

ABSTRACT BOOK

Bernd Strauss (Congress President)
Barbara Halberschmidt (Congress Manager)

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The State Government of
North Rhine-Westphalia



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INTRODUCTION¹

The 15th European Congress of Sport and Exercise Psychology – Building the Future of Sport and Exercise Psychology

The FEPSAC Congress will take place from July 15th to 20th 2019 in Muenster at the Schloss (the Muenster Castle) and its surrounding buildings. The special occasion is the 50th anniversary of the European Federation of Sport Psychology (FEPSAC), founded 1969 in Vittel, France, whose members are comprised of 24 national associations, e.g., including the German Society for Sport Psychology (asp). Accordingly, the hosts will welcome a large number of participants and expect a considerable amount of public interest. With over 1,000 anticipated participants during the week, the 15th FEPSAC Congress will be one of the largest international sport psychology congresses organized to date.

2 WELCOME ADDRESSES

Prof. Bernd Strauss – Congress President and President of the German Society for Sport Psychology (asp)



As Congress president and president of the German Society for Sport Psychology (asp), I am very pleased to welcome you to the 15th European Congress of Sport and Exercise Psychology in Muenster, the 15th FEPSAC Congress.

We expect almost 1,000 attendees to find their way in the medieval, beautiful, and loveable city of Muenster, located in the heart of Europe. With Muenster even being rated as the most liveable city in the world in 2004 by the United Nations Environment Programme (UNEP). Therefore, we do hope that you will find some time during the busy Congress week, which is jam-packed with activities, to explore this peaceful city. Perhaps by using the most popular vehicle in Muenster, namely, the bicycle. Over 500,000 bicycles can be found within this city of 300,000 inhabitants.

We invite you all to celebrate the 50th anniversary of FEPSAC during these five days in the Schloss (the castle) of Muenster (the main venue of this Congress). Over the last two-years the organizational committee has worked tremendously hard to be able to offer an outstanding and engaging program, including well over 900 presentations, a record in the history of FEPSAC.

I am absolutely excited about the outstanding collaboration with FEPSAC, the German Society (asp), the city of Muenster, the many supporters and sponsors, and finally, the state of North-Rhine-Westphalia. I am honored and excited that this Congress will be held under the patronage of the Undersecretary for Sport and Voluntary Work of the State of North Rhine-Westphalia, Andrea Milz.

I wish you all a fruitful, pleasant and exciting week, full of work, inspiration and hopefully also some relaxation.

Warmest wishes,
Prof. Dr. Bernd Strauss

**Prof. Anne-Marie Elbe,
FEPSAC President**



On behalf of FEPSAC's Managing Council, it is my great pleasure to welcome sport and exercise psychology enthusiasts from around the world to beautiful Muenster in order to celebrate the 15th European Congress of Sport and Exercise Psychology and FEPSAC's 50th anniversary from July 15th to 19th, 2019.

We are expecting around 1000 colleagues who will be hosted by the wonderful team from the Department of Sport and Exercise Psychology at the University of Muenster and by the German Society for Sport Psychology (asp). There could be no better venue than Muenster's own castle to come together under the Congress theme of "Building the future of sport & exercise psychology".

You will have the opportunity to enjoy six fantastic keynote lectures, a multitude of exciting symposia, workshops, individual oral and poster presentations. Special highlights will be the Science Slam as well as the Young Investigators Award. Furthermore, the Congress offers excellent opportunities for scientific exchange, an attractive social program as well as a wide variety of sporting activities. In addition, FEPSAC's vibrant history will be highlighted throughout the week with an exhibition, an anniversary symposium, the launching of the FEPSAC archive as well as the publication of an anniversary monograph and a special issue in Psychology of Sport and Exercise.

I am convinced that this special anniversary Congress will create many lasting memories for you and will be an important milestone in building the future of sport and exercise psychology.

I wish you an amazing Congress experience!

Prof. Dr. Anne-Marie Elbe

**Andrea Milz, Undersecretary for Sport and Voluntary Work
of the State of North Rhine-Westphalia (NRW)**



I am very happy to be the patron of this event. The slogan of the congress is "Building the future of sport and exercise psychology". Over the coming days you will be learning of the work being done in the fields of sports science, psychology and sports and exercise psychology. The presentations should be used not only as bare reports of project research done and findings arrived

at but also as starting points for discussions relating to practical activities and knowledge-transfer possibilities. I believe that the exposure and media coverage of the congress is most likely to generate considerable public interest if the transfer potential of the new scientific results and findings is set out clearly. This will bolster interest in practical research projects and raise the importance of research within the individual areas of application.

The government of the State of North Rhine-Westphalia is an active promoter of the sciences. Last year, for example, we revived the Regional Sports and Science Awards and singled out three sports scientists for their outstanding work in their respective fields. Each prize came with a cheque for €15,000.

I would like to thank the city of Münster, the University of Münster and Professor Bernd Strauß and his team for holding the 15th FEPSAC European Congress of Sport and Exercise in Münster and also for organising the celebrations for FEPSAC's 50th anniversary.

You, the congress participants, will have the opportunity to talk with national and international policymakers and representatives from the sports and science sectors and the business community and will be learning more about institutions, projects, products and materials. Use this chance for dialogue.

Parallel to your involvement in this multifaceted congress offering up to 20 sessions and workshops a day I would love to see you finding the time to explore the sights of Germany's No.1 bicycle city. I assure you it will be worth your while.

Andrea Milz

**Prof. Johannes Wessels,
Rector of the University of Muenster**



A warm welcome to the University of Muenster, the WWU (Westfälische Wilhelms-Universität). As Rector, I am delighted that you have chosen WWU as the venue for the 15th Congress of the European Federation of Sport Psychology (FEPSAC) on the occasion of its 50th anniversary!

Besides a broad variety of keynotes by internationally renowned scientists and several workshops, this year's Congress foresees a sports program, which I highly recommend to you. WWU encourages its students to view sports as a relevant part of their academic life. All students and staff have the opportunity to choose from over 120 different disciplines offered by our so-called University Sports, which currently serves roughly 20,000 participants each week. Through your participation in the offered sports program, you will have the chance to see at least part of our sports campus.

Since 2002, WWU is also official partner university in the field of top-level sports promoting competitive sports at the national and international level. As such, we want to enable students to benefit from both, an excellent scientific education and a successful sports career. WWU's Department of Sports and Exercise Psychology has an important role in this context. As it is also responsible for the organisation of this year's FEPSAC Congress, I take the opportunity to thank the Congress President Prof. Strauss and all others involved for their dedication in organising this event and wish all of you an inspiring and memorable time in Muenster.

Prof. Dr. Johannes Wessels

**Markus Lewe,
Mayor of the City of Muenster**



I am delighted that this year the 15th European Congress of Sport and Exercise Psychology is being held in our city. As the location of one of the most renowned universities and university clinics in Germany as well as being a city of science, Muenster is particularly suited to host this event. The university with its research, facilities and transfer of knowledge is a significant

location factor for Muenster and the surrounding region.

With nine universities, over 60,000 students and a network with elite research Muenster has a tradition as an academic location. The future is created in the lectures, institutes and laboratories. The city and science belong together, forming a firm alliance and making Muenster one of the leading educational, scientific, research and development locations in Europe and a centre of concentrated innovative energy.

You have come from near and far to our beautiful city and I hope that you will take enough time to see for yourself the proverbial "science and lifestyle" of Muenster. I am not only encouraging you to do so, I am also sincerely inviting you to do so. The beautiful old town, the large number of bicycles and young people are only three of the things that will immediately stand out. Make your way through our city on varied tours of discovery and sense some of the atmosphere which makes Muenster so unique. I promise, it's worth it!

I hope you will feel comfortable here in Muenster and I wish you an interesting Congress with rewarding lectures, fruitful discussions and stimulating presentations.

Markus Lewe

3 KEYNOTES

Brett Smith, PhD

University of Birmingham, Birmingham, UK

More of the same or time to up our game? 50 possibilities for sport and exercise psychology research

Monday, July 15th – Chair: Antonis Hatzigeorgiadis, PhD

Tatiana Ryba, PhD

University of Jyväskylä, Jyväskylä, Finland

Now you see me, but will you listen?

Sport, work and unexamined life in migration.

Tuesday, July 16th – Chair: Dorothee Alfermann, PhD

Ben Jackson, PhD

University of Western Australia, Perth, Australia

Staying afloat in Today's University System: Mistakes Made and Lessons Learned in the Transition from Postgraduate to "Mid-Career" Academic

Wednesday, July 17th – Chair: Stuart Biddle, PhD

F. Hülya Aşçı, PhD

Marmara University, Istanbul, Turkey

Self-perception and physical self: Its examination from cultural and mental well-being perspectives

Thursday, July 18th – Chair: Rita De Oliveira, PhD

Samuele Marcora, PhD

University of Kent, Kent, UK

The limits to endurance performance in humans: mind over muscle?

Friday, July 19th morning – Chair: Maurizio Bertollo, PhD

Zella E. Moore, PhD

Manhattan College, New York, United States

Clinical Sport Psychology: Considering Psychological Well-being and Performance Excellence

Friday, July 19th afternoon – Chair: Karin Moesch, PhD

Keynote 01: More of the same or time to up our game? 50(ish) possibilities for sport and exercise psychology research

Time: Monday, 15/Jul/2019: 4:30pm - 5:30pm · *Location:* H1 - Vittel
Session Chair: Antonis Hatzigeorgiadis, University of Thessaly

4:00pm – 5:30pm

Brett Smith¹

¹University of Birmingham

Partly as a result of the European Federation of Sport Psychology (FEPSAC), which was founded in 1969 in France, sport and exercise psychology is now widely recognised as a valuable and vital field. However, we must not rest on our laurels when it comes to conducting sport and exercise psychological research. Are we happy to do more of the same? Or is it a good time to up our game? FEPSAC's 50th anniversary presents an ideal opportunity to critically reflect on such questions. In this keynote, various concerns with the current state of sport and exercise psychology are offered. It is argued that in certain areas sport and exercise psychology research too often produces more of the same. In doing so our field risks becoming stagnant, dull, reserved, and/or limited in impact. Juxtaposed against certain concerns, various possibilities to 'up our game' when it comes to doing high-quality sport and exercise psychological research are offered. Numerous possibilities are very briefly offered throughout whilst several are attended to in detail. These include qualitative research methods, physical activity promotion and sedentariness, and sport psychology as an opportunity for enabling social justice. As recommended in Bakhtinian theory, throughout no attempt is made to finalise arguments. Rather, the modest goal is to stimulate dialogue and polyphony as we move into the next chapters of FEPSAC and how sport and exercise psychology might be imagined.

Keynote 02: Now you see me, but will you listen? Sport, work and unexamined life in migration.

Time: Tuesday, 16/Jul/2019: 11:30pm - 12:30pm · *Location:* H1 - Vittel
Session Chair: Dorothee Alfermann, University of Leipzig

11:30pm – 12:30pm

Tatiana Ryba

University of Jyväskylä

The International Organisation for Migration (IOM) estimated that 258 million individuals were international migrants in 2017, which is about one in every 30 persons worldwide; and migrant workers constituted more than a half of this population segment, 150.3 million, contributing to the economic growth of both sending and receiving societies. As the internationalisation and globalisation of private as well as public business practices within sport have been dramatically increasing in the last 20 years, the growing forms of migration among, for example, athletes, coaches, and referees have been forged as the means of career progression. Whereas sports labour migration studies tended to focus on transnational elites and, although the recent refugee crisis prompted the European Union to emphasise social inclusion of precarious migrants as one of its research priorities, it has been argued that a large group of 'middling transnationals' (Parutis, 2014) is an under-researched phenomenon of migrants. I suggest that these rather ordinary migrants, who occupy a middle-class position in their country of origin, are a large portion of the transnationals working within the sports industry, for or without wages. Drawing on the reconceptualisation of the career concept in vocational psychology (Hall, 2004; Savickas, 2012), which views career as a series of work experiences in one's life project rather than a high-ranking position as the end goal, I will first examine the relevance of transnational careers to the sport psychology community and how they could be studied. Then, I will introduce the Cultural Transition Model (Ryba, Stambulova, & Ronkainen, 2016) developed through my research with transnational athletes. The psychological work associated with cultural transitions was analytically crystallised and succinctly described in the model even though mobility patterns and experiences of middling transnationals are uniquely distinct. Finally, I will conclude with implications for practice and suggest directions for future research.

Keynote 03: Staying afloat in Today's University System: Mistakes Made and Lessons Learned in the Transition from Postgraduate to "Mid-Career" Academic

Time: Wednesday, 17/Jul/2019: 11:30pm - 12:30pm · *Location:* H1 - Vittel
Session Chair: Stuart Biddle, University of Southern Queensland

11:30pm – 12:30pm

Ben Jackson

University of Western Australia

The theme of FEPSAC's 50th anniversary congress is, appropriately, "building the future of sport and exercise psychology". Rather than considering the discipline(s) as a whole, Ben will draw from his experience in the Australian system to reflect on the lessons he's learned as a result of a changed (and changing) University landscape. In doing so, he will provide research examples that reflect the strategic 'push' to shift activity away from observational and experimental ('mechanistic') work, and toward activities that more readily offer opportunities for translation, community engagement, and income (rather than solely knowledge) generation. With particular relevance for postgraduates setting out on their career in sport/exercise psychology, it no longer appears sufficient that early-career academics generate good (novel, methodologically robust) study ideas. Instead, or at least in addition, it appears necessary—now, more than ever—to also develop a philosophy and strategy for securing funding and creating significant public interest / engagement in one's work.

Ben will illustrate this challenge by highlighting work being conducted by research groups around Australia, and also by discussing research activity within the Psychology of Active, Healthy Living (PAHL) group. Ben and James Dimmock formed the PAHL group in 2013 with the purpose of creating a rudimentary 'brand' to present to external partners, funders, media, and the public. Despite Ben and James both completing their doctoral degrees in sport psychology, research activity within the PAHL group is now almost exclusively embedded within PAHL's community health promotion programmes. Reflecting the shift toward community engagement and income generation, these programmes target issues including weight management, mental health, physical activity, and nutrition. Ben will outline a common 'philosophy' that underpins PAHL's community programming – that, in an age of technological advancement and mobile applications, the power of other people in shaping health behaviour should not be forgotten.

Keynote 04: Self-perception and physical self: Its examination from cultural and mental well-being perspectives

Time: Thursday, 18/Jul/2019: 11:30pm - 12:30pm · *Location:* H1 - Vittel
Session Chair: Rita F. de Oliveira, London South Bank University

11:30pm – 12:30pm

Hülya Asci

Marmara University

The physical self is considered to be an important psychological outcome, correlate and antecedent of physical activity behaviour, and is viewed as an important contributor to overarching, global perceptions of self-worth in multidimensional, hierarchical models of self-esteem. The greatest step forward in the physical self-research have been facilitated by the development of multidimensional and hierarchical physical self-instruments. With the development of physical self-instruments, much richer profiles that are capable of characterising groups or individuals have been produced, and links between the physical self and related behaviours and self-perception change have been more precisely reported. Thus, the aim of this presentation is to explain recent research on the physical self from two perspectives—culture and mental well-being. From a cultural perspective, studies provided good cross-cultural generalisability of physical self-measurements, theories and models. Extant research on physical self across different cultures indicates that the hierarchical and multidimensional models developed in Western nations which have predominantly individualistic cultural norms can be replicated with samples from collectivistic cultures. However, it must be noted that mean levels on these constructs are significantly different across cultures. In particular, participants from collectivistic countries tend to have lower physical-self scores than those from individualistic countries. From a mental health perspective, the studies examined the effects of different types of exercise programmes on the physical self. The research has demonstrated that different modes of exercise such as step dance, aerobic dancing, and physical fitness programmes have positive effects on the physical self and strength, physical condition/endurance, and sport competence were the subdomains of physical self mostly affected from exercise. The research also provides evidence that males and females have similar gains from exercise intervention. These findings indicated that the physical self should be considered as a target outcome of interventions based on physical activity and exercise programmes as mental well-being is considered.

Keynote 05: The limits to endurance performance in humans: mind over muscle?

Time: Friday, 19/Jul/2019: 11:30pm - 12:30pm · *Location:* H1 - Vittel
Session Chair: Maurizio Bertollo, University of Chieti-Pescara

11:30pm – 12:30pm

Samuele Marcora

University of Kent

Traditionally, it has been assumed that endurance performance is limited by muscle fatigue and various physiological factors that influence its peripheral or central mechanisms (e.g., convective oxygen delivery, hyperthermia and glycogen depletion). After presenting evidence against this traditional muscle fatigue model, we will describe an alternative psychobiological model of endurance performance that integrates in an interdisciplinary manner exercise physiology with motivation psychology and cognitive neuroscience. At the psychological level, this psychobiological model adopts the motivational intensity theory to explain how the perception of effort and potential motivation interact to determine endurance performance in a variety of physiological and psychological conditions. At the biological level, the model is based on experimental evidence that the neural signals processed by sensory areas of the brain to generate the perception of effort are generated by premotor and motor areas of the brain (corollary discharges) rather than afferent signals about the physiological condition of the body. The practical implications of this psychobiological approach for the training, monitoring and preparation of endurance athletes will also be discussed.

Keynote 06: Clinical Sport Psychology: Considering Psychological Well-being and Performance Excellence

Time: Friday, 19/Jul/2019: 4:00pm – 5:00pm · *Location:* H1 - Vittel
Session Chair: Karin Moesch, Swedish Sports Confederation

4:00pm – 5:00pm

Zella Moore

Manhattan College

Clinical sport psychology is the seamless and science-minded integration of the clinical psychology world, with all of the comprehensive cognitive, emotional, and behavioural variables on which it focuses; and the sport-performance psychology world, a fascinating setting and heterogeneous population searching for performance excellence and personal wellness. Instead of focusing solely on the enhancement of athletic performance or solely on the remediation of psychopathology, clinical sport psychology benefits from an expanded scope of practice intended to promote and enhance the athlete's overall well-being, including, but certainly not limited to performance related issues. As with all people, athletes present with an array of personalities, motivations, emotional states, and personal and performance issues, and they are certainly not immune to clinical, developmental, transitional, social, and health issues. Thus, clinical sport psychology is an empirically-informed model that employs a scope, style, and mode of practice that is built upon cutting-edge findings in both clinical and sport sciences, and that follows the sound methodological traditions of cognitive-behavioural psychology. Clinical sport psychology approaches the athlete seeking psychological and/or performance-based services in a broad, integrative manner that relates psychological processes and behavioural outcomes in the sport milieu, and conceptualises athletic performance in the context of recent empirical research in both athletic and non-athletic domains of human performance. This allows sport psychologists to adopt a style of practice that involves not only the enhancement of athletic performance, but also the personal development and psychological well-being of the athlete, and the result is the ability to help athletes reach and maintain high levels of functioning in multiple life domains.

4 PROGRAM OVERVIEW

MONDAY, 15/JUL/2019

9:00 am – 1:00 pm / 3:00 pm

PARALLEL PRE CONGRESS WORKSHOPS AND SYMPOSIA

9:00am – 1:00pm VSH 19 – Paris	Pre Congress 01: Workshop on Mindfulness Interventions in Sport: An Interactive Workshop Session Chair: Zella E. Moore, Manhattan College Session Chair: Frank Gardner, Touro College
9:00am – 1:00pm H 2 – Bern	Pre Congress 02: Workshop on Qualitative Research: Data Collection, Post-Qualitative Research and Generalizability Session Chair: Brett Smith, University of Birmingham
9:00am – 1:00pm VSH 17 – Westphalia	Pre Congress 03: Workshop on Providing Sport Psychology Services for Coaches Session Chair: Stilian „Ani“ Chroni, Inland Norway University of Applied Science / Session Chair: Kristen Dieffenbach, West Virginia University
9:00am – 1:00pm H 4 – Chalkidiki	Pre Congress 04: Workshop on Introduction to Structural Equation Modelling Session Chair: Nikos Ntoumanis, Curtin University
9:00am – 1:00pm VSH 18 – Edinburgh	Pre Congress 05: Workshop on Scientific Career Session Chair: Catherine Sabiston, University of Toronto
9:00am – 3:00pm VSH 06 – Bad Blankenburg	Pre Congress 06: Science and Practice of Sports Officiating Symposium Session Chair: Henning Plessner, University of Heidelberg
9:00am – 3:00pm VSH 116 – Varna	Pre Congress 07: Perceptual-motor expertise Symposium Session Chair: Rouwen Cañal Bruland, Friedrich Schiller University Jena / Session Chair: David Mann, Vrije Universiteit Amsterdam

MONDAY, 15/JUL/2019

MONDAY, 15/JUL/2019

2:00 pm – 3:30 pm

4:00 pm – 9:30 pm

PARALLEL CONGRESS SESSIONS

OPENING SESSION / WELCOME RECEPTION

2:00pm – 3:30pm H 2 – Bern	Symposium 01: Motor imagery during action observation: from neurophysiology to behaviour Session Chair: Cornelia Frank, Bielefeld University
2:00pm – 3:30pm H 3 – Madeira	Symposium 02: Executive functions in sport: Current trends and future prospects Session Chair: Robert Vaughan, York st John University
2:00pm – 3:30pm H 4 – Chalkidiki	Symposium 03: Diverse perspectives on athlete leadership development Session Chair: Todd Loughead, University of Windsor

4:00pm – 9:30pm H 1 – Vittel & LWL Museum	Congress Opening: Welcome Addresses, Keynote Brett Smith & Opening Ceremony Session Chair: Bernd Strauss, University of Muenster Session Chair: Anne-Marie Elbe, Leipzig University
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2:00pm – 3:30pm Senatssaal – Prague	Paper Session 01: Automatic Processes and Cognitive Resources Session Chair: Tanya R Berry, University of Alberta
2:00pm – 3:30pm S 8 – Copenhagen	Paper Session 02: Doping Session Chair: Vassilis Barkoukis, Aristotle University of Thessaloniki
2:00pm – 3:30pm S 9 – Cologne	Paper Session 03: Self-Compassion and Body Image Session Chair: Robert Charles Eklund, Florida State University
2:00pm – 3:30pm Aula im Schloss – Europe	Paper Session 04: Life skills & Well-being Session Chair: Glyn Roberts, Norwegian School of Sport Sciences
2:00pm – 3:30pm VSH 17 – Westphalia	Paper Session 05: Emotion, Anxiety and Public Shaming Session Chair: Penny McCullagh, California State University East Bay
2:00pm – 3:30pm VSH 118 – Nottingham	Workshop 01: The optimum performance program in sports: an evidence-supported sport-specific mental wellness intervention Session Chair: Bradley Donohue, University of Nevada, Las Vegas
2:00pm – 3:30pm VSH 07 – Magglingen	Workshop 02: Testing underlying assumptions and estimating reliability coefficients alpha, omega, omega ordinal and omega categorical Session Chair: Carme Viladrich, Universitat Autònoma de Barcelona

TUESDAY, 16/JUL/2019

TUESDAY, 16/JUL/2019

8:30 am – 10:00 am

8:30 am – 10:00 am

PARALLEL SESSIONS

PARALLEL SESSIONS

8:30am – 10:00am VSH 219 – Brussels	Featured Panel 01: Developing resilience in elite sport: research to practice Session Chair: Mustafa Sarkar, Nottingham Trent University
8:30am – 10:00am S 10 – Münster	Featured Symposium 01: Identifying and motivating youth who mostly need physical activity IMPACT: A European project Session Chair: Athanasios Papaioannou, University of Thessaly Session Chair: Anne-Marie Elbe, Leipzig University
8:30am – 10:00am Aula im Schloss – Europe	Invited Symposium 01: Holistic approaches to sport and physical activity participation in the Asian context #1 Session Chair: Youngho Kim, Seoul National University of Science and Technology

8:30am – 10:00am H 4 – Chalkidiki	Symposium 06: On the importance of self-control in sport and exercise psychology Session Chair: Chris Englert, University of Frankfurt Session Chair: Ines Pfeffer, Medical School Hamburg
8:30am – 10:00am VSH 19 – Paris	Symposium 07: Optimising athletes' dual careers in Europe: from research to applications Session Chair: Natalia Stambulova, Halmstad University
8:30am – 10:00am VSH 118 – Nottingham	Symposium 08: Cognitive and motor development in and through sports and physical activity Session Chair: Lisa Musculus, German Sport University Cologne
8:30am – 10:00am VSH 07 – Magglingen	Workshop 03: Resist the urge to stop in endurance activities: research-evaluated endurance strategies intending to support training Session Chair: Carla Meijen, St Mary's University, London Session Chair: Samuele Marcora, University of Bologna and University of Kent Session Chair: David Marchant, Edge Hill University

8:30am – 10:00am Senatssaal – Prague	Paper Session 06: Perception Session Chair: Daniel Memmert, Deutsche Sporthochschule Köln
8:30am – 10:00am S 8 – Copenhagen	Paper Session 07: Mental Health and Physical Activity Session Chair: Kristen Dieffenbach, West Virginia University
8:30am – 10:00am S 9 – Cologne	Paper Session 08: Clinical Sport Psychology Session Chair: Diane M. Wiese-Bjornstal, University of Minnesota
8:30am – 10:00am VSH 17 – Westphalia	Paper Session 09: Olympic, Paralympic, Elite and Team Sport Session Chair: Gretchen Kerr, University of Toronto
8:30am – 10:00am VSH 116 – Varna	Paper Session 10: Stress and Recovery Session Chair: Markus Gerber, University of Basel
8:30am – 10:00am H 2 – Bern	Symposium 04: Mental health in youth football in Europe: Recommendations for applied research and service delivery Session Chair: Carsten Hvid Larsen, University of Southern Denmark
8:30am – 10:00am H 3 – Madeira	Symposium 05: Talent identification, development and dropout in sports. The role of motivation, psychological competencies and mental health Session Chair: Claudia Zuber, University of Bern

10:15 am – 11:15am

POSTER SESSIONS

10:15am – 11:15am Marquee	Poster Tuesday Session Chair: Martina Kanning, University of Konstanz
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11:30 am – 12:30 am

KEYNOTE

11:30am – 12:30pm H 1 – Vittel	Keynote Tatiana Ryba: Now you see me, but will you listen? Sport, work and unexamined life in migration. Session Chair: Dorothee Alfermann, University of Leipzig
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TUESDAY, 16/JUL/2019

TUESDAY, 16/JUL/2019

2:00 pm – 3:30 pm

2:00 pm – 3:30 pm

PARALLEL SESSIONS

PARALLEL SESSIONS

2:00pm – 3:30pm
VSH 219 – Brussels

Featured Panel 02: Do we do what our results show? European career researchers about their own careers (panel session)
Session Chair: Paul Wylleman, Vrije Universiteit Brussel
Session Chair: Natalia Stambulova, Halmstad University

2:00pm – 3:30pm
H 3 – Madeira

Symposium 11: Rendering the exercise experience more pleasant: conceptual approaches and practical innovations
Session Chair: Costas I. Karageorghis, Brunel University London

2:00pm – 3:30pm
S 10 – Münster

Featured Symposium 02: asp-Symposium: The 50th anniversary of the German Society for Sport Psychology (asp)
Session Chair: Bernd Strauss, University of Muenster

2:00pm – 3:30pm
H 4 – Chalkidiki

Symposium 12: Optimising coaching behaviours throughout talent development – integrating multiple perspectives
Session Chair: Svenja Wachsmuth, Eberhard Karls University
Session Chair: Johannes Raabe, Pennsylvania State University

2:00pm – 3:30pm
VSH 116 – Varna

Gimme-Five 01
Session Chair: Philip Sullivan, Brock University

2:00pm – 3:30pm
VSH 19 – Paris

Workshop 04: Applied Exercise Psychology Workshop: Facilitating Mental Skills Delivery Among Exercise Instructors
Session Chair: Hila Sharon-David, Florida State University

2:00pm – 3:30pm
Aula im Schloss – Europe

Invited Symposium 02: Holistic approaches to sport and physical activity participation in the Asian context #2
Session Chair: Youngho Kim, Seoul National University of Science and Technology

2:00pm – 3:30pm
VSH 18 – Edinburgh

Workshop 05: The art of dialogue in coaching – towards transformative exchange
Session Chair: Reinhard Stelter, University of Copenhagen

2:00pm – 3:30pm
Senatssaal – Prague

Paper Session 11: Referees and Decision Making
Session Chair: Clare MacMahon, Latrobe University

2:00pm – 3:30pm
VSH 06 – Bad Blankenburg

Workshop 06: Sport psychology services for parents: the process and practice of delivering an evidence-based parent education workshop
Session Chair: Chris Harwood, Loughborough University
Session Chair: Sam Nicholas Thrower, University of Roehampton

2:00pm – 3:30pm
S 8 – Copenhagen

Paper Session 12: Motor Imagery
Session Chair: Gal Ziv, The Academic College at Wingate

2:00pm – 3:30pm
S 9 – Cologne

Paper Session 13: Executive Functions
Session Chair: Björn Krenn, University of Vienna

2:00pm – 3:30pm
VSH 17 – Westphalia

Paper Session 14: Science to Practice in Sport Psychology: Best Practice
Session Chair: Sidonio Serpa, University of Lisbon

2:00pm – 3:30pm
VSH 118 – Nottingham

Paper Session 15: Leadership
Session Chair: Katrien Fransen, Katholieke Universiteit Leuven

2:00pm – 3:30pm
Aula im Schloss – Europe

Symposium 09: The self-talk symposium: From the lab to the field and from research to practice
Session Chair: Antonis Hatzigeorgiadis, University of Thessaly

2:00pm – 3:30pm
H 2 – Bern

Symposium 10: Performance improvement and optimization: perceptual and psychophysiological approaches
Session Chair: Selenia di Fronso, University of Chieti-Pescara

4:00 pm – 6:00 pm

GENERAL ASSEMBLY

4:00pm – 6:00pm
H2 – Bern

General Assembly
Session Chair: Anne-Marie Elbe, Leipzig University

7:00 pm – 9:00 pm

SCIENCE SLAM

7:00pm – 9:00pm
H 1 – Vittel

Science Slam
Session Chair: Andrea Petroczi, Kingston University
Session Chair: Diane Ste-Marie, University of Ottawa

WEDNESDAY, 17/JUL/2019

8:30 am – 10:30 am

PARALLEL SESSIONS

8:30am – 10:00am
S 10 – Münster**Featured Symposium 03: Crossing borders: finding meaning and belonging in cultural transitions**
Session Chair: Tatiana V. Ryba, University of Jyväskylä8:30am – 10:00am
S 10 – Münster**Featured Symposium 04: Conceptual, theoretical and methodological advances in exercise motivation research: affect and automaticity**
Session Chair: Ralf Brand, University of Potsdam
Session Chair: Panteleimon Ekkekakis, Iowa State University8:30am – 10:00am
VSH 116 – Varna**Gimme-Five 02**
Session Chair: Yu-Kai Chang, National Taiwan Normal University8:30am – 10:00am
Aula im Schloss – Europe**Invited Symposium 03: Promoting links between ECSS and FEPSAC: A platform enhancing research and practice within and across disciplinary lens**
Session Chair: Joan Lynne Duda, University of Birmingham8:30am – 10:00am
Senatssaal – Prague**Paper Session 16: Physical Activity and Weight Loss Interventions**
Session Chair: Emmanouil Georgiadis, University of Suffolk8:30am – 10:00am
S 8 – Copenhagen**Paper Session 17: Decision Making and Judgement**
Session Chair: Geert Savelsbergh, Vrije University8:30am – 10:00am
S 9 – Cologne**Paper Session 18: Physical Education and Children**
Session Chair: Martin S. Hagger, Curtin University8:30am – 10:00am
VSH 118 – Nottingham**Paper Session 19: Physical and Cognitive Performance**
Session Chair: Peter Gröpel, University of Vienna8:30am – 10:00am
VSH 17 – Westphalia**Paper Session 20: Consulting and Counseling**
Session Chair: Carsten Hvid Larsen, University of Southern Denmark8:30am – 10:00am
H 2 – Bern**Symposium 13: Refining imagery relationships and applications**
Session Chair: Anthony Michael Morris, Victoria University, Melbourne, Australia8:30am – 10:00am
H 3 – Madeira**Symposium 14: Self-regulation in sport: developmental, learning, performance, and growth cycle perspectives**
Session Chair: Malgorzata Siekanska, University of Physical Education, Krakow, Poland
Session Chair: Artur Poczwadowski, University of Denver

WEDNESDAY, 17/JUL/2019

8:30 am – 10:30 am

PARALLEL SESSIONS

8:30am – 10:00am
H 4 – Chalkidiki**Symposium 15: Faster, stronger, higher, but at what cost? Safeguarding athletes from psychological violence in sport**
Session Chair: Ashley Stirling, University of Toronto8:30am – 10:00am
VSH 19 – Paris**Symposium 16: Optimising athletes' vocational development: European perspectives**
Session Chair: Paul Wylleman, Vrije Universiteit Brussel8:30am – 10:00am
VSH 06 – Bad Blankenburg**Symposium 17: Decoding and modifying brain oscillatory activity to optimise performance**
Session Chair: Arash Mirifar, Technische Universität München8:30am – 10:00am
VSH 07 – Magglingen**Workshop 07: Moving evidence into action: applying self-compassion in sport**
Session Chair: Leah J. Ferguson, University of Saskatchewan

10:15 am – 11:15am

POSTER SESSIONS

10:15am – 11:15am
Marquee**Poster Session Wednesday**
Session Chair: Katherine Anne Tamminen, University of Toronto10:15am – 11:15am
Marquee**Poster Session YRA**
Session Chair: Natalia Stambulova, Halmstad University
Session Chair: Taru Lintunen, University of Jyväskylä

11:30 am – 12:30 am

KEYNOTE

11:30am – 12:30pm
H 1 – Vittel**Keynote Ben Jackson: Staying afloat in Today's University System: Mistakes Made and Lessons Learned in the Transition from Postgraduate to "Mid-Career" Academic**
Session Chair: Stuart Biddle, University of Southern Queensland

WEDNESDAY, 17/JUL/2019

2:00 pm – 3:30 pm

PARALLEL SESSIONS

2:00pm – 3:30pm

VSH 06 –
Bad Blankenburg

Featured Symposium 05: Mental health in competitive sports – research and mental health programs from three countries
Session Chair: Göran Kenttä, The Swedish School of Sport and Health Sciences

2:00pm – 3:30pm

S 10 – Münster

Featured Symposium 06: Setting the stage for esports psychology: current state of research and future directions
Session Chair: Ismael Alfonso Pedraza Ramirez, German Sport University Cologne

2:00pm – 3:30pm

VSH 116 – Varna

Gimme-Five 03
Session Chair: Werner Helsen, Katholieke UniverPagei Leuven

2:00pm – 3:30pm

Aula im Schloss –
Europe

Invited Panel 01: FEPSAC 50th Anniversary panel discussion: past-presidents' insights
Session Chair: Xavier Sanchez, Halmstad University

2:00pm – 3:30pm

Senatssaal – Prague

Paper Session 21: Career and Athlete Development
Session Chair: Claudio Robazza, „G. d’Annunzio“ University of Chieti-Pescara

2:00pm – 3:30pm

S 8 – Copenhagen

Paper Session 22: Motor Control and Performance
Session Chair: Nicola Jane Hodges, University of British Columbia

2:00pm – 3:30pm

S 9 – Cologne

Paper Session 23: Quality of Life and Meaning in Sport
Session Chair: Jens Kleinert, German Sport University Cologne

2:00pm – 3:30pm

VSH 118 –
Nottingham

Paper Session 24: Coaching and Coaches
Session Chair: Gareth Edward Jowett, Leeds Beckett University

2:00pm – 3:30pm

H 2 – Bern

Symposium 18: National and regional journals in sport and exercise psychology – current status, challenges and future directions
Session Chair: Johan Michael Wikman, Halmstad University

2:00pm – 3:30pm

H 3 – Madeira

Symposium 19: Psychological resilience in sports: overcoming and growing from stressors
Session Chair: Ruud J. R. Den Hartigh, University of Groningen

WEDNESDAY, 17/JUL/2019

2:00 pm – 3:30 pm

PARALLEL SESSIONS

2:00pm – 3:30pm

H 4 – Chalkidiki

Symposium 20: Qualitative characteristics of physical-activity interventions on cognition in youth
Session Chair: Spyridoula Vazou, Iowa State University

2:00pm – 3:30pm

VSH 17 – Westphalia

Symposium 21: The research-to-practice gap in sport psychology: Exploring the challenges faced by researchers, consultants, and coaches
Session Chair: George Stewart Ely, Liverpool John Moores

2:00pm – 3:30pm

VSH 18 – Edinburgh

Workshop 08: How to use the 3P's model to reduce performance anxiety
Session Chair: Michael Dominick Zito, Morristown Clinical and Sport Psychology

2:00pm – 3:30pm

VSH 19 – Paris

Workshop 09: Adapting Mindfulness Sport Performance Enhancement (MPSE) to a variety of performance settings and populations
Session Chair: Jacob Cannon Jensen, California State University, Northridge

WEDNESDAY, 17/JUL/2019

4:00 pm – 5:30 pm

YOUNG RESEARCHER AWARD

4:00pm – 5:30pm

Aula im Schloss - Europe

Award Symposium: Young Researcher Award for Oral Presentation

Session Chair: Natalia Stambulova, Halmstad University
Session Chair: Taru Lintunen, University of Jyväskylä

4:00 pm – 5:30 pm

PARALLEL SESSIONS

4:00pm – 5:30pm

S 10 – Münster

Paper Session 25: Elite Athletes

Session Chair: Joe Baker, University of Toronto

4:00pm – 5:30pm

S 9 – Cologne

Symposium 22: A holistic perspective on coaching athletes through transitional challenges

Session Chair: Koen De Brandt, Vrije Universiteit Brussel

4:00pm – 5:30pm

S 8 – Copenhagen

Symposium 23: 50 years of performance enhancement: time to shift the future emphasis to mental health and well-being

Session Chair: Tadhg E. MacIntyre, University of Limerick

8:30am – 10:00am

VSH 118 – Nottingham

Symposium 24: Mental health in sport case studies

Session Chair: Stewart Cotterill, AECC University College

4:00pm – 5:30pm

VSH 19 – Paris

Workshop 10: Neuroscience in shooting and team sports – neuroshooting and team flow

Session Chair: Ágota Lénárt, University of Physical Education

4:00pm – 5:30pm

VSH 06 – Bad Blankenburg

Workshop 11: Critical realism in qualitative and mixed methods research in sport and exercise psychology

Session Chair: Noora J. Ronkainen, University of Jyväskylä
Session Chair: Tatiana V. Ryba, University of Jyväskylä

4:00pm – 5:30pm

VSH 17 – Westphalia

Workshop 12: Introduction to the program “I Play (cause) I Feel” addressed to sport psychology practitioners in youth sports.

Session Chair: Alexandra Markati, Kapodistrian and National University

THURSDAY, 18/JUL/2019

8:30 am – 10:00 am

PARALLEL SESSIONS

8:30am – 10:00am

S 10 – Münster

Featured Symposium 07: Physical education teacher autonomy support training to promote leisure-time physical activity in students (petals) intervention

Session Chair: Martin S. Hagger, Curtin University
Session Chair: Taru Lintunen, University of Jyväskylä

8:30am – 10:00am

VSH 118 – Nottingham

Featured Symposium 08: Mindfulness and acceptance-based interventions in elite sports: moving beyond performance enhancement

Session Chair: Karin Moesch, Swedish Sports Confederation
Session Chair: Johan Ekengren, Halmstad University

8:30am – 10:00am

Aula im Schloss – Europe

Invited Panel 02: Supervision in Applied Sport Psychology: developing good practice for the ISSP-Registry (ISSP-R)

Session Chair: Chris Harwood, Loughborough University

8:30am – 10:00am

VSH 219 – Brussels

Panel 01: Child protection and well-being in sport: what can sport psychologists do to prevent abuse and violence?

Session Chair: Anastasiya Khomutova, University of Brighton
Session Chair: Snezana Stoljarova, Tallinn University

8:30am – 10:00am

Senatssaal – Prague

Paper Session 26: Injury and Prevention

Session Chair: Daniel John Madigan, York St John University

8:30am – 10:00am

S 8 – Copenhagen

Paper Session 27: Sport Participation and Deviant Behavior

Session Chair: Michael Kellmann, Ruhr University Bochum

8:30am – 10:00am

S 9 – Cologne

Paper Session 28: Body Image and Embodied Cognition

Session Chair: Ronnie Lidor, The Academic College at Winhgate

8:30am – 10:00am

VSH 116 – Varna

Paper Session 29: Motivation

Session Chair: Julia Schüler, University of Konstanz

8:30am – 10:00am

VSH 17 – Westphalia

Paper Session 30: Coaches, Coaching and Coaching Education

Session Chair: Krista Munroe-Chandler, University of Windsor

THURSDAY, 18/JUL/2019

8:30 am – 10:00 am

PARALLEL SESSIONS

8:30am – 10:00am **Symposium 25: Self-regulation of endurance performance: novel research findings**
 H 2 – Bern
 Session Chair: Carla Meijen, St Mary’s University, London

8:30am – 10:00am **Symposium 26: Perception-action coupling in sport: Current perspectives from the UK, The Netherlands, Switzerland, and Germany**
 H 3 – Madeira
 Session Chair: André Klostermann, University of Bern
 Session Chair: Florian Loffing, Carl von Ossietzky University Oldenburg

8:30am – 10:00am **Symposium 27: Resilience in sport and performance psychology: multi-level perspectives**
 H 4 – Chalkidiki
 Session Chair: Mustafa Sarkar, Nottingham Trent University

8:30am – 10:00am **Workshop 13: Causal inferences in sport and exercise psychology research: what to do when randomization is not an option?**
 VSH 06 – Bad Blankenburg
 Session Chair: Andreas Karl Stenling, Umeå University
 Session Chair: Andreas Ivarsson, Halmstad University

8:30am – 10:00am **Workshop 14: Heart rate variability in sport psychology: applications of the vagal tank theory**
 VSH 19 – Paris
 Session Chair: Sylvain Laborde, German Sport University Cologne
 Session Chair: Emma Victoria Mosley, Solent University

8:30am – 10:00am **Workshop 15: Evolution of learning for future force readiness**
 VSH 18 – Edinburgh
 Session Chair: ChangHyun Ko, Science Applications International Corporation

10:15 am – 11:15apm

POSTER SESSIONS

10:15am – 11:15am **Poster Session Thursday**
 Marquee
 Session Chair: Raoul R.D. Oudejans, Vrije Universiteit Amsterdam

THURSDAY, 18/JUL/2019

11:30 am – 12:30 am

KEYNOTE

11:30am – 12:30pm **Keynote Hulya Aşçı: Self-perception and physical self: Its examination from cultural and mental well-being perspectives**
 H 1 - Vittel
 Session Chair: Rita F. de Oliveira, London South Bank University

12:30 am – 2:00 pm

MEETING

12:30pm – 2:00pm **Meeting PSE: PSE - Editorial Board Meeting (Closed Session)**
 Festsaal
 Session Chair: Bernd Strauss, University of Muenster
 Session Chair: Nikos Ntoumanis, Curtin University

2:00 pm – 3:30 pm

PARALLEL SESSIONS

2:00pm – 3:30pm **Featured Symposium 09: Leveraging the social environment to promote physical activity**
 S 10 – Münster
 Session Chair: Cecilie Thogersen-Ntoumani, Curtin University

2:00pm – 3:30pm **Gimme-Five 04**
 VSH 06 – Bad Blankenburg
 Session Chair: Norbert Hagemann, University of Kassel

2:00pm – 3:30pm **Invited Symposium 04: Various pathways, one destination - young specialists’ journeys toward becoming sport psychology professionals in Europe**
 Aula im Schloss – Europe
 Session Chair: Michala Bednářiková, Pro Performance

2:00pm – 3:30pm **Panel 02: Signature experiences: when “experts” on stress and coping battle burnout**
 VSH 219 – Brussels
 Session Chair: Stilian „Ani“ Chroni, Inland Norway University of Applied Science

THURSDAY, 18/JUL/2019

FRIDAY, 19/JUL/2019

2:00 pm – 3:30 pm

8:30 am – 10:00 am

PARALLEL SESSIONS

PARALLEL SESSIONS

2:00pm – 3:30pm Senatssaal – Prague	Paper Session 31: Burnout and Resilience Session Chair: Daniel Gould, Michigan State University
2:00pm – 3:30pm S 8 – Copenhagen	Paper Session 32: Disability, Functional Disorders and Aging Session Chair: Brett Smith, University of Birmingham
2:00pm – 3:30pm S 9 – Cologne	Paper Session 33: Teamsports (Varia) Session Chair: Frank Jing-Horng Lu, Chinese Culture University
2:00pm – 3:30pm VSH 116 – Varna	Paper Session 34: Young Elite Athletes Session Chair: Alan Lyle Smith, Michigan State University
2:00pm – 3:30pm VSH 19 – Paris	Paper Session 35: Violence, Substances and Gender (Varia) Session Chair: Maria Kavussanu, University of Birmingham
2:00pm – 3:30pm H 2 – Bern	Symposium 28: Psychology of sports injuries: from pre-injury to return to sport. Current research and practical implications Session Chair: Ulrika Tranaeus, The Swedish School of Sport and Health Sciences, GIH
2:00pm – 3:30pm H 3 – Madeira	Symposium 29: Uncharted perspectives on emotions in sport Session Chair: Svenja Anna Wolf, University of Amsterdam Session Chair: Franzi Lautenbach, Leipzig University
2:00pm – 3:30pm H 4 – Chalkidiki	Symposium 30: Holistic Movement Practices – a new direction for exercise psychology? Session Chair: Ineke Vergeer, University of Southern Queensland
2:00pm – 3:30pm VSH 118 – Nottingham	Workshop 16: Going green for well-being: a practical workshop on the use of nature-based Interventions in the sport context Session Chair: Tadhg E. MacIntyre, University of Limerick

8:30am – 10:00am VSH 219 – Brussels	Featured Panel 03: Round Table Discussion: International perspectives on professional accreditation: Balancing localized cultural infusion and proposed global guidelines Session Chair: Sebastian Brückner, Westfälische Wilhelms-Universität Münster
8:30am – 10:00am S 10 – Münster	Featured Symposium 10: Preventing doping in sport: Moral, psychological, and knowledge-based interventions in young British and Greek athletes Session Chair: Maria Kavussanu, University of Birmingham
8:30am – 10:00am S 8 – Copenhagen	Paper Session 36: Affect and Enjoyment Session Chair: Daniel Gucciardi, Curtin University
8:30am – 10:00am S 9 – Cologne	Paper Session 37: Understanding Physical Activity Behaviour Session Chair: Claudio Renato Nigg, Karlsruhe Institute for Technology
8:30am – 10:00am VSH 06 – Bad Blankenburg	Paper Session 38: Athletes, Coaches and Parents in Youth Sport Session Chair: Gretchen Kerr, University of Toronto
8:30am – 10:00am VSH 116 – Varna	Paper Session 39: Motor Control and Performance Session Chair: Claudia Voelcker-Rehage, Chemnitz University of Technology
8:30am – 10:00am H 2 – Bern	Symposium 31: Motives for participation in sport and physical activity: new approaches Session Chair: Anthony Michael Morris, Victoria University, Melbourne, Australia
8:30am – 10:00am H 3 – Madeira	Symposium 32: Understanding and facilitating effective goal striving Session Chair: Nikos Ntoumanis, Curtin University
8:30am – 10:00am H 4 – Chalkidiki	Symposium 33: Dual careers in sport - latest research findings from across Europe Session Chair: Robert Morris, Liverpool John Moores University

3:30/4:00 - 6:00 pm

SOCIAL PROGRAM

3:30/4:00 – 6:00 pm **Social Program**
For details see page 24



FRIDAY, 19/JUL/2019

8:30 am – 10:00am

PARALLEL SESSIONS

8:30am – 10:00am

Symposium 34: Heart rate variability as a self-regulation marker

VSH 17 – Westphalia

Session Chair: Sylvain Laborde, German Sport University Cologne

8:30am – 10:00am

Workshop 17: LoL generation: in the field with a professional team in Esports „Misfits Gaming“.

VSH 19 – Paris

Session Chair: Ismael Alfonso Pedraza Ramirez, German Sport University Cologne

8:30am – 10:00am

Workshop 18: Reframing good character: strengths-based positive psychology interventions to promote character development in sport

VSH 18 – Edinburgh

Session Chair: Penelope Ann-Scott Murdock, Universität Bremen

10:15 am – 12:15 am

POSTER SESSIONS

10:15am – 11:15am

Poster Session Friday

Marquee

Session Chair: Urban Johnson, Halmstad University

11:30 am – 12:30 am

KEYNOTE

11:30am – 12:30pm

Keynote S. Marcora: The limits to endurance performance in humans: mind over muscle?

H 1 – Vittel

Session Chair: Maurizio Bertollo, University „G. d'Annunzio“ of Chieti-Pescara

FRIDAY, 19/JUL/2019

2:00 pm – 3:30 pm

PARALLEL SESSIONS

2:00pm – 3:30pm

Featured Symposium 11: Sport psychology development – historical and institutional perspectives

S 10 – Münster

Session Chair: Roland Seiler, University of Bern

2:00pm – 3:30pm

Invited Symposium 05: Association of Applied Sport Psychology Symposium: Theory to Practice to Enhance Performance

S 9 – Cologne

Session Chair: Amy Lynne Baltzell, Boston University

2:00pm – 3:30pm

Panel 03: Ethics in applied sport psychology - international perspectives on the challenges faced across contexts of professional practice

VSH 219 – Brussels

Session Chair: Sydney Querfurth-Böhnlein, Westfälische Wilhelms-Universität Münster

2:00pm – 3:30pm

Paper Session 40: Groups and Team Performance

Senatssaal – Prague

Session Chair: David John Hancock, Indiana University Kokomo

2:00pm – 3:30pm

Paper Session 41: Perspectives on Emotions in Sport

S 8 – Copenhagen

Session Chair: Catherine Sabiston, University of Toronto

2:00pm – 3:30pm

Paper Session 42: Dual Career Environments and Career Transitions

VSH 19 – Paris

Session Chair: Saša Cecić Erpič, University of Ljubljana

2:00pm – 3:30pm

Paper Session 43: Psychology and Performance (Varia)

VSH 118 – Nottingham

Session Chair: Diane Ste-Marie, University of Ottawa

2:00pm – 3:30pm

Symposium 35: Characteristics and circumstances of sexual violence in sport from different perspectives

H 2 – Bern

Session Chair: Jeannine Ohlert, German Sport University Cologne

2:00pm – 3:30pm

Symposium 36: Perfectionism in sport, dance, and exercise: An overview of available models, analyses, and methods

H 3 – Madeira

Session Chair: Andrew P. Hill, York St John University

2:00pm – 3:30pm

Symposium 37: Psychological mechanisms underlying morality in sport

H 4 – Chalkidiki

Session Chair: Philip Hurst, Canterbury Christ Church University
Session Chair: Bahri Gürpınar, Akdeniz ,University

FRIDAY, 19/JUL/2019

2:00 pm – 3:30 pm

PARALLEL SESSIONS

2:00pm – 3:30pm

VSH 06 – Bad Blankenburg

Symposium 38: Intervention studies in applied sport psychology

Session Chair: Nadja Walter, Leipzig University, Faculty of Sport Science

2:00pm – 3:30pm

VSH 17 – Westphalia

Symposium 39: How culture and context inform practice in sport psychology: A cultural lens on talent and career development in sport

Session Chair: Louise Kamuk Storm, University of Southern Denmark

2:00pm – 3:30pm

VSH 18 – Edinburgh

Workshop 19: Introduction to Bayes statistics using GNU R for sport neuroscientists/psychologists

Session Chair: Sven Hoffmann, German Sport University Cologne

2:00pm – 3:30pm

VSH 116 – Varna

Workshop 20: Working with adolescent athletes: the importance of active involvement and fun based on ACT examples

Session Chair: Kristel Kiens, Tallinn University
Session Chair: Snezana Stoljarova, Tallinn University/ES-TIPP OÜ private consultancy

4:00 am – 5:00 am

KEYNOTE

4:00pm – 5:00pm

H 1 – Vittel

Keynote Zella Moore: Clinical Sport Psychology: Considering Psychological Well-being and Performance Excellence

Session Chair: Karin Moesch, Swedish Sports Confederation

7:00 pm – open end

CLOSING DINNER

7:00pm – open end

Closing Dinner

For details see page 26.

SATURDAY, 20/JUL/2019

8:30 am – 12:00 pm

MEETING

8:30am – 12:00pm

Committee Meetings

5 DETAILED PROGRAM AND PRESENTATIONS



Pre Congress 07: Perceptual-motor expertise Symposium

Time: Monday, 15/Jul/2019: 9:00am - 3:00pm · *Location:* VSH 116 - Varna

Session Chair: Rouwen Cañal Bruland, Friedrich Schiller University Jena

Session Chair: David Mann, Vrije Universiteit Amsterdam

9:00am - 9:15am

Pre Congress Workshop Welcome

Rouwen Cañal Bruland¹, David Mann²

¹Friedrich Schiller University Jena, Germany; ²Vrije Universiteit Amsterdam, The Netherlands

9:15am - 10:15am

Anticipation in sport: What should we focus on for the next 50 years!?

Andrew Mark Williams

University of Utah, United States of America

Anticipation in sport: What should we focus on for the next 50 years!?

10:15am - 10:30am

Morning tea

10:30am - 11:30am

A neurocognitive perspective on action observation and action prediction in sport

Nicola Jane Hodges

University of British Columbia, Canada

11:30am - 11:50am

Don't bite! Earlier detection of deceptive intent facilitates skilled responses to rugby sidesteps

Laurence S. Warren-West, Robin C. Jackson, Michael J. Hiley

Loughborough University, United Kingdom

Researchers have suggested that when anticipating actions of genuine and deceptive intent, expert performers wait longer before initiating movement responses in order to obtain more information to inform their decisions. The aim of the present study is to establish how movement kinematics and kinetics relate to observed effects, response biases and discriminability. We placed high-skilled (semi-professional) and low-skilled (recreational) male rugby players (19 per group) in a semi-immersive CAREN Lab environment and asked them to respond to life-size test footage of an opposing player 'cutting' left or right, with or without a deceptive sidestep. Participants were instructed to respond by moving in a way that would allow them to intercept the running line of the player and put them in a position to make a 'tackle'. Response kinematic and kinetic data were recorded using three-dimensional motion capture cameras and force plates, respectively, to measure mediolateral displacement and velocity, as well as the ground reaction forces responsible for movement initiation. Our research has shown that both high-skilled and low-skilled performers are equally susceptible to deception but that high-skilled players identify deceptive intent earlier in the action sequence. In this presentation, we examine how this affects the kinematic and kinetic measures and argue that it is earlier perceptual recognition that is crucial in facilitating suppression of an incorrect motor response.

11:50am - 12:35pm

Lunch break

12:35pm - 1:35pm

Creating adaptive athletes: the athletic skills model as a foundation for expertise

Geert Savelsbergh

Vrije University Amsterdam, The Netherlands

1:35pm - 1:55pm

A developmental embodied cognition perspective on the relation between sensorimotor and cognitive planning

Lisa Musculus, Azzurra Ruggeri, Markus Raab

German Sport University Cologne, Germany

The objective of this project is to understand the bidirectional link between sensorimotor as well as cognitive skills from a developmental embodied cognition perspective. By integrating cognitive, developmental and movement science, we explore how core mechanisms (i.e., internal models) affect cognitive and sensorimotor planning in the course of ontogenetic development (i.e., across the lifespan) and through the acquisition of expertise (i.e., training). Theoretically we propose the mechanism that optimizing the internal model by integrating sensorimotor and cognitive feedback will foster cognitive and sensorimotor planning.

To test this mechanism, we will conduct two large-scale studies. We developed a climbing task to assess planning allowing us to disentangle cognitive (“generating a route”), sensorimotor (“following a predefined route”) and sensorimotor-cognitive planning (“free climbing”), which we will use in both studies. The combination of sensorimotor and cognitive tasks allows us to disentangle how participants mentally prepare and/or move along a climbing route. Consequently, cognitive as well as motor parameters will be analyzed.

In Study 1 we will test how children of different age groups as well as adults differ in cognitive, sensorimotor, and sensorimotor-cognitive planning. In Study 2 we will investigate how training will affect the cognitive-motor relation. Therefore, we will set up a 3-month training study in which participants improve either cognitive planning, sensorimotor planning, or a combination via a climbing training. In this talk a project outline, preliminary results of Study 1 as well as theoretical and methodological added values of this work will be presented.

1:55pm - 2:45pm

Perceptual-cognitive variables in talent research: Lessons learned and future opportunities

Joseph Baker

York University, Canada

2:45pm - 3:00pm

Discussion and concluding remarks

Rouwen Cañal Bruland¹, David Mann²

¹Friedrich Schiller University Jena, Germany; ²Vrije Universiteit Amsterdam, The Netherlands

Pre Congress 06: Science and Practice of Sports Officiating Symposium

Time: Monday, 15/Jul/2019: 9:00am - 3:30pm · Location: VSH 06 - Bad Blankenburg

Session Chair: Henning Plessner, University of Heidelberg

Modelling and supporting the career development of sports officials

Clare MacMahon¹, Geraldine Rix-Lievre²

¹Latrobe University, Australia; ²Université Clermont Auvergne, France

Although there are a variety of different types of sports officials, such as the interactor, reactor and monitor (MacMahon & Plessner, 2008; Plessner & MacMahon, 2013), there is little work that considers the principles of skill acquisition, different stages of development, sources of skill transfer, and pathways for sports officials. The FTEM model (Foundation, Talent, Elite, Mastery) and framework (Gulbin, Croser, Morley & Weissensteiner, 2013) have been adapted to officiating (MacMahon, Mascarenhas, Plessner, Pizzera, Oudejans, & Raab, 2015) to provide a platform to address this gap. We will present the continued development and refinement of the FTEM-O (Foundation, Talent, Elite, Mastery-Officiating) framework, which considers the 3D-AD model (Gulbin & Weissensteiner, 2013), in profiling the individual, and understanding the environmental and system supports throughout development. In this context, we will present current research aiming to create a new skill and competencies framework to facilitate the career change of sports officials. The construction of this support is based on the study of the officials' activity during the match as well as out of it. It aims to access the developed experience and knowledge bases of high-level officials in order to support the retirement process and, in parallel, the development of training pathways for new officials.

The developmental histories of sport officials: exploring participation and training milestones

Nick Wattie, Jason Mergler, Susan L. Forbes, Lori A. Livingston

University of Ontario Institute of Technology, Canada

The majority of research on sport officials has focused on psychological, physical and perceptual-cognitive influences on performance. However, little is known about the development of sport officials (cf. MacMahon et al., 2007). The purpose of this study was to explore developmental milestones related to sport officials' participation and training. The Developmental History of Athletes Questionnaire (Hopwood, 2013) was modified to collect information from N = 235 Canadian sport officials on factors such as officiating debut age, the highest tier of officiating (recreational, district, provincial, national/international), as well as training milestones and activities. Compared to officials who had reached the two lowest tiers of officiating, those at the highest two tiers of officiating (provincial and national/international) began officiating at significantly younger ages (approximately 10 years younger: $F(3,193) = 9.21, p < .001$). Those at the highest tiers of officiating also engaged in significantly more hours of officiating games prior to the age of 20 ($F(3,76) = 7.18, p < .001$), and the same trend existed when officials were 21 to 30 years of age. With respect to deliberate practice (i.e. physical, officiating-specific and mental training, training camps), approximately 30% to 40% of officials in the bottom three tiers of officiating reported that they had not engaged in any such activities. These results provide some preliminary information on the developmental trajectories and activities of officials. Specifically, those that reach higher tiers may begin officiating at early ages and with higher volume, and that engagement in deliberate practice may be limited for many officials.

Perceived organizational support and officials' decisions to drop out or persist in the role

Lori A. Livingston, Susan L. Forbes, Nick Wattie, Jason Mergler

University of Ontario Institute of Technology, Canada

Eisenberger and others' (1986) theory of perceived organizational support (POS) holds that an individual's commitment to an organization is formulated in response to the perceived benefits of participation and opportunities for advancement. Building upon the findings of Livingston and Forbes' (2016) study of active Canadian amateur sport officials, POS, resilience, and measures of motivation were compared in officials identifying as active (n=1,147) versus inactive (n=42). Data were collected using three standardized instruments: the 8-Item Survey of POS (Eisenberger et al., 1986), the Connor-Davidson Resilience Scale (Vaishnavi et al., 2007), and the Sport Motivation Scale (SMS) (Pelletier et al., 1995). For the dependent variables meeting homogeneity of variance assumptions (Levene's test), One-Way ANOVA procedures were used to test for group differences. Significantly ($F(1,1167) = 8.34, p < .004$) higher mean scores for POS were observed in the active ($M = 40.5, SD = 11.3$) versus the inactive officials ($M = 35.3, SD = 12.8$), yet there was no significant difference in resilience ($F(1,1168) = 0.19, p < .66$). Active officials ($M = 14.5, SD = 5.8$), in comparison to inactive ($M = 11.9, SD = 6.5$), also demonstrated significantly ($F(1,1185) = 8.26, p < .004$) higher mean scores on the SMS "intrinsic motivation to accomplish" subscale and the extrinsic motivation subscale for introjection (i.e. active: $M = 9.7, SD = 4.3$; inactive: $M = 7.4, SD = 3.7$; $F(1,1185) = 11.3, p < .001$). These results, supported by participants' qualitative commentary, provide evidence that officials' intentions to persist in the role are positively influenced by POS and the pleasure and satisfaction experienced while engaging in the activity.

Demand for early recruitment and faster development in sport officials

Stirling Sharpe¹, Ashley Synnott², Ian Cunningham³, Catherine Ordway¹

¹University of Canberra, Australia; ²Sport Australia; ³PERF Arbitrage, Université Clermont Auvergne

MacMahon and colleagues (2014) identify the need to understand different stages and motives of officials' development, however, international federations appear to have recently moved the goal posts. As elite sport has become more accessible and professional in nature there has been a shift in international standards that dictate a younger and more athletic official (read: presentable on television). Other factors that perhaps align with this change include the professionalization of sport and officiating roles, changing nature of sports for more celebratory moments (Somerford, 2018), and the legitimate career opportunity that major sports offer to top-level officials. In promoting a more TV appropriate match official, elite sport organizations should be cautious of human resource and discrimination legislation and practices. Such changing demographics of elite level officials have direct systemic effects on officials' development and recruitment. As the age of elite level officials decreases, so too does the time frame to develop officials from beginner to elite level, thus requiring faster development and/or earlier recruitment of officials. As a systemic consequence, a bottom-up change to recruitment and development practices is required to operationalize this new generation of match officials, as Livingston and colleagues (2017) term it – 'Education is global; implementation is local' (p. 5). This situates strategy development, including officiating pathways, at IF and NSO level with further localised implementation of the initial recruitment and development stages. This presentation will discuss the shifting elite level environment and make recommendations for systemic adjustments to accommodate the changing development stages.

The use of observation by officials: current status and future possibilities

Diane M. Ste-Marie¹, David J. Hancock²

¹University of Ottawa, Canada; ²Indiana University Kokomo, United States of America

The pathway to becoming an expert official occurs through formal mechanisms (e.g. clinics and education programs), as well as informal mechanisms (e.g. use of communities of practice, interactions with peers, and/or observation). Our interest here is to speak about an informal mechanism: that of using observation to train and develop officials. Current research concerning the use of observation by officials will be presented within the investigative framework of the 5Ws (who, what, where, why, and when) and 1H (how; Beveridge Mackie, 2011). Research has shown that officials, once they have become officials (when), observe other officials and observe themselves on video to engage in self-analysis (who). Researchers have also reported that officials engage in observation not only for the skill function but also for strategic and performance functions (why). The research that has given some information about when, who and why, however, is limited, and there is even less information concerning what features are being observed and how the observation method is being used (e.g. video speed, angle of viewing, or the frequency of the observations). Given that observation has been shown to be effective for a variety of skills in numerous settings, we argue that more research concerning the efficacy of observation interventions is warranted within the context of the training and development of officials. In this light, we will present research recommendations to better investigate how observation could be used by officials to enhance their development.

In-match gaze behaviour of elite football referees

Tammie van Biemen¹, David L. Mann¹, Johan Koedijker¹, Raoul Oudejans^{1,2}, Geert Savelsbergh^{1,2}

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Calling whether a situation is a foul or not is one of the most frequent and important on-field decisions made by football referees. In order to make an accurate and appropriate decision, visual information and search behaviour play an important role in this decision-making process. Despite this importance, research in the visual skills of referees is limited, especially compared to the extensive research done in the visual skills of the athletes whom they are adjudicating. Moreover, gaze behaviour can be highly task-specific (Dicks, Button & Davids, 2010), yet existing research has focused on off-field rather than on-field in-situ tasks. Therefore, the aim of this study was to examine the on-field visual search behaviour of football referees while assessing (potential) foul situations. N = 14 football referees (6 elite, 9 sub-elite) wore mobile eye-tracking glasses (SMI ETGs) while adjudicating real football matches. Eye-tracking footage is analysed to determine decision-making accuracy and temporal (mean and total fixation durations) and spatial visual gaze behaviours (fixation frequency, areas of interest and fixation order). The analysis is ongoing, however, based on the pilot testing, we hypothesise that elite referees will make better decisions and will use more extensive gaze behaviour, in terms of referential fixations away from and back towards the ball, in the lead-up to potential fouls. Within-participant analyses will determine whether gaze differs when comparing foul decisions judged to be correct or incorrect. Analyses presented will help to uncover whether visual search characteristics can define the decision-making capability of elite football referees during matches.

Impact of visual attention on decision making

Stefanie Hüttermann¹, Werner F. Helsen², Daniel Memmert¹

¹Deutsche Sporthochschule Köln, Germany; ²University of Leuven (KU Leuven), Belgium

In recent years, several publications examined the underlying mechanisms that might have an impact on decision-making processes under time pressure. We present a recent study (Hüttermann, Helsen, Put, & Memmert, 2018) which investigated how individual differences in attentional capability relate to decision making in complex dynamic offside events. A total of N = 24 professional football assistant referees (ARs) performed an offside decision-making task and an attention-demanding task. ARs with higher attentional capability along the horizontal meridian of their attentional focus made fewer mistakes when judging offside situations in football than ARs with lower capability. This implies that being able to rely on high-attentional capabilities in situations requiring the conscious perception of multiple processes is likely to be beneficial for the ultimate decision-making performance.

Using 360 degree virtual reality footage as a form of decision-making training in Australian Football umpires

Aden Kittel¹, Paul Larkin¹, Michael Spittle¹, Nathan Elsworth²

¹Victoria University, Australia; ²Central Queensland University, Australia

Perceptual decision-making assessment through video-based methods have been examined extensively in both athletes and sporting officials. Video-based methods typically present match footage filmed from a broadcast perspective (i.e. television/match broadcast footage), to assess and develop perceptual-cognitive skills in an off-field controlled environment. With the advancement of technology, virtual reality has been proposed as a more representative method. 360° virtual reality footage was captured from Australian football small-sided games, and training drills for the purpose of simulating Australian football umpire decision-making scenarios. This workshop will present recommendations on how best to capture 360° virtual reality footage, and present this to athletes for the purpose of off-field decision-making assessment and training. Specifically, this workshop will present findings for the validity and reliability of this method for decision-making assessment, and the effectiveness of 360° virtual reality footage as a training tool in comparison to traditional match broadcast footage. Findings from a decision-making training intervention being conducted in early 2019 using this technology will be presented, differentiating the most effective video mode for developing decision-making skill. Participants in this workshop will experience the 360° virtual reality footage themselves, presented through an Oculus Go virtual reality headset. For example, the workshop will provide participants with the opportunity to be “coached” using this technology, similar to Australian football umpires. The workshop will allow for discussion on the feasibility and opportunity for this technology to be implemented in a wider range of sporting environments in the future.

The future of refereeing: is technology all it takes?

Jochim Spitz, Werner Helsen

KU Leuven, Belgium

Intro: Research has shown that perceptual-cognitive training improves decision-making accuracy of (assistant) referees in association football and other sports. To better support the referee, the Video Assistant Referee (VAR) was written into the laws of the game 2018/19. The current study investigates the impact of the VAR on referees' decision accuracy and the duration of the VAR interventions.

Methods: Using an online application in 13 different countries, referee-related data from competitive matches with VAR were collected. Decision accuracy (before and after VAR intervention) and the duration of VAR interventions were obtained for all match-changing incidents (goals, penalties, red cards, goals and mistaken identity).

Results: A total of N = 9,732 checks for match-changing incidents were conducted by the VAR in 2195 matches. The average duration of the 9,732 checks was M = 29.0 seconds. The results of the logistic regression analysis indicate that the predictive odds for making the correct decision after an intervention of the VAR were significantly higher than for the initial referee's decision ($p < .001$).

Discussion: Our results show that video technology improves decision accuracy with a limited amount of time-loss during the games. Nevertheless, decision-making training remains important as the initial referee's decision is crucial and not all decisions can be reviewed.

The referee's dilemma: contextual vs. rulebook judgment in soccer

Clare MacMahon¹, Markus Raab², Simcha Avugos³, Michael Bar-Eli⁴

¹La Trobe University, Australia; ²German Sport University Cologne, Germany, and London South Bank University, UK; ³The Academic College at Wingate, Israel; ⁴Ben-Gurion University of the Negev, Israel

A soccer referee makes on average 134 visible decisions during each game. However, there are also more than 200 other events that occur (not strict fouls), which a referee decides not to respond to or does not notice, and which are therefore not being called (Helsen & Bultynck, 2004). This means that on average 3-4 infringements occur per minute within a standard 90-minutes game. This is a remarkable number of events. The present study addresses the dilemma that soccer referees face around the properness of their decisions for the game context. We highlight the tension between creating flow and exerting control, as the referees are expected to demonstrate consistency while also having to provide a clear and correct application of the rules. Paradoxically, if the referee is a “control freak”, he or she might end up with less control or greater chaos in comparison to a referee who “educates” the players in the sense of game management. That is, “less (control) is more (control)”. We propose a new model that uses Bless/Fiedler categories (Plessner & Raab, 1999), but suggest that a referee applies a subjective threshold model for the in-game choice between rules to game-management. Our model shifts the scientific discussion from whether referees should do one thing or the other to a dynamic model of both intra- and inter-individual changes of behaviour, due to subjective differences in the thresholds and the context of play.

Influence of physical and psychological stress on decision-making performance of soccer referees

Alexandra Pizzera, Patrick Wahl, Sylvain Laborde

German Sport University Cologne, Germany

Introduction: Soccer referees have to make quick and accurate decisions while experiencing physical stress (i.e. fatigue) and psychological stress (i.e. pressure from the crowd, players). Research so far has examined the influence of physical and psychological stress on referees' decision-making performance separately, however, referees usually experience both types of stress simultaneously. The aim of the study was to investigate the influence of both physical and psychological stress on soccer referees' decision-making performance.

Methods: The decision-making performance of N = 25 soccer referees (M age = 23.12 years, SD = 3.79; mean refereeing experience = 8.08 years, SD = 4.15) was assessed under different conditions, simulating the physical and psychological stress during a game. Referees were asked to make foul decisions while running on a treadmill and/or being exposed to an audience/auditory stress.

Results: Referees were more physically fatigued in the physical stress condition and psychologically stressed in the psychological stress condition. However, this did not influence their decision-making performance in the video test, $F(5, 120) = 1.24, p = .295, \eta^2 = 0.05$. Nevertheless, the lower level and less experienced referees showed a decrease in their decision-making performance in the higher physical stress conditions, $F(5, 115) = 2.67, p = .026, \eta^2 = 0.104$.

Discussion: The results indicate that the experienced referees learned to cope with fatigue and psychological stress in terms of their cognitive processes. The effects seem to be differentially detrimental depending on the level of refereeing. The study protocol could help referees train in a highly ecologically valid environment, besides the on-field games.

The relationship between cohesion and performance among sport officials

David J. Hancock¹, Kyle F. Paradis², Luc J. Martin³, M. Blair Evans⁴

¹Indiana University Kokomo, United States of America; ²University of Windsor, Canada; ³Queen's University, Canada;

⁴Pennsylvania State University; United States of America

Though sport-officiating groups come in varying sizes with diverse members, they nevertheless represent intact groups (Hancock, Martin, Evans, & Paradis, 2018). Interestingly, their transience in group membership and presence of intra-team competition produce a unique environment surrounding members' interactions. While the cohesion-performance relationship in sport teams has been well established (Carron et al., 2002), it is unknown if cohesiveness in officiating groups influences performance. The purpose of the present study was to investigate the relationship between group cohesion, team satisfaction, and self-rated performance among sport officials, in references to their most recent competition. Participants (N = 200; 97% male; M = 50.35 years, SD = 12.44; M experience = 20.40 years, SD = 11.96) were sampled from 9 sports, mainly basketball, American football, European football, baseball, and ice hockey. Participants completed an online survey package, which included the Group Environment Questionnaire (GEQ; Carron, Widmeyer, & Brawley, 1985), satisfaction with their officiating team, and self-rated performance. Results indicated positive associations between cohesion and team satisfaction ($r(183) = .323, p < .001$), cohesion and self-rated performance ($r(181) = .454, p < .001$), and team satisfaction and self-rated performance ($r(189) = .466, p < .001$). These results suggest that cohesion is an important group variable that influences sport officials' performances and satisfaction. Discussion centres on implications of these findings, including suggestions for fostering perceptions of group cohesion while accounting for the unique and transient nature of officiating groups.

Interaction as a contributor to officiating performance

Ian Cunningham¹, Géraldine Rix-Lièvre¹, Duncan Mascarenhas², Peter Simmons³

¹Universite Clermont Auvergne, France; ²Edinburgh Napier University, UK; ³Charles Sturt University, Australia

Sport officials' decisions and decision making remain a core performance indicator and focus for empirical study. Communication and player management are clearly central to sport officiating performance, reinforced by evidence highlighting the influences of officials' interactivity on players' performance (Bar-Eli et al., 1995), perceptions of fairness (Simmons, 2011) and motives to transgress (Faccenda et al., 2005). With a lack of consensus about training strategies and assessment criteria for officials' interaction skills (Cunningham et al., 2014; Mellick et al., 2005), an improved conceptual foundation can inform individualized practice orientations to aid officiating performance. This presentation provides a review of critical perspectives used to interpret officials' interactions with players as relational, performative, strategic, and coordinated activity. We highlight the lack of understanding about contextual/situated characteristics and co-construction patterns and processes underlying player-official interactions (Cunningham et al., 2018). To begin to fill this knowledge gap, we present different case analysis in order to understand the concurrent activity between player captains and officials during high-performance European rugby union matches. A cross-disciplinary theoretical posture is emphasized and methodological approach that places players' and officials' lived experience during actual interactions at the focus of analysis (e.g. Rix-Lièvre et al., 2015). Recommendations are made for training design that helps to elicit sport officials' implicit knowledge during match interactions through a platform of deliberate self-confrontation and communication practice analysis. Further integration and conceptualisation of interaction skill development in officiating pathways to enhance interaction performance are discussed.

Networking and website on sport officiating: expanding and strengthening refereeing

Felix Guillen¹, Henning Plessner²

¹University of Las Palmas de Gran Canaria, Spain; ²University of Heidelberg, Germany

A lack of knowledge among researchers in the field of psychology on refereeing is one of the main issues within the field which has led to insufficient development of the discipline.

A website containing scientific information on arbitration and sports judgment will be created in order to overcome this limitation. The website consists of two areas, one aimed at referees, the other at researchers.

In the area dedicated to referees, results obtained by the works of researchers will be shared among referees with an informative intention. In the area dedicated to researchers, all the information regarding arbitration will be shown (articles, book chapters, books, doctoral theses).

Although there are a number of websites dedicated to arbitration and sports judgment at local levels, this website is most probably the first to be of scientific nature which focuses on arbitration and sports judgment worldwide.

In our opinion, the most relevant area is the one dedicated to scientific research; it will show every researcher worldwide with their work (articles, books, etc.). At present, there is an important number of people who work continuously with referees yet live in countries which are less relevant in the field of research or in countries where the work is not published in English.

This will allow not only greater knowledge of the work that is being produced anywhere in the world, but more importantly; it will encourage the participation of new and young researchers. Moreover, it will also enhance the collaboration of renowned researchers with novice researchers.

An analysis of literature on sport officiating research

David J. Hancock, Samantha Miller, Hannah Roaten, Kyle Chapman, Caleb Stanley

Indiana University Kokomo, United States of America

Since sport officiating is a complex role, it is not surprising that researchers have studied sport officials in an effort to understand and improve their performances. These efforts have spanned five decades, yet comprehensive reviews of the literature are lacking. The purpose of the present study was to conduct an analysis of literature (Culver, Gilbert, & Trudel, 2003) on sport officiating research. The first goal was to understand the strengths and weaknesses of the existing literature on sport officials. The second goal was to provide recommendations for future researchers to optimize sport officiating research. Using SportDiscus, the term "sport" was searched along with "referees", "umpires", "judges", and "officials". All peer-reviewed, English, original articles were included in the study. The reference lists of all included articles were inspected to identify any missing articles. This two-step process yielded over 350 articles for analysis, which were coded for year, journal, demographics (age, experience, sex), sport, competitive level, method, type of data collection, role (e.g. assistant or head official), officiating type (i.e., interactor, reactor, and monitor), and topic of study. Key findings included an influx of studies in the past 20 years, an underrepresentation of female participants, an overwhelming number of journals in which studies were published, and a concerning trend of underreporting key variables (e.g. missing participants' age, experience, and/or sex). Discussion centres on recommendations for future researchers to strengthen the quality of sport officiating research, as well as the need for a journal dedicated to sport officiating research.

"It wasn't me, ref": Lie detection in soccer

Geoffrey Schweizer¹, Chris Englert^{2,3}

¹Heidelberg University, Germany; ²Goethe University Frankfurt, Germany; ³University of Bern, Switzerland

Little is known about lie detection in sports, although recognising when athletes are lying may be beneficial for referees. Therefore, the goal of the present research is to investigate into lie detection in sports. For this purpose, we first generated 28 videos as stimulus material: In half of the videos, soccer players were telling the truth, while in the other half, the same soccer players were lying. Using this stimulus material, we conducted three experiments with student participants. For all experiments, hypotheses were derived from previous theorising and research on lie detection.

Results of Experiment 1 suggest that participants can distinguish between true and false statements, but only for some clips and not for others (N = 117). Results of Experiment 2 suggest that participants can better distinguish between true and false statements when focusing on verbal content than when focusing on nonverbal behavior (N = 145). Results of Experiment 3 suggest that the ability to detect lies does not improve with statement length (N = 92). Additional exploratory analyses using the Linguistic Inquiry and Word Count software provide initial evidence which verbal cues were indicative of telling the truth or lying. Generally, and in line with previous research on lie detection, participants were only modestly successful in distinguishing true and false statements. Taken together, this line of research offers some promising starting points for future studies with referees as participants. Ultimately, this research endeavor might lead to interventions to be employed in refereeing training.

Paper Session 01: Automatic Processes and Cognitive Resources

Time: Monday, 15/Jul/2019: 2:00pm - 3:30pm · Location: Senatssaal - Prague
Session Chair: Tanya R Berry, University of Alberta

2:00pm - 2:15pm

Examining the current methods used for inducing mental fatigue and their impact on arousal

Kate O'Keeffe, Dr. Simon Hodder, Dr. Alex Lloyd

Loughborough University, United Kingdom

Mental fatigue, a common cause of accidents and errors, is defined as the decrease in cognitive resources developing over time as a result of prolonged cognitive demands, independent of sleepiness and boredom. The current research aimed to explore the effectiveness of the current methods being used to induce mental fatigue. N = 12 participants (26.5 ± 3.12 years), including n = 7 females and n = 5 males, attended one familiarisation session and five experimental trials. Two cognitive tests, the AX-continuous performance test (AX-CPT) and the TloadDback, were compared. Both tests were set at a standard processing speed (1.2 ms) for two conditions, and a further condition involved the individualisation of the TloadDback. Subjective measures of sleepiness using the Stanford Sleepiness Scale (SSS), mental fatigue using a Visual Analogue Scale (VASf), mood using the Brunel Mood Scale (BRUMS) and motivation using task and success motivation scales (MS) were recorded. Heart rate variability (HRV) and galvanic skin conductance (GSC) measured arousal. Participants presented error rates of 1% in the AX-CPT, compared to 25% in the individualised TloadDback. GSC (0.11 ± 0.11 µS, +175%, p = .005) and HRV (37.74 ± 26.31, -32%, p = .015) results indicated higher arousal in the individualised TloadDback compared to the AX-CPT. Subjective ratings indicated decreased sleepiness, mental fatigue and general fatigue, with increased vigour, task and success motivation in the individualised TloadDback compared to the AX-CPT. The individualised TloadDback is most effective for inducing mental fatigue as it sustains physiological arousal whilst inducing measurable reductions in mental resources.

2:15pm - 2:30pm

To what extent do automatic processes regulate sedentary behaviour?

Martina Kanning, Christina Niermann, Jan-Philipp Lange

University of Konstanz, Germany

Purpose: Sedentary behaviour (SB) is a risk factor distinct from physical inactivity. Furthermore, it is not well understood how SB is regulated in daily life and to what extent automatic processes are relevant for this regulation. This study wants to investigate the association between automatic processes and SB. We developed Single-Target Implicit Association Tests for sitting (ST-IAT.sit) and standing (ST-IAT.stand) and explored the associations between these evaluations, habit strength to stand (Habit.stand) and objectively assessed SB.

Methods: The study consisted of two experimental sessions with a 7-day interval. In both sessions, ST-IATs and Habitstand (SRHI; Verplanken & Orbell, 2003) were assessed. Between measurements, participants wore a thigh-mounted accelerometer to assess SB objectively.

Results: The data of N = 43 persons (27 females, M = 27.7 years, SD = 10.7) were analysed. Both St-IATs revealed low test-retest reliability (St-IAT.stand: r = .25, ST-IAT.sit: r = .22). Using data from the first session, we found a moderate correlation between dscore ST-IAT.sit and Habit.stand (r = -.28, p = .08) as well as SB (r = .19, p = .26). Furthermore, SB differ significantly between groups of negative vs. positive ST-IAT.sit only for those with high habit.stand (F = 5.7, p = .02).

Discussion: The low reliability is congruent with former results and raises questions about first, the stability of automatic evaluations and second, about adequate measures to assess the reliability of automatic processes. Based on our findings, habit, automatic evaluations, and its interdependency could be relevant to regulate SB.

2:30pm - 2:45pm

Moderator of ego depletion effect: implicit theories about willpower

Liwei Zhang, Apei Zhang

Beijing Sport University, China, People's Republic of

In recent years, the moderators of ego depletion effect have received much attention. According to the dual-task paradigm of the strength model of self-control, this paper examines if implicit theories about willpower can moderate the ego-depletion effect, through two studies. Study 1 measures theories about willpower to test the moderating effect of implicit theories about willpower on the ego-depletion effect. Study 1 includes two experiments. The two dependent variables are cognitive self-control task (experiment 1) and behavioural self-control task (experiment 2), respectively. As hypothesised, the more participants endorsed a limited-resource theory, the stronger the ego-depletion effect was; the more participants endorsed a nonlimited-resource theory, the weaker the ego-depletion effect were. Study 2 manipulates theories about willpower to test the moderating effect of implicit theories about willpower on the ego-depletion effect with a causal relationship. Similarly, Study 2 included two experiments. The two dependent variables are a cognitive self-control task (experiment 3) and a behavioural self-control task (experiment 4) respectively. Study 2 showed that the participants who endorsed a limited-resource theory show an ego-depletion effect; The participants who endorsed a nonlimited-resource theory have no ego-depletion effect (experiment 4). However, there was no moderated effect on ego-depletion in the cognitive self-control task (experiment 3). This result suggests that implicit theories of willpower are likely to be one of the moderators of the ego-depletion effect, and that, to guide athletes endorse the nonlimited-resource theory of willpower, may benefit to reduce the ego-depletion effect in training and competition and to improve self-control.

2:45pm - 3:00pm**Trait self-control moderates the effects of achievement motive incongruence on motor performance and state self-control****Julia Schüler, Jonas Hofstetter, Wanja Wolff**

University of Konstanz, Germany

In the present research, we link motive-goal incongruence research with self-control: People have to override automatically derived behavioural tendencies of their implicit motives when they act in conformance with an incongruent goal. We hypothesised that this is confirmed by stronger activation of a brain area associated with self-control (DLPFC). Furthermore, trait self-control was expected to moderate the relationship between incongruence and motor performance. N = 28 participants (17 women, mean age = 24 years), whose implicit achievement motives were assessed at the beginning of the study, performed a handgrip task in an achievement goal condition and in three incongruent conditions, while their DLPFC activation was monitored continuously (using functional near-infrared spectroscopy, fNIRS). A significant three-way interaction (motive*goal condition*trait self-control) showed that trait self-control buffered the detrimental effects of incongruence on motor performance. The three-way interaction predicting DLPFC activation showed a partly unexpected but explainable pattern. We see our results as a starting point for further research on the interplay between motive-goal incongruence and trait and (especially cortical correlates of) state self-control that we believe to be important to understand performance in strenuous motor tasks.

3:00pm - 3:15pm**To move or not to move?! Automatic evaluations and reflective attitudes towards running and exercise****Julia Limmeroth, Norbert Hagemann**

University Kassel, Germany

Physical inactivity is one of the most important public-health challenges. Past research has focused mainly on cognitive theories. These are based on reflective components, which is not enough to explain physical inactivity. In contrast, according to dual-process-models, automatic evaluations and affects play a crucial role in predicting physical (in-)activity (e.g. Brand & Ekkekakis, 2018), which is emphasised by this study. At the moment the data collection is not yet completed. So far, 45 participants completed an evaluative priming task (Fazio, Sanbonmatsu, Powell, & Kardes, 1986) to assess the evaluative association strength towards running primes compared to control primes. The sample size varies considerably in their affection for running and sport as well as in their physical activity level per week (in min; M = 200, SD = 202). Additionally, reflective evaluations (cognitive and affective behavioural components) are analysed (Brand, 2006). We found a significant correlation between the physical activity level and affects ($r = .47, p < .001$) as well as for the evaluative priming ($r = .33, p = .02$), but not for the cognitive component ($r = -.16, p = .15$). A multiple regression analysis showed, that affects (towards running & physical activity) and the priming effect can predict physical activity ($F(2, 42) = 9.83, p < .001$), $r^2_{cor} = .29$. The preliminary results show that previous theories explaining physical (in-)activity only by cognitive components must be extended by automatic evaluations and affects. In our study they predict the level of physical activity, whereas the cognitive side does not.

Paper Session 02: Doping

Time: Monday, 15/Jul/2019: 2:00pm - 3:30pm · *Location:* S 8 - Copenhagen

Session Chair: Vassilis Barkoukis, Aristotle University of Thessaloniki

2:00pm - 2:15pm

Exploring perspectives and experiences of doping, anti-doping and clean sport: a meta-synthesis

Toni Louise Williams, Susan Backhouse, Luke Barnes, Kelsey Erickson, Laurie Patterson, Helen Staff, The RESPECT Consortium

Leeds Beckett University, United Kingdom

Sport and physical activity have economic, social, educational and health-enhancing value. Yet, these benefits may not be realised due to the omnipresent threat of appearance and performance enhancing drug (APED) use in sport and recreational settings (Backhouse, Whitaker, Patterson, Erickson & McKenna, 2016). For the first time, this meta-synthesis of qualitative research was undertaken to 1) systematically search, appraise and synthesise qualitative research evidence on sport and physical activity participants' experiences of drug use, (anti-) doping and clean sport, and 2) inform future research, policy and practice. To identify published articles relevant to the meta-synthesis, a systematic search of electronic databases with interdisciplinary and sport-specific coverage (e.g., PubMed, Scopus, SPORTdiscus, PsychINFO, PsychARTICLES) was undertaken. Based on the inclusion/exclusion criteria, 70 articles were included for review. Following a critical appraisal of included articles, rigorous methods of thematic synthesis were drawn upon to generate analytical themes through interpretation and conceptual synthesis (Thomas & Harden, 2008). Five interrelated analytical themes were constructed across the body of literature with competitive athletes, bodybuilders, gym users and athlete support personnel. These were 1) knowledge, 2) protective and risk factors, 3) ripple effects, 4) cultural normalisation, and 5) sporting systems. The results of this meta-synthesis advance our understanding of the surroundings, opportunities, and conditions that promote the use of APEDs in sport and recreational settings. This new knowledge serves to guide policy and practice in the field. Furthermore, significant theoretical, methodological and analytical implications for future research are proposed.

2:15pm - 2:30pm

Silver lining?! The doping critical state of mind of young elite sport coaches in combat sports

Katharina Pöppel, Dirk Büsch

Carl von Ossietzky Universität Oldenburg, Germany

Doping is perceived as one of the major crises in elite sports. Accordingly, the prevention of doping plays a significant role, especially to protect young athletes. Modern approaches go beyond athletes as single target group (e.g. Petróczi, Norman, & Brueckner, 2017), because coaches are an important hub, who take a substantial role in the athlete's network and influence their attitudes towards doping (Smith et al., 2010). Aiming to get a better understanding, how to protect young athletes efficiently this study focuses on coaches in the context of doping prevention. As combat sport is a setting, which faces a high risk of doping, the present study examines young elite sports coaches in boxing, fencing, judo and wrestling. N = 69 German coaches (89.9 % male, 76.8 % holding the highest German license level) took part in an online survey. They regard doping as an international problem. Independent of their type of sports, they show a critical position concerning doping attitudes and moral disengagement and indicate a satisfying knowledge concerning doping substances. Support is advised to be given in the handling of supplements, which are assumed to have a gateway function to doping. Results need to be interpreted in the context of potential socially desirable response patterns, but nevertheless, coaches seem to be open for doping prevention and request doping prevention regularly, tailored to their specific needs. Consequently, improving the quality of doping prevention programs also for coaches should be an important step to protect young athletes, which needs to be proven empirically.

2:30pm - 2:45pm

Using the theory of planned behaviour and social-cognitive theory to explain doping intentions in adolescent talented athletes

Tirza H. J. van Noorden¹, Brigitte J. C. Claessens¹, Erik Duiven²

¹Radboud University; ²Anti-Doping Authority the Netherlands

As doping poses a serious threat to a healthy and fair sports climate, early prevention is warranted. Previous research has demonstrated two theoretical frameworks to be particularly relevant in explaining doping behaviour: The Theory of Planned Behaviour (TPB; Ajzen, 1991) and the Social-Cognitive Theory (SCT; Bandura, 1991). In a nutshell, the TPB poses that the most proximal predictor of behaviour is one's intention to engage in that behaviour, which in turn is determined by one's attitude, subjective norms, and perceived behavioural control. The SCT poses that individuals are able to transgress through mechanisms of moral disengagement as these mechanisms decrease anticipated guilt. In the present study, the two theoretical frameworks are combined to explain doping intentions in adolescent talented athletes. Participants were N = 804 adolescents (56.8% male; mean age = 14.8 years, SD = 1.50) with an official talent status accredited by the Dutch Olympic Committee. This study is part of a larger investigation in which a doping prevention program was tested (Claessens & van Noorden, 2018). The constructs corresponding with the TPB (attitudes, subjective norms, perceived behavioural control) and the SCT (moral disengagement, anticipated guilt) were all investigated with measures targeting doping specifically. Doping intention was mapped with several different but related measures focusing on intention, temptation, likelihood and susceptibility. The results will be presented by emphasising commonalities and differences between the two theoretical frameworks in their predictive value of doping intention in adolescent talented athletes.

2:45pm - 3:00pm

The role of identity in anti-doping: elite athletes' views on the meaning and practice of clean sport, and clean athlete identity

Andrea Petroczi¹, Theofilos Gkinopoulos¹, Andrew Heyes², Jake Shelley¹, Susan Backhouse³

¹Kingston University, United Kingdom; ²University of Birmingham, United Kingdom; ³Leeds Beckett University, United Kingdom

This study is part of an EU-funded collaborative project (RESPECT), which consolidates previous doping research into an education-based anti-doping strategy. The aim of this study is to bring to the foreground the voice and experiences of athletes in relation to the meaning of clean sport as a means to establish their own athletic identity. While empirical evidence suggests that the majority of athletes prefer "clean sport", less is known and convincing about the effectiveness of the current anti-doping system and the extent to which this system drives clean athletes to remain so and maintain a clean athletic identity. The data comprise a total of five individual interviews; and audio-recorded focus group discussions with 14-15 elite athletes in each of the five partner countries (Germany, Ireland, the Netherlands, Slovenia and UK). Through a qualitative analysis of the pooled data, four overarching themes underpin our analysis: a) what clean sport means to athletes, b) the key cognitive and affective constituents of clean sport, c) perceptions of clean sport environment and anti-doping legitimacy, d) doping as a threat against clean sport and coping strategies to deal with doping. Implications on policy-making and practice of doping prevention are discussed, focusing on four dimensions: Clean athlete identity, challenges of a values-based anti-doping education, teaching of positive coping strategies against doping, a paradigm shift towards the use of positive psychology principles to support clean athletes.

3:00pm - 3:15pm

The choice is yours!: Promoting personal agency and building 'doping awareness literacy' with the SAFE YOU programme

Andrea Petroczi, Andy Hudson, Jake Shelley

Kingston University London, United Kingdom

The presentation introduces the SAFE YOU Programme which fosters Doping Awareness Literacy - a dynamic mix of knowledge and skills for making informed decisions about performance- and appearance-enhancement. The programme aims at adolescents and young adults. It was developed with 'generation Z' in mind, adopts a non-judgemental approach and acknowledges that individuals are responsible for their own behaviour and choices. The research we conducted for the project over four years included surveys, focus groups and life-story interviews, and opened a window into the real life of the athletes and exercisers and learnt about modern-day 'doping'. Working together with young exercisers and athletes, we developed a comprehensive education strategy for prevention and harm-reduction. We have identified important issues which we captured in 30 powerful Themes and turned into a workshop session for the SAFE YOU Programme. To support the workshop sessions, we have prepared 36 case studies of real athletes and exercisers and a set of fictitious Problem-Based Learning Scenarios. The Case Studies - PBL Scenario pairs offer a great deal of flexibility for adaptation for training programmes both in- and outside of sport.

Both learners and trainers are supported with two technology-inspired SAFE YOU Tools. The "Play Safe" interactive educational video raises awareness and the importance of making an informed decision, which allows athletes to model different decision situations without real consequences. The "Play Safe" Mobile Information App covers the most common performance- and image-enhancing substance categories and offers a simple but effective risk assessment information for immediate and long-term health risks.

Paper Session 03: Self-Compassion and Body Image

Time: Monday, 15/Jul/2019: 2:00pm - 3:30pm · Location: S 9 - Cologne

Session Chair: Robert Charles Eklund, Florida State University

2:00pm - 2:15pm

Exploring self-compassion and versions of masculinity in men athletes

Nathan A Reis¹, Kent C. Kowalski¹, Amber D. Mosewich², Leah J. Ferguson¹

¹University of Saskatchewan, Canada; ²University of Alberta, Canada

Despite a growing body of literature on self-compassion in sport, little research has focused exclusively on men athletes. Being self-compassionate entails being moved by one's own suffering along with a desire to alleviate that suffering (Neff, 2003), and it has been identified as a promising way for female athletes to manage emotionally painful sport experiences (e.g. perceived failures and inadequacies) in constructive and healthy ways (Mosewich et al., 2013; Ferguson et al., 2015). The purpose of this study was to (a) replicate a subset of findings from previous self-compassion research on female athletes and general populations of men, and (b) extend previous research on male athletes by exploring the role of self-compassion within diverse versions of masculinity. Participants (N = 172, Mage = 22.8 years) from a variety of sports completed an online survey. Self-compassion was related to most variables (e.g. psychological well-being, fear of negative evaluation, state self-criticism, internalized shame, reactions to a hypothetical sport-specific scenario) in hypothesized (i.e. adaptive) directions and predicted unique variance beyond self-esteem in the majority of variables. In addition, self-compassion was differentially related to inclusive and hegemonic masculinity, as well as moderated relationships between masculinity variables and both autonomy and attitudes towards gay men. Our findings support self-compassion as an effective resource for men athletes, and one that might buffer the emotionally difficult experiences that occur in men's sports. This research was funded by the Social Sciences and Humanities Research Council of Canada (SSHRC).

2:15pm - 2:30pm

Guilty, ashamed, and embarrassed: exploring the role of self-compassion in women's exercise lapses

Leah J. Ferguson, Hannah P. Murray, Ashton U. Unger, Margo E. K. Adam

College of Kinesiology, University of Saskatchewan, Canada

Despite the numerous and well-known advantages of attaining recommended levels of physical activity, exercise adherence can be challenging. Regular exercisers benefit not only from health outcomes, but they also exhibit increased self-worth, quality of life, intrinsic motivation, positive body image, and resilience, as well as lower social comparisons and guilt when compared to non-adherers (Huberty et al., 2008). Finding ways to overcome an exercise lapse is important to adaptively manage the corresponding difficulties (e.g. guilt, self-control failure), as well as to facilitate return to exercise. Self-compassion may be a useful resource during an exercise lapse, as it encourages individuals to remain present, find comfort within connectedness, and practice self-kindness during adversities (Neff, 2003). The purpose of this qualitative case study was to explore the role of self-compassion in women's exercise lapses. N = 3 women (M age = 29.33 years) who self-identified as regular exercisers and recently experienced an exercise lapse participated in three research phases: (1) one-on-one interviews to identify exercise habits and introduce self-compassion, (2) self-reflective writing to personally explore self-compassion, and (3) one-on-one interviews to consider self-compassion within their exercise lapse experiences. An inductive thematic analysis resulted in the generation of four themes: (1) Emotional balance; (2) Self-compassion versus self-determination; (3) One size does not fit all; and, (4) Exercise is self-compassion. Though the exact role varied between participants' experiences, self-compassion may be beneficial for women exercisers who experience lapses, as it may help to offset negative emotions and impact the frequency and duration of exercise lapses.

2:30pm - 2:45pm

Self-compassion or self-criticism? Predicting female athletes' flourishing in sport

Leah J. Ferguson¹, Margo E. K. Adam¹, Katie E. Gunnell², Diane E. Mack³, Amber D. Mosewich⁴, Kent C. Kowalski¹

¹College of Kinesiology, University of Saskatchewan, Canada; ²Department of Psychology, Faculty of Arts and Social Sciences, Carleton University, Canada; ³Department of Kinesiology, Faculty of Applied Health Sciences, Brock University, Canada;

⁴Faculty of Kinesiology, Sport, and Recreation, University of Alberta, Canada

Female athletes have expressed the need to be self-critical to flourish in sport, however, self-compassionate female athletes tend to have greater psychological flourishing (Ferguson et al., 2014, 2015). Researchers have suggested that initial levels of self-compassion (i.e. having a kind, connected, and balanced self-attitude when experiencing hardships) are key when responding to difficult sport situations (Reis et al., 2015), yet this has not been examined over time. The purpose of this study was to examine whether pre-season self-compassion predicted variance beyond self-criticism in female athletes' flourishing at the end of a competitive season. Female athletes (N = 78; M = 23.0 years, SD = 5.2 years) from a variety of sports (team and individual) and competitive levels (local - international) completed an online survey prior to and at the end of their competitive season. Measures included athlete versions of self-compassion and self-criticism, and sport-specific proxy measures of six components of flourishing (autonomy, mastery, growth, positive relatedness, purpose, and self-acceptance). Results from hierarchical regression analyses for each proxy measure indicated that pre-season self-compassion explained 6.4% and 8.9% of variance beyond self-criticism on end-of-season purpose and self-acceptance, respectively. The full models accounted for 11.9% and 28.6% of the variance. Minimal evidence supported self-compassion beyond self-criticism on female athletes' flourishing in sport, suggesting complexity in the interplay of these constructs on reaching one's potential. Exploring novel approaches such as adaptive self-criticism combined with self-compassion may be one avenue for integration in sport.

This research was funded by the Social Sciences and Humanities Research Council of Canada (SSHRC).

2:45pm - 3:00pm

Initial psychometric assessment and comparison of three athlete-specific measures of self-compassion**Margo E. K. Adam¹, Katie E. Gunnell², Rachel L. Duckham³, Amber D. Mosewich⁴, Kent C. Kowalski¹, Leah J. Ferguson¹**¹College of Kinesiology, University of Saskatchewan; ²Department of Psychology, Faculty of Arts and Social Sciences, Carleton University; ³School of Exercise and Nutrition Sciences, Deakin University; ⁴Faculty of Kinesiology, Sport, and Recreation, University of Alberta

Self-compassion has become popular in sport research, but sport-specific measures of self-compassion have received little attention. The purpose of this study was to examine the psychometric properties of scores from three athlete-specific self-compassion measures. Competitive female athletes (N = 120, M age = 22.47 years, SD = 5.14) completed the 26-item self-compassion scale athlete version (SCS-AV; Killham et al., 2018) four times, a 13-item SCS-AV (short form [SF]) six times, and a single item of self-compassion (SCS-AV [SI]) seven times through an online survey platform. Estimates of internal consistency were good (SCS-AV alphas = .94 to .96 and SCS-AV[Sf] alphas = .88 to .92). Test-retest reliability was good for SCS-AV (rs = .77 to .91, ps < .001) and SCS-AV(SF) (rs = .80 to .90, ps < .001). Test-retest reliability was weak for SCS-AV (SI) (rs = .25 to .65, ps = .05 to < .001). Results from a latent growth model suggested stability for SCS-AV (Mslope = .02, p = .23), SCS-AV(SF) (Mslope = .02, p = .10), and the fluctuation of the SCS-AV(SI) (Mslope = -.07, p < .01). These results suggest that responses to athlete versions of the self-compassion scale are comparable to the original scale (Ferguson et al., 2014, Mosewich et al., 2013) and that the SCS-AV and SCS-AV (SF) are appropriate for application in athlete samples. The SCS-AV (SI) requires further development and examination regarding stability before being recommended for use. This study highlights that the 26-item SCS-AV is the strongest measure of athlete-specific self-compassion after this initial assessment.

3:00pm - 3:15pm

Unique contributions of self-compassion in women athletes' sport performance perceptions: a longitudinal examination**Margo E. K. Adam¹, Amber D. Mosewich², Rachel L. Duckham³, Kent C. Kowalski¹, Leah J. Ferguson¹**¹College of Kinesiology, University of Saskatchewan; ²Faculty of Kinesiology, Sport, and Recreation, University of Alberta;³School of Exercise and Nutrition Sciences, Deakin University

Self-compassion is emerging as a valuable resource for women athletes. Previous studies with athletes have highlighted that self-compassion may play a unique role beyond self-esteem and self-criticism across a variety of well-being measures. The purpose of this study was to examine self-compassion in women athletes' sport performance perceptions beyond self-esteem and self-criticism across a competitive season. Female athletes (N = 137) between 16 and 35 years (M = 22.28, SD = 5.10) competing at local to international levels completed the Sport Performance Perceptions Scale (SPPS), the Self-Compassion Scale – Athlete Version (Killham et al., 2018), the Rosenberg Self-Esteem Scale (1965), and the Self-Criticism – Athlete Version (Mosewich et al., 2013) at four timepoints that were evenly distributed across their competitive season (i.e. start of season, early-season, late season, end of season). The results of within timepoint hierarchical regression analyses revealed self-compassion contributed unique variance beyond self-esteem in 1 (early season) of 4 (Delta R² = .05, p = .009) and beyond self-criticism in 2 (early and end of season) of 4 (Delta R² = .13 and .20, p < .001) SPPS measures. The results suggest that self-compassion plays a unique dynamic role in women athletes' sports performance perceptions during the competitive season beyond self-esteem and self-criticism. Early self-compassion training might, therefore, be a complementary resource to promote in sport to promote women athletes' sport performance perceptions.

3:15pm - 3:30pm

"Is it okay if I come or will I spoil everyone else's training?": Female athletes' experiences of participating in combat sports**Anastasiya Khomutova**

University of Brighton, United Kingdom

This presentation will explore the experiences of female athletes in combat sports. Female participation in sport has been well-researched in the academic literature, with a particular focus on body image and weight-cutting in leanness-promoting sports, and sports with strict weight categories (Gal & de Bruin, 2014; Swami et al, 2009). Female athletes are also likely to quit sport in puberty when doing sport is perceived "uncool" by their social network (Slater & Tiggemann, 2006) and when they want to maintain feminine appearance of their bodies (Shakib, 2003). Academic research has also explored sexual abuse, harassment and grooming in sport (Brackenridge & Fasting, 2005; Owton & Sparkes, 2015), with a particular focus on coaches in the position of power. This research started as a request by the European Judo Federation with an aim to improve retention rates among teenage girls in judo clubs. In order to explore this topic in more depth, the research sample included a variety of combat sports (e.g. boxing, Brazilian jiu-jitsu) and a wider age range of female combat athletes. Using qualitative semi-structured interviews and focus groups with coaches and athletes from different countries (e.g. UK, Ukraine, Czech Republic, Russia) and thematic analysis, the following themes were identified: (1) issues for women when entering combat sports, (2) challenges during training (i.e. degrading comments, body-image issues, training during puberty etc.), (3) mixed-gender training and relationship with coaches (including communication, trust issues, inappropriate relationships). The recommendations for increasing and retaining female participation in combat sports will be discussed.

Paper Session 04: Life skills & Well-being

Time: Monday, 15/Jul/2019: 2:00pm - 3:30pm · Location: Aula im Schloss - Europe

Session Chair: Glyn Roberts, Norwegian School of Sport Sciences

2:00pm - 2:15pm

Qualitative exploration of coaches' implicit and explicit approaches to life skills development and transfer in youth sport

Laura Gayle Shirley Martin, Martin Camiré

University of Ottawa, Canada

Sport is considered an important context for facilitating positive youth development (Holt, 2016). However, research indicates that simply taking part in sport does not necessarily amount to consistent developmental outcomes (Coakley, 2011). Two approaches of intentionality (i.e. implicit and explicit) that coaches may use to teach life skills have been discussed in the literature (Turnnidge et al., 2014). Recently, rather than viewing the process of teaching life skills as a dichotomy, Bean and colleagues (2018) proposed the implicit/explicit continuum of life-skills development and transfer, distributed across six levels of intentionality. Using the continuum as a conceptual framework, the purpose of the study was to explore coaches' implicit and explicit approaches to life-skills development and transfer in youth sports. Insights into how youth sport coaches addressed the development and transfer of life skills within their coaching practice were obtained using a qualitative multiple case study design, comprised of nine cases. Each case consisted of one coach and at least two of his/her athletes (M age = 14 years, SD = 1.4), with data collected over a sporting season. Data collection occurred within community sports teams (i.e. baseball, rugby, soccer, and sailing) based in the province of Ontario, Canada. Coaches were interviewed pre- and post-season and kept an in-season journal. Athletes were interviewed post-season. Findings indicate how nuances exist as it pertains to the approaches that coaches used and the associated experiences of their athletes, providing a deeper understanding of coaches' levels of intentionality in teaching life skills through youth sport.

2:15pm - 2:30pm

A cross-cultural extension of the life skills for sport scale: applying PYD in Botswana, Ghana and Tanzania

Leapetswe Maletse¹, Reginald Ocansey², Tshengang Tshube³, Daniel McCole¹, Cyprian Maro⁴, Thuso Mphela³, Clement Adamba², Juliana Machuve⁴

¹Michigan State University; ²University of Ghana; ³University of Botswana; ⁴University of Dar es Salaam, Tanzania

The burgeoning literature on positive youth development (PYD) through sport demonstrate the relevance of the PYD framework to youth development (Gould, & Carson 2010; Holt, Sehn, Spence, Newton, & Ball, 2012). It has also generated increased interest in measurement issues related to the framework. However, much of the research involves mainly western populations. This raises questions about the relevance and strength of this compelling framework across cultures and among less studied populations. Therefore, the purpose of this pilot study was to examine the measurement structure of the Life Skills for Sport Scale (LSSS; Cronin & Allen 2016) across three countries, using the maximum likelihood method. This was done as part of a three-week intervention. A total of N = 146 youth athletes (male = 51.40%), aged 12-20 years (M = 15.88, SD = 1.66) from Botswana, Ghana, and Tanzania participated in the study. Confirmatory factor analyses (CFA) were run to identify model fit. The data could not successfully fit the original eight-factor model of the 48 LSSS items. We computed subscale scores by averaging the items relevant to each of eight subscales and tested a single factor model. The single factor showed good fit statistics at pre and post-test and across countries, except for Tanzania. The lack of model fit could be explained in terms of sample size. The study shows a lot of promise for the use of the LSSS in other cultures. A larger sample size may lead to an improved model fit and allow the test of measurement invariance.

2:30pm - 2:45pm

Motives for multiple goals and well-being: a person-centred approach

Laura Catherine Healy¹, Nikos Ntoumanis², Calum Arthur³

¹Sport, Health and Performance Enhancement Research Group, Department of Sport Science, Nottingham Trent University, United Kingdom; ²PAW Lab, School of Psychology, Curtin University, Australia; ³UK Sport, United Kingdom

The motives underpinning goal pursuit have been shown to be important predictors of goal attainment (Ntoumanis et al., 2014) and well-being (Healy et al., 2014), with autonomous motives, aligned with an individual's personal interests and values, being considered most adaptive. However controlled goal motives, underpinned by internal or external pressures, may not be detrimental to the management of multiple goal pursuits if also accompanied by high levels of autonomous goal motives (Healy et al., 2016). The present study extends the literature on the motives for multiple goal pursuit, by using a person-centred approach to examine how profiles of student-athletes' academic and sporting goal motives relate to indices of well- and ill-being. Using a cross-sectional design, student-athletes (N = 153) were recruited from three British universities. Participants completed a battery of questionnaires, which included identifying their most important sporting and academic goal that they were pursuing over the academic year, and responding to items measuring their extrinsic, introjected, identified, and intrinsic goal motives. They also completed self-report measures of well- and ill-being. Latent Profile Analysis revealed six distinct profiles of goal motives, with variations in both the quality and quantity of motives for both goals. Follow-up analyses showed between-group differences for well- and ill-being; individuals with higher quality goal motives reported more positive outcomes for well- and ill-being than those with less optimal goal motivation. The findings and applied implications will be discussed in relation to optimising the pursuit of multiple goals.

2:45pm - 3:00pm

Effect of life skills training program on the development of youth football players**Veysel Küçük, Ömer Gümüšoğlu, Yağmur Kırdar, Mert Can**

Marmara University, Turkey

The aim of this study was to determine the effects of life-skills training on athletes, which have the competencies required for the effective continuation of the existence of the individual in lifelong change and development process with football-specific trainings applied in sports clubs. N = 32 athletes, who plays at Turkish Football Federation's U12 League, volunteered to participate in this study and were randomly assigned to experimental (n = 16; Xage = 11.81 ± .834) or control (n = 16; Xage = 12.06 ± .929) groups. Athletes attended in 8-week practical life skills training. In this study, "Personal Information Form" developed by researchers and "Life Skills Scale For Sport", which consists of 31 items with 7 sub-dimensions, were administered with participants. In order to analyse the data, nonparametric statistical techniques were used because of the low number of participants and the data was not normally distributed. Data was analysed using "Wilcoxon Signed-Rank Test" to test the significance of the score difference between the two related measurement sets. The "Mann-Whitney U Test" was used to determine whether the total scores of both groups differ significantly.

Result revealed that experimental group showed improvement in 6 sub-dimensions [time management (z = -0.136), communication (z = -0.990), leadership (z = -1.103), teamwork (z = -1.348), social skills (z = -1.550), emotional skills (z = -0.797)] but high significant difference on goal setting sub-dimension (z = -1.989) of life skills (p = .047). Additionally, after the 8-weeks life-skills training-program, there was a significant difference between means and sums of the experimental group and the control group.

3:00pm - 3:15pm

Which are the necessary skills for social inclusion development through sport? A qualitative study among practitioners**Chiara D'Angelo, Chiara Corvino, Caterina Gozzoli**

Università Cattolica del Sacro Cuore, Italy

Sport for development programmes often requires partnerships among several stakeholders including both social and sports organisations (Hermens, Super, Verkooijen, & Koelen, 2015). As a consequence, different professionals are involved in the implementation of programme activities. Although several authors (Schulenkorf, Sugden, & Burdsey, 2014; Gozzoli & D'Angelo, 2017) claimed the importance of staff training for social inclusion skills development through sport, a categorization of those skills seems to be lacking. This study aimed at exploring which kind of skills, according to practitioners, are necessary for the implementation of sport for social inclusion programmes. In particular, the research explores practitioners' representations concerning the necessary skills for developing social inclusion through sport.

Methods: We implemented in-depth interviews which were analysed following the phenomenological interpretive approach (Brocki & Wearden, 2006;). N = 17 practitioners of three Italian Sport for Development programmes aimed at promoting social inclusion among at-risk youngsters were involved in the research following the logic of convenience sampling.

Results: Interviews pointed out the following skills:

- skills centred on the single professional, such as the capacity to manage unexpected situations and the capacity to be clear with programme participants about the rules to transmit;
- group skills, in particular, the capacity to reflect, interpret and discuss programme participants' needs, emotions and feelings.

For the interviewed sport coaches, a role challenge emerged: In the sport for development programme, coaches stress the educational path of participants more than their sport experience. In this regard, technical sport skills need to be integrated with new relational and educational skills.

3:15pm - 3:30pm

A systematic review of life skills program characteristics influencing transfer**Elise Marsollier¹, Christiane Trottier¹, Olivier Audet¹, Roxane Carrière¹, Camille Sabourin², Stéphanie Gagnon¹, William Falcão¹, Martin Camiré², Marie-Denise Lavoie¹, Claude Goulet¹**¹Université Laval, Canada; ²Université d'Ottawa

The purpose of the present study was to identify empirical evidence regarding the transfer of life skills in sport and physical activity research. This work was guided by the Cochrane systematic review methods (Higgins, 2011). The search strategy involved a combination of subject headings, keywords, related synonyms, and Boolean operators. Three main concepts were included: life skills AND transfer AND sport and physical activity. This search strategy was performed in electronic databases such as SPORTDiscus, PsycINFO, Academic search premier, Dissertations and theses-full text, as well as Web of science. Reviewers independently performed an initial screening of all titles and published abstracts. The search identified 96 relevant studies and researchers applied the following inclusion criteria: (a) original data, (b) peer-reviewed literature including dissertations, (c) sport or physical activity, and (d) life skills used in other settings. Reviewers independently assessed the quality of the 45 final references using an adapted version of the Critical Appraisal Skills Programme (2017) and the Checklist for the assessment of the methodological quality of health care interventions studies (Downs & Black, 1998). Finally, the data extracted revealed programme characteristics that fostered participants' ability to transfer life skills, including being given time to reflect on their learning and building positive relationships with instructors and peers. In turn, programme characteristics that hindered transfer included lack of practice of life skills and having uninteresting lessons. Based on these results, practical recommendations will be made to help researchers develop effective programmes for teaching and transferring life skills.

Paper Session 05: Emotion, Anxiety and Public Shaming

Time: Monday, 15/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 17 - Westphalia

Session Chair: Penny McCullagh, California State University East Bay

2:00pm - 2:15pm

Late-race critical points and emotional experiences of ultra-runners

Will Critchley, Montse C. Ruiz

University of Jyväskylä, Finland

For most ultra-marathon runners, the goal is simply to finish the race. Despite the high dropout rate in ultra-marathons, statistics reveal that almost all runners who get far enough in the race successfully finish, even if a long distance remains. This research explored the experiences of ultra-runners related to their “tipping point” – the point in a race where they feel certain of achieving their goals. We also investigated whether this relates to the point in the race where statistical results suggest that anyone who continues will finish successfully. Participants (8 male, 5 female) were recruited from an ultra-marathon. A mixed-methods approach was used. Participants were interviewed pre-race about goals and strategies to deal with challenges, and post-race interviews focused on their entire race experience, their own “tipping point”, and the mental strategies used. Participants’ psychobiosocial states mid-race were assessed using a modified procedure based on Individualized Profiling of Psychobiosocial States. Individual scales, which included previously identified functional and dysfunctional state descriptors, were created for each participant. Interpretive phenomenological analysis indicated distinct changes in mindset, feelings, and positivity of the participants, who used various mental strategies to overcome stressors. Three participants had a statistically significant ($p < .05$) change in functional psychobiosocial states. However, the qualitative results suggest that ultra-marathoners experienced a “tipping point”, described as a strong positive experience, closely related to feeling able to finish or to achieve their goals. This study contributes to the growing research on ultra-running, particularly to understanding the success factors of ultra-endurance races.

2:15pm - 2:30pm

Effect of positive thinking training on competition anxiety of athletes with low mental toughness

Yuran Di^{1,2}, Li Wang¹

¹Beijing Sport University, People’s Republic of China.; ²Yonsei University, Korea

Competition anxiety is an important factor affecting competition. Research has shown that mental toughness was positively correlated with positive emotions, and negatively correlated with negative emotions. Athletes with low mental toughness have lower control over their anxiety in pre-match preparation and competition (Liu, 2012). They have higher levels of anxiety and are more likely to play under par on the court. Mental training can effectively reduce the athlete’s competition anxiety (Rees, Hardy, & Güllich, 2016). In this study, an 8-week specific psychological group counselling intervention program based on the positive psychology - the positive thinking training - was designed with the aim to reduce the athlete’s competition anxiety. $N = 8$ athletes with low mental toughness participated in the program. Results showed that (1) mental toughness was interventional by group counselling, (2) positive thinking training significantly reduced the athletes’ competition anxiety with low mental toughness, and (3) positive thinking training significantly improved the sleep quality of the athletes with low mental toughness.

2:30pm - 2:45pm

Dispositional athletic mindfulness and emotion regulation as mediators in the Mindfulness-Acceptance-Commitment (MAC) programme

Torbjörn Josefsson

Halmstad university, Sweden

The present study examined whether emotion regulation and athletic dispositional mindfulness mediated the relation between the Mindfulness-Acceptance-Commitment (MAC) programme and self-rated athletic training performance. $N = 69$ ($n = 36$ male, $n = 33$ female; mean age = 20.9 years, $SD = 4.17$) competitive elite athletes who did not have any prior experience with mindfulness- and acceptance-based exercises, were recruited from a national league floorball club ($n = 38$), a golf-section at a sport high-school ($n = 23$), and from a university-programme for elite athletes from various sports ($n = 8$). Athletes were randomly assigned into either a MAC group ($n = 17$ male, $n = 19$ female; mean age = 20.9 years, $SD = 4.24$) or a traditional Psychological Skills Training (PST) group ($n = 18$ male, $n = 14$ female; mean age = 21.0 years, $SD = 4.16$). Findings showed that the MAC intervention had an indirect effect on self-rated athletic training performance through changes in dispositional mindfulness ($ab = -0.05$, 95% CI = [-0.12, -.01]) and emotion regulation ($ab = -0.04$, 95% CI = [-.11, -.01]) respectively. Furthermore, the MAC-group obtained greater post-test improvements in athletic mindfulness, emotion regulation abilities, and perceived performance compared to the PST group. Overall, findings suggest that dispositional athletic mindfulness and emotion regulation may function as important mechanisms in MAC and that the MAC approach is a more effective intervention compared to the PST condition in reducing emotion regulation difficulties as well as enhancing sport-relevant mindfulness skills and perceived athletic training performance in elite sport.

2:45pm - 3:00pm

The influence of gender on online public shaming of professional athletes

Ellen MacPherson, Gretchen Kerr

University of Toronto, Canada

The development and use of social media have advanced significantly worldwide in the past 20 years (Boyd & Ellison, 2007) and these platforms often serve as a space wherein sociocultural values, such as gender or racial equality, are debated and reinforced (Antunovic, 2014). A key criticism of social networks, given their proliferation and accessibility, is the opportunity for people to engage in the public shaming of others in response to perceived misbehaviour. These practices are particularly relevant to professional athletes, as their personal and professional lives are public and highly criticised (Coombs & Holladay, 2012), especially when they misbehave. Therefore, the purpose of this study was to explore the influence of professional athletes' gender on the nature of shaming practices following the athletes' legal, social, and sport-specific norm violations. A qualitative content analysis of fans' comments on Facebook, Instagram, and Twitter directed at nine North American professional athletes in response to their norm violations was conducted. This research is the second of a two-part series and thus, adopted a pluralistic approach to data analysis (Clarke, Caddick, & Frost, 2016). Findings revealed fans' shaming practices on social media were gendered and espoused disparaging views that reflected and contributed to broader rape culture, including descriptions of the perceived roles and behaviours of women, sexualisation of females and normalisation of sexual and physical assault in the sport context. Findings will highlight the benefits of pluralistic analysis and consider the potential implications of these practices on gender equality in sport and society at large.

Symposium 01: Motor imagery during action observation: from neurophysiology to behaviour

Time: Monday, 15/Jul/2019: 2:00pm - 3:30pm · *Location:* H 2 - Bern
Session Chair: Cornelia Frank, Bielefeld University

Motor imagery during action observation: from neurophysiology to behaviour

Chair(s): Cornelia Frank (Bielefeld University, Germany)

While action observation (AO) and motor imagery (MI) are two psychological interventions that can improve the performance and learning of motor skills, recent research advocates their combined use (i.e. AO+MI). During AO+MI, the individual observes a motor action whilst simultaneously imagining the kinesthetic sensations associated with executing that action. Research interest in AO+MI has increased considerably in the last five years. This symposium will provide insights into the current state of AO+MI research from its neurophysiological effects to its behavioural outcomes. A variety of different methods will be used to address fundamental as well as applied research questions related to sport psychology, motor control and neuroscience to reveal the effects of AO+MI interventions. The symposium will open with a meta-analysis on the neurophysiological underpinnings of independent AO and MI and the extent of their functional equivalence to movement execution. This will be followed by a transcranial magnetic stimulation (TMS) experiment which investigated the effects of AO+MI on corticospinal excitability, compared to independent AO or MI. The third presentation will discuss a TMS and eye-tracking study on different MI states during AO (congruent, coordinative and conflicting). Following this, the effects of AO+MI on automatic imitation across different populations will be presented. The fifth presentation will then focus on a study which used virtual reality to compare the effects of novel AO+MI training methods, such as modeling one's own future performance, on behaviour. A discussion on current issues in AO+MI research and future research directions will conclude the symposium.

Presentations of the Symposium

Neural correlates of action: comparing meta-analyses of motor imagery, action observation, and movement execution

Robert M. Hardwick¹, Svenja Caspers², Simon B. Eickhoff³, Stephan P. Swinnen¹

¹Movement Control and Neuroplasticity Research Group, Department of Movement Sciences, KU Leuven, Belgium, ²Institute for Neuroscience and Medicine, Research Centre Jülich and C. and O. Vogt Institute for Brain Research, Medical Faculty, Heinrich Heine University Düsseldorf and JARA-BRAIN, Jülich-Aachen Research Alliance, Jülich, Germany, ³Institute of Systems Neuroscience, Medical Faculty, Heinrich Heine University Düsseldorf, Düsseldorf, Germany

Several established models have proposed that the mental simulation of action through motor imagery and/or action observation shares common neural substrates with movement execution (e.g. Crammond, 1997; Grezes & Decety, 2001; Jeannerod, 2001). Recently, we examined this theory by producing a quantitative synthesis of the brain regions consistently recruited by these tasks as shown in current neuroimaging literature. We compared the brain regions consistently associated with motor imagery (303 experiments, 4,902 participants), action observation (595 experiments, 11,032 participants), and control tasks involving movement execution (142 experiments, 2,302 participants). Motor imagery and action observation recruited generally similar premotor-parietal cortical networks. However, while motor imagery and movement execution both consistently recruited subcortical and cerebellar regions, action observation did not. These data provide a quantitative summary of the similarities in the brain networks underlying motor imagery, action observation, and movement execution, but also highlight key differences in their recruitment of the primary motor cortex, parietal cortex, and subcortical structures. These results question theories of 'functional equivalence' between mentally simulated and physically executed actions, and highlight that alternative models (e.g. Glover & Baran, 2017) are required to improve our understanding of action simulation.

The effects of combined action observation and motor imagery of a basketball free throw on corticospinal excitability

David J. Wright¹, Gregg Wood¹, Daniel L. Eaves², Adam M. Bruton³, Cornelia Frank⁴, Zoe C. Franklin¹

¹Research Centre for Musculoskeletal Science and Sports Medicine, Manchester Metropolitan University, Manchester, United Kingdom, ²Department of Exercise and Sport, Paramedic and Operational Departmental Practice, School of Health and Social Care, Teesside University, Middlesbrough, United Kingdom, ³Sport and Exercise Science Research Centre, Department of Life Sciences, University of Roehampton, London, United Kingdom, ⁴Neurocognition and Action - Biomechanics Research Group, Faculty of Psychology and Sports Science, Bielefeld University, Bielefeld, Germany

Action observation and motor imagery both produce activity in similar regions of the brain to those involved in movement execution (Hardwick, Caspers, Eickhoff, & Swinnen, 2018). Traditionally, these two motor simulation conditions have been studied independently, although recently there has been an increased focus on their combined and simultaneous use (Eaves, Riach, Holmes, & Wright, 2016; Vogt, Di Rienzo, Collet, Collins, & Guillot, 2013). Most previous research has used simple actions to explore the effects of combined action observation and motor imagery (AO+MI) on activity in the motor system, limiting the application of this research to sport. Recently, we used transcranial magnetic stimulation (TMS) to explore the effects of AO+MI of a basketball free throw on corticospinal excitability. Participants engaged in action observation, motor imagery, or AO+MI of a basketball free throw, or observed a static control image. TMS was delivered to the forearm representation of the motor cortex and the amplitudes of the resulting motor evoked potentials were taken as markers of corticospinal excitability. Results indicated that AO+MI of the basketball free throw facilitated corticospinal excitability, relative to the control condition. In contrast, neither independent action observation nor independent motor imagery produced such a facilitation effect. This finding provides some of the first evidence that AO+MI of sport-related motor skills produces increased activity in the motor system, providing a platform for future research to explore the effects of behavioural AO+MI interventions on sport performance and motor skill learning.

Differential effects of combined action observation and motor imagery states on corticospinal excitability and eye gaze behaviour

Adam M. Bruton¹, Zoe C. Franklin², Paul S. Holmes², Daniel L. Eaves³, David J. Wright²

¹Sport and Exercise Science Research Centre, Department of Life Sciences, University of Roehampton, London, United Kingdom, ²Research Centre for Musculoskeletal Science and Sports Medicine, Manchester Metropolitan University, Manchester, United Kingdom, ³Department of Exercise and Sport, Paramedic and Operational Departmental Practice, School of Health and Social Care, Teesside University, Middlesbrough, United Kingdom

Research investigating combined action observation and motor imagery (AO+MI) has largely focused on observing (AO) and imagining (MI) the same movement. Vogt, Di Rienzo, Collet, Collins, and Guillot (2013) proposed a spectrum of AO+MI states from congruent, through coordinative, to conflicting, where MI can have different roles during AO. We used transcranial magnetic stimulation (TMS) and eye-tracking to explore the effects of the three different AO+MI states for a simple hand movement (index finger abduction-adduction). Motor evoked potentials resulting from single-pulse TMS applied to the left primary motor cortex were recorded from the first dorsal interosseous (FDI) and abductor digiti minimi (ADM) muscles of the right hand. When controlling for the influence of relevant eye movements, results indicated that congruent and coordinative AO+MI conditions facilitated corticospinal excitability in the FDI muscle compared to control and conflicting AO+MI conditions. Additionally, coordinative AO+MI facilitated corticospinal excitability in the ADM muscle relative to all other conditions. Eye-tracking data showed that participants fixated most on the index finger during congruent AO+MI, the index and little finger during coordinative AO+MI, and the index finger and other hand areas during conflicting AO+MI. Our findings provide support for the dual-simulation hypothesis (e.g. Eaves, Riach, Holmes, & Wright, 2016), indicating the content of both simulation processes warrants consideration when employing AO+MI as an intervention. Studies should further explore the neurophysiological effects of different AO+MI states for more complex tasks as this will permit more sensitive manipulation of the level of congruency between AO and MI using different movement parameters.

Combined action observation and motor imagery: from brain to behaviour in different populations

Matthew W. Scott, Jonathan R. Emerson, Ryan P. W. Kenny, Jack A. Binks, Daniel L. Eaves

Department of Exercise and Sport, Paramedic and Operational Departmental Practice, School of Health and Social Care, Teesside University, Middlesbrough, United Kingdom

Brain imaging studies consistently show increased neurophysiological activity in cortico-motor regions for combined action observation and motor imagery (AO+MI) instructions, compared to either observing (AO) or imagining (MI) the same action independently. How well these effects translate from healthy young adults to different populations is not yet known. Across three experiments we examined the effects of combined AO+MI on automatic imitation in healthy young and older adults, and in children with and without dyspraxia. On each trial participants planned to execute an instructed rhythmical action (face washing or paint brushing). Before responding, participants observed a rhythmical distractor with a subtle speed manipulation across trials (fast vs slow). The imitation bias was quantified in the participants' subsequent response cycle times. Participants engaged in four blocks of trials, which assessed either unintentional imitation for AO, MI, and combined AO+MI, or intentional imitation of the distractor speeds. There were no clear group differences in the analyses comparing the four populations. For each within-group analysis the imitation bias was significantly greater for combined AO+MI instructions compared to AO and MI, while intentional imitation yielded the strongest effects overall. A significant bias was also obtained for both AO and MI instructions within each group. Unlike in previous studies, these results demonstrate the capacity for different forms of motor simulation in older adults, and children with restricted motor abilities. Combined AO+MI instructions may therefore represent an advantageous method for training movements in these populations, compared to separate AO and MI techniques.

Combined action observation and motor imagery in virtual reality: Practicing at a level that one has not yet achieved

Cornelia Frank¹, Felix Hülsmann², Thomas Waltemate², David J. Wright³, Daniel L. Eaves⁴, Adam M. Bruton⁵, Mario Botsch², Thomas Schack¹

¹Neurocognition and Action - Biomechanics Research Group, Faculty of Psychology and Sports Science, Bielefeld University, Bielefeld, Germany, ²Computer Graphics and Geometry Processing Group, Faculty of Technology, Bielefeld University, Bielefeld, Germany, ³Research Centre for Musculoskeletal Science and Sports Medicine, Manchester Metropolitan University, Manchester, United Kingdom, ⁴Department of Exercise and Sport, Paramedic and Operational Departmental Practice, School of Health and Social Care, Teesside University, Middlesbrough, United Kingdom, ⁵Sport and Exercise Science Research Centre, Department of Life Sciences, University of Roehampton, London, United Kingdom

Recent research on motor imagery during action observation (AO+MI) suggests that combining the two simulation states can be effective in improving motor performance (Eaves, Riach, Holmes, & Wright, 2016). However, the effect of modeling future states of action (Law, Post, & McCullagh, 2017) during AO+MI, has not yet been addressed. Using an immersive, state-of-the-art, low-latency cave automatic virtual environment (Waltemate, Hülsmann, Pfeiffer, Kopp, & Botsch, 2015), we compared AO+MI of one's current state of performance to AO+MI of one's future state of performance. After having performed 3D scans and having created ready-to-animate virtual humans of each participant, we assigned novice participants to one of two groups: a self-appearance/current performance level group (Me-Current) and a self-appearance/future performance level group (Me-Future). During acquisition, participants simultaneously imagined whilst observing an avatar of themselves either performing one of their previously executed squats or performing a squat of an expert model. We measured movement quality, mental representation structure, and self-efficacy of the squat. Preliminary findings revealed an advantage of the Me-Future group as compared to the Me-Current group in motor (i.e. movement quality), cognitive (i.e. mental representation structure) as well as motivational (i.e. self-efficacy) variables. These findings indicate that simultaneous imagery whilst observing future states of action may help establish both cognitive and motivational prerequisites that enable better motor performance. To this end, virtual reality is a promising tool to create learning environments that exceed real-world opportunities.

Symposium 02: Executive functions in sport: Current trends and future prospects

Time: Monday, 15/Jul/2019: 2:00pm - 3:30pm · *Location:* H 3 - Madeira
Session Chair: Robert Vaughan, York st John University

Executive functions in sport: Current trends and future prospects

Chair(s): Robert Vaughan (York st John University, United Kingdom)

Sport psychology has a longstanding interest in the association between cognitive function and sport performance. A growing body of work has focussed on examining how specific cognitive processes are controlled and regulated in athlete populations, known as executive functions (EF). EF governs goal-directed, future-orientated behaviour, that is, processes such as decision-making (i.e. the process of choosing between multiple alternatives). Recent research has examined the role of EF in sport and this symposium outlines state-of-the-art research combining a range of methodologies. After a short introduction by the chair, speaker 1 will discuss the association between athletic expertise and higher-order EF (i.e. reflection impulsivity) using a robust operationalisation across a 16-week period. Extending upon research highlighting the debilitating effect of anxiety on EF performance, speaker 2 will outline the possible mediating effect of mental toughness in both athlete and non-athlete samples, highlighting the importance of individual differences of athletes' EF. Our third and fourth speakers shift the focus to examining the relations between EF and sports performance in football players utilising both higher and lower-order models. These studies outline inconsistencies in the area and challenge the idea that higher aptitudes result in more successful athletic performance. Data suggest that the relationship between EF and sport performance is more complex and warrants additional research. Our final speaker will provide a meta-analytic summary of the research to date examining the relationship between EF and sport performance and the impact of sport participation on an individual's EF.

Presentations of the Symposium

Athletic expertise and reflection-impulsivity: A cross-sectional and longitudinal study

Robert Vaughan, Jack Haggard, Elizabeth Edwards, Martin Smith
York st John University

Competitive sports environments are laden with situations requiring athletes to respond selectively to internal and external stimuli (Williams, Anshel, & Quek, 1997). It stands to reason that individual differences in reflection-impulsivity, the ability to slow down the decision-making process to maximise the accuracy of processing information, would directly influence sporting performance. However, few studies have focussed on the link between athletic expertise and the ability to make deliberate decisions using non-sports specific tasks (Bar-Eli, Plessner, & Raab, 2011). We report two experiments examining reflection-impulsivity (effectiveness and efficiency on an information sampling task) across athletic expertise (super-elite, elite, amateur, novice or non-athlete) and sport-type (externally-or self-paced). Experiment 1 used a cross-sectional design (N = 108). Experiment 2 replicated Experiment 1 (N = 106), and incorporated longitudinal data to test changes across a 16-week playing season (n = 64). Experiment 1 and 2 concurred that athletes with higher expertise showed improved deliberate decision-making than those with lower expertise, independent of physical activity level (effectiveness $F(4,102) = 5.88, p = .002, \eta^2 = .19$; efficiency $F(4, 102) = 1.87, p = .005, \eta^2 = .19$). Experiment 2 found improvements across a season with significant growth trajectories in elite-level athletes (effectiveness ($\beta = 1.98, 95\% \text{ CI } [1.35 - 2.34]$) and efficiency ($\beta = 1.18, 95\% \text{ CI } [.92 - 1.80]$). No sport-type differences were noted. Results suggest that sports participation facilitates the development of reflection-impulsivity beyond that of physical activity and may be explained by the transfer of sport-specific cognitive skills into general cognitive domains.

The mediating role of athlete's mental toughness in the executive function and anxiety relationship

Jack Brimmell, Robert Vaughan
York st John University

Executive function has been linked to sports performance (e.g. Jacobson & Matthaues, 2014; Verburgh, Scherder, van Lange, & Oosterlaan, 2014). In addition, anxiety has been shown to negatively correlate with executive function (Edwards, Edwards, & Lyvers, 2016). Given that research has alluded to the potentially mediating role of mental toughness (e.g. Schaefer, Vella, Allen, & Magee, 2016), it is plausible that mental toughness may mediate the negative effect that anxiety has on executive function. Therefore, the present study examined whether mental toughness mediated the executive function-anxiety relationship in athletes and non-athletes. Upon arrival at the laboratory, N = 225 participants completed three tests of executive function (i.e. Intra-Extra Dimensional Set Shift, Stop Signal Task, & Spatial Working-Memory), the State-Trait Anxiety Inventory, and the Mental Toughness Inventory. Using hierarchical regression, results revealed that mental toughness mediated the relationship between executive function and anxiety. Moreover, indirect effects were found for IED Error ($\beta = .12, [95\% \text{ CI} = .03, .24]$), IED Stages ($\beta = .10, [95\% \text{ CI} = .02, .21]$), SST Correct ($\beta = .14, [95\% \text{ CI} = .04, .25]$), SST Stops ($\beta = .13, [95\% \text{ CI} = .02, .20]$), SWM Strategy ($\beta = .15, [95\% \text{ CI} = .05, .23]$), and SWM Error ($\beta = .11, [95\% \text{ CI} = .02, .25]$). The findings support limited research that has suggested mental toughness may provide additional psychological resources (e.g., Lin, Mutz, Clough, & Papegeorgiou, 2017). More specifically, mental toughness may act as a buffer against the potentially negative effect anxiety has on executive function.

The role of executive functions in predicting football performance

Björn Krenn

University of Vienna

Past research suggested that executive functions (EF) are fundamentally important for an athlete's success in team sports (Vestberg, Gustafson, Maurex, Ingvar, & Petrovic, 2012). However, results revealed less consistent considering the differing assessments of EF (Lundgren, Högman, Näslund, & Parling, 2016). The current study was aimed at broadening the insights into the role of EF in football by applying different tests measuring the EF concepts of inhibition, working memory and cognitive shifting (Design Fluency Test, Trail Making Test, Flanker Task, 2-Back Task; Delis, Kaplan, & Kramer, 2001; Krenn, Finkenzeller, Wuert, & Amesberger, 2018). Male football players (N = 95; mean age = 23.21, SD = 4.52 years) of the first and third Austrian division conducted the tests during the winter break of the 2017-2018 season. Match statistics of the year 2018 were collected via the Austrian football league. The results of the Flanker Task revealed a slight benefit on inhibition for football players of the first division in comparison to those of the third division (MANOVA: $F(3,90) = 3.06$, $p = .03$, $\eta^2 = .09$). All analyses of the Design Fluency Test, Trail Making Test and 2-Back Task did not show significant differences. Spearman's rank correlational analyses found significant correlations between measures of cognitive shifting and scored goals ($r(61) = -.31$, $p = .01$) as well as passing accuracy ($r(51) = -.28$, $p = .03$). Although the results emphasize the prominent role of the EF concept in football, the varying findings for the different tests assessed are challenging its validity.

Perceptual-cognitive skill and the in situ performance of soccer players

Mariëtte van Maarseveen, Raoul Oudejans, David L. Mann, Geert Savelsbergh

Vrije Universiteit Amsterdam

Many studies have shown that experts possess better perceptual-cognitive skills than novices (e.g. in anticipation, decision making, pattern recall; Roca & Memmert, 2018; Williams & Ericsson, 2005), but it remains unclear whether a relationship exists between performance on those tests of perceptual-cognitive skill and actual on-field performance. In this study, we assessed the in situ performance of skilled soccer players and related the outcomes to measures of anticipation, decision making, and pattern recall. In addition, we examined gaze behaviour when performing the perceptual-cognitive tests to better understand whether the underlying processes were related when those perceptual-cognitive tasks were performed. The results showed no significant correlations between the in situ performance score and any of the three tests of perceptual-cognitive skill ($r_s < .262$, $p_s > .265$). No significant regression equation was found that could predict the in situ performance score on the basis of performance in the perceptual-cognitive skill tests, $F(4, 15) = 1.074$, $p = .404$. Thus these findings revealed that on-field performance could not be predicted on the basis of performance on the perceptual-cognitive tests. The analysis of gaze behaviour revealed differences in search rate, fixation duration, fixation order, gaze entropy, and percentage viewing time when performing the test of pattern recall, suggesting that it is driven by different processes than those used for anticipation and decision making (Maarseveen et al., 2018). Altogether, the results suggest that the perceptual-cognitive tests may not be as strong determinants of actual performance as may have previously been assumed.

Executive function expertise in sport: A meta-analytic review

Jack Hagyard, Robert Vaughan, Elizabeth Edwards, Martin Smith

York st John University

Researchers have a longstanding interest in the role of cognitive function and sport performance (Scharfren & Memmert, 2019; Williams, Ford, Eccles, & Ward, 2011). Recently, attention has shifted to the impact of higher-order processes, known as executive functions (EF; Alvarez & Emory, 2006). Research has postulated that EF may differentiate on a function of athletic expertise with higher levels of EF associated with superior athletic performance (Vestberg, Reinebo, Maurex, Ingvar, & Petrovic, 2017). For example, sports requiring greater interaction with the environment and other dynamic stimuli result in increased response flexibility and attention capabilities (Di Russo et al., 2010). Additionally, research highlights the importance of mediators such as physical activity and expertise in determining sport-specific cognitive performance (Chan, Wong, Liu, Yu, & Yan, 2011). Nonetheless, consensus regarding the utility of EF is difficult due to inconsistencies in the literature. Given the growing body of work investigating EF in sport settings, up-to-date synthesis of the research is required, especially the association between EF and sport performance and the impact of sports participation on EF. A literature search yielded 94 studies and 477 effect sizes. Random effects models revealed that EF displayed a medium effect size of ($r+ = .374$; 95% CI .27-.47) with sport performance, and sports participation displayed a small-to-medium effect size of ($r+ = .287$; 95% CI .20-.37) with EF ability. Several factors (e.g. age, gender, EF measure, physical activity) were included in moderation analysis and are discussed in the context of their impact on the overall relationship between EF and sport performance.

Symposium 03: Diverse perspectives on athlete leadership development

Time: Monday, 15/Jul/2019: 2:00pm - 3:30pm · *Location:* H 4 - Chalkidiki

Session Chair: Todd Loughead, University of Windsor

Diverse perspectives on athlete leadership development

Chair(s): **Todd M. Loughead** (University of Windsor, Canada)

Athletes, coaches, and sport psychologists have long recognized the importance of leadership within sport teams. Historically, the majority of research examining leadership in sport has focused on coaches or managers. While these individuals definitely fulfill a vital leadership role, there is another source of leadership emanating from sport teams, namely the athletes. Within the last decade, there has been an increase of empirical research highlighting the importance of athlete leadership. One key finding emerging is that multiple athletes are providing leadership to their team. Given the sharedness of athlete leadership within teams, methods to assist athletes in terms of developing their leadership potential becomes critical. Therefore, the purpose of this symposium is to provide an overview of several emerging athlete leadership development approaches and perspectives. Each presenter will provide theoretically driven evidence-based research to explain how athlete leadership can be developed to enhance the team environment. The first two presentations will examine athlete leadership development from the perspective of the Full Range Leadership Model (Avolio, 1999). The third presentation will focus on the delivery of an athlete leadership development program from an interpersonal team level perspective utilising a solution-focused approach (de Shazer, 1985). The fourth presentation will introduce the 5R Shared Leadership Program that utilises a social identity perspective. The fifth presentation will examine athlete leadership development from the perspective of the head coach.

Presentations of the Symposium

A Full Range Leadership Model approach to the development of athlete leadership behaviours

Todd M. Loughead¹, Krista J. Munroe-Chandler¹, Gordon Bloom²

¹University of Windsor, ²McGill University

Over the last decade, there has been an increase of empirical research examining the importance of athlete leadership. Central to this research is the finding that several athletes are sharing leadership responsibilities on their teams (Duguay et al., in press). Further, these athlete leaders are using a variety of leadership behaviours that are positively related to individual (e.g. motivation, satisfaction) and team level (e.g. cohesion, collective efficacy) outcomes (Loughead, 2017). The Full Range Leadership Model (FRLM; Avolio, 1999) postulates that effective leaders use a host of leadership behaviours. Therefore, the objective of this multi-study was to use the tenets of the FRLM to advance an athlete leadership development program. In the first study, we identified 10 leadership behaviours (e.g. social support, role modeling) that athletes use to be effective leaders. In the second study, we used these 10 leadership behaviours as a basis to develop and deliver a season-long leadership development program to 66 intercollegiate athletes. The results of a repeated measures MANOVA showed significant mean increases from pre- to post-intervention for all 10 of the leadership behaviours. This result indicated that the programme was successful in enhancing the leadership behaviours being displayed by the athletes. Additionally, we conducted focus groups aimed at assessing the programme. Athletes discussed how the programme influenced their own personal leadership development, which included determining their leadership strengths and weaknesses, an increased confidence in using the different leadership behaviours, and a clearer understanding of how to be an effective leader.

The implementation of an athlete leadership development programme with elite youth ice hockey players

Matthieu M. Boisvert, Todd M. Loughead, Krista J. Munroe-Chandler

University of Windsor

Leadership in sport is considered a crucial factor for any team to achieve success. Researchers have found a positive relationship between athlete leadership and a variety of group dynamic outcomes. The present study focused on two of these outcomes: cohesion and collective efficacy. In particular, the purpose of the current study was to examine the effects of a season-long athlete leadership development programme on perceptions of athlete leadership behaviours, cohesion, and collective efficacy. The participants were 14 elite youth hockey players ($M = 16.46$, $SD = 0.78$) from one competitive team. Players participated in six athlete leadership development workshops over the course of the season. Each workshop lasted approximately 45 to 60 minutes. Using a mixed-method approach, quantitative data were collected prior to the athlete leadership development programme and following the programme. Specifically, the players completed measures assessing athlete leadership behaviours (Leadership Scale for Sports, Chelladurai & Saleh, 1980; Differentiated Transformational Leadership Inventory, Callow et al., 2009), cohesion (Youth Sport Environment Questionnaire; Eys et al., 2009), and collective efficacy (Collective Efficacy Questionnaire for Sports, Short et al., 2005). In addition, in-depth qualitative interviews with the players were conducted following the athlete leadership development program. Taken together, the leadership development programme was beneficial in fostering the players' leadership behaviours, and helped maintain their levels of cohesion and collective efficacy. Implications for developing leadership behaviours with the objective of enhancing cohesion and collective efficacy will be discussed.

Utilizing a solution-oriented intervention for shared leadership development in sports

Christopher Maechel¹, Todd M. Loughead², Vivian Vanessa Wergin³, Tom Kossak⁴

¹Technical University of Munich, ²University of Windsor, ³Technical University of Munich, ⁴Sportpsychologie Munchen

Athlete leadership is an essential element of effective team functioning (Crozier, Loughead, & Munroe-Chandler, 2013; Morgan, Fletcher, & Sarkar, 2015). Research has shown that athlete leadership is related to a variety of positive outcomes (Loughead, 2017). Given these positive associations, it becomes important to develop the leadership capacity of athletes. Of the few athlete leadership development studies, the majority of them focus on the development of individual athletes (Voelker et al., 2011; Voight, 2012). However, athlete leadership can be viewed as a form of shared leadership, which is defined as an emergent phenomenon at the team level (Zhu et al., 2018). Consequently, any leadership development should occur at the team level. Therefore, the present study used an interpersonal team level intervention utilising a solution-focused approach (de Shazer, 1994), which has been shown to be effective in health (Zhang et al., 2018) and sport settings (Høigaard & Johansen, 2004; McCormick, 2014). The study used a pre-test/post-test control group design with a convenience sample of four high performance teams in each condition. Three certified sport psychologists provided four workshops to each team over the course of a season. Each workshop consisted of a semi-structured group moderation process, with a scaling method at its core (De Jong & Berg, 1998). Pre- and post-test assessments included measures of shared leadership, cohesion, and athlete satisfaction. Preliminary findings suggest that the intervention was effective by engaging the athletes in the process of initiating desired changes within their teams.

All for us and us for all: introducing the 5R Shared Leadership Program

Katrien Fransen¹, Alex Haslam², Niklas K. Steffens², Kim Peters², Cliff J. Mallett², Filip Boen¹

¹KU Leuven, ²The University of Queensland

Most leadership programmes seek to develop the leadership qualities of the formal team leader. However, programmes that aim to develop leaders within the team are rare. In this presentation, we will draw on insights from organizational and sport psychology to develop and introduce a new leadership development programme — the 5R Shared Leadership Program (5RS) — that (1) encourages a structure of shared leadership (through Shared Leadership Mapping) and (2) further develops participants' leadership potential (through the 5R Program). The programme draws on principles derived from social identity theorising to help both the team and its leaders to create, embody, advance, and embed a collective sense of 'us' in their teams. Qualitative data from two case studies (one organisational and one sports team) illustrate the added value that the 5RS programme can bring to both organisations and sports teams. Furthermore, a critical reflection on these initial implementations of the 5RS programme outlines useful suggestions for further improvement.

Coaches' perceptions of athlete leadership in elite sport

Gordon Bloom¹, Todd M. Loughead²

¹McGill University, ²University of Windsor

Coaches believe that athlete leadership is an important component to team success. Moreover, research has shown that athlete leadership groups have the ability to improve team climate, cohesion, norms, and team functioning (Bucci, Bloom, Loughead, & Caron, 2012; Dupuis, Bloom, & Loughead, 2006; Rathwell, Bloom, & Loughead, 2014). However, the majority of research examining athlete leaders has been generated from the athlete's perspective. Therefore, the purpose of this presentation is to share the results of several empirical studies that have examined the perceptions of athlete leadership from the lens of successful coaches of elite sport teams. The current results help provide evidence that successful coaches have a clear understanding of the qualities they look for in their leaders both on and off the playing field, use similar approaches to empower and develop the leadership skills in their athletes, and understand the impact athlete leaders have on their team. Moreover, coaches appear to have shared positive relationships with their athlete leaders throughout their careers. These findings imply that athlete leadership is essential to both athletes and coaches, and that coaching and team success can be affected by athlete leadership. Additionally, this information may allow athletes to be better prepared to deal with the leadership expectations set by their coach and grasp the leadership opportunities that may arise as they progress in sport. This knowledge can lead coaches to strengthen the leadership of the team by carefully identifying, developing, and utilising their athlete leader's influence and aptitudes more effectively.

Workshop 01: The optimum performance program in sports: an evidence-supported sport-specific mental wellness intervention

Time: Monday, 15/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 118 - Nottingham
Session Chair: Bradley Donohue, University of Nevada, Las Vegas

The optimum performance program in sports: an evidence-supported sport-specific mental wellness intervention

Bradley Donohue

University of Nevada, Las Vegas, United States of America

The Optimum Performance Program in Sports (TOPPS) is a comprehensive sport-specific mental wellness intervention that has been shown in both highly controlled randomized clinical trials and uncontrolled case trials involving collegiate athletes to improve psychiatric functioning and reduce substance use and factors that have been indicated to interfere with sport performance (Donohue et al., 2018). Evolving from Family Behavior Therapy, this intervention approach has been shown to improve athletes' relationships with coaches, family and teammates. In this workshop the theoretical underpinnings of TOPPS and its intervention components will be underscored. Handouts, worksheets and intervention protocols will be utilized during behavioral role-playing to teach requisite skill sets. Attendees will gain familiarity with the optimization approach to mental wellness in athletes, and become familiar with the intervention components of TOPPS, including its intervention outcome support.

Donohue, Gavrilova, Y., Galante, M., Gavrilova, E., Loughrana, T., Scott, J., Chow, G., Plant, C., & Allen, D. A. (2018). Controlled evaluation of an optimization approach to mental health and sport performance, *Journal of Clinical Sport Psychology*, 12, 234 – 267. doi.org/10.1123/jcsp.2017-0054

Workshop 02: Testing underlying assumptions and estimating reliability coefficients alpha, omega, omega ordinal and omega categorical

Time: Monday, 15/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 07 - Magglingen
Session Chair: Carme Viladrich, Universitat Autònoma de Barcelona

Testing underlying assumptions and estimating reliability coefficients alpha, omega, omega ordinal and omega categorical

Carme Viladrich, Ariadna Angulo-Brunet

Universitat Autònoma de Barcelona, Spain

During the last ten years there has been a shift in the preferred estimator of internal consistency reliability of unidimensional constructs in social and behavioral sciences. The more general omega coefficient is taking over from the once omnipresent Cronbach's alpha in scientific publications. Nevertheless, it seems to be less well understood that a variety of omega coefficients is available, and that the correct use of any of them depends on specific assumptions. Based on Viladrich, Angulo-Brunet and Doval (2017) and on related papers published mainly in *Psychometrika* (2009) and in *Educational and Psychological Measurement* (2004 –2018), the learning objectives for attendees are: (1) to know the definition and the assumptions underlying the use of the coefficients alpha, omega, omega ordinal and omega categorical; (2) to develop decision-making strategies to select the coefficient(s) according to the available data and the measurement model; and (3) to be acquainted with the procedures for testing the assumptions and for calculating these coefficients. A brief presentation of all coefficients with their assumptions will be followed by group discussions about four cases illustrating the test of the assumptions and the use of each coefficient. All materials used during this workshop will be shared with the attendees, specifically: the four applied cases including data, results, and syntax in R and Mplus software. This workshop is conceived as a user-friendly guide for postgraduate students and researchers in sport and exercise psychology aiming to publish results based on questionnaires. Some background in applied confirmatory factor analysis will be useful.

Congress Opening: Welcome Adresses, Keynote Brett Smith & Opening Ceremony

Time: Monday, 15/Jul/2019: 4:00pm - 8:30pm · *Location:* H 1 - Vittel & LWL Museum

Session Chair: Bernd Strauss, Westfälische Wilhelms-Universität Münster

Session Chair: Anne-Marie Elbe, Leipzig University

4:00pm - 4:30pm

Welcome Messages

Anne-Marie Elbe

Bernd Strauss

4:30pm - 5:30pm

More of the same or time to up our game? 50(ish) possibilities for sport and exercise psychology research

Brett Smith

University of Birmingham

Partly as a result of the European Federation of Sport Psychology (FEPSAC), which was founded in 1969 in France, sport and exercise psychology is now widely recognised as a valuable and vital field. However, we must not rest on our laurels when it comes to conducting sport and exercise psychological research. Are we happy to do more of the same? Or is it a good time to up our game? FEPSAC's 50th anniversary presents an ideal opportunity to critically reflect on such questions. In this keynote, various concerns with the current state of sport and exercise psychology are offered. It is argued that in certain areas sport and exercise psychology research too often produces more of same. In doing so our field risks becoming stagnant, dull, reserved, and/or limited in impact. Juxtaposed against certain concerns, various possibilities to 'up our game' when it comes to doing high-quality sport and exercise psychological research are offered. Numerous possibilities are very briefly offered throughout whilst several are attended to in detail. These include qualitative research methods, physical activity promotion and sedentariness, and sport psychology as an opportunity for enabling social justice. As recommended in Bakhtinian theory, throughout no attempt is made to finalise arguments. Rather, the modest goal is to stimulate dialogue and polyphony as we move into the next chapters of FEPSAC and how sport and exercise psychology might be imagined.

5:30pm - 6:00pm

Walking bus to the LWL Museum

6:00pm - 8:30pm

Opening Ceremony

Featured Panel 01: Developing resilience in elite sport: research to practice

Time: Tuesday, 16/Jul/2019: 8:30am - 10:00am · *Location:* VSH 219 - Brussels

Session Chair: Mustafa Sarkar, Nottingham Trent University

Developing resilience in elite sport: research to practice

Mustafa Sarkar¹, Daniel Gould², Paul Wylleman³, Göran Kenttä⁴, Stewart Cotterill⁵, Ian Mitchell⁶

¹Nottingham Trent University, United Kingdom; ²Michigan State University, United States; ³Vrije Universiteit Brussel, Belgium;

⁴The Swedish School of Sport and Health Sciences, Sweden; ⁵AECC University College, United Kingdom; ⁶The Football Association, United Kingdom

Resilience and its development has arguably become one of the most talked about topics in sport over the last few years. In terms of the media, hardly a day passes without an athlete or coach being quoted reflecting on the significant role of resilience in performing under pressure. From a research perspective, there has been a growing body of evidence investigating resilience in elite sport (Morgan, Fletcher, & Sarkar, 2013; 2015; Sarkar & Fletcher, 2013, 2014, 2016). Underpinned by resilience research, a special issue in the Journal of Sport Psychology in Action was brought together to provide practitioners with sound information about developing resilience that was immediately applicable to their applied work (Fletcher & Sarkar, 2016a). Since then, practitioners have been guided by evidence-based work in this area and have seen it make a difference in the way that they practice. In this panel, we talk about how resilience research has informed applied practice. Specifically, Mustafa Sarkar talks about his programme of research on resilience in elite sport, and how this shaped the Mental Fortitude Training programme (Fletcher & Sarkar, 2016b; Sarkar, 2018) that has started to be used by a variety of elite sport teams and organisations. Subsequently, experienced sport psychology practitioners provide accounts of how this training programme, and other resilience research, has informed their private practice (Daniel Gould, Stewart Cotterill) and their work in organisations such as TeamNL of the Netherlands Olympic Committee (Paul Wylleman), the Swedish Sports Confederation (Göran Kenttä), and the Football Association (Ian Mitchell).

Featured Symposium 02: Identifying and motivating youth who mostly need physical activity (IMPACT): A European project

Time: Tuesday, 16/Jul/2019: 8:30am - 10:00am · *Location:* S 10 - Münster

Session Chair: Athanasios Papaioannou, University of Thessaly

Session Chair: Anne-Marie Elbe, Leipzig University

Featured Symposium: Identifying and motivating youth who mostly need physical activity (IMPACT): A European project

Chair(s): Athanasios Papaioannou (University of Thessaly), Anne-Marie Elbe (FEPSAC), Claude Scheuer (EUPEA)

Discussant(s): Joan L. Duda (university of Birmingham)

This symposium focuses on the promotion of motivation and physical activity (PA) of inactive European pupils through school Physical Education (PE). Presentations are made by researchers of a large European consortium that received funding from the Erasmus+ sport program to create tools and educational material for PE teachers and to provide evidence of a good practice focused on IMPACT. The aim of this symposium is to present key outputs of the IMPACT project, including (1) the tools and strategies of the IMPACT project, (2) evidence supporting construct validity and cultural invariance of various measures related to motivation and motivational outcomes, (3) cross-European findings stemming from these measures including objective measures of PA, (4) the key components of the educational material for PE teachers and its delivery process, and (5) the network that is under development to promote IMPACT across Europe. Existing partners include Universities (Thessaly-coordinator, Barcelona, Birmingham, Grenoble, Hacettepe, Padova), educational authorities (Ankara Ministry of Education, Greek Ministry of Education, Greek Institute of Educational Policy) and PE teacher associations at European (EUEPA) and national (German, Italian) level. Presenters will discuss the development of a roadmap for the promotion of PA through PE with the symposium participants.

Presentations of the Symposium

Identifying and motivating youth who mostly need physical activity (IMPACT) in Europe: Aims, tools, strategies, network

Athanasios Papaioannou¹, Attilio Carraro², Philippe Sarrazin³, Gıyasettin Demirhan⁴, Miquel Torregrossa⁵, Claude Scheuer⁶, Vasilis Bouglas¹, Viviana Zito⁷, Joan L. Duda⁸

¹University of Thessaly, ²University of Padova, ³University of Grenoble-Alpes, ⁴Hacettepe University, ⁵Autonomous University of Barcelona, ⁶EUPEA, ⁷CAPDI & LSM, ⁸University of Birmingham

Many European adolescents do not meet the World Health Organization's recommendations for at least one hour of daily physical activity (PA) at moderate to vigorous intensity. Physical Education (PE) is the ideal setting to motivate inactive students to adopt regular PA. Unfortunately, PE teachers are not particularly trained towards this end, while several European national policies do not have evidence-based strategies to promote out-of-school PA for all pupils. This presentation focuses on the methodology of the IMPACT project. At the center of this project is the development of an electronic measure that might help (1) PE teachers to identify inactive students in their classes, (2) policymakers to identify schools with high levels of physically inactive students, and (3) researchers to monitor students' PA, motivation in PA and in PE and determinants of students' out-of-school PA and well-being. Moreover, the IMPACT project aims at the development of open-access educational material for PE teachers that might facilitate the promotion of students' motivation in PE and their participation in out-of-school sport and PA. These tools and educational material have been used in an intervention study across four European countries. The methodology and the intervention effects of this study will provide valuable information to European policymakers, PE teachers and researchers. IMPACT partners will discuss strategies for the development of a sustainable network of researchers, PE teachers and policymakers focused on the promotion of PA through PE in Europe with the symposium participants.

Construct validity and measurement equivalence of the IMPACT project measure

Philippe Sarrazin¹, Paul Appleton², Yago Ramis³, Erica Gobbi⁴, Gokce Erturan İlker⁵, Charalampos Krommidas⁶, Martin Holzweg⁷, Athanasios Papaioannou⁶

¹University of Grenoble-Alpes, ²University of Birmingham, ³Autonomous University of Barcelona, ⁴University of Padova, ⁵Pamukkale University & Hacettepe University, ⁶University of Thessaly, ⁷Deutscher Sportlehrerverband (DSL) e.V.

A pilot study was carried out to establish construct validity and measurement equivalence across six European countries of the IMPACT project measures. Participants (N = 2271) were Physical Education (PE) pupils from France (n = 219 males, n = 224 females), Greece (n = 145 males, n = 134 females), Italy (n = 190 males, n = 167 females), Spain (n = 238 males, n = 229 females), Turkey (n = 254 males, n = 233 females) and UK (n = 64 males, n = 74 females). Their age was 13.70 (SD = 1.55). They responded to a battery of widely-used questionnaires assessing physical activity (PA), motivational climate in PE, basic needs satisfaction, achievement goals, behavioral regulations, positive and negative affect in PE, enjoyment in PE, self-efficacy, perceived behavioral control, intentions, attitudes and social support towards participation in out-of-school PA, self-monitoring and planning of out-of-school PA, and vitality. Confirmatory Factor Analyses (CFAs) supported the factorial validity of the measures in each country, while all scales had Cronbach's alphas above .70 across all countries. Multi-group CFAs supported configural and metric equivalence across the six countries. All scales contributed significantly in the explanation of variance of motivational outcomes, explaining in total 46% of out-of-school PA, 42% of vitality, 74% of positive affect in PE and 52% of negative affect in PE. Findings were in line with hypotheses based on trans-contextual models of motivation and PA, supporting the construct validity of these measures and their subsequent use in the main studies of this European project.

Physical activity, intention to be active and affective response to exercise in adolescents from France, Greece, Italy and Turkey

Attilio Carraro¹, Torregrossa Miquel², Giyasettin Demirhan³, George Loules⁴, Geraldine Escriva-Boulley⁵, Vasilis Bouglas⁴

¹University of Padova, ²Autonomous University of Barcelona, ³Hacettepe University, ⁴University of Thessaly, ⁵University of Grenoble-Alpes

Knowledge of physical activity (PA) practice, affective response and intentions to be physically active is of crucial importance to design interventions aimed to promote PA and to identify youth who need to be supported the most. The purpose of this cross-sectional study was to assess levels of habitual practice, positive and negative affect and intentions to partake in leisure-time PA in adolescents from four Mediterranean countries, participating in the Erasmus+ project IMPACT. Participants (N = 7574) were students from France (n = 530), Greece (n = 2357), Italy (n = 1998) and Turkey (n = 2670), 52.7% girls, mean age 13.8 (SD = 2.1 years), 13.1% primary school, 36.7% secondary school and 50.2% high school. They filled in the 2-item screening measure for PA (Prochaska, Sallis & Long, 2001), the Physical Activity Enjoyment Scale (Motl et al., 2001) and three items on their intentions to be active in leisure-time (Standage, Duda & Ntoumanis, 2003). Only 9.9% of the total sample declared to usually practice at least 1-hour/day of PA, with girls and oldest students practising less. Habitual PA, positive and negative affect and the intention to be active were significantly related between each other. Positive affect and intention to be active predicted habitual PA. Findings highlight significant differences between girls and boys and between different age groups. These results should be considered to improve the structure and management of PA promotion interventions.

Measuring pupils' physical activity levels with accelerometers: Preliminary findings of IMPACT Project in France, Greece and Italy

Charalampos Krommidas¹, Erica Gobbi², Geraldine Escriva-Boulley³, Attilio Carraro², Philippe Sarrazin³, Athanasios Papaioannou¹

¹University of Thessaly, ²University of Padova, ³University of Grenoble-Alpes

The IMPACT project aims to tackle the problem of youths' inactivity. To test the IMPACT effectiveness, pre- and post-intervention measurements of youths' physical activity (PA) levels using accelerometers have been planned (December 2018 and May 2019). The purpose of this study is to examine the preliminary data of the baseline assessment (pre-intervention). The sample consisted of N = 144 students, aged 11 to 18 years old (M = 13.6, SD = 2.27 years) from France (n = 36), Greece (n = 75) and Italy (n = 33). Participants wore an accelerometer for seven consecutive days (GT3X+ Actigraph). A 15-second epoch. Evenson equation and a minimum of four valid days with 8 hours of wear time per day were used to accurately monitor PA intensities. Results showed that boys and children had higher levels of PA compared to girls and adolescents. The majority of youths in the three countries do not fulfil daily step-recommendations (80.6%; Tudor-Locke et al., 2011) and do not meet WHO's PA recommendations for 60 minutes of moderate to vigorous PA (MVPA) per day (64.6%). Moreover, 15% of them were classified as overweight or obese. The findings of the present study are in line with previous research in the area of youths' PA assessment (Van Hecke et al., 2016). The diagnosis of inactive pupils and the promotion of their health-enhancing physical activity through increased participation in out-of-school PA should be one of the central aims of the physical-education curricula in Europe.

The educational material for the training of in-service PE teachers in the IMPACT project

Nikolaos Digelidis¹, Gokce Erturan Ilker², Damien Tessier³, Erica Gobbi⁴, Ioannis Syrmpas¹, Philippe Sarrazin³, Evgenia Gortsila⁵, Hurrem Ozdurak⁶, Athanasios Papaioannou¹

¹university of Thessaly, ²Pamukkale University & Hacettepe University, ³university of Grenoble-Alpes, ⁴University of Padova, ⁵Greek Insititue of Educational Policy, ⁶Ankara ministry of Education and Hitit University

The development of educational materials that are integrated into the physical education (PE) curricula of the participating countries plays a central role in the IMPACT project. The educational materials were developed to help PE teachers implement specific strategies focused on the identification and motivation of inactive students and the promotion of their physical activity (PA). It was delivered to more than 200 PE teachers in four countries (France, Greece, Italy, and Turkey) through 5 webinars in each country. The duration of each webinar was approximately 90 minutes. Topics of the webinars were decided based on the aims of the IMPACT project, the flow and language, and they were arranged according to the teachers' pedagogical content knowledge. Main topics and themes developed in the educational material included but were not limited to (1) importance of daily PA and self-monitoring, (2) setting goals for PA with autonomy and without controlling, (3) setting personally challenging/mastery and not normative goals, (4) developing self-efficacy to promote PA, and (5) caring for others and setting goals to support others. Webinars focused not only on the delivery of knowledge but also on the interaction among PE teachers during the webinars, such as online quizzes and discussions in small groups. Furthermore, tasks related to the content of each webinar were given to the teachers to try with their students in PE classes until the following webinar. The webinars helped to develop an online community of PE teachers who exchanged ideas about students' motivation and PA promotion.

Invited Symposium 01: Holistic approaches to sport and physical activity participation in the Asian context #1

Time: Tuesday, 16/Jul/2019: 8:30am - 10:00am · *Location:* Aula im Schloss - Europe
Session Chair: Youngho Kim, Seoul National University of Science and Technology

Invited: Holistic approaches to sport and physical activity participation in the Asian context #1

Chair(s): Youngho Kim (Seoul National University of Science and Technology, Korea, Republic of (South Korea))

It is clearly recognised that sport and exercise psychology today is different from the discipline that emerged in the 1960s. Scholars have responded to public concerns with increased research on health-oriented physical activity, and many sport psychologists focus on youth development following a positive psychology approach. Some researchers emphasise theory-based research with tight controls while others use interpretive approaches and search for experiential knowledge. Some do no research, but use information to educate, consult or clinically treat sport and physical activity participants. In this regard, it should be noticed that expanding international communication and interaction has moved us toward a global sport and exercise psychology with shared research and professional identification. Sport and exercise psychology has expanded beyond its North American and European bases to become a truly international discipline. Therefore, today, we will present some research works in sport and exercise psychology, which have been done in the Asian context. The symposium is composed as two parts such as sport psychology-related research and exercise psychology-related research. All presenters hope that this symposium can help you understand similarities and differences between Asian and Western sport and exercise psychology research and ultimately enhance mutual recognition and collaboration.

Presentations of the Symposium

An exploratory study of the relationship between team resilience, collective-efficacy, challenge and threat in sport

Araki Kaori

Sonoda Women's University, CORAZON CO., Ltd.

Morgan, Fletcher, and Sarkar (2013) defined team resilience in sport as dynamic and temporal process and protects potential negative effects of stressors. Even though there has been conducting research regarding individual resilience in sport, there are more rooms to investigate about team resilience. Thus, the purpose of the project was to validate the Japanese version of Characteristics of Resilience in Sports Teams (CREST: Decroos et al., 2017). Considering team resilience as shared, collective, and psychological phenomenon (Morgan, Fletcher, Sarkar, 2017), its relationship with collective efficacy, challenge and threat in sport, and satisfaction with the environment were also examined. Collegiate athletes (123 female, 100 male, M age = 19.93, age range: 18-23) completed questionnaires. Face validity and a part of content validity of the CREST was established with the two factors (resilient characteristics and vulnerabilities under pressure) with 14 items. The two subscales showed significant reliabilities ($\alpha = .89$ and $.87$, respectively). Resilient characteristics were significantly, positively correlated with six subscales of the Japanese version of Collective Efficacy Questionnaire (CEQ-J: Araki & Arakawa, 2009) and challenge (Japanese version of CAT-sport by Rossato et al., 2018) while vulnerabilities under pressure was significantly negatively correlated with the CEQ-J and challenge. Team resilience also showed significant relationship to satisfaction with environment including training ($r = .60$, $-.52$), coaching ($r = .48$, $-.41$), supporting system ($r = .62$, $-.49$), and facilities ($r = .33$, $-.36$). Team resilience in Japanese sport setting will be discussed.

Prediction of athletic mental energy on athletes' well-being and performance: an international integration

Frank J.H. Lu

Chinese Culture University

Mental energy is defined as "...maintaining long hours of working with high attention on a given task" (Cook & Davis, 2006). Recently, a sport-specific measurement entitled "Athletic Mental Energy Scale (AMES) has been developed by Lu and colleagues (Lu, Gill, Yang, Lee, Hsu, Chiu, & Kuan, 2018) but its' applicability has never been fully examined. The purpose of this study was to examine the effects of athletic mental energy on athletes' well-being and performance. Study 1 sampled 312 Taiwanese college student-athletes (M age = 19.87, SD = 1.54, male = 208; female = 104) and completed a survey package including a demographic questionnaire, 6-factor, 18-item AMES, positive state of mind, college student-athletes' life stress scale, and burnout. Results found athletic mental energy positively correlated with the positive state of mind but negatively correlated with athlete burnout and life stress. Study 2 administered AMES to 78 Malaysian Chinese university male martial artists (M age = 19.28 yrs, SD = 2.01) one day before the competition. Logistic regression results showed total AMES and four factors of athletic mental energy - confidence, motivation, tireless, and calm predicted medal winning. This study confirmed the applicability of AMES and concluded that athletic mental energy not only associates with athletes' well-being but also predicts performance. It is suggested that future studies may use AMES to examine its relationships with athletes' cognition, affect, and performance. The application of AMES in sport psychology was also discussed.

Pursuing God's will: spirituality in sport psychology consulting

Maria Luisa Guinto-Adviento

University of the Philippines

Despite extensive study of spirituality in mainstream psychology, its scientific investigation and acceptance has been slow to emerge in sport psychology. However, a holistic approach in performance enhancement work necessarily includes the physical, mental, emotional, and spiritual dimensions of an athlete's performance and life. While the inclusion of spirituality in sport psychology consulting might appear peripheral to some cultures, it is an integral component in some cultures. In this study, insights from over 20 years of reflective practice with Filipino elite athletes have been drawn to examine the role of spirituality in sport psychology consultation within the Philippine context. First, the likelihood for broader life issues and existential concerns to emerge in applied practice increased over time as a close and trusting relationship is built between the athlete and sport psychology consultant. Second, spirituality provided meaning and perspective to both triumph and defeat in the careers of elite athletes, allowing them to see the bigger picture, discover God's will, and persist with training rigours over extended periods of time. Third, religious observances such as prayer, making the sign of the cross, recalling bible verses, and attending mass or worship services, appeared to be extremely helpful for athletes, especially in coping with performance-related stress and anxiety, injury and failure. As such, the use of spirituality and religion has been openly endorsed to complement conventional psychological skills training among Filipino athletes. Future investigations on the development of spiritual sensitive-practice and on the meaningful integration of spirituality in sport psychology consultation are discussed.

Training during Ramadan: psychological supports working with the Malaysian athletes

Garry Kuan

Universiti Sains Malaysia

Ramadan fasting is one of the five pillars of Islam and is compulsory for all healthy Muslims from puberty onwards except for people with medical conditions. The month consists of 30 days, which vary in length depending on the geographical location and the time of year. During this month, Muslims abstain from food, drink, smoking, and sex from dawn until sunset and Ramadan rotate around the seasons which causes the length of days to differ each year, depending on whether Ramadan falls in the winter or in the summer time. In Malaysia, the length of the time of fasting is usually around thirteen to fourteen hours. Often, it imposes significant barriers for athletes to train and compete. In these situations, rather than accepting performance decrements as inevitable, athletes, coaches and sport psychologists strive to plan strategies for training and competition that offset these challenges. As a sport psychologist practitioner, the importance of cultural sensitivity working with athletes is important. Inappropriate cultural compatibility can undermine effective service provision through the selection of the wrong type of intervention or training time. In this presentation, I will be presenting practical sport psychology supports working with athletes competing in major competitions two weeks after their fasting completed. The psychological supports were carefully planned in an attempt to alleviate any detrimental consequences from the effect of fasting. Finally, the impediments for applied practices will be discussed.

New sport culture among youth in present India: especially for the women athletes in the North Eastern region of Manipur

Jayashree Acharya

National Sports University, Ministry of Youth Affairs & Sports

Despite numerous efforts that are being put to develop a sport culture in India, still it has not received the attention it should get except in few sports like badminton, tennis, athletics, shooting, weightlifting, boxing etc. There is a wide gap in the mind of the youth from one region of India to another as there are varying cultures from eastern parts of India, and more so from north eastern region to central, west, north and south of India.

A lot of effort is put by the government of India to make sport a subject in the curriculum and motivate students to choose it like any other subjects like science, arts or commerce. Recently, scholarship programs and opening of sports institutes in various parts of the country has been in the milieu for nurturing and encouraging the talent.

The sport achievement of Indian athletes in the international platform is meagre compared against the population of India. Having involved professionally for more than 30 years, it has been recently observed that the talent pool especially for women athletes in region of Manipur is huge but untapped. Women athletes have to go through lot of hardship owing to adverse climate, lack of transportation systems, poor educational facilities, language barriers and other basic facilities that an athlete requires. Culture of sport inherent in Manipur has given India some incredible women athletes like Mary Kom, Kunjurani Devi, Sarita Devi, etc. who have done the nation proud with their commendable performances and are role models.

Paper Session 06: Perception

Time: Tuesday, 16/Jul/2019: 8:30am - 10:00am · Location: Senatssaal - Prague

Session Chair: Daniel Memmert, Deutsche Sporthochschule Köln

8:30am - 8:45am

Assessment of psychoacoustical response in human beings with the aid of statistical and classification-based approaches

Sanjay H S¹, Basavraj V Hiremath², Prithvi B S³, Kiran Kumar H K⁴

¹M S Ramaiah Institute of Technology, India; ²M S Ramaiah Institute of Technology, India; ³Anugraha Chemicals Pvt Ltd, India; ⁴M S Ramaiah Institute of Technology, India

Human hearing often varies due to environmental and physiological factors. The present work highlights the deterioration of hearing perception due to occupational exposure to noise alone in fabrication industries (FB), to noise along with solvent exposure in chemical industries (CH) and improvement of hearing perception due to positive conditioning in basketball sport (BB), as compared to the control set (CO). Absolute Threshold Test was used to ascertain the threshold of hearing perception (ATTh) by varying the intensity of the sound provided to the subject. This experiment encompassed N = 144 subjects without any known auditory pathology. The results proved the noise exposure to be the reason for the deterioration of hearing perception in FB. A combination of noise, as well as the solvent exposure, was observed to be the reason for a higher deterioration of ATTh in CH, whereas regular training in case of BB seems to have improved the hearing perceptive abilities in professional sportsmen (ATTh: BB>CO>FB>CH). Further, the automated classification method using Support Vector Machine classifier incorporating linear, quadratic and radial basis functions were used. Radial basis function-based support vector machine classifier was found to provide the highest accuracy to classify the subjects (CH v/s FB = 94.31%, FB v/s BB = 97.7% and CH v/s BB = 98.86%). Such approaches can be used to predict and prevent permanent hearing dysfunction due to occupational exposure and for sports training and rehabilitation programs in order to improve the performance of the players.

8:45am - 9:00am

An exploration of visual search strategies for senior and sub-junior badminton players

Mayanglambam Surchand Singh, Jayashree Acharya

LNIPE, GWALIOR, M.P INDIA, India

Eye tracking technology provides the platform to explore and understand the dynamics and mechanisms underlying real-time cognitive processing that lead to expert performance (Moran, 2009). The present study was intended to understand the visual search strategies by mapping the gaze to the 'real' external environment between senior and sub-junior badminton players. The gaze data was analyzed through the gaze plot and heat map. n = 8 experienced badminton players age ranged between 20-24 years with the mean = 21.75 and SD = 1.28 and n = 12 sub-junior badminton players age ranged between 10-14 years with the mean = 12.58 and SD = 1.68 were selected at random. The visual search characteristics were recorded with the help of Tobii-Pro eye tracking glass-2. The shuttles were fed by two different feeders in a random sequence for both the groups and they were asked to perform 20 over-head clear shots. From the record, it was observed that the senior players were found to have more visual information and a broader range of fixation with shorter duration. The sub-junior players had a narrow range of fixation with longer duration. The mapping shows senior players have wider peripheral vision to get the information-extracting from the environment which allows them to have more choice while executing the next stroke. Thus, gazing allows the player to create a map to explore the opponent's court and score winning points.

9:00am - 9:15am

The INFORM neural network unifies forward and inverse models and recognition

Heiko Wagner, Kim Boström, Marc de Lussanet

University of Münster, Germany

Theories of sensorimotor control (Davidson & Wolpert, 2005) and action-perception coupling (Hommel, Müsseler, Aschersleben, & Prinz, 2001) suggest that internal forward and inverse models are simultaneously activated during movements. Moreover, action recognition is facilitated by motor experience (Barrett & Simmons, 2015; Grush, 2004). We propose to unify internal forward and inverse models into a single neural network, the INverse-FORward-Rognition Model (INFORM) which processes efferent motor signals, their predicted sensory consequences (reafference), and the sensorimotor idea. We show that the INFORM network is able to represent movement patterns together with their corresponding sensory feedback.

We used a Reservoir Computing (RC) network with FORCE architecture (Boström, Wagner, Prieske, & de Lussanet Marc, 2013). The efferent output of a Reservoir Computing network activates the muscles of a 3D-musculoskeletal model (Myonardo). Measured muscle activations and corresponding kinematics were used as input for the learning phase of the model. The sensorimotor idea is described as a three-dimensional vector of time-invariant values. The INFORM model was able to learn efferent and afferent signals from sensors of the Myonardo model together with the sensorimotor idea.

Given a sensorimotor idea, it generates the muscular activations and predicts the reafferent signal. Finally, for a given afferent sensory signal, the INFORM circuit recognized the presented sensory information.

Intentional states encode the goal of a motor action in an entirely abstract way. The INFORM circuit supported the hypothesis that a single neural network may be able to generate efferent signals, predict the afferent responses and recognize the sensorimotor idea.

9:15am - 9:30am

The influence of body action on time perception: a review of the cognitive and neural mechanisms

WeiQi Zheng

School of Psychology, Beijing Sport University, China

To achieve better dynamic interaction with others, accurate time estimation and prediction are important during movements. Especially in sports events, athletes need to have excellent ability of time perception. Recently, a growing number of studies suggested that time perception could be affected by whether people are in motion state (e.g. Imaizumi & Asai, 2017; Wiener, Zhou, & Joiner, 2018). From the results of these behavioural and cognitive neural experiments, we can summarize that: (1) different motion parameters would influence time estimation or prediction. Action with fast speed or direction away from the body can lead to time compression (Tomassini & Morrone, 2016; Yokosaka et al., 2015). In addition, during the motion preparation and after motion execution stage, the duration estimation of visual stimuli is lengthened (Hagura, Kanai, Orgs, & Haggard, 2012), while during motion execution stage, the duration estimation is compressed. (2) Action's role in time perception is supra-modal, and the advantage of motion experience in time perception is not evenly distributed to all perceptual modalities. Motion experience could enhance the validity of time estimation in auditory modality more than in visual modality (Murgia et al., 2017). (3) The motor system is involved in time perception. As a part of the motor system, the supplementary motor area also engages in duration encoding and is regarded as an important node in cortico-thalamic-basal ganglia timing circuit (Merchant & Yarrow, 2016). In conclusion, there is an intense link between body action and time perception, and the motor system helps to refine duration encoding.

Paper Session 07: Mental Health and Physical Activity

Time: Tuesday, 16/Jul/2019: 8:30am - 10:00am · Location: S 8 - Copenhagen

Session Chair: Kristen Dieffenbach, West Virginia University

A cross-sectional investigation into the relationships of physical activity domains and mental health

Katja Siefken¹, Astrid Junge²

¹University of South Australia, Australia; ²Medical School Hamburg, Germany

Background: Protective effects of physical activity (PA) from mental disorders have been described. The knowledge regarding optimal domain, intensity, type, context, and amount of PA promotion for the prevention of mental disorders however is sparse and incoherent. The objective of this study is to determine the relationship between PA domains and mental well-being, and whether associations vary by domain, amount, context, intensity, and type of PA.

Methods: N = 310 individuals (age = 25 years, SD = 7; 73% female) completed questionnaires on PA behaviour (IPAQ) and on mental health (Centre of Epidemiologic Studies Depression Scale, CES-D), Generalized Anxiety Disorder (GAD-7) scale, the subjective physical well-being (FEW-16). Linear and multiple regression were used for analysis.

Findings: A positive linear correlation on subjective physical well-being ($\beta = .175$, $p = .002$), and a negative linear correlation for anxiety ($\beta = -.142$, $p = .011$) and depression ($\beta = -.164$, $p = .004$) was found in the transport domain. Multiple regression analysis indicates that time spent in active transport on the bicycle significantly lowers anxiety and depression scores and enhances subjective physical well-being. The more time a participant spends using the bicycle for transport, the lower the depression ($\beta = -.143$, $p = .013$) and anxiety scores ($\beta = -.111$, $p = .050$).

Conclusions: Active transport can have a substantial impact on mental well-being. Findings have implications for policymakers, employers, public health experts and civil society. A stronger focus on the promotion and protection of health through active transport is recommended. Health systems must seek inter-sectoral collaboration for adopting policies that maximise possible health gains.

Exercise-induced enhancement of cognition in advanced age – is there a preferred mode of exercise?

Yael Netz

The Academic College at Wingate, Israel

The aim of this presentation is to examine the moderating effect of the mode of exercise on the exercise-cognition relationship. Based on official guidelines for old age, exercise modes include aerobic activity, strength (resistance) training, flexibility, balance, and coordination. In relation to cognition, these exercise modes are further divided into two categories: physical training – aerobic and strength, and motor training – balance, coordination, and flexibility. The physical training activities require high metabolic energy and relatively low neuromuscular effort. The motor activities involve high neuromuscular demands and relatively low metabolic demands. Studies examining the effect of exercise on cognition showed that modes of exercise from both training categories affect neuroplasticity, and consequently cognitive functioning. However, there are three main differences between the training categories:

1. Physical training affects cognition via improvement in cardiovascular fitness, whereas motor training affects cognition directly;
2. Physical training affects neuroplasticity and cognition in a global manner, while motor training is task-specific in increasing brain neuroplasticity and in affecting cognition.
3. In the physical training category, it is the intensity of training that enhances neuroplasticity and consequently improves cognition, while in the motor activities it is the task complexity that increases neuroplasticity, which improves cognition.

Dual-task training – a combination of a few types of training including cognitive tasks - has proven more effective in improving cognitive functioning than a single task.

The implications are that both – the metabolic and the neuromuscular activities - should be practised for cognitive health in advanced age.

The effect of high-intensity interval training on executive function in adolescents hospitalised for a mental health crisis

Jacqueline S. Lee¹, Addo Bofo², Stephanie L. Greenham², Patricia E. Longmuir³

¹University of Ottawa, Canada; ²Children's Hospital of Eastern Ontario, Canada; ³Children's Hospital of Eastern Ontario Research Institute, Canada

Poor mental health is associated with impairments in top-down cognitive processes called Executive Functions (EF), however, successful participation in mental-health therapy requires intact EF. The purpose of this study was to examine whether acute bouts of High-Intensity Interval Training (HIIT) could improve EF in adolescents hospitalised for a mental-health crisis. N = 28 participants (M = 15.5 ± 0.92 years, range = 14-17) performed the exercise and control conditions on consecutive days, with the order of conditions randomised. The Stroop Colour Word Task (SCWT) was assessed pre, post, and 30-minutes-post on both days. The HIIT intervention consisted of a 12-minute body-weight circuit with a 1:1 work-to-rest ratio. Repeated-measures ANOVA evaluated changes in the interference cost (i.e. reaction-time cost of responding to an incompatible stimulus compared to a neutral stimulus) and accuracy measures of the SCWT. There was a significant interaction between condition and time for the interference-cost measure, $F(1.6,43.3) = 13.6$, $p < .0001$, $\eta^2 = .34$. Interference cost was significantly reduced after exercise compared to control (mean diff = 78.8 ± 14.91, $p < .001$) and 30-minutes after exercise compared to control (mean diff = 59.6 ± 15.14, $p = .001$). However, accuracy did not differ by time ($F(2,54) = .14$, $p = .87$, $\eta^2 = .01$) nor condition ($F(1,27) = 2.25$, $p = .15$, $\eta^2 = .08$). These results suggest that performing the exercises reduced the interference cost of the SCWT, although the accuracy of the task did not improve. Thus, HIIT has the potential to be a simple, inexpensive, and non-pharmacologic tool to enhance EF and improve engagement in mental-illness treatments.

Predictors of mental health, physical activity intensity, and sedentary behaviour in first to fourth year medical students

Tamara Morgan¹, Taylor McFadden¹, Michelle S. Fortier¹, Jennifer R. Tomasone², Shane N. Sweet³

¹University of Ottawa, Ottawa, Ontario, Canada; ²Queen's University, Kingston, Ontario, Canada; ³McGill University, Montréal, Québec, Canada

Medical students are at risk of poor mental health compared to the general population (Dyrbye et al., 2014). Research has suggested that certain demographics can predict mental health in medical students (van Dijk et al., 2017). However, most studies have measured mental illness (e.g. depression) in lieu of mental health (e.g. well-being). Moreover, limited research has examined differences in medical students' physical activity (PA) and sedentary behaviour (SB) across demographics internationally (Blake et al., 2017; Padmapriya et al., 2013), leaving a dearth of knowledge how demographics predict PA intensity and SB in Canadian medical students. This research aimed to examine how six demographics (gender, ethnicity, age, year of study, educational level, proposed specialty) predict mental health, PA intensity (mild, moderate, vigorous), and SB in medical students. Medical students (N=129) completed validated questionnaires assessing demographics, mental health, PA, and SB. Data were analysed using five multiple regressions. Overall, six demographics explained 15.0%, 17.1%, and 36.5% of the variance in mental health, moderate PA, and SB, respectively. Results showed that the third year of the study negatively predicted mental health ($\beta = -.243, p = .013$), the second year of study positively predicted minutes of moderate PA/week ($\beta = .244, p = .013$) and the third ($\beta = -.521, p < .001$) and fourth year of study ($\beta = -.300, p < .001$) negatively predicted sitting hours/day. Being a female medical student positively predicted minutes of moderate PA/week ($\beta = .243, p = .010$). These findings fill gaps in the Canadian literature and may inform medical stakeholders in developing programs for improving medical students' mental health, PA, and SB.

Run for mental health: a mixed-methods study exploring a school-based running program

Alyona Koulanova, Catherine M. Sabiston

University of Toronto, Canada

Given the rise in adolescent mental health concerns (Statistics Canada, 2019), Canadian secondary schools are increasingly focused on implementing programs aimed at improving mental resilience in students. Team Unbreakable is an evidence-based, learn-to-run program that has been implemented in 117 schools, by nearly 10,000 students across southern Ontario. However, this program has yet to be evaluated. The present quasi-experimental, mixed-methods pilot study explored the effectiveness and acceptability of this program. Participants (n = 25 Team Unbreakable; n = 62 control; mean age = 15.1 years) completed pre- and post-questionnaires on measures of various mental health indices. In addition, individual interviews were conducted with Team Unbreakable participants (n = 9) to capture acceptability and perceived effectiveness of the program. Repeated measures ANCOVAs indicated there was a significant main effect of group on mental health ($F(1,83) = 5.46, p < .05, \eta^2 = .06$) and distress ($F(1,83) = 7.82, p < .05, \eta^2 = .09$), whereby Team Unbreakable participants generally reported lower levels of distress and higher levels of mental health, compared to the control group at both time-points. The inductive content analysis demonstrated that participants felt the program was beneficial for social support, skill development, and overall mental well-being. The results outline that although changes in mental health indices were not captured by quantitative measures, Team Unbreakable participants report that the program is acceptable and effective in improving mental health. These divergent results warrant further investigation of this program.

The role of harassment in sport participants' psychological ill-being and well-being: focus on gender and sexual orientation

Marja Kokkonen

University of Jyväskylä, Finland

This study surveyed N = 811 Finnish sport participants to examine 1) gender-based and sexual harassment by a coach and by teammates in relation to psychological ill-being (psychosomatic symptoms, depression, stress) and well-being (self-esteem, body-image, and satisfaction with life), and 2) differences in different forms of harassment and psychological ill-being and well-being due to gender, gender identity and sexual orientation. Self-reported data from n = 520 female and n = 284 male sport participants, aged 8 – 85 years, was collected anonymously and analysed using Spearman's correlations, structural equation modelling (SEM), and Mann-Whitney U test. The final SEM model fitted the data well ($\chi^2(74) = 118.58, p = .0008, TLI = .994, CFI = .995, RMSEA = .033$) and showed that harassment by a coach and by the teammates was negatively ($\beta = -.35$) related to sport participants' psychological well-being ($R^2 = .12$) and positively ($\beta = .71$) related to their psychological ill-being ($R^2 = .50$). Males scored higher than females in self-esteem and body-image, whereas females scored higher in depression, psychosomatic symptoms and stress. Males were more frequently verbally harassed by both the coach and the teammates, and witnessed their coach and teammates calling the opponents or the referee names. Those belonging to gender or sexual minorities scored higher in psychological well-being and lower in psychological ill-being. The gender and sexual minority sport participants, on the other hand, suffered more frequently from many forms of harassment. The present findings have scientific, educational and clinical importance for sport psychologists involved in research, coach education and applied work.

Paper Session 08: Clinical Sport Psychology

Time: Tuesday, 16/Jul/2019: 8:30am - 10:00am · Location: S 9 - Cologne

Session Chair: Diane M. Wiese-Bjornstal, University of Minnesota

8:30am - 8:45am

Exercise addiction – part of an eating disorder, or distinct diagnosis? Perspectives from gym employees

Flora Colledge¹, Ursula Buchner², Uwe Pühse¹, Markus Gerber¹, Marc Walter³

¹University of Basel, Switzerland; ²Deutsche Hochschule für Sport und Gesundheit; ³University Psychiatric Clinics, University of Basel

Almost 50 years ago, the first indication in the academic literature that exercise might be a problematic and possibly addictive pastime appeared. Since then, numerous case studies, qualitative and quantitative research have sought to address the phenomenon. However, there is currently still no consensus on whether exercise can be categorized as an addiction, or whether it is simply a symptom cluster that typically occurs with eating disorders. Excessive exercise is likely to be carried out, at least in part, in gyms. Consequently, the aim of this study was to examine whether gym employees report that they have observed clients who they think may exercise excessively and whether they believe they can separate these clients from those who they suspect have eating disorders

We contacted N = 384 gyms in the German-speaking part of Switzerland. n = 101 respondents took part in the study.

Respondents indicated that they observed both excessive exercise and eating disorders among their clients and that they felt that the indicators for these two cases were distinct.

Our study indicates that in a nonclinical setting, individuals who are regularly exposed to exercisers feel that they can identify and discern between eating disorders and possible exercise addiction. The implications of these findings are discussed in the context of the literature on defining exercise addiction. It is suggested that excessive exercise is likely to be a psychological condition distinct from an eating disorder, but that it may not be a non-substance related disorder.

8:45am - 9:00am

Reflection and brooding rumination as predictors of athletes' depressive symptoms

Richard Tahtinen¹, Niels Feddersen¹, Michael McDougall^{1,2}, Olli Tikkanen³, Libby Mitchell¹, Laura Thomas¹, Ronkainen Noora¹

¹Liverpool John Moores University, United Kingdom; ²Turock School of Arts & Sciences, Keystone College, Pennsylvania, USA; ³Fibion Inc., Finland

The literature base on depression in athletes is expanding, but very few studies have explored cognitive vulnerabilities. Depressive rumination, a repetitive thinking process in response to negative mood, consists of reflective pondering and brooding (Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). In non-athlete samples, a tendency to engage in brooding has been identified as a particularly robust cognitive vulnerability to depression (Treyner, Gonzalez, & Nolen-Hoeksema, 2003). In this cross-sectional study, we tested the respective contribution of reflection and brooding to depressive symptoms in a sample of N = 168 athletes from 40 different sports (age ≥ 18, 59.5% male). We utilised the Patient Health Questionnaire (PHQ-9) to measure depressive symptoms and the Ruminative Responses Scale (RRS-10) to measure brooding and reflection. There was a significant correlation between depressive symptoms and reflection [r = .33, p < .001], and brooding [r = .47, p < .001]. In a multiple-regression analysis controlling for gender, we tested the respective contribution of reflection and brooding to athletes' depressive symptoms. The adjusted model explained 25% of the variance [R² = .27, F(3,159) = 19.12, p < .001]. While brooding significantly contributed to depressive symptoms (β = .42, p < .001), reflection did not. This study extends the findings of previous studies in non-athlete samples to the current athlete sample, suggesting that brooding rumination could be an important target for future mental health initiatives in athletes. However, to further contextualise depressive rumination in athletes, future research could explore its relationship to performance-related issues or other sport-specific factors such as type and level of sport.

9:00am - 9:15am

Social support and physical activity among breast cancer survivors: a latent class analysis

Jenna D. Gilchrist^{1,2}, Catherine M. Sabiston²

¹The Pennsylvania State University; ²University of Toronto

Physical activity confers a host of benefits after a diagnosis of breast cancer, but few survivors engage in levels commensurate for health benefits. Social support may help survivors cope with the challenges they face following diagnosis and treatment, including engagement in moderate-to-vigorous physical activity (mvpa). This study examined social support among breast cancer survivors (N = 199; mean age = 54.89) and the extent to which patterns of social support are associated with mvpa three months later. Participants completed five subscales from the Social Support Survey (listening support, task challenge, emotional support, reality confirmation, tangible assistance; Richman et al., 1993) as well as an additional subscale targeting breast cancer support and reported their engagement in mvpa three months later. Latent class analysis was used to identify distinct patterns of social support, which were then used as predictors of mvpa. A three-class model of social support provided the best fit. Interpretation of the classes resulted in a No Social Support class (18%), a Mixed Social support class (18%) whereby participants reported social support on some subscales but not others, and Full Social Support class (64%). Those in the Full Social Support class engaged in greater mvpa three months later compared to the No Social Support class (β = .014, p = .029). There were no differences in mvpa for those in the No Social Support class and those in the Mixed Social Support Class. Implications include fostering networks for breast cancer survivors that provide a broad range of social support.

9:15am - 9:30am

Aerobic exercise for major depressed adult patients in mental health services: a systematic review and meta-analysis

Ioannis D. Morres¹, Antonis Hatzigeorgiadis¹, Afroditi Stathi², Nikos Comoutos¹, Chantal Arpin-Cribbie³, Charalampos Krommidas¹, Yannis Theodorakis¹

¹University of Thessaly, School of Physical Education and Sport Science, Trikala, Greece; ²University of Birmingham, School of Sport, Exercise and Rehabilitation Sciences, Birmingham, UK; ³Laurentian University, Department of Psychology, Ontario, Canada

Exercise interventions are associated with depression relief, but the effects of aerobic exercise on clinically depressed adult patients have not been examined. This study examined the antidepressant effects of aerobic exercise vs. non-exercise comparators among randomised controlled clinical trials with exclusively depressed adults (18-65 years) recruited via mental health services with a referral or clinical diagnosis of major depression. Relevant trials were searched across 11 e-databases. A random-effects meta-analysis (Hedges' g criterion) pooled post-intervention scores of depression. Heterogeneity (I²) and publication bias were examined. Trials were coded considering characteristics of participants and interventions, outcomes and comparisons made, and study design. Accordingly, sensitivity and subgroup analyses were calculated. We recorded 11 eligible trials with a total of N = 455 patients. Aerobic exercise was delivered on average for 45 minutes, at moderate intensity, three times per week, for 9.2 weeks, and showed a significant large overall antidepressant effect (g = -0.79, 95% CI = -1.00, -0.57, p < .00) with low and non-significant heterogeneity (I² = 21%). We found no publication bias. Sensitivity analyses demonstrated large or moderate to large antidepressant effects for aerobic exercise with low/non-significant heterogeneity (I² < 33%) among trials with a lower risk of bias, trials with up to 4-week interventions and trials involving individual preferences for exercise. Subgroup analyses demonstrated comparable effects for aerobic exercise across various settings and delivery formats, and in both outpatients and inpatients regardless of symptom severity. Notwithstanding the small number of trials reviewed, aerobic exercise emerged as an effective antidepressant intervention.

9:30am - 9:45am

Eating disorder (ED) symptoms and compulsive exercise in adolescent girls with ED, dancers and soccer players

Cristina Cuesta-Zamora¹, Maria Dolores Gomez Castillo², Mercedes Esparcia Moreno², Veronica Escrivá Saez², Carolyn Plateau³, Jorge Javier Ricarte Trives¹

¹Psychology Department (Castilla-La Mancha University, Spain); ²Eating Disorders Unit of the Mental Health Services in the Hospital Complex of Albacete (Spain); ³Centre for Research into Eating Disorders and Behaviours (Loughborough University)

Compulsive exercise is a core feature in eating disorders (EDs) and is associated with a greater risk of relapse and suicide. However, the role of compulsive exercise in aesthetic and non-aesthetic sports remains unstudied.

n = 36 adolescent girls with EDs (mean age = 15.78), n = 31 adolescents practising professional dance (mean age = 13.24) and n = 36 adolescents who practise soccer (mean age = 14.54) were recruited and compared on levels of ED symptoms and compulsive exercise. Participants completed the Eating Disorder Inventory-3 and the Compulsive Exercise Test.

Comparing the dance and soccer groups, the ED group scored higher on body dissatisfaction, total ED symptoms and compulsive exercise. However, there were no significant differences between the ED group and soccer group for bulimia symptoms and drive for thinness. There were no significant differences between dancers and soccer players on ED symptoms and levels of compulsive exercise.

Elevated compulsive exercise was associated with ED symptoms in all of the groups, suggesting that compulsive exercise could be a maintaining factor for ED symptoms in adolescent girls. The lack of differences in levels of compulsive exercise and ED symptoms between dancers and soccer players is in contrast with existing literature suggesting that the risk of ED is greater in aesthetic sports than non-aesthetic sports. This is the first known study to compare levels of compulsive exercise between aesthetic and non-aesthetic sports and clinical population in adolescent girls. Future research with a wider population (e.g. wider age range) is needed to clarify the findings of this study.

9:45am - 10:00am

The influence of obsessive and harmonious passion on running-related injuries in long-distance runners

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Passion is often touted as an admirable quality in various domains of sport. Vallerand (2003; 2010) nuanced the generally optimistic view of passion with the Dualistic Model of Passion, which discerns the, more positive, harmonious and, more negative, obsessive passion. Applied to long-distance runners we hypothesise that runners high on sport-specific obsessive passion are more likely to experience running-related injury (RRI) than runners high on sport-specific harmonious passion, due to overtraining mechanisms. To intervene on this mechanism we developed the mobile app (REMBO). This app focusses on improving mental recovery and improving the balance between load and 'loadability'. We focus on the relation between REMBO as an intervention, passion, and RRI.

We executed a randomised controlled trial with follow-up measurements (average response ratio was 67%) on a sample of N=425 long-distance runners, with the REMBO app functioning as the intervention. RRIs after the intervention period were the main outcome variable, controlling for RRIs before that period.

Binary logistic analyses showed that participants in the intervention group who used REMBO experienced no negative effects of high obsessive passion but reported significantly fewer RRIs if they scored higher on harmonious passion. Conversely, those who were in the intervention group but did not use REMBO showed an increase in RRIs if their obsessive passion was high yet showed no effect of harmonious passion. In the control group, neither type of passion showed any effects.

The use of the REMBO app contributes to the prevention of RRIs of long-distance runners with high harmonious passion.

Paper Session 09: Olympic, Paralympic, Elite and Team Sport

Time: Tuesday, 16/Jul/2019: 8:30am - 10:00am · Location: VSH 17 - Westphalia

Session Chair: Gretchen Kerr, University of Toronto

8:30am - 8:45am

Lifestyles and mindsets of Olympic, Paralympic and World Champions: is an integrated approach the key to elite performance?

Lauren Burns¹, Marc Cohen¹, Juanita Weissensteiner²

¹RMIT, Australia; ²New South Wales Office of Sport, Australia

International sporting bodies advocate a holistic approach to the athletic profile and environmental and system level factors required for world-class sporting performance, yet key lifestyle, relational, training, and performance practices are commonly overlooked (Fletcher & Sarkar, 2012; Henriksen, 2010; Weissensteiner, 2017). To determine how lifestyle and mindset impacts on elite performance we conducted in-depth interviews of 10 world, Olympic and Paralympic champions that identified four dominant, overlapping themes: psychological attributes, interpersonal relationships, performance strategies and lifestyle practices (Burns, 2018). All athletes attributed their success to psychological rather than physical factors and the vast majority relied on mental-rehearsal skills and recovery practices. The findings suggest that championship performance is likely to occur at the intersection of psychological prowess, self-regulation, interpersonal support, effective performance strategies, and lifestyle. These results further suggest the athletic profile and support required to reach and sustain podium level performance is multi-dimensional, integrated and individualised with psychological factors being paramount and that an integrated approach inclusive of these dimensions can be used to guide athlete development and support at both at an individual and collective level.

Further research is underway, involving a survey of a broader section of elite athletes which aims to explore the importance and contribution of lifestyle practices to athlete development, well-being and sporting performance and determine differences between different sports or levels of performance. The findings will be used to inform and refine current education approaches and resources and related strategy and practice supporting pathway athletes, their coaches, parents and other support agents.

8:45am - 9:00am

Assessing aspirations and motives of athletes participating in Special Olympics through a qualitative design

Emmanouil Georgiadis, Allison Boggis

University of Suffolk, United Kingdom

Many individuals with intellectual disabilities (ID) feel isolated, rejected and marginalised from physical activities. The Special Olympics (SO) is an organisation that provides them with an opportunity to participate in sport and exercise in an environment free from negative judgement. Research on SO has focused mainly on the parents' views (Kersh & Siperstein, 2007). What remains unexplored are the athletes' perspectives regarding their experience and motives for taking part in SO and how much responsibility and choice they are receiving during training and competition. N = 5 athletes from a local SO athletics club agreed to take part in focus-group interviews, which were recorded and transcribed. Thematic analysis was used to identify any emerging themes and patterns of interest between participant responses. We identified the following themes: 1) responsibility, how much responsibility the athletes are given during training and competition; 2) choice, how much choice athletes are allowed to have; 3) meaning, what training and competing in SO means to them and if there is anything they would change; 4) things to amend, detrimental practices or behaviours that do not sustain a healthy lifestyle. In relation to previously published research studies, there was a better understanding of the SO athletes' needs. Athletes appeared to request more responsibility and more choice during training. Results are discussed in terms of coaches' behaviours and the ways they have to support those needs.

9:00am - 9:15am

The emergence and perpetuation of toxic cultures in Olympic sports in the United Kingdom

Niels Feddersen, Robert Morris, Martin Littlewood, David Richardson

Liverpool John Moores University, United Kingdom

Recent global events in elite sports (i.e. Nassar abuse-case and allegations of a culture of bullying in elite sports in the United Kingdom) has emphasised the importance of understanding the development and enactment of cultures in elite sports – especially those which have toxic features to them (Grey-Thompson, 2017; McCradden & Cusimano, 2018). This study aimed to explore the process of a change of culture in Olympic Sports in the United Kingdom.

We conducted a 16-month longitudinal study with one Olympic sport in the United Kingdom. The primary data collection was ethnographic observations supplemented by nine focus groups, two with athletes (n = 15), four with coaches (n = 10), two with parents of athletes (n = 13), and one with talent development personnel of the national governing body (n = 4). We analysed the data using a grounded theory approach (Corbin & Strauss, 2015).

The core concept was ongoing power relations, and toxic subcultures emerged under structural conditions characterised by a lack of oversight, lack of supervision, radical changes to normative practices, and a disengaged community within the sport. The stigma of toxic behaviours (e.g. vocal criticism, deception, and manipulation) was neutralised through social weighting (i.e. condemn the condemner), denial of victims, and the malleability of euphemistic language.

This study highlights that governing bodies and organisations in Olympic sports should be vigilant of how subcultures experience changes as a challenge to their survival - imposing radical changes could lead to the emergence of toxic subcultures depending on perceived threats to survival or social position.

9:15am - 9:30am

Transformational leadership in briefing: a case-study in elite team sports

Anne-Claire Macquet¹, Marie Le Menn^{1,2}, Neville Stanton³

¹French Institute of Sports, France; ²University Paris-Descartes, France; ³University of Southampton

For coaches and elite athletes, the briefing is particularly important for top performance. A briefing provides athletes with information about the task and team-work as well as inspiring athletes with a positive vision of the outcome (Lainé et al., 2016). Coaches behave as leaders (Smith et al., 2017). The Differentiated Transformational Leadership Inventory (TDLI, Callow et al., 2009) was used to explore leadership behaviours in the briefing. This study aims to identify head coaches' (HCs) behaviours during major competitions, for briefing elite team-sport players. N = 9 national HCs voluntarily participated in semi-structured interviews. They were shown to use seven behaviours: a) present players with an assessment of the opponent team's game and game plan, (b) provide players with roles, (c) encourage players to analyse their opponent team's game when developing their own game plan, (d) encourage players to be flexible and adapt tactics, (e) manage players' stress and fatigue, (f) enable players to implement tactics from the briefing, and (g) foster motivation. These behaviours referred to transformational leadership behaviours (a-b: fostering acceptance of group goals, c-d: intellectual stimulation, e-f: individual consideration and g: inspired vision). The data highlighted that the HCs frequently fostered the acceptance of group goals and considered the players' needs and feelings. This suggests that the HCs promoted cooperation among players and were concerned with the players' well-being. Results are consistent with the TDLI (Callow et al., 2009). Results have been used to improve HCs transformational leadership behaviours in the briefing.

9:30am - 9:45am

Short- and long-term effects of a team-building intervention using outdoor activities

Oliver Stoll, Anne Lenz

Martin-Luther-University Halle-Wittenberg, Germany

The aim of this study was to evaluate a team-building-intervention with female soccer-teams, using an outdoor activity (as often used in practice). The dependant variable was team-cohesion (measured with the MAKO-O2). A quasi-experimental-study design was used. Two teams of the German 3rd Bundesliga acted as an intervention group (n = 34) and two other teams (same league, same gender) acted as a no-intervention-control-group (n = 40). The intervention consisted of an outdoor-activity, using different experience-educational tasks in partner-settings (1 day) - usually called "Team-Day", which is wide spread in the German Bundesliga before the start of the season. The measurements took place at three points (before and after the intervention as well as three months follow-up). At this point, we report the results after two measurement-points. The data were analysed using a General Linear Model. As a main result, an interaction-effect (Time x Group) could be determined ($F = 10.75$, $p = .000$, $n_2 = .240$). This effect is due to the fact that the intervention-group increased in the cohesion scores while the scores of the control group stayed stable. Furthermore a main-effect time ($F = 11.90$, $p = .000$, $n_2 = .256$), but no main-effect group could be found.

This result shows evidence for the assumption that these kinds of team-building-interventions enhance team-cohesion as a short-term-effect. At the conference, we will present also the analysis after three points of measurement to see if this effect is also stable over three months.

Paper Session 10: Stress and Recovery

Time: Tuesday, 16/Jul/2019: 8:30am - 10:00am · Location: VSH 116 - Varna

Session Chair: Markus Gerber, University of Basel

8:30am - 8:45am

Assessing recovery and stress in three English-speaking regions - validation of the Acute and the Short Recovery and Stress Scale

Michael Kellmann^{1,2}, Sarah Kölling^{1,3}

¹Ruhr University Bochum, Germany; ²The University of Queensland, Australia; ³Stellenbosch University, South Africa

An effective athlete preparation optimally includes monitoring training load and the psychophysiological response (Bourdon et al., 2017). Psychological processes play an important role in the recovery-stress continuum, so self-report measures are useful tools to determine stress and recovery (Meeusen et al., 2013; Saw et al., 2016). The Acute Recovery and Stress Scale (ARSS) and the Short Recovery and Stress Scale (SRSS; Kellmann et al., 2016) were developed for regular monitoring routines. As no comparable English questionnaire had previously been available, the ARSS and SRSS were translated and validated for its application in three English-speaking regions.

Overall, N = 996 athletes (24.9 ± 9.1 years) of Australia/New Zealand (n = 380), the United Kingdom (n = 316), and North America (n = 300) participated via online surveys. The 32 adjectives (rated from 0 to 6) of the ARSS are summarised into eight scales. These scales constitute the items of the SRSS using the corresponding adjectives as descriptors. Confirmatory Factor Analysis (CFA), internal consistency (α), and discriminatory power of the items ($r[it]$) were calculated.

Satisfactory discriminatory power ($r[it] > .30$) for all ARSS and SRSS items and acceptable internal consistency ($\alpha > .70$) were achieved. Model specifications within CFA indicated good fit indices for the total sample and subsamples, although limitations apply for the North American subsample. Spearman correlations between corresponding scales and items ($r[s] = .68 - .78$) support theoretical congruency as well as independent usage of both questionnaires. Thus, the ARSS and SRSS are promising tools for training monitoring in English-speaking regions worldwide.

8:45am - 9:00am

Modification and applicability of questionnaires to assess the recovery-stress state among adolescent and child athletes

Sarah Kölling^{1,2}, Michael Kellmann^{1,3}

¹Ruhr University Bochum, Germany; ²Stellenbosch University, South Africa; ³The University of Queensland, Australia

Despite the establishment of self-report measures in training monitoring, there is a lack of research regarding their applicability among developing athletes. This group needs special considerations to balance increasing training demands, health, and performance (Bergeron et al., 2015; DiFiori et al., 2014). The present study deals with the challenges of assessing recovery-stress states among developing athletes using questionnaires which were validated with adult populations.

The Acute Recovery and Stress Scale (ARSS), a 32-adjective list covering eight scales, and the 8-item derived version, the Short Recovery and Stress Scale (SRSS; Kellmann et al., 2016) were answered by N = 1,052 athletes (aged 10-16 years). In phase I, 302 athletes (14-16 years) answered the original questionnaires with the option to mark "I don't understand", while in phase II, modified versions with additional explanations were applied to 438 adolescents (14.7 ± 0.6 years) and 312 child athletes (11.8 ± 1.1 years).

Comparable psychometric properties to the validation sample were found, although more difficulties and limitations were present within the children's group, and especially among 10- and 11-year-olds. While modifications lead to improved values of the ARSS scales among adolescents, further modification is necessary for children. The modified SRSS indicated good applicability for children.

Overall, these findings confirmed the assumption that questionnaires designed for adults cannot be directly transferred to younger athletes. Peculiarities of each age group and differences in the cognitive-affective development should be considered. Future research needs to identify a minimum age to start the proper application of state-oriented questionnaires in monitoring training.

9:00am - 9:15am

Best better rest: conceptualisation of a seasonal recovery-stress monitoring routine in a German elite woman soccer team

Fabian Loch¹, Annika Hof zum Berge¹, Daniel Kraus², Michael Kellmann^{1,3}

¹Ruhr University Bochum, Germany; ²Sportgemeinschaft Essen-Schönebeck 19/68 e.V.; ³The University of Queensland, Australia

In elite women soccer, players have to balance various challenges of training and competition (club/national team) and additional demands of university and work. As the multifaceted demands are constantly increasing, comprehensive and holistic monitoring is essential to understand an athlete's training response and recovery-stress states.

Differentiated monitoring routines of self-report measures were implemented at the start of the season 2018/19. The Recovery-Stress-Questionnaire (RESTQ; Kallus & Kellmann, 2016) was used to gauge current stress symptoms and recovery-associated states on specific measuring points (e.g. start pre-season, start in-season, end in-season). Players completed the Short Recovery Stress Scale (SRSS; Kellmann et al., 2016) and a short training survey on a daily basis in order to monitor acute recovery-stress states and training demands. In addition, during the first half of in-season, comprehensive sleep monitoring via protocols, actigraphy and portable polysomnography were implemented to gather subjective and objective sleep parameters. For easy and quick access to daily monitoring questionnaires, an internet-based monitoring tool was applied.

Daily monitoring data was used to understand players' training responses and to periodise training sessions. Weekly monitoring reports were prepared (SRSS, training survey) for coach and sport psychologist with the aim to overview players' recovery-stress balance and also used as an opener for individual conversations with athletes. Based on sleep monitoring data workshops were planned to present specific sleep-management strategies (e.g. sleep hygiene) and to modify players' recovery strategies (e.g. breathing regulation). Nonetheless, future work in elite woman soccer is needed to improve multidimensional and individualised monitoring routines.

9:15am - 9:30am

Does a brief slow-paced-breathing intervention facilitate coping with a sport-specific stressor?**Marie Ottilie Frenkel¹, Sylvain Laborde², Laura Giessing¹, Jan Rummel³, Christian Kasperk⁴, Henning Plessner¹**¹Institute for Sport and Sport Sciences, Heidelberg University, Germany; ²Institute of Psychology, German Sport University Cologne, Germany; ³Psychological Institute, Heidelberg University, Germany; ⁴Department of Internal Medicine I and Clinical Chemistry, Steroid Laboratory, Heidelberg University Hospital, Germany

It is widely known that stress and self-control depletion negatively affect sports performance (Englert, 2017). Simultaneously, performance can be enhanced through systematic sport-psychological interventions like breathing techniques (Birrer & Morgan, 2010). Slow-paced breathing interventions have been shown to positively influence physiological parameters like heart rate variability in a clinical sample (HRV; Laborde et al., 2016). The Neurovisceral Integrating Model expects a relation of vagal activity (HRV) and self-control (Thayer et al., 2009). However, there is a lack of studies focusing on the effects of brief breathing interventions on athletes. Therefore, the present study investigated the effects of a brief slow-paced-breathing intervention on a sport-specific stress task (Heidelberg Sport-Specific Stress Test, HSST; Frenkel et al., in review). The HSST involves a top-rope climbing task, in which stress is induced through an intentional jump (and fall of 4 meters) into the rope. N = 71 sport students underwent the HSST with a within-design with two conditions (breathing intervention vs. watching a documentary). Their psychological (anxiety) and physiological responses (cortisol, HRV) to the HSST were measured repeatedly. The results do not support the positive effects of the breathing intervention on the following HSST. In contrary, the breathing intervention depleted participants' momentary available self-control and reduced their motivation. Supporting the process model of self-control (Inzlicht et al., 2014), it seems to be crucial to control for intrinsic motivation when investigating the influence of self-control on performance. Therefore, future research is needed to specify the role of motivation in interventions that aim to enhance self-control.

9:30am - 9:45am

Effect of stress reduction therapy on selected psychophysiological variables in elite shooters**Abhaydev C S, Jaiprakash Bhukar, Nibu R. Krishna**

Lakshmbai National Institute of Physical Education, India

This study examined the effect of stress reduction therapy on the selected psycho-physiological variables among all India Interuniversity level Shooters of LNIPE, Gwalior. N = 20 elite shooters (mean age = 20 years, SD = 3) were randomly assigned to a treatment and control group. The treatment group attended 20-minutes session of MMT for eight weeks at a frequency of five days per week. The training program consisted of instruction regarding focused attention, breathing techniques intended to reduce sympathetic nervous system arousal, stress. Heart rate variability (HRV) and respiratory rate (RR) were measured through biofeedback instrument. Focused attention (FA) was measured through the Vienna Test System (VTS) and blood pressure (BP) was analysed with a BP monitor machine. ANCOVA was employed as the statistical tool with the level of significance set to 0.05. In the post-intervention, the treatment group exhibited a significant difference in the mean reduction of systolic blood pressure (SBP) (119.37mmHg) than the control group (126.03mmHg). The mean value of the experimental group (86.64) was significantly higher than the control group (74.15) for FA ability. The mean value of the experimental group (52.98) has significant difference than the control group (60.41) for HRV. The mean value of the experimental group (6.31) has significant difference than the control group (7.59) for RR. The reduction in SBP was significant in relation to the control group. Reduced SBP was correlated with reduced stress symptoms. The treatment group also demonstrated improvements in the HRV, RR and the FA ability, including significant reductions in stress symptoms.

9:45am - 10:00am

Yoga instead of traditional training programs as interventions to reduce stress in healthcare staff? A systematic review**Laura Luise Bischoff, Ann-Kathrin Otto, Carolin Hold, Bettina Wollesen**

University of Hamburg, Germany

Introduction: Due to demographic changes and shortages in the labour market, healthcare personnel are facing high workloads and exceptionally high stress-levels (Weinberg & Creed, 2000). Even though research focusing on potential beneficial effects of exercise on perceived stress is evolving (Gerber & Pühse, 2009), there are yet no systematic reviews examining the effect of physical activity interventions on stress in healthcare professionals.

Method: A systematic search was conducted in the databases PsycINFO, Medline and CINAHL in February 2018, using a combination of synonyms of the terms "healthcare professionals", "physical activity" and "stress". Included were all studies examining the effect of single component physical activity interventions on stress in healthcare professionals. Study quality was assessed using the Updated Method Guidelines for Systematic Reviews (Furlan et al., 2015).

Results: N = 9 studies were included. Examined interventions were yoga, Tai Chi, Qigong and different worksite training programs incorporating resistance and endurance exercises. None of the studies was rated high quality, with risks of performance and attrition bias. Studies observed a stress-reducing effect of yoga and qigong interventions, whereas traditional workplace physical activity programs and tai chi did not show significant results.

Conclusions: The present review reveals the need for further research and detailed descriptions of the conducted interventions to determine the effect of physical activity interventions on stress in healthcare staff. Nevertheless, it also illustrates that yoga and qigong might be an effective way of reducing stress in healthcare staff and should be incorporated into health promotion in the healthcare sector.

Symposium 04: Mental health in youth football in Europe: Recommendations for applied research and service delivery

Time: Tuesday, 16/Jul/2019: 8:30am - 10:00am · *Location:* H 2 - Bern
Session Chair: Carsten Hvid Larsen, University of Southern Denmark

Mental health in youth football in Europe: Recommendations for applied research and service delivery

Chair(s): **Carsten Hvid Larsen** (University of Southern Denmark, Denmark)

Discussant(s): **Mark Nesti** (Liverpool John Moores University)

Applied work with several top-level professional clubs in England suggests that youth players do not progress on to professional levels because of psychological challenges that impact negatively on well-being, mental health, and performance (Nesti, 2010). Recently, Jensen and colleagues (2018) revealed a higher prevalence of depression for young footballers compared to professional footballers. Lately, current views on mental health have shifted the focus from a negative conceptualization of mental health, as the absence of mental illness, to definitions that encompass positive aspects and include the level of functioning of individuals. The purpose of this symposium is to provide researchers and sport psychology practitioners with knowledge about mental health and practical guidance for working with mental-health issues with young footballers.

In the first contribution from Holland, there will be a closer look on the development of psychological assets, such as the ability to set goals, prepare for important events, coping with adversity and manage stress in school and football.

The second contribution from Denmark will illustrate which factors respectively correlate with mental disorders and which factors support well-being and mental health among $N = 68$ Danish youth footballers. Amongst other, results show that social support from the sports environment correlated positively with well-being and negatively with depression.

The third contribution from England will describe how experienced sport psychology consultants focus on new approaches of identity (e.g. existential and Jungian) from a holistic perspective, and stress the importance of meaning, psychological equilibrium and authenticity for sound mental health in young footballers.

Presentations of the Symposium

Psychological development in football and school: Who's responsible?

Remke Hekers, Vana Hutter

Vrije University Amsterdam

Football players normally enter football academies at a young age and will have to develop physically, psychologically and intellectually during their time there. Players need to be supported during these developmental tasks by a collaboration of stakeholders, mainly players themselves, parents, the staff at the academy, and the school system. In collaboration with a football academy and their associated school, we have investigated the views of parents, trainers/coaches, teachers and managers regarding the responsibility for different developmental tasks of football players. The main focus was on the development of psychological assets, such as the ability to set goals, to prepare for important events, to cope with adversity, to manage stress, etc. Subjects ($N = 108$) indicated who should be responsible (and to what extent) for the development of each of these assets. We differentiated between the school and sports context, for example, we asked respondents which stakeholders should be responsible to help players prepare for exams in school, and which parties for helping to prepare for an important game. In addition, we asked respondents to indicate their perception of the current collaboration between players, the academy, the school and the parents.

We will present three main findings: 1) a comparison between the views of different stakeholders (e.g., parents versus academy staff) on responsibilities to help the athlete grow psychologically, 2) a comparison between responsibilities for development in sport and development in school, and 3) a comparison between the preferred division of responsibilities and the perceived reality.

Mental health in Danish football: The role of protective factors in youth academies

Carsten Hvid Larsen, Andreas Küttel

University of Southern Denmark

Football, and sports, in general, offer many opportunities to promote mental health and well-being and to develop social and emotional skills. The sporting context can be an excellent social-emotional training ground, where players engage in teamwork and make use of psychological and emotional skills (Aquilina 2013). There may, however, be a downside to the intense involvement in organized sports that is required to be successful in elite football. The aim of this presentation is to determine which factors respectively correlate with mental disorders and which correlate with factors that support well-being and mental health in elite football. $N = 68$ Danish youth football players (M age = 15.59, $SD = 1.18$) participated in an online survey which included the short version of the Warwick-Edinburgh Mental Well-Being Scale (SWEMWBS), the Center for Epistemological Depression Study (CES-D), and the General Anxiety Disorder (GAD-7) scale. Correlation analyses between well-being, depressive symptoms, anxiety and factors related to mental health were conducted. Perceived stress from sports was negatively related to well-being (-.30) and positively to CES-D (.38) and GAD-7 (.34). Perceived stress in private life correlated negatively with well-being (-.38) and positively with CES-D (.52) and GAD-7 (.46). A sporting environment that allows for autonomy and self-determination correlated positively with well-being (.33), but had no significant influence on depression and anxiety. Social support from the sporting environment correlated positively with well-being (.32) and negatively with CES-D (.28). The results show what and how football academies could consider to develop psychosocial skills and an environment that supports mental health.

Mental health in premiership football cademies: Cultural, organisational and individual challenges

Mark Nesti, Martin Littlewood

Liverpool John Moores University

Drawing on over 20 years involvement working as sport psychologists' in English Premier League football, we consider how culture and organisational psychology play an important part in guaranteeing optimal mental health for young players and the wider support staff. We will examine the ways in which identity, values and ethics can contribute to creating a culture of excellence for the psychological growth and development of individuals. Our recent research and applied reflections strongly suggest that the concept of identity is of central importance to any efforts to improve mental health in Academy players. The presentation focuses on new approaches to identity (e.g., existential and Jungian) that take a holistic perspective, and which stress the importance of meaning, psychological equilibrium and authenticity for sound mental health. We discuss how culture and individual activity need to be aligned to ensure that a psychologically healthy organisational identity can emerge and be sustained. Particular attention will be directed at the roles and responsibilities that parents and coaches should adopt when aiming to create the best environment for psychological health and performance success. Recommendations will be offered in relation to what sport psychologists could do to support this task and, more specifically, we look at how the sport psychologist might choose to work directly with individual players and through coaches to achieve this aim.

Symposium 05: Talent identification, development and dropout in sports. The role of motivation, psychological competencies and mental health

Time: Tuesday, 16/Jul/2019: 8:30am - 10:00am · *Location:* H 3 - Madeira
Session Chair: Claudia Zuber, University of Bern

Talent identification, development and dropout in sports. The role of motivation, psychological competencies and mental health

Chair(s): **Claudia Zuber** (University of Bern, Switzerland)

From a practical point of view, talent researchers should be able to answer the following two questions; Which predictors can we use to identify successful athletes in the future? And in view of sporting successes at peak performance age, how can we prevent promising young athletes from leaving the sport early to preserve the resources that were invested? In this symposium, current results will be presented concerning the prediction of a) athletic performance in world-class and high-potential athletes and b) continuation or dropout in youth elite sports. The focus therein lies on psychological variables, whereby their significance is investigated in both team and individual sports.

In the first presentation, Suzan Blijlevens will present qualitative data on psychological competencies that characterise world-class beach volleyball players in comparison to competitive beach volleyball players and explores whether the competencies of world-class athletes are already present in high-potential beach volleyball players

Following on, Michael Schmid's presentation of his longitudinal mixed-method project deals with patterns consisting of psychological and performance variables which predict future success in rowing at an international level.

Third, Hanna Granz will focus on the prevalence of burnout symptoms and the dispositional and environmental factors associated with burnout in a sample of adolescent elite athletes.

For the final presentation, Johan Wikman investigates which factors affect motivation and how motivation is related to continuation or dropout in Danish football players. The presentation will include baseline results from his longitudinal study.

Presentations of the Symposium

What to do to succeed? A qualitative study on the competencies of high-potential and world-class beach volleyball players

Suzan Blijlevens¹, Paul Wylleman², Kayan Bool³, Chris Visscher⁴, Marije Elferink-Gemser⁴

¹Vrije Universiteit Brussel: NOC*NSF; University of Groningen, ²Vrije Universiteit Brussel: NOC*NSF, ³NOC*NSF, ⁴University of Groningen

An athlete's actual behaviour in dealing with developmental challenges plays a key role in their progressive accumulation of expertise. Questions of how psychological competencies are reflected in athletes' actual behaviour during training, competition and in their daily lives, and how these competencies influence their actions in the face of challenges, remain underexplored. The primary aim of our research was to determine the psychological competencies that characterise world-class beach volleyball players in comparison to competitive players and how these are reflected in their behaviour. A secondary aim was to explore whether the competencies of world-class athletes are already present in high-potential beach volleyball players. Data were gathered from in-depth interviews held with 28 beach volleyball players (both male and female), of whom 8 were world-class, 7 competitive and the remaining 13 were high-potential beach volleyball players in the initiation and development phase of their athletic development. The data were interpreted using thematic analysis. World-class players were differentiated based on 10 self-reported competencies within four thematic clusters: (1) knowing what to do and actually doing it, (2) focusing on personal development, (3) internal attribution of actions and (4) proactive behaviour and a hands-on attitude. The results yielded qualitative insights about the psychological competencies of world-class athletes and how they should be developed in high-potential athletes to enable them to perform at a world-class level.

Patterns of achievement-motivated behaviour as indicators for future performance in rowing

Michael Schmid, Achim Conzelmann, Claudia Zuber

University of Bern

Talent identification in rowing is often solely based on anthropometric factors and performance variables (e.g. Bourgois et al., 2010), even though psychological characteristics are considered to be important contributors to successful talent development (e.g. MacNamara et al., 2010). Since multidimensional talent models represent the state-of-the-art (Zuber et al., 2016), this project aimed to find patterns consisting of psychological and performance variables which can predict future success in rowing.

In this study, 22 coaches rated at t1 the achievement-motivated behaviour (AMBIS-I; Zuber & Conzelmann, in review) of 65 athletes (Mage = 17.2±1.55 years) for the past year. Additionally, the athletes performed several 2000m tests on the rowing ergometer during that same period. Afterwards, it was checked which rowers were selected for international regattas two years later (t2). We conducted a cluster analysis based on the variables proactivity, ambition, commitment and ergometer test performance at t1, then identified the transitions to the selections at t2.

The rowers could be assigned to five clusters (EES% = 59.2; HCmean = 0.87). Although the athletes of the cluster "highly motivated rowers" were not the fastest on the ergometer at t1, they were significantly more likely to be selected for international regattas at t2 compared to the other clusters (OR = 5.04, p<.01). By contrast, all athletes of the cluster "ambitionless rowers" were either racing at club level or dropping out (OR = 6.35, p<.01).

Achievement-motivated behaviour can help to predict future performance in rowing. Thus, it is beneficial to select rowers not only based on anthropometric factors or performance results.

Burnout in junior elite athletes: Approaching prevalence and determinants

Hanna L. Granz, Alexia Schnell, Ansgar Thiel

University of Tübingen

In elite sport, an athlete's physical as well as psychological health is an essential requirement of functionality. The extensive demands inherent to elite sport can lead to chronic stress and manifest to burnout, which has been shown to lead to a heightened dropout rate (Isoard-Gauthier, Guillet-Descas, & Gustafsson, 2016). Athlete burnout is regarded as a complex multi-causal syndrome with three main symptoms: 'Emotional and physical exhaustion', 'reduced sense of accomplishment' and 'sport devaluation'. In this study, we aim to assess the extent of junior athletes afflicted by burnout symptoms. Further, we want to determine the individual and environmental factors associated with heightened burnout symptomatology.

1138 young elite athletes (M = 16.33 years, SD = 1.10) from all Olympic disciplines were assessed regarding athlete burnout symptomatology and several dispositional correlates (e.g. willingness to sacrifice, perfectionism) and environmental correlates (e.g. hours of training, coach's style of leadership).

Analyses showed that 23.1 % of our sample report repeated symptoms of physical and emotional exhaustion, 10 % report recurring symptoms of a reduced sense of accomplishment and 6 % perceive a certain devaluation of their sport. Associations with burnout correlates will be analysed via multivariate methods.

By assessing prevalence and deciphering the underlying factors, this research can provide important practical implications for the elite sport system, in which it remains a struggle to keep promising young athletes from dropping out and staying performance-capable and healthy.

The relationship between coach-created motivational climate, motivation and playing level in youth football

Johan Michael Wikman¹, Peter Elsborg², Glen Nielsen³

¹Halmstad University, ²Steno Diabetes Center, ³University of Copenhagen

Danish football struggles with high dropout rates during the youth years, and this has consequences for physiological and psychological health (Oja et al., 2015) as well as the chances for developing sporting excellence (Côté & Vierimann, 2014). Therefore, it should be investigated how motivation is related to continuation or dropout, but also which factors affect motivation.

Research has shown that coaching behaviour affects motivation (e.g. Gillet et al., 2010). As coaching behaviour, and the motivation climate it creates, is a possible target for an intervention (e.g. Duda, 2013), it seems important to investigate how football participants experience the coach-created motivational climate, and how this affects motivation.

Therefore, the aim of this study is to investigate coaching behaviour as well as motivation, and how this is related to continuation and development in playing level in young football players.

A link to an online questionnaire consisting of the Behavioral Regulation in Exercise Questionnaire (Markland & Tobin 2004; Wilson et al. 2006), the Basic Psychological Needs Questionnaire (Vlachopoulos et al. 2009) and the Empowering and Disempowering Motivational Climate Questionnaire (Appleton et al., 2016) was administered through email to 27669 players aged 12-20 through a regional subdivision of the Danish Football Association. Follow-up measurements will be conducted every year for five years with the same measurements. Structural equation modelling will be used to investigate the relationship between coaching behaviour, motivation, continuation and playing level.

This presentation will include the longitudinal design of the study and the results from the baseline measurements.

Symposium 06: On the importance of self-control in sport and exercise psychology

Time: Tuesday, 16/Jul/2019: 8:30am - 10:00am · *Location:* H 4 - Chalkidiki

Session Chair: Chris Englert, University of Frankfurt

Session Chair: Ines Pfeffer, Medical School Hamburg

On the importance of self-control in sport and exercise psychology

Chair(s): **Chris Englert** (University of Frankfurt, Germany), **Ines Pfeffer** (Medical School Hamburg)

Self-control describes a process, which enables us to inhibit dominant response tendencies in order to achieve desirable (long-term) goals. This process is especially important in sport and exercise contexts, where individuals often have to ignore immediate sensations of pain or fatigue and instead have to focus on the long-term benefits of their behaviours. Self-control is also highly important among individuals engaging in physical activity for recreational or health reasons. For instance, self-control is needed to resist the temptation to postpone a scheduled, potentially exhausting workout session. However, exerting self-control is effortful and failures are common. For example, individuals who have to strongly regulate themselves during the day (e.g., coping with stress at work), tend to be less likely to execute their workout intentions in the evening. There are also strategies designed to support self-control, which might ultimately lead to better sport performance and higher physical activity levels.

The aim of this symposium is to give an overview about recent research on self-control in sport and exercise contexts. The first talk discusses the role of executive functions in a planning intervention study to promote a physically active lifestyle. The second talk demonstrates the importance of self-control in soccer refereeing. The third talk is about training for excellence in sport, music and dance. The fourth talk highlights the importance of self-control strength for regular physical activity. Finally, the fifth talk deals with self-control and body language.

Presentations of the Symposium

The role of executive functions in a planning intervention study to promote physical activity behaviour

Ines Pfeffer, Tilo Strobach

Medical School Hamburg

Objectives: Planning interventions helps people to translate their physical activity intentions into action and to reduce the intention-behaviour-gap (Hagger & Luszczynska, 2014). The aim of our study was to examine the moderating role of executive functions (EFs; Miyake & Friedman, 2012; Miyake et al., 2000) for the effectiveness of a planning intervention on the intention-behaviour-gap in physical activity behaviour.

Methods: We conducted a randomised controlled trial with two points of measurement (t1 and t2 with a one week interval) and two groups: (1) planning intervention group, and (2) control group. Young adults (N = 201; 18-30 years old) participated in the study. At t1 participants filled in standardised questionnaires assessing physical activity behaviour, intention as well as action and coping planning. Six computer based tests assessed the EFs inhibition, updating and shifting. At t2 action and coping planning as well as physical activity behaviour were measured again.

Results: Moderated mediation models revealed that the specificity of the action and coping plans is a significant mediator of the intervention effect on the intention-behaviour-gap particularly for those with poor EF performance but only partially for individuals with high EF performance.

Conclusions: Planning interventions are an effective compensating self-regulatory strategy for people with low EF performance with regard to the intention-behaviour-gap. In contrast, individuals with strong EFs possibly rely on other self-regulatory strategies than generating and following rigid physical activity plans particularly when the initial action plan failed.

Self-control strength and performance in soccer referees

Roy David Samuel¹, Chris Englert², Qian Zhang³, Itay Basevitch⁴

¹Kibbutzim College of Education Technology and the Arts, ²University of Frankfurt, ³Florida State University, ⁴Anglia Ruskin University

Objectives: Soccer refereeing requires exercising self-control in order to optimally manage the various physiological, professional, and mental performance demands. In this study, the strength model of self-control (e.g., Baumeister & Vohs, 2016) was applied to examine the relationship between self-control strength and refereeing performance.

Design and methods: Israeli soccer referees (N = 16) representing several professional levels completed a trait self-control scale. Then, over several real matches, they completed measures of daily hassles prior to the match and state self-control prior to and after the match. Personal, situational and performance indices were also collected.

Results: Data were analysed using several statistical procedures, including hierarchical linear modeling. The referees exhibited high levels of trait as well as state self-control. A noticeable decrease (10% or more) in state self-control strength (i.e., ego depletion) was evident in almost half of the matches. Experience of daily hassles and travel time to the match were related to lower pre-match state self-control. Ego depletion was associated with self-reported match difficulty and was negatively related to self-rated match performance.

Conclusion: These findings are in line with previous studies and the strength model of self-control. Practitioners should support referees in planning match day routines as well as teach them self-control skills. Referee unions can assist referees in decreasing daily hassles prior to challenging matches, by announcing match allocation much earlier, so referees can plan their work schedule. Also, by providing car services and even accommodation to referees who need to travel over a long distance.

Training for excellence in sport, music and dance

Raoul Oudejans¹, Frank C. Bakker¹, Jolan Kegelaers²

¹Vrije Universiteit Amsterdam, ²Amsterdam University of Applied Sciences

Objectives: In sport, music and dance, performers have to be able to execute complex perceptual-motor skills under high-pressure circumstances (e.g., Olympic finals). To reach excellence, many hours of training are needed. However, over the last decades there is growing awareness that what one does in all those hours is essential as well (i.e., quality of practice). The Training for Excellence project is aimed towards implementing and evaluating quality training methods, based on – among others – principles of deliberate practice (i.e., highly structured self-regulation training activities involving setting concrete practice goals, planning how to reach these goals, generating feedback and reflecting on progress (Ericsson & Poole, 2016). In this presentation we will present preliminary results of a study with music students.

Methods: Over the course of three weeks, 12 music students prepared for a specific performance of a new music piece, using deliberate practice and self-regulated learning. A process evaluation was conducted using a mixed methods design. Both quality and quantity of practice was monitored at regular intervals during the practice period. After completing the performance, the novel practice routines were evaluated using both qualitative and quantitative measures.

Results: Preliminary data shows that the high-quality training sessions are seen as a valuable addition to regular training routines and might improve performance in high-stress situations.

Conclusion: By stimulating self-regulated learning and thus the quality of training, more can be achieved in less time. The next step is to structurally implement these training methods in practice of sport, music and dance.

On the importance of self-control strength for regular physical activity

Darko Jekauc¹, Chris Englert², Emily Finne³

¹Karlsruhe Institute of Technology, ²University of Frankfurt, ³University of Bielefeld

Objectives: Physical activity intentions do not automatically lead to physical activity behaviour, indicating that there are other (psychological) factors involved. In the present study, we tested the assumption that self-control strength is required to bridge the intention-behaviour-gap in terms of initial and weekly intentions.

Design: A total of N = 259 individuals, who registered for a weekly university sports course, were followed for 13 weeks.

Methods: At baseline, trait self-control strength as well as the intention to take part in the respective sports course on a regular basis were measured. Then, we registered weekly participation and asked the participants after each training session to report their intention to show up at next week's training session.

Results: Despite very high baseline as well as weekly exercise intentions, the participation rate dropped considerably over time, indicating a large intention-behaviour-gap. The association of within-person fluctuations in weekly intentions and actual participation was moderated by self-control: Only individuals with high levels of trait self-control stronger intentions were associated with a higher chance of actual re-attendance. Baseline intention was also associated with participation but not moderated by self-control.

Conclusions: These findings indicate that high levels of self-control strength are beneficial in order to translate short-term intentions into actual behaviour. Practical implications on how to improve self-control are discussed.

Self-control and body language

Philip Furley

German Sports University

High level athletes and officials deliberately try to present themselves in a desirable manner. An important aspect of this impressions management (Schlenker, 1980) is the deliberate use of body language and facial expressions (nonverbal behaviour; NVB). However, the display of NVB is believed to vary along a continuum of controllability (DePaulo, 1992) with some forms of NVB being displayed automatically, while other forms of NVB can be deliberately used to convey a desired impression. The first part of the presentation will review research showing that athletes' and officials' NVB often automatically "leak" information about internal states that they might rather want to hide (Furley & Schweizer, 2019). Contextual influences like a person's self-control capacity is assumed to influence the degree to which people can control NVB. In this respect, a series of experiments showed that observers could reliably infer how intact a person's self-control capacity was based on short recordings of people's nonverbal behaviour (Furley, Kohlhaas, Englert, Nieuwenhuys, & Bertrams, 2019). This finding provides indirect support for the assumption that people need self-control capacity to present themselves in a desirable manner (if this does not come to them "naturally"; i.e. is automatic). Hence, athletes and referees might be able to use their body language to present themselves favorably when relaxed and rested, but might have more trouble controlling their body language after long durations of intense competition or after prior self-control exertion. I will discuss how (and when) NVB can likely be controlled to support sport performance.

Symposium 07: Optimising athletes' dual careers in Europe: from research to applications

Time: Tuesday, 16/Jul/2019: 8:30am - 10:00am · *Location:* VSH 19 - Paris

Session Chair: Natalia Stambulova, Halmstad University

Optimising athletes' dual careers in Europe: from research to applications

Chair(s): **Natalia Stambulova** (Halmstad University, Sweden)

Discussant(s): **Paul Wylleman** (Vrije Universiteit Brussel, Belgium, NOC*NSF, Netherlands)

Dual career (DC) is defined as “a career with major foci on sport and studies or work” (Stambulova & Wylleman, 2015, p.1). Relevant research and practice in Europe have been informed by specific DC context in the EU countries (e.g., separated sport and education settings) and inspired by White Paper on Sport (EC, 2007), and additionally by the European Guidelines on DCs of Athletes (EC, 2012). This symposium brings together DC researchers from three European countries who, during the last four years, collaborated on several European-level DC projects. The aim of the symposium is to overview and discuss recent European DC research and its multiple links to dual-career support to talented, elite, semi-/professional and retired athletes. The first presenter will make a brief overview of psychological research on athletes' DCs and four recent European projects. The second and third presenters will focus on two interrelated aspects of the “Gold in Education and Elite Sport” project: competencies of DC athletes and competencies of DC support providers emphasizing measurement, empirical findings, and applications. The fourth presenter will shift the focus to development, implementation, and evaluation of an educational module on competencies of DC support providers as a part of the project “The development and evaluation of training modules for DC support providers: A European pilot”. The fifth presenter will share insights from the “Mind the Gap” project about roles and competencies of DC support providers helping semi-/professional footballers to prepare for the transition to the post-sport career.

Presentations of the Symposium

Psychology of athletes' dual careers: an overview of European research and selected projects

Natalia Stambulova

Halmstad University, Sweden

The aim of this presentation is twofold: (1) to trace the evolution of dual-career (DC) research in Europe based on two consecutive systematic review papers (Guidotti, Cortis, & Capranica, 2015; Stambulova & Wylleman, 2018), and (2) to provide a brief introduction to four European DC projects conducted in 2015-2018. The two aforementioned reviews covered European DC research for 2007-2014 (Guidotti et al.) and 2015-2018 (Stambulova & Wylleman). The recent review, compared to the previous one, revealed the following trends: DC research has intensified (more studies are published per year), the term DC is well established, more studies are informed by a holistic lifespan perspective (Wylleman, Reints, & De Knop, 2013), there is still a lack of published research on DC in sport and work, but in terms of DC in sport and education, three new concepts, eight new instruments, and 16 empirical frameworks (e.g., DC competency frameworks for athletes) have been introduced in the 2015-2018 publications. Four European projects have been selected for this presentation to illustrate the continuity in the academic dialogues within the European DC discourse in regard to DC athletes' and support providers' competencies and related training. These projects include: “Gold in Education and Elite Sport” (GEES) funded by the EU (2015-2016), “The development and evaluation of training modules for DC support providers: A European pilot” funded by the IOC (2017-2018), “Be a Winner In elite Sport and Employment before after athletic Retirement” (B-WISER) and “Mind the Gap”, both funded by the EU (2017-2018).

Gold in education and elite sport (1): how can we evaluate student-athletes' dual career competencies?

Koen De Brandt¹, Paul Wylleman², Simon Defruyt¹

¹Vrije Universiteit Brussel, Belgium, ²Vrije Universiteit Brussel, Belgium, NOC*NSF, Netherlands

The “Gold in Education and Elite Sport” (GEES) project was initiated in 2015 with the support of the Erasmus+ program of the EU. Coordinated by the Vrije Universiteit Brussel and Institut National du Sport, de l'Expertise et de la Performance (INSEP, France), the project brought together a consortium of 40 internationally renowned dual-career (DC) researchers and expert practitioners from 17 research centres and elite sport organisations from nine EU Member States (Belgium, France, Italy, Netherlands, Poland, Slovenia, Spain, Sweden, UK). GEES focused on research in order to assist (1) 15-to26-year-old athletes preparing for a successful DC ‘education and elite sport’ pathway, and (2) DC support providers to optimise the quality of their support and initiate new sustainable services. To address these aims, GEES provided data on (1) n = 3,500 athletes' competencies to successfully manage their DC ‘education and sport’ pathway, (2) n = 330 DC support providers to support athletes during their DC pathway, and (3) instruments and methods to assess and develop the quality of DC services. This first of two presentations on the GEES project focuses on the competencies athletes require to effectively cope with the multi-level demands of their DC pathway. The presentation's objectives are to introduce the Dual Career Competency Questionnaire for Athletes (DCCQ-A) in order to (1) explain how student-athletes' competencies are evaluated using the DCCQ-A, (2) highlight the main findings obtained with the DCCQ-A in 3,500 European student-athletes, and (3) provide examples of how the (results of the) DCCQ-A can be used in practice.

Gold in education and elite sport (2): how can we evaluate dual career support-providers' competencies?

Simon Defruyt¹, Paul Wylleman², Koen De Brandt¹

¹Vrije Universiteit Brussel, Belgium, ²Vrije Universiteit Brussel, Belgium, NOC*NSF, Netherlands

Competent professional dual career (DC) support is important in assisting student-athletes to cope with the challenges of their DC pathway (European Commission, 2012). However, no researchers up to date focused specifically on what competent professional DC support exactly means. As such, during the GEES project, DC support providers were defined as "professional consultants, related to an educational institute and/or an elite sport organization – or certified by one of those – that provide support to elite athletes in view of optimizing their dual career/combination of elite sport and education" (Wylleman, De Brandt, & Defruyt, 2017, p.18). Furthermore, to gain more insight in the actual meaning of competent DC support, the second work package of the GEES project focused on developing a competency instrument, the Dual Career Competency Questionnaire for Support Providers (DCCQ-SP), measuring the importance and possession of competencies of DC support providers. The DCCQ-SP consists of 33 competencies (i.e. skills, knowledge, attitudes) divided into six competency factors: (1) advocacy and cooperation competencies, (2) reflection and self-management competencies, (3) organisational competencies, (4) awareness of student-athletes' environment, (5) empowerment competencies, and (6) relationship competencies. The current presentation's objectives are to (1) introduce the DCCQ-SP, (2) illustrate how the importance and possession of DC support-providers' competencies are evaluated using the DCCQ-SP, (3) highlight the main findings obtained with the DCCQ-SP in N = 330 European DC support providers, and (4) provide insight in how the findings of this study and the DCCQ-SP can be applied in practice.

Competency training for dual career support providers: insights from the IOC funded project

Anna Jordana¹, Yago Ramis¹, Luana Prato¹, Susana Regüela², Miquel Torregrossa¹

¹Universitat Autònoma de Barcelona, Spain, ²Centre d'Alt Rendiment Esportiu de Sant Cugat del Vallès, Spain

The previous European projects (GEES, B-WISER) revealed that while dual-career support providers (DCSPs) play a key role in helping student-athletes to become more resourceful in coping with dual-career (DC) demands, the DCSPs' job profile and relevant training are still not established in Europe. To bridge this gap, the IOC project "The development and evaluation of training modules for DCSPs: a European pilot" was aimed at the development, implementation and evaluation of three modules for DCSPs' education. In this presentation, we focus on the development, implementation and evaluation of one module on DCSPs' competencies. The module was developed by an expert focus group, contained several parts (e.g., self-assessment of the competencies, developing an individual profile, reflecting on strengths and needs for further development), and implemented in Belgium, Sweden and Spain. Two experts in each country led this four-hour module and trained a total of N = 19 DCSPs. Both the trainers and the trainees evaluated the module experiences through a survey and/or interview. Overall impression of the participants was positive. The main strengths were a proper balance between theoretical and practical parts, specificity of the content, exchanging experiences between DCSPs with different levels of experience, and the professional level of the experts. To further improve, the participants recommended making the module longer and working more thoroughly on reflections in regard to self-assessment of DCSPs competencies. The development and implementation of this and the other two modules of the project are the first steps in the provision of specific training for DCSPs.

Mind the gap: closing the gap between the end of the professional soccer career and entering the labour market

Sofie Smismans¹, Paul Wylleman², Simon Defruyt¹

¹Vrije Universiteit Brussel, Belgium, ²Vrije Universiteit Brussel, Belgium, NOC*NSF, Netherlands

Professional players with a view on continued employment upon sports-career termination encounter fewer difficulties adapting to their post-sport life. Therefore, it is recommended for players to engage in a dual career (DC) or pre-retirement planning. However, there exists a lack of empirical data and evidence-based practices with regard to DC and career-transition support services for professional football players (European Commission, 2012). The current presentation will show how the "Mind the Gap" project will address these concerns. The "Mind the Gap" project, coordinated by FIFPro, was initiated in 2017 with the support of the Erasmus+ program of the EU. The project brings together three expert partners (4Player Denmark, IRUPA, TASS), one research partner (VUB) and five European players' associations (PSAP Cyprus, JPY Finland, SFS Sweden, PSAP Greece, PFA Ireland). Mind the Gap focusses on research in order to assist (1) semi-/professional football players preparing for a successful transition into a purposeful post-soccer career, and (2) transition-support providers to optimize the quality of their services and to create a long-term capacity of the services. To address these aims, Mind the Gap will provide data on (1) support-providers' roles and competencies to guide athletes before, during and after their transition, (2) players' competencies needed to be successful in their (future) employment, and (3) instruments and methods to develop and build long-term capacity. The presentation's objectives are to (1) highlight preliminary results on the roles and competencies of career-support providers and (2) introduce how future research will address the aims of the project.

Symposium 08: Cognitive and motor development in and through sports and physical activity

Time: Tuesday, 16/Jul/2019: 8:30am - 10:00am · *Location:* VSH 118 - Nottingham
Session Chair: Lisa Musculus, German Sport University Cologne

Cognitive and motor development in and through sports and physical activity

Chair(s): Lisa Musculus (German Sport University Cologne, Germany)

This symposium aims at a better understanding of cognitive and motor development, by addressing children enrolled in sports and physical activity. In particular, this symposium sheds light on the role of cognitive and motor functioning development for (sports) performance and health-related quality of life during childhood. Deepening the scientific knowledge on the topic is important from a theoretical and applied perspective: Developmental studies can specify theories with respect to cognitive-motor and performance or health interactions. In the applied field, cognitive and motor functioning assessed early might predict future (sports) performance, health, and well-being.

The presentations cover a broad range of methods (intervention, (quasi-)experiments, age-group comparison, systematic review), age (preschool-aged children, children, adolescents) and samples (preschoolers, Pediatric-Cancer-Survivors, athletes). In particular, Spyridoula Vazou presents an intervention study evaluating the “Move for Thought preK-K”. In preschools, this programme offers movement games integrated with academic concepts, executive function, and social-emotional skills. Valentin Benzing highlights the role of motor coordination in a study focusing on executive functions, motor abilities, and health-related quality of life in Pediatric-Cancer-Survivors. Elisa Bisagno presents two studies with female volleyball players on the role of working memory capacity and executive functioning for motor learning for performance in volleyball. Lisa Musculus brings together developmental and sport studies addressing predecisional processes to provide a more complete picture of decision-making process development during childhood in a systematic review.

Together, the talks provide an integrative overview of cognitive and motor development and allow coaches, teachers, educators, and parents to draw conclusions for their work.

Presentations of the Symposium

Integrating physical activity in preschools: targeting executive function skills through the Move for Thought preK-K programme

Spyridoula Vazou
Iowa State University

Despite a widespread belief that young children are very physically active, research shows that children in preschools mostly engage in sedentary activities with limited opportunities for structured PA or motor skill development. A growing body of research indicates that integrated physical activity (PA) with academics in the classroom benefits children both physically and cognitively and the benefits are stronger when exercise is embedded in an engaging context. However, preschool curricula with cognitively engaging PAs are scarce. Thus, the “Move for Thought (M4T) preK-K” programme provides movement games integrated with academic concepts, executive function, and social-emotional skills in the preschool environment. The purpose of the project was to evaluate the feasibility and effectiveness of the M4T preK-K programme over an eight-week period in 16 preschool centers (8 intervention, 8 control; N=257 3-5 years old children). Teacher ratings of students’ attention and behavioural control in the classroom, as well as social skills, were collected before and after the intervention in both groups. A daily teacher log was used to measure intervention fidelity and perceptions about the experience with the programme. Results showed a significantly larger improvement on attention and behavioural control for the intervention group, compared to the control group. No significant differences emerged for social skills. Further, the program was easy to implement in the preschool classroom and highly enjoyable for both students and teachers. The M4T preK-K programme is promising in helping teachers prepare preschool children for future educational success by integrating PA with executive function skills and academic concepts.

Executive functions, motor abilities and quality of life in pediatric cancer survivors – the crucial role of motor coordination

Valentin Benzing¹, Janine Spitzhüttl², Valerie Siegwart³, Michael Grotzer⁴, Maja Steinlin³, Kurt Leibundgut⁵, Regula Everts³, Mirko Schmidt⁶

¹Institute of Sport Science, University of Bern, Bern, Switzerland; Division of Pediatric Hematology and Oncology, University Children's Hospital Bern, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland, ²Division of Neuropaediatrics, Development and Rehabilitation, University Children's Hospital Bern, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland. Institute of Psychology, University of Bern, Bern, Switzerland, ³Division of Neuropaediatrics, Development and Rehabilitation, University Children's Hospital Bern, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland, ⁴Division of Pediatric Oncology, University Children's Hospital Zurich, Zurich, Switzerland, ⁵Division of Pediatric Hematology and Oncology, University Children's Hospital Bern, Inselspital, Bern University Hospital, University of Bern, Bern, Switzerland, ⁶Institute of Sport Science, University of Bern, Bern, Switzerland

Due to the improved treatment and diagnosis, survival rates for pediatric cancer have increased by over 80%. Nonetheless, Pediatric Cancer Survivors (PCS) bear a high risk for late effects within cognitive functions, such as the executive functions (EFs). In typically developing (TD) children, EFs are related to motor abilities, and they contribute to the development of the physical self-concept which is important for psychological wellbeing. Therefore, the aim of this study was to investigate EFs, motor abilities, physical self-concept and health related quality of life (HRQOL) in PCS.

In total, 81 PCS and 55 TD children and adolescents between 7-16 years of age ($M = 11.14$; $SD = 2.35$) participated in this study. EFs were assessed using the Stroop (inhibition, shifting) and the Corsi task (updating); motor abilities using the German Motor Ability Test (fitness, strength, coordination). In addition, Physical Self-Description Questionnaire (PSDQ-S) and the Kidscreen-10 were used to assess physical self-concept and HRQOL.

PCS showed a lower performance in EFs and in motor abilities ($ps < .0005$), and both were found to be correlated ($rs > .315$, $ps < .005$). PCS had lower physical self-concept in the facet of coordination ($p < .0005$), which also significantly mediated the relationship between actual coordination performance and HRQOL.

In conclusion, the assessment of motor abilities, and in particular motor coordination, should be included in standard aftercare in PCS. Results indicate that physical exercise interventions are warranted, and are also likely to impact HRQOL via improvements in physical self-concept.

The role of working memory in motor learning and sports performance: two studies with young volleyball players

Elisa Bisagno¹, Sergio Morra², Francesca Vitali³

¹University of Genova, Dept. Of Educational Sciences; University of Modena and Reggio Emilia, Dep. Of Educational Sciences, ²University of Genova, Dept. Of Educational Sciences, ³PhD, University of Verona, Dep. Of Neurosciences, Biomedicine, and Movement Sciences

These studies aimed to testing the role of working memory (WM) capacity (Pascual-Leone, 1987; Pascual-Leone & Goodman, 1979) as general cognitive ability in motor learning (Study 1) and sports performance (Study 2) in volleyball.

105 young female volleyball players (5-17 years old and a group of "experts", i.e., adults with at least 10 years of volleyball experience) took part to Study 1. Participants were engaged in WM and practical tests of volleyball of increasing difficulty, defined through a task analysis and scored in terms of "correct execution" and "precision". Furthermore, each athlete was asked about his volleyball experience, in terms of years of practice and trainings per week. The best predictor of the "correct execution" ($R^2=.74$) was the WM capacity ($\beta=.55$), while for the "precision" ($R^2=.20$) the years of volleyball experience were the only significant predictor ($\beta=.45$).

In Study 2, 114 female volleyball players (11-18 years old) were engaged in WM and Executive Functions (Updating, Shifting and Inhibition: see Miyake et al., 2000) tests and completed self-report measures on their attentional style and the emotions they experienced before competitions. Moreover, they were video-recorded during at least three competitions and an efficiency index was calculated by two judges (inter-rater agreement: $r=.84$; $p<.001$). Among a set of six cognitive and four emotions-related predictors, only a composite "WM-updating" index was found significant ($\beta=.35$) in predicting volleyball players' performance ($R^2=.15$) in a stepwise regression. Therefore, WM can be considered a predictor not only for motor learning, but also for performance in volleyball.

What happens before and when children decide? A systematic review on the development of decision-making processes

Lisa Musculus¹, Markus Raab²

¹Institute of Psychology, Dept. of Performance Psychology, German Sport University Cologne, Germany, ²Institute of Psychology, Dept. of Performance Psychology, German Sport University Cologne, Germany; London South Bank University, United Kingdom

Making a decision in sports games is quite a hard task, especially for a young player, because before making the decision, he/she needs to generate options. These predecisional processes are of crucial importance but are most of the time neglected. By taking a developmental perspective we addressed the interplay of predecisional process and selection aim to deepen our understanding of how cognitive decision-making processes develop during childhood. To get a complete picture of how decision-making processes develop, we conducted a systematic literature review (PRISMA) including studies from sport and developmental psychology. Studies involving children and addressing predecisional processes (i.e., option generation, information search) were included. Ecological rationality served as a theoretical framework because it covers predecisional processes and has been applied in both fields. In particular, the results were interpreted with respect to the person- (i.e., developmental changes, age effects, expertise effects) and environment-level (i.e., tasks conducted, stimuli used, manipulations) effects.

A total of $N = 21$ empirical studies were included in the review. The studies were systematically compared (i.e., integrated and differentiated) with respect to the methodological design and the results were qualitatively reinterpreted through the ecological rationality framework. First, person-level effects of age and expertise on quality of the first option, number of options generated and quality of the decisions were comparable in developmental and sport studies. Second, environment-level effects of task-complexity differed between developmental and sport studies. The results allow future tests of decision-making models and specific theoretical predictions on what happens before and when children decide.

Symposium 09: The self-talk symposium: From the lab to the field and from research to practice

Time: Tuesday, 16/Jul/2019: 8:30am - 10:00am · *Location:* VSH 06 - Bad Blankenburg

Session Chair: Antonis Hatzigeorgiadis, University of Thessaly

The self-talk symposium: From the lab to the field and from research to practice

Chair(s): Antonis Hatzigeorgiadis (University of Thessaly, Greece)

Discussant(s): Alexander Latinjak (University of Suffolk)

Self-talk research in sport has blossomed within the last two decades and keeps expanding steadily. As a result, new research questions have been developed and a variety of methodological approaches are now used for the investigation of this particular mode of cognitive process. In this symposium, a selection of studies is included attempting to cover different research perspectives evident in our self-talk quests. Following an introduction to a new framework for the study of self-talk, in general, and self-talk interventions, in particular, two presentations that focus on experimental research exploring the effectiveness of self-talk under adverse conditions in lab and field settings will take place: The first explores self-talk under conditions of physical fatigue, whereas the second explores self-talk under conditions of ego-depletion. The third presentation takes us into an intervention applied in elite athletes investigating the potential effects of self-talk training on flow experiences in competition. The fourth presentation involves a field study on the relationship between emotional reaction and self-talk in a realistic, competitive environment through observations and video-assisted recalls of emotions and self-talk. Finally, the fifth presentation describes an all-around self-talk case study intervention addressing issues of strategic and reflexive, goal-directed self-talk interventions aiming at enhancing performance and changing an athlete's thought patterns in competition.

Presentations of the Symposium

Self-talk can counter the effects of ego depletion on sport performance: Evidence from lab and field experiments

Laur Nurkse, Jelle Kooijman, Persefoni Makri, Marianna Koutaniti, Eleftherios Papagiannis, Evangelos Galanis, Antonis Hatzigeorgiadis
University of Thessaly

The effects of ego depletion have shown negative consequences on various sport tasks. Recently, self-talk emerged as a successful method to counteract ego depletion in a cognitive attention-based task (Gregersen et al., 2017). To forward this line of research, the current study examined the effects of a self-talk intervention on sports tasks requiring attention and precision in lab and field settings. In the lab experiment, which involved a divided-attention golf task, participants were N = 54 sport science students (mean age = 18.66), whereas, in the field experiment, participants were N = 39 young tennis players (mean age = 16.54, mean experience = 4.53). A repeated-methods design was adopted in both experiments. Following a baseline assessment, participants went through a training phase, during which participants of the experimental group practised to use self-talk. The final assessment took place following the implementation of an ego-depletion inducing task. In the lab experiment, the results showed that the putting performance of the experimental group increased, whereas that of the control group did not change. In the field experiment, the result showed that in the final assessment, forehand-drive accuracy of the experimental group was higher than that of the control group. The results of the study suggest that self-talk can be a viable method to counter the detrimental effects of ego depletion on performance. In addition, the findings provide support for an attentional interpretation of the facilitative effects of self-talk on sports performance.

The effects of self-talk on flow in elite Taekwondo athletes

Nastasija Minija, Konstantina Tzeli, Evangelos Galanis, Themis Tsatalas, Antonis Hatzigeorgiadis
University of Thessaly

The purpose of the study was to investigate the effects of a self-talk intervention on flow in elite Taekwondo athletes. Originally, N = 28 Taekwondo athletes with similar characteristics and experience from two clubs were recruited (mean age = 15.64, mean competitive experience = 5.10 years). The clubs were randomly assigned as experimental and control. An 8-week intervention was implemented in-between two competitions where flow was assessed. During the intervention, participants of both groups dedicated the same time at the beginning of each training session to specific kicking drills, with the experimental group practising to use self-talk. N = 17 athletes participated in the two competitions before and after the intervention. The results showed a notable increase at post-intervention for the experimental group in overall flow and the dimensions of challenge-skills balance, clear goals, unambiguous feedback, concentration on the task at hand and sense of control post-intervention, whereas no differences were found for the control group. The results can be linked to findings from studies supporting the attentional and motivational effects of self-talk strategies, thus explaining the impact of self-talk on competitive flow. Final conclusions based on the present study should be taken with caution and remain limited due to the small sample size.

Exploring the links between self-talk and emotions in competitive tennis matches

Julian Fritsch¹, Darko Jekauc¹, Peter Elsborg², Alexander Latinjak³, Antonis Hatzigeorgiadis⁴

¹Karlsruhe Institute of Technology, ²University of Copenhagen, ³University of Suffolk, ⁴University of Thessaly

In tennis, players react emotionally very differently to evidently similar situations, such as winning or losing a point. One psychological construct that might explain these different reactions is self-talk. While spontaneous self-talk is involuntary in nature and often emotionally charged, goal-directed self-talk describes mental processes intentionally employed to make progress on a task (Latinjak, Zourbanos, López-Ros, & Hatzigeorgiadis, 2014). Based on this self-talk framework, the purpose of the study was to investigate the relationship between tennis players' emotional experience as well as outward emotional reactions and their self-talk. To this end, N = 20 tennis players (n = 7 female) with a mean age of 23.1 years (SD = 4.88) and an average of 14.7 (SD = 5.58) years of tennis experience were taped during a competitive tennis match. Thereafter, each player was shown 40 rallies of the previous match and asked to assess their emotional experience and outward emotional reaction. In addition, they were asked to recall their self-talk as accurately as possible. In total, the players remembered their self-talk after 646 rallies (M = 32.3, SD = 6.17). As a next step, the different statements will be coded according to the spontaneous/goal-directed self-talk framework. It is hypothesized that players' spontaneous self-talk is more likely in situations where they experience emotions and show outward emotional reactions. Besides contributing to a theoretical understanding of the relationship between self-talk and emotions, practitioners could apply the findings to make better use of the "psychologist within" (Latinjak, Font-Lladó, Zourbanos, & Hatzigeorgiadis, 2016).

The use of strategic and reflexive self-talk interventions with an expert tennis player: Putting theory into practice

Alexander Latinjak

University of Suffolk

In the literature, two large groups of self-talk interventions have been described: strategic (a) self-talk interventions, which consist of repeating predetermined cue words (Hatzigeorgiadis, Zourbanos, Galanis, & Theodorakis, 2011), and (b) reflexive self-talk interventions, where athletes reflect on their organic, goal-directed self-talk (Latinjak, Font-Lladó, Zourbanos, & Hatzigeorgiadis, 2016). Herein, I describe a real-world case where interventions of both kinds have been used in sequence to achieve different performance and self-regulatory outcomes. The athlete, Paul, was a 21-years old tennis player who competed at the time of the 11-months collaboration in international competitions. During the preseason, Paul used a traditional strategic self-talk intervention (Latinjak, Torregrosa, & Renom, 2011) to improve his service technique and shot selection from the baseline. Starting with the competitive season, we used the IMPACT-ST guidelines (Hatzigeorgiadis, Zourbanos, Latinjak, & Theodorakis, 2014) to develop an if-then self-talk approach. Paul had specific cue words to stay focused if winning, to keep calm if under pressure and to keep fighting if losing. Finally, as Paul's knowledge about self-talk grew, he engaged in reflexive discussions analyzing his organic, goal-directed self-talk, thereby creating meta-cognitive knowledge relevant for successful self-regulation. When reflecting upon all self-talk interventions, Paul identified the sequence of interventions as a crucial aspect. The traditional self-talk intervention was efficient, yet superficial, and the if-then intervention was more malleable and thus better suited for competition. Nonetheless, the key to personal growth was the reflexive intervention, which "prepared the mind to meet new and unpredictable challenges".

Workshop 03: Resist the urge to stop in endurance activities: research-evaluated endurance strategies intending to support training

Time: Tuesday, 16/Jul/2019: 8:30am - 10:00am · *Location:* VSH 07 - Magglingen

Session Chair: Carla Meijen, St Mary's University, London

Session Chair: Samuele Marcora, University of Bologna and University of Kent

Session Chair: David Marchant, Edge Hill University

Resist the urge to stop in endurance activities: research-evaluated endurance strategies intending to support training

Carla Meijen¹, Samuele Marcora^{2,3}, David Marchant⁴, Noel Brick⁵, Andrew Lane⁶, Alister McCormick⁷, Dominic Micklewright⁸

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Endurance sports and activities present physical and psychological challenges to athletes. A major psychological challenge includes managing unwanted thoughts around the urge to slow down, stop, or quit. In our survey of 761 athletes, 95% reported experiencing such unwanted thoughts, and 90% of respondents had acted on these thoughts leading to slowing down, walking, temporarily stopping, or quitting. These thoughts are experienced across all levels of competition from highly experienced athletes to novices. Thus, there is a huge number of competitors who could benefit from interventions. There is a need to translate research-based evidence into real-world interventions that impact endurance athletes' experiences, and to emphasise the positive impact of sport psychology support for recreational athletes. Through our research-evaluated endurance strategies, we provide readily-accessible support for recreational athletes to facilitate desirable psychological experiences of endurance activities.

The aim of this session is to discuss ways of dealing with the thoughts around the urge to slow down, stop, or quit. We highlight athletes' experiences of this urge, introduce brief educational interventions developed by the RESIST group, and share resources that can empower athletes to overcome performance-limiting urges and improve endurance performance outcomes. Strategies focus on optimising pacing-related decision making, managing expectations and negative unhelpful thoughts, psychological versus physiological limits, and caffeine as a physiological way to influence perceived exertion. We will involve participants in the evaluation of the brief educational interventions and discuss innovative methods (videos, infographics, website) to share interventions with the public. These materials will be shared with the participants.

Poster Session Tuesday

Time: Tuesday, 16/Jul/2019: 10:15am - 11:15am · *Location:* Marquee
Session Chair: Martina Kanning, University of Konstanz

1.01 Investigating the relationship between perfectionism & competitive anxiety in athletes

Anna Marie Fergione

The American College of Greece - Deree, Greece

Current literature proposes numerous unsettled debates in sport psychology regarding how perfectionism functions and the degree to which competitive anxiety has detrimental effects on an athlete's performance. The present study explores perfectionism, as a personality characteristic, and competitive anxiety, as an emotional state, and in what ways they are interconnected. A sample of competitive athletes (N = 100) who met specific criteria completed a background survey, the Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1991) and the Revised Competitive State Anxiety Inventory-2 (CSAI-2R; Cox, Martens, & Russell, 2003). After collection of data, appropriate statistical measures were applied to assess correlations between perfectionism and competitive anxiety in athletes, as well as comparing dimensions of perfectionism and competitive anxiety with other variables, such as type of sport. Statistically significant correlations were found between cognitive anxiety with self-oriented perfectionism and socially-prescribed perfectionism. Moderate correlations were also found between somatic anxiety and socially-prescribed perfectionism. Furthermore, a positive association was discovered between other-oriented perfectionism and self-confidence. Finally, the data provided a statistically significant difference between individual sport athletes and self-oriented perfectionism in comparison to team athletes, with individual athletes presenting higher levels of self-oriented perfectionism. However, the hypothesis that team sport athletes would have higher degrees of other-oriented perfectionism than individual sport athletes was not supported by the data. These results extend previous research findings, as well as add new dimensions to the discussion, such as differentiating team sport athletes from individual sport athletes in further detail.

1.02 Differences in burden from sport related and general developmental tasks between elite handball players and recreational players

Jeannine Ohlert, Marion Sulprizio, Alicia Stolle

German Sport University Cologne, Germany

Young elite athletes have to cope with high training loads while at the same time managing their educational career. Therefore, previous studies have found differences in the importance and satisfaction with general developmental tasks (GDT) in elite athletes (Ohlert & Ott, 2017), but until now, it is not clear, how the burden from GDT and also sport related developmental tasks (SDT) affects general stress perception in athletes. The current study aims to answer this question and at the same time compare a sample of recreational and elite handball players. Participants were 81 elite handball players (3rd league or above) and 101 recreational handball players (59% female; Ø age 18.3 years). They answered an online-based questionnaire on general stress and burden from single GDTs and SDTs. Results reveal that for elite handball players, burden from GDTs as well as SDTs shows a positive correlation with general stress. For recreational players, only burden from SDTs correlate positively with general stress. In detail, for recreational players, especially burden from coping with changes of the body and finding a balance between stress and relaxation are significant predictors of general stress. For elite players, however, coping with the surrounding conditions of elite sport and developing a vision about a future spouse, are significant stress predictors, and explained variance is much higher than for recreational players. Thus, coping with developmental tasks (from sport and from other areas of life) can be a stress factor for elite handball players that should not be neglected.

1.03 Dual career pathways in sport: The optimal balance is not always equal.

Emily Deason^{1,2}, David Fletcher¹, Christine Coupland¹

¹Loughborough University; ²Liverpool John Moores University

The connotation of the term 'dual career' often leads the reader to assume that the most ideal approach to combining a sporting career and an educational or vocational career is to embrace a fifty/fifty split in focus between the two careers. However, this research project, based on experiences of dual career athletes, presents three categories of dual career pathways: (1) the parallel dual career pathway, i.e., a fifty/fifty split in focus between sport and education or vocational career; (2) the sporting pathway, i.e., an focus on the sporting career; and (3) the educational/vocational pathway, i.e., a focus on the educational or vocational career. These pathways were developed from a grounded theory analysis, which integrates inductive interview data with previous research (such as, Aunola, Selänne, Selänne, & Ryba, 2018; Chamorro, Torregrosa, Sánchez Oliva, García Calvo, & León, 2016; Ryba, Stambulova, Selänne, Aunola, & Nurmi, 2017; Stambulova, Engström, Franck, Linnér, & Lindahl, 2015). All three pathways exhibit varying outcomes, benefits, and detriments, which are outlined as: the educational gap, vocational skills gap, and the sporting gap. The categorisation of dual career pathways in this way is supported via the results of a cluster analysis which identified three heterogeneous groups based on their scores on identity and self-efficacy measures. These findings conclude that dual career support systems and practitioners must consider the type of dual career pathway which best suits the individual in question and take steps to prepare the individual for the associated gaps of each pathway.

1.04 Sport specific sport psychology: a conceptual framework for Danish elite triathletes

Ronja Ries Højbjerg

Danish sports psychology forum (DIFO), Denmark

Objectives: The ability to successfully develop to the highest level in sport is dependent on a range of variables, especially an individual's ability to cope with various challenges related to their sport. The limited triathlon specific literature available reveals only little of the psychological demands, skills and techniques needed to enhance elite performance. This study examines the Danish national triathlon team by developing a sport specific conceptual framework to reveal psychological skills relevant to facing their challenges.

Design and Method: The research takes the form of a semi structured focus group interview study. Four group interviews were carried out, including nine triathletes at national and international level, and their two national coaches and sports manager. Follow-up interviews were made for clarification and further elaboration. Furthermore, the communicative validity was ensured through a stakeholder check. A deductive and inductive content thematic analysis revealed sport specific categories within various challenges.

Results and Conclusions: Results show that the elite triathletes perceived a multitude of sports psychological challenges both in the sporting and non-sporting context. The most significant daily challenges appeared in their training environment and concerned interpersonal skills and training culture. Relative to athletes competitive performance, the most pronounced challenging factors occur in the form of adversity, unforeseen situations or unexpected events in relation to their ability to maintain focus. It is anticipated that these results can contribute to practitioners work with triathletes by supporting the development of interpersonal and psychological skills that enhance triathletes' ability to cope with the challenges they encounter.

1.05 Pathway and mental skills of elite sport climbers: a series of case studies

Konstantin Bochaver^{1,3}, Elizaveta Novoradovskaya^{2,3}

¹Moscow Institute of Psychoanalysis, Russian Federation; ²Curtin University, Australia; ³ENYSSP, EU

Sport climbing is demanding on mental skills such as anxiety control or imagery, and successful athletes demonstrate not only coordination and strength, but also high cognitive performance and high levels of memory, attention and decision-making.

The aim of the study was to find the relationship between mental skills and professional pathway of elite climbers using case studies.

Methods and sample of the study: Structured interviews with 35 questions were conducted with three world champions (males, Mage 28 years, national team) (Kvale, 1996). Qualitative content analysis was used to analyse the obtained data (Biddle, Markland et al., 2001; Tenenbaum, Driscoll, 2005; Leavy, 2014; Smith, 2015).

Results: Social environment (a group of competing athletes and sport school) becomes the strongest factor of successful trajectory in the beginning of the career and during the period of transitions. However, personal choices are more important after first years of athletic career and after the successful transition to professional adult sport. Mainly stressful events, such as injuries and result recessions, are the most effective base to train mental skills like awareness, self-talk, imagery, and cognitive preparation.

Discussion: The pathway of a successful climber is determined by the balance of personal choice and supportive environment, as well as certain mental skills acquired by athletes during the turning points of their careers. The results of this study and work in the national team were summarised in a publication prepared for athletes titled «Stress management for sport climbers: up and ahead!».

1.06 Athlete burnout, insomnia and polysomnographic indices in young elite athletes: cross-sectional and longitudinal analyses

Markus Gerber¹, Simon Best¹, Fabienne Meerstetter¹, Sandrine Isoard-Gauthier², Henrik Gustafsson³, Renzo Bianchi⁴, Daniel J. Madigan⁵, Flora Colledge¹, Sebastian Ludyga¹, Edith Holsboer-Trachsler⁶, Serge Brand¹

¹University of Basel, Switzerland; ²Laboratoire Sport et Environnement Social, Université Grenoble Alpes, Grenoble Cedex, France; ³Department of Health Sciences, Karlstad University, Karlstad, Sweden; ⁴Institute of Work and Organizational Psychology, University of Neuchâtel, Neuchâtel, Switzerland; ⁵School of Sport, York St. John University, York, United Kingdom;

⁶Psychiatric Clinics (UPK), Center for Affective, Stress and Sleep Disorders, University of Basel, Basel, Switzerland

In the study of occupational burnout, the relationship between burnout symptoms and increased sleep complaints is well documented. By contrast, few studies have looked at the association between sleep and burnout symptoms in (young) elite athletes. To address this research gap, we recruited 257 young elite athletes (163 males, 94 females, Mage = 16.8 years) from Swiss Olympic partner schools. Of these, 197 were re-assessed six months later (125 males, 73 females). Moreover, 24 participants with clinically relevant burnout symptoms (based on the first assessment) volunteered to participate in a polysomnographic examination. We compared these participants to 26 healthy controls (matched for gender, age, educational level and place of residence). Between 12-14% of young elite athletes reported burnout symptoms of potential clinical relevance. In addition, clinically relevant insomnia symptoms were found in 4-11% of the participants. Athletes with clinically relevant burnout symptoms were more likely to report insomnia symptoms, reported more dysfunctional sleep-related cognitions, and spent less time in bed during weeknights ($p < .05$). By contrast, our analyses yielded no significant differences for objective sleep parameters. Based on a cross-lagged panel analysis, we found that burnout positively predicted self-reported insomnia symptoms. No significant path was found in the opposite direction. Cognitive-behavioural interventions to treat dysfunctional sleep-related cognitions might be a promising avenue to reduce subjective sleep complaints in young elite athletes.

1.07 Predicting training success from individual's resilience

Nigel Zhuo, Jonathan Khoo

Republic of Singapore Air Force, Singapore

The Republic of Singapore Air Force (RSAF) administers the Connor Davidson Resilience Scale (CD-RISC, 25 items) to RSAF Officer Cadets as part of their training programme. Multiple linear regression analyses were used to predict the relationships between CD-RISC facets (Personal competence, tolerance of negative affect, positive acceptance of change, control and spiritual Influences) and training success. The findings serve to validate the effectiveness of enhancing the resilience of RSAF Officer Cadets, and will be discussed at the conference.

1.08 The role of parents in the successful implementation of dual career athletes

Natalia Leonidovna Iliina

St. Petersburg State University, Russian Federation

Data was obtained on the support of highly qualified athletes by parents and other significant persons in sports and training activities, as one of the factors of a successful dual career. A high degree of identification with the role of an "athlete" as a possible factor in the deterioration of academic success was assessed.

The study used questions from the N. Stambulova structured questionnaire "The Dual Career Survey (DCS)" in the translation and adaptation of N. L. Iliina, E.E. Khvatsky (n = 34, sportsmen of different kinds of sports; 16 boys, 18 girls), from 17 to 23 years old. All sportsmen study in universities (n = 34; year 1-4; 27 mothers, 7 fathers).

Athletes were divided into two groups: "successful" in training activities and "unsuccessful" (there are academic debts, academic leave, low academic achievement score).

The main support in training and competitions, athletes of both groups receive from the coach, teammates and parents. "Successful" athletes feel the same strong support from coaches, parents and teachers in the field of training at the university. "Unsuccessful" athletes do not feel the support from teachers, coaches and parents.

The parents of the athletes of the two groups are confident that they provide maximum support to the athletes. This is not combined with the opinion of the "unsuccessful" athletes.

High identification with the role of an "athlete" does not interfere with the successful combination of training and sports activities.

The study was carried out with the support of the RFBR grant No. 17-06-00883

1.09 Russian student-athletes' double careers: analysis of socio-psychological difficulties

Natalia Leonidovna Iliina, Regina Anatolyevna Berezovskaya

St. Petersburg State University, Russian Federation

In European studies on sport psychology the number of publications focused on the issues of maintaining life balance among athletes and effectively combining sports with other activities (including education, work, creating a family, raising children and others) increases every year (EU Guidelines on Dual Careers of Athletes, 2012). For Russian psychology of sport and related branches of knowledge a term of "dual career" (DC) is a relatively new concept. Previous researchers have shown that the problem of combining sports career and education at the university level is also relevant for the Russian reality, especially for students with a high sports qualification (Afanasyev & Zotov, 2014; Galimov, 2016; Hubbiev, 2010).

To investigate the difficulties of DC in our study we used a semi-structured interview and a questionnaire for assessing the frequency of main difficulties' occurrence. The sample was comprised of 115, male and female, age with a range from 17 to 21.

Four categories of difficulties were identified through thematic content analysis: 1) time and moving from place to place, 2) financial, 3) communicative, 4) cognitive and emotional. The results showed that student-athletes are experiencing a large number of organisational and psychological difficulties.

Thus, we work out a scientifically based career assistance programme, aimed at developing coping strategies such as stress and time management. Suggestions for promoting skills to maintain life balance through the effective use of both internal and external resources are discussed.

The study carried out with the support of the RFBR grant No. 17-06-00883

1.10 Interpersonal emotion regulation among individual varsity sport coaches and their athletes

Courtney Braun, Katherine Anne Tamminen

University of Toronto, Canada

Researchers have examined the impact of coaches' emotional expressions and emotional intelligence on athlete outcomes (Allan & Côté, 2016; Thelwell et al., 2008; van Kleef et al., 2018). However, there is little research examining coaches' use of specific strategies to try and regulate their athletes' emotions. The purpose of the present study was to explore the interpersonal emotion regulation (IER) strategies that coaches used to try and regulate their athletes' emotions, and to explore the relationship and contextual factors influencing coaches' IER strategy use. A qualitative longitudinal multiple case study approach was used (Stake, 1995) with five cases, each consisting of one male coach and two individual varsity sport athletes (N = 15). Participants completed individual interviews, a two-week audio diary period, and a follow-up interview. Data were inductively and deductively analysed and a conceptual model was developed outlining athletes' emotions and emotion regulation, coaches' IER, the coach-athlete relationship, and contextual factors. Participants described a bidirectional association between the coach-athlete relationship and coaches' IER. Several factors influenced athletes' and coaches' use of emotion regulation strategies and contributed to the quality of the coach-athlete relationship; these factors included the athlete's performance, context (competition versus workout), group size, competitive expectations, injury, personal life concerns and sport type. The IER strategies that coaches used may reflect instrumental, performance-related motives, and coaches' IER efforts may also contribute to coaches' emotional labour.

1.11 Burnout among sport psychologists

Claire Rossato¹, Itay Basevitch², Stacy Vance³

¹University of Greenwich; ²Anglia Ruskin University; ³Florida State University

The aim of this study was to examine burnout among sport psychologists, specifically whether there was a difference in burnout between academic sport psychologists and applied sport psychologists. Fifty Seven participants (Twenty three males, mean age= 36.43, SD 8.13; 34 females, mean age= 33.41, SD 7.79) completed an online survey examining burnout via the Maslach Burnout Inventory Human Services Survey (MBI-HSS) to specifically examine exhaustion, depolarisation and decrease in personal accomplishment (antecedents of burnout). The results demonstrated that antecedents of burnout were present in both academic and practitioner sport psychologists; in particular decreased personal accomplishment was higher in applied practitioners compared to academics. Furthermore, number of hours spent on research per week predicted higher levels of exhaustion and higher levels of personal accomplishment. Further research should look to develop interventions to help cope and/or decrease the level of burnout within the sport psychology population.

1.12 Influences of stereotypes on the relation between non-verbal behaviour and team confidence in football

Kirstin Seiler¹, Geoffrey Schweizer², Roland Seiler¹

¹Universität Bern, Switzerland; ²University of Heidelberg

Previous research on non-verbal behaviour (NVB) in the sport performance setting (Furley, Moll, & Memmert, 2015) has shown that NVB might be among the most important factors influencing emotions and team confidence within sport teams. Even when external performance information was included as factor influencing the person perception process the NVB-effect remained large (Seiler, Schweizer, & Seiler, 2018). However, research on NVB so far has not considered the influence of internal performance information such as gender stereotypes on the soccer abilities of men and women although stereotypes seem to be crucial for the person perception process (Fiske & Neuberg, 1990).

The aim of the present research was to investigate whether the effects of non-verbal behaviour (NVB) on team outcome confidence in sports decrease when internal performance information transported through gender stereotypes is added.

Using video footage of soccer players, two experiments with two different samples (university sports students vs. low-league soccer players) were designed to examine the effects of NVB and internal performance information on team outcome confidence. The results show that independent of how strongly the stereotype was internalised (Experiment 1 vs. 2), NVB and gender stereotypes influence team outcome confidence. In addition, the NVB effect remains large despite the salience of internal performance information, i.e., gender stereotypes. These results are in line with previous research on NVB in sports as they emphasise the robustness of the NVB effect regardless of the influence of other factors relevant for person perception.

1.13 Coaches' prosocial and antisocial behaviours as predictors of athletes' affect and motivational climate

Ali AL-Yaaribi¹, Maria Kavussanu²

¹Sultan Qaboos University, Oman; ²University of Birmingham, UK

Prosocial and antisocial behaviours among players have received increased attention in recent years. However, to date researchers have not investigated coaches' prosocial and antisocial behaviours. Coaching behaviours can affect athletes' behaviour, performance and psychological and emotional well-being (Horn, 2002). Therefore, the aim of this study was to examine whether coaches' prosocial and antisocial behaviours were associated with their players' perceptions of competence and burnout, and whether these associations were mediated by positive and negative affect. 247 team sport players (110 males) aged 17 to 28 years (Mage = 21.41, SD = 4.16) completed an adapted version of the Prosocial and Antisocial Behavior in Sport Scale (PABSS), the Athlete Burnout Questionnaire, the competence subscale of the Basic Needs Satisfaction in Sport Scale (BNSSS), and the International Positive and Negative Affect Schedule-Short Form (PANAS-SF). Mediation analysis (Hayes, 2013) indicated that coaches' prosocial behaviour was positively related to competence and negatively related to burnout; and these relationships were mediated by positive affect. Coaches' antisocial behaviour was positively related to burnout and this relationship was mediated by negative affect. Coaches' antisocial behaviour was negatively related to competence only through negative affect. The findings highlight the potential role of coaching behaviours and players' affective responses on influencing players' competence and burnout. To increase perceived competence and reduce burnout, the coaches should act more prosocially and less antisocially toward their players.

1.14 Catastrophic thoughts and history of injuries. Relevance for psychological vulnerability in soccer players

Aurelio Olmedilla Zafra¹, Luis Miguel Ramos², Juan González Hernandez³

¹University of Murcia, Spain; ²University Autonomos of Madrid; ³University of Granada, Spain

In a competition-oriented context, demands on sport from an increasingly early age (records, trajectories, sports scholarships...) are very high, aspects that link obligations and needs with the achievement (essential element for the construction of perfectionist beliefs), but they direct experiencing the "have to win, surrender or arrive" as the only agonizing vision for success. Bearing in mind that aspects such as age, experience and maturation are elements that model and regulate such a belief system (sources of stress-anxiety, emotional or behavioural alterations, among others...), it is important to understand the identification, regulation and interpretations about how young athletes "design" mental and attitudinal paths to achieve what they propose, to understand how to appear mismatches about aspects that make the body vulnerable to injuries or illnesses. Aims of this study, points out the links between perfectionist patterns and catastrophic thoughts towards injury, with the appearance of anxiety sensitivity responses in young soccer players in competitions categories. The sample consisted of 100 young footballers (under-20 years old) belonging to amateur categories of Spanish football. Results show the strength of catastrophic thoughts and the history of previous injuries, on perfectionist beliefs and anxiety, building a vulnerable response to performance and injuries. Point out the type of thoughts and beliefs in young players who compete in pre-professional categories, will identify cognitive and emotional responses that lead to the construction of fear of injury, susceptible to being trained and mentally strengthened to cope with situations of gambling and pressure.

1.15 Parents and youth high performance athletes' perception of ideal communication before, during, and after competitions

Sina Azimi¹, Katherine Tamminen²

¹University of Toronto; ²University of Toronto

Parents play an important role in facilitating their children's involvement in sports (Knight, Kneely, & Holt, 2011). In competitions, parents can provide immediate verbal and non-verbal feedback by displaying a wide selection of behaviours (Fredrick & Eccles, 2004). Previous research examining female athletes' preferred parental behaviour demonstrates that before competition athletes indicated preferences connected to preparation, parental support and encouragement during competition, and receiving positive feedback after competition (Knight, Neely, & Holt, 2011). However, limited research has examined male and female high performance athletes' perception of ideal communication. Furthermore, to our knowledge, no empirical research has investigated the similarities or differences in athletes and parents' perception of ideal communication. In this study, 10 parents and 10 high performance athletes (7 males & 3 females between 13-15 years of age) participated in a six-week reflective practice intervention that increased parents' awareness of their communication, and appeared to help parents have a more positive view towards their children's athletic performance. In individual post-study interviews parents and athletes were asked to describe their perception of ideal communication before, during, and after competition. Thematic analysis of the data revealed that parents and athletes perceive being supportive, positive, and concise before and during competition, and giving space and being positive after competition as ideal forms of communication. These findings can inform theories of athlete development by offering specific information regarding the types of feedback parents can provide to support youth athletes, and identify what might be the best forms of communication at this developmental stage.

1.16 Supervised internship of study and intervention in sports psychology: Rugby and E-Sports

Ricardo Marinho de Mello de Picoli¹, Lara de Azevedo Tardeli², Paulo Gabriel Guerche Fuzzari²

¹Universidade de São Paulo, Brazil; ²Universidade Federal de São Carlos, Brazil

This work describes the experience of a supervised internship of study and intervention in sports psychology developed by two trainees in partnership between the Psychology Department of Universidade Federal de São Carlos (Brazil) with a high-performance amateur Rugby team and a college League of Legends™ team, both from a small town from the state of São Paulo. The aim was to promote the study and experience of the trainees with the practical application of sport psychology and to contribute to a good performance of the teams and well-being of the athletes. Sports psychodiagnoses of the teams were made through the application of an inventory developed to detect existing leadership and investigate potentialities and limitations of the team. Behavioural cataloging and systematic observation of their contingencies were made in addition to the interventions. The main topics of the intervention with a Rugby team were developing strategies improving interpersonal communication, group cohesion, leadership, coherence of personal and collective goals orientations and resilience to defeats. With the League of Legends™ team, we were able to perceive several interfaces between the phenomena observed in both conventional and electronic sports, like the influence exerted by some team members' representations about professional conventional sports they had over their organisation style and objectives. The college context was also a defining aspect on player efforts and general approaches about training, competition and the team in general, most notably observed through the high turnover of players and the inability to train pin attendance due to logistic and infrastructural issues.

1.17 Successful transition from the U-17 to the U-19 Swiss national-team in female soccer: the role of motivational factors

Stephan Horvath, Gareth Morgan, Daniel Birrer

Swiss Federal Institute of Sport Magglingen, Switzerland

Introduction: In Switzerland three youth women national teams in soccer exist (e.g., U-16, U-17 and U-19). Whereas most players successfully transfer from U-16 to U-17, a selection takes place from U-17 to U-19. The aim of the present study is to explore motivational factors (measured in U-17) related to the selection for the U-19 national team.

Methods: 98 U-17 national team players of four cohorts (n1998 = 15, n1999 = 25, n2000 = 34, n2001 = 24) took part in the study. Sixty-one of 98 were considered for the U-19 national team, 37 never made an appearance for the U-19 national team. All players completed questionnaires covering 12 motivational components based on the Sport-Related Achievement-Motivation Test (SMT; Frintrup & Schuler, 2007), and self-determination based on the Behavioral Regulation in Sport Questionnaire (BRSQ; Lonsdale, Hodge, & Rose, 2008)

Results: Statistical analyses showed that U-17 national team players that were selected for the U-19 national team - compared to non-selected players - showed more self-determination, perseverance, devotedness, self-discipline and clearer long-term goals (all $p < .05$). Stepwise logistic regression revealed high self-determination (step 1) and low compensatory effort (step 2) to be independent predictors.

Discussion/Conclusion: The study revealed that self-determination is the most important factor for a successful transition from the U-17 to the U-19 national team, although all players showed rather high self-determination. Motivational components that are related to self-regulation (e.g., self-discipline or perseverance) might be particularly advantageous. Finally, consequences for talent-development and talent-selection are discussed.

1.18 Athlete relationship maintenance questionnaire (CARM-Q): evidence of validity and reliability in turkish adolescents athletes

Nükte Özgör, Aydan Gozmen Elmas, F. Hülya Aşçı

Marmara University, Turkey

The purpose of this study was to test the validity and reliability of Coach-Athlete Relationship Maintenance Questionnaire (CARM-Q) developed by Rhind ve Jowett (2012) for Turkish adolescent athletes. Eighty-one girls (Mage = 13.91±1.71) and 109 boys (Mage = 13.96±1.82), totally 190 (Mage = 13.94±1.77) athletes participated in this study. "Personal Information Form", "Coach-Athlete Relationship Maintenance Questionnaire (CARM-Q)" and "The Coach-Athlete Relationship Questionnaire (CART-Q)" were administered to athletes for testing the construct validity of the scale. The scale consists of 28 items and 7 sub-scales - conflict management, openness, motivational, preventative, assurance, support, and social network strategies. Each item is answered on a 7-point Likert scale. A confirmatory factor analysis and Pearson product moment correlation analysis were used to test the construct and convergent validity of the scale. In addition, Cronbach's alpha internal consistency coefficient was calculated to test reliability. Confirmatory factor analysis results revealed that the factor loading of items were ranged between .33 and .87. The acceptable fit index values (Chi2/df = 2.78, RMSEA = 0.09, NFI = 0.90, NNFI = 0.92, CFI = 0.93, SRMR = 0.08) were obtained. In addition, there was a significant relationship between the subscales of coach-athlete relationship maintenance scale and coach-athlete relationship scale which supported convergent validity of scale. The internal consistency coefficients of CART-Q ranged from 0.55 (preventative) to 0.83 (conflict management and motivational). It can be concluded that the Coach-Athlete Relationship Maintenance Questionnaire is a valid and reliable measure to determine the coach-athlete relationship maintenance in sport for Turkish adolescents.

1.19 Development and validation of career-long psychological support services in Swedish handball

Johan Ekengren¹, Natalia Stambulova², Urban Johnson³

¹Halmstad University, Sweden; ²Halmstad University, Sweden; ³Halmstad University, Sweden

This study is part of the PhD-project aimed at examining Swedish professional handball players' career experiences and developing an applied framework to improve career assistance. Inspired by the cultural praxis of athletes' careers (Stambulova & Ryba, 2013; 2014) we blend theory, research, and practice with the athletes' cultural and sporting contexts. In the previous part, the author and three co-authors (2018) developed an empirical career model (ECM-H), describing players' changing demands across career stages from the holistic perspective (Wylleman, Rosier, & De Knop, 2015) and showing that they need different types of career assistance at different stages. The second study part aims to develop and validate an applied framework – the career-long psychological support services (CLPSS). To create the initial version of CLPSS, a heuristic approach combining the ECM-H with the author's applied sport psychology experiences was used. Then the initial version was validated in two focus groups with elite handball coaches (N=4) and experienced sport psychology consultants (N=3) following Kreuger and Casey's (2015) recommendations. The participants were positive to the initial version and suggested several improvements. The validated CLPSS implements the whole career and whole person perspectives with the four career stages aligned with age markers and three layers of career assistance issues derived from the Swedish handball context, athletes' perceived demands, and desirable support from relevant stakeholders (e.g., coaches, parents). The CLPSS helps to understand, what issues to address and when in a career to facilitate players' coping, reduce unnecessary stress, and promote sustainable careers in elite handball.

1.20 A qualitative study of factors that influence the psychological conditioning of Japanese athletes participating in 'home game'.

Joyo Sasaki, Yasuhisa Tachiya

Japan Institute of Sports Sciences, Japan

It has been predicted that in Tokyo 2020, the unusual circumstances of playing a 'home game', will influence the psychological conditioning of Japanese athletes. In the present study, we aimed to qualitatively investigate the psychological processes of Japanese athletes during participation in international competitions held in Japan. Two Japanese athletes who had performed in international competitions held in Japan participated in a semi-structured interview of approximately three hours in which they answered questions concerning the adversities they confronted, their coping strategies, whether they coped successfully or not, and the social support they received. The taped and transcribed interviews were analysed using the modified grounded theory approach (M-GTA). The M-GTA results produced two models for each participants' experience. Both models ended with them not reaching their best performance. In both models, the following three concepts were highlighted as factors which produced unsatisfactory performances: feeling unable to relax under circumstances of increased publicity via more media exposure, not knowing how to relax in the athletes' village in which actions such as going out and conversation with other athletes were restricted because of the excitement in neighbouring places, and lack of psychological simulations for their competitions. The results showed how unique the psychological processes of athletes in international competitions, held in their home country, are compared to those in other countries. Additionally, for adequate preparation in 'home game' competition, including Tokyo 2020 for Japanese athletes, it is important to acquire not only psychological skills during performance but also skills for relaxing outside the stadium.

1.21 Effects of group cohesion and collective efficacy on the performance among university Kendo players

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In sports team, coalescing team members positively affects their performance (Carron, Colman, & Wheeler, 2002; Gully, Incalcaterra, Joshi, & Beaubian, 2002). However, research on the influence of group cohesion and collective efficacy on sports team on performance is often targeted at group sports, and there are quite a few studies targeting group competitions in individual sports. The purpose of this research was to focus on the university Kendo club, to investigate the influence of group cohesion and collective efficacy on performance and its characteristics. For the Kendo players of two university (N = 99) completed a Japanese translated version (Oda, Yamamoto, & Tokunaga, 2017) of Group Environment Questionnaire (Carron, Widmeyer, & Brawley, 1985) and a Japanese translated version (Uchida, Machida, Tsuchiya & Kugihara, 2014) of Collective Efficacy Questionnaire for Sports (Short, Sullivan, & Feltz, 2005) at two time points: before a district competition and the All Japan competition. Furthermore, we conducted a semi-structured interview with a captain of each team in order to explore the characteristics of relationship between team members. The results showed that the teams in which non-regular players scored significantly higher levels of group cohesion and collective efficacy than those of regular players improved performance throughout season. Based on the results of interview, it was found that regular players and non-regular players trusted each other in teams which improved performance. The results suggest that group cohesion and corrective efficacy of whole members in team play a key role in improving and maximising their performance.

1.22 Origins of self-control failure in athletes: a pilot study

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Self-control failures leading to poor performance are common in athletes. According to a meta-analysis (Friese, 2018), additional research is required to shed light into their underlying mechanisms with better standardisation, more objectivity and greater ecological validity. The current study aimed at piloting a research design that tests two theories competing to explain self-control failures: the ego depletion theory (e.g. Muraven, et al., 1998) and the process theory (e.g., Inzlicht & Schmeichel, 2012). The ego depletion theory suggests that actions requiring self-control exhaust a limited resource whereas the process theory argues that motivation accounts for self-control failure. Competitive basketball players (N = 10, male = 100%, M = 23.6 years, SD = 2.84) were randomly assigned to experimental or control conditions of a 2 x 2 factorial repeated measures design. Self control was manipulated by a physical exhaustion task (i.e., jumping jacks) as opposed to different motivational environments. A high degree of standardisation was achieved by presenting all instructions as videos. Effects were measured on a basketball free-throw task which is similar to the demands of an actual sports competition (i.e., task ecological validity). As an indicator of physiological resources underlying self-control depletion, heart rate variability was used (i.e., objective measurement) and questionnaires assessed the degree of motivation. Data collection is ongoing. A multifactorial analysis of variance will be conducted to determine the effects of ego depletion on HRV as well as motivation and performance. In conclusion, this study provides implications for further research regarding the feasibility of the design and the interpretation of findings.

1.23 How student athletes explain their successes and failures in sport?

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Athletes experience success and failure almost on an everyday basis. Because of that, it is especially interesting and important to understand how they explain these outcomes and what are the reasons they think are behind their performances. Therefore, the aim of this study was to investigate how student athletes explain the causes behind the most and least successful performances of their sports career. Participants in the study were 118 students of University of Zagreb, Faculty of Kinesiology in Croatia (Nm = 77, Nf = 41). All participants were active competitive athletes at one point of their life and 51 of them (43 %) were still actively involved in sport and competing at the time study was conducted. To measure their attributions, we used Weiner's attribution model and CDS-II scale (McAuley, Duncan, & Russell, 1992). This scale measures attributions across four dimensions: locus of causality, stability, personal control, and external control. In this study, each participant filled the scale twice: once for the most successful performance of their career and once for the least successful performance. The results indicated that student athletes in this study attributed the most successful performance of their sports career to more internal, stable and personally controllable reasons than they did for the least successful performance. There was no significant difference on the external control dimension. These results can help athletes, coaches and sport psychologists to further understand athlete's perceptions about the reasons they use to explain different outcomes with which they encounter during their experience in the competitive sport.

1.24 Australian Paralympic athletes' training histories and developmental trajectories: What do we know?

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In a recent study exploring developmental trajectories and training histories of Canadian wheelchair basketball players, athletes with congenital impairments reached the majority of developmental milestones earlier; however, athletes with acquired impairments reached 'key' performance milestones (e.g., national/international debuts) at a similar age (Dehghansai, Lemez, Wattie, & Baker, 2017). The purpose of this study was to extend on these findings to see whether similar trends exist across other sports. Eighty-six Australian athletes (64 male, 22 female; 35 with acquired and 49 with congenital impairments) competing in table tennis (N = 27), cycling (N = 26) and wheelchair rugby (N = 23) completed the modified Developmental History of Athletes' Questionnaire (Wilson, 2013). The athletes had an average age of 32.63 (9.43) and started sport participation around 9.50 (4.84) years of age. They transitioned into their main sport around 12.26 (5.22) years old and have been competing for 11.02 (7.07) years. Primary analysis (between sport comparisons) yielded only a few significant differences (i.e., age started main sport, age started supervised and unsupervised practice); however, the majority of milestones, and all training factors, were relatively similar across all three sports. A secondary analysis (acquired vs. congenital) demonstrated that athletes with congenital impairments reached developmental milestones at a significantly earlier age; however, did not differ on the hours they invested in different types of practice, nor when they reached key performance milestones (e.g., international level of competition). The findings corroborate previous research (Dehghansai et al., 2017) and highlight an important question for future work.

1.25 Dual career competences and the athlete's perception of relationship with the coach

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One of the main challenges talented and elite athletes face is combining education and high-level sport. Lately, much attention has been given to student-athletes dual careers (DC; a combination of sport and studies), whereas much less is known how the relationship with coach influences the possession of DC related competences. The aim of the study was to explore the athletes' possession of dual career competences and to investigate possible influence of the perceived quality of the coach-athlete relationship. A questionnaire Gold in Elite Sport and Education (GEES) presenting a list of 38 dual career competences (attitudes, knowledge, and skills) was administered to 70 Slovenian student-athletes (students of 1st-year university study). The Relationship with coach scale from Student-athletes' Transition to University Questionnaire (Cecić Erpič, 2015) and the revised version of Sport Interpersonal Relationships Questionnaire (Wylleman, 2001) were used as measures of the quality of the coach-athlete relationship. Results showed that athletes with higher possession of different DC competences perceive coach's interpersonal behaviors toward them as more caring (showing more interest in athletes and active willingness to help them). These athletes more often report that their coaches encourage them to actively pursue DC and offer them more support in combining sport and studies. Coach's (perceived) position toward education influences the student-athletes DC competences.

1.26 Mental Robustness as a Facet of an Action Theory Driven Mental Fitness Concept

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For a theory driven conceptualisation of fitness we used an action theory perspective, which considers the person-task-environment constellation to be the fundamental reference system for fitness. Adopting the biopsychosocial model for health (Engel, 1977), fitness as a multidimensional concept including physical-, mental-, and social fitness is explained in detail. More specifically and in a further differentiation, mental fitness consists of three facets, namely the potentials for performance, resilience and recovery. The cognitive and affective aspects of resilience and recovery are combined in the design of the concept of mental robustness. A tool to measure mental robustness based on this conceptualisation was developed. Rather than developing a further inventory in this field of research, the aim was instead to realise a new approach and to create an economic measurement comprising marker items of factors of existing validated and reliable inventories including emotional stability, resilience, mental toughness, self-efficacy, self-regulation, reinvestment and the ability to recover. The scale (MR2B) consists of 13 items comprising of three adjectives derived from the beforementioned inventories. Participants (N = 503; Mage = 34 years, SD = 14.3) completed the MR2B and the inventories representing the adjectives to confirm validity using a binary factor analysis and oblique rotation (Klämpfl & Hackfort, 2017). Due to the summative procedure applied in developing the scale, it can be used as a state or trait measure and to observe direct differences over a short period of time. Furthermore, used as a diagnostic tool, individual deficiencies are identified expeditiously to support personalised psychological training programmes.

1.27 Anxiety perception according to the character of athlete - obstacles or resources?

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Athletes perceive numerous and novel stimulating situations, turning into threatening those that they interpret when they surpass their personal and coping resources. Coping is the process that includes the individual's attempts to overcome demands and adapt to new situation, explained by dispositional variations (temperament) and previous learning (character). Thus, both for demands and for experiences, sports context supposes an ideal scope to understand the individual differences of those situations interpreted as surpassing the individual resources, being facilitators of anxious processes in athletes and that of their interpretation as functional, will allow effective performance. The aim has been to identify from Cloninger's psychobiological model what personality indicators, temperament or character, predict in a more adequate way the direction of the anxiety of athletes. Sample consisted of 141 athletes of team modalities aged between 18 and 34 years (M = 20.60, SD = 2.77). Instruments administered have been: Cloninger Personality Questionnaire (TCI-R-67), Competitive State Anxiety Questionnaire (CSAI-2), and socio-demographic ad hoc. In regression analysis of personality, indicators of character self-transcendence and self-directedness positively predict cognitive anxiety. On the other hand, harm avoidance indicator of temperament predicts negative cognitive anxiety. Therefore, identifying which dimensions of personality predict anxious processes that block/enhance the perception of performance of an athlete, making it possible to generate interventions within sports training and training, through the various experiences or sports demands faced by players (learnings, training, competitions, variability of coaches, etc.) seems reasonable.

1.28 Exploring the relationship between athlete sport participation and subsequent development as a sport official

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Research involving sport officials has focused on areas such as their psychological and physiological characteristics, cognitive-perceptual skills, in addition to the issues of attrition and retention (Forbes & Livingston, 2013; Livingston & Forbes, 2007, 2016). However, there remains a lack of research concerning the development of sport officials. Research suggests that 80% of officials originate from an athletic background (Livingston & Forbes, 2016). As such, the purpose of this study was to explore the relationship between sport officials' athletic histories (i.e., athletic peak level) and their level of officiating (recreational, district, provincial, and national/international). A modified digital version of the Development History of Athletes Questionnaire (Hopwood, 2013) was used to survey Canadian officials from different sport backgrounds (N = 235). Of the overall sample, 90% of officials participated in their sport as athletes. Early findings suggest that a greater proportion (78%) of top-tier officials (national/international levels) seem to have participated at a higher level of athletic competition (collegiate, provincial, national/international) than lower tier officials, although this trend was not significant ($\chi^2(15) = 20.71, p > .05$). For officials currently participating as athletes, the regional level of officiating was the most likely level of performance to have been reached, suggesting that many of these officials have experienced some athletic career success. This result, however, was also not significant ($\chi^2(5, 211) = 8.25, p > .05$), thus a larger sample size is required for future research. Playing experience may be an important component of officials' development, although further developmental data are needed to understand this relationship.

1.29 Psychometric characteristics of the Brunel Mood Scale in a Singaporean context

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Mood profiling serves several functions in the sporting domain, including monitoring of athlete mindset, early problem identification, performance prediction, and screening for pathogenic behaviours. The 24-item Brunel Mood Scale (BRUMS; Terry, Lane, Lane, & Keohane, 1999) is yet to be validated or researched extensively in a Singaporean context, and hence the current investigation provided a cross-cultural re-validation of the BRUMS. The six-factor measurement model was tested on a sample of 1444 English-speaking Singaporean participants (age range = 18–56+ yr., median = 22–25 yr.; male = 991, female = 440, unspecified = 13), including 954 involved in sport and 490 non-sport participants. In addition, a subgroup of 243 participants completed the BRUMS and concurrent measures of affect and psychological distress. A subgroup of 141 participants completed the BRUMS on two occasions to assess test-retest reliability. Structural equation modelling showed a good fit of the data to the measurement model (CFI = .937, TLI = .927, RMSEA = .062). Multi-sample modelling (sport vs. non-sport, ≤ 25 yr. vs 26+ yr.) further supported the factorial validity of the measure. Relationships between BRUMS subscales and concurrent measures were consistent with theoretical predictions. Internal consistency and test-retest reliability coefficients were acceptable. Findings supported the psychometric integrity of the BRUMS for use in a Singaporean context, providing opportunities for further investigation of the antecedents, correlates and behavioural consequences of mood responses among Singaporean sport and non-sport participants.

1.30 Perceived challenges during participation in a six-month outdoor gym exercise programme: participants reflections

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Research has generally demonstrated positive associations between park-based outdoor gyms and physical activity (Rung et al., 2011). There are few studies evaluating potential challenges with outdoor gyms on physical activity, especially interventions using smartphone apps (Johnson et al., 2019). Increased knowledge about these challenges can help to improve adherence to such intervention programmes. The purpose was to study the participant's perceived challenges during participation in a six-month outdoor gym programme. Ten participants (Mage = 50.3, SD = 9.2), all with low levels of physical activity participation in the beginning of the intervention, were interviewed at the end of the intervention (male = 2; female = 8). At the start of the intervention participants received a smartwatch and an exercise app specially designed for the study, along with an individual motivational interviewing (MI) coaching session. A thematic content analysis of the interview data generated three core themes of perceived challenges experienced during the intervention: negative life event stressors, problems managing the smartwatch and an exercise app, and, lack of motivation. The results indicated both structural and personal challenges, likely to have a negative effect on the adherence to the intervention protocol. Future developments of outdoor gyms are expected to be increasingly based on smartphone technology. Therefore, it is important to develop simple and user-friendly communication systems. When designing outdoor gyms, it is also recommended to organize opportunity for continuous communication with significant others around everyday life which, perhaps also could facilitate motivation for sustainable exercise.

1.31 If you build it, they will come out: developing an LGB inclusive environment in US Collegiate Athletics

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The Self Determination Theory (Deci & Ryan, 1985) posits when the basic needs of autonomy, competence, and relatedness are met, individuals are likely to feel greater levels of psychological well-being and be more intrinsically motivated to perform. Athletes who identify as lesbian, gay male, or bisexual (LGB) may be less likely to feel their basic psychological needs are being met in an environment traditionally hostile to sexual minorities (Fenwick & Simpson, 2017). The purpose of this study was to determine what coaching behaviours might encourage an LGB inclusive environment. Semi-structured interviews (N = 19) were conducted with college/university coaches (13 males, 6 females), representing 10 sports, regarding their coaching style, coaching behaviours, team culture, and response to an LGB player coming out. Using Basic Psychological Needs Theory (Ryan & Deci, 2017) as a framework, a concentric model was developed to explain how external influences and coaching behaviours impact athlete behaviours and outcomes (e.g., performance, personal growth, athlete experience). Coaches employ autonomy-supportive behaviours (Mageau & Vallerand, 2003) to elicit peak performance, impact team climate, and develop professionally. Coaches rely on relational behaviours (e.g., providing support, facilitating discussions, seeking expert assistance, and providing a safe environment) to ensure an inclusive environment, among other desired outcomes. Developing an inclusive environment strongly aligns with coaching behaviours that enhance other outcomes. Sport psychology consultants can assist coaches by facilitating the development of an LGB inclusive environment and highlighting the overall positive impact relational behaviours can have on optimal team outcomes.

1.32 Gazing in the mirror while working-out: reasons to prefer or avoid mirrored-exercise environments

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Although most fitness facilities have a mirror on at least one of four walls, not all exercisers may benefit from exercising in a mirrored-environment. While studies suggest that certain antecedents, such as body-image concerns, may underline people's avoidance from mirrored-exercise settings (e.g., Focht & Hausenblas, 2003), the reasons that motivate people to exercise in front of a mirror remained unclear. In the current study, we explored in-depth the reasons that drive people to, or prevent people from, exercising in a mirrored-setting, and the perceived consequence of exercising with and without a mirror. Semi-structured interviews were conducted with 8 mirror-preferring exercisers (MPEs) and 8 mirror-avoiding exercisers (MAEs) and analysed through thematic analysis. Themes of self-pleasure from looking at the "exerciser" image, and motivations to correct form and track fitness progress underlined preference for a mirrored-exercise environment. Themes of body-shame and self-disgust underlined female MAEs' avoidance from mirrored-exercise settings, while a high sense of exercise-mastery underlined male MAEs' avoidance from mirrored-settings. Both MPEs and MAEs indicated perceptions of reduced enjoyment, low motivation, and performance decrements in relation to exercising in a non-preferred mode. These findings indicate the importance of adhering to one's preferred exercise-mode for positive exercise-related outcomes. While mirrored-exercise environments can motivate people who derive their exercise-enjoyment from their appearance, it may impair mood and performance among people, specifically females, who are less satisfied with their physical self-appearance. Understanding individual preferences for specific exercise-environments is essential for targeting exercise barriers. Considering these preferences may aid in enhancing exercise participation and motivation.

1.33 The mediating role of motivation, emotion, and attention between cognitive and physical self-control

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In sport and exercise contexts, it is highly important to control one's impulses and behavioural tendencies to meet specific goals. However, such self-control acts do not always work successfully. An explanation for self-control lapses derives from the process model of self-control (Inzlicht, Schmeichel, & Macrae, 2014), which posits motivation, emotion and attention as psychological mediators of the interaction between cognitive and physical self-control. We used a multiple mediation analysis to test the hypothesis that a cognitive self-control task at time 1 reduces the motivation to work on a second physical self-control task, accompanied by negative emotions and reduced attention during a second self-control task at time 2. Sixty-nine participants completed two isometric biceps endurance trials, separated by a 6-min cognitive manipulation of self-control. Changes in motivation (Hutchinson et al., 2011; Ryan, 1982) and emotion (Watson, Clark, & Tellegen, 1988) were assessed prior to the respective biceps task (T1 and T2), and attention was assessed in terms of eye fixation behaviour on task relevant and irrelevant stimuli. The results indicated that cognitive and physical self-control were not mediated by motivation, emotion, and attention and that cognitive control-related exertion did not necessarily lead to impaired performance. Future studies should investigate other potential mediators of self-control and the role of cognitive and physical task demands.

1.34 Motivational climate and participation motivation of 10-12-year-old Bulgarian pupils in physical education lessons

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Physical and sports activities provide both healthy development of the adolescents' organism and many positive intellectual, affective and personal changes. A number of sports psychologists point out that in order to increase the enjoyment, positive experiences and the inner motivation to engage in sports it is necessary to create a motivational climate oriented to mastery. The purpose of our study is to establish the influence and correlations between the perceived motivational climate and 10-12-year-old pupils' motives to engage in sport. The study was conducted with 100 students (49 girls and 51 boys divided into three age groups 10, 11 and 12 years old). We used Bulgarian adaptations of the Participation Motivation Questionnaire (PMQ; Gill et al., 1983) and the Perceived Motivational Climate in Sport (Walling, Duda & Chi, 1993). The results from the comparative analysis showed that there are statistically significant differences between the researched variables differentiated by age (Kruskal-Wallis) in relation to motivational climate oriented to performance ($\chi^2=14.26$; $p=.001$) and unequal recognition ($\chi^2=12.04$; $p=.002$), punishment for mistakes ($\chi^2=11.05$; $p=.004$), intra-team member rivalry ($\chi^2=10.12$; $p=.006$). The regression analysis shows statistically significant dependence between motivational climate oriented to performance with teamwork orientation ($\beta=-.301$; $t=-2.985$; $p<.01$), achievements ($\beta=.294$; $t=-2.914$; $p<.01$) and between motivational climate oriented to mastery with emotions and challenges ($\beta=.226$; $t=2.179$; $p<.05$), energy release ($\beta=.210$; $t=2.263$; $p<.05$) and teamwork orientation ($\beta=.362$; $t=3.873$; $p<.001$). The results obtained provide guidance for PE teachers to manage motivation and to interact more effectively with students.

1.35 Compensatory health beliefs and sedentary behaviour among elderly: a qualitative study

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The aim of the study was to provide evidence about the compensatory health beliefs and sedentary behaviour of the elderly. Ten elderly individuals (67.8 ± 3.9) were selected and the data were collected through a semi-structured interview. It seems that the beliefs of the elderly about the health effects of sedentary behaviours were in conflict with their actual behavioural actions, suggesting a cognitive dissonance. This reveals a motivational conflict between the will to perform various sedentary activities, and the goal of being physically active. The elderly solved the motivational conflict avoiding feelings of guilt about sedentary time, activating compensatory health beliefs as a way to solve the motivational conflict. The results suggested also, that although the elderly perceived that the practice of physical activity was important to improve the quality of life, they recognised that they practiced physical exercise because family encouragement and, above all, by medical indications. Thus, it is suggested that the elderly showed an extrinsic motivation for the practice of physical activities. The results also showed that the compensatory health beliefs of the elderly were supported through the creation of an intention to perform compensatory behaviour and were dependent on the level of self-efficacy of the elderly. The results showed, however, that they presented low levels of self-efficacy considering their abilities to increase their autonomous physical activity involvement on a daily basis.

1.36 The independence running events in Poland in 2018 – motives of participation

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The purpose of the study was to examine the motivations to participate in a non-high-class running event and to evaluate the socio-demographic profile of a participant. The sample comprised 100 runners that participated in the 8th edition of the Independence Run in Luboń, which took place on November 11, 2018, on the hundredth anniversary of Poland regaining its independence. To evaluate the motivation to participate in the event, a self-constructed questionnaire was used. Athletes were asked to recall their motives for sport participation, about their goals, reason motivating each goal and to provide background demographic information including age, gender, education level, and sporting involvement. The results might be useful for sport managers to analyze consumer behaviour and utilise the results in their everyday practice, especially in the strategic planning, marketing and implementation of massive sport events which take place outside the limits of a big city. Mostly the men took part in the running event, most often aged 36-50, with secondary education, and those who were professionally active. Respondents most often came from cities 10000-100000 of inhabitants and from big cities (more than 500000 of inhabitants). Among the most important and most frequently reported motives of participation in the running event were: the will to check yourself, willingness to maintain good physical condition, desire to achieve your goal, willingness to maintain good mood and mental condition and willingness to spend time with friends and relatives.

1.37 School coaches' corporal punishment behaviours over three years after the corporal punishment prohibition

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Notification of the ban on corporal punishment in Japanese education was issued in 2013, and coaches' use of corporal punishment in school sport clubs has subsequently decreased, but it is still scattered.

Purposes: This study was planned for two purposes related to sport coaches' use of corporal punishment. The first was to examine the corporal punishment from sport coaches in participants' third year of high school.

The second was to show the effect of corporal punishment prevention education, comparing participants' recognition about sport coaches' corporal punishment before and after classes on corporal punishment prevention.

Methods: A corporal punishment survey was conducted over three years: with 180 people in 2015, 177 people in 2016, and 178 people in 2017. In 2015 only, a survey was conducted to examine the effects of prevention of corporal punishment.

Results: High school sport coaches' corporal punishment of students has decreased gradually over the past 3 years, but it was still experienced by 10 percent of the participants. Most participants of the corporal punishment group respected their coaches. After the corporal punishment prohibition classes, the negative side of corporal punishment was understood, and those who think that corporal punishment is unnecessary increased in number. In addition, if they were punished corporally in the future, many participants said they would be more likely to consult with others.

1.38 Decision making process towards use of doping substances in recreational sport: the role of muscle dysmorphia

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Objectives: The problem of doping is on the rise not only in elite sport but also in recreational sport. Several approaches have been used in an attempt to better understand the decision making processes towards doping in competitive sports. The Theory of Planned Behavior (TPB; Ajzen, 1991) is among the most prominent ones. According to the theory, athletes' attitudes towards doping, the subjective norm and the perceived behavioural control will influence the intention to dope. Furthermore, past evidence has revealed muscle dysmorphia (i.e., the preoccupation with the idea that the body is too small/insufficiently muscular (APA, 2013; Olivardia et al., 2000) as a significant precursor of doping use in recreational sports. The aim of the present study was to examine the effect of muscle dysmorphia on doping intention and the mediating role of doping-related cognition.

Methods: A sample of 197 recreational athletes completed a survey assessing the variables of TPB and muscle dysmorphia. The mean age of the participants was 24.5 years (SD: 5.96) and 66.3% were males.

Results: Linear regression analysis revealed that muscle dysmorphia and TPB variables predicted 57% of variance of the doping intentions. Size, exercise dependence and substance use significantly predicted doping intentions. The effect of muscle dysmorphia was partially mediated by attitudes towards doping.

Conclusions: The findings of the study highlight the role of muscle dysmorphia and provide valuable information to inform interventions aiming at doping prevention in recreational sport.

1.39 „TRUCKactive“– Speed-coachings to enhance physical activity in truck drivers

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Truck drivers (TD) experience enormous strains in their everyday professional life (e.g., irregular working shifts, sleeping issues, poor air quality, and a lack of options for physical activity (PA)). These strains might lead to high stress levels, cardiovascular and other chronic diseases. Despite this situation, TD have been neglected regarding health promotion interventions. Thus, a tailored theory-based intervention for TD to enhance PA was developed.

Participants were 178 German TDs. After data clearing, 140 data sets were analysed. To be physically active, all participants received a vehicle-integrated fitness device (TopFit-Set) and a USB-stick/mobile application to watch 36 different, simply explained exercise videos to perform physical exercises in their driver's cabins. In addition, 111 TDs received speed-coachings via telephone (15 min). These coachings were tailored in time and content to the TD's professional life. Moreover, coachings consisted of 2 multi-theory-based phases: One 4-week motivational phase (2 speed-coachings) to enhance the internalisation process and a further 8-week volitional phase (2 further speed-coachings) to enhance the implementation process. Besides PA-behaviour (use of set, leisure activities), well-being and stress level were assessed as dependent variables.

On average, as a result the TopFit-Set was used 80 minutes per week. Significant changes regarding TD's lifestyle, well-being, and stress level were revealed. The usage of the TopFit-Set was accompanied by an increase in PA in leisure time. All changes were sustainable after 6 weeks. However, the group with coachings did not exhibit an additional effect on PA, potentially showing that 4 coaching sessions were not sufficient.

1.40 The interactive effects of self-control depletion and goal motivation when pursuing an increasingly difficult goal

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It has recently been suggested that goal pursuits underpinned by autonomous motives, whereby the reasons for goal pursuit align with an individual's own interests and values, might be less impacted by the depletion of self-control than goals pursued with controlled motivation (Taylor, Boat & Murphy, 2018). However, this has yet to be directly tested with empirical research. Addressing this gap, the present study integrated the self-control and goal motives literature to examine performance towards an increasingly difficult goal. A two (self-control condition: self-control/no self-control) by two (prime condition: autonomous/controlled) between-subjects design was employed. Regularly training athletes completed an incremental multi-stage cycling trial where they were required to maintain a given cadence at increasing levels of resistance. Prior to this trial, self-control was manipulated using an easy (no self-control) or difficult (self-control) Stroop task, following which the motivational primes were presented as a video. Participants also completed measures of well-being, task appraisals and coping strategies. Factorial ANOVA explored the main effects and interactions on the dependent variables. The findings will be discussed in relation to how this study extends the existing self-control and goal motives literatures.

1.41 Athletic competence, but not social competence, moderates children's perceptions of social exclusion

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A natural feature of childhood is being ignored, left out, or deliberately excluded by peers. Social exclusion is the process where a person is put into a condition of being alone or denied social contact (Blackhart et al., 2009). Excluded children typically report reductions in pleasant feelings (Wölfer & Scheithauer, 2014). However, not all children are bothered by being excluded. This suggests that there is value in exploring individual characteristics that may alter exclusion perceptions. Our study purpose was to explore if athletic and social competence moderate children's perceptions of social exclusion as might occur in a physical play context. Sport-involved healthy girls (N = 35, Mage 10.4 +/- 1.2 years) reported how happy, sad and ignored they were after being included and then excluded by a computer simulation of a ball toss game that presumably involved two other players. Parents provided assessments of athletic and social competence using established measures. Children reported feeling less happy (d = -1.6, 95%CI [-2.2, -1.0]), more sad (d = 1.3, 95%CI [0.7, 1.8]), and more ignored (d = 3.1, 95%CI [2.3, 4.0]), after being excluded than when included. Changes in perceptions of being ignored were moderated by athletic competence, but not social competence. Higher athletic competence associated with larger increases of perceptions of being ignored (B = .37, 95%CI [.03, .65]). These findings suggest that greater athletic competence may amplify reports of being ignored. This might be explained by social exclusion being unexpected and uncommon for highly competent athletes in physical play contexts.

1.42 Can beliefs predict the intention of sports practice in free time in high school students? incidence of motivation

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The physical education (PE) class is usually an excellent mean to promote and encourage the participation of physical and sports activities. Therefore, students may perceive positive experiences in different curricular contents in PE classes, so the probability of developing volitional and pleasurable behaviours in their leisure time, in benefit of their physical and mental health. It is hypothesised, that implicit beliefs of physical and athletic skills are incremental antecedents for adopting intrinsic motivation, predicting sports participation and physical exercise among high school students. The study involved 451 Chilean high school students during PE classes. The questionnaire of beliefs regarding sporting ability was used, which has two dimensions (entity and incremental), other was perception of locus of causality (intrinsic motivation, integrated regulation, identified regulation, introjected regulation, external regulation and amotivation). The results indicated that there are linear relationships, except for amotivation and entity beliefs, which presents curvilinear relationships with the rest of the motivational variables. For Pearson correlation, the results reflected that stable-type beliefs are weakly related to introjected and moderate motivation with external regulation and amotivation. Beliefs of incremental type are associated in a moderate and direct way to intrinsic motivation, identified and introjected direct and weak regulation with integrated regulation and in an inverse and weak way with amotivation. To identify whether motivation has an impact on physical and sporting activities, a model was drawn up, which shows that only stable-type beliefs turn out to be a relevant variable for predicting the performance of physical activity.

1.43 The effect of exercise intervention on the abnormal loop of spontaneous autobiographical memory— —based on the study of depressed

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The study explored the effect of exercise on the abnormal circulation of spontaneous autobiographical memory in depressed patients through a pre-trial, a laboratory experiment and a long-term intervention experiment.

In the preliminary experiment, a mixed design of 2 (population: ordinary individuals, highly depressed individuals) * 3 (objective content valence of memory: positive, negative and neutral) was used, and the palisade task pattern (Schlagman and Kvavilashvili, 2011) and the pre- and post-emotional test showed that depression -- the negative loop of spontaneous autobiographical memory was applicable to people with high depression. The laboratory experiment was designed within the group. The independent variable was sports intervention, and the dependent variable was autobiographical memory and emotional fluctuation of participants in sports intervention. The study participants were 40 people with high levels of depression who participated in the preliminary study. 30 minutes of moderate-intensity aerobic exercise was required, and the contents and evaluation of autobiographical memory were measured before and after. It was found that one exercise can significantly reduce negative spontaneous autobiographical memory and evaluation, and weaken depression -- negative loop of spontaneous autobiographical memory. In the long-term intervention experiment, the mean emotional score and the objective content potency of spontaneous autobiographical memory of depressed individuals before and after the period 1-4 exercise were analyzed with the repeated measurement profile of intergroup factors every 3 weeks, and the results showed that there was a cumulative effect, but the improvement effect was gradually slowed down. The improvement effect of aerobic exercise is better than anaerobic exercise.

1.44 Influence of manual grip strength and usual gait speed on mortality, functionality and life satisfaction of older adults

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The aging is an inevitable process in which we desire longevity associated with quality of life and psychological aspects. For this, the maintenance of physical capacities can be fundamental to reduce mortality risk and to better life satisfaction. The objective of this study was to verify the influence of physical performance on mortality risk, functionality and life satisfaction of elderly. It was follow-up of 900 Brazilian (680 women) non-hospitalised older adults (mean age = 72.5±5.3) between 2008-2016, being found 154 deaths from natural causes (88 women). As the main results, worst manual grip strength (RR=1.60; CI 95% = 1.15 to 2.23, p = 0.005) and less gait speed (RR = 1.82; CI 95%=1.30 to 2.55, p<0.001) were associated with increased mortality risk. Other factors increased mortality risk, being the age was a confounding for manual grip strength (RR = 1.06; CI 95% = 1.03-1.09, p < 0.001) and rheumatoid arthritis a confounding for gait speed (RR = 2.02; CI 95% = 1.36-3.01, p < 0.001). The older adults with better mobility realised more instrumental (Slow: mean = 20.1±2.9, Fast: mean = 20.7±2.9, CI 95% = 0.24 to 0.61, p < 0.001) and advanced activities of daily living (Slow: mean = 63.2±22.1, Fast: mean = 68.3±20.5, CI 95% = 0.82 to 7.41, p = 0.015) and presented better life satisfaction (Slow: mean = 20.4±2.9, Fast: mean = 21.1±2.6, CI 95% = 0.15 to 1.03, p = 0.009). As conclusions, the maintenance of physical performance seems to be fundamental to reduced mortality risk and for aging with autonomy on daily living activities, besides a good perception of psychological aspects of life.

1.45 Blood lactate levels and short-term memory during a judo competition

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Judo is a martial art that takes inspiration from the different techniques of various ju-jitsu schools. The purpose was to examine the relation between blood lactate levels and short-term memory in adult athletes of judo. Two hundred seventeen athletes (132 males and 85 females) practicing judo for at least 5 years, participated in the study. Measures included personality aspects with the Sensation Seeking Scale V (Manna, Faraci, & Como, 2013), the amount of stress with the Mesure du Stress Psychologique (Di Nuovo, Rispoli, & Genta, 2011) and the ratio between the second (index) and fourth (ring) finger (Coco et al., 2011). The assessment was divided in: (1) administration to each participant of SSS-V and MSP and measurement of digit ratio; (2) administration to 50 athletes performing a 5 min combat, a digit span test and evaluation of blood lactate in three moments: before the competition, just after the conclusion, and 10 min after the end. Results showed an increased blood lactate above 4 mmol/l and an association between blood lactate levels and backward memory capacity, with relevant correlation between SSS-V, MSP and the digit ratio. Lactate production, even if minimal, has a protective role against fatigue toward frontal cortex and define worse performances in backward memory capacity by conditioning strategic ability of the athletes. The findings supported that judo turns out to be a sport discipline useful to help women for manifesting disinhibition and their personality, and men to control their aggressiveness and to try of overcoming their limits.

1.46 Blood parameters as a measure for controlling physical performance of young Algerian cyclists

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The aim of this study was to evaluate the level of change in haematological and hormonal parameters of young Algerian cyclists (U23) during a follow-up at the Arabian Championships Mostaganem 2018.

Thirty-five cyclists (U23) of the Algerian national team with international level evolve in Algeria, France and Spain participated in the study. Arterial blood samples were collected one day before and one day after the training camp and out of competition.

The haematological results show: RBC ↑ 1,75% (p=0,042) ; HGB ↑ 4,59% (p=0,000); HCT ↑ 4,08% (p=0,000) ; MCV ↑ 2,66% (p=0,001) ; MCH ↑ 2,46% (p=0,012) ; MCHC ↓ 3,32% (p=0,224). WBC ↑ 6,23% (p=0,206) ; NEUT ↓ 8,49% (p=0,732) ; LYM ↓ 3,80% (p=0,301). PLT : ↑ 5,20% (p=0,167). The hormonal results show: Tnt ↓ 92,78% (, p=0,000); cortisol ↓ 13,45% (p=0,000), TSH ↓ 6,68% (p=0,137); ProBnp ↓ 16,30% (p=0,350); Insulin ↑ 3,49% (p=0,241) ; testosterone ↑ 14,16% (p=0,241)

In summary, the obtained results allowed us to define normative values that will serve as scientific support for the professional practices of this discipline in our country, as well as to demonstrate tolerance to training from a hematological and hormonal point of view during preparation courses and which opens the way to the field of physiological research.

1.47 Do domain-specific perceptual abilities operate outside of conscious awareness?

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Previous studies report that skilled decision-makers in football have developed superior perceptual-cognitive skills, such as pattern recognition. Although these studies examined conscious processes, it is challenging to consciously recognise all visual information in a given scene. Thus, the present study focused on the unconscious decision-making processes, specifically referring to perception, as a leading factor behind the excellent judgement of skilled decision-makers. We examined whether skilled decision-makers demonstrate superior implicit perception in 3-on-3 football situations. A backward masking paradigm was used to assess their implicit perceptual abilities. In this paradigm, either a football-specific or a non-specific static image (objects such as flowers) was presented for short periods of time (17, 34, 51, 68 or 85 ms) just before the masking stimulus. In the football-specific condition, participants were required to select the location of an unmarked player in the static image. In the non-specific condition, they were forced to select a name for the object from the provided alternatives. In both conditions, the participants also rated how confident they were with their decision. The results indicated that, with a 34 ms image presentation in the football-specific condition, skilled players demonstrated significantly higher correct judgements than novices despite having no confidence in their judgment. This was not evident in the non-specific condition. These results indicate that skilled decision-makers have superior implicit perceptual abilities and skilled implicit perception cannot be attributed to differences in the visual hardware, such as tachistoscopic vision, but to the visual software that was developed based-on football-specific experiences.

1.48 Vitamin D3 supplementation can play a protective role for the mood of ultramarathon participants

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Introduction: Participation in the ultramarathon can be associated with a lot of stress, which can affect the mood of the participants. The aim of the study was to examine the mood of runners 12 hours before the start in the 100km run and 12 hours after the finish and to determine how the personality traits and vitamin D3 supplementation may be associated with the mood.

Methods: The study group consisted of 20 experienced participants of marathons and ultramarathons taking part in the 100km run. All participants were men, aged from 31 to 50 years (M = 40.75, SD = 7.15). The study group was divided into two equal parts: a placebo group and a group supplemented with vitamin D3. Personality traits were measured using the EPQ-R 106 (Eysenck, 1991); and the mood was measured twice using the UMACL test (Mathews, Chamberlain, & Jones, 1990).

Results: Extraversion was correlated with tense arousal (r = -0.48) and energetic arousal (r = 0.47) and neuroticism with tense arousal (r = 0.53) and hedonic tone (r = -0.57). The level of vitamin D3 correlated with energetic stimulation (r = 0.80) and hedonic tone (r = 0.74) 12 hours before the run. There were no significant correlations between the level of vitamin D3 and mood states after the run.

Conclusions: Vitamin D3 can play a beneficial role in shaping the mood of an athlete preparing for the ultramarathon run. This may be important especially for neurotic runners who are exposed to a negative mood before the start.

1.49 Running during encoding improves word learning for children

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The learning of new information is an important task in everyday life, especially at a young age. Acute physical exercise can facilitate cognitive processes in multiple ways (see a meta-analysis by Chang, Labban, Gapin, & Etnier, 2012 and a review by Tomporowski, Davis, Miller, & Naglieri, 2008). Previous studies have shown that memory can profit from physical exercise before (Coles & Tomporowski, 2008) and during the encoding of vocabulary (Schmidt-Kassow et al., 2010, 2013, 2014). The current study further investigates this interplay of movement and vocabulary learning and also addresses lifespan differences in these effects. Participants were recruited in a recreational basketball club. Children (N = 24, M= 12,3 years; 13 girls), young adults (N = 30, M= 21,5 years; 17 women), and older adults (N = 24, M= 59,3 years; 9 women) learned twenty new pseudo-words, which corresponded to a German word. In a between-subjects design, encoding took place either while standing, while running, or while running and dribbling a basketball. Recall was assessed throughout the learning session and on the following day. In children, more words could be remembered in the running condition compared to the standing and dribbling condition. There were no differences between conditions for the young and older adults. Age dependent reasons for this pattern of results are further discussed and embedded into the literature of physical exercise. This result suggests that implementing learning activities into children's physical education or exercise activities could be beneficial.

1.50 Effects of long-term downhill running exercise on the perceived exertion and physiological responses

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Background: Lin et al. (2009) have reported that the extent of their physiological responses is related to the gradient at which downhill running (DHR) takes place. However, the conclusion made no inference to the long-term effects of DHR training.

Purpose: This study investigated whether variations in gradient would affect the magnitude of rating of perceived exertion (RPE) and physiological responses over 6 weeks of DHR training.

Methods: 16 healthy male adults were randomly assigned into 0° (level running, LR = control) and -9° (DHR), based on their pre-determined VO₂max, and then performed one time a week for 6 weeks (one bout of 30-min 70%VO₂max running each week) at gradients of 0 (LR) and -9 (DHR) training respectively. Oxygen consumption (VO₂), minute ventilation (VE), respiratory exchange ratio (RER), heart rate (HR), and rating of perceived exertion (RPE) were measured at 5, 10, 15, 20, 25 and 30 minutes, respectively, during each run.

Results: The change in RPE showed no significant difference ($p > 0.05$) between the LR and DHR groups. The results showed that elevations in VO₂, VE, RER and HR during running for DHR group were greater than for LR group from 1 to 4 weeks ($p < 0.05$) and abolished at 5 weeks.

Conclusions: These results suggest that physiological responses assessed at long-term DHR is more affected than LR, but the effect is not present in RPE.

1.51 Stroboscopic technology for improving visual attention in the decision-making process

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Being able to “read the game” is a crucial component of skilled performance in sports (Mann, Williams, Ward, & Janelle, 2007). The ability to gaze and attend to relevant cues in the playing environment is the initial process which determines the accuracy and swiftness of a decision, and consequently, the final action (Tenenbaum, 2013; Williams et al., 1999). Specifically, visual attention plays a central role in anticipating upcoming events, particularly under high-speed and uncertain conditions. As such, visual skills are perceived as a key component in the decision-making process (Savelsbergh, Williams, Van der Kamp, & Ward, 2002; Williams & Ward, 2003). Two studies using stroboscopic technology (Nike Vapor Strobe) to enhance visual attention in tennis serve return, and in turn, improve the athlete’s sport related decision-making will be discussed. The first study aimed at exploring the effects of a single stroboscopic (i.e., intermittent glimpses of the environment) training session on anticipating tennis serve return direction. Results revealed that stroboscopic training significantly improved response accuracy but not reaction time. The second study implemented a similar design protocol to determine the effects of a longer training regimen. Intermediate collegiate tennis players took part in a 6-day stroboscopic training programme, a pre-, mid-, post-test and another outcome test after 1-week delay. To ensure ecological validity, all trainings were completed on the tennis court and all testing was done with tennis service videos at the same level of the participants. Results of the second study is currently being analysed and will be reported.

1.52 Effects of a motor-enriched exercise program on task preparation during working memory in children

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Studies have shown positive influences of motor-enriched exercises on working memory (WM) in children. However, the mechanism underlying the exercise effects remains unknown. The current study focused on the effects of an 8-week extracurricular gymnastics programme on the contingent negative variation (CNV), an event-related brain potential component reflecting stimulus engagement and task preparation processes, prior to the performance of a WM task. Children aged 7-10 years old were assigned to a gymnastics group (N = 23) and a waiting-list control group (N = 22). The gymnastics group engaged in structured gymnastics programme, whereas children in the control group were required to maintain their typical routines during the intervention period. Prior to and after the intervention, children performed a delay-matching task, with concurrent data collection on the CNV. Data on motor competence were also collected. The results revealed that motor competence was improved in the gymnastics group. The gymnastic group also had improved response accuracy regardless of WM demands. Moreover, an increase in mean amplitude of the initial CNV on higher WM demand conditions was observed in the gymnastic group only. Pearson correlations further indicated that the response accuracy of 6sec conditions negatively correlated with mean amplitude of the initial CNV, indicating higher mean amplitude of the initial CNV was associated with higher response accuracy in the WM task. These findings suggest that 8 weeks of motor-enriched exercise facilitates WM performance in children. Improved stimulus engagement and task preparation could underlie the exercise effects, particularly when WM demand is high.

1.53 The effect of distance on putting performance, outcome prediction and prediction bias.

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The ability to anticipate and predict the outcome of one's action is a hallmark of skilled performance. In order to further elucidate this capacity, the present study investigated the ability of novice golfers to estimate the outcome of their putting performance at various target distances. Specifically, we investigated the relationship between putting ability, outcome prediction, and prediction bias. Thirty novice golfers performed a golf-putting task ($N = 15$) in which knowledge of result (KR) was occluded at the moment of club-ball impact. After each putt, participants provided an estimation of the predicted end location of the golf putt relative to the target. Findings indicated a significant relationship between putting accuracy and predicted location of the putt. Furthermore, as the target distance increased, outcome performance and prediction accuracy declined. Interestingly, participants tended to predict the outcome of the putt to be 26% closer to the target than the actual ending location, reflecting a positive prediction bias. This prediction bias was independent of target distance. Our findings suggest that the ability to estimate outcomes is closely linked to the ability to execute putts, but is biased toward more positive outcomes in novices. We will discuss this finding with regards to forward models of motor control and expertise.

1.54 Modality-specific processing of spatial and temporal representations: an embodied cognition perspective

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Spatial and temporal representations are strongly interrelated. Two conflicting hypotheses regarding the mechanisms underlying these interrelations are fiercely debated: on the one hand, the symmetry hypothesis (grounded in a theory of magnitude; Walsh, 2003) suggests that temporal and spatial representations are symmetrically intertwined. On the other hand, the asymmetry hypothesis (Lakoff & Johnson, 1980) predicts an asymmetrical interrelation, in the sense that temporal representations have a weaker impact on spatial representations than the other way around. Despite contradictory predictions, both accounts have received empirical support. However, these conflicting findings may be due to the fact that different modalities are differently sensitive to time and space processing. Indeed, visual information processing is less sensitive to temporal than spatial information, whereas auditory information processing is less sensitive to spatial than temporal information. From an embodied cognition perspective, we therefore hypothesised that the auditory and visual modalities are differently addressed in various sensorimotor tasks, thereby potentially accounting for the seemingly contradictory findings. We present a critical review of a select number of empirical studies examining time-space mappings to scrutinise which modalities were addressed. Our review shows that most studies providing support for the asymmetry hypothesis used visual tasks for spatial and temporal representations. By contrast, most studies supporting the symmetry hypothesis used visual tasks for the spatial domain, but auditory tasks for the temporal domain. We conclude that addressing different modalities by means of different tasks may explain the contradictory findings between studies, but cannot provide support for a genuine (a)symmetric mapping.

1.55 Does resting heart rate variability measure (RMSSD) predict sport-specific decision-making speed?

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Fast decision-making seems to play a crucial role in team sports like soccer, where athletes must develop and execute fast and accurate decisions based on the processing of multiple stimuli (Gerisch, 2001). Latest research assumes that heart rate variability (HRV), and more specifically the root mean square of successive differences (RMSSD) as a measure of cardiac vagal activity, is positively associated with cognitive executive performance (Thayer et al., 2009) and decision-making (Laborde et al., 2013).

The present study is intended to assess whether resting RMSSD predicts performance in decision-making task both in a laboratory setting and in a sport-specific field setting. The participants were shown a priming stimuli (left/right arrow) followed by two synchronous light stimuli either of the same (congruent) or of different (incongruent) colour. The objective was to press (computer task) or run to (field task, $d = 5m$) the displayed direction in case of congruent stimuli and vice versa. To control for individual differences in general running speed and reaction time, the participants performed two running tests, namely a self-started sprint and a signal-induced reaction-run ($d = 5m$). The tests were conducted in a randomised order and experimental groups were created by median-split (low and high resting RMSSD). Data is analysed according to groups mean differences in decision-making time both in computer test and field test results. Data collection is ongoing, and full results will be presented at the conference.

1.56 The relationship between heart rate variability and performance self-ratings under stress in sports coaches: preliminary results

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Sports coaches experience numerous stressors, particularly in relation to their performance (Norris, Didymus, & Kaiseler, 2017). Coaches' emotional competencies have been linked to their coaching efficacy (Hwang, Feltz, & Lee, 2013) and may impact heart rate variability (HRV) as a protective factor against stress (Laborde, Brüll, Weber, & Anders., 2011). Moreover, greater perceived stress is reported at lower HRV (Dishman et al., 2000), whilst the self-perception of stress may influence an individual's self-efficacy towards performance (Bem, 1972; Moritz, Feltz, Fahrbach, & Mack, 2000). This study examines the relationship between HRV and performance self-ratings and the moderating role of emotional competencies in coaches when facing a laboratory-based coaching stressor. Competitive coaches were randomised into experimental (N = 8, male = 87.5%, M = 26.00 years, SD = 5.76) or control (N = 9, male = 100%, M = 32.44 years, SD = 9.89) groups. All coaches completed a profile of emotional competencies questionnaire. The experimental group received a stress induction involving planning and presenting a training session whilst subject to various socio-evaluative components (i.e., filmed, timed, interruptions) and rated their presentation performance at three time points (before planning, before presentation, after presentation). The control group planned a session without any socio-evaluative components. A multiple regression analysis will be run to determine the effect of HRV on self-ratings. The moderating effect of emotional competencies will be tested. Data collection is in progress. This study advances the limited body of literature on the coach as a performer in their own right by including a psychophysiological measure.

1.57 Qualitative study of correlations among social support, emotion regulation behaviours, and acceptance of sports injuries

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We analysed a case study of an injured athlete and investigated correlations among social support (SS) provided to the athlete in the time between the injury and returning to competition, emotion regulation behaviors (ERB) of the athlete, athletic injury psychological acceptance (AIPA) and longitudinally time-course changes. The participant developed a herniated disk in the lumbar vertebrae and underwent rehabilitation for six months before returning to sports. We conducted semi-structured interviews and qualitatively examined the content of the athlete's utterances using the Trajectory Equifinality Model (TEM) and considered the return to competition as the final Equifinality Point (EFP). The trajectory was divided into eight periods based on EFP and Bifurcation Points (BFP) at which the athlete's consciousness and attitudes towards the injury and the comeback changed. We identified four phases based on the quality of worries including shock and denial, confusion and depression, acceptance, and post-acceptance. Next, we extracted SS and ERB affecting the phase transition and analysed their correlations with AIPA, which indicated that acceptance was facilitated in the SS condition through the expression of negative emotions and positive reappraisal, whereas suppression and acceptance were inhibited in the no-SS conditions. Moreover, the time-course indicated that expression and suppression affecting emotional stability were conducted before acceptance, whereas, positive reappraisal affecting recovery of the time perspective, self-control based on suppression, and positive reappraisal was conducted after acceptance. These findings suggest the need for providing support after an injury by considering the time period and the quality of ERB.

1.58 Interpersonal violence experienced by a sample of Quebec teenagers in the context of sport

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Recent studies clearly demonstrate that interpersonal violence towards young athletes is a significant problem (Vertommen et al., 2016). However, there is currently very little scientific data in this problem in Canada. The goal of this study was to describe the magnitude of interpersonal violence towards young Canadian athletes and to explore associated risk factors. A total of N = 1,055 athletes anonymously completed an online survey in 2017 about their experiences of violence in sport. The sample consisted of n = 763 girls (72.3%) and n = 292 boys (27.7%). Participants' age ranged from 14 to 17 years, with a mean of 15.3 years (SD = 1.07). First, frequency analysis by type of violence and χ^2 analyses comparing the proportion of boys and girls were conducted. Then, logistic regression analyses were used to examine relationships between violence toward athletes and age, sex, ethnicity, sexual preference, disability, early sport specialization, hours of practice weekly, sport-level, and sport-type. The results showed that, for at least one experience, psychological violence is the most prevalent form of violence (79.2%), followed by physical violence (39.9%), neglect (35.7%) and sexual violence (28.2%). Age, sex, sexual preference, early sport specialization, hours of practice weekly, sport-level and sport-type were all associated risk factors but differences appear depending on the type of violence experienced. These results could help convince public decision makers of the urgency to act and could serve as a basis for the development and implementation of interventions.

1.59 Comparison of sensation seeking and self-esteem with mental health in professional and amateur athletes, and non-athletes

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The main goal of this study was the comparison of sensation seeking and self-esteem with mental health in professional and amateur athletes, and non-athletes in Arak city. The study samples were N = 150 professional and amateur athletes and non-athletes of Arak city in 2008, selected by simple random sampling. The study design was reason-comparative. Professional, amateur athletes and non-athletes were independent variables and sensation seeking, self-esteem, and mental health were the dependent variables. Zuckerman's sensation seeking, Coppersmith's self-esteem, and Goldberg's mental health questionnaires were used to collect research data. Analysis of variance and post-hoc LSD test were used for statistical analysis. Results showed that there was a significant difference among study groups in self-esteem, sensation seeking and mental health ($p < .01$). The professional athletes had the highest self-esteem, sensation seeking and mental health. The amateur athletes were also in a better situation with respect to these characteristics, as compared to non-athletes. A significant negative correlation was observed among self-esteem, sensation seeking and physical symptoms, anxiety level, social performance disorder and depression level ($p < .01$).

1.60 Physical activity in the lifestyle of Iran university students

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The aim of this study is to analyse the amount of physical activity (PA) in Iran university students' daily lives. The research on university students was conducted as part of nationwide research on PA in the adult population of the I.R.IRAN.

With respect to BMI, the recommendation of 10,000 steps per day on an average day was met by 76% of men and 68% of women of normal weight, 67% of male students who were overweight or obese and 85% of female students who were overweight or obese. Of all monitored days, in both females and males, the number of steps taken on Friday was significantly lower ($p = .0001$) in comparison to other days of a week (in Iran, Friday is part of the weekend). No significant differences were found in the number of steps taken among students of normal weight, students who were overweight and students who were obese on any of the monitored days. The majority of Iran male university students are of normal weight. Only 9% of students meet the criterion of 10,000 steps every day. Approximately two-thirds of students meet the 10,000 steps daily criterion on four or more days per week. The lowest number of steps is taken on Fridays. These findings support the need for intervention programmes to enhance PA on weekends.

1.61 Selective attention during the first seasonal competition

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Attention selectivity is a critical predictor of performance, and in athletes who return to competition following injuries attention can shift away from essential performance cues (Gray, 2015; Janelle & Hatfield, 2008). Therefore, examining athletes' selective attention is relevant. Christakou, Zervas, Psychountaki, and Stavrou (2012) developed the Attention Questionnaire of Rehabilitated Athletes Returning to Competition (AQ-RARC), which includes 10 items in two subscales: Functional Attention (FA) and Distraction Attention (DA). Our study was aimed at investigating the selective attention of athletes during the first seasonal competition, using the Italian version of the AQ-RARC, which included 4 supplementary items on the DA subscale. Two hundred athletes (Mage = 24 yr., SD = 5.76) completed the questionnaire the day after their first seasonal competition, independently of their injury history. The Psychobiosocial States Scale (PBS-ST; Robazza, Bertollo, Ruiz, & Bortoli, 2016) and the Concentration/Disruption subscale of the Sport Performance Psychological Inventory (IPPS-48, Robazza, Bortoli, & Gramaccioni, 2009) were also administered. Confirmatory factors analysis (CFA) supported the two-factor solution of the AQ-RARC (CFI = .96, TLI = .95, RMSEA = .060, SMRS = .91). FA correlated positively with the PBS-ST functional subscale ($r = .66$), and negatively with the PBS-ST dysfunctional ($r = -.30$) and Concentration/Disruption ($r = -.36$) subscales. On the other hand, DA correlated negatively with the PBS-ST functional subscale ($r = -.34$), and positively with the PBS-ST dysfunctional ($r = .49$) and Concentration/Disruption ($r = .70$) subscales. Future studies will involve the comparison between injured and non-injured athletes returning to competition after a period away from competition.

1.62 Examination of the psychometric properties of the Dispositional Flow Scale-2 into Greek language

Nektarios A.M. Stavrou^{1,2}, Maria Psychountaki¹

¹Faculty of Physical Education & Sport Science, National & Kapodistrian University of Athens, Greece; ²Sport Psychology Department, Hellenic Sports Research Institute, Olympic Athletic Center of Athens "Spyros Louis", Greece

The Dispositional Flow Scale-2 (DFS-2; Jackson & Eklund, 2002) is a self-report 36-items instrument evaluating athletes' flow experience during their participation in sport activities. The purpose of the present study was to investigate the psychometric properties of the DFS-2 through confirmatory factor analysis. The sample of the study consisted of seven hundred and seventy nine (779) athletes (413 males, 366 females). Athletes' age ranged from 16 to 46 years ($M=21.45$, $SD=6.04$) and their competitive experience from 2 to 24 years, with a mean of approximately 65 competitions. The athletes completed the DFS-2 based on how the athletes usually feel when they compete. DFS-2 items' logical validity was examined through content analysis, based on a structured and open-ended interview on the translated items. The items were adequately categorized (90%), and they were appropriate for further analysis. The confirmatory factor analysis results indicated acceptable fit, supporting the nine factor model. The χ^2/df ration was 2.11, the NonNormed Fit Index .934, the Comparative Fit Index .942, the Incremental Fit Index .942, the Standardized Root Mean Residual .046, and the Root Mean Square Error of Approximation (RMSEA) .046 (90% CI of RMSEA = .043 - .049) providing support to the acceptance of the hypothetical nine factor solution. The mean Cronbach's alpha of the DFS-2 factors was .82 (ranged from .78 to .91). Items loadings were above .500, ranging from .573 to .848, whereas the factor intercorrelations from .251 to .657. Concurrent and discriminant validity provided further support for the factor structure of the DFS-2.

1.63 Stressors experienced by severely injured elite level athletes: a phenomenological pilot study

Ezgi Aypar

Middle East Technical University, Ankara, Turkey

Injured athletes confront different types of stress sources during injury period. Being aware of the perceived stressors might be a good solution for the development of effective and proper intervention programmes matching with athletes' and sport professionals' needs. Therefore, the purpose of this study was to discover the different stressors experienced by severely injured athletes on three phases of injury process: onset, rehabilitation and 1st training. The athletes' experiences and feelings were explored with phenomenological inquiry. Semi-structured interviews were conducted with four athletes. Interviews were tape-recorded and fully transcribed verbatim. Thematic analysis was utilised to interpret the data. The codes and themes were defined for three phases separately. The results displayed, that all athletes experienced different and similar variety of stress sources at different stages of the injury process. The codes under the stages of the injury were collected under two same themes; physical relate (e.g., physical pain related to injury, physical pain related to rehabilitation methods, lack of knowledge about the injury, loss of fitness, fear of re-injury) and sport related stressors (e.g., loss of opportunities, socially isolation from the team, isolation from the sport, social comparison). In addition, the theme 'general' (e.g., sleep problems, concentration problems) emerged only under the onset of the injury. Different codes appeared depending on the stage. For instance, "lack of knowledge about the injury" replaced (onset) with "lack knowledge about the recovery process" (rehabilitation stage). The study highlights the importance of further research on psychological demands of the sport injury process on different phases.

1.64 Types of helping behaviours observed in a tag game that promotes children's helping behaviour-related self-efficacy

Kohei Ueno

Kagawa University, Japan

Expectations about the role of physical education (PE), which aids the generalisation of fair play in sports from the gym to the classroom, are increasing. Ueno (2015, 2017) developed a game of tag, called Nakama-oni, to promote children's helping behaviour-related self-efficacy (HBSE). In this game, helping other children avoid the catcher without regarding for personal safety is evaluated as fair play. This study investigated the types of helping behaviours that emerged during this game. Fifty-one elementary school students (aged eight to nine years) played one round of two types of tag in a PE class (Nakama-oni and a regular tag game). A t-test showed that proactive ($t(49) = 8.62, p < .01, d = 1.74$) and involuntarily ($t(49) = 6.88, p < .01, d = 1.40$) helping behaviour appeared more commonly during Nakama-oni than during the regular tag game. Similar differences were observed in the participants' subjective evaluations of the frequency of helping behaviour ($t(49) = 10.96, p < .01, d = 1.84$). A multiple regression analysis showed that HBSE post Nakama-oni was influenced by subjective evaluations of the frequency of helping behaviour ($\beta = .35, p < .05$) rather than the actual number of helping behaviours (proactive behaviour: $\beta = .12, p = .41$, involuntarily behaviour: $\beta = -.08, p = .56$). Further, distinctive helping behaviours were observed only in Nakama-oni. These findings suggest that subjective evaluations of the frequency of helping behaviour might be more important for promoting HBSE as compared to the actual number of helping behaviours.

Featured Panel 02: Do we do what our results show? European career researchers about their own careers (panel session)

Time: Tuesday, 16/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 219 - Brussels

Session Chair: Paul Wylleman, Vrije Universiteit Brussel

Session Chair: Natalia Stambulova, Halmstad University

Featured Panel: Do we do what our results show? European career researchers about their own careers (panel session)

Chair(s): **Paul Wylleman** (Vrije Universiteit Brussel, Belgium), **Natalia Stambulova** (Halmstad University)

Discussant(s): **Paul Wylleman** (Vrije Universiteit Brussel, Belgium)

This panel of four prominent career researchers will discuss the associations between their research during the past 20 to 30 years and their own professional careers. Some important findings from their research on topics such as career transitions, career termination/retirement, psycho-socio-cultural factors/holistic development, and athletes' crises include that:

- a career and its termination are the result of multiple factors (athlete and social environment);
- transitions have the power to change the development of careers in sport and life;
- research should include retrospective accounts and rationalisations and also future prospects;
- athletes' careers are influenced by their concurrent development in different domains and the occurrence of transitions.

After four brief career narratives the researchers will discuss:

- How their thinking about athlete careers evolved during their research career;
- The associations between a research-based 'career-type-of-thinking' and their own career;
- The people and organisations having influenced their career;
- The major lessons learned and what recommendations could be given to younger career researchers and sport psychology/career/dual career practitioners?

Questions from the audience will also be encouraged.

Presentations of the Symposium

Do we do what our results show? European career researchers about their own careers (panel session)

Paul Wylleman

Vrije Universiteit Brussel, Belgium

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Do we do what our results show? European career researchers about their own careers (panel session)

Dorothee Alfermann

Leipzig University

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Do we do what our results show? European career researchers about their own careers (panel session)

Miquel Torregrossa

Universitat Autònoma de Barcelona

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Questions from the audience will also be encouraged.

Featured Symposium 03: asp-Symposium: The 50th anniversary of the German Society for Sport and Exercise Psychology (asp)

Time: Tuesday, 16/Jul/2019: 2:00pm - 3:30pm · *Location:* S 10 - Münster
Session Chair: Bernd Strauss, Westfälische Wilhelms-Universität Münster

Featured Symposium: asp-Symposium: The 50th anniversary of the German Society for Sport Psychology (asp)

Chair(s): Bernd Strauss (WWU)

50 years ago, in 1969, the German Society for Sport Psychology (German: Arbeitsgemeinschaft für Sportpsychologie, abbr. asp) was founded in Muenster (Germany). The Society is devoted to the promotion of research, practice, and development in the discipline of sport and exercise psychology in Germany. The asp has almost 500 members, most of them are sport psychologists, sport scientists or psychologists.

The purpose of the Society is to encourage and promote the study of human behaviour within sport and exercise settings as well as to improve the quality of research and professional practice in sport and exercise psychology (see www.asp-sportpsychologie.org).

The managing council of the asp invites all attendees of the FEPSAC Congress who are interested in celebrating this 50th anniversary to attend this symposium. Bernd Strauss, president of the asp, will start the session with some introductory and historical statements. Then, three content related talks related to the three major topics of the asp will follow, focusing on: 1. sport psychology, 2. exercise psychology, 3. motor behaviour. Current members/vice presidents of the asp-managing council will facilitate these presentations. After these three talks there will be time for a discussion, and also a get together.

Presentations of the Symposium

Sportpsychology in performance sports

Babett Lobinger¹, Oliver Stoll²

¹DSHS Köln, ²Martin-Luther-Universität Halle-Wittenberg

This presentation focusses on the contribution of sport psychology in understanding expert performance in peak performance sports from, especially from a perspective of sportpsychologists, working and researching in Germany. According to the main aims of the science of psychology the following questions will be addressed: 1.) What are the main characteristics of expert performance in sports? 2.) How can we describe peak performance? 3.) How can expert performance be better understood and explained? 4.) Do we have empirical evidence to predict expert performance? And 5.) How can sport psychology help in optimizing performance? These questions will be answered by reviewing research in sport psychology addressing expert performance and talent development. Applied sport psychology will be highlighted by outlining the topics of the publications in the German Journal of Sportpsychology (Zeitschrift für Sportpsychologie) in the last 50 years since the founding of the asp in 1969. In summary, it can be shown that there is a gap between research-oriented and applied articles in the journal. Furthermore the quantity of papers with an applied focus decreased over the years.

Health Perspectives in the German Society for Sport Psychology

Harald Seelig¹, Gorden Sudeck²

¹University of Basel, Switzerland, ²University of Tübingen, Germany

For about 30 years, the health perspective has been a proven element of the spectrum of exercise psychological research and application within the German Society for Sport Psychology. On the occasion of the 50th anniversary of this German Society for Sport Psychology, we dedicate this contribution to some lines of development regarding exercise psychology. Based on a short characterization of research topics and activities with reference to the German Society of Sport Psychology, we outline potentials and challenges that may be relevant for the present and future needs of exercise psychology research and health-related applications.

Milestones in Motor Behavior Research

Nadja Schott¹, Julian Rudisch², Claudia Voelcker-Rehage²

¹Stuttgart University, Germany, ²TU Chemnitz, Germany

Research on motor behavior has a longstanding tradition, with a large number of researchers contributing to a broad and in-depth theoretical understanding. The development of theories mostly occurred in a non-linear fashion, with rapid growth phases following the publication of important research articles and new theoretical perspectives that have changed the way we conceive motor behavior today. We will outline and discuss some of the most innovative and effective theories and developments in the field of motor behavior (divided into its three main branches: development, learning and control) of the last century. In addition, we will present early, seminal papers that we consider indispensable when starting to study motor behavior. Looking back should allow us to draw and discuss a direction for the future. The highlighted research topics may (and hopefully will) have an even greater impact on the development of a healthy living environment in the next decades in many areas of society, including sport and movement science, robotics, and various clinical areas.

Gimme-Five 01: Gimme-5 Talks

Time: Tuesday, 16/Jul/2019: 2:00pm - 3:30pm · Location: VSH 116 - Varna

Session Chair: Philip Sullivan, Brock University

Teammate influences predict eating and exercise psychopathology over the athletic season

Charlotte Scott, Emma Haycraft, Carolyn Plateau

Loughborough University, United Kingdom

Introduction: Athletes are at an increased risk of developing disordered eating and exercise attitudes and behaviours. Cross-sectional research has pointed out the positive (e.g., provision of anti-dieting advice) and negative (e.g., modelling of disordered eating behaviours) influences of teammates. However, the prospective nature of these influences, in addition to possible gender differences in susceptibility to influence, require investigation.

Method: A longitudinal design was employed to establish whether teammate influences at the start of the athletic season predicted athletes' eating and exercise attitudes and behaviours seven months later, at the end of their season. Athletes (N = 245, mean age = 18.45 years, n = 135 female) completed a survey exploring teammate influences (e.g., modelling of disordered eating, friendship quality), eating and exercise attitudes and behaviours in October 2017 (T1) and May 2018 (T2).

Results: ANOVAS revealed that eating and exercise attitudes and behaviours remained stable over time. For females, the most prominent predictor of eating/exercise psychopathology was teammates' modelling of disordered eating behaviours, followed by supportive teammate friendships and anti-dieting advice. For males, teammates' discouragement to eat healthily was the most prominent predictor of eating/exercise psychopathology, followed by anti-dieting advice. Overall, teammate influences explained a greater proportion of the total variance in eating/exercise psychopathology for females.

Discussion: Teammates can be both protective against, or engender an increased risk of, disordered eating and exercise in athletes, with gender differences apparent. These findings are important to consider when developing tailored, team-based interventions to reduce disordered eating and exercise among athletes.

Exploring perceived barriers and facilitators to exercise behavior among people with visual impairments and motor disabilities

Carina Mnich¹, Leon Klos¹, Annalena Schneider¹, Claudio Renato Nigg^{1,2}

¹Karlsruhe Institute of Technology, Germany; ²University of Hawai'i at Manoa, USA

Background: Exercise leads to multiple benefits such as improved cardiovascular and muscular functioning and fitness. However, people with visual impairment (VI) and motor disabilities engage less in sports and exercise than people without disabilities (Haegele et al., 2019, National Center for Health Statistics, 2012). Understanding underlying reasons may guide intervention.

Aim: To explore barriers and facilitators to exercise behavior in people with VI and motor disabilities.

Methods: Semi-structured interviews were conducted with 8 participants (6 VI, 1 VI & motor disability, 1 motor disability; 2 females; mean age=27.4 [SD=8.6]; 62% university students) face to face or on the phone due to physical distance. Grounded theory was used for content analysis.

Results: Main barriers named for exercise behavior were infrastructure such as lack of accessibility, lack of adaptations, missing specialized equipment, time and effort especially in terms of organizing a seeing sports assistant, lack of social support and limited capacities due to the impairment. Main facilitators of exercise behavior were a wide range of individual- and team-sports, adaption of exercise programs and facilities to the disability, social support and social interaction in the sports group and anticipation of positive emotions and experiences as well as health and fitness outcomes.

Discussion: People with VI and motor disabilities perceive similar exercise barriers and facilitators as people without disabilities. However, disability related barriers add to the general barriers, making more and specific facilitators necessary to bring about exercise behavior. Future research and interventions should consider these results and explore possible solutions.

Evaluation of portable polysomnography to assess sleep stages in natural environments of athletes

Annika Hof zum Berge¹, Michael Kellmann^{1,2}, Sarah Kölling^{1,3}

¹Ruhr University Bochum, Germany; ²The University of Queensland, Australia; ³Stellenbosch University, South Africa

Recent studies indicate that sleep of elite athletes is compromised (Gupta et al., 2017). While psychological factors (e.g., competition, Erlacher et al., 2011) or training schedules (e.g., Sargent et al., 2014) were identified as critical aspects, little is known about the sleep architecture of athletes and how it varies in different training phases. The lab-based gold standard polysomnography (PSG) is not practical for large-scale studies and regular monitoring in elite sport settings. Therefore, the present study evaluates portable PSG versus the gold standard.

Twenty-five participants (22.9 ± 2.0 years) slept in a sleep lab on two consecutive nights wearing both PSG and SOMNObatch plus EEG electrodes. Sleep parameters and sleep stages were compared via intraclass correlation coefficients (ICC) and paired t-tests based on 39 nights in total.

ICC ranged between .64 and .98, while differences were found between Total Sleep Time (t(38)=3.16, p=.003, d=0.51), Total Wake Time (t(38)=-3.34, p=.002, d=-0.53), Wake after Sleep Onset (t(38)=-4.24, p<.001, d=-0.68) and Sleep Efficiency (t(38)=2.66, p=0.012, d=0.43) with small to moderate effect sizes. Sleep Onset Latency and the sleep stages (N1 to N3, Rapid Eye Movement) did not differ significantly.

As sleep parameters differed only within a timeframe of 15 minutes, while sleep stages showed no differences between measures, and ICC's indicated good to excellent agreement, portable PSG may serve as an orientation measurement of sleep architecture and as occasional monitoring system. Athletes can apply the self-sticking electrodes in familiar environments. However, it should not be used to replace in-lab PSG for clinical purposes.

Adherence to rehabilitation following a severe sport injury: prospective test of an integrated psychological model

Alfred S. Y. Lee¹, Derwin K. C. Chan^{1,2,3}

¹The University of Hong Kong, Hong Kong S.A.R. (China); ²Curtin University, Australia; ³The Education University of Hong Kong, Hong Kong S.A.R. (China)

We conducted a two-month prospective study that applied the integrated model (Hagger & Chatzisarantis, 2009) of self-determination theory (SDT; Deci and Ryan, 1985) and the theory of planned behaviour (TPB; Ajzen, 1991) in the prediction of patients' adherence to post-surgery rehabilitation programme following anterior cruciate ligament (ACL) reconstruction. It is hypothesised that the psychological variables of the integrated model at baseline would be predictive to patients' rehabilitation adherence at 2 month. We recruited 120 ACL patients (mean age = 27.62, range = 18 to 53; Male = 63.33%) in a Hong Kong public hospital who had ACL reconstruction surgery performed within 2 months. At baseline and 2-month follow-up, they completed a survey package measuring perceived autonomy support from doctors and physiotherapists (HCCQ; Williams et al., 1996), treatment motivation (TSRQ; Levesque et al., 2007), social cognitive factors (Ajzen, 2002) and adherence (Chan et al., 2009) toward rehabilitation. Path analysis displayed good goodness-of-fit, chi-square = 11.47 (df = 9), CFI = .98, TLI = .93, and RMSEA = .06 [90% CI = .00 to .10] after controlling for age, gender, time of surgery and post-surgery rehabilitation, and injury severity. The parameter estimates supported the hypothesized pathways of the integrated model (i.e., autonomy support from physiotherapist and autonomous treatment motivation directly and indirectly predicted TPB variables and treatment adherence), except the association between autonomy support from doctor and autonomous motivation. In conclusion, the integrated model of SDT and TPB provided a comprehensive framework for explaining patients' psychological processes of medical adherence.

Learning sport safety in-school and sport injury prevention out-of-school: an examination using the trans-contextual model

Alfred S. Y. Lee¹, Derwin K. C. Chan^{1,2,3}

¹The University of Hong Kong, Hong Kong S.A.R. (China); ²Curtin University, Australia; ³The Education University of Hong Kong, Hong Kong S.A.R. (China)

This cross-sectional study applied the trans-contextual model of motivation (TCM; Hagger, Chatzisarantis, Culverhouse, & Biddle, 2003) to investigate if students' motivation of learning sport safety in an in-school context is transferrable to the motivation, social cognitive factors, and intention of sport injury prevention in an out-of-school context. We hypothesised that perceived autonomy supports from PE teachers would not only be related to students' in-school autonomous motivation of sport safety, but it would also be indirectly predictive to students' autonomous motivation, social cognitive factors, and intention of sport injury prevention in an out-of-school context. We recruited 1557 junior secondary school students (mean age = 13.34, range = 11 to 19; Male = 50.20%) from 6 local secondary schools in Hong Kong who were asked to complete a survey comprising established scales of the psychological variables of TCM. Path analysis was employed to examine the hypothesised associations. The model displayed acceptable goodness-of-fit, chi-square = 255.10 (df = 22), CFI = .98, TLI = .95, and RMSEA = .08 [90% CI = .07 to .09], and the parameter estimates supported all the hypotheses derived from the tenets of TCM regarding how in-school autonomy support and autonomous motivation of sport safety were linked to students' autonomous motivation, social cognitive factors, and intention of sport injury prevention in out-of-school context. In summary, the findings provided preliminary support of the application of TCM regarding how students learnt sport safety in-school and adopt the corresponding behaviour for sport injury prevention in out-of-school environments.

The effect of physical fatigue and heat on cognitive function during high-intensity intermittent exercise in team sport players

Kate Donnan, Emily Williams, Nicholas Stanger

Leeds Beckett University, United Kingdom

Limited research has investigated the conjunctive effects of physical fatigue and heat on cognitive functioning in sport. Accordingly, this study investigated the effects of physical fatigue and heat on cognitive function during a validated exercise protocol reflective of the incremental fatigue experienced during team sport. Twelve well-trained male team-sport players (53±3.6 mL·kg⁻¹·min⁻¹) completed an 80-minute cycling intermittent sprint protocol (CISP), interspersed by a 15-minute half-time period, in three fully counterbalanced environmental conditions (18°C, 25°C, 32°C [50%rh]). Computerised vigilance and Stroop tasks were administered every 10-minutes throughout exercise, alongside a visual-auditory dual-task pre, half-time and post CISP. Two-way repeated measure ANOVA's revealed that throughout the CISP, reaction time (RT) improved for congruent Stroop but not incongruent Stroop, whereas accuracy declined over time for both congruent and incongruent Stroop across all conditions. There were no effects for vigilance during the CISP. However, dual-task auditory accuracy appeared to be influenced by condition whereby accuracy was lower in 32°C, suggesting that processing of auditory stimuli could be impaired in hot conditions. Interestingly, peak power output was significantly lower during the third quarter of the CISP in 32°C compared to 25°C and 18°C. Our findings indicate that RT may improve during prolonged high-intensity intermittent exercise, but decision accuracy becomes impaired particularly for more complex cognitive tasks; perhaps resultant of exercise-induced increases in catecholamine concentration (McMorris et al., 2011). Athletes may also reduce their physical effort in the heat, particularly during the second half of match-play, to help sustain cognitive performance in more physically demanding environments.

Handlers' psychological demands in human-animal sports: a scoping review

Kathleen Oswald, Sebastian Harenberg, Laura Cobus-Kuo, Justine Vosloo

Ithaca College, United States of America

Human-animal sports (e.g., dog agility, dressage) require handlers and animals to compete in high stress environments. The handler has to manage the unpredictability of the animal through interspecies communication to achieve optimal performance. Preliminary evidence suggests that handlers experience intense emotions and need to apply several mental skills to guide the animal successfully in competition. To date, there is an absence of summarizing efforts of this literature to create a deeper understanding of the handlers' psychological demands during competition. Hence, the purpose of this scoping review was to examine the literature on the handlers' psychological demands in human-animal sports. A search of four databases (i.e., PubMed, PsycInfo, SPORTDiscus, CINAHL) revealed 974 unique articles. Twenty-five articles met the inclusion criteria. The majority of the articles examined equestrian events, followed by dog sports and rodeo. The psychological factors explored included pre-competitive emotions (e.g., anxiety) and mood states ($n = 12$, 48%) followed by the use of psychological skills ($n = 10$, 40%) and cognitive abilities ($n = 5$, 20%). The most frequently reported psychological skills included imagery ($n = 5$, 20%) and goal setting ($n = 5$, 20%). Most of the selected research was conducted in the United States ($n = 9$, 36%) and in the United Kingdom ($n = 8$, 32%). Nineteen of the articles (76%) were published between 1999 and 2019. The present body of evidence suggests that handlers, much like athletes in other sports, experience intense pre-competitive emotions and apply mental skills to optimize performance.

Athlete and staff perceptions of mental health and mental illness in high-performance sport

Isobelle Kennedy, Andrea Scott-Bell, Sarah Partington, Elizabeth Partington

Northumbria University, United Kingdom

Physical activity (PA) can be beneficial to mental health (MH) and therapeutic in the treatment of mental illness (MI; Chekroud et al. 2018). However, the psychological benefits of PA may dissipate at the elite level (Hughes & Leavey, 2012). Athletes associate health (Theberge, 2008) and MH (Coyle, Gorczynski & Gibson, 2017) with their capacity to perform successfully within their sport. The current study provides further insight into athlete and support staff perceptions of MH and MI in high-performance sport (HPS). Qualitative data from an online survey ($n=60$) was supplemented with ongoing semi-structured interviews ($N=10$) with both high-performance athletes and support staff from a variety of sports in England. Data were analysed using the principles of thematic analysis (Braun, Clarke & Weate, 2016). Preliminary analysis suggested that athletes and staff perceived MH and MI to be universal states (i.e. the characteristics of both do not differ between athletes and the general population) that could be shaped by the culture and context of HPS. Frequent reference was made to the pressures inherent within HPS and the different ways this may influence the beliefs about, and consequences of, differing levels of MH and/or MI. Athletes and staff perceived MH to be fluid and representative of a spectrum but indicated there needed to be a certain level of severity associated with MI. The results highlight the need to further understand and consider the socio-cultural aspects of HPS when designing interventions aimed at preventing MI or promoting optimal MH for athletes.

EEG-based functional communication can predict mindfulness in skilled golfers

Kao-Hung Lin¹, Kuo-Pin Wang¹, Wen-Hsuan Chang¹, Tai-Ting Chen¹, Kuan-Fu Chen¹, Cheng-Wei Kao¹, Eric Hung², Chih-Yen Chang¹, Chung-Ju Huang³, Yu-Kai Chang¹, Tsung-Min Hung¹

¹Department of Physical Education, National Taiwan Normal University, Taiwan; ²Department of Optoelectric Physics, Chinese Culture University, Taiwan; ³Graduate Institute of Sport Pedagogy, University of Taipei, Taiwan

Objectives: This abstract reported an on-going study examined whether cortico-cortical communication could be related to mindfulness in golf putting task.

Method: Thirty-five skilled golfers were recruited to perform 60 putts while their EEGs were recorded. Before the putting task, participants were asked to finish a questionnaire to measure their mindfulness score. EEG Coherence between Fz, the motor planning areas, and other sites (i.e., F3, F4, C3, C4, T3, T4, P3, P4, O1, & O2) was assessed for four frequency bands (theta, 4-8 Hz; low alpha, 8-10 Hz; high alpha, 10-12 Hz; low beta, 12-22 Hz). Correlation analysis and stepwise linear regression were used to determine the relationship between coherence, mindfulness, and putting performance.

Results: Coherence at Fz-O1 for theta at T2 (-1000 ~ 0ms) was inversely related to putting performance. The stepwise regression indicated that Fz-T4 coherence in low beta at T1 (-2000 ~ -1000ms) and Fz-P3 coherence in theta at T1 (-2000 ~ -1000ms) could positively predict the score of non-judgment in mindfulness questionnaire, which explained 26.5% of the variance ($R^2=.308$, $F(2, 32)=7.127$, $p=.003$).

Conclusions: The inverse relationship between coherence and putting performance supports the psychomotor efficiency hypothesis. The communication between motor planning areas (Fz) and visuo-spatial (T4 and P3) areas of the cortex might be able to predict the mindfulness in skilled golfers. More participants will be recruited to increase statistical power.

Invited Symposium 02: Holistic approaches to sport and physical activity participation in the Asian context #2

Time: Tuesday, 16/Jul/2019: 2:00pm - 3:30pm · *Location:* Aula im Schloss - Europe
Session Chair: Youngho Kim, Seoul National University of Science and Technology

Invited: Holistic approaches to sport and physical activity participation in the Asian context #2

Chair(s): **Youngho Kim** (Seoul National University of Science and Technology, Korea, Republic of (South Korea))

It is clearly recognised that sport and exercise psychology today is different from the discipline that emerged in the 1960s. Scholars have responded to public concern with increased research on health-oriented physical activity, and many sport psychologists focus on youth development following a positive psychology approach. Some researchers emphasise theory-based research with tight controls while others use interpretive approaches and search for experiential knowledge. Some do no research, but use information to educate, consult or clinically treat sport and physical activity participants. In this regard, it should be noticed that expanding international communication and interaction has moved us toward a global sport and exercise psychology with shared research and professional identification. Sport and exercise psychology has expanded beyond its North American and European bases to become a truly international discipline. Therefore, today, we will present some research works in sport and exercise psychology, which have been done in the Asian context. The symposium is composed as two parts such as sport psychology-related research and exercise psychology-related research. All presenters hope that this symposium can help you understand similarities and differences between Asian and Western sport and exercise psychology research and ultimately enhance mutual recognition and collaboration.

Presentations of the Symposium

Heart rate variability and self-regulation in athletes and non-athletes in Singapore

Emily Ortega

Singapore University of Social Sciences

Self-regulation plays an important role in many behaviours and a lack of self-regulation is believed to be linked to poor physical health and emotional well-being (Baumeister, Heatherton, & Tice, 1994). In elite sports, self-regulation is also believed a critical factor for successful performance (Kitsantas, Corbatta, Javussanu, & Van de Pol, 2017). Since heart rate variability (HRV) has been identified as a marker for self-regulation, it was postulated that elite athletes from a closed skill sport that demands high self-regulatory abilities for sporting success would have higher HRV in comparison to athletes from a team sport and a non-athlete population. Personality traits of the three groups were also assessed to determine if HRV plays a role in trait differences that may elicit varying autonomic responses. A Singapore based sample of 122 participants were examined, comprising of athletes from an individual closed skill sport (shooting), athletes from a team sport (floorball), and a non-athlete population (university students). It was anticipated that shooters would have the highest HRV and conscientiousness scores, while team sport athletes would have the highest extraversion scores. Comparisons between the three groups found significant differences in HRV, openness, conscientiousness, extraversion, and agreeableness. HRV was highest for the shooters, lending further support for HRV as a marker of self-regulation.

Acute exercise and cognitive function

Yu-Kai Chang

National Taiwan Normal University

Acute exercise, also known as a single bout of exercise, has been demonstrated as being positively linked to cognitive function. In 2018, the evidence of a positive relationship between acute exercise and cognitive function was reviewed by the Physical Activity Guidelines Advisory Committee, and was mentioned in the newly released second version of the Physical Activity Guidelines for Americans. The purpose of this presentation is to provide a series of studies from our laboratory, with the specific objective of targeting on dose-response relationships between acute exercise and cognitive functions involving intensity and duration aspects, and also the potential mechanisms pertaining to event-related potential aspects, one of the electroencephalography (EEG) approaches. The possible and recommended exercise protocols will be provided, based upon the current evidence, and directions for further examinations will also be discussed.

The effect of a rowing class on college adaptation and social support among freshmen in medical school

Seunghyun Hwang¹, Eunseok Yang², Yonggwon Song³

¹Kyungpook National University, ²Hallym University, ³Pukyong National University

It is challenging for freshmen in college to adjust to a new college life. In fact, medical students have psychological difficulties in academics and social relationship due to a comparative environment in Korea (Lee & Lee, 2013). The participation in a sport programme, which is involved with behavioural synchrony (e.g. rowing), could facilitate their social interaction (Sullivan, Gagnon, Gammage, & Peters, 2015). The purpose of this study was to examine the effect of a rowing class on college life adaptation and perceived social support among freshmen in medical school. The rowing class, which consisted of fourteen two-hour sessions, was given only to the freshmen (experimental group, N = 61) at H university while the freshmen at K university (control group, n = 25) did not participated in the rowing class. The questionnaires for college life adaptation and perceived social support were administered at the beginning and the end of the semester. A two-way repeated MANOVA was used to test the effect of the rowing sport class on students' adaptation of college life (academic, social, personal-emotional, institutional) and perceived social support (emotional, informational, tangible, appraisal). The results showed that the rowing class led positive changes in college life adaptation and perceived social support. The social adaptation of the students in H university was significantly increased compared to their counterparts. Also, a significant interaction effect was found in emotional support, which indicated that the perceived emotional support of the students in K university was significantly decreased while the students in H university was not.

Motivational approaches in promoting physical activity involvement

Dev Roychowdhury

DR ACADEMY, University of Canberra

Modern society is witnessing a gradual decline in individual adherence to physical activity.

Despite the well-documented benefits of physical activity, a large proportion of the global population remains physically inactive, which has been linked to many major causes of morbidity and mortality (Gavin, Keough, Abravanel, Moudrakovski, & McBrearty, 2014; WHO, 2010). One of the most prominent factors that stimulates and maintains individuals' participation in physical activity is their motivation (Morris & Rogers, 2004; Roychowdhury, 2018). Research in participation motivation indicates that individuals who are intrinsically motivated to participate in a physical activity tend to participate over a longer period of time as compared to extrinsically motivated individuals (Frederick & Ryan, 1993). Examining and understanding individuals' motivation for an activity, therefore, can not only assist in increasing adherence but also reducing lifestyle-related illnesses, which has huge implications for overall health and well-being. The main aim of this paper is to provide an overview over the key approaches that have been used to understand participation motivation within physical activity domain. This paper further comments on the complexity of understanding behaviour change within physical activity research and proposes the need to develop and embrace a dynamic and multilevel framework that would comprehensively envelop the intricacies associated with physical activity behaviour and involvement.

Physical activity participation and its related variables in an Asian setting

Youngho Kim

Seoul National University of Science and Technology

It is well documented that active lifestyles including regular physical activity are an important contributor to the reduction of various negative symptoms and the prevention of many chronic diseases. Nevertheless, many people around the world have failed to engage in physical activity on a regular basis. Physical activity and its related factors are very complex. It means that physical activity is difficult to change without clear understanding of relationships between them. In this regard, research suggests that psychological, social, and physical environment variables impact on the ability or likelihood of individuals participating in physical activity. Recently, in exercise psychology concerted efforts have been directed towards not only psychosocial factors, but environmental factors that might be useful for encouraging and supporting physical activity initiation and/or maintenance among people. In addition to this approach, there has been a shift towards theoretically based studies that concentrate on physical activity adherence focusing on the broad range of interactions among those variables. The current presentation, in the first part, introduces the psychosocial correlates of physical activity participation based on various theories which have been frequently applied in exercise psychology. Then, I introduce the broad range of practical research evidences on the significant relationship between physical activity participation and various constructs

Paper Session 11: Referees and Decision Making

Time: Tuesday, 16/Jul/2019: 2:00pm - 3:30pm · Location: Senatssaal - Prague

Session Chair: Clare MacMahon, Latrobe University

2:00pm - 2:15pm

The adjudication of duels by the assistant referee in football

Simon Boyer, Ian Cunningham, Michel Recopé, Géraldine Rix-Lièvre

Universite Clermont Auvergne, France

Most research about football assistant referee performance has focused on judgment and decision-making of offside (e Pina et al., 2017). Judging offside is a domain specific skill, but other aspects of the assistant's performance that are part of refereeing the match, have received less attention in research. The purpose of our study was to elicit the assistant referee performance when he carries out his prerogative of intervention in the course of the match by signalling a foul. We specifically investigated the assistant referee's lived experiences (Cahour et al., 2017) in order to understand how they participated, or not, in decision-making for adjudicating duels (i.e. one-on-one action between opponents). Six professional football matches were studied involving self-confrontation interviews (Theureau, 2003) conducted with N = 12 assistants. Analysis of interviews showed that for the assistants the cues that indicate that a decision process is taking place for the central referee, also indicate a priority of the latter for the decision. The participation of assistants in the decision-making processes depends on contextual cues related to preoccupations concerning the team organisation (Poizat et al., 2010). Findings also showed that throughout the match, the assistants construct an understanding of the circumstances of the central referee's decision-making in the cases of duels. Assistants constructed their judgment in relation to the central referee's perceived contextual judgment (Mascarenhas et al., 2005). During a football match, the referee team members construct mutual intelligibility about the intentions of the central referee (Bourbousson et al., 2010).

2:15pm - 2:30pm

Identity and influence: player captains' activity during interactions with sport officials

Ian Cunningham¹, Géraldine Rix-Lièvre¹, Duncan Mascarenhas², Peter Simmons³

¹Universite Clermont Auvergne, France; ²Edinburgh Napier University, UK; ³Charles Sturt University, Australia

Insight into complex interactions between players and officials is limited, particularly from players' views (Dosseville et al., 2014; Rix-Lievre et al., 2015). Considering the hierarchical position of the officials, role and identity concerns are one group of preoccupations in interaction but can radically shift and be reconstructed given contextual changes across unfolding interactions (Goffman, 1967). The investigation aims to study player captains' activity during match interactions with officials to understand their situated preoccupations and how identity concerns arise from moment to moment and potentially direct their interaction. Course-of-action theory (Theureau, 2003) was used as a frame to describe players' lived experience during interactions including what is most meaningful and salient for them. Five professional European rugby union matches were studied involving self-confrontation interviews conducted with seven player captains. Findings show inconsistency between captains' perceived role description and enacted identity during interactions. Most captains are preoccupied with the official's perception of match events that precede explicit and implicit methods of influencing the official's future decision-making through self-initiated interactions. Captains generally participate in a front-stage interaction, or "working communication" with limited adaptation to the official's activity. The findings lend information to inform training to help officials manage and adapt their interaction to players' activity. An integration of cognitive anthropology and sociological perspectives helps to progress modelling of sport officials' communication to account for dynamism and co-construction of interactions.

2:30pm - 2:45pm

The coordination between officials and players: how the game's unfolding is co-constructed?

Géraldine Rix-Lièvre, Ian Cunningham, Simon Boyer

Université Clermont Auvergne, France

Some research has studied officiating in its daily practice context (MacMahon, 1999; Mascarenhas et al., 2005; Ollis et al., 2006), but few studies have focused on the official as a scientific object (Rix-Lièvre et al., 2014). As some officials are considered 'interactors' (MacMahon & Plessner, 2008), studying their activity leads to highlighting the co-construction of the unfolding game (Rix-Lièvre et al., 2014). To address this issue, we studied the official's activity and their coordination with the players during the match. An activity-oriented approach seeks to understand 'from within' how the subject constructs his/her activity (Récopé et al., in press), what is meaningful for him/her, and what is at stake 'here and now'. To understand the coordination, we propose to approach how everyone lives his/her situation (Poizat et al., 2012). Four elite rugby matches were investigated. Several video recordings were produced: one from the stands, another from a head-mounted video camera worn by the official. Video recordings were used to conduct various individual self-confrontation interviews in order to approach what is salient and significant for the official and players during the same match moment. It was found that before any intervention by the official (whistle, gesture, speech), shared contextual information and shared perception are strongly limited. The official's intervention initiates different modalities of coordination based on resignation, obviousness or reflexivity-in-action. We present these different coordination modalities and discuss new training opportunities to improve interactions between players and sport officials.

2:45pm - 3:00pm

Jersey colour effects on attentional, perceptual, and decision-making processes in an immersive simulated soccer task

Stefanie Hüttermann¹, Nicholas J. Smeeton², Paul R. Ford², A. Mark Williams³

¹German Sport University Cologne, Germany; ²University of Brighton, United Kingdom; ³University of Utah, United States

The sensing of colour changes across the visual field; detection is strongest in the fovea and declines in the periphery (Hansen, Pracejus, & Gegenfurtner, 2009). Several researchers have assessed the effect of jersey colour on sports performance over the last decade (e.g. Greenless, Leyland, Thelwell, & Filby, 2008). However, while most researchers have concentrated on visual perception processes, the effect of different coloured jerseys on the focus of attention, which normally is much smaller than the visual field (Hüttermann & Memmert, 2017), has not been adequately studied. We developed a football-specific task to evaluate whether jersey colour affects decision making as a function of attentional and perceptual capabilities. Pairs of players wearing either black and white (achromatic colours), red and green (chromatic colours), or blue and yellow (chromatic colours) jerseys were briefly presented across a range of visual angles on a large immersive screen (radius of 3m). Participants (N = 20) were required to decide to whom to pass the ball, while their perceptual and attentional skills were recorded. Accuracy of perceiving jersey colour was higher for achromatic when compared to chromatic colours and lower at greater visual angles of player pair presentation. There were no differences in attentional performance (due to the relatively small size of the attentional focus) or decision making as a function of jersey colour. Findings are discussed with regard to research on colour perception and attention in the visual periphery and its impact on decision making in sport and other professional domains.

3:00pm - 3:15pm

When in doubt, it's not out: LBW decision making in elite level cricket umpires across match types

Joshua Mark Adie^{1,2}, Remco Polman^{1,2}, David L. Mann³, Ian Renshaw^{1,2}

¹School of Exercise & Nutrition Sciences, Queensland University of Technology, Australia; ²Institute of Health and Biomedical Innovation, Australia; ³Vrije Universiteit Amsterdam, Netherlands

Leg before wicket (LBW) judgements are arguably the most difficult decisions umpires are required to make in cricket. Umpires must decide whether a ball that has hit the batter would have gone on to hit the stumps in a highly temporally constrained environment (see Law 36 in MCC, 2017). Previous work has shown that cricket umpires possess superior flight prediction expertise in a lab setting (Chalkley et al., 2015), however, no work to date has explored LBW decision-making expertise in a naturalistic context. This project utilised historical LBW decision data from Australian first-class matches in three match types (Four Day, One Day, and T20). Decisions were rated as correct or incorrect by a match referee, which were then used to calculate umpire sensitivity (A) and response bias (B) in an exploratory signal detection paradigm. Overall, umpires showed high levels of sensitivity and tended to be conservatively biased to respond not-out. Umpires showed the highest levels of sensitivity in Four-Day matches, followed by One-Day and lowest in T20 matches. Umpires were significantly more conservative in T20 matches than in Four-Day matches. These exploratory findings will be discussed in relation to recent work by Russell et al. (2018) which suggests that officials' decisions are not driven by traditional notions of accuracy, but rather by what the 'game' expects of the official (e.g. cricket expects umpires to give the 'benefit of the doubt' to the batsman). Further, we will suggest that contextual differences between match types may shape officials' decisions.

Paper Session 12: Motor Imagery

Time: Tuesday, 16/Jul/2019: 2:00pm - 3:30pm · Location: S 8 - Copenhagen

Session Chair: Gal Ziv, The Academic College at Wingate

2:00pm - 2:15pm

The effect of synchronous music and imagery on swimming performance

Garry Kuan¹, Kuan Juen Leong^{1,2}, Hua Ann Mok^{1,2}, Kai Shian Foo², Ngien Siong Chin³, Tony Morris⁴

¹Exercise and Sports Science, School of Health Sciences, Universiti Sains Malaysia (USM), Kelantan, Malaysia; ²Faculty of Arts and Social Sciences, Universiti Tunku Abdul Rahman, Malaysia; ³Department of Physical Education and Health, Institute of Teacher Education Batu Lintang Campus, Sarawak, Malaysia.; ⁴Institute of Health & Sport, Victoria University, Melbourne, Australia

The study aimed to examine the use of synchronous music with mental imagery on swimming performance. N = 40 district swimmers, aged 18 to 23 years old, were randomly grouped into three research conditions, namely (i) Guided imagery only (GI), (ii) Synchronous music with imagery (SMI), and (iii) No imagery (Control). A shortlist of 20 music tracks with the potential to be synchronised to individual swimming strokes (1 or 2 strokes per beat) was established, and was rated by 10 university swimmers, using the Brunel Music Rating Inventory-3. Music ratings of 38-44, indicating motivational qualities, were shortlisted. Swimming strokes were calculated using a video recording during participants' pre-test at the swimming pool. All participants completed the Sport Imagery Ability Measure (SIAM) to assess their imagery abilities. Participants in the GI and SMI conditions undertook seven-minute imagery sessions, three times per week for four weeks. They then completed a performance post-test. Results showed that swimming performance was significantly improved for the GI and SMI conditions compared to the control condition, $F = 4.835, p = .007$. There was a significant difference between the GI, SMI, and control condition in swimming performance, $F = 8.292, p = .007$, with SMI showed significantly greater improvement followed by the GI condition. The results suggest that both interventions can be incorporated into the regular training regimen of both regular and professional swimmers to improve their swimming performance. Further study is warranted to confirm the finding that synchronous music enhances imagery effects on swimming performance.

2:15pm - 2:30pm

Does mimicking actual movement during climbing observation change the subsequent climbing movements?

Takahiro Sugi, Masami Ishihara

Tokyo Metropolitan University, Japan

We investigated whether mimicking the actual movement during climbing observation affects the exploratory action. Climbing observation influences the subsequent climbing moves (Sanchez et al., 2012). Although climbers often mimic the actual movement according to their motor image during the observation, the actual effect of such simulative action is still unclear. In the present study, N = 12 climbers were asked to climb two routes six times after the observation of the given route with body movement ("with"-condition) or without body movement ("without"-condition). Using the number of touches of the holds as an index of the exploratory action, we compared the ratios of the sixth trial to those of the first trial. The participants were also asked to answer the Vividness of Movement Imagery Questionnaire-2 (VMIQ-2; Roberts et al., 2008), which is a scale for the vividness of the motor image. On the basis of the median of VMIQ-2 score, we divided the participants into two groups (high-vividness and low-vividness group). The order of conducting the actual climbing and the VMIQ-2 were counterbalanced. The ratio of the exploratory action was fed into the ANOVA with the group (high vividness vs low vividness) and the action ("with" vs "without") conditions. The results revealed a significant main effect for the action, that is, the participants showed a lower ratio (i.e. less touching) in the "with" condition compared to the "without" condition irrespective of the groups. This implies that the mimicking of actual movements during the climbing observation may facilitate exploratory action.

2:30pm - 2:45pm

Training reactions with imagery: exploring whether response behaviours influence choice reaction time

Dominic G McNeil¹, Michael Spittle², Christopher Mesagno³

¹University of New England, Australia; ²Victoria University, Australia; ³Federation University Australia

One psychological technique proposed to improve reactive task performance is imagery, however, it is unclear whether it is possible to imagine reacting to an unknown stimulus as imagery is volitional. Imagery training could be a pragmatic approach to investigating whether athletes react to unpredictable stimuli during imagery (Paivio, 1985). Traditionally, imagery is performed without observable movement, however, coupling movements to imagery may promote effective performance strategies (Guillot, Moschberger & Collet, 2013). The aim of the study was to investigate whether imagery training can improve choice-reaction time performance and whether response differences elicit varied performance results. N = 72 participants were randomly assigned to one of four conditions: physical, imagery-physical response, imagery-verbal response, or control. Participants completed a pre-intervention-post-test design, with pre- and post-test consisting of 40 4-choice reaction time trials. The physical and imagery response conditions completed 600 4-choice reaction time trials distributed into three 200 trial training blocks completed on one day. The findings indicated that the physical condition reaction time improved from pre- to post-test. The imagery-physical response condition significantly improved reaction time performance, whilst the imagery-verbal response and control condition had a non-significant effect on performance. Differences between imagery conditions potentially indicate that performing the physical response may have mediated the effectiveness of imagery. The lack of performance improvements for the imagery-verbal response condition may support the conceptual issue of generating and rehearsing important performance components of reactive tasks. These findings have applied implications since it seems to be difficult to practice reactive components of a task in imagery.

2:45pm - 3:00pm

Exploring ipsilateral reacting to imagined and physical stimuli**Dominic G McNeil¹, Michael Spittle²**¹University of New England, Australia; ²Victoria University, Australia

One advantage of imagery is that it provides an opportunity to generate an event that is representative of action. The majority of research focused on the effect of imagery on motor or perceptual performance components, identifying similarities between imagery and physical performance. Little research, however, has investigated the role of imagery on perceptual-motor tasks. That is, motor performance that is directly informed by cognitive-perceptual information. For imagery to be an effective psychological technique, it is important that the mental representation reflects the perceptual-motor components of performance. This study investigated whether imagers react to unpredictable stimuli during imagery by examining the movement response pattern and RT performance on complex ipsilateral finger and foot movements. N = 59 undergraduate students (mean age = 27.01, SD = 8.3) completed 30 simple, 2-choice congruent and 2-choice incongruent ipsilateral finger-foot movement trials in response to a physically presented or imagined stimulus. Ipsilateral finger-foot programming rule was maintained when reacting to an imagined stimulus. Imagery reaction time performance also slowed as the difficulty of the task increased. These findings support a functional equivalence to physical reacting performance with imagers generating and reacting to unpredictable stimuli. Slower imagery performance than the physical conditions on the 2-choice incongruent task and minimal performance change to the 2-choice congruent task, however, may indicate that task complexity caused the slower reaction time between simple and 2-choice congruent task rather than reacting to the imagined stimulus. Findings will be discussed in relation to the conceptual, theoretical and applied role of imagery for reactive tasks performance.

3:00pm - 3:15pm

The effect of a combined action observation and motor imagery (AOMI) intervention on the putting performance of golfers**Eoghan McNeill, Niall Ramsbottom, Adam J Toth, Mark J Campbell**

University of Limerick, Ireland

Motor simulation interventions like motor imagery (MI), and action observation (AO), are readily accepted as effective interventions to enhance motor skill performance. MI is commonly defined as the internal generation of visual and kinaesthetic features of a movement or skill (Eaves et al., 2016), while AO refers to the deliberate observation of a successfully executed motor skill (Neuman & Gray, 2013). Traditionally, MI and AO have been examined independently of one another, however, evidence is emerging suggesting that MI and AO can be used as complementary interventions to enhance motor learning and performance. Recent experimental evidence suggests that combined AO and MI (AOMI) interventions can positively augment performance (Romano-Smith et al., 2018; Scott et al., 2017). The purpose of the current study was to examine the role of an AOMI intervention on golf putting performance. N = 44 right-handed male golfers were assigned to one of two experimental groups, an AOMI intervention group or a reading control group. The putting task involved putting to a target from a distance of 15 feet (4.572m) with the intention of stopping the ball on a target. Putting performance was measured via radial error from the target and through three kinematic variables measured using a SAM PuttLab device. Results show significant improvements in both experimental groups from pre-test to post-test on radial error scores, while participants in the AOMI group showed significant improvements for ball direction at impact. Findings are discussed in the context of the current literature and with several key limitations in mind.

3:15pm - 3:30pm

The effectiveness of imagery and an instructional aid on learning to putt in golf**Ronnie Lidor, Matar Ochayon, Gal Ziv**

The Academic College at Wingate, Israel

The purpose of our study was to examine the effectiveness of (a) visualizing an object used as an instructional tool to help learners in the perception of the learning environment (in the current study, a 1 X 1 m wall placed behind a golfing hole), and (b) the actual use of this visual aid, on learning a novel task. N = 48 physical education students with no prior experience in golf participated in this study and were taught how to putt. The participants were randomly assigned to three groups: imagery, visual aid, and control (a no-intervention condition). The study was composed of two sessions, in which the participants putted 90 times from a distance of 2 m (sessions 1 and 2) and 3 m (session 2). sessions 1 and 2 were composed of acquisition trials and session 2 of retention and transfer trials. At the beginning of session 1, the participants completed a vividness imagery questionnaire. The data analyses revealed no differences in putting accuracy between the three groups. However, an interaction was found between the imagery ability of the participants and the variability in performance: the putts of the participants with higher imagery ability were more consistent than the putts of the participants with lower imagery ability. The findings of the current study suggest that high imagery ability may have a positive effect on performance. It was suggested that additional studies examine the contribution of visualizing objects used as visual aids and the actual use of these aids in beginning golfers.

Paper Session 13: Executive Functions

Time: Tuesday, 16/Jul/2019: 2:00pm - 3:30pm · Location: S 9 - Cologne

Session Chair: Bjoern Krenn, University of Vienna

2:00pm - 2:15pm

Systematic review of Yoga and Tai-Chi interventions and cognition within Asian populations

Bernalyn Ruiz¹, Margaux Grivel², Courtney Hess¹

¹University of Massachusetts Boston; ²New York University

Introduction: Researchers have demonstrated the utility of exercise interventions for improving facets of cognition (e.g. working memory, social cognition, attention, short-term memory) among individuals with Schizophrenia (Firth et al., 2015; Pajonk et al., 2010). Findings indicate that 90 minutes of moderate-to-vigorous exercise per week is optimal for improving cognitive functioning in patients with Schizophrenia (Firth et al., 2015). Studies have focused on walking, running, and cycling, which may have limited the application to culturally diverse populations. Within Asian populations, mild forms of exercise are more commonly practised (e.g. Yoga, Tai-Chi; Juan, 2005), and therefore more accessible and culturally appropriate. As such, to examine the utility of mild exercise for improving cognition, the current study examined differences between moderate-to-vigorous exercise (e.g. running, cycling) and Yoga-type exercise interventions (e.g. Tai-Chi) on cognition among Asian populations.

Method: A systematic review was conducted in accordance with PRISMA guidelines (Moher et al., 2009). Studies were included if they (1) used DSM or ICD-10 diagnostic criteria, (2) reported results on cognitive functioning, (3) included a measure of, or intervention for, exercise, physical activity, or sedentary behaviour, and (4) were conducted in Asia.

Results: Findings of the review were mixed but demonstrate the utility of exercise interventions for improving cognition, and warrant consideration within populations of individuals with Schizophrenia. Moderate-to-vigorous exercise interventions outperformed Yoga-type interventions in short-term cognitive improvement, however, sustained improvement was observed following Yoga-type interventions. Detailed findings from the systematic review will be provided as well as implications for future research and applied practice.

2:15pm - 2:30pm

Sport type involvement affects executive function measures in elite athletes

Philipp Koch, Björn Krenn

University of Vienna, Austria

Recent research detected better performance in executive function (EF) measures in elite athletes competing in interceptive or strategic sports (Krenn, Finkenzerler, Würth, & Amesberger, 2018; Voss, Kramer, Basak, Prakash, & Roberts, 2010). However, research is lacking to scrutinise how athletes' sport involvement or creative activities during childhood and youth contribute to the development of their EF. N = 57 elite athletes from Austria (36 male; M = 22.86 ± 4.66 years), competing at the highest national level in their respective sports, conducted different neuropsychological tests measuring working memory, inhibition, perceptual speed and cognitive shifting. Design Fluency Test, Trail Making Test, Flanker task, and a 2-back task (Delis, Kaplan, & Kramer, 2001; Krenn et al., 2018) were used. Retrospective interviews assessed athletes' past sport and music involvement (Côté, Ericsson, & Law, 2005). Athletes' involvement in static, interceptive and strategic sports was clustered into age episodes for analysis. Multiple regression showed that interceptive sport involvement, especially before the age of 13, and music involvement significantly predicted EF measures of cognitive shifting and perceptual speed, whereas static sport involvement hindered performances on perceptual speed. In addition, Spearman's rank-correlation analyses indicated that the total number of different sports participated in during one's career and the age of an athlete when first entering regular sports significantly correlated with measures of cognitive shifting and perceptual speed. The results demonstrate that EF measures were influenced by extensive practice in certain sport types and activities during an athlete's career, emphasising the need to investigate the athletes' developmental histories.

2:30pm - 2:45pm

Larger effect of acute aerobic on lower inhibitory control in children with attention deficit/hyperactivity disorder

Yu-Jung Tsai¹, Chi-Fang Lin¹, Ting-Yu Chueh¹, Sin-Chi Liu¹, Chung-Ju Huang², Tsung-Min Hung^{1,3}

¹National Taiwan Normal University, Taiwan; ²University of Taipei, Taiwan; ³Institute for Research Excellence in Learning Science, National Taiwan Normal University, Taiwan

The aim of the present study was to investigate the effect of acute aerobic and resistance exercise on inhibitory control in children with attention-deficit/hyperactivity disorder (ADHD). Using a within-subject design, thirty children with ADHD were recruited and assigned in counterbalanced order for three conditions. The treatment consisted of a 30-min moderate intensity of aerobic exercise, resistance exercise, and watching videos. The Stroop and the Simon test were assessed after each condition and the order of these two tasks were conducted randomly for all participants. The manipulation check showed that ratings of perceived exertion were around 6 to 7, indicating moderate exercise intensity on two exercise conditions, and also the reaction time was longer in incongruent related to congruent conditions. The results showed no significant differences among the three conditions on both of Stroop and Simon tests. However, when examining the inhibitory control capacity, the children with lower inhibitory control capacity had shorter RT following aerobic exercise compared to the control session. Collectively, the finding indicated that the effect of acute exercise would be moderated by the ability of inhibitory control in children with ADHD.

2:45pm - 3:00pm

Executive functions in elite level football players**Adam Francis Beavan^{1,2,3}, Job Fransen³, Jan Spielmann⁴, Sabrina Skorski¹, Jan Mayer⁴, Thomas Hauser², Tim Meyer¹**¹Saarland University, Germany; ²German Football Association Academy (Deutscher Fußball-Bund; DFB- Akademie), Frankfurt, Germany; ³Sport and Exercise Discipline Group, Faculty of Health, University of Technology, Sydney, Australia; ⁴TSG 1899 Hoffenheim, Zuzenhausen, Germany

Introduction: Previous research in football has conveyed the value of measuring executive functions (ExF) as a prognostic tool for talent identification (Verburgh et al., 2014). This study examined if variables that influence ExF exist in a population of high-level players.

Methods: Data was collected biannually from the 2016/17 to the 2018/19 season. N=316 male players (from U12-Professional) representing a professional German club were measured on three computer-based cognitive tasks: a choice reaction-time task (CRTT), a stop-signal reaction-time task (SSRT) and a sustained attention task. In total, n=849 individual observations were included in the analyses.

Results: Linear-mixed random intercept models were used (the individual player's intercepts are allowed to vary randomly). A main effect of age on CRTT and SSRT, where age only explained 5% and 9% of the explained variance (EV), respectively. Including random effects (conditional explained variance, CEV) improved the accuracy of the model for SSRT but not for CRTT (CEV = 48% & 5%; p<.001). Furthermore, a significant main effect of both age and playing position on response inhibition (EV=8%; CEV=48%; p<.005) was observed. Lastly, a significant interaction effect of both age and playing position on the attention task's number of correct answers (EV=40%; CEV=83%; p=.02) and response-time (EV=52%; CEV=83%; p<.001) was observed.

Conclusions: Age and playing position did not appear to be strong predictors of performance on ExF tasks. Further investigations are warranted regarding the importance of high ExF scores as an attribute that is required in professional football.

3:00pm - 3:15pm

Does physical exercise lead to enhanced cleverness?**Katharina Pöppel, Ingo Roden, Nora Müller**

Carl von Ossietzky Universität Oldenburg, Germany

Current research findings suggest that benefits in cognitive parameters can be enhanced by a combination of physical and cognitive exercise (e.g. Moreau, Morrison, & Conway, 2015). Therefore, the present study investigates whether combat sport training (TaeKwonDo), which includes cognitive parameters like memorizing complex movements as well as physical parameters, leads to higher cognitive advantages in visual-spatial working memory and executive functions compared to working-memory training and aerobic training. We investigate this assumption within a quasi-experimental intervention study with three-time points of measure. In particular, we measure N = 54 primary school children (M = 8.28 years, SD = 0.63; 50% female) concerning their cognitive (working memory), psychophysiological performances (resting heart rate, blood pressure, salvia cortisol and alpha-amylase concentrations as well as self-reports of positive and negative affects) before (pre) and after the interventions (post) as well as five weeks later (follow-up). Within the eight weeks of intervention, one group of children received a weekly TaeKwonDo training (n = 12, combat sport group), while the two comparison groups either received a working memory training (n = 15, working memory group) or an aerobic training (n = 14, aerobic training group) of 45 minutes. A fourth group of children without any training served as a control group (n = 13). We suggest higher physiological and working-memory outcomes after the intervention for children in the combat sport group compared to the other groups. Measurements have taken place in the period October to December 2018, the follow-up is scheduled for January 2019. Results will be presented at the conference.

Paper Session 14: Science to Practice in Sport Psychology: Best Practice

Time: Tuesday, 16/Jul/2019: 2:00pm - 3:30pm · Location: VSH 17 - Westphalia

Session Chair: Sidonio Serpa, University of Lisbon

2:00pm - 2:15pm

NCAA Division I coaches' perceptions of sport psychology and mental health service provision

Thomas Gretton, Allison Blake, Dabney Skutt, Lindsey Blom

Ball State University, United States of America

Although research has identified a rising number of U.S. NCAA Division I (DI) schools utilising sport psychology services (Gross et al., 2018), little is known about DI coach perceptions of the service of sport psychology. Furthermore, there is a limited understanding of DI coaches' opinions on mental health and how they perceive their role in identifying and responding to student-athlete mental health concerns (Cox et al., 2017). Using a qualitative case study design, this study explored the experiences and opinions of N = 4 NCAA DI coaches on sport psychology and mental health service provision for the student-athlete population. Following IRB approval, interviews were conducted and subsequently underwent inductive thematic analysis (Kibblewhite et al., 2017). Results identified that past experiences contributed to coaches seeking enhanced role clarity and consistency, and improved service versatility in terms of content and content delivery. Notably, all coaches underlined their aspiration to have access to both licensed and in-training sport psychologists. Relative to mental health provision, coaches recognized their fear of personal incompetence, the worry of possible mental health misjudgment by athletes, and inadequate protocol and communication with the athletic department. In light of these concerns, coaches accentuated their desire for institutional and athletic intervention to improve mental health education and develop a less ambiguous mental health response protocol. This oral presentation will discuss the acquired findings, highlight ways to improve collegiate sport psychology services and draw attention to important coach-opinions that must be considered when advocating for and implementing effective mental health services within universities.

2:15pm - 2:30pm

Effect of biofeedback training on reactive stress tolerance and sports performance of track and field athletes: a case study

Jaiprakash Bhukar¹, Nibu R. Krishna¹, Jayashree Acharya^{1,2}, Dalley Krishnan³

¹Lakshmbai National Institute of Physical Education, Gwalior, India; ²National Sports University, Imphal, Manipur, India;

³National Institute of Technology, Tiruchirappalli, Tamil Nadu, India

The purpose of the present case study was to investigate the effect of Biofeedback training on reactive stress tolerance and the sports performance of track and field athletes. A total of (N = 5) male junior Indian athletes camping at Patiala, ranging between 14 – 18 years, were selected as subjects for the single-subject design of the study. All the athletes underwent an eight-week Biofeedback training. Treatment was given thrice in a week. Observations were recorded in three phases i.e. pre-intervention, mid-intervention and post-intervention. The dependent variables were EMG, GSR and pulse rate, which were measured through Biofeedback instruments. The reactive stress tolerance was assessed through the Vienna Test System (VTS). Descriptive statistics were employed for the analysis of data and the level of significance was set at alpha = .05. The results indicated that in all three variables, biofeedback had a drastic reduction effect on the recovery time after a strenuous workout when compared to the pre-intervention state (i.e. 43 ± 6min) and the post-intervention reading (i.e. 3 ± 1.5min). There was also a significant improvement in the reactive stress tolerance level with the pre-intervention mean score (M = 63 PR) to the post-intervention mean score (M = 76 PR) and the performance of athletes increased from 20% to 36% in their respective events during the treatment phase. The current study implies that the use of biofeedback training for a minimum of 15 minutes thrice a week holds significant improvements in recovery time and performance enhancement of the athletes.

2:30pm - 2:45pm

RONJA ...Story of my Life...

Jan Elet Brand

University of Twente (finished in august 2018)

Storytelling is one of the primary and oldest communication forms used by human beings. It offers the possibility to secure information about people or situations and order this information in time. Different scientific sources claim, that reading or listening to well-constructed narratives enhances our empathic forms of understanding and can broaden our narrative reasoning and meaning construction (Koch, 1998; Worth, 2008). I want to present a project which incorporates storytelling in the area of performance sports, more specifically in the area of martial arts. Being a passionate martial artist myself I am working on a podcast ("RONJA"), in which I interview seven athletes on following seven topics: love, patience, humour, pride, courage, fear and death. In more detail, I am interested in how far these aspects play a role in the personal life of each athlete and how they affect the athletic progress. By linking autobiographical details up with athletic experiences, I want to stimulate holistic stories of personal ways of dealing with diverse living conditions. Questions shall cover situational aspects (e.g. situations triggering fear), strategical aspects (e.g. personal dealings with fear), personal experiences (e.g. with fear) and resulting learning experiences. The eventual aim is to present narratives, listeners can relate to, with regard to their own personal/ athletic development. Due to the generality of the seven topics, I believe that not only martial artists but everyone can learn from these stories. As Sheridan states: "we're all fighting something" (2010, p. 288).

2:45pm - 3:00pm

Motor and psychosocial development in children with ASD through soccer**Alberto Cei¹, Daniela Sepio², Michele Rosci³, Bruno Ruscello⁴**¹San Raffaele Roma Open University, Rome, Italy; ²Accademia di Calcio Integrato, Roma, Italy; ³AS Roma, Roma, Italy;⁴University of Tor Vergata, Roma, Italy

The goal of this investigation was to study the effects of a training program based on teaching a sport team (e.g. soccer) in a naturalistic intervention on children with autism spectrum disorder (ASD). The "Soccer Together Program" recruited N = 30 children (6-13 years old) with ASD from a public school in Roma, Italy. Specifically, this investigation wanted to promote the psychosocial, motor and soccer competences of these children. No other study has been conducted in team sports. To assess the impact of the training program on the psychosocial skills (collaboration, communication, socialization, problematic behaviours, self-support and families), a qualitative approach has been used to get to know this specific phenomenon and to formulate the intervention model. The qualitative approach of the psychosocial skills was conducted interviewing the parents at the beginning and the end of the training period. To analyse the results of the motor and soccer training, the assessment was conducted by interviewing the parents' about the global motor improvement and the ball approach with a quantitative analysis of 10 motor skills. The results showed the parents perceived that most of the children with ASD improved their psychosocial and motor skills, with differences according to the severity of their autism. Regarding the quantitatively assessed motor skills, the children improved significantly on 6 tests out of 10. In relation to soccer skills, 39.3% of children did not show any improvement in running with the ball. 28.6% reached an intermediate level and 10.7% a medium-high level of skill.

3:00pm - 3:15pm

Boosting human performance in organizations: what can be learned from sports psychology?**Michael Bar-Eli**

Gurion University of the Negev, Israel

Performance enhancement is a major goal of sports organizations. To boost human performance, the complex behavioural science of getting ahead has to be broken down into its determinants. In this presentation, I will discuss some of the most important psychological underpinnings of human behaviour, and how we can harness them in order to perform at our highest levels and to succeed in sports and other organizational settings.

To excel in any achievement situation, it is critical to develop psychological skills, which, just like physical abilities, can be taught, learned, and practised. Both as individuals and as groups, people can refine their psychological skills and use them to heighten awareness, foster talent, and achieve peak performance. Individual skills include the regulation of arousal, motivation and goal setting, self-confidence, decision-making, and creativity, whereas working in teams requires appropriate group cohesion and effective leadership.

To thrive and boost performance in any competitive environment, these components of mental preparedness and psychological awareness are mandatory. I will illustrate some of the lessons to be learned from sports psychology and apply them to other settings as well, in order to better support, inspire, and manage elite performers in any domain of their lives.

Paper Session 15: Leadership

Time: Tuesday, 16/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 118 - Nottingham

Session Chair: Katrien Fransen, Katholieke Universiteit Leuven

2:00pm - 2:15pm

Consequences of authentic leadership in sport

Ella Rose Malloy¹, Maria Kavussanu¹, Mariya Yukhymenko²

¹University of Birmingham, United Kingdom; ²Fresno State University, United States

Authentic leadership (AL) is a model of leadership which could be promising in sport. Authentic leaders are genuine and show consistency between their inner values and behaviours, have high moral standards and are concerned with the relationships they establish with their followers. Authentic leadership is expected to have a number of positive outcomes for followers, however, research examining this construct in sport is limited. We conducted two studies to examine the relationship between AL and athlete outcomes. In Study 1, we investigated whether coach AL is related to athlete commitment, positive affect and moral behaviour and whether these relationships are mediated by trust and team climate. Participants were N = 366 male and female team sport athletes. Results showed a positive relationship between AL and athlete commitment, pro-social behaviours and positive affect, and these relationships were mediated by trust and team climate. In Study 2, we investigated the same relationships, using a longitudinal design. A total of N = 421 team sport athletes took part in the study. Data analysis is ongoing, but we expect that AL will have a stronger effect on athlete outcomes than the other way around. Our findings suggest that AL could be key to creating more positive follower outcomes and thus go some way to address current issues in sport such as low sports participation levels and antisocial sport behaviours.

2:15pm - 2:30pm

Talking is silver, silence is gold, or maybe not!? A case study on communication and leadership in elite team sports

Michele Ufer

Institute of Sports & Management Psychology, Germany

This presentation reports on a consulting project with a national team. The goal of the national coach was to "increase the motivation (and performance) of the athletes". But the original focus was quickly widened during the contracting from a simple "motivation/team training" for the athletes to an organizational development process in order to involve the most important players. Thus, topics for systematic improvement were made accessible, which at first did not seem relevant, but whose importance in terms of athlete's motivation was crucial, such as: communication and interface management between athletes and trainer/staff, the communication and coordination within the staff members, the leadership and self-leadership of the national coach. Tools that were used during the process are discussed in this presentation, e.g. a SYMLOG leadership assessment and solution-focused coaching. This case study shows that it can be of great value to implement an effective feedback process on athlete-staff communication which in turn may lead to significant improvements on athlete's motivation and performance.

2:30pm - 2:45pm

Leadership development to enhance individual and team functioning of walking groups for older adults

Joren Looockx, Filip Boen, Jannique Van Uffelen, Jan Seghers, Peter Iserbyt, Katrien Fransen

KU Leuven, Belgium

Given that a majority of older adults reports poor physical activity levels (Sallis et al., 2016), walking programs can be recommended to increase their physical activity levels (Pelssers et al., 2013). These programs can be led by either professionals or participants themselves (i.e. peer leaders). The review of Burton et al. (2018) concluded that peer-led walking groups are equally effective and less expensive than professional-led programs. In sports, it has been found that teams in which peers fulfilled different leadership roles (i.e. shared leadership) showed greater team confidence, stronger goal commitment and greater effort, and ultimately performed better (Fransen et al., 2017). These insights have led to the development of peer leadership programs in sports teams (e.g. Franssen et al., 2019). However, to date, no program exists that incorporates implementation and development of different peer leaders in physical activity settings. Therefore, we want to investigate the impact of a peer-leadership intervention in walking groups for older adults. Twenty walking groups, which participated in a 12-week walking program, were randomly assigned to intervention (n = 10 groups) or control condition (n = 10 groups). The intervention condition received a group-workshop after 3 weeks to implement a structure of shared leadership and develop leadership potential of the appointed peer leaders. At week 1 (pre-test) and week 12 (post-test), health, motivation, team identification, social cohesion, and physical activity will be assessed. Data will be collected in the coming months. We hypothesise that high-quality peer-leadership development will have positive effects on older adults.

2:45pm - 3:00pm

An interdisciplinary citation network analysis of career mentoring: a roadmap for sport mentoring research

Jordan S. Lefebvre¹, Gordon Bloom¹, Todd M. Loughead²

¹McGill University, Canada; ²University of Windsor, Canada

According to Ragins and Kram (2007), there has been an explosion of mentoring research over the last several decades spanning a number of professions, such as teaching, management, and nursing. Given our limited understanding of sport mentoring, reviewing knowledge from other disciplines has the potential to improve the advancement of knowledge in this context. Therefore, the purpose of this study was to inform sport mentoring research by systematically synthesizing the mentoring literature across disciplines using citation network analysis - a novel technique that uses citation structures to identify of breadth, structure, and development of literature. A comprehensive interdisciplinary literature search to locate influential mentoring articles, books, and book chapters resulted in a network of 1,819 texts and 10,951 citation links. Five major mentoring disciplines emerged: academic medicine, industrial and organisational, education, nursing, and psychology. Sport mentoring represented only 1.47% of the full-network and was interwoven within the industrial and organizational literature, signifying a limited amount of sport mentoring research. Moreover, our findings indicated a scarcity of mentoring research targeting formal sport mentoring and peer athlete mentoring. Given these two areas are well developed in other mentoring disciplines, in addition to having identified the seminal mentoring texts related to these areas in our citation network analysis, this study attempts to bridge the gap between what is known about mentoring and sport mentoring. In sum, this study provides sport mentoring scholars with a roadmap to further promote the advancement and dissemination of mentoring knowledge and research in sport.

3:00pm - 3:15pm

Leading together towards a stronger 'Us': an experimental test of the 5RS shared leadership program in basketball teams

Niels Mertens¹, Filip Boen¹, Alex Haslam², Niklas K. Steffens², Stewart Cotterill³, Katrien Franssen¹

¹KU Leuven, Belgium; ²The University of Queensland, Australia; ³University of Winchester, England

Leadership has been suggested as a key factor that helps to gain competitive advantage. More specifically, research has highlighted that shared leadership constitutes a better predictor of team effectiveness than vertical leadership. Although the benefits of shared leadership are well documented, the evidence on how to implement such a structure of shared leadership is sparse. In sports teams, this leaves coaches with three key challenges: (1) identifying the "right" team members, (2) defining what roles those leaders should fulfil, and (3) how to further develop the leadership skills of the appointed leaders. The 5RS Shared Leadership Program addresses these challenges by identifying the best leaders within the team on task, motivational, social, and external leadership (through social network analysis). Next, we strengthen the identity leadership skills of the appointed leaders over the course of five phases (Readying, Reflecting, Representing, Realizing, and Reporting). To test the effectiveness of this program, we recruited eight Belgium basketball teams at the national level (N = 96). We adopted an experimental design in which teams were evenly distributed over two conditions (i.e. intervention and control condition), each being measured at two points in time (i.e. pre- and post-test). The results of 2x2 repeated measures ANOVA's show that the 5RS Program succeeded in creating an effective structure of shared leadership and in strengthening the perceived leaders' ability to create a shared sense of "us" within their team. Additionally, the program strengthened members' team identification, motivation, commitment to team goals, and well-being in comparison to our control group.

Symposium 10: Performance improvement and optimization: perceptual and psychophysiological approaches

Time: Tuesday, 16/Jul/2019: 2:00pm - 3:30pm · *Location:* H 2 - Bern
Session Chair: Selenia di Fronso, "G.d'Annunzio" University of Chieti-Pescara

Performance improvement and optimization: perceptual and psychophysiological approaches

Chair(s): **Selenia di Fronso** (Department of Medicine and Aging Sciences, BIND–Behavioral Imaging and Neural Dynamics Center, University "G. D'Annunzio", Chieti-Pescara, Italy)

Discussant(s): **Mauro Murgia** (Department of Life Sciences, University of Trieste, Italy)

In the sport domain, improving and reaching optimal performance during training and competition is one of the main goals for coaches and athletes (e.g., di Fronso, Robazza, Bortoli, & Bertollo, 2017). Consequently, in the last 20 years there has been a growing interest in the study of different techniques and approaches useful for performance enhancement. For example, perceptual and psychophysiological interventions were demonstrated to lead to better performance and better insight of the functioning of the entire organism and its interaction with the environment (e.g., Tang & Bruya, 2017). Based on these assumptions, the purpose of this symposium is to offer an overview of the most recent studies using the aforementioned approaches in sport and physical exercise contexts. Firstly, we will discuss the established techniques based on auditory stimuli which were found to be relevant for performance in sports, for example volleyball or football. Secondly, the focus will shift on the beneficial effects of slow paced breathing approaches in a formula three motor sport. Thirdly, we will move on the importance of adopting a psychophysiological approach in the study of the quiet-eye phenomenon for performance improvement in target sports. Finally, the last two presentations will describe the usefulness of electroencephalography to study brain patterns related to optimal performance as well as current issues about neurofeedback training for performance enhancement.

Presentations of the Symposium

Performance improvement by means of auditory stimuli: established techniques and hints for new interventions

Fabrizio Sors¹, Mauro Murgia¹, Tiziano Agostini¹, Serena Mingolo¹, Eleonora Bilotta²

¹Department of Life Sciences, University of Trieste, Italy, ²Physics Department, University of Calabria, Italy

There is an abundance of techniques for performance improvement based on vision (e.g., modeling, temporal/spatial occlusion, etc.). In the new millennium, researchers started to investigate the potentialities of the auditory system, discovering that auditory information provides relevant cues in various sports and that, in turn, such cues can be used as stimuli to significantly improve performance – in some cases even more effectively than visual stimuli.

During the present talk, an overview of the established techniques based on auditory stimuli will be offered, and some hints for new interventions will be provided, based on the latest findings within this field of research. In particular, as concerns the established techniques, the attention will be focused on the use of auditory information as a model – auditory modeling/second order biofeedback (e.g., Agostini et al., 2004) – and as a feedback – movement sonification (e.g., Effenberg, 2005).

As concerns the hints, a series of experiments in soccer and volleyball highlighting the contribution of early auditory information to shot power and length discrimination/prediction will be presented (Sors et al., 2017; 2018). It will be shown that, in some circumstances, early auditory information may be even more relevant than the corresponding visual information. These results might be useful for the implementation of perceptual-motor training protocols aimed at improving athletes' performance.

Enhancing cardiac vagal activity through slow paced breathing: formula three case study

Emma Mosley¹, Zoe L Wimshurst²

¹Solent University, UK, ²AECC University College, UK

Slow paced breathing has been shown to have many beneficial effects for the management of stress and coping in both mainstream psychology (i.e., Wells, Outhred, Heathers & Haddon, 2012) and sport psychology (i.e., Paul & Garg 2012). A recent case study utilising this intervention approach in elite sport resulted in increased subjective feelings of optimal performance during competition (Gross et al., 2017). The mechanisms of slow breathing, when controlled at a particular frequency (6 cycles per minute), stimulate the resonant frequency, a phenomenon which couples respiratory and cardiovascular systems (Lehrer, 2013). This increases cardiac vagal activity, the activity within the vagus nerve indexed through heart rate variability, which has been shown to have many benefits for adaptation under demand (Porges, 1992; Thayer, Hansen, Saus-Rose, & Johnsen, 2009). Which makes slow paced breathing a useful and worthwhile intervention to use with athletes. However, the manner of delivery and specifics of these interventions at a case study level is somewhat limited within elite sport. The current case study covers the discovery of breathing rate in line with the resonant frequency, the period of breathing training and testing the ability to breathe at the set rate. Furthermore, the application of the intervention within sport specific scenarios is discussed along with practical ideas for the implementation of slow-paced breathing with athletes. The case study concludes with results from both objective and subjective accounts from the athlete.

A psychophysiological account of the quiet eye phenomenon: novel methods and insights

Germano Gallicchio¹, Andrew Cooke², Christopher Ring³

¹School of Sport, Exercise & Health Sciences, Loughborough University, UK, ²School of Sport, Health & Exercise Sciences, Bangor University, UK, ³School of Sport, Exercise & Rehabilitation Sciences, University of Birmingham, UK

Superior performance in target sports has been associated with a long quiet eye period, defined as a steady final fixation on the target of an action (e.g., the ball in golf putting). Despite extensive evidence showing that experts have a longer quiet eye than novices, scientists debate on the putative mechanisms that confer performance advantage to a long quiet eye. With the aim to stimulate this debate, this presentation discusses novel psychophysiological methods to examine eye movements (through electrooculography, EOG) alongside brain activity (through electroencephalography, EEG) and movement kinematics (through movement sensors). Recent research adopting this multi-measure approach has generated a series of findings that shed light on the function of the quiet eye (Gallicchio, Cooke, & Ring, 2018; Gallicchio & Ring, 2018). First, expertise and performance effects emerged mostly for the quiet eye component beginning after movement initiation, hence downplaying the role of cognitive mechanisms related to movement planning. Second, visual processing decreased before and during movement execution, thereby challenging the dominant interpretation of the quiet eye as a period of enhanced visual attention to the target. Finally, the finding that post-movement initiation quiet eye duration was strongly and positively associated with movement duration suggests that the quiet eye-performance effect may be due to a stable posture, ensuring a steady visual reference for a smooth execution, hence better performance. These findings encourage a radical re-interpretation of the quiet eye as postural-kinematic phenomenon and, moreover, demonstrate the utility of adopting a psychophysiological approach in the study of the quiet eye.

Attentional strategies and brain activity in endurance cycling tasks

Selenia di Fronso¹, Gabriella Tamburro², Laura Bortoli¹, Silvia Comani², Claudio Robazza¹, Maurizio Bertollo¹

¹Department of Medicine and Aging Sciences, BIND–Behavioral Imaging and Neural Dynamics Center, University “G. D’Annunzio”, Chieti-Pescara, Italy, ²Department of Neurosciences, Imaging and Clinical Sciences, BIND–Behavioral Imaging and Neural Dynamics Center, University “G. D’Annunzio”, Chieti-Pescara, Italy

Functional internal and external attentional strategies have been found to exert beneficial effects on endurance performance compared to dysfunctional internal strategies (Bertollo et al., 2015). Moreover, Comani and colleagues (2014) showed specific functional connectivity patterns associated with different attentional strategies. Drawing on previous results (di Fronso et al., 2018), the aim of this study was to further examine EEG coherence before, during, and after an endurance cycling task. The effect of attentional strategies, leading to type 1, type 2 and type 3 performance states (Robazza et al., 2016), and the impact of perceived effort on functional connectivity was also considered. Five college-aged participants performed an endurance cycling task with simultaneous EEG and rate of perceived exertion (RPE) monitoring. EEG data were divided into five effort level periods based on RPE values (Baseline, RPE 0-4, RPE 5-8, RPE 9-MAX, and Recovery). A RM-ANOVA (3 performance types × 5 effort levels) was performed to compare EEG coherence in alpha and beta bands for 13 pairs of electrodes representative of brain areas. Higher EEG coherence values were observed at rest (baseline) than during cycling (RPE 0-4, 5-8, 9-MAX) for all pairs of electrodes and frequency bands irrespective of the type of performance ($p < .05$). We observed a performance × effort interaction in central area in beta band ($p = .035$) during RPE 9-MAX for type 3 performance as compared to type 1 and type 2 performances. Findings suggest the use of bio-neurofeedback to stimulate functional connectivity among specific brain areas for performance optimisation.

Performance enhancement with EEG neurofeedback training: current topics & issues

Ming-Yang Cheng¹, Thomas Schack², Kuo-Pin Wang³, Tsung-Min Hung³, Chenglin Zhou⁴

¹Institute of Sport Science, Johannes Gutenberg-Universität Mainz, Mainz (Germany); School of Kinesiology, Shanghai University of Sport, Shanghai, China, ²Cluster of Excellence Cognitive Interaction Technology (CITEC), Faculty of Psychology and Sport Science Bielefeld University, Germany, ³Department of Physical Education, National Taiwan Normal University, Taipei, Taiwan, ⁴School of Kinesiology, Shanghai University of Sport, Shanghai, China

EEG neurofeedback training (EEG NFT) is a technique to help the athletes modulate their brain waves by providing the real-time feedback signals captured by the athletes themselves. The aim of using EEG NFT is to facilitate the athletes to achieve the adaptive psychological states and, thus, leading to superior sports performance (Gruzelier, 2014). The beneficial effect of EEG NFT can be discussed by the theoretical framework of psychomotor efficiency hypothesis. Psychomotor efficiency refers to the processing efficiency in the cortical activity in sports performance (Hatfield & Hillman, 2001). Superior performers achieve the high psychomotor efficiency by attenuating the irrelevant cortical processing. Encouraging reports from previous studies pointed out a close relationship between the cortical activity in the sensorimotor area and psychomotor efficiency (Cheng et al., 2015). In this presentation, one of the promising EEG markers will be discussed, which is the sensorimotor rhythm (SMR), 12–15 Hz of the EEG frequency band in the sensorimotor area. Higher SMR activity has shown a tight connection to improved cognitive performance and superior sports performance. Specifically, the reduced interference at the sensorimotor area, as reflected by higher SMR power, leading to the superior psychomotor efficiency during the preparation period in sports performance. Further studies focusing on building up the EEG NFT protocol based on SMR power is recommended in ameliorating the understanding of psychomotor efficiency hypothesis for sports performance.

Symposium 11: Rendering the exercise experience more pleasant: conceptual approaches and practical innovations

Time: Tuesday, 16/Jul/2019: 2:00pm - 3:30pm · *Location:* H 3 - Madeira
Session Chair: Costas I. Karageorghis, Brunel University London

Rendering the exercise experience more pleasant: conceptual approaches and practical innovations

Chair(s): **Costas I Karageorghis** (Brunel University London, United Kingdom)
Discussant(s): **Yvonne N. Delevoeye** (University of Lille, France)

The health-related problems associated with physical inactivity are a matter of grave concern to people, societies, and healthcare systems worldwide (World Health Organization, 2018). Exercise psychology has a central role to play in addressing this global problem. It is evident, however, that with cognitivism as the pre-eminent paradigm, exercise psychology has yet to deliver interventions that can meaningfully and sustainably increase physical activity participation. In recent years, a burgeoning body of evidence has emerged to suggest that an emphasis on improving the affective experience of exercise holds much potential in the promotion of long-term exercise adherence (e.g., Ekkekakis, Zenko, Ladwig, & Hartman, 2018). Arguably, cognitivist approaches should be implemented in tandem with approaches aimed at improving the affective experience of exercise and physical activity. This symposium will provide four complementary papers to explore “exercise hedonics” and provide innovative, evidence-based examples of how the exercise experience can be rendered more pleasant. Panteleimon Ekkekakis will critically appraise studies that link affective responses with exercise as well as the key methodological challenges faced by researchers. Jasmin Hutchinson will offer empirical data pertaining to the effects of non-conscious visual cues on measures of experienced, remembered, and forecasted pleasure associated with exercise. Leighton Jones will highlight the role of individual “presence” through the use of virtual reality during cycle ergometry. Costas Karageorghis will expound a range of approaches intended to render the exercise experience more pleasurable, along with their theoretical underpinnings.

Presentations of the Symposium

The challenge of making exercise feel better

Panteleimon Ekkekakis
Iowa State University, IA, USA

Researchers in exercise psychology increasingly recognise the importance of supplementing messages highlighting rational reasons for exercise and physical activity participation (i.e., “it’s good for you”) with experiences that are pleasant and enjoyable. Recent theoretical models, such as the Affective-Reflective Theory (Brand & Ekkekakis, 2018), posit that, as long as past experiences have established a negative affective valuation of the target concepts of “exercise” or “physical activity”, rational-educational interventions (e.g., those aimed at improving perceptions of benefits vs. barriers, strengthening appraisals of personal agency, or fostering perceptions of autonomy, competence, and relatedness) may have limited effectiveness. Indeed, recent meta-analyses show that rational-educational interventions result in small effects on behaviour (standardised mean differences between 0.20 and 0.30) that diminish further after the period of the intervention. This situation underscores the need to develop and test methods that can improve the affective experience of exercise and physical activity across diverse settings (e.g., school physical education, youth sports, fitness facilities, weight-loss programmes, rehabilitation clinics). This presentation has two objectives. First, examples of correlational and experimental studies linking affective responses with exercise and physical activity behaviour will be outlined. Second, methodological challenges will be highlighted, including the operationalisation of the key variables of “exercise” and “affective responses”. As exercise psychology reaches the end of its first half-century, the need to establish its societal value is intensified. Devising effective methods to improve the affective experience of exercise and physical activity across the lifespan should help the field advance towards this major objective.

Non-conscious visual cues can positively influence the affective experience of exercise

Jasmin C. Hutchinson¹, Zachary Zenko², Paul C. Dalton³, Sam Santich¹

¹Springfield College, MA, USA, ²California State University, Bakersfield, CA, USA, ³Lebanon Valley College, PA, USA

This study investigated the effects of nonconscious visual cues on measures of experienced, remembered, and forecasted pleasure associated with exercise. Participants (N = 24; Mage = 37.5 years, SD = 8.0) completed a 10-min brisk walk on a treadmill under two conditions: primed and unprimed. In the primed condition, positively valenced words (happy, pleased, joyful) were embedded within a music video at 16 ms duration (i.e., below the threshold for conscious perception; Ionescu, 2016). The unprimed condition used the same music video without the embedded primes. Affective valence was assessed at the mid- and end-point of exercise using the Feeling Scale (Hardy & Rejeski, 1989). Exercise enjoyment, remembered pleasure, and forecasted pleasure were assessed post-exercise using the PACES-8 (Mullen, 2011), Feeling Scale, and Empirical Valence Scale (Lishner, Cooter, & Zald, 2008), respectively. As predicted, the priming condition enhanced all affective outcomes. The effect of condition was significant for all dependent variables; namely, experienced pleasure at Minute 5 ($p = .001$, $\eta^2 = .37$) and Minute 10 ($p = .003$, $\eta^2 = .32$), remembered pleasure ($p < .001$, $\eta^2 = .43$), forecasted pleasure ($p < .001$, $\eta^2 = .54$), and enjoyment ($p = .007$, $\eta^2 = .28$). These results demonstrate the efficacy of nonconscious visual cues in enhancing the affective experience of exercise. Positive affective responses increase the likelihood of repeating a given experience (Kahneman, 1999). Therefore, interventions that enhance positive affect during and following exercise should bear positive influence on exercise adherence (Williams et al., 2012).

On the role of presence in enhancing pleasure: a study of virtual environments during exercise

Leighton Jones, Jonathan Wheat

Sheffield Hallam University, UK

The benefits of regular exercise are widely acknowledged, but adherence to an exercise regime remains a significant challenge for many (Linke, Gallo, & Norman, 2011). In-task affective responses have been linked with continued exercise behaviour and there is a need for additional evidence-based strategies that enhance pleasure during exercise (Rhodes & Kates, 2015). Emerging evidence supports the utility of purposefully selected multisensory stimuli (motivational music and videos; Hutchinson, Karageorghis, & Jones, 2015; Jones & Ekkekakis, 2019) with increased dissociation related to increased pleasure during exercise (Jones, Karageorghis, & Ekkekakis, 2014). It was proposed that by increasing immersion (presence) in purposefully selected multisensory stimuli, the concomitant dissociation from bodily sensations would further promote pleasure during exercise. The present study examined the effects of: a high-definition 360° video (cycling through parkland) with a fixed speed and direction; a purposefully designed virtual parkland environment that allowed control over speed and direction of cycling; and a control condition. Twenty-eight participants cycled on a fixed bicycle at an intensity proximal to ventilatory threshold with experimental conditions delivered via an Oculus Rift headset. They were administered: The Feeling Scale and Felt Arousal Scale before, during, and after exercise; the CR10 scale (RPE), and an attention item during exercise; and the Physical Activity Enjoyment Scale, Presence Questionnaire, and Simulator Sickness Questionnaire after exercise. Discussion of the results will elucidate the role of presence in external stimuli and the influence on affective responses to exercise.

Conventionality belongs to yesterday: innovative approaches in the exercise–pleasure nexus

Costas I Karageorghis

Brunel University London, UK

The human race evolved to be physically active but the rapid technological advances of the last 40 years have led to profound reductions in people's activity levels (see e.g., Bassett, John, Conger, & Fitzhugh, 2015). The attendant health problems have led scientists and health professionals to grapple with the practicalities of how to maintain appropriate levels of activity in the general population. The purpose of this presentation will be to explore the structured and systematic use of a range of techniques/approaches that have potential to render the exercise experience more pleasant. The central question to be addressed is: "How might we operationalise a shift from a purely cognitivist approach to embrace the notion of exercise hedonics?" Rather than focus on approaches that are widely known, such as provision of social support, a green environment, empowering exercise leadership, and so on, emphasis will be placed on more innovative/technology-based approaches. For example, immersive video, virtual/augmented reality, and exergaming, as well as novel music-related applications (respite/recuperative music). The theoretical foundations of such approaches will be outlined to illustrate the theory-to-practice links. The techniques will be critically appraised, with reference to empirical evidence, to enable suggestions regarding for whom and under what circumstances they might be most appropriate. The presentation will be of interest to exercise and health practitioners searching for innovative approaches in the exercise–pleasure nexus. The content will serve to underscore the central thrust of the symposium, which concerns theory-based applications under the rubric of exercise hedonics.

Symposium 12: Optimising coaching behaviours throughout talent development – integrating multiple perspectives

Time: Tuesday, 16/Jul/2019: 2:00pm - 3:30pm · *Location:* H 4 - Chalkidiki

Session Chair: Svenja Wachsmuth, Eberhard Karls University

Session Chair: Johannes Raabe, Pennsylvania State University

Optimising coaching behaviours throughout talent development – integrating multiple perspectives

Chair(s): **Svenja Wachsmuth** (Eberhard Karls University, Germany), **Johannes Raabe** (Penn State Altoona), **Oliver Höner** (Eberhard Karls University Tübingen)

Special attention has recently been devoted to creating environments that optimally support talented athletes. While multiple factors may contribute to such an environment (e.g., club, parents), coaches and their interactions with athletes are at its heart. Therefore, coaches and athletes' individual characteristics and preferences (Gledhill & Harwood, 2014; Mallett & Lara-Bercial, 2016) as well as the quality of their relationship (Vella et al., 2013) need to be closely examined in order to forward recommendations for shaping talent development pathways which allow young athletes to grow and succeed.

By utilising diverse theoretical and methodological approaches, this symposium aims to expand our understanding of how to optimise coaching behaviours within talent development settings. Within the first presentation gender-dependent differences in coach-athlete interaction within university level sport teams will be discussed. The following three contributions are then framed by Self-Determination Theory (Ryan & Deci, 2017) considering both, athletes and coaches' basic psychological needs. Accordingly, an initial focus will be on collegiate athletes' perceptions and preferences of need-supportive coaching behaviours which is followed by an intervention study aiming at promoting such behaviours within the German Football Association's talent development programme. The fourth presentation will then shift the focus towards the coach's perspective by exploring the role of collegiate head coaches in fulfilling or thwarting their assistant coaches' psychological needs. Lastly, youth coaches' perceptions of what it means to be mentally tough will be presented highlighting the significance of personal coach characteristics in shaping effective coach-athlete interactions and creating positive talent development environments.

Presentations of the Symposium

What's gender got to do with it? Coaching female versus male teams

Jyoti Gosai, Sophia Jowett, Daniel Rhind

Loughborough University

Coaches are central in athletes' development whether in psychological, social, emotional and physical facets. Therefore, coaches are in a great place to influence their athletes and teams to reach their potential. However, the gender of athletes may play a role in how coaches choose to coach. Limited empirical (Lorimer & Jowett, 2009; Schlesinger & Schlesinger, 2013) and some anecdotal (Slot, 2017) evidence indicate gender stereotypes within coaching. Social Role Theory (SRT) (Eagly, 1987) is a framework pertaining to gender differences and similarities in social behavior or roles. Accordingly, women are viewed submissive and understanding, whilst men are viewed assertive and powerful and thus are expected to interact and react within society in line with these social roles. Gender stereotypes prevail in sport (Eccles & Harold, 1991; LeDrew & Zimmerman, 1994; MacKinnon, 2011; Norman, 2016; Plaza et al, 2017). This investigation aims to extend the literature by focusing on how coaches interact with male and female teams. The focus is on identifying specific patterns and variability in coach-athlete interactions (e.g., relationship, leadership, instruction-related behaviour). Coaches were observed and filmed during training. The use of an observation guide assisted in organising collected data into specific areas (constructs) relevant to this research and facilitated the emergence of patterns (data collection is on-going.) The findings and conclusions from the study will contribute towards a better understanding how gender and coaching are linked as well as whether gender roles and stereotypes may hold coaches back from influencing athletes and teams to reach their full potential.

Collegiate athletes' perceptions of coaches' autonomy-supportive behaviours: a qualitative investigation

Tucker Readdy¹, Johannes Raabe², Matthew Bejar³

¹University of Wyoming, ²Penn State Altoona, ³Mount Mercy University

Guided by self-determination theory (Ryan & Deci, 2017), many researchers have examined sport motivation, with the general conclusion being that positive cognitive, affective, and behavioural outcomes can be achieved through coach-athlete interactions that foster an athlete's basic psychological needs of competence, autonomy, and relatedness. Mageau and Vallerand (2003) outlined seven classes of autonomy-supportive behaviour that can support these needs: provide choice within specific rules and limits, provide rationale for tasks and limits, acknowledge the other person's feelings and perspectives, provide athletes with opportunities for initiative taking and independent work, provide non-controlling competence feedback, avoiding controlling behaviours, and preventing ego involvement in athletes (p. 887). To date, research exploring the association of these behaviours with basic need satisfaction has primarily been quantitative. Consequently, the current study adopted a qualitative methodology to explore athletes' perceptions of the importance, use, and outcomes of the seven classes of autonomy support within the competitive sport context.

Transcripts of semi-structured interviews with 15 collegiate student-athletes from a variety of individual and team sports in the United States were analysed utilising a concurrent deductive and inductive content analysis (e.g., McCarthy & Jones, 2007). Results indicate that athletes believe coaches use each class of autonomy-support, often in conjunction. However, the frequency of use, sense of importance, and perceived outcomes of each behaviour varied meaningfully, with none of the seven classes universally endorsed or criticised. Practical implications suggest that coach-athlete interactions can be structured to fulfill competence, autonomy, and relatedness, but consideration must be given to individual athlete preferences.

Promoting need-supportive behaviours among youth football coaches within German competence centers: an intervention study

Svenja Wachsmuth¹, Johannes Raabe², Tucker Readdy³, Oliver Höner¹

¹Eberhard Karls University Tübingen, ²Penn State Altoona, ³University of Wyoming

Over the last decades, an effort has been made to identify and promote effective coaching behaviours among youth coaches. Especially research based upon self-determination theory (Deci & Ryan, 2017) provides promising results in this endeavour. More specifically, coaches who engage in behaviours which promote young athletes' basic psychological needs of autonomy, competence, and relatedness seem to effectively facilitate sport and personal development compared to those who utilise controlling or autocratic strategies (Gilchrist & Mallett, 2016). Yet, coaching practice often does not align with recommendations drawn from this research but rather builds upon a traditional sports culture which promotes a more dominant, autocratic coaching role (Potrac & Jones, 2009). The current intervention, thus, aimed at promoting need-supportive behaviours among coaches involved in the German Football Association's talent development program (N = 1300). By equipping coach coordinators with the theoretical knowledge and practical skills necessary to further educate coaches, it was not only hoped to reach a large number of youth coaches but also to initiate a change of thought within the talent development pathway. The intervention consisted of various components, including a workshop for all coach coordinators who are part of the talent development program (N = 29) as well as an online training (incl. animated videos, practical examples, etc.) accessible to both, coaches and coach coordinators. An evaluation of the intervention based upon qualitative and quantitative data will be presented during this oral communication. Practical recommendations for promoting need-supportive coaching strategies among talent development coaches can be drawn from this study.

Head coaches' behaviours that satisfy and thwart assistant coaches' basic psychological needs and motivation

Rebecca Zakrajsek¹, Johannes Raabe², Tucker Readdy³, Sara Erdner¹, Andrew Bass⁴

¹University of Tennessee, ²Penn State Altoona, ³University of Wyoming, ⁴Pittsburgh Pirates

Head coaches play a central role in the professional development of assistant coaches as they meaningfully influence the way members of their coaching staff think, feel, and perform (e.g., Cushion, Armour, & Jones, 2003; Erickson, Bruner, MacDonald, & Cote, 2008). Self-determination theory (Deci & Ryan, 2000) offers a practical framework for exploring head coaches' influence on assistant coaches' development and functioning. The main premise of this theory is that the most optimal cognitive, affective, and behavioural outcomes occur when individuals' basic psychological needs of autonomy, competence, and relatedness are satisfied. Seventeen National Collegiate Athletic Association Division I assistant coaches participated in semi-structured interviews about the role head coaches play in satisfying or thwarting their basic psychological needs and motivation. Consensual Qualitative Research (Hill, 2012) procedures revealed four domains: (a) assistant coaches have a need to make a difference; (b) cultural factors in coaching that affect head coach behaviours; (c) quality communication facilitates "being on the same page"; and (d) making assistant coaches feel valued, competent, and connected strengthens their motivation. Optimal head coach behaviours—investing in development, asking opinion, giving meaningful responsibility, and providing recognition—enhanced participants needs satisfaction and allowed them to be valuable contributors to the programme. However, it was during stressful times that head coaches exercised their inherent power most and interacted in ways that thwarted assistants' feelings of competence, autonomy, and relatedness. In this presentation, an emphasis will be placed on ways head coaches can effectively interact to enhance assistants' need satisfaction, motivation, and professional growth.

Understanding mental toughness in the coaching profession: a qualitative perspective

Johannes Raabe¹, Earlynn Lauer², Matthew Bejar³

¹Penn State Altoona, ²Western Illinois University, ³Mount Mercy University

In recent years, the youth sport culture has become increasingly privatised and professionalised (Gregory, 2017). Consequently, coaches have to adapt to an environment characterised by meaningful challenges and demands (Farrey, 2008). In particular, they face competitive expectations mainly dependent on the performance of their athletes, over whom they have limited control (Jones & Wallace, 2005). Researchers have suggested that mental toughness is an attribute that enables individuals to cope with such stressors and to thrive in demanding situations (e.g., Jones & Moorehouse, 2007). However, while mental toughness in athletes has been explored extensively (e.g., Jones, 2002), researchers have yet to examine this construct related to coaching. Accordingly, the purpose of the current study was to explore coaches' perceptions of mental toughness. Fourteen youth sport coaches (nine male, five female; M age = 37.7 years) from a variety of sports participated in phenomenological interviews. Using a hermeneutic process (Thomas & Pollio, 2002), three researchers analyzed the qualitative data and developed a thematic structure comprising six themes: (a) mentally tough coaches are able to persist through adversity, (b) mentally tough coaches can control their emotions, (c) mentally tough coaches communicate effectively with athletes, (d) mentally tough coaches maintain high standards for themselves and the athletes they work with, and (e) mentally tough coaches develop athletes beyond the sport setting. Although there appears to be some consistency with previous conceptualisations of mental toughness in athletes, the current results also highlight the unique nature of the concept as it pertains to the coaching profession.

Workshop 04: Applied Exercise Psychology Workshop: Facilitating Mental Skills Delivery Among Exercise Instructors

Time: Tuesday, 16/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 19 - Paris
Session Chair: Hila Sharon-David, Florida State University

Applied exercise psychology workshop: facilitating mental skills delivery among exercise instructors

Hila Sharon-David, Asaf Blatt, Gershon Tenenbaum

Florida State University, United States of America

Satisfying exercisers' psychological needs is essential for creating sustainable exercise programs. However, fitness instructors' certification programs focus mainly on the basics of exercise science while overlooking the mental aspects of exercise behavior. Implementing evidence-based mental techniques within fitness instructors' arsenal may improve their capacity to create a positive exercise experience while addressing the most common barriers to exercise participation- lack of motivation and enjoyment. Therefore, the purpose of the current workshop is to introduce an applied exercise-psychology program, TherapeuticFit, which was developed to provide fitness instructors with authorized mental techniques to empower their exercisers through motivation and self-fulfillment. The workshop consists of two active stages. At the first stage, participants are divided into small groups and conduct a facilitated discussion on the essential qualities that qualify good fitness instructor. Workshop attendees are then encouraged to share the identified qualities with the larger group, with an emphasis on the mental aspects that underlie the work of fitness instructors. A discussion which explores the methods through which applied exercise psychologists may promote mental skills delivery among fitness instructors follows. During the second stage, participants practice in pairs an applied exercise-psychology technique relying on the principles of self-determination theory (Deci & Ryan, 1985) which they can later convey to fitness instructors to improve their ability to meet exercisers' mental needs. Finally, participants will be exposed to the TherapeuticFit training program which consists of several applied exercise-psychology techniques aimed at facilitating mental skills delivery among fitness instructors to create a positive exercise experience.

Workshop 05: The art of dialogue in coaching – towards transformative exchange

Time: Tuesday, 16/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 18 - Edinburgh
Session Chair: Reinhard Stelter, University of Copenhagen

The art of dialogue in coaching – towards transformative exchange

Reinhard Stelter

University of Copenhagen, Denmark

Elite athletes and all other participants (of all ages) in our sport and movement culture are members of societies in radical change where identity, self-surveillance, burnout and social isolation are some of the challenges or threads that also have an impact on the world of sport and leisure. The intention of this workshop is to invite participants to rethink dialogue as a central phenomenon in coaching.

Traditionally coaches and educators put too much focus on goals in their work with their clientele (athletes, exercises, youth, children, and elderly). However, goals change and develop during conversation and over time (Ordóñez et al., 2009). The intention of this workshop is to invite participants towards developing an attitude, where they manage to engage with their coaching partner(s) in transformative and fruitful dialogues with an emphasis on values and meaning making – a so-called third generation coaching (Stelter, 2014; 2019).

The workshop participants will learn something about:

1. societal changes as the basis to understand human interaction in sport and leisure
2. experiential, existential, relational and narrative theories as a possible theoretical foundation of fruitful coaching dialogues
3. the central methodological elements for a trustful and collaborative relationship

The workshop leader has a strong intention to create a lively interaction between participants and between participants and himself. The objective is to create a learning environment for reflective practitioners. All participants will receive a handout that unfolds some of the central aspects of the content and guidelines for concrete exercises conducted during the workshop.

Workshop 06: Sport psychology services for parents: the process and practice of delivering an evidence-based parent education workshop

Time: Tuesday, 16/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 06 - Bad Blankenburg
Session Chair: Chris Harwood, Loughborough University
Session Chair: Sam Nicholas Thrower, University of Roehampton

Sport psychology services for parents: the process and practice of delivering an evidence-based parent education workshop

Chris Harwood¹, Sam Nicholas Thrower²

¹Loughborough University; ²University of Roehampton

Parents are a key agent in initiating children's involvement in sport, encouraging their long-term participation, and influencing the quality of their experience in competition (e.g., Côté, 1999; Knight & Holt, 2014). To this end, there has been a rapid increase in research on parenting in sport (see Harwood, Knight, Thrower, & Berrow, 2019) and an ongoing call for parent education and support-based interventions. Grounded within tennis, Thrower, Harwood and Spray (2016, 2017, 2018) investigated the educational needs of parents and translated these findings into successful face-to-face and online interventions. As a result of this evidence-based research, the authors worked with the Lawn Tennis Association (LTA) in the UK to develop and deliver the LTA 'Optimal Competition Parenting Workshop' as part of a national parent education strategy. Since 2017, over 80 workshops have been delivered around the country, reaching over 1500 parents of children aged 9 to 14 years old. The aim of this workshop is to guide international attendees through the workshop content and delivery process, sharing knowledge and nuances through the same interactive tasks and materials delivered to parents during the workshop. Specifically, participants will learn about the methods used to raise awareness and confidence in parents around their understanding of the demands of the sport, their communication skills before competition, their management of stress as a spectator, and their role in helping their child learn from their experiences. In sum, this workshop offers participants the opportunity to explore how to effectively integrate parent education in their applied practice.

TUESDAY / 2:00 PM – 3:30 PM



General Assembly

Time: Tuesday, 16/Jul/2019: 4:00pm - 6:30pm
Session Chair: Anne-Marie Elbe, Leipzig University

General assembly

Bernd Strauss

E-Mail: bstrauss@uni-muenster.de

Science Slam: Science Slam

Time: Tuesday, 16/Jul/2019: 7:00pm - 8:30pm · *Location:* H 1 - Vittel
Session Chair: Andrea Petroczi, Kingston University

War and peace: the effect of footballers' pitch behavior on spectators

Muhammet Cihat Çiftçi¹, Fazilet Bektaş², Ayşe İrem Bulut²

¹Ankara Yıldırım Beyazıt University, Department of Sport Science, Turkey; ²Ankara Yıldırım Beyazıt University, Department of Psychology, Turkey

The aim of this study is to investigate the effects of aggressive behavior of football players on spectators' aggression level. 91 sport science students (M age= 20.46 years, SD=2,11, Males=49 Females=42) participated voluntarily for course credit. Three compilation of videos (aggressive, fair-play, neutral) consisting diverse scenes from different football matches were used to trigger participants emotions. Participants completed an aggression scale after videos were showed. Data were collected with Buss-Perry Aggression Scale consisting 29 items and 4 subscales (Madran 2012, Buss and Perry 1992). The cronbach alfa score of BPAS was found 0,85 in validity study and it was found 0,88 for this study. This study conducted with between subject designs. Results show that, overall scores of the aggressive video group was lower but not significant in BPAS except verbal aggression subscale. In fact, negative significant difference was found in verbal aggression between aggressive video and control group. When results indicated, it could be seen that the participants in the control group scored higher. There was no any significant difference found between fair-play video and control group. Outcomes of the study shows that aggressive behavior of players had no any significant effect on spectators' level of aggression. This study shows the importance of the identity factors underlying the aggressive behavior of spectators' from different perspective.

4 for 12 plus event and candy make habits dandy or what we need to change behaviour

Nadja Walter

Leipzig University, Faculty of Sport Science, Germany

A common problem of lifestyle modification programs is that participants often return to their former lifestyle after the intervention program has ended (Verplanken & Wood, 2006). Therefore, the interest in how to form habitual behavior has increased in the field of sport and exercise psychology. Studies with longitudinal designs to investigate habit development found that it takes about six to nine weeks to develop a habit (Kaushal & Rhodes, 2015; Lally et al., 2010). However, the impact of influential psycho-social aspects such as mood was not investigated. The purpose of this study was (1) to investigate the behavioural requirements for habit formation and (2) to understand the impact of mood. It was hypothesized that habit formation depends on continuity and consistency and is modified by mood. It was expected that (1) individuals who practice a behaviour regularly and consequently show higher scores in the Self-Report Habit Index (SRHI, Verplanken & Orbell, 2003) and (2) that individuals with a more positive mood would show higher scores in the SRHI. 67 participants chose an individual diet or exercise behaviour to carry out daily for 12 weeks. During the 12 weeks participants completed the SRHI, the Profile of Mood States (POMS, McNair, Lorr, & Doppleman, 1971) and a questionnaire about continuity and consistency once a week. The SRHI score increased significantly over time. Significant differences were found regarding continuity, consistency and mood. Continuity and consistency were confirmed as behavioural requirements for a habit formation process, influenced by a positive mood.

A mixed methods approach investigating causes of collective sport team collapse

Vivian Vanessa Wergin¹, Clifford Mallett^{1,2}, Christopher Mesagno³, Zsuzsanna Zimanyi¹, Jürgen Beckmann^{1,2}

¹Technical University of Munich, Munich, Germany; ²The University of Queensland, Brisbane, Australia; ³Federation University Australia, Ballarat, Australia

Causes of collective team collapse, the phenomenon when a team experiences a sudden, extreme, and collective underperformance (Wergin et al., 2018), remain unexplained. Two previous qualitative studies investigated perceptions of causes of team collapse using grounded theory and abduction. Especially negative emotional contagion seemed to prevent the teams' returns to their initial performance levels. According to Kuhl's Personality Systems Interaction theory (2000), particularly state-oriented athletes struggle with negative affect and are more vulnerable to rumination and choking than action-oriented individuals. To investigate, whether their performance would also differ in team collapse situations, which are typically associated with negative affect, a quantitative field study with 90 male field hockey players of five teams was employed. Two teams consisting of 33 athletes experienced a team collapse, whereby their individual running performance and emotions in these collapse situations were compared to lost game situations, where the team was behind but did not experience a team collapse. A repeated measures ANOVA showed that action- and state-oriented individuals differed significantly in team collapse situations, where state-oriented players ran significantly less, but not in lost game situations. A moderation analysis revealed that running performance was significantly lower in state oriented players, when negative affect was involved. The lack of positive emotions appears to trigger state-oriented individuals more, resulting in a performance decrease. This study offers first insights into how action- and state-oriented athletes behave in team collapse situations and is the first to quantitatively examine causes of team collapse, that were revealed in previous qualitative studies.

Exploring whether, how, and why athletes experience and seek support from nonhuman relationships with sport

Xander Hodge¹, Emily Oliver¹, David W. Eccles²

¹Durham University, United Kingdom; ²Florida State University, United States

Athlemaphilia is a protologism of the Greek “áthlima-” meaning sport, and “-philia” meaning love for or a disposition towards something. Athlemaphiles are individuals who experience meaningful affective connections with sport. Athlemaphilic relationships exist, support wellbeing and the development of attachments, and are sought to improve wellbeing. This presentation outlines a three-study, multi-theoretical, mixed-methods programme of research which explored whether, how, and why individuals experience, benefit from, and seek out athlemaphilic relationships. Study 1 identified shared features of significant human and sporting relationships. Ratings of attachment to, and features of, athlemaphilic relationships improved the ability of interpersonal relationships to predict environmental mastery and a sense of relatedness. Study 2 asking athletes to discuss how they experience relationships and illuminated athlemaphilia further. Participant’s experiences demonstrated intense experiences of athlemaphilia can influence internal working models of interpersonal attachment and highlighted athlemaphilic relationships offer participants things they cannot experience in human relationships, such as omnipotent control. Study 3 tested whether athlemaphilia is specifically pursued to recuperate depleted wellbeing caused by faulty interpersonal relationships. Results demonstrate engaging with an important athlemaphilic other improved wellbeing, though these results were not significantly different from the control group. Cumulatively, these results broaden the scope of attachment theory (Keefer, Landau, & Sullivan, 2014), challenge the interpersonal requirement of relatedness in self-determination theory (Ryan & Deci, 2000), and demonstrate the utility of the three-factor theory of anthropomorphism (Epley, Waytz, & Cacioppo, 2007) in sport. The need for further theoretical and applied consideration of athlemaphilia will be discussed.

Featured Symposium 01: Crossing borders: finding meaning and belonging in cultural transitions

Time: Wednesday, 17/Jul/2019: 8:30am - 10:00am · *Location:* VSH 219 - Brussels
Session Chair: Tatiana V. Ryba, University of Jyväskylä

Featured Symposium: Crossing borders: finding meaning and belonging in cultural transitions

Chair(s): **Tatiana Ryba** (University of Jyväskylä, Finland)

Discussant(s): **Stiliani Chroni** (Inland Norway University of Applied Science, Norway)

A growing number of sport participants migrate within and between nations for a variety of reasons. While crossing borders is often associated with cultural transitioning and, indeed, numerous challenges experienced by migrant athletes and coaches have been documented, a modest progress has been made in theory building to enhance the explanatory power of cultural transition effects on performance and psychological functioning. The symposium's objectives are to draw on empirical findings to theorise the cultural transition as a social psychological phenomenon and the practice of sport psychology as cultural praxis that works for the benefit of receiving communities, origins, and athletic migrants. In the first presentation, the existential issues of meaning and belonging will be explored by showing the ways in which Christian athletes reconstructed their religious identities and practices in transnational and return migration to the Nordic region. The focus of the second presentation is on Indigenous Australian athletes and their cultural transitioning from learning to play in local communities to the global culture of sport as business. In the third presentation, a cultural transition to Germany by the Israeli U18 national handball team for professional development will be analysed through the lens of a career change and transition framework. In the final presentation, cultural transition and athletic career transition models are complemented with career assistance and context-driven practice to provide with insights into what and hows of service provision for migrants. We conclude with a discussion about the tensions of achieving a sense of meaning and belonging in transition.

Presentations of the Symposium

Cultural transitions and religious (Christian) life: believing without belonging?

Noora J. Ronkainen¹, Tatiana Ryba², David Tod³

¹University of Jyväskylä, Finland; Liverpool John Moores University, UK, ²University of Jyväskylä, Department of Psychology, Finland, ³Liverpool John Moores University, UK

The literature on athletes' cultural transitions has centralised the need to consider athletes as holistic people and explore the implications of their various identities and meaning systems on adaptability. We explored how religious (Christian) athletes reconstructed meaning of their religious identities and practices in cultural transitions. Two male athletes aged 34 and 36 years old and residing in the Nordic region participated in life story interviews. The stories were analysed using thematic and structural narrative analyses and against the lens of cultural transition model (Ryba, Stambulova, & Ronkainen, 2016). Our analysis showed that, although both athletes had grown up in Christian families and had actively practised their faith in youth, cultural transitions to the Nordic region combined with intensive investment in sport loosened their belonging in religious communities. The cultural transitions also coincided with meaning reconstruction where athletes developed a more individualised faith as a form of "believing without belonging". In cultural transitions, athletes' belonging in religious communities was partly replaced by belonging in sporting communities, and living in secular contexts further marginalised their faith from their public representation of the self. While the athletes constructed religion and sport as separate entities, their foundational sense of self-worth and values derived from Christianity could still influence how they made sense of their athletic careers. From an applied perspective, it is vital to recognise that although athletes might not highlight their faith in secularised cultural contexts, it does not indicate a lack of importance.

"Some things are non-negotiable": elite Indigenous Australian athlete's transitioning into professional sport

Richard L. Light¹, John R. Evans²

¹University of Canterbury, New Zealand, ²University of Technology Sydney, Australia

This presentation draws on a study that inquired into the journeys of sixteen Indigenous Australian athletes from their first touch of the 'footy' to the Australian Football League (AFL) and National Rugby League (NRL) that identified two distinct stages of: (1) the development of expertise and a distinctly Aboriginal style of play from their first touch of a footy to around the age of thirteen and, (2) transitioning into the AFL and NRL (Light & Evans, 2018). Although geographically in the same country the almost profound cultural differences between the culture within which the participants learned to play 'footy' and the global culture of the sport industry constituted a border that they had to cross. Adopting an interdisciplinary approach (sociology & psychology), this paper focuses on their cultural transitioning from learning to play in local communities shaped by Australian Indigenous culture to the global culture of sport as business (Ryba, Stambulova & Ronkainen, 2016; Schlossberg, 1981). It examines the challenges involved and how mentors, families, community and cultural identity helped the participants meet these challenges. It also helped identify the ways in which tensions between local approaches to 'footy' as play and cultural expression and the meaning and practice of sport in the global culture of the sport industry were manifested in the challenges that the participants had to overcome. This article contributes to knowledge about Indigenous development of sporting expertise and processes of cultural transitioning while highlighting the importance of culture in this transitioning.

Cultural transition for professional development: case study of the Israeli men's U18 national handball team migrated to Germany

Roy David Samuel¹, Natalia Stambulova², Yaniv Ashkenazi³

¹Kibbutzim College of Education Technology and the Arts, Department of Physical Education and Movement, Tel Aviv, Israel; Interdisciplinary Center (IDC), School of Psychology, Herzliya, Israel, ²Halmstad University, School of Health and Welfare, Halmstad, Sweden, ³Elite Sport Department, The Olympic Committee of Israel, Wingate Institute, Natanya, Israel

The globalisation of sport culture has led athletes to engage in short-term cultural transitions for professional development (e.g., Ryba, Haapanen, Mosek, & Ng, 2012). This case study describes the cultural transition of the Israeli men's U18 national handball team to train and compete in Germany for a full competitive season, as part of a specialised Training Abroad Program (TAP). Qualitative and quantitative data were collected longitudinally as part of sport psychology services offered to the team. Data analysis was guided by an integrated career change and transition framework (ICCT; Samuel, Stambulova, & Ashkenazi, in press). The transition demands covered on-court (e.g., increased training load) and off-court (e.g., a foreign culture, residing at a hotel) issues. Players perceived this transition as significant and positive, although they varied in emotional responses due to differences in professional progress and feelings of loneliness. In response to selection for the TAP, most players relied on consulting with others. The transition barriers were also related to on-court (e.g., injuries) and off-court (e.g., cultural differences, difficulties in studying) issues. Players varied in their conscious decision to change (i.e., apply all necessary adjustments) and coping effectiveness. High athletic identity, external support, and coping strategies facilitated the transition coping and positive perception of the transition outcome. Players exhibited several transition pathways, as suggested by the ICCT. This is the first case study of a national team that migrated for such a long period for professional development purposes. Our findings illustrate the dynamics and multifaceted nature of the cultural transition.

Supporting athletes in cultural transitions: insights from cultural sport psychology and athlete career scholarship

Natalia Stambulova

Halmstad University, Halmstad, Sweden

Cultural transition research and practice are currently positioned on the border between cultural sport psychology and athlete career scholarship taking insights from both fields. The aim of this presentation is to elaborate on how the athletic career transition model (Stambulova, 2003), the cultural transition model (Ryba, Stambulova, & Ronkainen, 2016), and principles of career assistance (e.g., Stambulova, 2012) and context-driven practice (e.g., Stambulova & Schinke, 2017) might complement each other in guiding practitioners to support athletes in cultural transitions. The athletic career transition model emphasises transition demands, resources, barriers, and coping strategies as major components of any transition process. The cultural transition model is more specific and provides the three-phase transition temporal structure (pre-transition, acute cultural adaptation, and sociocultural adaptation), developmental tasks (or demands) for each phase and psychological mechanisms (e.g., meaning reconstruction) underlying the transition process and overlapping with coping strategies. Application of these models might help consultants to understand what happens to athletes during the transition process and what kinds of support they need at its various phases. Principles of career assistance (e.g., the holistic developmental and ecological approaches, the individual and empowerment approaches) complemented by postulates of context-driven practice (e.g., recognising that both clients and consultants are cultural beings, situating the clients within their relevant contexts, consultants' immersing in the clients' contexts, stimulating the client's and the consultant's reflections) might help practitioners to navigate how they can facilitate athletes' meaningful transition experiences and "achieving optimal functioning in the novel environment" (Ryba, Schinke, Stambulova, & Elbe, 2017).

Featured Symposium 04: Conceptual, theoretical and methodological advances in exercise motivation research: affect and automaticity

Time: Wednesday, 17/Jul/2019: 8:30am - 10:00am · *Location:* S 10 - Münster

Session Chair: Ralf Brand, University of Potsdam

Session Chair: Panteleimon Ekkekakis, Iowa State University

Featured Symposium: Conceptual, theoretical and methodological advances in exercise motivation research: affect and automaticity

Chair(s): **Ralf Brand** (University of Potsdam, Germany), **Panteleimon Ekkekakis** (Iowa State University, USA)

How does exercise make people feel? Why do people fall short of acting rationally and in accordance with their beliefs, values, and intentions? In the past few years, researchers have increasingly recognised (and demonstrated empirically) that the pandemic of physical inactivity, behavior change, and exercise motivation cannot be sufficiently understood without addressing the affective and automatic bases of behavior. In the first presentation of this symposium, Panteleimon Ekkekakis will summarise the epistemological reasons that have led the field of exercise psychology into the current paradigmatic monoculture of cognitivist ideas. The second presentation, by Boris Cheval, will discuss the possibility of an automatic attraction to effort minimisation and how cognitive resources may be critical to counteract this attraction. Ralf Brand will, in the third presentation, illustrate how researchers might get closer to the somatic core of automatic affective valuation of exercise by integrating social cognition methodology with psychophysiological testing. In the fourth presentation, Matthew Miller will illustrate that exercise-related attitudes may be manifested in electroencephalography (EEG), and how EEG indices may reveal how stimuli are automatically registered in the brain prior to being reported as button-presses in computerized tasks or written responses to questionnaires. In the fifth and final presentation, Tanya Berry will illustrate how exercise-related messages in public health campaigns can influence the automatic processing of information. Each presentation will summarize a distinct line of ongoing (multi-study) investigation, thus providing the audience with a broad perspective on this flourishing field of research.

Presentations of the Symposium

The rise of postcognitivist ideas in exercise psychology: will our field's first Kuhnian crisis result in a Kuhnian revolution?

Panteleimon Ekkekakis

Iowa State University, USA

Students of exercise psychology, if asked how we can change exercise behaviour, would probably respond that we need to (a) shift decisional balance by creating a belief that there are more benefits than barriers, (b) bolster appraisals of self-efficacy, and (c) create an environment that fosters perceptions of autonomy, competence, and relatedness. This approach reflects the model of the mind that the field of exercise psychology has embraced throughout its fifty-year history: humans are conceptualised as rational beings, whose behavioural decisions emanate in an orderly, predictable fashion from the contemplation of relevant information. Examining exercise behaviour through this lens, however, has caused researchers to overlook indications that many schoolchildren "hate" feeling scorned in physical education, young people abandon youth sports because they did not get the enjoyment they were seeking, adults feel guilt and embarrassment when entering fitness facilities, middle-aged and older individuals report pain and exhaustion when attempting to take more than a few steps, and patients in rehabilitation programs drop out due to fear. It is now becoming clear that the conceptual perspective through which exercise and physical activity have been approached has been too narrowed. The presentation will delve into epistemological reasons for this "narrowing" of our conceptual perspective, will highlight indications that exercise psychology is undergoing a transitional phase characterized by phenomena indicative of a Kuhnian "crisis," and will propose avenues for shortening the period of "essential tension" between the "old" and "new" paradigms, so that the field can progress toward a fruitful postcognitivist "revolution"

Are we wired to sit? Automatic neuro-behavioural reactions to exercise-related stimuli

Boris Cheval¹, Matthieu P. Boisgontier²

¹University of Geneva, Switzerland, ²University of British Columbia, Canada

Every ten seconds, one person is estimated to die because of physical inactivity worldwide. A better understanding of the factors involved in the successful regulation of physical activity is thus warranted. Until recently, the dominant approaches to exercise behaviour were based on motivation theories focusing on how people reflect on their perceptions. Yet, meta-analyses examining the effectiveness of exercise-related intervention based on these reflective approaches have shown small effect sizes and high levels of unexplained variance. These results have emphasised the impact of theoretical articles highlighting the importance of the automatic evaluation of exercise-related stimuli in exercise-related decision-making and behavior. These theoretical articles are supported by multiple experimental studies showing that exercise-related stimuli affect automatic reactions such as attentional capture, affective reactions, and approach tendencies. The number of recent theoretical, experimental, and review articles on the topic suggests that the importance of automatic behaviours is about to be fully recognized in the field. Yet, the reason why people fail to be physically active despite knowledge of the risks associated with physical inactivity is still unclear. In this presentation, we contend that an automatic attraction to effort minimisation may explain this exercise paradox. We will present behavioural, neural and large-scale longitudinal data supporting this hypothesis that we are wired for energetic cost minimisation. We will also highlight how cognitive resources may be critical to counteract this automatic attraction. Finally, we will discuss the implications in terms of interventions aiming to tackle the pandemic of physical inactivity.

Affective valuation. Getting closer to the somato-affective core of exercise motivation

Ralf Brand

University of Potsdam, Germany

The Affective-Reflective Theory (ART) of physical inactivity and exercise is a dual-process model and assumes that the mere thought of exercise can activate an automatic affective valuation, which, if negative, can drive a physically inactive person to maintain his or her current exercise-avoidant behaviour. Affective valuations are theorized to form as a result of repeated experiences with exercise. Because exercise is not only a social stimulus but also a somatic one, it can induce core affective feelings of displeasure that arise directly from the body. One example is the experience of shortness of breath during a run. In the ART, affective valuation of exercise is conceptualized as the momentary actualization of a somato-affective representation of one's past experiences with exercise during the automatic processing of the exercise-related stimulus. The aim of our research group is to develop a better understanding of this somatic core of affective valuation, and whether and how automatic affective valuation influences exercise motivation and physical inactivity. We have adapted methodological paradigms from social-cognition research (e.g., emotional Stroop tasks) to collect biometric data and tested study participants' behavioural (e.g., changes in affective facial micro-expression) and psychophysiological responses (e.g., changes in heart rate variability, galvanic skin response) to exercise-related stimuli. Taken together, results from these studies suggest that exercisers and non-exercisers differ with regard to their somatic responses to exercise cues and that these differences explain incremental variance in (self-reported) minutes of exercise per week.

Using electroencephalography to investigate attitudes toward exercise

Matthew W. Miller

Auburn University, USA

The failure of most people to obtain adequate exercise is a large problem with negative effects on individual well-being and societal economic costs. Thus, it is important to understand why most people do not obtain sufficient exercise. Traditionally, researchers have examined people's self-reported attitudes about the utility and pleasantness of exercise in order to predict exercise intentions and behaviour. This research has generally shown self-reported attitudes, particularly affective attitudes, are strong predictors of exercise intentions and moderate/strong predictors of exercise behaviour. However, a good deal of variance in exercise behaviour remains unexplained. The reasons for the unexplained variance may include people's intentional misreporting of their attitudes for reasons of social desirability (i.e., exercise is supposed to be a positive thing), and/or an inability to report nonconscious attitudes. Thus, there has been a recent increase in the number of studies investigating exercise intentions and behavior by measuring nonconscious (implicit) attitudes with behavioral measures, such as response time when matching exercise stimuli with positive/negative words in computerised tasks. Building off of this work, we have begun examining attitudes manifested as electroencephalographic (EEG)-derived brain activity elicited by the presentation of exercise stimuli (images). EEG is useful for examining automatic evaluations of stimuli for multiple reasons, including the ability of EEG to index how stimuli are automatically registered in the brain prior to being reported as button-press responses in computerised tasks or written responses to questionnaires. We will present data from our recent work using EEG to investigate attitudes toward exercise.

Exercise is (not?) fun: considering effects of affective exercise messages on automatic processes

Tanya R. Berry

University of Alberta, Canada

Exercise-related messages can trigger automatic processes, potentially influencing behavioural decisions. Consumer psychology research shows that measures of automatic processes are more predictive of behaviour when they measure affect rather than reasons for the behaviour. Our research group examines the effects of exercise-related messages on automatic processes in an effort to better understand how messages may influence motivation. This presentation will include illustrative data from our research. For example, one recent study examined the effects of statements such as "exercise is not boring". The purpose of including such statements in exercise messages is to convey the idea that exercise is fun. However, the act of negating information may strengthen the association between the concepts of 'exercise' and 'boring', resulting in an effect opposite to that intended. This may occur because the affirmation (exercise is boring) is processed more easily, before the negative tag (not) is processed. Counter-attitudinal information (e.g., telling someone who dislikes exercise that it is not boring) could therefore result in effects that are opposite to the intent of the message. In non-exercisers, the idea that exercise is boring may be reinforced. This idea was tested in a study where the effects of negating statements with positively (e.g., fun), negatively (e.g., boring), or neutrally (e.g., challenge) valenced words were examined in exerciser and non-exerciser schematics. Outcome variables were automatic associations and impulsive approach tendencies toward exercise. The implications of this study and related work on physical activity and exercise promotion will be discussed.

Gimme-Five 02: Gimme-5 Talks

Time: Wednesday, 17/Jul/2019: 8:30am - 10:00am · *Location:* VSH 116 - Varna

Session Chair: Yu-Kai Chang, National Taiwan Normal University

Amendment of a screening tool for adjustment disorder in the athlete population

Chantal Simons, Lisa Martin, Luke Balcombe, Peter K Dunn

University of the Sunshine Coast, Australia

Elite athletes are a unique population found to be at high risk for mental health disorders (Gouttebauge et al., 2017). Stress may be a factor contributing to disorders such as psychological distress and athletic burnout. A mental health diagnosis concerned with the adjustment to stressors, is that of Adjustment Disorder (AjD). Limited research has been performed on AjD in athletes, only one case study of a collegiate athlete with AjD has currently been reported (Shell & Ferrante, 1996). Knowledge of the stressors commonly experienced by athletes, and athletes' adjustment to these stressors, could inform early intervention strategies to prevent long lasting mental ill health. To investigate the types of stressors experienced by athletes and to screen for AjD, a validated AjD questionnaire, the Adjustment Disorder New Module 20 (ADNM-20, Glaesmer, Romppel, Brähler, Hinz, & Maercker, 2015), was amended. The ADNM-20 consists of a list of stressors and screening questions. An athlete specific list of 76 potentially stressful life and sport events was compiled. Four athlete specific screening questions were developed. Seven experienced sport psychologists reviewed the amendments. Based on the sport psychologists' feedback, no stressors were removed, and 17 stressors were added. Some stressors were reworded or merged with existing items, resulting in a list of 87 stressors. Three sport-specific screening questions were slightly reworded and all four were maintained in the questionnaire. The final amended ADNM-20 will now be part of a larger study in Australian elite athletes, investigating athletes' adjustment to stressful events in life and sport.

“Dual career in Spanish high-level athletes: factors affecting the social and professional integration process after retirement”

Rubén Moreno Castellanos¹, José L. Chamorro¹, Cristina López de Subijana Hernández²

¹Universidad Europea, Faculty of sport science; ²Universidad Politécnica de Madrid, Spain

Combining higher education studies or work with a career as professional athlete (Dual Career; DC) requires a physical and psychological effort that is difficult to manage. This work aims to explore the opportunities and difficulties encountered by professional athletes pursuing a Dual Career, and to develop a better understanding of how this choice affects their social and professional integration after retirement.

The qualitative approach of this research has been chosen to complement and integrate the data emerged from quantitative studies by adding an in-depth exploration of the life trajectories of elite athletes.

In order to study this complex field, this research draws on the theoretical framework defined by the holistic model of sport career (Wylleman, Reints y De Knop, 2013). The broad and heterogeneous sample employed - Olympic, World, and European medallists - positively affects the ecological validity of the research, allowing a comprehensive view of the field. In this line, factors such as identity, socio-cultural and family resources, State laws and whether or not they are known to those involved in DC choices, coping strategies, perceived social support, etc. comprise a complex network which affects these athletes' transition out of pro sports and, after retirement, their lives as a whole.

Fear of failure, motivation and negative affect in sport: multilevel analyses of coaches and athletes

Simon Gregory Taylor, Justine Allen, Edward Duncan

University of Stirling, United Kingdom

WORK IN PROGRESS

Recent studies have shown the negative impact controlling coach behaviours can have on individual athletes' basic psychological needs and negative affect (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011); however, less is known about how it might impact athletes' fear of failure. Additionally, more research is necessary to understand why coaches engage in controlling behaviours, as research in this area is limited (Matosic, Ntoumanis, & Quested, 2016). This study furthers our understanding in this area by examining if controlling coach behaviours influences athletes' fear of failure and whether coach fear of failure acts as a potential antecedent. Participants to date are coaches (n=21) and athletes (n=83) competing in individual sports at elite level (national/international). This study uses multilevel analyses to examine the relationship between these variables.

H1: Positive associations between coaches' fear of failure and negative affect, and athletes' perception of controlling coach behaviour, needs frustration, fear of failure and negative affect at the between-level.

H2: Negative associations between coaches' fear of failure and positive affect, and athletes fear of failure and positive affect at the between level

H3: Positive associations between athletes' perceptions of controlling coach behaviour, needs frustration, fear of failure and negative affect at the within-level.

H4: Negative associations between athletes' perceptions of fear of failure and positive affect at the within-level.

H5: Mediation between controlling coach behaviour and fear of failure, via needs frustration at the between and within-level.

First steps towards a cultural adaptation of the 5Cs intervention program for team-sport coaches

Marta Borrueco, Yago Ramis, Susana Pallarés, Jaume Cruz

Universitat Autònoma de Barcelona, Spain

Positive Youth Development (PYD) research enlightens how sport context constitutes a great opportunity to foster young athletes' personal development. The work of Harwood, Barker and Anderson (2015) illustrates how coaches' behaviour influences athletes' key attributes for their psychosocial development such as motivation, self-regulation and interpersonal skills. Athletes can more easily acquire these key attributes if the coach promotes commitment, communication, concentration, control and confidence, namely the 5Cs. Based on this approach, the purpose of our work is to describe the first steps of a culturally adapted intervention programme for team-sport coaches to enhance their coaching effectiveness and, consequently, optimize athletes' psychosocial development. The process of cultural adaptation included three different stages: (a) review of previous scientific knowledge on PYD-based and 5Cs interventions in sport; (b) focus groups with managers, coaches and athletes from two Catalan team-sport clubs to discuss relevant aspects of the intervention programme (e.g., role of the coach in athletes' development, evaluation of coaches and players' needs); and, (c) generation of an education package for coaches aimed at promoting the 5Cs based on the information gathered in (a) and (b). Preliminary results show that each of the 5Cs components should be developed individually combining the theoretical background (i.e., evidence-based) and specific recommendations for training sessions. Furthermore, athletes' perceptions and feedback should also be considered in order to elaborate the intervention program (i.e., need-based). Next steps will include conducting a pilot study to assess the understanding of the intervention programme's content and process.

Examination of social support for athletes in support demanding contexts: development of social support provider program

Eriko Katagami

Kyoritsu Women's University, Japan

Social support has been broadly recognised as a salient factor for athletes' performance and psychological health (Holt & Hoar, 2006). For example, the influence of social support on athletes' self-confidence was identified (Freeman, Coffee, Moll, Rees, & Sammy, 2014). In a decade, even though the effectiveness of social support in a competitive sport context (e.g. before games) has been examined, social support within support demanding contexts (e.g. athletes' sport injury or career transition context) has not been fully examined in empirical research. Since the effectiveness of social support is considered to be determined by several factors including context (Rees, 2006), the examination of the context in which social support plays a key role in athletes' whole career would be needed. The current study aimed to clarify social support for athletes within support demanding contexts, and to develop a program for support provision.

Three hundred and seven university student athletes who have experienced of each context completed an open-ended questionnaire of 1) encountered issues and concerns in the context, and 2) expected support within the context. Thematic analysis was conducted to categorise the types of social support in each context.

The results revealed that athletes expect several context-specific types of support in addition to social support in general competitive sport settings. For example, "Spending time together outside of sport setting" was found to be a support for injured athletes, and "Sharing own experience" was identified as support for freshman athletes. Based on the results, social support provider program was developed.

Dual career pathways: developing optimal dual career support from an ecological holistic approach

Kristel Kiens

Tallinn University, Estonia

Dual careers can have benefits on personal level by being a good investment into future careers and enhancing self-confidence (Tekavc, Wylleman & Erpic, 2015) as well as for the society by creating good role models for youth (Stambulova, 2007). However, trying to balance dual careers brings many challenges and pressures on social, psychological, physical, educational and financial levels (O'Neill, Allen, & Calder, 2013). Therefore, dual career athletes need support in developing a holistic skill set for coping with the challenges (Larsen, Alfermann, Henriksen, & Christensen, 2013). In addition, the environment, athletes are embedded in, and interrelations within the environment need to be considered for optimal dual career development (Linnér, Stambulova, & Henriksen, in prep).

The PhD project that will be presented, will be conducted in an Estonian elite sport school. The project serves three main objectives. Firstly, to provide a holistic description of a dual career development environment and analyze it's effectiveness. Secondly, to provide a detailed description of developing and implementing a dual career competencies development program from a holistic ecological perspective and analyze it's effectiveness. Thirdly, to analyze dual career pathways and competencies on different levels of development.

The project would contribute to the field of sport psychology, especially due to the need for more research dual career development in different contexts (Stambulova, in Press). It would also provide valuable practical implications for enhancing dual career support services and applied work with youth athletes.

Improving talent identification using insights from selection psychology

Tom L. G. Bergkamp¹, Ruud J. R. Den Hartigh², A. Susan M. Niessen¹, Wouter G. P. Frencken^{3,4}, Rob R. Meijer¹

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Talent identification involves the prediction of elite sports performance. According to a recent review, insights from selection psychology can help to provide more accurate predictions of future performance (Den Hartigh, Niessen, Frencken, & Meijer, 2018). One approach to potentially improve such predictions is using 'sample-based', as opposed to 'sign-based' methods. Sign-based methods are defined as tests that measure distinct (e.g., psychological, physiological) constructs that are conceptually related to the criterion. Sample-based methods aim to sample criterion behavior.

In the current study, the predictive validity of samples of soccer performance in small sided games (SSGs) were compared with the validity of distinct (endurance, sprint and agility) tests. Thirty-four players of the U-19 and U-23 teams of a professional soccer academy participated in 11 (SD = 3) 7-vs-7 games. Players' performance was assessed based on their contribution to the result of each SSG outcome, whereas standardized tests were used to assess speed, endurance, and agility. Whole-season performance ratings (0 – 10) given by coaches were used as a criterion measure. For the U-19 players, SSG performance ($r = .44$) was a stronger predictor of the coaches' performance rating than speed ($r = -.08$), endurance ($r = .34$), and agility ($r = -.08$). Surprisingly enough, all variables correlated negatively with coaches' rating for the U-23 players, which might be due to other factors confounding the judgment of the coach in this age category. In line with selection psychology literature, our results provide first evidence that sample-based methods (SSGs) may provide stronger indicators of soccer performance than sign-based tests.

Psychoregulative training: conceptualization and new techniques using 360° video

York-Peter Klöppel

University FAF Munich, Germany

Psychoregulative Training is, alongside Mental Training and Interpersonal Training, a subordinated construct of the overarching action theory driven framework of Psychological Training (PT). Psychoregulation attempts to create and maintain optimal psycho-vegetative functional states for certain actions through self-influence (Nitsch & Hackfort, 1979). Furthermore, psychoregulation is distinguishable on two levels: 1) temporal level (pre-emptively, compensatory, or retrospectively) and 2) level of activation tendency (activating or relaxing). In the present study, inexpensive and incomplex technology in the form of a full-spherical video camera was used to create a 74 seconds long video, that is used as a pre-emptive and activating method. The video consists of scenes from a variety of team sports. Participants watch the video using Virtual Reality (VR) glasses, which creates the effect of an immersive first-person perspective, in which they are free to look into any direction. The self-assessment mannikin (SAM; Bradley & Young, 1994) and the MR2B (Hackfort & Klämpfl, 2017) were administered before and after the video to measure the direct influence on the self-perception of individuals of their inner state. The video could be used by athletes immediately before a competition, as the technology is mobile and easy to use. Relatively little empirical research has been conducted systematically on activation techniques, which might be due to athletes usually reporting about being aroused too little (Gould & Udry, 1994). However, the lack of research does not indicate a lack of necessity.

Directed forgetting, emotion, and mental toughness

James Christopher Welsh¹, Stephen Dewhurst¹, John Perry²

¹University of Hull, United Kingdom; ²Mary Immaculate College, Ireland

Within the highly pressurized and competitive domain of sport, the ability to forget or prevent unwanted thoughts are perceived as crucial attributes of mentally tough performers (Clough, Earle, & Sewell, 2002). However ironically, an exiguity of attention has been devoted to the exploration of such cognitive mechanisms underpinning mental toughness (MT) within sport. Ergo, the current study endeavoured to greater identify the cognitive mechanisms underpinning MT through the utilization of the item-method directed forgetting (DF) paradigm and the Mental Toughness Questionnaire 48 (MTQ48, Clough et al., 2002). To achieve our a priori statistical power, 40 UK male participants (club, amateur, national, and professional snooker players) were recruited. Participants were presented with negative, positive, and neutrally arousing pictures with a subsequent instruction slide informing which items were to-be-remembered (R items) and to-be-forgotten items (F items). Results showed recall was higher for the neutrally arousing pictures than the positive and negative. In contrast, our main linear regression findings produced a statistically significant effect for the F items in the neutral condition, with the MT subscale of challenge being the only significant predictor of the individual coefficients. In the negative forget condition (compared to neutral), being higher in challenge indicated that individuals were more likely to forget these items, thereby suggesting mentally tough performers in snooker have the enhanced ability to see problems as opportunities and not as threats. Collectively, the findings infer support that forgetting is one of the cognitive mechanisms underpinning MT and that MT is multidimensional.

Invited Symposium 03: Promoting links between ECSS and FEPSAC: A platform enhancing research and practice within and across disciplinary lens

Time: Wednesday, 17/Jul/2019: 8:30am - 10:00am · *Location:* Aula im Schloss - Europe

Session Chair: Joan Lynne Duda, University of Birmingham

Invited: Promoting links between ECSS and FEPSAC: A platform enhancing research and practice within and across disciplinary lens

Chair(s): **Joan L. Duda** (University of Birmingham, United Kingdom)

In this invited symposium, we celebrate and speak to the positive implications for research and practice, which stem from the evolving partnership between the European College of Sport Science (ECSS) and the European Federation of Sport Psychology (FEPSAC). The vision of ECSS is "to lead the promotion and application of world-class, multidisciplinary science in sport and exercise". FEPSAC, comprised of various European associations of sport psychology and individual members, has as its first key aim "to promote scientific, educational and promote co-operation in sport psychology in Europe". A major theme undergirding this symposium is how emerging links between these two organisations (including those who typically participate in FEPSAC and who are encouraged to submit their best work and take in the multi-disciplinary science presented at ECSS and vice versa) can only strengthen the quality and impact of our over-arching field. In the first presentation, we will summarise the recently developed connections between ECSS and FEPSAC and their implications. In the last three presentations, we illustrate the natural synergy between the two organisations by arguing the need for multi- and particularly inter-disciplinary research and intervention in three areas that are of interest to members of ECSS and FEPSAC (namely perseverance during demanding endurance exercise, determinants and implications of sport injury, and sedentary behaviour change).

Presentations of the Symposium

Sport/exercise psychology and FEPSAC: Their importance to and implications for interdisciplinary research and ECSS

Joan L. Duda

University of Birmingham

This presentation will commence with information on the structure, objectives, and activities of ECSS and provide illustrations of the emerging collaborative links between FEPSAC and ECSS. The past and potential further involvement of academics and students in sport (and exercise) psychology to ECSS's annual Congress and the College itself will also be noted.

ECSS has traditionally been organised in terms of three scientific themes: physiology & sports medicine, social sciences & humanities (which has been, to date, the "home" of submitted research in sport (and exercise) psychology), and biomechanics & neuromuscular topics. Starting with the annual Congress in Dublin 2018, ECSS now has a fourth pillar, i.e. a multi-disciplinary/interdisciplinary theme. Basic and applied/translational research to be included here aim to integrate concepts, theories, methods, and techniques from two or more disciplines to advance fundamental knowledge, and address the solving of "problems" and societal challenges in and via the sport and exercise sciences. The interdisciplinary research embraced and encouraged in this fourth pillar strives to achieve outcomes (including new approaches) that could not be achieved within the framework of a single discipline. It is proposed that researchers and/or practitioners in sport (and exercise) psychology have much to contribute as well to this focus on multi-/interdisciplinarity within ECSS.

Resisting the urge to stop during intense endurance exercise: Interdisciplinary directions in research + intervention development

Andrew Lane¹, Samuele Marcora²

¹University of Wolverhampton, ²University of Kent

The capacity to perform at a high intensity during endurance activities involves managing intense physiological and psychological factors. Fatigue is experienced with clear markers of physiological disturbance such as heart rate, ventilation and lactate. It is coupled with psychological markers such as thoughts that urge slowing down and unpleasant emotions such as anger, anxiety and sadness. Thus, the development and evaluation of interventions that help athletes manage psychological and physiological factors related to fatigue is a goal for athletes, practitioners, and researchers alike.

A wealth of research on high-intensity exercise has been conducted from a single discipline. From a physiological approach, research has examined factors such as oxygen uptake, heart rate and blood lactate in relation to performance. Psychological factors such as mood, emotion, self-efficacy, effort and attention have also been studied in relation to endurance performance. Perceived exertion is arguably the natural variable that links physiological and psychological factors. The presentation will introduce a case as to why an interdisciplinary approach should provide the most fruitful way forward. For example, past work has considered the role of factors such as emotions, where the intensity can change greatly and quickly during endurance exercise. Emotions provide input on how physiological factors are interpreted and could intensify sensations of physiological feedback, leading to excessive exercise being perceived as even harder. Focusing on the potential interactions between psychological and physiological determinants in a manner that is understood by athletes and practitioners might facilitate the creation of more holistic and potentially more effective interventions.

Determinants and implications of sport injury: A ripe opportunity for interdisciplinary research

Leslie Podlog
University of Utah

Sport injury is a common challenge in the career of an athlete. Unfortunately, the majority of sport-injury research to date has occurred in silos, much to the detriment of theoretical and practical advances in rehabilitation science. Given the mind-body challenges inherent in the sport-injury experience, it offers fertile ground for multidisciplinary inquiries. This presentation draws on sport-injury work from sport psychology, sociology, neurophysiology, and communication. In so doing, I highlight (1) barriers to interdisciplinary research, (2) cutting-edge scholarship drawing upon multidisciplinary expertise, and (3) suggestions for further interdisciplinary exploration.

From a sport psychology standpoint, several factors have traditionally limited interdisciplinary research on sport injury, including a heavy reliance on questionnaires - this is partially due to pragmatic and convenience issues, the need to obtain larger sample sizes for statistical analyses, and difficulties associated with procurement of funding typically required to conduct interdisciplinary studies. Despite such challenges, innovative scholars have taken creative approaches in uncovering knowledge of mind-body processes within the sport-injury context. For instance, investigators have articulated how spinal-cord injured athletes draw on larger cultural narratives in understanding and how they come to terms with their athletic injuries (Smith & Sparkes, 2003), how stress-reduction programs can mitigate injury occurrence via use of modern communication platforms (e.g. phone apps; Rubio et al., 2019), and how psychological strategies such as imagery impact neurochemical processes among recovering athletes and attenuate loss of muscle mass (Clark et al., 2014). The presentation concludes with a discussion of avenues for further collaborative efforts.

Sedentary behaviour change in clinical populations: Current challenges and interdisciplinary approaches to intervention

Sally Fenton
University of Birmingham

Sedentary behaviour (“too much sitting”) is highly pervasive in clinical populations, likely as a result of disease symptoms (e.g. physical function and persistent fatigue). Patients living with chronic disease represent “high-risk” cohorts when considering the adverse health consequences of sedentariness. In recognition, a growing number of studies have sought to advance our understanding of the determinants (individual, environmental and organisational), and health consequences of sedentary behaviour in specific patient cohorts, to establish an evidence base for intervention. However, extant research is too often siloed within the domains of psychology, physiology or biochemistry, resulting in a limited understanding of the inter-relationships between psychology, behaviour and disease processes – factors that operate in synergy to determine the potential (clinical) efficacy of an intervention.

This presentation underlines the importance of adopting an interdisciplinary approach to developing, delivering and evaluating sedentary behaviour-change interventions in clinical populations. Such an approach is fundamental for establishing potential, as well as proven efficacy. New research conducted among patients with Rheumatoid Arthritis will be used to illustrate interdisciplinary methods currently employed, and an interdisciplinary framework proposed to guide future research in the clinical context. The proposed framework specifies the importance of the inter-relationships between psychosocial factors and physiological disease processes, which may influence an individual’s quality of motivation and “readiness to change”, prior to developing targeted intervention strategies. The framework also highlights the need to employ appropriate methodologies to ensure interventions can be evaluated to determine their efficacy in terms of hypothesised psychological processes, behaviour and clinical (physiological) outcomes.

Paper Session 16: Physical Activity and Weight Loss Interventions

Time: Wednesday, 17/Jul/2019: 8:30am - 10:00am · Location: Senatssaal - Prague

Session Chair: Emmanouil Georgiadis, University of Suffolk

8:30am - 8:45am

Go Fit: an interdisciplinary educational program for healthy habits funded by Erasmus+ Emmanouil Georgiadis¹, Paraskevi Malliou², Asgeir Mamen³, George Panayiotou⁴, Katerina Daskalaki², Asimenia Gioftsidou²

¹University of Suffolk, United Kingdom; ²Democritus University of Thrace, Greece; ³Kristiania University College, Norway; ⁴European University, Cyprus

Health and fitness professionals are now noticing a decrease in the physical functionality of their participants with conditions and health issues increasingly manifested in modern society. Contemporary fitness programs need to adapt adequately to tackle those requirements with exercise programs needing to be tailored around each individual, his/her personal environment, eating habits, and psychological needs. The GO Functional Improvement & Tourism (GO FIT) was designed to develop a new learning program for exercise and health experts through a jointly developed and delivered program by Higher Education Institutions' exercise and health experts in collaboration with tourism specialists. In line with Europe 2020 Strategy and its relevant recommendations GO FIT was created as a joint program of 5 European Institutions supported by Erasmus+ EU funding programs. It included musculoskeletal functional improvement, weight control management, behavioural change of eating and exercise habits, applied clinical knowledge related to musculoskeletal conditions, as well as IT applications through the development of specialised web platform. The program is ongoing and based on eight outputs jointly supported - in variable degrees - by all partners. Apart from the disseminated learning program, this newly developed and piloted joint curriculum program will be incorporated into the existent curriculum of three HEIs in three European countries. GO FIT project is expected to have a long-lasting social impact through its multiple dissemination routes -including a web platform that educates tourists and experts on the most frequent contemporary problems of human kinetic/physical systems - supporting healthier lifestyles and quality of life.

8:45am - 9:00am

“Workplace Physical Activity Program” (WOPAP) study: a 4-arm RCT intended to prevent burnout and promote vigor

Clément Ginoux, Sandrine Isoard-Gautheur, Philippe Sarrazin

SENS Lab, University Grenoble Alpes, France

Almost 20% of European employees report high burnout, indicating impaired work-related well-being (WRWB; Eurofound, 2018). Previous research has shown that regular physical activity (PA) was efficient to promote vigour at work and protect employees from burnout (Naczenski, Vries, Hooff, & Kompier, 2017). The few existing workplace PA-interventions seem promising but report methodological concerns, did not compare PA with other leisure activities, did not use weekly measures to examine trajectories of WRWB during the intervention, and did not investigate the promising role of recovery experiences (Sonnentag, Venz, & Casper, 2017) or the motivational climate during sessions (Ryan & Deci, 2017) to explain within- or between-person differences. WOPAP examines whether a 10-week PA intervention improves WRWB, compared to another activity, and if recovery experiences could mediate this effect. In a four-arm parallel trial, N = 88 university employees were randomized in two PA groups, a theatre group, and a waiting list. One of the PA instructors was trained to create a favourable motivational climate. During 10 weeks, the groups' instructors led two sessions weekly. Burnout, vigour, work motivation and recovery experiences were assessed at pre-post and weekly. Statistical analyses are still in progress and will be presented at the congress. We expect (1) an intervention effect (intervention groups reporting better WRWB than the waiting-list group), (2) an activity effect (PA groups reporting better WRWB than the theatre group), (3) climate effect (need-supportive PA group reporting better WRWB than traditional climate PA group), and (4) that recovery experiences explain WRWB trajectories over the intervention.

9:00am - 9:15am

Findings from a weight loss program delivered in Australian Football League settings for overweight and obese men (Aussie-FIT)

Eleanor Quested¹, Dominika Kwasnicka¹, Nikos Ntoumanis¹, Kate Hunt², Cindy Gray³, Cecilie Thøgersen-Ntoumani¹, Deborah Kerr⁴, Robert Newton⁵, Jo McVeigh^{6,7}, Phil Morgan⁸, Daniel Gucciardi⁹, Sally Wyke³, Jenny Olson¹, Suzanne Robinson⁴

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Physical inactivity and poor diet have created a major health crisis among Australian males; approximately 71% of men are overweight or obese. Following the successful Football Fans in Training program, Aussie-FIT was designed to capitalise on the appeal of the Australian Football League to engage men in Australia in a 12-week weight loss and healthy-eating program. Aussie-FIT included pedagogical features to promote men's autonomous motivation and use of behaviour change techniques. This presentation will describe the Aussie-FIT intervention and present key findings, with a focus on the role of motivational processes in promoting weight loss and behaviour change. 130 overweight/obese men (M[SD] age = 45.78[8.01]; M[SD] weight = 111.42kg[18.23]; M[SD] BMI = 34.48[SD:4.87]) were recruited and following baseline assessments, participants were randomised to one of two groups: intervention or waiting-list control. The 12-week intervention included weekly 90-minute education and physical activity (PA) sessions delivered by a coach trained in program delivery and principles of promoting effective motivation. At baseline, 3- and 6-month follow-ups, objective measures of PA, weight, waist size, and blood pressure were taken and men completed assessments of motivational support during the program, basic need satisfaction, motivation and indices of physical and psychological health. Mean difference in weight loss between groups at 3 months was 3.35kg (95% CI: 2.47-5.26) in favour of the intervention group ($p < .0001$). Results for all outcome variables will be presented. Aussie-FIT is feasible for delivery in Australia. There is preliminary evidence of the program's role as a means to address obesity in Australian men.

9:15am - 9:30am

A physical activity program for university students: improving mental health concerns through physical activity referral

Melissa L. deJonge¹, Garcia L. Ashdown-Franks¹, Guy E. Faulkner², Catherine M. Sabiston¹

¹University of Toronto, Canada; ²University of British Columbia, Canada

Despite the demonstrated effectiveness of physical activity (PA) in improving mental health concerns among students (Ravindran et al., 2016; McFadden, Fortier, & Guérin, 2017), referral to campus PA programs is understudied. As such, in collaboration with counselling services at the University of Toronto, the current study aimed to explore the effectiveness and acceptability of referring help-seeking students to a mental health PA program. Participants (N = 62; M = 23 years, SD = 3.58) completed pre-post questionnaires to evaluate the effectiveness of the program in improving mental health indices. One-on-one interviews with program participants (n = 11) were conducted to understand the acceptability of referring help-seeking students to mental health PA programs. Using a Repeated Measures ANCOVA, the model demonstrated that while controlling for age, and change in moderate-to-vigorous PA, psychological distress (M pre = 85.88, SD = 19.91 vs M post = 70.56, SD = 19.91, $F(1,52) = 4.34$, $p < .05$, $\eta^2 = .08$), and depression scores (M pre = 15.04, SD = 4.24 vs M post = 11.80, SD = 4.28, $F(1,52) = 7.52$, $p < .05$, $\eta^2 = .13$) decreased significantly. Improvements in psychological well-being (M pre = 36.77, SD = 10.52 vs M post = 46.48, SD = 13.71) and decreases in anxiety (M pre = 34.24, SD = 8.58 vs M post = 29.11, SD = 9.55) were not significant ($p < .05$). Interviews demonstrated that participants viewed the program as an acceptable alternative option for improving mental health symptoms. The results highlight the importance of understanding effective PA program delivery and referral models for improving mental health symptoms among university students.

9:30am - 9:45am

Evaluation of a novel sport-based weight-loss intervention for overweight and obese men: program feasibility and outcomes

Timothy J. H. Budden¹, James A. Dimmock¹, Mark R. Beauchamp², Ben Jackson¹

¹University of Western Australia, Australia; ²University of British Columbia, Canada

A high proportion of men (relative to women) are overweight or obese, and accompanying health complications (e.g. cardiovascular disease) are more prevalent in men. This disparity may be in part because traditional weight-loss programs lack 'male appeal'. When developing health interventions, it is important that researchers integrate what is known about factors that may foster engagement among men. MAN v FAT Soccer is a novel sport-based weight-loss intervention designed exclusively for overweight and obese men in Western Australia, incorporating several program elements shown to encourage male participation in health promotion interventions (e.g. gender-sensitisation, appropriate setting). The purpose of this study was to examine the feasibility of large-scale implementation of MAN v FAT Soccer in Western Australia and to determine likely program effects on key outcome variables. Participants (N = 85) completed a baseline survey prior to participation in a 14-week soccer program, during which they participated in one soccer match per week and received ongoing weight-loss support through various approaches. Participants also completed two mid-program surveys (weeks 4, 9), an end-of-program survey, and semi-structured interviews following completion of the program. In addition to measuring feasibility components (e.g. recruitment methods, attendance), key outcome variables assessed pre- and post-program included physical and psychological health indicators such as BMI (d = .36), waist (d = .58) and hip (d = .45) circumference, depression (d = .86), and stress (d = .74). Findings provide support for the feasibility of large-scale implementation of the program.

9:45am - 10:00am

The effect of self-determination theory-based interventions on exercise behavior and body mass index of university staff

Gozde Ersoz

Tekirdag Namik Kemal University, Turkey

The purpose of this study was to examine the effects of an 8-week Self-Determination Theory (SDT)-based exercise counselling on exercise behaviour (EB) and body mass index (BMI) on university staff. In addition, the effects were examined after 12 months after the end of the consultation (follow-up). N = 33 university staff participated in the study and were required to exercise for eight weeks (moderate intensity, 30-45 min walk + 30 min resistance exercise with trainers) and SDT-based interventions were used to help them acquire the habit of exercising. Exercise counselling was provided to participants before and during the exercise program. Descriptive statistics were used to define the characteristics of the research group, repeated measures ANOVA was used to compare the pre-consultant, post consultant, and 12 months follow-up scores of the participants. As a result of the analysis, exercise stages were significantly increased post consultant and significantly decreased at 12-month follow-up. In addition, BMI scores were significantly decreased post consultant but not in follow up. 12 months after the exercise interventions were over, an online survey was administered to the participants. Findings indicated that 33% of the sample group did not exercise regularly. Furthermore, participants stated that the presence of the exercise counsellor motivated them, provided discipline, raising awareness, informed them about the exercise, defined clear goals and inspired them to participate in the exercise. As a result of this study, SDT-based exercise counselling combined with an exercise program is effective in maintaining exercise and body composition.

Paper Session 17: Decision Making and Judgement

Time: Wednesday, 17/Jul/2019: 8:30am - 10:00am · Location: S 8 - Copenhagen

Session Chair: Geert Savelsbergh, Vrije University

8:30am - 8:45am

Prior probability information impairs goalkeeper judgments of penalty-kick direction

Robin C. Jackson

Loughborough University, United Kingdom

When attempting to save a penalty kick, the goalkeeper's advantage of prior probability information is predicated on the benefits of congruent outcomes outweighing the costs of incongruent outcomes. This partially rests on the assumption that the bias of probability information will be equivalent across genuine and deceptive actions. Yet, exaggerated static and dynamic stimuli have been shown to elicit stronger responses and are commonly observed in deceptive actions. In the present study, we tested the hypothesis that situational probability information will more strongly bias responses to deceptive actions than genuine actions, resulting in impaired discriminability of kick direction. $N = 12$ semi-professional goalkeepers responded to 120 video clips of two skilled, right-footed penalty-takers directing genuine and deceptive kicks to the left or right side of the goal. Before each kick, goalkeepers were given the probability of the kick being directed to each side, so that each kick outcome was associated with 0.20, 0.35, 0.50, 0.65, or 0.80. Each video clip was occluded at the frame before the kicker's foot made contact with the ball. We recorded goalkeeper response times, response accuracy, and visual behaviour. Signal detection analysis revealed that probability information strongly biased goalkeeper responses, $F(4,44) = 14.38$, $p < .001$, $\eta^2 = .57$. Response bias for high probability values was stronger for deceptive than genuine actions, resulting in impaired discriminability of kick direction relative to the 50-50 condition, $F(2,22) = 6.71$, $p = .005$, $\eta^2 = .57$. We conclude that deceptive actions take on "super-deceptive" properties when probability information is aligned with misleading kinematic information.

8:45am - 9:00am

Psychological momentum effects on affordances of athletes

Ruud J. R. Den Hartigh¹, Joske K. Van der Sluis¹, Frank T. J. M. Zaal²

¹Department of Psychology, University of Groningen, The Netherlands; ²Center for Human Movement Sciences, University Medical Center Groningen / University of Groningen, The Netherlands

In sports matches, psychological momentum (PM) develops when moving toward or away from a desired outcome, such as the victory. This elicits various psychological and behavioural changes within the athlete. In empirical studies, our research team found positive and negative changes in, amongst others, confidence and effort exertion while athletes moved toward or away from a victory (e.g. Den Hartigh et al., 2014, 2016; Den Hartigh & Gernigon, 2018). Recently, we proceeded by studying whether PM influences athletes' perception of the environment and the possibilities for action it offers (affordances, see Fajen et al., 2008). We asked participants to make practice putts on a golf course. Subsequently, they were asked to place the ball at their maximum 'puttable' distance and to judge the hole size. Next, participants played a match against an opponent, in which the first to take a lead of 5 points would win (they won a point when making the putt or being closest to the hole). The experimenter manipulated the scoring pattern: participants either came back from a four-point lag to a four-point lead (positive PM) or underwent the opposite scenario (negative PM). Then, participants judged their maximum puttable distance and the hole size again. Results provided the first evidence for a PM-affordances link: relative to the baseline, the judgment of the puttable distance corresponded to 113% during positive PM (95% CI = 97% to 130%) and to 83% (95% CI = 69% to 95%) during negative PM. No significant effects were found for hole-size judgments.

9:00am - 9:15am

Individual differences in multitasking choices

Laura Broeker¹, Harald Ewolds², Stefan Künzell², Rita F. de Oliveira³, Markus Raab^{1,3}

¹German Sport University Cologne, Germany; ²Universität Augsburg; ³London South Bank University

We have developed a theoretical perspective arguing that human multitasking should be understood as a choice (Broeker et al., 2018). This idea emerged from recent developments in the field of dual-task research, demonstrating that individual differences, flexible resource allocation, and prioritization of tasks are hard to align with classic dual-task accounts, e.g. structural bottleneck or capacity limitation accounts. We argue that decision parameters, used in judgment and decision making (JDM) research, can help to predict and better understand multitasking performance and thereby complement classic dual-task theories. We adapt the Decision Field Theory (Busemeyer & Townsend, 1993) to multitasking purposes, and explain how computational modelling techniques may provide a benefit to understanding multitasking costs. In our initial theoretical publication, we outlined a concrete interdisciplinary future research program whose preliminary implementation and results will complement the talk. We applied a continuous switching paradigm, in which participants ($N = 22$) have to prioritise a task over another under different situations of risk. We hypothesise that performance on an independent risk measure and the transformation of performance scores into decision parameters can predict switching behaviour. Data collection will be finished until the conference presentation.

9:15am - 9:30am

3D multiple object tracking training and passing decision-making in soccer: a replication of Romeas et al. (2016)

Sebastian Harenberg¹, Zachary McCarver², Justin Worley¹, Oliver Höner³, Dennis Murr³, Justine Vosloo¹, Rमित Singh Kakar¹, Rob McCaffrey⁴, Kim D. Dorsch⁴

¹Ithaca College, United States of America; ²University of Northern Colorado, United States of America; ³University of Tübingen, Germany; ⁴University of Regina, Canada

As a fast-paced invasion game, soccer requires athletes to make quick decisions in dynamic environments. Superior perceptual-cognitive skills may underlie the quality differences between expert and novice performances in such environments (Faubert, 2013). Several off-court cognitive training interventions have been developed to train such skills, however, the evidence for the transfer of the trained skills to athletic performance has been sparse (Zentgraf et al., 2017). One study that showed a transfer effect was conducted by Romeas et al. (2016). The authors trained 23 collegiate soccer players using 3-dimensional multiple object tracking (3D MOT) training and found a significant increase in the quality of passing decision-making. Limitations of the study included a small sample size and the use of subjective ratings of decision-making by an experienced coach. Hence, the purpose of the present study was the replication of Romeas and colleagues' study with a larger sample size and a standardized test of passing decision-making in soccer. N = 31 NCAA Division III soccer players (female n = 16) were randomised to 3D MOT training or a control task. The experimental group received 10 training sessions over a span of 4 weeks. Decision-making was assessed via a validated and standardized video battery. A significant interaction effect ($F(1,29) = 20.34, p < .001, \omega^2 = .16$) indicated a successful intervention effect of the 3D MOT training. Yet, no significant changes in decision making over time were found, suggesting that 3D MOT training may not transfer to increased quality of decision-making in soccer with NCAA Division III athletes.

9:30am - 9:45am

Temporal decision-making: the interplay of goalkeepers and penalty takers

Benjamin Noël¹, John van der Kamp², Stefanie Hüttermann¹

¹German Sport University, Germany; ²VU Amsterdam, The Netherlands

Penalty kicking has been interpreted as a prime example of two-person zero-sum games and different researchers found that professional soccer players' behaviour resembles mixed strategies Nash equilibrium (e.g. Palacios-Huerta, 2003). Not only in this respect but also in general research on penalty kicking researchers predominantly focused on spatial decision making of penalty takers and goalkeepers without considering temporal aspects of players' decisions (van der Kamp, Dicks, Navia, & Noël, 2017). However, it is known that penalty takers can either choose for a target area before they start to run-up or wait for the goalkeeper to commit to one side of the goal to kick to the undefended goal side (van der Kamp, 2006). Goalkeepers can decide/start to move relatively early or late during the penalty takers' run-up (Kuhn, 1988). The current study focused on these temporal aspects of decision making while also considering the interaction between goalkeepers and penalty takers that influences the probabilities of scoring. Results show that goalkeepers should more often move relatively late than early (64% vs. 36%), and that penalty takers should wait for the goalkeeper's reaction more often than deciding where to kick in advance (55% vs. 45%). This way, both opponents would maximise their chances without their behaviour being easily predictable. However, especially penalty takers behave differently than game theory-based recommendations would suggest. This discrepancy and benefits of applying different kinds of analyses within the same (theoretical) framework are discussed considering action recommendations for penalty takers and goalkeepers based on previous research.

9:45am - 10:00am

Naturalistic decision-making in elite sports: looking back, looking forward the Recognition-Primed Decision model

Anne-Claire Macquet

French Institute of Sports, France

In elite sports, athletes make decisions under high uncertainty and time pressure. Most situations resemble dynamic situations studied using the Naturalistic Decision-Making approach (Zsombok, 1997). Klein (1997) developed the Recognition Primed-Decision (RPD) model to explain how experts use their experience to assess situations by comparing them with similar situations stored in memory and associated with the corresponding action to implement. The RPD model presents three variations: Simple match refers to a rapid situation recognition and the implementation of a corresponding decision from memory. Diagnosing the situation is initiated when information is not yet available or the situation has suddenly changed. Mental simulation is achieved to assess the workability of the decision. Although this model has been used to explain decision-making in sports (e.g. Bossard et al., 2010), it does not account for planned decisions. Macquet and Pellegrin (2017) augmented it with a fourth variation. Force the situation is initiated when the decision-maker aims to impose a planned decision which is not adapted to the current situation. The decision-maker implements an initial action aimed at forcing the situation features to fit those of the planned action and then implements the planned action. This revisited model accounts for two kinds of decision: one-off decision and two-stage decision: One-off decision aims to adjust the decision to the situation and two-stage decision aims to adapt the situation to the planned decision. This model accounts for planned decisions and decisions made in the course of action in dynamic situations (e.g. Macquet & Lacouchie, 2017).

Paper Session 18: Physical Education and Children

Time: Wednesday, 17/Jul/2019: 8:30am - 10:00am · Location: S 9 - Cologne

Session Chair: Martin S. Hagger, Curtin University

8:30am - 8:45am

Development, face and content validity of a novel qualitative tool to measure young children's motivation for physical education

Katie Fitton Davies¹, Paula M Watson¹, James Rudd¹, Farid Bardid², Knowles Zoe¹, Simon Roberts¹, Lawrence Foweather¹

¹Liverpool John Moores University, United Kingdom; ²University of Strathclyde

Introduction: Self-Determination Theory (SDT) suggests that children who are more autonomously motivated within physical education (PE) are more likely to sustain engagement in PE (Ryan & Deci, 2017). A paucity of research exists around young children's motivations to engage in PE, largely due to a lack of age-appropriate tools.

Aim: This study aimed to develop a novel qualitative tool (Draw, Write, Show and Tell; DWST) based on the self-determination theory (SDT) to assess young children's motivation regulations and basic psychological needs satisfaction in relation to PE.

Methods: The DWST was iteratively developed by child development, PE and SDT experts to establish content validity. Several iterations of the DWST method were piloted with 5-6-year-old children from across three primary schools in the United Kingdom (UK) (N = 41, 54% male) (phase 1), and refined according to children's responses in order to ensure face validity. The final DWST method was then piloted with two children who had not taken part in the initial study (50% male) (phase 2).

Results: Evidence of face and content validity were established with findings gathered by the tool indicating that different types of motivation for PE can be distinguished in young children and insight into their basic psychological needs satisfaction within PE can be gained.

Conclusion: This study developed an SDT-based qualitative tool that evaluates young children's motivation and basic psychological need satisfaction within PE. By understanding children's motivational perceptions in regards to PE, it can aid practitioners in keeping children suitably motivated within the PE environment.

8:45am - 9:00am

Physical literacy for Australia: a modified Delphi study to define & operationalise physical literacy for application in Australia

Richard Keegan¹, Dean Dudley², Lisa Barnett³

¹University of Canberra, Australia; ²Macquarie University, Australia; ³Deakin University, Australia

Alongside growing interest in physical literacy, the concept's meaning has been debated. The Australian Sports Commission sought a research team to develop an accessible and widely applicable definition. The outcomes were guided by the following requirements: 1) applicable to all age groups, 2) applicable to a wide range of stakeholders spanning education, recreational sport, elite sport and health context, and 3) accessible to practitioners, recipients, policymakers and researchers alike. Following a substantial review of the existing literature in physical literacy, we implemented a modified Delphi methodology using leading experts from Australia, and internationally. Two phases of Delphi were used, one to establish a definition, and one for the standards framework: each primed by a one-day face-to-face workshop. The panel reached consensus on four defining statements: Core - Physical literacy is lifelong holistic learning acquired and applied in movement and physical activity contexts. Composition - it reflects ongoing changes integrating physical, psychological, cognitive and social capabilities. Importance - it is vital in helping us lead healthy and fulfilling lives through movement and physical activity. Aspiration - a physically literate person is able to draw on their integrated physical, psychological, cognitive, and social capacities to support health-promoting and fulfilling movement and physical activity - relative to their situation and context - throughout the lifespan. Consensus was reached on a standards framework which addressed four learning domains (physical, psychological, cognitive, social) and included five learning configurations (based on the 'System of Observed Learning Outcomes' taxonomy of learning). The process and outcomes have important implications for other physical literacy initiatives.

9:00am - 9:15am

Construct validity and reliability of a physical activity parenting questionnaire for children

Arto Laukkanen¹, Kaisa Aunola², Elisa Korhonen³, Sääkslahti Arja⁴

¹Faculty of Sport and Health Sciences, University of Jyväskylä, Finland; ²Department of Psychology, University of Jyväskylä, Finland; ³Faculty of Sport and Health Sciences, University of Jyväskylä, Finland; ⁴Faculty of Sport and Health Sciences, University of Jyväskylä, Finland

A child's perception of parenting is hypothesised to significantly affect the way parenting influences the child's physical activity behaviour (Davison et al. 2013). This study aimed to examine construct validity and reliability of a new tool: Physical Activity Parenting questionnaire for Children (PAPC). The PAPC consisted of 22 items which were hypothesized to be developmentally suitable, and to cover three factors of physical activity parenting, named as structure, autonomy support and warmth. The construct validity was tested using a sample of first-, second- and third graders (N = 501; mean age = 8.25 ± 0.95 years, n girls = 48.1%) and by using confirmatory factor analysis. Reliability was tested using a sample of children who completed a 4-week retest of the questionnaire (n = 478; mean age = 8.84 ± 0.95 years, n girls = 48.3%) and by using the Pearson correlation coefficient. Overall, factor modelling showed different suitability for grade levels, first-graders having the lowest fit for models. Therefore, the model fitting was performed first for the first-graders. The hypothesised first-order 3-factor model was significantly better than first-order 1-factor-model for all subsets. A first-order three-factor model with 20 items, after removing 2 items, showed an acceptable fit for all grade levels. Test-retest reliability ranged across the items between $r = .199$ to $.645$, $r = .166$ to $.616$, and $r = .325$ to $.806$ in first-, second- and third-graders, respectively. The PAPC can be considered as a promising tool for investigating young children's perceptions of physical activity parenting.

9:15am - 9:30am

Impact of motor competences on executive functions in elementary school children**Thomas Finkenzerler¹, Benjamin Niederkofler², Günter Amesberger¹**¹University of Salzburg, Austria; ²Salzburg University of Education Stefan Zweig, Austria

There is growing evidence that physical activity and physical fitness are positively related to executive functions. However, the main goal of physical education is directed towards the promotion of basic motor competences (e.g. throwing, balancing, etc.). Therefore, the question arises how motor and cognitive competences are interrelated. The aim of this study was to investigate the predictive value of motor competences on executive functions in elementary school children.

Motor competences and executive functions were assessed in a sample of $n = 61$ male and $n = 62$ female fourth-graders (age: $M = 9.74$ years, $SD = 0.61$) in elementary school. The MOBAK-3-4 instrument (Herrmann, 2018) was used to assess basic motor competences. Executive functions were recorded with a computer-based modified version of the Flanker Task (Hillman et al., 2006), and a 2-back task. Linear regression analyses were performed to predict executive functions taking locomotor skills and object control skills as well as age and sex into account.

Locomotor skills explained 17.8% of the variance in correct answers on congruent items in the Flanker Task ($\beta = .42$, $p < .001$). The adjusted hit rate of the 2-back task (subtraction of the error-rate from the hit rate) was significantly explained by age, sex and locomotor skills ($R^2 = .39$, $F(117) = 7.05$, $p < .01$).

The findings on the Flanker Task suggest that locomotor skills are associated with cognitive control in fourth-graders in elementary school. The impact of age and sex on working memory and its relationship on motor skills should be addressed in future studies.

9:30am - 9:45am

The effect of peer-tutoring on empathy and perceived ability in inclusive physical education**Erica Gobbi, Attilio Carraro**

University of Padua, Italy

Research examining physical education (PE) reported peer tutoring as an effective approach to promote inclusion (Cervantes, Lieberman, Magnesi, & Wood, 2013). Direct and extended contact with members from a stigmatised group have shown promise in reducing the stigma, and the peer-tutoring strategy resulted effective for students in reaching mastery in PE. The purpose of this study was to evaluate the effect of an inclusive PE program on self-perceived sport ability, empathy and implicit attitudes toward people with disability among early adolescents.

$N=242$ students from different schools were involved in the study ($M=13.1$ years, $SD=1.7$). $n=129$ volunteered to attend an extra 1-hour PE class/week for 6 months, tutoring students with disabilities (aged 13-18 years), adopting a one-on-one relationship, in groups constituted by 25 tutor/tutee couples on average (Gobbi & Carraro, 2018). The rest of the students ($n=113$) served as a control group. The Ability-subscale of the Physical Self-Description Questionnaire short version, the Interpersonal Reactivity Index, and the Disability Attitude-Implicit Association Test were administered pre- and post-intervention and analysed by means of RM-ANOVAs.

After the intervention, students involved in the peer-tutoring inclusive PE reported enhanced self-perceived sport ability, affective and cognitive empathy ($p<.05$) than the control group. The implicit attitude resulted significantly more positive after intervention for boys in the experimental group ($F=5.1$, $p=.026$).

Findings seem to support that peer-tutored inclusive PE can positively affect perceived ability and empathy among early adolescents. Addressing empathy and attitudes toward stigmatised groups is an important goal when considering shaping inclusive environments.

9:45am - 10:00am

Physical self-concept, physical activity and physical fitness: A Reciprocal-Effect-Model in a cross cultural context**Marie-Christine Ghanbari, Till Utesch, Maïke Tietjens, Bernd Strauss**

University of Münster, Germany

The development of physical self-concept (PC) and the extent of physical activity (PA) are strongly related to the environment and the culture. Wästlund et al. (2001) have already shown that African adolescents show a more positive self-concept than Asian or American. Such differences cannot be explained solely in terms of cultural dimension such as Individualism-Collectivism. It is important to unpack the culture at the level of individuals. As known from western research, PC is reciprocally related to physical fitness (PF) and PA (Marsh et al., 2006). Consequently, different cultural context like different PA lifestyles may produce differences in the development of the self-concept. The study aims to analyse cultural differences and similarities in PC, PF and PA-level (organised, self-organised, daily). Data are collected from Nigerian $t1=369$, $t2=252$, $t3=162$ and German $t1=345$, $t2=327$, $t3=301$ adolescents.

Structural equation modelling/test-of-invariance confirmed the reciprocal-effect between PC, PF and PA ($p < .05$, $.13 < \beta < .28$, $CMIN/DF = 2.694$, $CFI = .966$, $TLI = .946$, $RMSEA = .049$). The fit indices allowed us to accept the hypothesis of metric and structural invariance (CFI -differences = $.01$). Adolescents in both countries who are more active have a more positive physical self-concept than those who are inactive. These results support the cross-cultural generalisability of the REM. The higher PA could be the reason for the higher self-evaluation of Nigerian adolescents.

Paper Session 19: Physical and Cognitive Performance

Time: Wednesday, 17/Jul/2019: 8:30am - 10:00am · Location: VSH 118 - Nottingham

Session Chair: Peter Gröpel, University of Vienna

8:30am - 8:45am

Enhanced cognitive performance in expert compared to lower skilled eSports gamers and non-gamers

Mark Campbell, Chris Exton, Adam J Toth

University of Limerick, Ireland

Understanding the neurological changes that take place as expertise develops is a central topic in sport psychology, cognitive psychology and cognitive neuroscience. Here, we argue that video games, despite previous misconceptions, are an excellent model environment from which one can examine neurocognitive expertise. We argue that the area of eSports is of particular relevance, which encompasses video/computer games played within the medium of cyberspace competitively and increasingly professionally. Playing action video games requires players to develop a cognitive profile that allows them to rapidly monitor and react to fast moving visual and auditory stimuli, and to inhibit erroneous actions. This study investigated whether experience and expertise with action video games are associated with an advantage in standardised cognitive tasks. Specifically, we investigated whether individuals (N = 1,548) who played action video games demonstrated enhanced cognitive processing speed, task-switching and inhibitive abilities. Standard cognitive tests utilised for this purpose were the Stroop, N-Back and Trail Making Test. Results showed that in all three tests, expert gamers outperformed less skilled gamers and non-gamers. Our findings suggest that eSports gamers possess enhanced processing speed and task-switching ability and that higher skill ratings in eSports are associated with higher performance on standardised measures of cognition. Our data corroborate and bolster previous findings demonstrating different cognitive profiles for eSports gamers of differing skill ratings and non-gamers.

8:45am - 9:00am

Motivated implicit beliefs in competitive gymnasts: is there a self-serving bias?

Christopher Mark Spray¹, Victoria Emily Warburton²

¹Loughborough University, United Kingdom; ²University of East Anglia, United Kingdom

Recent evidence suggests that individuals shape their implicit beliefs concerning the malleability of personality characteristics in the service of self-enhancement (Steimer & Mata, 2016). There are reasons to expect differences in motivated beliefs about one's strengths and weaknesses in the sport performance setting, however, this proposition has not been tested to date. Therefore, the purpose of this research was to ascertain whether motivated implicit theories could be identified among competitive gymnasts and to test for a self-serving bias. Across two studies, N = 278 male and female gymnasts ranging from 7 to 38 years of age reported their implicit theories of their perceived strengths and weaknesses in gymnastics, the direction of expected future change in these attributes, and desire for change. These three sets of beliefs were assessed in relation to attributes about the self as well as to the same attributes in other gymnasts. Results showed greater perceived stability in gymnasts' own weaknesses than in their own strengths and a greater desire to change their own weaknesses than their own strengths. In addition, gymnasts perceived their own weaknesses as more stable than the same weaknesses in other gymnasts. However, there was no difference in desire for change in their own or others' weaknesses, nor in the expected future change of their own strengths and weaknesses compared to those of other gymnasts. Compared with previous research on the malleability of personality, competitive gymnasts show less evidence of a self-serving bias underpinning their implicit beliefs.

9:00am - 9:15am

Personality and performance under pressure: testing the role of fear of negative evaluation and action orientation

Peter Gröpel, Jared Jentzsch

University of Vienna, Austria

Objectives: Athletes who are high in fear of negative evaluation (FNE) and low in action orientation (AO) are likely to experience performance decrements under pressure (i.e. choking; Geukes et al., 2017; Gröpel, 2016). This proposition was tested in a basketball free-throw task.

Method: N = 67 professional and semi-professional basketball players performed 15 basketball free throws under normal (low pressure) conditions, followed by another 15 free throws under pressure. The Trier Social Stress Test and the presence of the audience were used to induce pressure, and a state anxiety questionnaire was used to validate the manipulation. In addition, participants reported practice free-throw percentage (FT%), which was compared with their game FT%. FNE was measured with Carleton et al.'s (2006) Brief Fear of Negative Evaluation-II questionnaire and AO with Kuhl's (1994) Action Control Scale.

Results: Participants' state anxiety increased and free-throw accuracy decreased significantly from before to after the pressure induction, supporting the performance-harming effect of pressure. Participants' game FT% were also significantly lower than their practice FT%. The effect of personality was mixed. FNE predicted the drop in FT% but was unrelated to the free-throw task performance. AO was unrelated to FT% but related to the free-throw task performance. In contrast to expectations, however, participants high (rather than low) in AO worsened performance under pressure.

Conclusion: Pressure can take over the personality. Even athletes with less "choking-susceptible" personalities may thus benefit from learning and applying existent interventions to improve performance under pressure (Gröpel & Mesagno, 2017).

9:15am - 9:30am**Cognitive enhancement training in a high security environment****ChangHyun Ko**

Science Applications International Corporation, United States of America

The Transportation Security Administration (TSA) is an essential part of ensuring security across all airports in the United States. The cognitive requirements for TSOs are extremely high and maintaining a high performing environment is critical not only to TSA but to the overall safety for all passengers. The SAIC Army Human Performance Group (AHPG) provided Cognitive Enhancement (CE) training to TSOs in order to boost the cognitive skills necessary for TSOs to achieve higher performance.

SAIC's CE training, rooted in sport psychology with a holistic human performance emphasis and has been effectively utilized across various military populations since 2008 for enhancing cognitive capabilities. We offer a systematic approach for learners to accelerate the acquisition and application of the competencies, skills, and techniques required for optimal performance. The foundational competencies that drive the skills and techniques are as follows: self-awareness, self-regulation, psychophysiological activation, self-efficacy, present moment awareness, and motivation.

We developed experiential opportunities within the training to enhance the learning environment for the TSOs. We created performance profiles to provide measures of effectiveness in pre/post training. We collected standalone measures in skill effectiveness from the officers who received the training, measures which were directly related to the cognitive enhancement skills which were the core of the training experience. We also obtained self-report data from the officers which identified the level of cognitive enhancement skill usage by the officers when engaged in key performances identified by the TSA leadership as critical areas in need of remediation.

9:30am - 9:45am**Successful performance and cardiovascular markers of challenge and threat: a meta-analysis****Maciej Behnke, Łukasz Kaczmarek**

Adam Mickiewicz University, Poland

Cardiovascular responses to challenge and threat have been used extensively in psychophysiological research. In this meta-analysis, we scrutinized the body of evidence for the role of challenge and threat hemodynamic responses in predicting positive behavioural outcomes, i.e. performance quality. We accounted for cardiac output (CO), total peripheral resistance (TPR), and Challenge-Threat Index (CTI). With 17 articles covering 19 studies (total N = 1045), we observed that the literature might have been biased towards positive results. After we excluded outlying studies and compensated for missing null-effect studies, we found that the mean standardized coefficient, corrected with the trim-and-fill method, was $r = .14$ for CO, $r = -.13$ for TPR, and $r = .10$ for CTI. This indicated relatively small but stable effects of cardiovascular responses in the facilitation of successful performance. Moderator analyses indicated that TPR and CTI produced stronger effects in non-experimental studies. We also found that effects were not moderated by levels of engagement (indexed by heart rate and pre-ejection period), task domain (cognitive vs. behavioural) and measurement method. In summary, our results supported the general validity of the biopsychosocial model in the prediction of behavioural outcomes. However, they also indicated limitations of the empirical evidence and significant bias in the literature.

9:45am - 10:00am**Social challenge and threat predict performance and cardiovascular responses during Counter-Strike competitive gaming****Maciej Behnke, Michał Kosakowski, Łukasz Kaczmarek**

Adam Mickiewicz University, Poland

Individuals tend to compare themselves with others and the results of these self-evaluations influence subsequent performance. Individuals who perceive their advantage over others (challenge-type response) are more likely to achieve higher levels of performance. The benefits of favourable self-cognitions are partly mediated by cardiovascular efficiency that is increased by the challenge and decreased by threat evaluations. In the current study, we tested whether the biopsychosocial model of challenge and threat can be extended to predict behavioural outcomes among competitive e-sport gamers. Testing performance models among e-sport gamers offer a unique opportunity for highly ecologically valid studies on highly motivated and goal-oriented individuals. N = 82 men were assigned to a challenge or threat group and completed three rounds of Counter-Strike: Global Offensive (CS:GO). Individuals with the highest scores were awarded money prizes. Cardiovascular markers of challenge and threat, cognitive appraisals and game scores were recorded. We manipulated with social challenge and social threat evaluation by informing participants that their performance in the initial round was superior (challenge) or inferior (threat) compared to other players. We found that individuals who believed that they were stronger than other players, had stronger cardiac responses and achieved higher scores. These effects, however, were related to trait-like appraisal at the baseline and was not boosted by situational information. These results are the first to document that social comparisons among CS:GO gamers are accurate in the prediction of future physiological and behavioural outcomes. Furthermore, these findings emphasise that physiological responses mediate some relationships between cognition and performance.

Paper Session 20: Consulting and Counseling

Time: Wednesday, 17/Jul/2019: 8:30am - 10:00am · Location: VSH 17 - Westphalia

Session Chair: Carsten Hvid Larsen, University of Southern Denmark

8:30am - 8:45am

Narrative inquiry: athletic grief and its haunting impact

John Coumbe-Lilley

University of Illinois at Chicago, United States of America

The purpose of this study was to investigate the emotional recovery experiences of athletes who suffered sport injuries during competition keeping them out of their sport longer than six months. The study contrasted athletic grief responses with the emotional experiences described in the Stages of Grief model (Kubler-Ross, 1969). The study received institutional research board approval. Recorded semi-structured interviews were completed (55min average duration) with recovered athletes (N = 18; 15 female, 3 male) who competed in basketball, American Football, marathon running, soccer, rugby, baseball, swimming and wrestling. Snowball sampling was used to recruit subjects. Narrative inquiry methods (Clandinin & Connelly, 2000) were used to organise transcribed data. Thematic content analysis was employed (Aronson, 1995; Gilbert, 2002) to detail themes, patterns and meaningful details expressing the experiences of each subject. Results of analysis expressed experiences discussed within four dominant themes: 1) non-linear unexpected grief recovery patterns, 2) exiting the sport experience yielded positive emotions, 3) athletic grief endures beyond sport, and 4) raised awareness because of interview experience. Findings suggest the need to 1) provide proper clinical sport psychology support, 2) develop education materials and delivery strategies for athletes, sport medicine professionals (SMPs) and coaches to ameliorate the deleterious emotional experiences recovering athletes have, and 3) train SMPs to perform lay counselling with recovering athletes. Future research studies are needed to show how to counsel recovering athletes and help them cope with the grief and loss of their future sport experience and the change in their identity.

8:45am - 9:00am

A proposed process model for athlete grief counselling

John Coumbe-Lilley

University of Illinois at Chicago, United States of America

The purpose of this study was to investigate the emotional recovery experiences and needs of athletes who suffered sports injuries during a competition, keeping them out of their sport longer than 6 months. The study received institutional research-board approval. Recorded semi-structured interviews were completed (55min average duration) with recovered athletes (N = 19; 16 female, 3 male) who competed in individual and team sports. Snowball sampling was used to recruit subjects. Narrative inquiry methods (Clandinin & Connelly, 2000) were used to organise transcribed data. Thematic content analysis was employed (Aronson, 1995; Gilbert, 2002) to detail themes, patterns and meaningful details expressing the experiences of each subject. Results of analysis expressed experiences discussed within four dominant themes: 1) non-linear elastic grief recovery patterns, 2) exiting the sport experience yielded positive emotions, 3) athletic grief endures beyond sport participation, and 4) raised athlete awareness because of interview experience. An athlete grief counselling process model was developed and presented to an expert focus group (N = 6) licensed professional counsellors for feedback. Results indicated 1) total agreement for the use of narrative and existential therapy solutions at the onset of counselling, 2) considerations for integrating solution and cognitive behavioural therapeutic modalities, 3) practitioner training in grief counselling was required, 4) clinical sport psychology practitioners should educate sport medicine professionals on lay counselling methods and referral to a licensed mental health provider, 5) point of physical treatment psycho-education materials should be provided, and 6) clinical sport psychology professionals should be part of a multidisciplinary sport medicine team.

9:00am - 9:15am

Perceptions of sport psychology consultancy in professional UK rugby league

Emily Victoria Stout, Dr Martin Eubank

Liverpool John Moore's University, United Kingdom

The primary aim of the present study was to explore key stakeholders' perceptions of sport psychology consultancy in professional UK rugby league. To this end, n = 3 coaches, n = 3 management staff and n = 2 player welfare managers (PWM's) currently working at a professional rugby league club in the UK were interviewed. Thematic analysis of interview data resulted in five higher-order themes: (1) importance of sport psychology, (2) recruitment of SPC's, (3) barriers to the entry of SPC's, (4) challenges for SPC's, and (5) practitioner characteristics. Participants generally recognised the importance of sport psychology for performance and success in the rugby league. Despite this, participants acknowledged that the service had been under-utilised in the sport to date. Main barriers to the entry of SPC's were finance, low relative importance of the service and players' reluctance to disclose performance-related concerns. Identified challenges for SPC's were the informal nature of recruitment and a lack of awareness of requisite qualifications/accreditation pathways. Finally, possessing good relational skills and understanding the culture of the sport were identified as important abilities for SPC's. The findings suggest that a) bodies responsible for the training/qualification of SPC's in the UK (e.g. BPS/BASES) must do more to promote the profession in sports where sport psychology does not have a long history or recognised tradition (e.g. rugby league), b) to survive or 'thrive' in elite/professional sport, SPC's must develop both relational and cultural competencies in addition to theoretical knowledge.

9:15am - 9:30am

A clinical psychological model for consulting to athletes and sports teams

Robert G. Ley, David Cox

Psychology Dept., Simon Fraser University, Canada

Psychologists have been providing specialised psychological services to teams and athletes for many years with the intended goal of improving performance. Although the delivery of sports psychology services has a long history, for some as far back as Hippocrates statement of “a sound mind in a sound body”, that history is not without controversy particularly in the area of professional competency. There are divisive issues associated with education and training, as well as the certification of individuals using the title “sports psychologist.” For example, in Canada, the title of “psychologist” is reserved for those who have doctorate degrees in clinical or counselling psychology, and who are registered with their provincial licensing and regulatory body (e.g. the College of Psychologists in BC). Likewise in Canada, in contrast to the training, registration, regulation and titling of “sports psychologists” is the education, training and work of other mental health, non-psychologist professionals, who provide services to teams and athletes, and who are designated as “mental trainers”.

In this presentation, the authors will present a decision-making process and consulting model which combines mental training and clinical psychological interventions. This model “clinical sport psychology” has been successfully applied with a wide variety of athletes and teams including amateur and professional teams and athletes. Case studies will be presented which illustrate successful psychological interventions with professional athletes, who experienced clinical depression, Attention Deficit Hyperactivity Disorder (ADHD) and Post Traumatic Stress Disorder (PTSD), and whose athletic performance was significantly enhanced through these interventions.

Symposium 13: Refining imagery relationships and applications

Time: Wednesday, 17/Jul/2019: 8:30am - 10:00am · *Location:* H 2 - Bern
Session Chair: Anthony Michael Morris, Victoria University, Melbourne, Australia

Refining imagery relationships and applications

Chair(s): **Tony Morris** (Victoria University, Melbourne, Australia, Australia)

Discussant(s): **Tony Morris** (Victoria University)

Imagery is a ubiquitous cognitive process used in every aspect of life. Imagery can influence sport behaviour, leading to a large volume of research on factors that influence imagery in sport. However, researchers have examined such a diversity of sport contexts, with a multitude of extraneous factors, that results vary across studies of the same imagery characteristic, so key issues remain unresolved. In this symposium, we address major issues associated with relationships and application of imagery in sport. After a brief introduction (5 mins), Kuan et al. describe original research examining the potential of virtual reality (VR) to enhance imagery ability and netball shooting performance (12 mins). Then, Budnik-Przybylska et al. examine the relationship of personality and body-esteem to imagery ability, based on the Imagination in Sport Questionnaire (12 mins). Next, Itoh et al. report on a study of frequency of imagery sessions in basketball free-throw shooting (FTS), systematically holding repetitions and duration constant at optimal levels that were determined in two previous studies. Waraphongthanacot et al. have examined imagery interventions to enhance the experience of flow through flow antecedents, including clear goals and total concentration. Now they report on the impact of a targeted imagery intervention on the flow dimension, sense of control, and basketball shooting performance (12 mins). Next, Savardelavar et al. describe a study in which neuro-linguistic programming is combined with five elements of PETTLEP to enhance archery performance and self-confidence (12 mins). Finally, we open the symposium to discussion (25 mins).

Presentations of the Symposium

Effects of virtual-reality imagery modelling on netball players' imagery abilities and shooting performance: a preliminary study

Garry Kuan¹, Siti Nur Shafiqah Rosli¹, Chin Ngien Siong², Tony Morris³

¹Universiti Sains Malaysia, ²Sarawak Institute of Teach Education, ³Victoria University

In this study, we examined the role of Virtual Reality (VR) during imagery training for enhancing netballers' imagery abilities and performance. Nine netball state players aged 13 – 15 years ($M = 13.44 \pm 0.88$) volunteered to participate in this study. They were randomly grouped into two research conditions, namely a VR imagery condition and a no-VR imagery comparison condition (progressive muscular relaxation with imagery), using a cross-over study design. All participants underwent 12 sessions (three weeks) of imagery training twice a week in both conditions with two weeks of resting period in between. For the VR imagery, we computerised the netball shooting skills into the Oculus VR DK2 (development kit 2), using 3D reconstruction with the concept of telepresence. The results showed a significant increase ($p < .05$) in imagery abilities on all subscales of the Sport Imagery Ability Measure (SIAM) for the VR imagery condition, but we also observed significant increases ($p < .05$) for vividness, control, and speed of generation for the comparison condition. In terms of netball shooting performance, both conditions showed significant performance enhancement for the 0.98m, 1.98m, and 2.94m netball shooting distances, with no significant difference between conditions on any distance, although we observed slightly higher scores for the VR imagery condition. The study suggests using VR during imagery could potentially enhance imagery abilities, leading to enhanced sporting performance. Implications for coaches and sport psychologists will be discussed.

Personal differences and predictors of imagery in dancers

Dagmara Budnik-Przybylska, Maria Kaźmierczak, Adriana Weremij

University of Gdansk

Dancing is mainly regarded as a form of art, which has been linked to expression of emotions. In the dancer's work, body as a tool is crucial (Jakubiec & Sękowski, 2007; Kijak-Owczarzyk & Swiderska, 1979). Additionally, specific personality traits are likely to facilitate performance (Fink, Graif, & Naubauer, 2009; Kowal, 2011; Rudnicka, 2012). Imagery is a widely-used technique for enhancing performance (Cumming & Hall, 2002; Morris, Spittle, & Watt, 2005). In this study, we examined personality and perceived body-esteem as predictors of imagery ability in professional dancers. We examined two experimental groups, ballet dancers and professional dancers of other techniques, and a control group. A sample of 249 people took part in the study: 155 women (62.2 %) and 94 men (37.8 %) aged 18-56 ($M = 25.07$, $SD = 5.82$). Participants completed the Imagination in Sport Questionnaire (Budnik-Przybylska, 2014), and Polish adaptations of the Big Five Inventory-Short (BFI-S; Strus, Ciecuch, & Rowiński) and the Body Esteem Scale (Lipowska & Lipowski, 2013). We used one-way ANOVA to investigate differences among groups, then regression analysis. The study results indicated that while both styles of dancers differed from the control group in imagery, personality, and body-esteem levels, there were no differences between the two experimental groups and the control group in the measured variables. Regression analysis revealed that personality, mainly higher openness to experience, and body-esteem, mainly related to perception of higher physical condition, were significant predictors of higher imagery ability in all groups. Detailed results and implications are discussed.

Examining the frequency component of the imagery dose-response relationship

Sho Itoh, Tony Morris, Michael Spittle

Victoria University

Imagery training is an effective psychological technique in sport psychology that can be applied for improving performance and controlling mental states. However, imagery training research neglects important imagery dose variables of repetition, duration, and frequency, so the most effective imagery dose for improving sports performance is still unclear. In determining the imagery dose-response relationship systematically, the most effective frequency of imagery sessions a week can contribute providing guidance for athletes, coaches, and psychologists. Forty volunteer basketball players from local basketball teams participated in the research. They were allocated into three imagery intervention conditions (N = 10 each), who undertook 3, 4, or 5 imagery sessions a week, respectively, and a control condition (N = 10), who did their usual physical basketball training. The aim of the 4-week imagery program was to enhance basketball free-throw shooting (FTS), while physical basketball training was maintained. The key imagery variables of repetitions and durations in a session were kept constant at 20 FTS imagery repetitions and 13-minute duration, respectively. FTS gain scores were calculated (difference between score at pre-test and on each occasion), then we tested for a significant effect of imagery conditions, using two-way, mixed-design ANOVA. The research findings indicated that all imagery conditions improved FTS performance, while the 4-day imagery frequency condition was the most effective. Thus, designing 20 imagery repetitions and 13 minutes duration in an imagery session for 4 days a week over 4 weeks of imagery training was most effective for improving sport performance.

Imagery intervention to promote the sense of control flow dimension and increase basketball shooting performance

Phatsorn Waraphongthanachot, Tony Morris, Anthony P Watt

Victoria University

Enhancing flow is an important goal in sport because of its link with intrinsic motivation and performance (Jackson, 1996). Imagery is a powerful technique shown to enhance performance and flow state (Pates et al., 2002). Stavrou and Zervas (2004) proposed that five flow dimensions are antecedents that can enhance flow. We examined the impact on flow and performance of an imagery intervention designed to increase sense of control. 16 male and 14 female basketball league players (M age = 26.33 years) completed a pre-test, shooting 40 shots (8 trials x 5 locations) at 4.5 metres (2-point shots) and 40 shots at 6.75 metres (3-point shots). Participants were randomly assigned to the imagery intervention and a video placebo condition. The imagery condition involved imagining calmness and confidence during shooting, for six, 15-minute sessions over two weeks. The video placebo involved equivalent time watching video of NBA competition, excluding shooting. Participants then completed the 80-shot task at post-test. We used two-way, mixed-design ANOVA to examine all nine flow dimensions and 2- and 3-shot shooting performance. The Imagery condition showed higher levels of flow than the Video condition. There was a significant occasion main effect for all flow state dimensions, except merging of action and awareness and clear goals, but no significant interaction effects. The imagery condition improved 2-, 3-point, and total shooting significantly more than the video placebo condition ($p < .01$). Imagery of sense of control enhanced basketball shooting performance, but significant pre-test differences interfered with effects of imagery on flow dimensions.

The effect of an NLP-PETTLEP intervention on performance and state sport-confidence in archery official practice setting

Meisam Savardelavar¹, Garry Kuan¹, Yee-Cheng Kueh¹, Tony Morris²

¹Universiti Sains Malaysia, ²Victoria University

In this study, we aimed to evaluate the effectiveness of NLP-PETTLEP as an imagery-based intervention for improving performance for junior archers aged 16 to 19 years (M = 16.83). All participants had two to four years of competition experience. Participants spent 10 to 15 hours per week on the archery training range (M = 12.16). They entered 2 to 4 tournaments per year, mainly between universities and national championships. On the basis of previous results, a tailored NLP-PETTLEP script was designed to target the steps of optimal archery performance. Due to limited participant access to archery accessories and the archery shooting range, the first two elements (physical, environment) of the PETTLEP were removed and were added to the imagery script. Thus, five elements of the model (task, timing, learning, emotion, perspective) were integrated into the anchoring and future-pacing concept of working with mental images to improve archery performance, as well as enhance participants' state sport-confidence. The NLP aspects of the script operated on the associative learning function to integrate amplified emotional components of past optimal performance mental images to the mental images of future performance. We employed a single-case, multiple-baseline, A-B design with all six nationally-ranked athletes. Participants employed the intervention as audio script twice a week and completed an adherence log-book. Following a 5-week baseline phase and a 6-week intervention phase monitoring performance and state sport-confidence (measured by the SSC1), all six participants revealed an increase in archery mean performance, and they all enhanced their state sport-confidence.

Symposium 14: Self-regulation in sport: developmental, learning, performance, and growth cycle perspectives

Time: Wednesday, 17/Jul/2019: 8:30am - 10:00am · *Location:* H 3 - Madeira
Session Chair: Malgorzata Siekanska, University of Physical Education, Krakow, Poland
Session Chair: Artur Poczwadowski, University of Denver

Self-regulation in sport: developmental, learning, performance, and growth cycle perspectives

Chair(s): **Malgorzata Siekanska** (University of Physical Education, Krakow, Poland, Poland), **Artur Poczwadowski** (University of Denver, USA)

Discussant(s): **Artur Poczwadowski** (University of Denver, USA)

Sport expertise and successful athletic careers are dynamic, uncertain, and depend on multifaceted fabric of person and contextual factors (e.g. Ericsson, 2003; Siekańska, 2013; Stambulova, 2016). Recently, self-regulation (as a person factor) gained a renewed interest among applied sport psychology researchers (e.g. Jonker et al., 2012; Massey et al., 2013) and practitioners (e.g. names deleted for the integrity of the review process). The purpose of this symposium is to review (conceptually and practically) the developmental, skill acquisition, and athletic performance perspectives on the role of self-regulation in sport behaviour. Additionally, metacognition involved in the cyclical athletic growth process will be highlighted as a prerequisite to self-regulation skills. The opening presentation will map out the conceptual landscape of the current understanding of self-regulation and its connections with numerous aspects of sport behaviour as related to practice and competition from a short- (e.g. practice session, match) and long-term perspectives (e.g. season, career). The second presentation will demonstrate how the complex processes of cognitive and emotional development facilitate self-regulation knowledge and skills in children, youth, and adults. The third presentation will focus on the role of new technologies in self-regulation for performance optimisation. Finally, the fourth presentation will report empirical data on the impact of long term self-regulatory practices on pre-competitive mental states in elite and sub-elite athletes. The question and answer part of the symposium will aim at exchanging the diversity of perspectives as well as invite the cultural differences in understanding and applying the principles of self-regulation in sport contexts.

Presentations of the Symposium

The role of self-regulation in sport: a conceptual review

Artur Poczwadowski¹, Malgorzata Siekanska², Jan Blecharz²

¹University of Denver, USA, ²University of Physical Education, Krakow, Poland

The concept of self-regulation has different meanings depending on a theoretical or temporal perspective applied to understanding of athlete behaviour and athletic career. The purpose of this presentation is to (1) identify types of self-regulation and (2) theoretically and practically reflect on the role of self-regulation as related to learning, performing, and career management. For instance, Jonker et al. (2012) underscored the importance of reflection (as a tool in self-regulation) in acquiring sport expertise. Namely, effectiveness of deliberate practice depends on strategic self-evaluation, causal attribution, self-satisfaction, and the use of adaptive inference (Zimmerman, 2000). Alternatively, self-regulation is viewed as an ability to momentarily adjust cognitive-emotional states to serve both learning (e.g. a 5-step pre-execution routine [Singer, 2002]) and performance (e.g. attention management; pre-competitive anxiety regulation [Hanin, 1997; Vealey, 2007]). These in-situation adjustments are typically enabled by deliberate (initially) or automatic (once well-learned) use of psychological skills developed via mental training programmes. Similarly, a capacity for self-control of daily activities (Toering & Jordet, 2015) and environments (Massey et al., 2013) facilitates adherence to rigorous training programmes and life-style choices associated with elite sport training. Short-term self-regulation (practice session, match, meal, etc.) helps to maximise one's learning, recovery, and performance potential; whereas the long-term perspective (e.g. season, career) is related to an attainment of sport expertise and demonstration of resilience through career transitions. Throughout, the presenter will emphasise the role of metacognition that allows for an athlete's reflective and self-regulating relationship to both learning/performing events and to oneself as a learner/performer

Self-regulation in sport context: a developmental perspective

Malgorzata Siekanska

University of Physical Education, Krakow, Poland

Self-regulation has recently attract theoretical and empirical efforts among sport psychologists (Appelt, 2005; Dixon & Moon, 2006; Jonker, Elferink-Gemser, & Visscher, 2009, 2010, 2011; Siekanska, 2012, 2013). One underdeveloped aspect in current research is a developmental perspective on self-regulation as an important individual resource. Clearly, at every stage of life, numerous internal and external factors impact human development. As a result, both the directions in the growth and maturation as well as the quality of the life itself are profoundly shaped (Brzezinska, 2005). Developmentally, as the scope and power of a person's influence on the external environment increases (Schaffer, 2005), the skills of self-regulation aiming at managing internal resources have a potential to grow. Self-regulation competencies, however, vary depending on: (1) universal changes in the life trajectory (i.e. biological factors and social demands typical for a particular stage of life) and (2) types of individual resources (i.e. knowledge and skills acquired through various activities, task accomplishments, and experiences; Bee [2004]). The purpose of the presentation is three-fold. First, the presenter will describe the main developmental phases of self-regulation in the sport context. Second, both risk factors (i.e. developmental crises) and growth facilitators (i.e. types of adults' behaviour supporting emotional self-regulation) of self-regulatory skills enhancement in children, youth, and adult athletes will be discussed. Third, based on her own sport psychology practice, the presenter will provide examples of problems in self-regulation, outline possible solutions, and identify the ways of monitoring intervention progress.

Self-regulation and performance optimisation: using new technologies in practice

Maurizio Bertollo, Selenia di Fronso, Laura Bortoli, Claudio Robazza

Department of Medicine and Aging Sciences, BIND–Behavioral Imaging and Neural Dynamics Center, University “G. D’Annunzio”, Chieti-Pescara, Italy

During the last decades, the contribution of sport psychology to performance optimization has evolved, integrating emotion- and action-centered self-regulation strategies as proposed in the task execution design approach (TED; Hanin, Hanina, Sasek, & Kobilek, 2016) and the multi-action plan model (MAP; Robazza, Bertollo, Filho, Hanin, & Bortoli, 2016). These approaches advocate a multimodal, multidimensional, and psychophysiological perspective in the assessment of performance-related states and for performance improvement (Bertollo et al., 2016; Holmes & Wright, 2017). This holistic approach has been implemented to the study of body-mind interaction processes and their interplay with the environment, and to improve performance (Bertollo, Doppelmayr & Robazza, 2019; di Fronso, Bortoli, Robazza, & Bertollo, 2017). Psychophysiological monitoring and intervention provide useful information to athletes (and their coaches) about their mental status, and how to self-regulate their processes for optimal performance. The analysis of the processes surrounding performance is guaranteed at different levels of motor behaviour, including the relationship among person, task, and environment. Drawing on the ecological perspective of linking brain, body, and environment (Teques, Araújo, Seifert, del Campo, & Davids, 2017), action-perception coupling can be analysed via eye-tracking, kinetic, and kinematic analysis. The investigation of the resonant system linking mind-body-environment can be completed using near-infrared spectroscopy (NIRS), electroencephalography (EEG), and electromyography (EMG), as well as autonomic measures, such as electrodermal activity (EDA) or heart rate variability (HRV). A comprehensive psychophysiological and behavioural assessment can inform bio- and neuro-feedback techniques to help athletes learn self-regulation strategies for optimal performance states also under competitive pressure.

Self-regulation of pre-competitive mental states: impact of long term self-regulatory practices

Jan Blecharz¹, Artur Poczwardowski²

¹University of Physical Education, Krakow, Poland, ²University of Denver, USA

When working with their clients, sport psychologists often combine long term self-regulated practices (e.g. season-long mental training with reflective follow-ups [Vealey, 1997]) with momentarily used self-regulating skills (e.g. to manage pre-competitive states [Hanin, 1997]). In this project, 89 sub-elite track and field athletes were compared with their 24 elite counterparts (i.e. participants in World and European Championships). The participants assessed the extent (as percentages) they succeeded in meeting their performance goals during the most important competitions in relation to their level of physical preparation in the last season. Moderating variables included self-efficacy, motivation, support from the significant others (mainly the coach) and psychoregulation skills (i.e. managing attention and emotional states). Statistical analyses showed significant differences between the elite and sub-elite groups ($F(1,110) = 9,075, p = .003, \text{partial Eta squared} = 0.077$). In addition, the elite athletes felt greater satisfaction (by 17.7 %) than the sub-elite group. In the next phase, the participants set goals for the following season in relation to their overall sport performance, technical performance, and the use of psychological skills. After the season ended, the competitors assessed how successful they were at attaining their goals. No statistically significant differences between the examined groups were observed in the post-season phase of the project. The goals set by the elite athletes, however, included both medaling during the World and European Championships (ego-orientation) and goals for improvement (task-orientation), whereas the sub-elite group set primarily task-oriented goals (Duda, 1989; Nichols, 1984). Implications for sport psychology practice will be presented and discussed.

Symposium 15: Faster, stronger, higher, but at what cost? Safeguarding athletes from psychological violence in sport

Time: Wednesday, 17/Jul/2019: 8:30am - 10:00am · *Location:* H 4 - Chalkidiki
Session Chair: Ashley Stirling, University of Toronto

Faster, stronger, higher, but at what cost? Safeguarding athletes from psychological violence in sport

Chair(s): Ashley Stirling (University of Toronto, Canada)

Psychological violence understood as the repeated intimidation, ridicule and/or humiliation of an individual includes name calling, yelling, screaming, threats, bullying, comparing kids negatively to others, intentional withholding of affection and expressions of worthlessness (Unicef, 2017). Among athletes, psychological violence is the most prevalent form of interpersonal violence experienced in sport, with reported prevalence rates ranging from 38% (Vertommen et al., 2016) to 75% (Stafford, Alexander, & Fry, 2015). Often normalized as common practice in the sport domain, and rationalized as a required part of the process of developing successful athletic performance (Kerr & Stirling, 2017), athletes' experience of psychological violence is still relatively under-researched compared to other forms of authority-based interpersonal violence in sport (Kavanagh, Brown, & Jones, 2017). Recent media cases of interpersonal violence in sports highlight the current gap in addressing athlete abuse within sport-psychology research and in safeguarding practice in sports. The purpose of this symposium is to present the current state of knowledge with respect to athlete's psychological violence. An overview of interpersonal violence in sports will be presented, followed by recent research highlighting the normalization of the psychological violence of athletes, sense-making of abusive practices, coaches' perspectives of psychologically harmful practice, and the scope of virtual psychological violence in sport. The symposia will conclude with implications for future directions in sport psychology research and practice.

Presentations of the Symposium

Safe sport at risk: Psychological violence in youth sport

Tine Vertommen

Thomas More University of Applied Sciences; University of Antwerp

This presentation starts with an overview of common definitions and available research on interpersonal violence in youth sport, highlighting the discrepancies, methodological limitations and challenges. Researchers' and policymakers' primary focus on sexual violence in sport has fuelled the suspicion that sexual violence is the most prevalent, severe and devastating type of interpersonal violence against children in sport. However, and in line with the general literature, several prevalence studies showed that psychological violence is the most common type of interpersonal violence in youth-sports settings. In a Dutch-Belgian study with N = 4,043 adults who participated in sports before the age of 18, 38% reported having experienced psychological violence. While the majority of these experiences could be classified as mild or moderate, the number of respondents reporting severe psychological violence (9%) is comparable to the 8% we recorded for severe physical violence and the 6% for severe sexual violence. Unlike often expected, both female and male victims report peer athletes as the perpetrators. Moreover, there is a significant overlap in athletes experiencing two or even three types of interpersonal violence in sports, pointing at a culture in which all types of interpersonal violence can flourish. Remarkably, when asking respondents whether they classify these experiences as abusive, the majority did not do so back then (84%), and still does not recognize these behaviours as abusive today (77%). These findings suggest far-reaching normalization of psychological violence in youth sport and pinpoint the challenges for sport-psychology consultants to recognize, assess, treat and prevent.

Data from the Netherlands on sense-making of psychologically abusive practices in elite youth sports

Froukje Smits

Utrecht University of Applied Sciences

A growing number of studies have indicated that emotionally abusive coaching behaviours occur in sport (e.g., Gervis & Dunn, 2004; Stirling & Kerr, 2013; Pinheiro et al., 2014). Likewise, negative reports with respect to the climate in Dutch elite gymnastics have surfaced in the media. The Royal Dutch Gymnastics Union has stated that they had no knowledge of the negative culture described in the media, and were unable to say to what degree these reports were a reflection of the general experiences of the gymnasts, coaches, parents and administrators, or how to interpret them. The aim of this study was to use a 'sense-making' frame (Weick, 1995) to explore meanings assigned by athletes and parents to the climate in elite gymnastics in the Netherlands. Semi-structured interviews were held with 14 elite women gymnasts and their parents to examine how they made sense of what occurred during practices. The results show how the sense-making of athletes and parents was an ongoing activity that resulted in a code of silence and a normalization of abusive coaching practices.

Coaches' perspectives on psychologically harmful practices

Anthony Vincent Battaglia

University of Toronto

Researchers have shown that exercise as punishment remains a common coaching method used in response to athletes' behavioural transgressions or inadequate athletic performance (Burak, Rosenthal, & Richardson, 2013; Kerr et al., 2016; Richardson, Rosenthal, & Burak, 2012). Athletes respond to this practice with negative psychological affects, including a diminished sense of enjoyment for the sport, decreased perceived competence, and adverse feelings towards the coach (Battaglia et al., 2018). Given the well-documented negative effects of punishment in sport and other domains, this study sought to understand why coaches use the practice of administering exercise as punishment. Semi-structured interviews with N = 8 inter-university coaches (n = 4 male, n = 4 female) were conducted. Data were analyzed using inductive thematic analysis (Braun & Clarke, 2006). Participant accounts revealed that exercise as punishment was implemented frequently, often to the entire team in response to one athlete's transgression, and sometimes by having the athlete who transgressed administer the exercise as punishment to the remainder of the team. The coaches reportedly used this practice to motivate the athletes, enhance team cohesion, teach the athletes a lesson, and deter undesirable behaviour. The coaches did not perceive the practice of administering exercise as punishment as potentially psychologically harmful in terms of public shaming or humiliation. Findings are interpreted in accordance with punishment (Kerr et al., 2016), shaming (Braithwaite, 1989), and coach education research (Holt, 2016). Recommendations for future research and practice are suggested.

The scope of virtual psychological violence in sports

Emma Kavanagh

Bournemouth University

Digital technologies have become an essential component in the navigation of everyday tasks and activities (Kavanagh, Litchfield and Osbourne, 2019). Virtual platforms have proven to be valuable to athletes, coaches and fans, but with increased connection comes the potential for misuse and abuse within these spaces. As Litchfield, Kavanagh, Osbourne and Jones (2018) highlight, gendered hostility, sexualized threats of violence and racially charged invective are part of a dark narrative of human behaviour within virtual space(s). This presentation will provide an introduction to virtual spaces and explore their adoption in sporting environments, while highlighting the dangers they pose to individuals engaging within them. Data will be presented from a series of netnographic studies that have sought to explore the scope of violence experienced in virtual spaces (e.g., Kavanagh, Jones and Sheppard-Marks, 2016; Litchfield et al. 2018; Kavanagh, Litchfield, Osbourne and Jones, in press). Findings to date demonstrate how virtual technologies provide a space for unregulated psychological violence to occur. Fans, athletes, coaches, officials and other key stakeholders can be the target of violence in online spaces and, in turn, can become the perpetrators of violence directed at others. Interaction in digital spaces can reach from one-off hateful comments to far more targeted, systematic, and pervasive examples of abuse. Sporting organisations must increase awareness of virtual spaces and the threat they pose to the safety and well-being of individuals in order to prevent these from becoming a significant blind spot in keeping people safe in sports.

Addressing psychological violence: Reflections as a researcher and sport psychology consultant

Gretchen Kerr

University of Toronto

Recent research and high-profile cases highlight athletes' experiences of psychological violence in sport (Stirling & Kerr, 2008; Vertommen et al., 2016). Some psychologically abusive practices such as yelling, humiliating and derogatory comments, body shaming or the intentional denial of attention and support by coaches tend to be normalized in sport and yet have significant negative implications for affected athletes (Alexander et al., 2011; Stirling & Kerr, 2013). Given that sport psychology consultants often establish a close rapport with athletes and coaches, attend training and/or travel with the team, consultants may observe or become aware of psychologically harmful practices and thus are in ideal positions to affect change. This presentation will encourage an interrogation of the consultant's role and responsibilities for intervening in and preventing incidents of psychological violence. Questions will also be raised about whether consultants are socialized into sports to accept potentially harmful practices, thus inhibiting their abilities to enforce the ethical principles to protect the well-being of athletes as set out by professional bodies. Implications will be drawn for further education and training of sport psychology consultants to identify, respond to, and/or prevent psychologically violent practices. Moreover, a call for further research on maltreatment and safeguarding athletes from harm within the sport-psychology domain will be made.

Symposium 16: Optimising athletes' vocational development: European perspectives

Time: Wednesday, 17/Jul/2019: 8:30am - 10:00am · *Location:* VSH 19 - Paris

Session Chair: Paul Wylleman, Vrije Universiteit Brussel

Optimising athletes' vocational development: European perspectives

Chair(s): **Paul Wylleman** (Vrije Universiteit Brussel, Belgium; NOC*NSF, the Netherlands), **Koen De Brandt** (Vrije Universiteit Brussel, Belgium)

Discussant(s): **Natalia Stambulova** (Halmstad University, Sweden)

One of the main challenges athletes face is combining elite sport with other pursuits such as education and/or work. While research on the dual career "education and sport" pathway has intensified during the past decade (Stambulova & Wylleman, 2018), research on the dual career "work and sport" and transition into a new professional career is lacking. In response to this lack of empirical data, this symposium presents the recently finalized Erasmus+ Sport project B-WISER: "Be a Winner in Elite Sport and Employment before and after athletic Retirement". Research centres, elite sporting institutions and companies from six countries joined forces with the aim to investigate the employability of athletes in three specific career stages: when they are active in elite sports, when they have retired from elite sports and prepare for first-time employment, and when they are employed in their post-athletic career. The first presenter will explain the aims, work packages (WPs) and impact of B-WISER. The second presenter will focus on the roles, contributions and interactions of "elite sport and employment" career support providers in Europe (WP1). The third presenter will provide an overview of the competencies athletes require to optimize their employability during the three specific career stages (WP2). The fourth presenter will focus on the reasons why employers (do not) hire athletes, and their perceptions of how athletes' value in the labour market can be maximized (WP3). Finally, the fifth presenter will approach the findings of the B-WISER project from a Slovenian perspective.

Presentations of the Symposium

B-WISER: Be a Winner In elite Sport and Employment before and after athletic Retirement

Koen De Brandt¹, Paul Wylleman², Simon Defruyt¹, Sofie Smismans¹

¹Vrije Universiteit Brussel, Belgium, ²Vrije Universiteit Brussel, Belgium; NOC*NSF, the Netherlands

Taking into account the lack of empirical data and specific actions regarding the employability/employment of active and former elite athletes, a consortium of universities, national Olympic and Paralympic committees and elite sport centres from six EU Member States (Belgium, Germany, Italy, Slovenia, Spain and Sweden) together with international experts in elite sports, career counselling, employment and HR, initiated the project "Be a Winner In elite Sport and Employment before and after athletic Retirement". B-WISER was launched in 2017 with the support of the Erasmus+ Sport program of the EU. The project aims to optimise the employability of athletes in three specific career stages: (1) when they are active in elite sport (D-phase), (2) when they have retired from elite sport and prepare for first-time employment (R-phase), and (3) when they are employed in their post-athletic career (P-phase). B-WISER addressed this aim by identifying (1) the practices, roles, challenges and effectiveness measures related to "elite sport and employment" of n = 169 surveyed stakeholders, (2) the barriers faced and competencies required by n = 954 active and former elite athletes across the DRP stages, and (3) the perceptions of n = 65 employers on the value of hiring athletes, expressed in four focus groups and six face-to-face interviews. Finally, a toolbox for career counsellors with ten evidence-based tools was developed based on the empirical data. The tools aim to increase athletes' awareness about their competencies and enhance the matching with employers. B-WISER raised awareness across Europe on the importance of optimizing athletes' employability.

Employability of athletes in the view of dual-career supporters

Babett Lobinger¹, Sinikka Heisler¹, Franziska Kalde¹, Simon Defruyt²

¹German Sport University Cologne, Germany, ²Vrije Universiteit Brussel, Belgium

For elite athletes, reconciling sporting and professional careers is a key challenge (Ryan, 2015). The aim of the European project B-WISER, coordinated by the Vrije Universiteit Brussel, was to optimize the employability of active and former elite athletes. The first part (WP1) of the project aimed at identifying the roles, contributions and interactions of different stakeholders who provide support to active and former elite athletes with regard to their employability and/or employment. In the course of an online survey, data from six European countries (Belgium, Italy, Sweden, Slovenia, Spain, Germany) were collected. The questionnaire, which comprised a total of seven question blocks, contained questions on flexibility and coaching offers of stakeholders as well as questions on special challenges, barriers and resources of the athletes. Respondents were asked to distinguish between elite athletes in three different career phases: active (D), former (R), and preparing for first-time employment (P). Around 80% of the N = 169 stakeholders stressed the need for special support for active and former elite athletes in the workplace or in employment preparation. Individual (43.02%) and group counselling (7.2%), as well as support-in-job placement (21.49%), were mentioned as coaching offers. The greatest barriers to employability in the three career phases include time constraints and a lack of long-term perspective. Former athletes seem to receive less support. Perceived challenges and barriers show the necessity of a proactive promotion, constant control and revision of athlete-specific promotion structures and support offers of the dual career.

Enhancing athletes' employability before and after sport retirement: The role of competencies

Francesca Vitali¹, Nicole Tabarini¹, Federico Schena¹, Koen De Brandt²

¹University of Verona, Italy, ²Vrije Universiteit Brussel, Belgium

Enhancing the employability after sport retirement is a key challenge for elite athletes (Torregrosa et al, 2015). The aim of the European project "Be a Winner in elite sports and Employment before and after athletic Retirement" (B-WISER), coordinated by the Vrije Universiteit Brussel, was to optimize the employability of elite athletes. There is a lack of empirical data and specific actions regarding the employability and employment of elite athletes during as well after athletic career. The second part (WP2) of the project was aimed at identifying the competencies required and developed by elite athletes in three final stages of their careers: active (D), former (R), and preparing for first-time employment (P). 954 17-to-69-year-old elite athletes (Mage=26.3, SD=10.0; 46% female) from six European countries (Belgium, Germany, Italy, Slovenia, Spain, Sweden) filled the Athletes' Competency Questionnaire for Employability. Participants reported average-to-strong possession of their competencies (M=3.77). Former elite athletes who were employed perceived the strongest possession of their competencies (M=3.90). Overall, participants reported the strongest possession for goal orientation, dedication to succeed in different life domains, and collaboration with colleagues. Participants reported the weakest possession for their ability to create a professional network, to identify themselves with the culture of their organisation, and the understanding of their own career interests and options. The findings can be used as an evidence base for stakeholders (e.g., career counselors, employers, sport federations, educational institutions) to target specific competencies in different career stages, addressing athletes' strengths and weaknesses in preparing for and/or securing employment.

The added value of employing active and former elite athletes: An employer's perspective

Sofie Smismans, Koen De Brandt, Simon Defruyt, Paul Wylleman

Vrije Universiteit Brussel, Belgium

Athletes with (a view on) continued employment upon athletic retirement encounter fewer difficulties adapting to their end-of-athletic-career transition (Stambulova, Stephan, & Jäphag, 2007). Recent research therefore generally focused on developing and enhancing support for athletes in their vocational development (Cosh & Tully, 2015). However, employers' perspectives on the added value of (former) elite athletes as employees are lacking. Therefore, the aim of this study was to identify employers' perceptions on (1) the added value of employing elite athletes, (2) ways to maximize athletes' added value, and (3) ways to compensate for possible disadvantages. Focus groups and semi-structured interviews were conducted with a total of N = 65 employers in six European countries and analysed using inductive thematic analysis (Braun & Clarke, 2006). Results revealed that employers see affinity with sports, facilitated cooperation with sports organisations, developed competencies such as goal-orientation, dedication and self-discipline, and commercial purposes as main reasons to hire (former) athletes. The need for flexibility, lack of key competencies, occupational delay, legal frameworks, the fact that sport is their priority, and the possibility of injury, are perceived as reasons to not hire (former) athletes. Based on these reasons, employers suggested several strategies to maximize athletes' added value and compensate for disadvantages, including career counselling, exit interviews, financial management, apprenticeships, network events, online platforms and ambassadors. The findings can serve as a basis to develop methods and promote the added value for the world of sport, employers, governmental agencies and policymakers with regard to employing active and former elite athletes.

Employers' Perspective on Athletes' Employability and Employment: A Lesson from Slovenia

Saša Cecić Erpič¹, Koen De Brandt²

¹University of Ljubljana, Slovenia, ²Vrije Universiteit Brussel, Belgium

The aim of the European project "Be a Winner In elite Sport and Employment before and after athletic Retirement" (B-WISER) was to optimize the employability/employment of active and former elite athletes. As the third part of the project focused on the employers' perspective related to the employability of elite athletes, a large focus group (N = 17), consisting of different stakeholders, was conducted. Five employers (one from the public sector, three active and four former elite athletes, one coach and four representatives from sports organisations) took part in the discussion regarding the employability and employment of athletes in Slovenia. All participants were instructed to share their employment experiences in a form of small group discussions. Each group presented a summary of their joint argumentations, followed by general discussion (audio recorded and later transcribed in verbatim). Participants formed new small groups for further questions and discussions. The thematic content analysis showed that companies are not especially attentive in hiring elite athletes. Athletes are not perceived as having special competitive advantages but are rather disadvantaged as they enter the job market later and without practical working experiences. On the other hand, athletes often have very high expectations regarding the first employment. In order to improve their employability, elite athletes have to be recognized as a special group of employees, emphasizing their strongly possessed competences related to the ability to be goal-oriented and to see failure as a teaching experience, persistence and dedication to succeed, resilience to stress, and being collaborative with colleagues.

Symposium 17: Decoding and modifying brain oscillatory activity to optimise performance

Time: Wednesday, 17/Jul/2019: 8:30am - 10:00am · *Location:* VSH 06 - Bad Blankenburg

Session Chair: Arash Mirifar, Technische Universität München

Decoding and modifying brain oscillatory activity to optimise performance

Chair(s): **Arash Mirifar** (Department of Sport and Health Sciences, Chair of Sport Psychology, Technische Universität Uptown München, Germany)

Discussant(s): **Andrew M. Cooke** (School of Sport, Health & Exercise Sciences, Bangor University, UK)

Manipulating brain activity to enhance performance has attracted attention from many disciplines, including sport science. Neurofeedback (NF) is currently a popular approach, but empirical evidence about its effectiveness at improving performance of athletes has been equivocal. Furthermore, concerns have been raised about the underlying theoretical framework at different levels of explanation and outcome expectations.

This symposium aims, first, to track and decode the brain activity in order to develop a rationale for modifying brain activity through NF training (NFT). Accordingly, research will be presented that tracks and decodes early stages of motor learning (Van Duijn). Then, the focus will be on decoding brain activity during the performance of aiming motor tasks (Gallicchio). These studies will provide evidence that particular types of brain oscillations are associated with successful motor performance, thus laying the ground for purposeful modification. Second, further evidence that NFT optimises athletic performance through modifying brain activity will be provided. Thus far, the effect of NFT on enhancing performance in fine motor skills (e.g. golf, archery) has been the primary focus of investigation in the field of peak performance. In contrast, Mottola presents an experiment on the effect of NFT on whole-body endurance performance, in this case long-distance cycling. Third, a theoretical framework for psychophysiological regulation will be presented, allowing for a better understanding of the neurophysiological mechanisms of NFT. Based on current understandings of physiological regulation, the framework should provide access to underlying mechanisms and allow deduction of how NFT functions and its effects.

Presentations of the Symposium

Analogy instructions may promote neural efficiency during early stages of motor learning – but not for all learners

Tina Van Duijn, Rich S. W. Masters

Te Huataki Waioira Faculty of Health, Sport and Human Performance University of Waikato

Analogy instructions impart knowledge about how to move by way of comparison with a similar, well-known concept. This reduces the number of verbal instructions or rules that need to be provided to the learner. It has been argued that analogy learning reduces reliance on verbal information processes during motor planning (Liao & Masters, 2001; Masters, 2000), which may be reflected by reduced verbal activity in the brain (measured by EEG alpha power at the temporal region, T7) during the preparation phase of a movement. We investigated the underlying processes responsible for the benefits of analogy instructions on a neural level. In a study in hockey novices, an analogy-instructed group exhibited superior performance in a combined (movement and decision-making) condition compared to explicit and uninstructed (discovery) groups, along with reduced left-temporal high-alpha power. We concluded that analogy instructions may help to promote psychomotor efficiency.

A second study investigated whether preference for verbal vs visual instructions was related to changes in performance and neural activity after analogy instruction. Basketball novices who had a preference for verbal instructions showed relatively superior psychomotor efficiency (stable performance with reduced neural activity). This suggests that both cognitive and performance changes after analogy instruction may depend on instruction preference. Analogy instructions may be useful in early stages of motor learning because they reduce the need for verbal-cognitive information processing; however, these benefits may depend on other factors, such as preference and ability for information processing in different domains.

Neural correlates of motor performance in target sports: the model of movement-related alpha gating

Germano Gallicchio¹, Andrew M. Cooke², Christopher Ring³

¹School of Sport, Exercise & Health Sciences, Loughborough University, UK, ²School of Sport, Health & Exercise Sciences, Bangor University, UK, ³School of Sport, Exercise & Rehabilitation Sciences, University of Birmingham, UK

What determines optimal motor performance? Scientists have addressed this question through various approaches. One such approach involved the measurement of brain activity during performance of aiming motor tasks by using electroencephalography (EEG). This research field has produced compelling evidence that a particular type of brain activity involved with neuronal inhibition – oscillations within the alpha frequency (8-12 Hz) – is associated with successful motor performance (e.g. a holed putt in golf). Our programme of research evaluated the utility of examining EEG alpha activity from multiple brain regions while relatively inexperienced recreational golfers putted golf balls to a hole or a series of targets. Our findings revealed that motor execution was accompanied by a regional pattern – alpha gating – whereby neuronal activation was diverted away from movement-unrelated regions of the brain exhibiting enhanced alpha activity (temporal and occipital), and gated towards movement-related regions exhibiting diminished alpha activity (central). Greater inhibition of movement-unrelated regions was associated with greater movement accuracy and improved performance after skill practice, provided that an adequate level of neuronal activation was maintained in movement-related regions. In addition, a disturbance to the alpha gating, induced by randomly varying target location, resulted in impaired performance and greater perceived task difficulty. The main theoretical contribution of this research programme lies in the proposal of the movement-related alpha gating model of motor performance in target sports. These findings lay out the foundations for future applied work aimed at teaching athletes to self-regulate their brain activity to recreate the alpha gating pattern for optimal performance at will.

Get in the endurance zone! EEG neurofeedback improves cycling time to exhaustion

Francesca Mottola, Anthony Blanchfield, James Hardy, Andrew M. Cooke
School of Sport, Health & Exercise Sciences, Bangor University, UK

Electroencephalographic (EEG)-neurofeedback training is a non-invasive approach for modifying brain activity. Promising evidence endorses EEG-neurofeedback as an intervention to enhance performance in tasks requiring fine motor control (e.g. golf, archery, shooting). However, no study has examined EEG-neurofeedback interventions for whole-body endurance performance. Our experiment addresses this gap in the literature. We adopted a randomised single-blind, placebo-controlled parallel design. Forty subjects were recruited and randomly allocated to three groups (increase relative left cortical activity, NFL, N = 13, increase relative right, NFR, N = 13 and passive control, CON, N = 14). They performed a depleting cognitive task followed by either EEG-neurofeedback training (NFL and NFR), consisting of 6 × 2 min sessions, or time matched-videos of the neurofeedback display (CON). Next, they performed a time to exhaustion test on a cycle-ergometer (TTE). Measures of mood and state self-control were obtained at baseline and after each task. Results confirmed that our brief EEG-neurofeedback intervention modified brain activity in the expected way. Importantly, the NFL group performed for over 30 % longer than the other groups in the TTE (mean ± S.E. NFL = 1382 ± 252, NFR = 878 ± 167, CON = 963 ± 117 sec, contrast tests $p = .05$). There were no group-differences in mood, self-control or rate of perceived exertion measured during the TTE, suggesting that the mechanism underlying neurofeedback benefits was a neurophysiological shift towards approach motivation. Our results show that EEG-neurofeedback can be used to modulate frontal hemispheric asymmetry, and greater relative left frontal activity may enhance endurance performance.

Neurofeedback training: challenges and potential solutions

Arash Mirifar, Jürgen Beckmann, Felix Ehrlenspiel

Department of Sport and Health Sciences, Chair of Sport Psychology, Technische Universität Uptown München, Germany

Although the mechanisms of physiological regulation are generally “automatic”, humans seek voluntary control or self-regulation over their physiological states for different reasons including optimising athletic performance. Brain stimulation and neural regulation relying on non-invasive approaches may modify brain activity, developing a greater volitional influence on physiological regulation, and as consequence, enhanced performance. Neurofeedback training (NFT) is an approach whose use has grown dramatically and an increasing number of studies indicates that it leads to measurable performance benefits. However, the main challenge faced by many researchers is understanding the neurophysiological mechanisms, which likely comprise structural and functional plasticity, underlying NFT despite extensive research which has shown positive behavioral outcomes for NFT. One of the current challenges that lead to discussion among researchers is whether steady changes in resting or baseline brain activity across sessions should be expected. In this work we aim first to develop a theoretical framework for psychophysiological regulation, allowing for a better understanding of the neurophysiological mechanisms of NFT. We do so by outlining several concepts of physiological regulation (e.g. control theory, homeostasis, etc.). Second, we introduce a framework which may aid in understanding the unresolved issues regarding expected outcomes of NFT.

Workshop 07: Moving evidence into action: applying self-compassion in sport

Time: Wednesday, 17/Jul/2019: 8:30am - 10:00am · *Location:* VSH 07 - Magglingen

Session Chair: Leah J. Ferguson, University of Saskatchewan

Moving evidence into action: applying self-compassion in sport

Leah J. Ferguson¹, Amber D. Mosewich², Kent C. Kowalski¹, Tara-Leigh F. McHugh²

¹College of Kinesiology, University of Saskatchewan, Canada; ²Faculty of Kinesiology, Sport, and Recreation, University of Alberta, Canada

Self-compassion has gained momentum in the sport psychology literature, with researchers identifying its usefulness for athletes experiencing setbacks, failures, and adversities (Mosewich et al., in press). Self-compassion consists of practicing self-kindness during hardships, finding comfort in one's connectedness to others, and remaining in the moment (Neff, 2003). Athletes with higher levels of self-compassion exhibit adaptive outcomes and behaviours, including personal growth and perseverance, and lower fear of failure and negative evaluation (Ferguson et al., 2015; Mosewich et al., 2011). Self-compassion is well-positioned for integration into the sport context by applied researchers and mental skills consultants, and researchers have begun translating research findings into interventions with athletes, including the development of a 7-day psychoeducation intervention (Mosewich et al., 2013) and a brief self-compassion writing induction (Reis et al., 2015). Facilitated by leading self-compassion in sport scholars, this workshop will further facilitate moving research evidence into applied practice. By the end of this workshop, our goal is that attendees will be able to: (1) explain and experience self-compassion, (2) describe current self-compassion interventions in sport, and (3) produce an action plan to integrate self-compassion into a sport context. These learning outcomes will be achieved through experiential learning (e.g., self-compassion practices such as audio-guided activities), active participation (e.g., individual, partner, and small group writing activities; "peer-review" program development), and lecture (e.g., summary of empirical evidence to inform application). In addition to materials presented (e.g., lecture) and developed (e.g., action plan), attendees will receive modules for implementing a 7-day self-compassion intervention for athletes.

Poster Session Wednesday

Time: Wednesday, 17/Jul/2019: 10:15am - 11:15am · *Location:* Marquee
Session Chair: Katherine Anne Tamminen, University of Toronto

2.01 The relationship of motivation with disabled females physical activity participation constraints in Tehran City

Elahe Riahi, Tayebeh Zargar, Hamid Soryan
Islamic Azad University, Iran, Islamic Republic of

This study aimed to investigate the influence of constraint dimensions on motivation.

Method: for this reason, 100 disabled females were simple randomly selected and completed the Sport Motivation Scale and the leisure constraints questionnaire. For investigating relationship between constraints and motivation, a multiple regression analysis was performed with motivation dimensions (intrinsic motivation, extrinsic motivation and amotivation) as the dependent variables and the seven constraint dimensions as the independent variables. The relationship between motivation dimensions (intrinsic motivation, extrinsic motivation and amotivation) and frequency of participation, investigated with multiple analyses of variance.

Results: The results indicated that individual-psychological and accessibility constraints accounted for 40% of the variance in amotivation. Nobody come, lack of knowledge and accessibility constraints accounted for 25% of the variance in extrinsic motivation. Lack of accessibility accounted for 17% of the variance in intrinsic motivation.

Discussion: These results suggest that intrapersonal constraints influenced motivation. They support elements of the hierarchical model of leisure constraints, and further clarify the role of motivation in the model. Finally, they suggest that future research should focus on the conceptualisation of intrapersonal constraints, and their relations with other social and psychological mediators of motivation that have been proposed in the literature.

2.02 Relationship among college athletes' stress, coping style and burnout

Li Wang
Beijing Sport University, People's Republic of China

Burnout has been viewed as a prolonged response to chronic emotional and stressors (Maslach, Schaufeli, & Leiter, 2001). Adolescent athletes' burnout is one of the focuses on sports psychology. It can be measured by three components: exhaustion, cynicism, and professional efficacy.

This study examined the relationship among college athletes' stressor, coping style, and sports burnout. The athletes' stressor scale, coping style scale, sports burnout scale were distributed to 243 college athletes in Beijing.

Results showed that 1) the majority of athletes experienced low to moderate levels of burnout, 6% of athletes reported high levels of burnout; 2) both training volume and stress demonstrated a significant positive association with burnout; 3) regression analyses revealed that both stress and negative coping style demonstrated a significant positive association with burnout; 4) two dimensions of copying style (concentrated problem-solving style and emotional processing) partially mediated the relationship between stress and exercise burnout.

2.03 Amateur triathletas have higher levels of anxiety and high total time compared to experienced ones

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Triathlon is a sport that consists of swimming, pedaling and running. Psychological aspects, such as anxiety, are important for good performance in the half IRONMAN competitions (1900m, 90km, 21 km). The aim of this study was to analyse whether anxiety levels differ in triathletes who would perform the first half IRONMAN, when compared with those who have performed more than one. We evaluated 79 male triathletes, with a mean age of 35 years. The SCAT (Sport Competition Anxiety Test) instrument was applied, which analyses differences in competitive trait-anxiety and perceives competitive situations as threatening. The data regarding the premiere in the race and the time were collected on the competition website. The evaluation was performed 1 day before the competition. The statistical analysis was performed with an unpaired t-test to compare the averages of those who made the test for the first time and who made more than on test ($p = .05$). The results showed that the rookie triathletes had higher scores of anxiety symptoms (21,7) than the experienced (19,0); the rookies had higher times (364,86 min), while the experienced (338,62 min) shorter. Thus, it is concluded that the rookie athletes tend to have more anxiety symptoms, which may impair their performance and affect their final time. Thus, it is essential to evaluate this psychological variable in the integral development of the athlete, aiming at is better control in the training process and, consequently, in the days of competitions.

2.04 Psychotherapy for an archery player with yips: a case study

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Yips can be a serious problem for athletes during competition. Yips is considered to be a psychogenic motor disorder. Yips manifest as an individual's sudden inability to make a particular play or movement. Originally described as a movement disorder in golfers related to putting, it is now recognised in a wide range of sports. In kyudo, the ancient Japanese martial art of archery, two manifestations of yips have been characterised: hayake, in which the arrow is released immediately after pulling the bow but before pulling out, and motare, in which the string cannot be released while pulling the bow. These yips are regarded as difficult problems to solve. In this study, we analysed and examined the case of a high school female athlete who received counseling for yips. Based on this case, we attempted to clarify the characteristics of yips, the process leading to its onset, and the psychological changes (i.e., the resolution of psychological problems) associated with overcoming yips. The patient sought counseling with a chief complaint of "I cannot let go with my pull hand when pulling a bow," and attended 35 sessions over 10 months. Through these sessions, she deepened her insight into herself by discussing in detail her movements in archery competitions. The patient described her circumstances by saying, "I was distracted by the surroundings, and I could not move forward." The process of solving her problem in the competition setting was synchronised with the resolution of problems in psychological development related to separation and independence.

2.05 Motivation on sport and exercise contexts: a different approach

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Different theoretical frameworks advocate that motivation comes as a result of the fulfilment of some needs. When referring to sport and exercise contexts, the Self-Determination Theory (SDT; Deci & Ryan, 1985) possesses the biggest part of the scientific research. However, a number of other theories are encountered in the literature and have not gained the same research interest in sport environments, such as the Motive Disposition Theory (MDT; McClelland, 1985). Having its roots in Human Motivation Theory (McClelland, 1953), MDT examines humans' motives (achievement, affiliation, power) through two lenses: the conscious (explicit) and the unconscious (implicit) motives. Literature in MDT has shown its applicability in numerous areas such as business, economic and social sciences. This study sought to present a literature review regarding MDT in sport and exercise contexts. With regard to methodology, the search conducted in databases revealed few studies examining motivation in sports through MDT framework with, notwithstanding, some important evidence. The findings from literature review revealed that an integrative process between MDT and SDT can better predict participants' psychological well-being as well as engagement than each theory per se. More specifically, it seems that individuals with higher levels of achievement and affiliation motives, as suggested by MDT, tend to benefit more when their needs, as described by SDT, are fulfilled. The contribution of this study is to point out the main research gaps, as identified in the literature on motivation, and also to become the spark and open new avenues for further scientific research in that area.

2.06 Recruiting parents and their child to a screen-time and diet intervention: reasons and barriers

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Introduction: Recruitment to research studies can be challenging. Understanding why people do or do not sign up to a study should be helpful in boosting recruitment.

Methods: Parents were invited to take part in a study concerning screen time and diet in families. Parents were asked open-ended questions about why they had signed up, why they thought some parents had not signed up, and what could be done to recruit more parents. Responses were transcribed and entered into Mindgenius V6.0. Statements were inductively content analysed and grouped into coherent themes.

Results: Parents' responses to why they agreed to take part comprised 99 statements grouped into seven themes: General interest, altruism, to learn, extrinsic reasons, physical activity, screen time, and healthy eating. There were many statements reflecting a general interest to take part (39%), as well as those concerning the motivation of the child to be involved (19%). Nearly half (49%) of the 85 responses to the question 'why do you think other parents did not sign up to take part?' reflected that parents were likely to have perceived that they had a lack of time or were too busy. In response to the question 'what could be done to encourage more parents to take part?', a significant number of parents were either unsure about what could be done (18%) or felt nothing was obvious (9%). More or better incentives was a common theme (17%).

Conclusion: Understanding motives and barriers may assist in better recruitment.

2.07 Psychological dimensions of successful recovery and wellbeing of an injured athlete

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Sport injuries can be defined as special life events determined by the sports career's voluntary choice and characterised by a high intensity of experience, combining pain, stress and the significance of the consequences. The level of wellbeing can be an indicator of the successful recovery from an injury (Arvinen-Barrow, Walker, 2013; Lu, Hsu, 2013).

The aim of the study was to explore personal factors and dimensions of successful recovery and continuation of sports activity after injuries.

Methods and sample: The empirical base of the study was 283 respondents (Mage 20 years) of various sports. Questionnaires assessed coping skills (CSI, ACSI-28), emotional state (PANAS), wellbeing (WEMWBS), and resilience (Hardiness Survey). Statistical processing was performed using the method of Bayesian regression-factor analysis.

Results and discussion: The presence of a large number of significant life events precedes injury; this is true for both sexes. In comparison with other patients, athletes demonstrate a higher level of negative affect while coping with injury, and their coping repertoire has the maximum variability. Personal predictors of successful recovery after injury vary according to sex and age of athletes. Differences between athletes, correlated with sex, are most pronounced in adolescence. Boys have a higher level of positive affect compared to girls, and their coping skills show more development. In adults, different coping resources are mobilised.

Data analysis led to the construction of an empirical predictive model of sports injury experience and coping with it, identified as following 6 types: "Victims"; "Unstable"; "Sports Hope"; "Unbroken"; "Veterans"; "Stable".

2.08 Preliminary Italian version of Multidimensional Inventory of Perfectionism in Sport (MIPS) in university students of sport science

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Perfectionism is defined as a multidimensional domain-specific personality trait that has shown different relationships with psychological processes and outcomes. Although there are several sport-specific tools of perfectionism in literature, none of these have ever been used in the Italian context.

The purpose of this study was to adapt the Italian and preliminarily validated 72-item version of the Multidimensional Inventory of Perfectionism in Sport (MIPS; Stoeber, Otto, & Stoll, 2006). The scale consists of 9 subscales: perfectionistic aspirations during training, perfectionistic aspirations during competitions, negative reactions to non-perfect performance during training, negative reactions to non-perfect performance during competitions, perceived pressure from coach, perceived pressure from teammates, perceived pressure from parents, perfectionistic pressure on teammates and negative reactions to non-perfect performance of teammates.

According to established international guidelines, the scale was forward and backward translated, by a bilingual expert committee and pre-tested for comprehension. 266 university students of sport science practicing sports from amateur to international level filled the questionnaires online (56% male, Age: M=23.34, SD=5.4).

The exploratory factor analysis showed an 8-factor structure with the subscales of negative reactions to non-perfect performance during training and competition forming the same factor. The factors extracted explained the 69.93% of the variance and all factor loadings are adequate (> .49). Subscales showed good internal consistency ($\alpha > .94$) and test-retest reliabilities within two months were equal or higher of .58.

The Italian version obtained was found to be a reliable and valid tool for evaluating perfectionism in students of sport science.

2.09 Athletes' mind-body unity and psychological maturity

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One way to support athletes psychologically in Japan focuses on their physical experience. There is a premise of a connection between the mind and the body there, and it is claimed that the type of physical experience the athlete has, leads to mental and physical maturation. In psychological support for athletes, we encounter that athletes who experience things like the mind and body are estranged from each other. For example, there is the phenomenon of yips. In the consultation process of athletes who are experiencing yips, they can confirm the process of trying to regain connection with the body again, and often overcome certain psychological maturity. Therefore, in this research, I aimed to present a maturation process model from the relationship between the athletes' mind and body, targeting yips. The subjects are two elite university baseball players with experience of yips. It was carried out through a semi-structured interview with them. As a result, the following maturation process was confirmed. After the onset of yips, the athlete undergoes the following stages and achieves whole human growth. (1) Avoiding involvement with the body, (2) stages of involvement with the passive body, (3) false coping stage, or (4) a stage involving the subjectively subject. In case (3), it will go back and forth between (2) and growth will be delayed. In the case of transition from (2) to (4), psychological maturity is fulfilled. A hypothetical process of the connection between athlete's body and mind was presented.

2.10 Effects of aerobic training on female students' memory quotient according to time of test

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Many studies have shown the beneficial effects of aerobic training on cognitive functions among which memory is regarded as pivotal. Several studies have described the effect of time of the day on cognitive functions including memory. The purpose of this study was to investigate the effects of aerobic training on memory quotient in relation to diurnal variations. A sample of N = 36 female students from Isfahan University (M age 24.11 ± 2.58 years) was selected through convenience sampling. Before and after aerobic exercise, the participants' memory quotients were assessed using the Wechsler's Memory Scale (WMS) at 8am and 4pm. A repeated-measures ANOVA was used to analyse the data.

Results: Findings showed that the average point score (APS) of memory quotient was better in the evening pretest than in the morning pretest. Moreover, the participants' APS of memory quotient had a significant increase after aerobic exercise than before aerobic exercise upon morning intervention. Meanwhile, aerobic exercise exerted no significant effect on APS upon evening intervention. According to the findings of the present study, it can be concluded that aerobic exercise in the morning exerts a positive effect on the memory quotient of participants. Therefore, it seems that it is important to consider the time of the day when assessing optimal cognitive functioning following aerobic exercise.

2.11 Psychological skills as predictors of sport performance of Latvian footballers

Irina Simonenkova

Ltd Simir, Latvia

The paper presents research findings of psychological skills of Latvian football players. The research population were 90 male football players from six first division teams 18-35 years of age. The analysis of theoretical and practical research on psychological skills in sports and expert interviews with the Latvian Football Federation representatives, Latvian coaches and experienced football players have enabled the researchers to identify 11 most essential psychological skills. To measure a football player's efficiency, the method of expert assessment was applied. At the end of the play season, the efficiency of each footballer-participant was confidentially rated by each of nine experts in football. A questionnaire including 91 statements has been worked out to measure the intensity of these skills in football players. The research has made it possible to identify 5 psychological skills as having a statistically significant correlation with the game efficiency of football players. These findings were used for producing a final version of the questionnaire: 50 statements (10 statements for each psychological skill). The psychological skills inventory for football players was tested on a sample group of Latvian Olympic, National and second division football teams. The research results proved that the higher sport performance, associated with playing for higher-status teams, correlated with more developed automaticity, communication, decision making, emotion control and concentration.

2.12 Survey of the Czechoslovak (Czech) sport psychology development

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The presentation is focused on the description of the Czechoslovak (Czech) sport psychology history since the 20s of the last century up to the present days. These following main areas are mentioned: (1) education system in sport psychology, (2) textbooks and publications in Czech, (3) Russian and English in that time, (4) research projects, (5) leading persons, (6) sport psychology association development as well as (7) contact with practice and (8) important events. The sport psychology under the umbrella of Research Board of the Czechoslovak Physical Education Association, independent Czech Sport psychology Association after 1993.

2.13 Frequency of speaking with teammates and feelings of relatedness and loneliness in adolescent athletes

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Sharing of information through communication can foster adaptive perceptions of social relationships (Rose, 2002). In sport, teammates often speak with their teammates and this communication can influence feelings of relatedness and loneliness, having implications for athlete's well-being. The purpose of our study was to examine the frequency of speaking with teammates and how this aspect of communication is linked to athlete reports of relatedness and loneliness. Participants included adolescent softball players (N = 32; M age = 15.6 years) on three teams who completed network questions pertaining to the frequency of interactions with each of their teammates during and outside of practice as well as established measures of relatedness and loneliness. UCINET software was used to generate sociograms of the teams. Overall, relatedness perceptions were high (M = 5.9 out of 7.0) and loneliness perceptions were low (M = 1.5 out of 4.0). Two athletes had relatively high loneliness perceptions (2.5 or greater). Sociograms of these athletes' teams revealed that these athletes frequently (i.e., at least three times a week) spoke with teammates during practice. However, they did not report frequently speaking with any teammate outside of practice. Fourteen athletes had relatively high relatedness perceptions (6.0 or greater) and reported frequently speaking with teammates both during and outside of practice. Results suggest connections with teammates outside of the sport context may benefit relatedness perceptions and diminish loneliness perceptions. Future work should consider how the quality of teammate connections links with social perceptions and other well-being markers such as self-perceptions, engagement, and burnout.

2.14 Disabled athlete activism in South Korea: a mixed-method study

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Enabling social missions within disability sport, such as social activism, has recently become a key agenda in sport and exercise psychology. While research on disabled athlete activism is emerging in Western cultures, no research has been conducted in a non-Western culture. The aim of this study is to fill this gap by examining social activism engagement amongst disabled elite athletes from South Korea. A sequential mixed-method design was used to meet this aim. In the first phase, we measured social activism orientation amongst 100 disabled elite athletes and, to offer a comparative group, 100 disabled non-athletes. Quantitative analysis suggested that elite athletes were more willing to engage in activism than non-athletes. In the second phase, we interviewed a subset of elite athletes with either highest ($n=9$) or lowest ($n=9$) scores for social activism orientation, to understand why some disabled athletes engage (motivators) and whereas others do not engage (barriers) to activism. In addition, to compare reasons to engage in activism, we also interviewed 12 disabled non-athletes. Thematic analysis revealed that high-activism athletes are motivated by socialisation process (e.g., athlete status, Paralympic and encouragement), whereas low-activism athletes face barriers related to emotional cost (e.g., fear of disadvantage, perceived backlash and loneliness/depression). Thematic analysis also showed that compared to non-athletes, elite athletes are better positioned to speak out for social change. These findings enrich our understanding of cultural sport psychology and, furthermore, contribute to promoting activism by revealing how disabled athletes can be supported in their social mission.

2.15 The development of a social support webinar for elite sport coaches

Zoe Arts Poucher, Katherine Anne Tamminen, Gretchen Kerr

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Coaches provide elite athletes with high levels of social support (Poucher et al., 2018), which has been found to play a significant role in athletes' success and well-being (Cheon et al., 2015). However, while many coach education programmes exist, there are few resources to teach coaches about social support (e.g., Belski et al., 2017). Therefore, the purpose of this study was to create and test a webinar designed to teach elite coaches about support provision. The webinar content was based on interviews with Olympians, their coaches, current literature on coach education and social support, and researchers' input. The resulting 45-minute webinar included information about different types of support, and problems coaches may encounter when providing support (e.g., confidentiality, dealing with crisis situations, electronic communication). Next, Olympic coaches participated in a focus group to review the webinar. Overall, these coaches found the webinar to be well designed, personally valuable, and felt that it was a valuable learning tool for others. Content was added based on the feedback from the focus groups, such as potential resources for coaches should they feel unable to provide sufficient support to their athletes. This webinar fills an important gap in the education of coaches, who are typically taught about more technical aspects of sport. Moving forward this webinar will be widely distributed so that many coaches may benefit from information on the provision of social support in elite sport contexts.

2.16 The development of a theoretical model describing and explaining group flow

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In simple terms, the phenomenon of group flow can be outlined by a situation in which a group appears to be a single unit during the accomplishment of a task and in which it seems like there is a total understanding between the group members (e.g., Hart & Di Blasi, 2015; Sawyer, 2006). Existing theoretical approaches only describe and explain single aspects of the group flow phenomenon, partially in selected life domains only. Therefore, our aim was to develop a context-unspecific comprehensive theoretical model of group flow. In line with an integrative definition of group flow (cf. Pels, Kleinert, & Mennigen, 2018), our model describes the state of group flow as a balance in a group's behaviour (e.g., synchronisation of all group members), competence (e.g., integration of the skills of all group members) and state of mind (e.g., collective expectancies). This balance can occur due to symmetry (e.g., having the same goals) and complementarity (e.g., the different skills of all group members complement each other). We assume that the overall foundation for the balance in the three aspects (i.e., behaviour, competence, state of mind) is a positive relationship between group members, building upon classical work from Heider (1958). For future research, we suggest the development of a research paradigm that can be used for a series of experiments in which parts of the model get systematically evaluated by manipulating them as independent variables.

2.17 Beliefs toward success and doping attitudes: influence of dark personality in Spanish athletes

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Little is known about the implications of the dark triad of personality - narcissism, Machiavellianism and psychopathy - (Paulhus & Williams, 2002) in behaviours related to physical-sport activity (González, Garita, & Godoy, 2018). For this reason, it is considered of important relevance, how negative "personality trends" (e.g., "soft" attitudes towards doping) can be construed too easily, justified by the achievement of objectives proposed in sport, with the aim of establishing the relationship between dark features and attitudes and behaviours of doping in a mixed sample of practitioners of physical and sports activities. 254 people participated in this study ($M = 26.8$ years, $SD = 8.84$, 47.2% women, 31.9% federated). 64.2% were regular exercise practitioners, 26.4% athletes and 9.4% oppositors with physical tests in their professional conditions. The participants voluntarily completed measures of dark triad of personality, doping and other relevant psychological constructs, as well as personal and physical-sports data. The participants as a whole showed moderately favourable attitudes towards doping. 31.3% acknowledged using or having used some method of doping. Psychopathy predicted attitudes towards doping ($\beta = .26$, $p < .05$). Both attitudes towards doping ($\beta = .51$, $p < .05$) and dark personality ($\beta = .86$, $p < .05$) separately predicted doping behaviours, but the effect was marginal when considered jointly, suggesting a possible indirect relationship. It is necessary to investigate the implications derived from having a dark personality in the context of physical-sporting activities. The dark features seem to have an important influence on the phenomenon of doping.

2.18 System approach in the psychological athletes' training

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Sports activity as a long-term process of preparation, starting at childhood until reaching the professional level, is considered as a system that has its own specific character at each stage of age. The presence of such a system allows a correct determination of the direction of work, goals and objectives at each age stage and thereby avoid errors associated with insufficient consideration of the psychological characteristics of age. More than 20 years of research in this direction allowed us to determine the ideology that we put in the system of training athletes. It is based on Rubinstein, Desi, Rayyan, Konopkin writings. The basis of this ideology is the creation of conditions for the formation of such qualities among athletes as responsibility, autonomy, arbitrary self-regulation, autonomy and goal-setting. These qualities, as shown by our researches, form the psychologically stable personality of an athlete. And the sooner psychological and pedagogical work with athletes begins to be conducted, the more chances there are to achieve success in the formation of a psychologically stable personality of an athlete.

To solve this problem, we used both traditional psychological and pedagogical methods and new technologies for the formation of psychological stability, reliability, as well as mental training based on not only the regulation process, but also the process of forming the subject of sports activity. Studies on the implementation of this approach in both children's and professional sports have shown that this system is sufficiently effective.

2.19 Mindfulness training for college athletes: associations between mindfulness practice and sport performance

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Research suggests that mindfulness training may be an effective strategy for contributing to sports performance (Noetel et al., 2017). One specific mindfulness-based intervention that has garnered recent attention is the Mindful Sport Performance Enhancement (MSPE; Kaufman et al., 2018), which teaches mindfulness both didactically and experientially, and encourages formal and informal home practice. Research on mindfulness interventions with non-athletes showed a significant association between the amount of formal practice and positive outcomes (Parsons et al., 2017).

The present study investigated the relation between mindfulness practice and sport performance following a 6-week MSPE intervention with the 21 members of a women's field hockey team at a private university in the United States. Participants were Caucasian, ranged in age from 18 to 21 ($M = 19.00$), and had been involved in their sport for an average of 10.21 years. Athletes completed self-report measures of overall athletic performance, flow, anxiety, and mindfulness following the MSPE intervention, along with a questionnaire that asked about their mindfulness practice during the program.

Pearson correlations indicated significant positive associations between self-rated sport performance and the number of days participants engaged in both formal mindfulness practice (e.g., sitting meditation) and informal practice (e.g., mindful eating, walking) outside of the intervention meetings. A near-significant trend was found between self-rated performance and how frequently mindfulness skills were used during sport, and formal practice was also significantly related to overall mindful awareness and informal practice to sport mindfulness. Future studies can investigate the association between objective sport performance measures and mindfulness practice.

2.20 Welcome, Summoner: Intervention with a E-Sports League of Legends™ College team in Brazil

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Playing video games as a professional career is becoming an option for more and more people (Bányai, Griffiths, Orsolya, & Demetrovics, 2018). The present intervention was a supervised internship of study and intervention in sports psychology, developed in partnership with a college League of Legends™ team of a small town from the state of São Paulo. The intervention was based on applied behaviour analysis, including the characterisation of player profiles, the observation of the team's demands and organisational interventions. The major aim of this internship was to assist the team in improving their performance while still tending to the player's well-being. During the meetings, talks, training sessions and championships we were able to perceive several interfaces between the phenomena observed in both conventional and electronic sports, like the influence exerted by some team members' representations about professional conventional sports had over their organisation style and objectives. The college context was also a defining aspect on player efforts and general approaches about training, competition and the team in general, most notably observed through the high turnover of players and the inability to train pin attendance due to logistic and infrastructure issues.

2.21 The validity and reliability of risk of injury in sport scale for Turkish Athletes

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The purpose of this study was to test the validity and reliability of Risk of Injury in Sport Scale developed by Kontos (2004) for Turkish athletes. Seventy-two female ($Mage = 18.93 \pm 2.81$) and 122 male ($Mage = 19.59 \pm 2.42$), totally 194 ($Mage = 19.34 \pm 2.58$) athletes participated in this study. "Personal Information Form" and "Risk of Injury in Sport Scale" were administered to athletes for testing the construct validity of the scale. The scale consists of 24 items and 6 subscales - uncontrollable, controllable, overuse, upper body, surface-related and re-injury. Each item is answered on a 6-point Likert scale. A confirmatory factor analysis was used to test the construct validity of the scale. In addition, Cronbach's alpha internal consistency coefficient was calculated to test its reliability. Confirmatory factor analysis results revealed that the factor loading of the items ranged between .41 and .76. The acceptable fit index values ($Chi^2/df = 2.21$, $RMSEA = 0.07$, $NNFI = 0.89$, $CFI = 0.91$, $SRMR = 0.08$) were obtained. The internal consistency coefficients of RISSc ranged from 0.60 (surface-related) to 0.74 (uncontrollable and controllable). It can be concluded that the Risk of injury in Sport Scale is a valid and reliable measure to determine the perceived probability of risk of injury in sport for Turkish athletes.

2.22 The desire to be perfect: different aspects of perfectionism and their connection to burnout in adolescent athletes

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The determined effort of athletes to achieve a perfect sport performance is one of the key qualities required to be successful. However, the effect of perfectionism in sports can be both positive and negative. One of the generally discussed negative effect of perfectionism is burnout, which draws considerable attention both from sport practitioners and scientific community in sport psychology. The aim of the study was to evaluate the relationship between perfectionism (Sport Multidimensional Perfectionism Scale - 2) and burnout (Athlete Burnout Measure). The sample of the study consisted of 240 students (50.4% males) of dedicated sports high school in the age range 14 - 19 years. Using linear regression analysis, it was found that dimensions of perfectionism significantly contribute to the prediction of burnout (27% of explained variance in burnout while controlling demographic characteristics). When looking into particular dimensions of burnout, it was revealed that in case of emotional/physical exhaustion the most significant predictor was perceived coach pressure, in case of devaluation it was personal standards (in negative direction), and in case of Reduced sense of accomplishment, the most significant predictor was doubts about actions.

2.23 Psychological growth of a team by utilising a team building programme

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Past studies have consistently reported that collective efficacy and group cohesion play important roles in the performance of a team. However, such findings have not been fully utilised to improve team coaching. The purpose of this research is to propose a team building program that contributes to collective efficacy and group cohesion. It also examines the effects of this team building program on the productivity of the team in terms of the average within the team, the score distribution, and the performance score. The participants were athletes in a women's college basketball team (N = 13). The participants completed a questionnaire that measured collective efficacy and group cohesion at three time points (April, June, and September) and underwent a team building programme from June to September. They held meetings after each season and discussed team performance at each time point. The results showed a significant difference in collective efficacy and group cohesiveness before and after the team building programme was implemented. The team plot suggests that there was a qualitative change at each point. The plot showed a decrease in variation from the first time point to the second time point and to the third time point. The September performance was evaluated the highest. These results suggested that the intervention of the team building program contributed to the improvement in group cohesiveness and could affect productivity.

2.24 Is "Passion Scale" reliable and valid for adolescent athletes?

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The purpose of this study was to test whether or not the Passion Scale, that was developed by Vallerand et al. (2003), could be used to measure passion toward sport in adolescent athletes.

One hundred twenty-five girls (Mage = 14.15±2.37) and 125 boys (Mage = 14.40±2.02), totally 250 (Mage = 14.29±1.50) Turkish adolescent athletes voluntarily participated in this study. The Passion Scale is answered on a 7-point Likert typed scale and consists of 16 items for measuring two types of passion - harmonious and obsessive. "Personal Information Form" and "Passion Scale" were administered to the athletes. A confirmatory factor analysis (CFA) was used to test the construct validity of the scale. Cronbach's alpha internal consistency coefficient was calculated to test reliability.

CFA results revealed that the factor loading of items were ranged between 0.81 and 0.94 and the acceptable fit index values ($\chi^2/df = 2.76$, RMSEA = 0.08, NFI = 0.98, NNFI = 0.98, CFI = 0.99, RMR = 0.05, SRMR = 0.03, GFI = 0.91, AGFI = 0.87). The internal consistency coefficients of the subscales were .95 for harmonious passion and .96 for obsessive passion. It can be concluded that the Passion Scale is a valid and reliable measure to determine the passion toward sport in adolescent athletes.

2.25 Development of the Parent-Initiated Motivational Climate in Individual Sport Competition Questionnaire

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The purpose of this research was to develop a measure of athletes' perceptions of the parent-initiated motivational climate in sport competition with explicit relevance to individual sports. A series of studies that progresses the development and validation of the Parent-Initiated Motivational Climate in Individual Sport Competition Questionnaire (MCISCQ-Parent) are presented. Study 1 examined the face and content validity of an initial pool of 26 items based on the principles of achievement goal theory and prior research. In study 2, data from an adolescent sample of individual sport athletes was subjected to an exploratory factor analysis (EFA) of items pertaining to the perceived task and ego involving characteristics of fathers and mothers in the competition setting. Study 3 tested the factor structure of the MCISCQ-Parent through confirmatory factor analysis (CFA) in a further youth athlete sample. Following modifications, CFA indicated good goodness of fit indices for the father-(three-factor model) and mother-related (two-factor model) dimensions of motivational climate. In study 4, a further CFA provided additional evidence for the revised factor structure of the MCISCQ-Parent, convergent and discriminant validity, and internal consistency. Finally, study 5 provided support for the concurrent validity of the MCISCQ-Parent by demonstrating significant relationships between MCISCQ-Parent sub-scales and task and ego orientation, athlete engagement, and perceived social support. In sum, we present the MCISCQ-Parent as a measure with promising psychometric properties, and specifically to those applied researchers interested in assessing the quality of motivation-related parental involvement perceived by young athletes in the competition setting.

2.26 Sport Motivation Scale-II: examining the validity and reliability in Greek language

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The Sport Motivation Scale-II (SMS-II; Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2012) is a self-report 18-items instrument measuring athletes' types of motivation, based on self-determination theory. The purpose of the present study was to investigate the factor structure, validity, and reliability of the SMS-II. Four hundred and twenty three (423), individual (198) and team (225) sport athletes, volunteered to participate in the study (58% males, 42% females). Athletes' age ranged from 16 to 36 years ($M=20.77$, $SD=4.66$) and their competitive experience from 2 to 22 years, with a mean of approximately 59 competitions. The athletes completed the SMS-II based on how they usually felt when they participate in their trainings and competitions. The confirmatory factor analysis results indicated acceptable fit, supporting the nine factor model. The χ^2/df ration was 2.59, the NonNormed Fit Index .911, the Comparative Fit Index .919, the Incremental Fit Index .912, the Standardized Root Mean Residual .062, and the Root Mean Square Error of Approximation (RMSEA) .070 providing support to the acceptance of the hypothetical nine factor solution. The internal consistency of the SMS-II factors ranged from .78 to .88, the items' loadings from .495 to .733, and the factor intercorrelations were .360 to .455. Significant positive correlations revealed between intrinsic types of motivation and Dispositional Flow Scale factors, whereas extrinsic motivation and amotivation showed zero to negative correlations providing support to the concurrent validity of the SMS-II. The results indicated that Greek version of the SMS-II is a valid and reliable instrument.

2.27 Sport psychology consultants in high school sport: Do they promote life skills development?

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School sport is identified as a highly educational setting that is structured to provide opportunities for coaches to intentionally teach life skills. Along with the coach, the sport psychology consultant (SPC) also works with athletes and recognizes the value of fostering holistic development (Friesen & Orlick, 2010). Since no study to date has addressed the SPC's work in a school setting, the aim of this study was to analyse the SPC's work on student-athletes' life skills development through their participation in high school sport. This study used a qualitative methodology with a constructivist paradigm (Merriam & Tisdell, 2016). Two semi-structured interviews were held with seven SPCs working in school sport programs. The content analysis was guided by the literature and on Revised Sport Psychology Service Delivery heuristic (Poczwardowski & Sherman, 2011). First, the results revealed that all SPCs have a holistic philosophy and care about student-athletes' positive development. Second, SPCs mentioned incorporating some life skills development and transfer strategies in their interventions (e.g., workshops, specific discussions). Third, differences were observed in the SPCs' approaches in response to the challenges associated with life skills' teaching. For example, SPCs with training in physical education expressed a lack of tools and resources to teach and to facilitate the transfer of life skills outside of the sport setting. In conclusion, SPCs teach life skills to the best of their knowledge but report the need for better training for it to be more effective. Finally, practical recommendations for SPCs are suggested.

2.28 Examining the relationship of growth mindset to positive psychology skills and competitive anxiety in athletes

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Positive psychological attributes such as mental toughness, resilience and coping limit performance detriment from competitive anxiety. One potential psychological attribute that may positively contribute is mindset, yet greater research is needed to understand the role of mindset for competing athletes in sport. This study investigated the relationships between mindset, mental toughness, resilience, coping and competitive anxiety, and explored whether mindset and coping mediated the relationships between mental toughness to competitive anxiety and resilience to competitive anxiety. A cross-section research design using competitive athletes in Australia ($N = 281$, 52% male, 48% female) aged from 16 to 73 ($M = 32.21$, $SD = 14.40$) completed an online self-report questionnaire examining mindset, coping, mental toughness, resilience and competitive anxiety. Positive correlations were found between mental toughness, resilience, coping and growth mindset, whereas negative relationships were found between competitive anxiety and mental toughness, resilience, and coping. No relationships were found between mindset and competitive anxiety. Mediation analyses revealed that growth mindset and coping mediated the relationships between mental toughness and competitive anxiety, and resilience and competitive anxiety. Findings highlight the potential role of growth mindset to other prominent psychological attributes. The implication of these findings will be discussed in respect to theoretical and applied application to sports performance.

2.29 Big-five personality in relation to courage, sport participation, attributions to success and failure

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There is limited knowledge about the Big-Five Personality Traits in relation to sport courage. Therefore, the purpose of this study was to research the Big-Five Personality Traits (neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness) in relation to sport courage (mastery, determination, assertiveness, venturesome, and sacrifice behaviour), sport participation (i.e. school sport team participation, level of sport participation), attributions to success and failure (i.e. ability, task difficulty, luck, and effort), various good luck and bad luck believes. Data were collected from N=256 sport participants aged 18-35 (M=14.58 years, SD=4.22, n=143 male, n=112 female, n=1 unstated). Participants administered the validated Sport Courage Scale (Konter & Johan, 2012) and the Adjective Based Personality Test measuring the Big-Five Personality Traits (Bacanli, Ilhan & Aslan, 2009) with the personal information form. Collected data were analysed using correlations, various non-parametric tests and regression analyses. Analyses revealed a number of significant ($p < .05$) differences between Adjective Based Personality Test and the level of Sport Courage (low and high), including various individual, sport participation, attribution, good luck and bad luck believe variables indicated above. In general, participants with higher levels of sport courage have significantly high points of extraversion, Openness to Experience, Agreeableness, and Conscientiousness than participants with lower points of sport courage. However, Neuroticism has inverse results. Big-Five Personality Traits and Sport Courage factors seem to have an important role for sport participation, attribution to success and failure, good luck and bad luck believes. More research is needed to have more conclusive results.

2.30 Cross-cultural comparison of the patterns of influence within the Theory of Planned Behavior in predicting physical activity among

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Objective: The present study aimed to validate the Chinese-version Theory of Planned Behavior (TPB; Ajzen, 1991) questionnaire, test the applicability of the TPB model to predict Chinese college students' leisure-time physical activity and compare the strength of relationships among the TPB variables (attitude, subjective norm, and perceived behavioural control) on intention across Chinese and Western samples.

Methods: 892 Chinese college students (49% female, M = 19.84 years, SD = 1.64) participated in the study. The strength of relationships among the TPB variables across Chinese and Western samples was compared using the test of the difference between the two correlations. The data for the Western sample was inferred from a meta-analysis by Hagger et al. (2002).

Results: The hypothesized TPB model adequately represented the data and predicted physical-activity behaviour, $\chi^2(2) = 7.37$, $p = .03$, CFI = .99, TLI = .98, RMSEA = .06, SRMR = .02. The subjective norm-intention relationship was significantly stronger in the Chinese sample ($\beta = .18$) than Western sample ($\beta = .05$, $z = 3.81$, $p = .001$). The perceived behavioural control-intention association was stronger in the Chinese sample ($\beta = .38$) than Western samples ($\beta = .33$), $z = 1.70$, $p = .04$. No difference was found in the strength of the attitude-intention relationship across the samples, $\beta = .39$ and $\beta = .40$, respectively.

Conclusions: The Chinese-version TPB questionnaire has good psychometric properties and the TPB model can be applied to predict physical activity among Chinese student populations. However, there are differences in the relative contributions of the TPB variables on the intention for physical activity across Chinese and Western samples.

2.31 How cognitive functions and quality of life are associated with academic performance in children: a latent profile analysis

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This study investigated the interplay of measures of cognitive function and quality of life in relation to academic performance. N = 437 children in third grade (mean age 9.30). Measures of attention, memory, working memory and word memory were used as indicators of cognitive performance, four subscales (physical, emotional, social and school functioning) of the PedsQL questionnaire were used as indicators of quality of life, and standardised tests of mathematics and reading comprehension were used as indicators of academic performance. A latent profile analysis, in which indicators of cognitive performance and quality of life were used to identify subgroups, was performed. Subsequently, using the BCH method, it was tested whether the profiles differed in math and reading performance. Three profiles emerged from the latent profile analysis. Profile 1 (n = 26) had below average levels of cognitive performance and average levels of quality of life, profile 2 (n = 313) had above average levels in both cognitive performance and quality of life, and profile 3 (n = 98) had average levels in cognitive performance and below average levels in quality of life. There were statistically significant differences between the three profiles in both math ($\chi^2(2) = 68.68$, $p < .001$) and reading ($\chi^2(2) = 39.23$, $p < .001$) performance: Profile 2 had higher levels than both profile 1 and profile 3, and profile 3 had higher levels than profile 2. These results suggest that cognitive function is more important than quality of life for academic performance.

2.32 All work and no play makes Jack a dull boy: relationship between motivation in physical education and academic stress

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Low participation and negative attitude to physical education (PE) are not only related to inactive lifestyle, but also to high academic stress (Back, 2015). According to the Self-Determination Theory (Ryan & Deci, 2017), students with more self-determined motivation (i.e., intrinsic motivation and identified regulation) in PE will experience more positive cognitive, affective, and behavioural consequences, such as intention to exercise during leisure and reduction of stress. The present study aimed to investigate the relationship between motivation in physical education and academic stress. A sample of 556 Chinese adolescents completed the Perceived Locus of Causality Scale and Educational Stress Scale for Adolescents at the beginning of the semester and 3 months later. We found that less self-determined motivation (i.e., introjected regulation, external regulation, and amotivation) were positively related to all academic stress factors. However, more self-determined motivation was negatively related to pressure from study, workload and despondency, but positively related to worry about grades. In addition, we found that identified regulation positively predicted worry about grades while amotivation positively predicted despondency. These findings imply that students with high self-determined motivation in PE would strive for both physical and academic achievement with less perceived academic stress. These findings highlight the importance of motivation in PE, not only in promoting students' physical activity but also in improving academic state.

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2.33 Association of physical fitness and mental well-being in middle-aged women

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Background: Positive mental well-being has important implications for health and longevity. Research suggests that high level of physical activity (PA) is beneficial for well-being. On the other hand, physical fitness hypothesis (Bouchard et al., 1994) states that the beneficial effect of PA is due to gained level of physical fitness, rather than an increase of PA. The present study investigates the association between cardiorespiratory fitness and mental well-being among menopausal middle-aged women.

Methods: Data were drawn from the Estrogenic Regulation of Muscle Apoptosis study (Kovanen et al. 2018). Women aged 47-55 were randomly selected from the Finnish National Registry (N=6878). Performance in 6-minute walking distance was measured as an indicator of cardiorespiratory fitness (N=827). Mental well-being was assessed using the Centre for Epidemiologic Studies Depression Scale, the International Positive and Negative Affect Schedule Short Form and the Satisfaction with Life Scale. Associations between variables were analysed using multivariate linear regression modelling adjusted for menopausal symptoms, menopausal status, fat mass, height and PA.

Results: All the control variables and performance in 6-minute walking distance were regressed on each of the well-being indicators (depressive symptoms, life satisfaction, positive and negative affectivity) separately. In the full model, only association between performance in walking distance and positive affectivity was found significant (B=0.01, p<.001).

Conclusion: Cardiorespiratory performance associates with positive affectivity independently of PA. The results provide further evidence that, in addition to maintaining high level of PA, physical performance, particularly its cardiorespiratory component, is beneficial for some indicators of mental well-being in middle-aged women.

2.34 Gender and sports as a moderator of relationships: Sensation seeking fosters both resiliency and risky behaviour among adolescents

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Background: The highest levels of sensation seeking (SS) occur in adolescence and encourage engagement in risky behaviours (Wang et al., 2014; Zuckerman, 1994) and physical activity (PA; Wilkinson et al., 2012). Adolescents who practice sports have higher levels of SS and resiliency (beneficial personality resources for coping processes) than those who do not (Lipowski, et al. 2016; Mastroleo et al., 2013; Wilkinson et al., 2013). McKay et al. (2018) suggest that SS directly and indirectly supports psychological resilience by modifying the stress response and strengthening coping resources.

Participants and procedure: This study investigates the role of SS in building resiliency and the risk of tobacco and alcohol use in 649 teenagers (Mage = 15.93; SD = 0.30), who either practice (N = 135; 66 girls) or do not practice sports (N = 514; 322 girls). Participants were asked to complete a set of questionnaires about engagement in risky behaviours, resiliency, sensation seeking.

Results: The highest levels of resiliency were observed in boys who practice sports. The main risk factor in this group was SS. Disinhibition was not a risk factor for tobacco use only for girls who practice sports and that resiliency significantly influenced tobacco and alcohol use in this group. SS influences resiliency (the most significant influence was observed in boys who do not practice sports).

Conclusions: Engaging in sports fosters resiliency. The mechanisms underlying the development of resiliency seem to be aided by SS and appear to be similar in adolescents who do not train.

2.35 Validation evidence of Basic Needs Frustration Scale for Teachers - Greek version (BNFS-T/GR)

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According to the self-determination theory (SDT), the frustration of teachers' basic needs for autonomy, competence and relatedness influences negatively the quality of their teaching and work behaviour. Since there is a lack of valid and reliable instruments measuring teachers' basic needs frustration within the Greek context, we evaluated the psychometric properties of the Greek version of the Basic Needs Frustration Scale for Teachers (BNFST; Longo, et al., 2016). Standard back-translation procedures followed. The sample of the study comprised 113 physical education pre-service teachers. Confirmatory factor analysis results supported the validity of the 9-item, 3-correlated factors model, suggesting an acceptable model fit (TLI=.927, CFI=.951, RMSEA=.079, $\chi^2=40.68$, $df=24$, $\chi^2/df=1.70$). Internal consistency of the subscales was considered acceptable with alphas at .68, .75, and .75 for autonomy, competence and relatedness frustration respectively. All three factors correlated strongly and positively with each other ($r>.63$, $p<.01$). The external-criterion validity of the scales was examined through their latent factor correlations with "Beneficence" and "Cooperation willingness" scales (TLI=.949, CFI=.961, RMSEA=.054, $\chi^2=106.04$, $df=80$, $\chi^2/df=1.33$). Expectedly, a negative trend emerged in the relationships between teachers' basic needs dissatisfaction and all the criterion variables. However, due to the small sample size, the only significant negative correlations were between relatedness ($p=.009$) and competence ($p=.081$) frustration with PE teachers' willingness to cooperate with colleagues. The aforementioned findings provide initial support for the validity of the BNFST-GR, providing researchers a useful tool for examining Greek PE teachers' basic needs dissatisfaction.

2.36 Translation of the "Competitive index-revised" into German, and the validation of its internal structure

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The revised competitive index (CI-R; Houston et al., 2002) assesses the global, inter individual inclination, i.e., a personality trait to compete with others. This trait distinguishes goal orientation and interpersonal competitiveness (Griffin-Pierson, 1990). Factor analyses yielded a two-factor solution of the CI-R with the dimensions "enjoyment of competition" and "contentiousness." This study aimed to provide a German language version of the CI-R and to test the questionnaire's psychometric properties. To create the German version (CI-Rd), back-translation was used (involving English and German native speakers). 432 German-speaking students (22.8 yrs.; 204 male; 225 female) filled in the questionnaire. For the CI-Rd, an exploratory factor analysis was performed and the results were compared to a confirmatory factor analysis (based on Houston et al., 2002; using maximum-likelihood method & varimax rotation). Convergent validity was tested by correlating CI-Rd and the Achievement Motives Scale-Sport (AMS; Elbe et al., 2005) in a sub sample (N=227). The descriptive scale means for men and women are similar to the English sample. Both factor analyses resulted in a two-factor solution that mirrored the English data sample; as expected, all items loaded uniquely on one factor. Good internal consistencies (Cronbach's alpha: 0.7-0.9) yielded acceptable reliabilities of the questionnaire's scales. As predicted, enjoyment of competition showed a moderate positive correlation with hope for success (AMS) and contentiousness showed a moderate negative correlation with fear of failure (AMS). The results suggest that the CI-Rd is a reliable and valid tool for assessing the individual tendency for and enjoyment of interpersonal competition.

2.37 Swimming and the reciprocal relationships between autonomous motivation and social cognitive variables

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In the integrated model of self-determination theory (SDT) and the theory of planned behaviour (TPB), it is postulated that autonomous motivation from SDT is the antecedent of the social cognitive variables (i.e. attitude, subjective norm, and perceived behavioural control (PBC)) from TPB (Hagger & Chatzisarantis, 2009). This longitudinal study applied a two-wave cross-lagged panel design to examine this tenet among children swimmers in Hong Kong. We recruited N = 1,614 children (M age = 6.40, range = 5 to 9; male = 54.18%) who took part in a learn-to-swim programme of 20 swimming lessons (M program length = 3.26 months). With the assistance of parents, participants completed the established scales of the study variables before (baseline) and after (follow-up) the programme. Path analysis on the reciprocal model (Marsh, Chanal, & Sarrazin, 2006) yielded excellent goodness-of-fit (CFI = .995, TLI = .982, and RMSEA = .037 [90% CI = .019 to .057]). Autonomous motivation at baseline positively and significantly correlated with attitude (standardised beta = .135, $p < .001$; $R^2 = .182$), subjective norm (standardised $\beta = .099$, $p < .005$; $R^2 = .110$), and PBC (standardised $\beta = .163$, $p < .001$; $R^2 = .109$) at follow-up. In contrast, the social cognitive variables at baseline, apart from attitude (standardised $\beta = .173$, $p < .001$), were not significant in predicting autonomous motivation at follow-up ($R^2 = .284$). In conclusion, autonomous motivation was likely to be the antecedent of subjective norm and PBC. However, the direction of relationship between autonomous motivation and attitude appeared to be reciprocal.

2.38 The effect of music rhythm and exercise rhythm consistency on exercise emotional experience: moderating effect of exercise habits

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The aim of this study is to discuss the effect of music rhythm and exercise rhythm consistency on exercise emotional experience and the moderating effect of exercise habits. The study selected N = 136 ordinary college students. Study 1 adopted an experiment of 2 (fast and slow) * 3 (fast, slow and neither) between-subjects design. The independent variables were the rhythm of the sport and the rhythm of the music. Study 2 adopted an experiment of 2 (consistent, inconsistent) * 2 (have exercise habits, no exercise habits) between-subjects design, the independent variables were the rhythm consistency and exercise habits. The dependent variables were the subjective fatigue and the emotional experience of exercise. The results showed the following: (1) The main effect of sport rhythm is not significant, and the main effect of the music rhythm is also not significant, the interaction is significant, the main effect of measurement time points is significant. The three aspects of the interaction are significant. (2) The main effect of rhythm consistency is significant, and the main effect of physical exercise habits is significant, and the interaction between the two is significant. It shows that the rhythm of sport and music rhythm consistent can reduce subjective fatigue. At the same time, exercise habits were shown to be a mediator in this model.

2.39 On combat sport and martial practices: from fighting to violence – breaking the norm of sensitivity

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Research on combat sports psychology rarely refers directly to fighting experiences, often making use of psychological constructs as motivation, aggression or anxiety. A new approach to the subject has been done by applying a classical phenomenological analysis of fighting and martial arts phenomena (Barreira, 2017). The intentional structures of different kinds of combat experiences allow finding an essential typology useful to psychological comprehension of fighting experience. Martial arts and combat sports daily life practices are essentially non-violent, even if sometimes dangerous and aggressive. They are intersubjective accordances for physical challenges and improvement of personal capabilities to defence and attack. However, those practices are close to violence, what demands communitarian regulation to avoid that practitioners, instead of fighting, turn their experience on brawls and duels. Empirical investigations have been done in a phenomenological perspective with different martial arts and combat sports to grasp subjects' experiences on fighting and violence in daily life practices. Around a hundred Capoeira, Jiu-jitsu, Muay Thai, Karate, Taekwondo, wrestling, and MMA fighters have been deeply interviewed by using suspensive listening as a tool to explicit their own experiences. On different researches, intentional crossing analysis allows to individuate transitions between different types of combative experiences, included violent ones. Violence never is only physically determined. Moral and normative spheres play a central role to happen violence. Intentional analysis favours the description of "norm of sensitivity", an intertwined sense of norm and intensity level. Violence is perceived when that norm is broken and one feels treated as a thing.

2.40 Perceived autonomy support scale for exercise settings: testing its psychometric properties in Turkish youth athletes -Parent Form-

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Purpose: The perceived autonomy support scale for exercise settings (PASSES) that was developed by Hagger et.al. (2007) for measuring perceived physical education teacher autonomy support in adolescents. This study was aimed to test whether or not PASSES is reliable and valid for measuring perceived parent autonomy support in Turkish youth athletes aged between 12-18 years old.

Method: 132 female (Mage = 14.85 ± 2.00) and 128 male (Mage= 13.86 ± 2.32), in total 260 (Mage = 14.36 ± 2.22) youth athletes from the individual and team sports voluntarily participated in the study. The Perceived Autonomy Support Scale is unidimensional and consists of 12 items measuring the perceived autonomy support from significant others - physical education teachers, coaches, and parents - as a source of support. Each item is responded on a 7-point Likert scale. Principle components factor analysis with the varimax rotation was used to test the factor structure of the scale. The Cronbach's alpha coefficient was calculated for testing its internal consistency.

Findings: The results of principle components factor analysis with varimax rotation supported the single-factor structure of the scale and the items explained 62.11% of the total variance. The factor loadings of items were ranged between 0.71 and 0.86. Cronbach's alpha internal consistency coefficient of the scale was 0.94. It can be concluded that the Turkish version of the "perceived autonomy support scale for exercise settings" is a reliable and valid measure for evaluating perceived autonomy support with parent as the source of support in Turkish youth athletes.

2.41 Relationship between performance improvements self-efficacy and academic self-efficacy.

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Collegiate athletes, who have a dual-career, are expected to succeed in sports as well as schoolwork (Japan Sports Agency, 2018). It is well known that the self-efficacy has a high generalisation. Therefore, we developed a self-efficacy scale to assess performance improvements in athletic club (PISE) and examined the relationship between PISE and Academic Self-Efficacy (ASE). In a preliminary study, 65 questionnaire items were developed through open-ended responses of 60 collegiate athletes (37 men and 27 women), and the content validity of the items was established. In Study 1, we conducted explanatory factor analyses using the data of 528 collegiate athletes (346 men and 182 women) who completed the 65-item PISE scale. Results indicated that PISE comprises two subscales: Self-regulation of learning ($\alpha = .96$) and communication ($\alpha = .926$). In Study 2, 134 collegiate athletes (87 men and 47 women) completed PISE, ASE (Pintrich et al., 1993), and Generalised Self-Efficacy (GSE) Scale (Sherer et al., 1982). We analyzed the relationship between PISE, ASE, and GSE. Results indicated a positive correlation between PISE and GSE ($r = .42 - .53$, $p < .001$), indicative of the convergent validity of the PISE scale. A positive correlation was also indicated between PISE and ASE ($r = .27 - .37$, $p < .001$). As a result, a scale measuring PISE was developed and its content and convergent validity were established, which demonstrated a positive correlation between PISE and ASE. These results indicate the possibility of generalisation between PISE and ASE.

2.42 Objectively measured physical activity in clinically diagnosed major depressed adult outpatients

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Physical activity is linked to a lower risk of depression, but research on the objectively measured habitual physical activity is scarce. This study examined the relationship of objectively measured habitual physical activity with depression in adult depressed outpatients. Participants were included when: (1) aged 18-65 years, (2) clinical diagnosed with major depression without psychotic features, and (3) referred by a health professional. To record habitual physical activity, participants wore a triaxial accelerometer device (Actigraph GT3X+, Actigraph LLC, Pensacola, FL) on the right hip during waking hours for seven consecutive days except when bathing. The Beck Depression Inventory-II (BDI-II) (Beck et al., 1996) was employed to assess self-reported depression severity after day seven. Stepwise regression analysis examined the predictive properties of objectively measured physical activity on depression. A total of 19 outpatients (6 males) participated in the study (age = 47.79 ± 11.67 years) and mild-to-moderate depression (mean = 17.10 ± 8.70). The mean valid wear time of accelerometer devices was 13.40 hours/day ± 2.61 and 6.26 days ± 1.24 . light and moderate-to-vigorous physical-activity levels recorded 266.01 min/day ± 100.74 and 31.59 min/day ± 25.83 , respectively. Participants spent 515.33 min/day ± 155.71 sitting. Stepwise regression analysis yielded a significant prediction $F(1,18)=5.07$, $p<.05$ with only moderate-to-vigorous physical activity contributing to the prediction of depression ($\beta=-.48$, $t=-2.25$, $p<.05$). The model explained 23% of the variance of depression. Objectively measured habitual moderate-to-vigorous physical activity may support depression treatment as it predicted lower depression in clinically diagnosed major depressed outpatients.

2.43 Solidarity network for migrants and refugees: a project towards integration through sport

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Nowadays, multicultural societies are a common phenomenon across Europe. As a consequence, new challenges emerge at both national and international levels whereas the successful adaptation arises as a fundamental and pressing issue. Therefore, the need for research and development of strategies that can help smoothing the acculturation process is high. Sport participation has long been considered an effective socialising agent, as sport is among the few social activities that are globally recognised as a vehicle for bringing people, and in particular youth, together. For sport to become an effective acculturation agent, migrants and refugees must become part of it. Nevertheless, the evidence so far suggests that, across Europe, their participation in sport is very limited. The purpose of this project was to identify the reasons preventing the migrants and refugees' from participating and develop appropriate platforms and networks to facilitate access. A survey was conducted in three countries, Italy, Slovenia, and Greece. Participants were 233 migrants and refugees. Among them, 195 did not participate in sport, while 187 would like to. The most important reasons were by large the lack of financial resources and the lack of awareness about where they should seek sport participation. The top sports in their preferences were football, basketball, and swimming. Based on these findings a network of sport clubs willing to facilitate the participation of migrants and refugees through free access or reduced fees will be developed and disseminated. Future actions will aim at expanding the network across more European countries.

2.44 Parent bonding, coach-athlete partnership, and athlete's psychological characteristics: how strong is their relationship?

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In sport environment the coach-athlete relationship has been considered important (Cote & Gilbert, 2009) as it can influence athlete's development. In addition, the quality of parent bonding sets the foundation for the athlete's personal development (Bowlby, 1973). The purpose of the present study was the investigation of the parent bonding and the coach-athlete partnership relation, as well as the athlete's individual and psychological characteristics. Based on the theory and results of previous research, the following hypotheses have been examined: (1) Parent bonding correlates with the coach-athlete partnership, (2) athlete's individual and psychological characteristics are linked with both athlete-parent and athlete-coach bonds.

The total sample of the present study consisted of 171 team and individual sports athletes, ranging in age from 16 to 26 years old. The athletes completed a consent form followed by the questionnaires: Parental Bonding Instrument (Parker, Tupling, & Brown, 1979), Coach-Athlete Relationship Questionnaire (Jowett & Ntoumanis, 2004), and NEO Five-Factor Inventory (Costa & McCrae 1992). Furthermore, athletes completed the Social Desirability Scale (Reynolds, 1982) to avoid socially desirable answers.

The data analysis revealed a statistically significant correlation between the parent bonding and the coach-athlete partnership. With regard to the athlete's individual and psychological characteristics, a statistically significant relationship was found with both parent bonding and coach-athlete partnership. The results of this study could be used to provide useful information to the athletes, parents, and coaches for improving their relationship, as well as, to the sport psychology consultants in creating psychological preparation programmes for athletes.

2.45 Resilience and well-being in sports

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Athletic resilience and well-being have been of paramount concern in the field of sports psychology. Due to the context-specific (Luthar et al., 2000) nature of resilience, research inclination is majorly on studying clinical population suffering with high risk of stressful circumstances and serious illness (Denz-Penhey & Murdoch, 2008) that, however, does not address the challenges faced by sports achievers who cannot escape the forbidden conditions constraining sporting performance by any chance.

As per the obligatory circumstances, calling for a certain amount of mental toughness is essential to sustain in the sport (Mguni & Brown, 2012). Such situations incite us to interrogate whether excelling in sporting performance worth one's psychological well-being (Amirault & Orlick, 1999).

On the other hand, finding the appropriate coping and stress preventive measures becomes essential for sporting professionals to help athletes deal with their distressed mental state. Thus, the present chapter discusses the concept of resilience and psychosocial wellbeing in detail by addressing the major concerns regarding athletic well-being.

2.46 Implicit theories of athletic abilities and implicit self-esteem in competitive athletes

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According to Dweck (1999) and Dweck and Leggett (1988), we consider our abilities as fixed or malleable. The modern theories of self-esteem make a distinction between explicit (conscious/cognitive) and implicit (unconscious/experiential) self-esteem (Greenwald & Banaji, 1995). The incongruence between the two systems leads to adaptational problems, and this, according to our hypothesis, is connected to implicit ability theories. Thus, people with incongruent or low congruent self-esteem have fixed theories. We administered IAT (implicit self-esteem), CNAAQ-2 (implicit theory of athletic abilities), Rosenberg's Self-Esteem Scale, PSPP (Physical self-evaluation), on a computer. N = 105 (n = 74 male, n = 31 female) actively competing athletes participated (M age = 24.05, SD= 6.9). Comparing the groups of 1 SD within (average) and outside (extreme) of the mean implicit self-esteem, the 'extreme' group scored higher on the fixed ability scale. No other differences were found. There was no correlation between the implicit theories of abilities and the implicit self-esteem. Weak positive correlations were found between fixed theory and the 'importance' scales of the PSPP (Physical Self-Esteem, Physical Conditioning, Body Attractiveness, Body Strength). In addition, we found a relationship between the incremental theory of physical conditioning and the importance of physical conditioning. In conclusion, a fixed mindset is not related to implicit self-esteem, but to some aspects of physical self-esteem. On the other hand, the extreme difference between implicit and explicit self-esteem is related to a fixed mindset. The present study also argues that in sports, athletes can score high on both the fixed and incremental dimension.

2.47 Influence of a 30 days slow paced breathing intervention compared to social media use on subjective sleep quality and HRV

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Breathing techniques are part of traditional relaxation methods, however their influence on psychophysiological variables related to sleep is still unclear. Consequently, the aim of this paper was to investigate the influence of a 30 days slow paced breathing intervention compared to social media use on subjective sleep quality and cardiac vagal activity (CVA, operationalised via high-frequency heart rate variability). Healthy participants (N=64, 33 male, 31 female, M=22.11, SD=3.12) were randomly allocated to an experimental group where they had to perform a 15-minute smartphone-based slow paced breathing technique each evening for 30 days, or to a control group where they had to use social media (e.g., Facebook, Instagram, WhatsApp) for the same duration. During the night before and after the intervention, their CVA was assessed via a light portable ECG device, and they had to fill in the Pittsburgh Sleep Quality Index questionnaire. Results showed that in comparison to the use of social media, the slow paced breathing technique improved subjective sleep quality and increased overnight CVA, while a tendency was observed for morning awakening CVA. Slow-paced breathing appears a promising cost-effective technique to improve subjective sleep quality and cardiovascular function during sleep in young healthy individuals.

2.48 Visual regulation in long jump run-ups

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The long jump requires both high precision to hit the take-off board properly and high run-up velocity to reach the furthest horizontal distance (Lee et al., 1982). Bradshaw and Aisbett (2006) found that jumping distance is closely intertwined with visual regulation during the run-up, i.e., earlier and longer visual regulation leads to longer jumps. However, Bradshaw and Aisbett did not directly examine the visual behaviour of long jumpers, but used step parameter analyses instead (i.e., the maximum standard deviation of toe-board distances across trials; cf. Berg, Wade, & Greer, 1994). The current study aimed at conceptually replicating and extending Bradshaw and Aisbett using a portable eye-tracking system. 15 experienced long jumpers performed six long jumps and six run-throughs in counterbalanced order wearing eye-tracking glasses. Additionally, all trials were recorded with a high-speed camera. Preliminary analyses revealed neither significant correlations between the jumped distance of valid jumps and the beginning of visual regulation as derived from step characteristics nor between parameters of gaze (initial gaze on take-off board, dwell time) and the jumped distance of valid jumps. Moreover, visual regulation (cf. Berg et al., 1994) and initial gaze towards the take-off board do not seem to match. More fine-grained additional analyses are currently carried out to further determine the relationship between step parameters and gaze patterns. As it stands, however, our preliminary results do not seem to replicate Bradshaw and Aisbett (2006).

2.49 Can novices learn sports decision making through video game play?

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Decision-making is a critical aspect of many sports, and, as such, much research has explored how it can be improved. Video-based training has shown some benefits in improving this skill (Lorains, Ball, & MacMahon, 2013); however, the time and energy needed to develop videoclips for this training can be impractical. The present study investigated whether playing a sports video game (NHL14) could provide an inherently enjoyable, less time-consuming alternative to video-based training of decision-making skills. A gaming group (N = 12) with no experience in ice hockey completed 6 sessions of video game play. Decision-making ability was examined before and after the gaming intervention, as well as after one additional week of no video game play. Sport-specific declarative knowledge was also examined at the post-gaming session. The gaming group results were compared to a control group (N = 15), who completed no sports video game play, but completed all three testing sessions. Analyses of variance revealed no differences between the two groups for decision-making speed, accuracy, or confidence (all $p > .05$). Declarative knowledge, however, did differ, with gaming participants developing more knowledge than the control group ($t(25) = 4.69, p < .001$). Additionally, gaming participants who enjoyed their video game play more were more confident than those who enjoyed it less ($r = .61, p = .034$). These findings suggest that sports video games may not be beneficial for developing decision-making skills in novices, and in the absence of physical play; however, they appear useful in introducing novices to a new sport.

2.50 At the mere thought - using psychophysiological measures for approaching the somatic core of automatic valuations of exercise

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According to the Affective-Reflective Theory of Physical Inactivity and Exercise, already the mere thought of exercise leads to an immediate somato-affective response which, if negative, will drive a physically inactive person to maintain his or her current exercise avoidant behaviour (Brand & Ekkekakis, 2018). There is evidence that the somatic core of this affective response can be objectively quantified by psychophysiological measurement. For example, in a previous study, physically inactive participants showed a decrease in heart rate variability (HRV) during viewing of exercise-related stimuli, and this decrease was related with lower reported positive affective valence and less arousal elicited by these exercise-related stimuli (Schinkoeth, Weymar & Brand, under revision). The present study followed a cross-sectional design. This study sought to include one further psycho-behavioural aspect of automatic affective valuation, that is change in affective facial expression in reaction to exercise-stimuli, and then analyse correlations between the two aspects of the somato-affective response (HRV and facial expression) and automatic associations with exercise. Path analysis with data from 69 participants showed that positive automatic associations with exercise predicted a decrease in HRV as well as, independently from this effect, fastened response times when participants were asked to produce a smile after exercise-related stimuli. Correlations between these two aspects of affective valuation remained insignificant. A decrease in HRV and higher reaction times when producing a smile in response to exercise-related stimuli predicted higher self-reported exercising behaviour.

2.51 The effect of self-talk on kicking performance in young elite Tae Kwon Do athletes

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The purpose of the study was to investigate the effects of a self-talk intervention on kicking performance in young elite Tae Kwon Do athletes through biomechanical measures. Originally, 28 Tae Kwon Do athletes from two clubs were recruited. Assessments of kick performance through measures of force and repetitions for both the dominant and the non-dominant leg were obtained before and after an 8-week intervention in laboratory settings. In particular, participants performed three types of kicks (roundhouse kick, side kick and repetitive roundhouse kick) on a kicking pad stably placed on a force measuring plate. Eighteen athletes completed the training and the two performance assessments. The results revealed a significant increase of peak force for the roundhouse kick and an increased number of kicks for the repetitive roundhouse kick in the experimental group for the non-dominant leg, whereas no differences were found for the dominant leg. No differences in kick performance were recorded for the control group. The findings based on biomechanical measures show support for positive effects of self-talk on performance. Drawing final conclusions based on the present study should be taken with caution due to the small sample size. Further studies adopting biomechanical assessments are recommended in order to upgrade the existing knowledge on self-talk in elite sports performance.

2.52 Psychological stress during decision-making performance of soccer referees

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Introduction: Pressure from the crowd and the need to make accurate decisions in split seconds is a typical situation for soccer referees, which causes psychological stress. Studies have shown that stress usually negatively impacts cardiac vagal activity (CVA) as inferred via heart rate variability (HRV), which in turn negatively impacts decisions (Laborde & Raab, 2013). The aim of the study was to investigate the influence of psychophysiological variables on soccer referees' decision-making performance (DMP).

Methods: DMP of 25 soccer referees (Mage = 23.12 years, SDage = 3.79; Mrefereeing experience = 8.08 years, SD = 4.15) was assessed while they were running on a treadmill and/or being exposed to an audience/auditory stress. DMP, HRV and subjective stress measures were assessed during the whole study.

Results: Contradictory to our hypothesis, no significant correlations emerged between DMP and CVA. However, subjectively, the referees felt psychologically more stressed ($p = .004$), excited, ($p = .001$), and unpleasant, ($p = .026$) in the psychological stress condition, and more stressed, ($p < .001$), excited ($p < .001$), and unpleasant ($p < .001$) in the combination condition compared to baseline.

Discussion: This was the first time that the relationship between DMP and CVA was investigated while the participant was engaged in physical activity – and not sitting. This may have introduced some confounding mechanisms in the usual relationship found between DM and CVA. Referees seem to have felt stressed, however, objectively the data show that they have learned to cope with this stress, because their CVA remained stable across conditions.

2.53 A pilot examination of relationship among perceived anxiety, confidence and eye fixation

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Previous research in sport psychology found that longer and earlier Quiet Eyes (QE: the final fixation spotted to a target) are a characteristic of skilled rather than amateur performers. This trait helps performers to execute skills optimally under pressure (Moran et al., 2018). In addition, sport psychology strives to manage competition-induced anxiety in individuals to aid in peak performance. The purpose of this study was to examine the relationship among participants' perceived cognitive and somatic anxiety, confidence, and eye fixation under competitive and non-competitive conditions in darts performance. Twenty-one participants were randomly assigned into two groups. One group (N = 10) was informed that their performance score was part of an imaginary competition. The other group (N = 11) was informed that the activity was about their eye fixation technique only (i.e., put efforts on gazing at the central point of dart board). Pre- and post-surveys assessed participants' perceived cognitive and somatic anxiety and confidence before and after their trial performance. Eyeball tracking devices recorded duration and frequency of eye fixation during their performance. Results revealed no statistically significant differences between competitive and non-competitive groups among the aforementioned variables and within each group pre- and post-testing among cognitive and somatic anxiety and confidence. However, signs of hypothesised differences were evident. Sample size and future research design/direction were discussed along with the current study that analysed subjective and objective variables.

2.54 Effect of expertise on coincidence timing in baseball batting in virtual reality

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In baseball batting, the ability to adapt movements to unexpected changes in ball trajectory is important for success. Nakamoto et al. (2008; 2012) suggested that the coincidence timing of skilled baseball batters is underpinned by flexible timing corrections when velocity suddenly decreases. However, these studies examined coincidence timing when participants anticipate the arrival of an approaching series of lights, with the degree to which the skilled advantage would be replicated when batters anticipate the arrival of a baseball being less clear. Using a virtual-reality environment to reproduce a baseball batting situation, we examined the coincidence timing of baseball batters. Six skilled (college level) baseball players and 10 novices wore a head-mounted display in the standing position, and then observed the ball trajectory thrown by a pitcher. Participants were required to press the controller's button at the time at which the ball reached the front edge of the home plate. Following ball-release from the pitcher's hand, the ball moved at a constant velocity (120 or 140 km/h) until the velocity suddenly increased or decreased at various time points (-100, -200, or -300ms) before reaching the home plate. Although the skilled players' reactions were significantly faster than those of novices in all conditions, we failed to observe any skilled advantage in the rate of timing correction when the ball-velocity suddenly changed. These results suggest that in our experimental task, skilled players may adopt a strategy that prioritises fast reactions over timing corrections to avoid delayed reactions when the ball velocity increases.

2.55 "I just feel bad": differences in self-conscious emotions after exercise absenteeism in recreational exercisers and athletes

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While most theoretical models assume that decisions to sustain exercise are cognitively driven, the possibility that these decisions are influenced by affect is under-appreciated. This study aimed to investigate differences in self-conscious emotions after exercise absenteeism, exercise-identity and behavioural regulations between recreational exercisers (RE) and athletes (AT).

156 RE (77 females, M = 27.31 years, SD = 10.66) and 88 AT (48 females, M = 23.27 years, SD = 5.88) completed assessments of self-conscious emotions (shame, guilt, pride; Marschall et al., 1994), exercise-identity (Anderson & Cychoz, 1994) and sport behavioural regulations (Kleinert & Pels, 2013). T-tests for independent samples were calculated to investigate differences between aforementioned variables for RE and AT.

RE and AT showed moderate scores on self-conscious emotions and controlled regulations. Moderate to high scores were found for autonomous regulation and exercise identity across groups. While no significant differences in any of the self-conscious emotions were found between RE and AT. RE reported significantly lower exercise-identity ($z = -6.642$; $p < .001$), identified ($z = -2.089$, $p = .037$), integrated ($z = -4.372$, $p < .001$) and intrinsic motivation ($z = -2.871$, $p = .004$) compared to AT.

Although exercise behaviour is less internalised in RE, they do not perceive more self-conscious emotions after exercise absenteeism compared to AT. Their autonomous exercise motivation (i.e., personal valuation, acceptance of exercise) might "protect" RE against the potentially negative effect of shame and guilt on long-term participation. Whether self-conscious emotions are detrimental in exercisers with lower internalization needs to be investigated.

2.56 Testing the Physical Activity Maintenance (PAM) Theory: a structural equation model approach

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Introduction: Physical activity (PA) is important for preventing a variety of chronic non-communicable diseases (e.g., type 2 diabetes, cardiovascular disease, hypertension), however, PA must be maintained long-term to experience benefits. There is a paucity of studies addressing the factors related to long-term physical activity maintenance (PAM) and habituation. Nigg and colleagues (2008) proposed the PAM Theory to address this gap. The current study examines whether the PAM Theory explains long-term maintenance using structural equation modeling.

Methods: Data were pooled from 3 cross-sectional studies (total N = 623, 70.42% female, Mage=39.64 years [SD=13.97], mean BMI=23.96 [SD=3.80]). Measures included the PAM psychological constructs (goal-setting, self-motivation, and self-efficacy), contextual variables (life stress, social support, and physical activity environment), and lifetime PA volume.

Results: Of the three structural equation models tested, the partially mediated model utilising the original PAM Theory had the best fit (versus a fully mediated or a direct effects model). The adjusted version of the partially mediated model had very good fit statistics ($\chi^2 = 104.06$, $df = 38$, $p < .001$; AIC = 15801.60; CFI = 0.97; TLI = 0.95; RMSEA = 0.05; and SRMR = 0.04) and accounted for marginally significant 28% of PA volume ($p = .09$).

Conclusion: To our understanding the PAM Theory contributes to the factors related to long-term maintenance. Researchers should consider using the PAM Theory constructs in interventions. More research is needed to better evaluate PAM in lower income or minorities to examine generalisability of the PAM model.

2.57 Factor structure and measurement invariance of the International Positive and Negative Affect Schedule short form

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This study translates the International Positive and Negative Affect Schedule Short Form (I-PANAS-SF; Thompson, 2007) into Chinese and examines its factor structure and measurement invariance in a sample of Chinese adolescents in Hong Kong. Chinese adolescents in Hong Kong were invited to participate in the study. The factor structure of the I-PANAS-SF was examined using ESEM. The internal consistency reliability was evaluated using Cronbach's alpha coefficient, and the criterion validity was assessed using bivariate correlations between positive affect (PA) and negative affect (NA) subscale with worry and lack of concentration. Finally, measurement invariance across genders and grades was examined to evaluate the invariance of the I-PANAS-SF. The results of the ESEM analysis indicated that item 3 (alert) was problematic and the 9-item measurement model removing the item fit the data better. The Cronbach's alpha was above 0.70 (0.81 and 0.83), revealing excellent internal consistency reliability, and the PA subscale (negatively) and NA subscale (positively) was significantly associated with worry and lack of concentration respectively, indicating criterion validity. Finally, the measurement invariance analysis displayed strict invariance across genders and grades. The results of the study suggest that the 9-item Chinese version I-PANAS-SF is a reliable and valid instrument and could be used among Chinese adolescents in Hong Kong.

2.58 The association between social media consumption and physical activity in adults

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Sedentary lifestyle represents a risk factor for non-communicable diseases. Therefore, the promotion of physical activity is of capital importance. With the upcoming of social media, online platforms such as Instagram and YouTube are used by professional athletes or sportspersons to demonstrate their fitness activities/regimen and a positive consequence of consuming such online-content could be a more active lifestyle.

In the present study we investigated in N=549 participants (143=males; Mage: 28.51, SD=13.70) if 1) social media in general motivates consumers to do more sports, 2) if consumers actually exercise more often due to their social media consumption and 3) how many participants follow the online profiles of distinct fitness „influencers“. Additionally, physical activity (Global Physical Activity Questionnaire, WHO), „exercise addiction“ (Griffiths, Szabo, & Terry, 2005) and personality (BFI-10; Rammstedt & John, 2007) were assessed. The associations between the mentioned social media variables and physical activity were analysed and the influence of age, gender and personality was examined.

Our results demonstrate that all three social media variables were linked to higher physical activity scores (and exercise addiction). In particular, following a person with a sports background on social media strongly impacted on physical activity ($\eta^2 = .08$) and exercise addiction ($\eta^2 = .06$). Extraversion (in males) and conscientiousness (in females) were also associated with physical activity.

The present study provides preliminary evidence that social media consumption and in particular following a fitness „influencer“ on social media is associated with higher physical activity. Of note, longitudinal studies are needed to prove the direction of effects.

2.59 The Effects of Personality on the Creativity of Middle School Basketball Players

HanSeung Yang, Jin Hwang

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The purpose of this study is to investigate the personality would have effects on the creativity through emotional intelligence. 142 middle school basketball players of five regions in the whole nation registered in Korea Basketball Association, with the use of SPSS 24.0 version, the mediating effects were verified through correlation analysis, stepwise regression analysis, and hierarchical regression analysis based on the 3-step mediating effect by Baron and Kenny(1986). The results are as following: The motivational attitude of creativity had positive correlations with all the factors except for the emotional instability of personality. The motivational attitude of creativity had positive effects on the extroverted openness of personality while the ability attitude had positive effects on the extroverted openness and sincerity. The emotional intelligence had positive effects on the extroverted openness of personality, and the control/utilization of self and others showed the positive effects on the sincerity and the negative effects on the emotional instability. The results of the mediating effects verification, Emotional intelligence had the control/utilization of self and others and empathy/self-Control utilization have been found to be extroverted openness of personality and fully mediating effects. In conclusion, the personality type of individuals could predict the possibility to improve the creativity through emotional intelligence.

2.60 The effects of ankle kinesio tape on acute ankle sprains in young soccer players

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Background: Ankle sprains or chronic ankle instability (CAI) is one of the most common injuries among young soccer players that can lead to residual effects negatively affecting functional performance.

Objective: The aim of this study was to investigate the effects of Kinesio Tape (KT) on functional performance of young soccer players with (CAI).

Methodology: Twenty-five young soccer players (Mage: 13.34±0.49 years; stature 1.61m±0.05; BMI: 21.5±1.05kg/m²) participants in this study. Thirteen participants with CAI were in the experimental group, and 12 participants with no history of ankle injuries were in the control group. Kinesiotaping was applied and maintained for three consecutive days in experimental group. Three functional pre- and post-tests were performed for affected ankles with kinesiotaping in experimental group and the unaffected ankle without tape on control group. Tests were: Figure-8 hopping test, 6-meter crossover hop test, side hop test. Time to complete each test was recorded and the mean of 3 trials was used for statistical analysis. Repeated measures ANOVA was completed to analyse the data.

Results: The main results showed that there was statistically significant ($p < .05$), after application of kinesiotaping on experimental group by improving dynamic postural stability in CAI. Measures of figure-8 hopping test, 6-meter crossover hop test, side hop test were significant for all 3 functional performance tests ($p < .05$) in experimental group.

Conclusion: Kinesiotaping easily applied to rapidly improve ankle strength and prevention of ankle ligament injuries. Therefore, the KT can be an effective method for enhancing functional performance among young soccer players with CAI.

Poster Session Wednesday Young Research Award

Time: Wednesday, 17/Jul/2019: 10:15am - 11:15am · Location: Marquee

Session Chair: Natalia Stambulova, Halmstad University

Session Chair: Taru Lintunen, University of Jyväskylä

VRA.01 Get in the endurance zone! EEG neurofeedback improves cycling time to exhaustion

Francesca Mottola, Anthony Blanchfield, James Hardy, Andrew Cooke

Bangor University, United Kingdom

Electroencephalographic (EEG)-neurofeedback training is a non-invasive approach for modifying brain activity. Promising evidence endorses EEG-neurofeedback as an intervention to enhance performance in tasks requiring fine motor control (e.g. golf, archery, shooting). However, no study has examined EEG-neurofeedback interventions for whole-body endurance performance. Our experiment addresses this gap in the literature. We adopted a randomised single-blind, placebo-controlled parallel design. Forty subjects were recruited and randomly allocated to three groups (increase relative left cortical activity, NFL, N = 13, increase relative right, NFR, N = 13 and passive control, CON, N = 14). They performed a depleting cognitive task followed by either EEG-neurofeedback training (NFL and NFR), consisting of 6 × 2 min sessions, or time matched-videos of the neurofeedback display (CON). Next, they performed a time to exhaustion test on a cycle-ergometer (TTE). Measures of mood and state self-control were collected at baseline and after each task. Results confirmed that our brief EEG-neurofeedback intervention modified brain activity in the expected way. Importantly, the NFL group performed for over 30% longer than the other groups in the TTE (mean ± S.E. NFL = 1382 ± 252, NFR = 878 ± 167, CON = 963 ± 117 sec, contrast tests p = 0.05). There were no group-differences in mood, self-control or rate of perceived exertion measured during the TTE, suggesting that the mechanism underlying neurofeedback benefits was a neurophysiological shift towards approach motivation. Our results show that EEG-neurofeedback can be used to modulate frontal hemispheric asymmetry, and greater relative left frontal activity may enhance endurance performance.

YRA.02 Psychological risk profiles for overuse injuries in sport: a prospective study

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Introduction: Overuse injuries account for a substantial part of sport injury incidence among athletes of various sports and levels (Yang, Tibbetts & Covassin, 2012). Despite the gradual onset of symptoms, athletes often persevere in training and competing. Based on a prospective cohort design, the present study aimed to identify psychological risk profiles for overuse injury.

Methods: One hundred and forty nine athletes representing eight individual and team sports responded to a range of questionnaires regarding personal (athletic identity, perfectionistic concerns, grit and negative life stress) and interpersonal (coach-athlete relationship) psychological traits. Participants subsequently answered the OSTRC Overuse Injury Questionnaire on a weekly basis during a 10-week period. A latent profile analysis was used to identify different psychological profiles, further compared in terms of overuse injury occurrence.

Results: Athletes were classified into 3 latent profiles regarding their psychological characteristics: profile 1 was labelled "perfectionistic overuse injury risk profile", profile 2 "negative stress overuse injury risk profile" whereas profile 3 was called "low risk profile for overuse injury". Indeed, athletes in profile 1 and 2 were found to be significantly more often affected by overuse injuries than individuals in profile 3 (71% and 70% of the time vs 45% of the time), with athletes in profile 1 also experiencing more substantial overuse injuries than in profile 3 (35% vs 21% of the time).

Discussion: Cognitive-behavioral interventions supporting athletes in interpreting their bodily signs and in adopting adaptive subsequent behaviors could be developed for sports burdened by overuse injuries.

YRA.03 Brain dynamics during visual anticipation in sport

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Scarce literature has investigated anticipation in sport comparing the effect of 2D and 3D modes of presentation on the underlying brain activity (Smith, 2016). Therefore, the purpose of the current investigation is characterizing the dynamics of brain activity during anticipation processes in tennis players using the two different modalities.

Thirty tennis players (all males, 24 ± 6 years) were categorized into two groups: 14 Elite Players (EP) and 16 Less Expert Players (LEP).

Anticipation was investigated by presenting a series of images in both 2D and 3D modalities, erasing body parts from the images: full body, no legs, no trunk, no racket and arm, no ball (spatial occlusion, Jackson and Morgan, 2007), and predicting ball's landing position. Simultaneously high density (128 channels) EEG has been recorded.

Results revealed that accuracy was lower in the no trunk condition compared to others occlusions and that EP's had general higher accuracies than LEP, and being reaction times in 3D condition higher than in 2D condition.

Considering the ERP components, N2 was lower in trunk occlusion, P3a lower in no trunk and no ball, P3b higher in no trunk and full body and LRP lower in trunk occlusion. Moreover, for LRP a main effect of Mode was found, with 2D potential lower than 3D potential.

Our results showed a larger information processing in a more ecological context, as the 3D with respect to 2D. Moreover, the importance of racket-arm and trunk should be reconsidered in anticipation processes in tennis.

YRA.04 Development and validation of career-long psychological support services in Swedish handball

Johan Ekengren¹, Natalia Stambulova², Urban Johnson³

¹Halmstad University, Sweden; ²Halmstad University, Sweden; ³Halmstad University, Sweden

This study is part of the PhD-project aimed at examining Swedish professional handball players' career experiences and developing an applied framework to improve career assistance. Inspired by the cultural praxis of athletes' careers (Stambulova & Ryba, 2013; 2014) we blend theory, research, and practice with the athletes' cultural and sporting contexts. In the previous part, the author and three co-authors (2018) developed an empirical career model (ECM-H) describing players' changing demands across career stages from the holistic perspective (Wylleman, Rosier, & De Knop, 2015) and showing that they need different types of career assistance at different stages. This second part study aims to develop and validate an applied framework – the career-long psychological support services (CLPSS). To create the initial version of CLPSS a heuristic approach combining the ECM-H with the author's applied sport psychology experiences was used. Then the initial version was validated in two focus groups with elite handball coaches (n=4) and experienced sport psychology consultants (n=3) following Kreuger and Casey's (2015) recommendations. The participants were positive to the initial version and suggested several improvements. The validated CLPSS implements the whole career and whole person perspectives with the four career stages aligned with age markers and three layers of career assistance issues derived from the Swedish handball context, athletes' perceived demands, and desirable support from relevant stakeholders (e.g., coaches, parents). The CLPSS helps to understand, what issues to address and when in a career to facilitate players' coping, reduce unnecessary stress, and promote sustainable careers in elite handball.

YRA.05 Stressor Incidence and Adjustment Disorder Prevalence among elite athletes: a pilot study

Chantal Simons, Lisa Martin, Luke Balcombe, Peter K. Dunn

University of the Sunshine Coast, Australia

Elite athletes face the same stressors as their non-athlete peers, as well as stressors specific to the sport environment (Jones & Tenenbaum, 2009). Stressful life events may negatively affect elite athletes' mental health (Stephan, 2003). Stress, and the maladjustment to stressors, may be a factor contributing to disorders such as athletic burnout. A diagnosis specifically concerned with maladjustment to stressors, that of Adjustment Disorder (AjD), is virtually absent from the sporting literature. Only one case study, describing a collegiate athlete with AjD, has been identified (Shell & Ferrante, 1996). The current study investigated the incidence of stressors and occurrence of AjD in elite athletes. An amended version of the Adjustment Disorder New Module-20 (ADNM-20, Glaesmer, Romppel, Brähler, Hinz, & Maercker, 2015) was completed by 52 elite athletes. They indicated whether they experienced any of the 86 stressors listed in the survey, and answered 24 questions about their adjustment to these stressors. The ADNM-20 responses of 14 athletes (13 females) indicated the presence of AjD. The number of events the athlete named as stressful was significantly higher for those who presented with AjD compared to those who didn't ($p=0.01$). The prevalence of AjD in this sample hasn't been corrected for the presence of other mental health disorders. It should be noted that high comorbidity has previously been reported (Maercker, Einsle, & Köllner, 2007). This study illustrates that screening for stressor occurrence and maladjustment to stressors may be part of an early intervention strategy to prevent far reaching mental ill health.

YRA.06 Response inhibition of team handball experts

Holger Hepp^{1,2}, Karen Zentgraf^{2,3}

¹University of Muenster, Germany; ²Otto-Creutfeldt-Center for Behavioral and Cognitive Neuroscience, University of Münster, Germany; ³University of Frankfurt, Germany

Introduction

Inhibition enables flexible and adaptive behavior by suppressing prepotent motor responses. In former studies, it has been shown that athletes acting in dynamic environments exhibit superior motor inhibitory control based on sensory stimuli. So far, existing studies have corroborated this in manual motor response settings only. Therefore, this study addresses the effector specificity of the inhibition benefit in expert athletes compared to physically active controls. We hypothesized that handball players perform better than recreational athletes in both conditions.

Methods

Male adult handball players playing in the second league in Germany ($n = 30$) and male adult recreational non-handball athletes ($n = 30$) were tested in a response inhibition paradigm (DV was stop-signal reaction time, SSRT). Repeated-measures ANOVA with factors response-effector (hands, feet) and group was conducted.

Results

Main effects of response-effector ($F(1,58) = 27.17, p < .001, \eta^2 = .319$) and group ($F(1,58) = 7.89, p = .007, \eta^2 = .117$).

Feet condition: Post-hoc test (one-tailed) showed no significant SSRT difference between handball experts ($259.5 \text{ ms} \pm 41.6$) and recreational athletes ($276.74 \text{ ms} \pm 38.4$), $t(58) = 1.63, p = 0.10, 95\% \text{ CI} [-0.094, 0.929], d = .42$. Hands condition: Significant difference between handball experts ($M = 229.36 \text{ ms}, SD = 32.83$) and recreational athletes ($M = 261.52 \text{ ms}, SD = 39.00$), $t(58) = 3.46, p = .001, 95\% \text{ CI} [0.357, 1.420], d = .89$.

Discussion

Results show a convincing superiority of handball players in response inhibition, predominantly when responding with their hands, with weaker differential effects when responding with their feet.

YRA.07 Development, face and content validity of a novel qualitative tool to measure young children's motivation for physical education.

Katie Fitton Davies¹, Paula M Watson¹, James Rudd¹, Farid Bardid², Knowles Zoe¹, Simon Roberts¹, Lawrence Foweather¹

¹Liverpool John Moores University, United Kingdom; ²University of Strathclyde

Introduction: Self-Determination Theory (SDT) suggests that children who are more autonomously motivated within physical education (PE) are more likely to sustain engagement in PE (Ryan & Deci, 2017). A paucity of research exists around young children's motivations to engage in PE, largely due to a lack of age-appropriate tools. **Aim:** This study aimed to develop a novel qualitative tool (Draw, Write, Show and Tell; DWST), based on self-determination theory (SDT), to assess young children's motivation regulations and basic psychological needs satisfaction in relation to PE. **Methods:** The DWST was iteratively developed by child development, PE and SDT experts to establish content validity. Several iterations of the DWST method were piloted with 5-6-year-old children from across three primary schools in the United Kingdom (UK) (n=41, 54% male) (phase 1), and refined according to children's responses in order to ensure face validity. The final DWST method was then piloted with two children who had not taken part in the initial study (50% male) (phase 2). **Results:** Evidence of face and content validity were established with findings gathered by the tool indicating different types of motivation for PE can be distinguished in young children and insight into their basic psychological needs satisfaction within PE can be gained. **Conclusion:** This study developed an SDT-based qualitative tool that evaluates young children's motivation and basic psychological need satisfaction within PE. By understanding children's motivational perceptions in regards to PE, it can aid practitioners in keeping children suitably motivated within the PE environment.

YRA.08 The influence of self-talk on challenge and threat states and performance

Adrian Hase¹, Jacob Hood¹, Lee John Moore², Paul Freeman¹

¹University of Essex; ²University of Bath

Objectives

A challenge state has been consistently associated with better performance than a threat state. However, to date, challenge-promoting interventions have rarely been tested. Therefore, this study investigated whether instructional and motivational self-talk promote a challenge state and improve performance.

Design

A three-group, randomised-controlled experimental design was used.

Method

Sixty-two participants (52 males, 10 females; M age = 24 years, SD = 6) were randomly assigned to one of three self-talk groups: instructional, motivational, or control. Participants performed four dart throwing tasks. Cognitive and cardiovascular measures of challenge and threat states were recorded before the first and final task.

Results

The motivational, but not the instructional group, improved their performance between the baseline and final tasks more than the control group. No effects were found on the cognitive and cardiovascular challenge and threat measures. Evaluating the task as more of a challenge (i.e., coping resources match or exceed task demands) was related to better performance. Cardiovascular reactivity more reflective of a challenge state (i.e., higher cardiac output and/or lower total peripheral resistance reactivity) was more positively related to performance in the motivational than in the control group, and in the control than in the instructional group.

Conclusions

Motivational self-talk improved performance more than control self-talk. Furthermore, motivational self-talk may have intensified, whereas instructional self-talk may have attenuated, the relationship between challenge and threat states and performance. Hence, athletes in a challenge state may benefit from motivational self-talk, whereas those in a threat state may benefit from instructional self-talk.

YRA.09 Supporting student-athletes with their social challenges: Dual career support providers' perspectives

Simon Daniël Defruyt¹, Paul Wylleman^{1,2}, Koen De Brandt¹

¹Vrije Universiteit Brussel, Belgium; ²TeamNL NOC*NSF, the Netherlands

Balancing education, elite sport and a satisfying social life can be challenging to student-athletes (Gledhill & Harwood, 2015). The time pressure associated with engaging in a dual career (DC) can jeopardize the quality of athletes' relationships with friends and family, and in some cases lead to severe loneliness (e.g., Debois et al., 2015; Geranosova & Ronkainen, 2015). To support student-athletes proactively in coping with these and other challenges, the role of DC support providers has become increasingly important (Wylleman, De Brandt, & Defruyt, 2017). As part of the Erasmus+ Sport 'Gold in Education and Elite Sport' project, the objective of this study was to gain insight in how DC support providers try to support student-athletes to attain a satisfactory social life. Using a convergent parallel research design (Creswell & Clark, 2011), data were gathered from 265 DC support providers from nine European Member States participating with an online survey, as well as from 28 DC support providers from four European Member States via four focus groups. Results of the quantitative part of this study showed that DC support providers perceive that student-athletes need (to develop) planning, time management and social competencies to cope with this scenario. From the focus group analyses, several support strategies to enhance these competencies proactively, as well as to optimize student-athletes' social environment, were distilled and will be presented. The current findings provide insight in how DC support providers (try to) enhance student-athletes' coping with social challenges.

YRA.10 The influence of parent-athlete relationship quality on athletes' self-efficacy, self-esteem, and thriving

Olivier Y. Rouquette^{1,2}, Camilla J. Knight², Victoria E. Lovett³, Jean-Philippe Heuzé¹

¹Laboratoire Sport et Environment Social (SENS), Université Grenoble Alpes, Grenoble, France; ²School of Sport and Exercise Sciences, Swansea University, Swansea, United Kingdom; ³Department of Psychology, Swansea University

Based on Feeney and Collins' (2015) model of thriving through relationships, this study examined the effects of a parent-athlete interaction on athletes' perceived self-efficacy, self-esteem, and various indicators of thriving. Forty one Belgian individual sport athletes aged 12 to 15 years ($M = 13.1$) and their most involved parent in their sport spent 10 minutes discussing three important sport goals for the next season. The discussion was unobtrusively video-taped. After the conversation, athletes responded to questionnaires measuring Perceived Parental Responsiveness (PPR; Tomlinson et al., 2015), self-efficacy (Bandura, 2006), self-esteem (Marsh et al., 1994), and thriving indicators such as emotions (Ebesutani et al., 2012), vitality (Ryan & Frederick, 1997), life satisfaction (Cantril, 1965), and health quality (Benjamins et al., 2004). These indicators were merged into one factor of thriving; CFA: $\chi^2(50) = 43.16$, CFI = 1.00, TLI = 1.00, RMSEA 90% CI = [0.00-0.07]. Parents' relational-catalyst (RC) support behaviours in response to their child were coded by three independent coders.

Mediation analyses showed the indirect effect of athletes' PPR = 0.12, 90% CI = [0.04-0.3], and parental RC-Support = 0.07, 90% CI = [0.01-0.23] on athletes' thriving through self-efficacy and self-esteem. Athletes' PPR ($\beta = .49$) and parental RC-Support ($\beta = .28$) predicted athletes' self-efficacy ($r^2 = 0.35$), which in turn predicted self-esteem ($\beta = .42$; $r^2 = 0.19$), which in turn predicted thriving ($\beta = .60$; $r^2 = 0.39$). These results align with the suggestion that optimal parental involvement in sport is dependent upon the development of an understanding emotional climate.

Featured Symposium 05: Mental health in competitive sports – research and mental health programs from three countries

Time: Wednesday, 17/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 06 - Bad Blankenburg
Session Chair: Göran Kenttä, The Swedish School of Sport and Health Sciences

Featured Symposium: Mental health in competitive sports – research and mental health programs from three countries

Chair(s): **Göran Kenttä** (The Swedish School of Sport and Health Sciences, Sweden)
Discussant(s): **Natalie Durand-Bush** (University of Ottawa)

Mental health in competitive sports has received increasing attention as reflected by position statements and media reports (Moesch et al., 2018; Schinke, Stambulova, Si, & Moore, 2018). In conclusion, the prevalence of mental health problems is the same in athletes as in the normal population. However, sport-specific challenges have been noted such as injuries, overtraining and career transition with a higher threshold for help-seeking and stigma (Bauman, 2016; Rice et al., 2016). The overall purpose of this symposium is to address different perspectives of mental health with research from three countries. More specifically, research from Canada examined the mental-health literacy of university athletes and their support staff. Results indicate that knowledge and beliefs regarding mental health are similar in university sports and the general population, however with higher barriers to help-seeking. A cross-sectional study with Swedish elite athletes examined the prevalence and history of mental health problems. Overall, five out of ten elite athletes reported a history of suffering from mental health problems. A large German study examined the risk for depression depending on age, gender and performance level. Overall, 13% of the athletes were screened positive for depression. Also, ways of managing positive results will be described as within the German initiative MentalEmpowerment. Finally, data collected from athletes and coaches receiving services at The Canadian Centre for Mental Health and Sport during the first 6-month implementation of a mental health care model will be presented. The screening process and measures used to determine eligibility will also be discussed.

Presentations of the Symposium

Mental health literacy in collegiate athletes and their support staff

Philip Sullivan, John Murphy, Mark Blacker
Brock University

Research has shown that collegiate sport in Canada and the United States is characterized by high levels of mental distress and mental health stigma, as well as perceived barriers to mental-health services. It is also known that the social context of sport has a significant impact on help-seeking behaviours. This presentation will present the results of two studies that examined the mental health literacy (MHL) of university athletes and their support staff. MHL refers to an individual's knowledge and beliefs regarding mental health. Two independent studies were conducted comprising samples of athletes (n = 370), coaches (n = 57), athletic therapists (n = 18) and student trainers (n = 71). Our results show that the level of MHL in this context is not significantly different than in other contexts, and there are no significant differences between the roles in collegiate sport. There are significant differences between genders for both professionals and students, whereby females have greater MHL than males, and MHL is significantly and negatively correlated with age. These results suggest that the level of knowledge and beliefs regarding mental health in university sport is no different than the general population despite the higher level of mental distress and the barriers to help-seeking in this context. These results underscore the need for interventions and other resources and initiatives to increase awareness of these issues in elite sport.

The prevalence and stories of mental health problems in elite sport

Cecilia Åkesdotter¹, Göran Kenttä²

¹The Swedish School of Health Sciences, ²The Swedish School of Sport and Health Sciences

The mental health of elite athletes has long been downplayed in sport psychology research (Rice et al., 2016). This is partly explained by traditional sport psychology interventions aiming to optimise performance in a presumably healthy population (Weinberg & Gould, 2014). The last year's emphasis on mental health problems (MHP) therefore plays an important role to broaden our understanding by including symptoms on a clinical level in research and passing this knowledge on to stakeholders working in sport (Herzog & Hays, 2012).

Increased attention to these problems in sports has provided important information, however, some of the overarching aspects of mental health problems in elite sport are still unknown. A cross-sectional survey with elite athletes on a national team level (N = 333) was conducted with the main focus on prevalence and history of mental health problems.

Overall, five out of ten elite athletes had a history of suffering from MHP so severe that the psychological distress had a substantial impact on quality of life and caused functional impairment for a time period of two weeks or longer. Female athletes had a higher prevalence and recurrent episodes were common. The onset of first MHP episode peaked at age 19 with 50% of onsets between age 17-21. This is important information for personnel working to support the well-being, health and performance in elite sport. Future research is suggested to move beyond cross-sectional research and examine the lived experiences and stories of athletes suffering from MHP and diagnosed clinical problems in elite sports.

Mental health in German competitive athletes – prevalences and prevention programs

Johanna Belz, Marion Sulprizio
German Sport University Cologne

Athletes have the same risk of suffering from mental disorders as non-athletes (Gorczyński et al., 2017) and are just as likely to express elevated depressive symptoms (Rice et al., 2016). It is, therefore, pertinent to assess factors associated with depression in competitive athletes. A study on N = 1,799 German competitive athletes investigated the risk for depression depending on the athletes' age, gender and performance level via the screening tools PHQ-2 and WHO-5. Overall, 13% of the athletes were screened positive for depression. Adolescents, females and athletes of junior national teams showed a higher risk for depression than other subgroups.

The aforementioned standardised screening for depression is part of a physiological and psychological basic check-up for German adolescent athletes of national and state squads. In case of a positive screen for depression, the athlete is informed about the potential risk for depression by the German initiative MentalEmpowerment, and is offered alternative ways of handling the positive screening result, e.g. the consultation with a sport-psychological or sport-psychiatric expert. The network of MentalEmpowerment currently comprises 305 qualified partners from the fields of sport psychology, sport psychotherapy and sport psychiatry. MentalEmpowerment is also involved in further education programmes for athletes, coaches and sport psychologists to gain more knowledge about preventing mental health problems in competitive sport and strengthen athletes' and coaches' skills to cope with stress. Furthermore, MentalEmpowerment provides sport-psychological workshops in cooperation with the German initiative mentaltalent.de. Forthcoming, MentalEmpowerment expands collaborations with European partners also dealing with mental health in competitive sport.

Provision of sport-focused mental health care by the Canadian Centre for Mental Health and Sport (CCMHS): Characteristics and ment

Krista Van Slingerland, B Chin, Natalie Durand-Bush
University of Ottawa

Sport participation can exacerbate existing psychological concerns or trigger the development of new ones (Neal et al., 2013). Furthermore, sport-specific factors such as athletic identity, competitive pressure, and obsessive passion can complicate diagnosis and treatment of mental health disorders (Glick & Horsfall, 2009). This was the impetus for organisations such as the FEPSAC to advocate for effective, evidence-based mental health care models in sport (Moesch et al. 2018). The Canadian Centre for Mental Health and Sport (CCMHS) is one of two interdisciplinary clinics in the world specialising in providing sport-focused mental health care to athletes and coaches. Currently, there is a dearth of data on the prevalence and impact of mental health challenges and disorders in sport, which precludes a comprehensive understanding of best practices to support athletes and coaches struggling with mental health. With research as one of its three pillars, the CCMHS is uniquely positioned to provide evidence of the nature of mental health disorders experienced in sport, and factors associated with recovery. In this presentation, we will share data collected from athletes and coaches receiving CCMHS services during the first 6-month implementation of a sport-focused mental health care model. Specifically, we will summarise the characteristics (e.g. age, level of sports participation, gender) of service-users, as well as the mental health challenges (e.g. clinical symptoms, functional impairment, performance deficits) with which they presented upon referral. We will also discuss the screening process, measures used to determine eligibility, and factors associated with triaging service-users to the CCMHS interdisciplinary team.

Featured Symposium 06: Setting the stage for esports psychology: current state of research and future directions

Time: Wednesday, 17/Jul/2019: 2:00pm - 3:30pm · *Location:* S 10 - Münster
Session Chair: Ismael Alfonso Pedraza Ramirez, German Sport University Cologne

Featured Symposium: Setting the stage for esports psychology: current state of research and future directions

Chair(s): **Ismael Alfonso Pedraza Ramirez** (German Sport University Cologne, Germany)

Competitive video gaming or eSports is rapidly growing in popularity. Recently, conversations at the IOC (International Olympic Committee) took place, about the potential inclusion of eSports to the 2024 Paris games. Undoubtedly, this competitive industry is very attractive for sport psychologists and sport scientists, due to the nature of the games. Therefore, the aim of the present symposium is to introduce eSports to the sport psychology community and its importance of our attention and the opportunities that this new domain provides for researchers and practitioners (Cottrell, McMillen, Harris, 2018). The present symposium consists of five research studies, two of them systematically reviewing the literature on eSports. Besides reviewing the literature on eSports performance, Pedraza and colleagues (in preparation) have made efforts to add to the ambiguous eSports definition and the distinction of eSports from video gaming, proposing the eSports performance and eSports psychology concepts. Additionally, Leis et al. (in preparation) looked to organise the theoretical approaches and empirical evidence on psychological and/or physiological stress in eSports. Moreover, Jimenez (in preparation) compared hormone levels of two groups of eSport players, showing that face-to-face matches presented higher testosterone concentrations than the control group on both before and after the games. Furthermore, Bosman et al. (in preparation) provide the first evidence on Psychological Momentum processes in eSports. Lastly, in a multidimensional study, Parejo (in preparation), explored the levels of mental workload, competitive anxiety, flow state and teamwork in international eSports competitions.

Presentations of the Symposium

Performance psychology of esports: A systematic review

Ismael Alfonso Pedraza Ramirez, Sylvain Laborde, Lisa Musculus, Markus Raab
German Sport University Cologne, Germany

Competitive gaming, or better known as eSports (electronic sports), is rapidly growing in popularity and is identified by fundamental characteristics of performance coming from different domains, such as sports, arts, music, warfighters etc. Consequently, the aim of the present study was to systematically review the available literature on eSports using the evidence-based reporting checklist PRISMA and PICOS model. Thus, our review covered the period of 1994-2018 and focused on empirical investigations. We only consider the studies involving eSports games if they were associated with either cognitive performance or eSports game performance. So far, a few attempts at reviewing the literature of eSports and video gaming exist (e.g., Mora-Cantalops., & Sicilia, 2018; Bediou et al., 2018; Bányai et al., 2018), however, there is not yet a quality report defining and differentiating the empirical research of eSports from general video gaming related to performance and competition. Therefore, the added value of our systematic review was twofold: First, to propose a comprehensive definition of eSports with the aim to address the issues found in previous definitions; second, to define and propose the concepts of eSports psychology and eSports performance, aiming to build a structure by proposing specific performance indicators and differentiating eSports from general video gaming. Clearly defining the theoretical foundations of eSports performance and the underlying differences with video gaming will facilitate the proper direction for the upcoming empirical research and the development of proper practice for those who want to go on the field.

Stress in esports: A systematic literature review

Oliver Leis, Thomas Wendeborn
University of Leipzig, Germany

eSports, also referred to as electronic sports, competitive video gaming, and professional gaming (e.g., Bányai, Griffiths, Király & Demetrovics, 2018; Polman, Trotter, Poulus & Borkoles, 2018) are commonly associated with playing video or computer games against other people according to established rules (ESBD, 2018). Although there are reviews of different topics in eSports, these do not include psychological and/or physiological stress. eSports is similar to traditional sports, an activity where competition is a core characteristic and which requires participants to understand how to counteract potential stress and how to prevent sub-optimal performance (i.e., choking under pressure). Therefore, this systematic review aims to systematically organize theoretical approaches and empirical evidence on psychological and/or physiological stress in electronic sports and thereby identify future research questions. The search will comprise the databases EBSCOhost, PubMed, Web of Science, and additional searches adopting the PRISMA guidelines (Liberati et al., 2009). The a priori specified and pre-registered inclusion criteria used for the present review were as follows: (1) assessing psychological and physiological stress in electronic sports, (2) empirical studies, (3) including healthy subjects over 12 years of age, (4) published in peer-reviewed journal, (5) and written in English or German. Two reviewers will perform eligibility assessment independently. Methodological adequacy of the studies will be assessed using the Cochrane Collaboration's tool for assessing the risk of bias. Disagreements between the reviewers will be resolved by discussion, while a third expert will be consulted to resolve disagreements if necessary.

Ward off snowballing: Psychological Momentum within and across league of legends games

Nicky Bosman¹, Ruud J. R. Den Hartigh¹, Mark Hermann¹, André Pimenta², Nico W. Van Yperen¹

¹University of Groningen, The Netherlands, ²Universidade do Minho, Portugal

Snowballing, a well-known phenomenon in electronic sports (eSports), is commonly believed to impact performance greatly, also because eSports, in particular, require mental rather than physical skills. Snowballing is scientifically known as Psychological Momentum (PM) and refers to the psychological and behavioral changes that occur when players perceive they are progressing (positive PM) or regressing (negative PM) in relation to their goal (Den Hartigh, Van Geert, Van Yperen, & Cox, 2016, p. 82). The effects of PM appear to occur on different time-scales, i.e. within a game and across games (Den Hartigh et al., 2016). This study aims to provide first evidence on PM processes in eSports by examining whether (1) positive and negative PM occurs within and across best-of-five League of Legends games, and (2) positive and negative PM affects players' performance in subsequent games. For these purposes, within-game PM was assessed by winning or losing significant plays (e.g. first blood). Between games, positive and negative PM is defined as a naturally occurring 2-set advantage or disadvantage, respectively. Key performance indicators (KPIs) that are used to assess subsequent performance are action per minute, mouse velocity and precision, and gold per minute (Pimenta & Sevenhuysen, 2018). Creating insight into the occurrence of PM in eSports will be the first step towards levelling the mental playing field and helping players overcome snowball effects.

Neuroendocrine responses to esports games are modulated by face-to-face competitions

Manuel Jimenez, Guillermo Mendoza

Universidad internacional de la rioja UNIR, Spain

The relationship between hormone levels and performance in competitive contexts have been studied in many traditional sports like tennis, basketball, rugby and football (Archer, 2006; Salvador, 2005; Jiménez et al., 2015; Jiménez et al., 2017). Electronic sports (eSports) bring a new dynamic. Having organized video-game competitions where players can measure their abilities not only in face-to-face matches like traditional sports, but also in online tournaments where the rival's and fans' presence are not a factor.

The present study compares hormone levels of two groups of players (age between 18 and 27, M = 22.15, SD = 2.37) on both rest day and game day before and after a match. The experimental group consisted of n = 10 experienced League of Legends (LOL) players who enrolled in an official face-to-face tournament. The second group was a control group formed by n = 10 students without much LOL knowledge playing, against a non-human rival (computer AI). Results showed that face-to-face matches presented higher testosterone concentrations in the experienced players than in the control group both before and after the games (z = -1.965, p < .05, z = -3.099, p < .002, respectively). This could be an explanation for previous studies null results (Gray, 2018). The social hierarchy can be modified by a face-to-face competition outcome and thus provoking neuroendocrine anticipatory responses. In order to confirm these findings, a longitudinal study with a bigger sample throughout an official competition on both face-to-face and online games is necessary.

Gamers mind: psychological factors in esports

Alejandro Parejo¹, José Carlos Jaenes Sánchez¹, Alex Garcia-Mas²

¹UPO - Universidad Pablo de Olavide, Spain, ²UIB - Universitat de les Illes Balears, Spain

eSports is the name given to professional video gaming. Gaming is now larger than the film industry. eSports - the professional side - has a massive but largely invisible eco-system of teams, leagues, players, social media stars, game owners (called publishers), sponsors and fans around the world. The professional side of the industry is growing rapidly (41.3% in 2017) and is on track to become a \$1bn business in 2018-2019 (Newzoo, 2017). Fan numbers are also increasing massively throughout the world with an estimated 385 million in 2017 (Newzoo, 2017).

Video game playing has become professionalized, and for a minority of players, competitive gaming has become a career path (Faust et al., 2013; Griffiths, 2017).

In spite of this growth, to date, professional competitive video gaming has not been widely researched from a psychological perspective. The aim of this presentation is to explore the relationship between different psychological variables and performance in eSports. This research is based on a multidimensional study still in progress, aiming to study the levels of mental workload, competitive anxiety, flow state and teamwork in international eSports competitions.

Gimme-Five 03: Gimme-5 Talks

Time: Wednesday, 17/Jul/2019: 2:00pm - 3:30pm · Location: VSH 116 - Varna

Session Chair: Werner Helsen, Katholieke Universiteit Leuven

A home advantage? Examining 100 years of team success in national hockey league playoff overtime games

Desmond McEwan

University of Bath, United Kingdom

Despite the well-known advantage that sports team generally experience when competing at their home venue, recent research (e.g., Hoffman et al., 2017; McEwan et al., 2013) has shown that there may be certain situations where there is actually a home disadvantage—particularly, when teams have an imminent opportunity to win a competition. The purpose of this archival study was to examine the potential home (dis)advantage within National Hockey League (NHL) playoff overtime games. To do so, a series of 2X2 contingency tables were constructed in order to compare win percentages for home and away teams in various outcome-imminent overtime games (i.e., wherein a team has an opportunity to win the playoff series) relative to their respective percentages in non-imminent overtime games (i.e., when the outcome of the game does not determine the outcome of the series). Results showed that when away teams had an opportunity to win a series, they were significantly more likely to win an overtime game compared to home teams (chi-square = 5.71, $p = .017$). In contrast, when home teams had an opportunity to win a series, they were no more likely than away teams to win that overtime game (chi-square = 0.02, $p = .888$). These results suggest that when an NHL team has an opportunity to win a playoff series, there appears to be an advantage for visiting teams—but not home teams—in winning an overtime game. These findings provide further nuance to our understanding of the home (dis)advantage in sport.

Differences in sleep of German U20 national ice hockey players preparing for the world championship

Annika Hof zum Berge¹, Fabian Loch¹, Karl Schwarzenbrunner², Michael Kellmann^{1,3}

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While sleep is most relevant for optimal recovery (Halson et al., 2008), travel to competition-venue may vary within a national team, as players arrive directly from national or international clubs. Further, previous sleep environments and conditions may differ due to different competition-schedules. Hence, differences in fatigue within a national team may occur. Consequently, sleep-assessment can help to understand individual needs of regeneration.

The presented study was conducted in preparation for IIHF U20 division-IA ice hockey world championship. On German pre-selective-squad (N=21) were six first-national-league-players (D1), seven lower-leagued-players (D2) and eight international-players (IP). Athletes answered Epworth-Sleepiness-Scale (ESS; Johns, 1991) and Pittsburgh-Sleep-Quality-Index (PSQI; Buysse et al., 1989) at arrival (T1, day 1) and before tournament (T2, day 11).

No significant differences were found T1-T2 for PSQI ($T(20)=1.55$, $p=.14$, $d=-.34$) and ESS ($T(20)=0.95$, $p=.351$, $d=-.20$) overall, but tendential differences were shown for PSQI in IP ($Z=-1.7$, $p=.09$) and ESS in D1 ($Z=-1.73$, $p=.08$). At T1, no significant group differences were found for ESS ($H(2)=0.1$, $p=.95$) and PSQI ($H(2)=4.59$, $p=.10$); however, descriptive-data show higher PSQI values for IP (6.25 ± 2.6) compared to D1 (5.83 ± 1.60) and D2 (4.00 ± 2.08), with large effect sizes for IP-D2 ($d=-.95$) and D1-D2 ($d=-.98$).

Results indicate higher baseline sleep-quality for D2 compared to IP and D1, likely explainable by longer travelling distances and time-zone changes for IP and more frequent competition-schedules for D1 and IP. Coaches need to take different regeneration statuses into consideration to adapt training-loads and recovery-periods. Nonetheless, sleep should always be examined on individual and longitudinal basis.

Resting the mind: acute effects of mental recovery strategies on recovery-stress states after a mentally fatiguing task

Fabian Loch¹, Annika Hof zum Berge¹, Michael Kellmann^{1,2}

¹Ruhr University Bochum, Germany; ²The University of Queensland, Australia

Multifaceted challenges (physical, mental) in sports with multiple intensive competition bouts can result in a psychobiological state of mental fatigue (MF) in athletes. Key outcomes of MF (e.g., feelings of tiredness, lack of energy, increase of perceptions of effort) lead to performance decrements (van Cutsem et al., 2017). In addition to physiological recovery methods athletes, therefore, need to access strategies aiming at mental aspects of recovery (Kellmann et al., 2018).

Following a counterbalanced cross-over design, participants (N=25) ran through mental recovery strategies (MR; power nap, systematic breathing, systematic breathing+mental imagery) or control condition over four consecutive weeks. After completing the AX-Continuous Performance Test (AX-CPT, 60-min), a rest period of MR (25-min) was applied. The German version of the Short Recovery and Stress Scale (SRSS, Kellmann et al., 2016) and Visual Analog Scales (VAS) were used to assess the perceptions of MF and MR.

For mental scales of the SRSS, RM-ANOVA's revealed significant time effects [Mental Performance Capability, $F(1.6,36.8)=81.55$, $p<.001$, $\eta^2=.78$; Lack of Activation, $F(2,46)=43.66$, $p<.001$, $\eta^2=.66$]. From pre- to post-MR Overall Recovery significantly improved respectively Overall Stress significantly decreased in all interventions. Similar results were found for MF-VAS [measurement effect: $F(1.5,35.1)=53.42$, $p<.001$, $\eta^2=.70$]. From pre- to post-MR subjective perception of MF significantly decreased.

However, no differences between interventions were found, results indicate beneficial effects of MR-interventions on recovery-stress states from pre- to post-MR. As recovery strategies should be considered from an individual perspective, acute effects of MR-interventions need to be further investigated in applied sport settings (between intensive competitions bouts).

Communication and spatiotemporal patterns underlying expert team performance: case of e-sports

Clément Cornière¹, Gilles Kermarrec²

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In team sports, expertise leads to specific players' space-time movement coordination (Bourbousson et al., 2010). Nevertheless, few studies investigated the dynamic of players' activity over space and time since Kermarrec & Bossard (2014) demonstrated that expert soccer players' decision-making was led by spatiotemporal patterns.

Following the TNDM framework considering team coordination as situated and embodied, this study aimed at analyzing the relationship between spatiotemporal patterns and verbal communications through the description of individuals' decision-making coordination in an expert team of five national level esports players.

Data collection included records of seven games from each player's point of view, teammates verbal communications, and consecutive self-confrontation interviews.

Data analysis consisted in an identification of salient features (RPD model; Klein, 1997), interpersonal articulations (Bourbousson et al., 2008), and consequently shared spatiotemporal patterns (empirical categorisation).

The results consisted of two typical and shared patterns ("movement" and "confrontation") and of three types of communication contents (the "target", the "salient cues" and the "tactic plan"). Taken together they indicated that situations of high space interpenetration induced a higher number of verbal communications, and required immediate decision-making (simple matching). On the contrary, low pressure situations led to fewer verbal communications and slower decision-making processes (diagnosing and simulating).

The results are consistent with the RPD decision model applied in team sports (Kermarrec & Bossard, 2014), but they are counterintuitive considering the use of verbal communications between teammates in very short-time decision-making.

Effects of attentional focus on amateur's performance in golf putting

Wen-Hsuan Chang¹, Kuo-Pin Wang¹, Tai-Ting Chen¹, Kuan-Fu Chen¹, Cheng-Wei Kao¹, Eric Hung², Kao-Hung Lin¹, Chih-Yen Chang¹, Chung-Ju Huang³, Yu-Kai Chang¹, Tsung-Min Hung¹

¹National Taiwan Normal University, Taiwan; ²Chinese Culture University, Taiwan; ³University of Taipei, Taiwan

Research have revealed that an individual's focus of attention holds an important influence over motor learning and performance. Most studies showed that novices and experts benefit from external focus, but findings for amateurs were inconsistent. The effect of attentional focus on putting performance in amateurs was examined. OBJECTIVE: To investigate the differences in putting performance between the external and internal focus of attention in amateur golfers. METHOD: Forty right-handed amateur golfers performed 60 putting with a 3m putting distance while indicating the focus of attention they used in each putt and recording by electroencephalograms (EEG). A paired t-test was used to analyze the data. RESULTS: Preliminary analysis (N=20) showed that those focus on internal cues (M = 0.52, SD = 0.17) holed in more than that of external cues (M = 0.42, SD = 0.19) [$t(19) = 2.48, p = .02$] whereas there was no difference in the frequency of choosing an internal or external attentional focus. More participants will be added and analysis for the EEG components that are related to the focus of attention will be performed. CONCLUSION: Adopting an internal attention focus could be more beneficial to the amateur golfers and the findings of this study may have important implications for the training of amateur golfers.

High self-confidence golfers have better performance and attention

Cheng-Wei Kao¹, Wen-Hsuan Chang¹, Kuo-Pin Wang¹, Tai-Ting Chen¹, Kuan-Fu Chen¹, Chih-Yen Chang¹, Eric Hung², Kao-Hung Lin¹, Yu-Kai Chang¹, Chung-Ju Huang³, Tsung-Min Hung¹

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OBJECTIVE: The relationship among self-confidence, cortical correlate of attention, and sport performance was less studied. Given that attention is one of the most widely discussed topics in electroencephalographic (EEG) research, it could be fruitful to examine the relationship among self-confidence, EEG, and sport performance.

METHODS: This study recruited 25 golfers to perform 60 putters while EEG was collected. The self-confidence score was measured by a visual analog scale right before each putt. The power of frontal midline theta associated with self-confidence score higher than the average was classified into the high confidence condition and those with lower than the average was the low confidence condition. RESULTS: Paired t test found that putting preceded by higher self-confidence was associated with better putting performance (0.73 ± 1.13 v.s 0.26 ± 1.13) as well as higher frontal midline theta power ($1.16 \pm .79$ vs $1.07 \pm .80$). DISCUSSION: Higher frontal midline theta has been observed during the aiming process in expert shooter, compared to the novices, indicating better concentration in the expert shooters. It is possible that better concentration as reflected by higher frontal midline theta could mediate the benefit higher self-confidence to putting performance.

How perceiving and acting on affordances is influenced by psychological momentum

Joske K. Van der Sluis¹, Frank T. J. M. Zaal², Christophe Gernigon³, Nico W. Van Yperen¹, Ruud J. R. Den Hartigh¹

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Recent research has shown that athletes judge their possibilities for action (i.e., affordances) differently during positive and negative psychological momentum (PM, Den Hartigh, Van der Sluis, & Zaal, 2018). Participants in a golf experiment judged the maximum 'puttable distance' from the hole as longer when they moved toward the victory (positive PM) than when they moved away from it (negative PM). However, does PM have comparable effects on actual affordances? In the current study, 52 ball sport athletes participated in a lateral interception task (PONG). First, participants entered a baseline measure that determined which balls were verbally judged as interceptable (Group 1), or were actually interceptable (Group 2). Next, participants played a match where they had to intercept as many balls as possible. Here, feedback on successes and failures was manipulated to induce a positive or negative PM. Finally, participants received the same balls as in their baseline measure again. Interestingly, our results showed that PM had a different and unexpected effect on judged and actualized affordances. First, when looking at the actualized affordances, there was a counterintuitive opposite tendency: Compared to the baseline measure, participants intercepted relatively more balls after the negative PM manipulation than after the positive PM manipulation ($p = .009$). Furthermore, although participants intercepted less balls after the positive PM manipulation compared to the baseline, they judged relatively more balls to be interceptable ($p = .011$). This study opens the door to further explore the link between PM and affordances.

Deceptive actions bias responses and impair discriminability: signal detection analysis of rugby sidesteps

Laurence S. Warren-West, Robin C. Jackson, Michael J. Hiley

Loughborough University, United Kingdom

Researchers who have used the temporal occlusion paradigm to study responses to deceptive actions have focused on the time window in which players resolve deception, improving from low to high response accuracy. Remarkably, the window of time during which players become deceived has yet to be examined. In the present study we address this by examining both susceptibility to, and detection of, deception in rugby union players using signal detection analyses. High-skilled and low-skilled participants (19 per group) responded to 168 trials, showing a player 'cutting' left or right, with or without a deceptive sidestep. Physical responses were recorded using force plates and three-dimensional motion capture cameras. Each trial was occluded at one of seven time points relative to the footfall after the initial (genuine or fake) reorientation (deception window: -600ms to -300ms; resolution window: -300ms to 0ms). High-skilled ($M = 0.40$) and low-skilled players ($M = 0.39$) were found to be equally susceptible to deception ($P = .62$, $\eta^2 = .01$) but high-skilled players were significantly better at resolving deception ($P = .004$, $\eta^2 = .21$), indicated by better discriminability ($P = .001$, $\eta^2 = .25$), reduced bias toward judging actions to be genuine ($P = .02$, $\eta^2 = .14$), and earlier improvements in both these indices ($P = .01$, $\eta^2 = .12$). We conclude that experts are highly susceptible to deception but are able to respond more effectively than lesser-skilled players through earlier detection of deceptive intent.

Invited Panel 01: FEPSAC 50th Anniversary panel discussion: past-presidents' insights

Time: Wednesday, 17/Jul/2019: 2:00pm - 3:30pm · *Location:* Aula im Schloss - Europe
Session Chair: Xavier Sanchez, Halmstad University

FEPSAC 50th Anniversary panel discussion: past-presidents' insights

Xavier Sanchez¹, Guido Schilling², Stuart Biddle³, Glyn C. Roberts⁴, Roland Seiler⁵, Paul Wylleman⁶, Anne-Marie Elbe⁷

¹Halmstad University, Sweden; ²No Affiliation, Switzerland; ³University of Southern Queensland, Australia; ⁴Norwegian University of Sport Science, Norway; ⁵University of Bern, Switzerland; ⁶Vrije Universiteit Brussel, Belgium; ⁷Leipzig University, Germany

The reality of sport and exercise psychology (SEP) across Europe differs greatly. In some geographical regions, the discipline may officially and legally be protected, and its education, training and supervision, accreditation, and professional practice, development, service delivery and status well-established and officially regulated. Whereas in other parts of Europe, our discipline is still in its infancy at some, if not most levels.

The purpose of the present session is to, firstly, stimulate individual brainstorming from each of the FEPSAC past-presidents and, subsequently, encourage general discussion with the rest of the audience.

The session will be divided in two main parts. Firstly, each past-president will discuss various subjects based upon their experiences within the context of their respective periods served as President. Secondly, the rest of the delegates will be given the stage to share their insights, discuss and address further the points they prioritise – the presentations will serve as a basis for general discussion.

The points addressed will revolve around the past, present and future of FEPSAC within the European context in general and that of FEPSAC in particular. More specifically, each past-president will provide a general overview of their term served and an overall chronological and historical positioning and development of FEPSAC within the reality of Europe and status of SEP at the time of their respective mandates.

The session will close with an overview of points discussed and suggested for the development of SEP in general and that of FEPSAC in particular.

Paper Session 21: Career and Athlete Development

Time: Wednesday, 17/Jul/2019: 2:00pm - 3:30pm · Location: Senatssaal - Prague

Session Chair: Claudio Robazza, "G. d'Annunzio" University of Chieti-Pescara

2:00pm - 2:15pm

Which competencies does a professional soccer player require and how can we measure these?

Julian Decius, Niclas Schaper

University of Paderborn, Germany

Introduction: In recent years, many aspects of soccer players' talent development have been optimized (Höner & Feichtinger, 2016). Various approaches deal with motivation factors, environmental conditions, sports-related and physical determinants of success in soccer (Gould et al., 2002; Holt & Dunn, 2004; Larsen et al., 2013; Mills et al., 2012). However, research scarcely considered competencies required for successful players. Thus, we advance a competency structure model to adequately reflect different professional demands in soccer. We then operationalize competency dimensions by developing questionnaire scales.

Methodology: Based on a literature review, we conducted qualitative interviews with six experts and ten players. We asked the participants to describe relevant competencies that a professional soccer player should possess or develop. Using qualitative content analysis, we identified 17 competencies which we assigned to the dimensions social (3), self (9), methodological (3) and professional (2) competency. We developed an item pool (following the methodical recommendations of MacKenzie, Podsakoff and Podsakoff, 2011) and implemented a survey of soccer players (n=157) as a pilot sample. Based on reliability criteria we conducted an item selection process.

Results & Discussion: The study's result is a reliable instrument for competency assessment of soccer players (α -values between .73 and .87). We also found moderate relationships (r between .17 and .46) to construct validation variables, i.e. self-efficacy and performance motivation.

Clubs and their coaches can use the new instrument to foster players' development. However, further research is needed on competency determinants and on correlations with success variables in professional soccer.

2:15pm - 2:30pm

Experimental study examining the effect of stereotype threat on student-athletes' academic performance and career development

Yawen Hsu, Yin-ru Li

National Chiayi University, Taiwan

Literature has mainly focused on gender and race stereotypes, and in recent years, researchers have paid attention to the influence of stereotype threats on student-athletes' academic performance and career development. It is especially well documented that stereotypes such as "dumb jock" and "all brawn and no brains" can impact student-athletes' affection, motivation, performance, and behaviours. The purpose of the present experimental study was to explore the effects of different types of stereotypes on student-athletes. A total of N = 202 senior high school student-athletes participated in this study. Participants were first randomly provided with an essay describing three priming conditions: negative identity, positive identity, and neutral identity. After that, participants completed a math test, the self-handicapping scale, and the career aspiration scale. The math test was further described as relatively difficult or easy to general senior high school students. Research results showed that negative stereotype was associated with worse math performance and lower career aspiration. Furthermore, when the math test was described as a very difficult test, the participants had poor performance. However, inconsistent with hypothesis and literature, self-handicapping did not have a significant mediating effect between stereotype threat and math performance or career aspiration. These findings partially support the literature that stereotypes can impact an individual's motivation and behaviours. Further investigations should focus on understanding the influence of stereotypes on athletes' career development and occupational preference, as well as the underlying mechanisms and the moderating factors of the relationship.

2:30pm - 2:45pm

A proposed model of perceived motivationally-relevant social agent influence during athlete development

Bryan McCann¹, Paul McCarthy², Kay Cooper¹, Katrina Forbes-McKay¹

¹Robert Gordon University, United Kingdom; ²Glasgow Caledonian University, United Kingdom

Objectives: To extend knowledge of the perceived motivationally-relevant influences of coaches, parents and peers (social agents) during athlete development.

Design: Mixed methods.

Methods: Study 1 retrospectively explored perceptions of social agents' motivational influence across athlete development. Four investment stage soccer players (M = 18.5 years, SD = 0.6) with on average 14 years footballing experience (SD = 1.4), and four of their parents, were interviewed to investigate perceptions of social agents' motivationally-relevant influence during the athletes' development. Study 2 aimed to determine the structural nature of the proposed model of perceived motivationally-relevant social agent influence which was developed in Study 1. Athletes (N = 229) from a wide range of sports and developmental stage completed psychometric measure subscales. The scales measured each category of perceived motivationally-relevant social agent influence within the proposed model and were adapted to reflect each of the three social agents.

Results: The best-fitting model consisted of 6 categories of perceived motivationally-relevant social agent influence: relationships, conflict, conflict resolution, support for development, support for performance, and feedback & evaluation. Coaches, parents and peers were found to have distinct but similar categories of influence. There were some significant differences between developmental stages, with coaches perceived to have more motivationally-relevant influence amongst athletes in the sampling stage than those in the specialising and investment stages.

Conclusion: Coaches, parents and peers are perceived to influence athlete motivation in similar ways, but their roles are dynamic and independent of one another. The proposed model may inform future interventions to enhance and maintain athlete motivation.

2:45pm - 3:00pm

The influence of parent-athlete relationship quality on athletes' self-efficacy, self-esteem, and thriving

Olivier Y. Rouquette^{1,2}, Camilla J. Knight², Victoria E. Lovett³, Jean-Philippe Heuzé¹

¹Laboratoire Sport et Environnement Social (SENS), Université Grenoble Alpes, Grenoble, France; ²School of Sport and Exercise Sciences, Swansea University, Swansea, United Kingdom; ³Department of Psychology, Swansea University

Based on Feeney and Collins' (2015) model of thriving through relationships, this study examined the effects of a parent-athlete interaction on athletes' perceived self-efficacy, self-esteem, and various indicators of thriving. N = 41 Belgian individual-sport athletes aged 12 to 15 years (M = 13.1) and their most involved parent in their sport spent 10 minutes discussing three important sporting goals for the next season. The discussion was unobtrusively videotaped. After the conversation, athletes responded to questionnaires measuring Perceived Parental Responsiveness (PPR; Tomlinson et al., 2015), self-efficacy (Bandura, 2006), self-esteem (Marsh et al., 1994), and thriving indicators such as emotions (Ebesutani et al., 2012), vitality (Ryan & Frederick, 1997), life satisfaction (Cantril, 1965), and health quality (Benjamins et al., 2004). These indicators were merged into one factor of thriving; CFA: $\chi^2(50) = 43.16$, CFI = 1.00, TLI = 1.00, RMSEA 90% CI = [0.00-0.07]. Parents' relational-catalyst (RC) support behaviours in response to their child were coded by three independent coders.

Mediation analyses showed the indirect effect of athletes' PPR = 0.12, 90% CI = [0.04-0.3], and parental RC-Support = 0.07, 90% CI = [0.01-0.23] on athletes' thriving through self-efficacy and self-esteem. Athletes' PPR ($\beta = .49$) and parental RC-Support ($\beta = .28$) predicted athletes' self-efficacy ($r^2 = 0.35$), which in turn predicted self-esteem ($\beta = .42$; $r^2 = 0.19$), which in turn predicted thriving ($\beta = .60$; $r^2 = 0.39$). These results align with the suggestion that optimal parental involvement in sport is dependent upon the development of an understanding emotional climate.

3:00pm - 3:15pm

Increasing self-efficacy among professional youth football players: an exploration of the effectiveness of imagery and EMDR

Tania Simone Ecken

School of Psychology and Sport Science, Anglia Ruskin University, Cambridge, UK

The present qualitative case-study investigated the effects of an EMDR (Eye-Movement Desensitisation and Reprocessing) and imagery intervention in academy (Division 1, Bundesliga) goalkeepers, with the aim to increase goalkeepers' self-efficacy (SE) and performance.

EMDR and imagery interventions were delivered individually over a 12-week period, where each participant received six individual interventional sessions of 30-40 minutes. The EMDR (n = 3) and imagery (n = 2) interventions aimed to consolidate memories of success, through eye-movements and visualisation, respectively. General Self-Efficacy (GSE) was measured at baseline, during the intervention and at follow-up. Self-reported position-specific self-efficacy (GKSE) was measured during the intervention and at follow-up. The performance was measured by ranking the performance and training/progressing into other teams. Qualitative post-intervention interviews evaluated the practicability of EMDR and imagery interventions.

Post-intervention, both GSE and GKSE increased across interventions and participants. Follow-up testing, at 6-weeks post-intervention, yielded consistent values of GSE and GKSE across both interventions. Longitudinal comparison (10-months period) suggested a moderate relationship between SE and performance. Consolidating successful memories through EMDR gave confidence in training and maintained mental toughness during injury as highlighted in qualitative post-intervention interviews.

The findings support the influence of EMDR on SE in footballers and personal accounts of EMDR as a performance-enhancement technique. These empirical results are discussed in the context of existing EMDR research and the applied implications of delivering an EMDR intervention as sport psychological practitioners.

3:15pm - 3:30pm

Time for change: development and implementation of a dual career competency program in Estonia

Kristel Kiens

Tallinn University, Estonia

Dual career brings opportunities but also challenges that require developing a holistic skillset to support long-term development throughout athletic career (Larsen, Alfermann, Henriksen, & Christensen, 2013). In addition to personal factors, student-athletes' development is influenced by the surrounding environment and wider context (Henriksen, 2010). Therefore, adopting an ecological holistic approach when working in dual-career settings, could support long-term development and successfully managing dual careers. This article provides an overview of mindfulness and acceptance-based holistic dual career support program and analysing the process through a practitioner's perspective. The program was aimed at providing knowledge of and developing psychosocial, mindfulness and general life skills that could be applied in sports and other areas of student-athletes lives. Reflections on delivering the program highlight the need for a flexible approach, being persistent and patient during the process and making the learning process interactive. To further enhance optimal dual career support, cooperation between different agents in the environment and integration of efforts on different levels is required. Further research is needed on dual career pathways and competencies needed to enhance optimal dual career support when working with dual career athletes.

Paper Session 22: Motor Control and Performance

Time: Wednesday, 17/Jul/2019: 2:00pm - 3:30pm · Location: S 8 - Copenhagen

Session Chair: Nicola Jane Hodges, University of British Columbia

2:00pm - 2:15pm

Grunting in tennis: simply distracting or systematically biasing opponents' predictions?

Rouwen Cañal Bruland, Lars Jauernig, Florian Müller

Friedrich Schiller University Jena, Germany

Grunting in tennis has become part of a heated debate. Some – like Roger Federer and Martina Navratilova – argue that it may distract and irritate opponents. Empirical evidence confirms that grunting deteriorates opponents' anticipations of tennis shot direction (Sinnott & Kingstone, 2010). Yet, two competing hypotheses have been submitted to explain why grunting may deteriorate opponents' predictions. On the one hand, the distraction account proposes that grunts capture attentional resources needed for and therefore hampering the anticipation of ball flight trajectories. On the other hand, the multisensory integration account predicts that the grunt conveys auditory information that may systematically influence the anticipation of ball flight trajectory, which for a long time has erroneously been treated as if relying on visual information only (see Cañal-Bruland et al., 2018). The aim of this study was to put these competing hypotheses to test. We presented experienced tennis players with a number of temporally occluded video clips of tennis rallies featuring experimentally amplified, attenuated, or muted grunting sounds. Participants had to predict the ball landing position. Results revealed that the higher the grunt intensities (i.e. the louder the grunts), the longer the ball trajectories were predicted. However, the radial prediction errors were not affected by the grunt or its different intensities. This latter finding is clearly at odds with the distraction account of grunting, predicting increased prediction errors after higher intensity grunts. However, the systematic bias towards longer ball estimates with increasing grunt intensities seems to provide support for the multisensory integration account.

2:15pm - 2:30pm

Enhanced expectancies in golf putting – increasing ecological validity

Gal Ziv, Ronnie Lidor, Matar Lavie

The Academic College at Wingate, Israel

The performance of motor tasks can be improved by enhanced performance expectancies (Wulf & Lewthwaite, 2016). The purpose of this study was twofold: (1) to replicate a previous study (Ziv, Ochayon, & Lidor, 2019) in which a large circle around a target led to enhanced expectancies and improved golf putting accuracy, and (2) to strengthen the ecological validity of the putting task by adding an actual golf hole to the putting environment. N = 45 physical education students were randomly assigned to three learning groups: (a) a large-circle group, (b) a small-circle group, and (c) a control group (no circle). They all performed 50 putts from a distance of 2m. We informed the participants in the large- and the small-circle groups that landing the golf ball inside the circle would be considered a successful trial. Two days later, the participants performed a retention test of 12 putts followed by a transfer test of 12 putts from 2.5m. The participants who putted with the large circle around the hole showed a lower absolute error than the control participants in the acquisition putts. In addition, these participants showed a lower absolute error and an increased number of holed putts than both the small-circle and the control participants in the transfer test. The results suggest that placing a relatively large circle around a golf hole in practice can lead to improved putting performance.

2:30pm - 2:45pm

Visual and auditory action effects facilitate performance in a motor task

Mengkai Luan, Felix Ehrlenspiel

Department of Sport and Health Sciences, Chair of Sport Psychology, Technical University of Munich, Germany

Research has shown that contingent, distinct tone response effects have a beneficial influence on the initiation and execution of key sequence presses (Stöcker & Hoffmann, 2004). Building on the evidence of performance benefits of multisensory response cues (i.e. pre-action), this study investigated whether performing sequence typing benefits from multisensory response effects (i.e. post-action).

Participants (N = 36) were assigned to three different sensory response effect groups (auditory, visual, audiovisual). They practiced two key sequences with key-specific sensory effects for 6 (blocks) x 2 (sequences) x 30 trials. Initiation (IT) and inter-response times (IRT) were recorded as dependent variables. These were analysed using Linear Mixed Models (LMM) on log-transformed IT and IRT. The block (1-6), the sequence (long or short), the group effect and all interactions between them were entered as fixed factors. Four random effects associated with each participant (intercept, block, sequence, block x sequence) were further included.

IRTs in the audiovisual (multisensory) effect group were significantly faster than in the auditory effect ($\beta = -0.48$, $t(33) = -2.44$, 95% CI [-0.87 -0.08]) and there was no significant difference between auditory and visual effect ($\beta = -0.32$, $t(33) = -1.66$, 95% CI [-0.72 0.08]). However, there is no main effect for group on IT.

Multisensory response effects seem to have a beneficial influence on the execution of sequence typing but not the initiation of a sequence. During the execution, subsequent key presses can be prepared more easily with multisensory effects. The results imply that performing sequential movements could be improved by providing multisensory response effects.

2:45pm - 3:00pm

The effects of pre-performance unilateral hand contraction protocols on cognitive verbal processes during a golf putting task

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Previous studies suggest that a pre-performance left-hand contraction protocol can lead to better performance under pressure compared to a right-hand contraction protocol (Beckmann, Gröpel, & Ehrlenspiel, 2013; Gröpel & Beckmann, 2017). Left-hand contractions possibly suppress engagement of cognitive verbal processes in the left-brain hemisphere, which reduces conscious control of movement. In this study, we examined whether left-hand contractions suppress engagement of cognitive verbal processes when preparing to move.

N = 28 participants performed three hand contraction protocols in a randomised order; left, right and no hand contractions. Each protocol was followed by a golf-putting task, consisting of 25 putts to a given target. Electroencephalography connectivity between the left hemisphere verbal-analytical (T7) brain region and the frontal motor planning (Fz) brain region was analysed for the three seconds leading up to golf putting, to evaluate cognitive verbal processes engaged in motor planning (Gallicchio, Cooke, & Ring, 2016).

Left-hand contractions led to significantly lower T7-Fz connectivity during movement preparation compared to right-hand and no hand contractions. Right-hand contractions led to significantly higher T7-Fz connectivity, compared to no hand contractions.

Pre-performance hand contraction protocols, therefore, had different effects on verbal cognitive processes during preparation for a golf-putting task by activating the contralateral brain hemisphere. The left-hand contraction protocol lowered engagement in cognitive verbal processes, whereas the right-hand contraction protocol increased engagement in cognitive verbal processes. This study increases understanding of the cognitive processes potentially responsible for stable performance under pressure after a left-hand contraction protocol.

3:00pm - 3:15pm

Effects of sleep deprivation on perceptual-motor performance under low and high threat

Arne Nieuwenhuys

The University of Auckland, New Zealand

Recent neurophysiological evidence suggests that a lack of sleep can increase emotional brain-responding and decrease cognitive control when it counts the most (Krause et al., 2017). To examine behavioural implications of these effects, the current study investigated if partial sleep deprivation modulates effects of anxiety on perceptual-motor performance under low and high threat.

N = 62 participants underwent a 3-day partial sleep-deprivation protocol (5hrs per night [n=32] vs. 8hrs per night [n=30]) and subsequently performed a complex perceptual-motor task that required them to move small coloured blocks from one instrumented pegboard to another – matching a target layout presented on a computer screen. During the task, threat was manipulated by means of performance-contingent loud (100dB; high-threat) or quiet (50dB; low-threat) noise blasts. Dependent variables included measures of performance effectiveness (performance time, placement errors) and efficiency (effort invested, visual search behaviour).

Experimental manipulations of sleep deprivation and threat reliably increased perceived sleepiness ($p < .001$) and anxiety ($p < .001$). Under high threat, participants generally reported higher effort investment ($p = .01$) and effectively accelerated their performance ($p < .01$), without increasing errors. No significant changes were observed in visual search behaviour. None of the dependent variables showed significant main or interaction effects of sleep deprivation.

Despite causing marked increases in perceived sleepiness, partial sleep deprivation (3 nights of 5hrs vs. 8hrs sleep) may not significantly affect perceptual-motor performance under high threat (cf. Van Peer, Gladwin, & Nieuwenhuys, 2018). Future work is required to examine effects across a broader range of sleep deprivation.

3:15pm - 3:30pm

Motor contagion in single-limb stance by means of visual stimuli does not induce postural reactions but enhances muscle activity

Eric Eils¹, Tobias Brockmann¹, Marc de Lussanet¹, Karen Zentgraf²

¹University of Muenster, Germany; ²University of Frankfurt, Germany

Introduction: Although there seems to be evidence that humans are prone to copying the action of others (Heyes, 2011), it might not be as generalizable as previously suggested and the mechanisms why and when subjects are influenced to copy others' movements are still unclear. Therefore, the aim of the present study was to investigate the influence of biological and non-biological stimuli on body sway and muscle activity when observing a point-light-display (PLD) of postural imbalance.

Methods: Subjects (n=29) stood in single limb-stance (SLS) and observed different PLD-conditions: a person in single-limb-stance (biomotion-BM), moving dots without biological information (non-BM), and a static control stimulus (CON). Centre of Pressure (COP) excursions, muscle activity (TA, PL, GM), and body part movements were investigated. A one-way repeated measures ANOVA was used for statistical analysis.

Results: Results showed no significant differences between the three conditions for COP and body-part movements. Significant differences were found in muscle activity of PL between conditions ($F(2,56) = 4.2, p = .02, \eta^2 = .13$). Post-hoc tests revealed differences between CON and BM but not between BM and non-BM.

Discussion: Muscle activity of PL is of importance when regulating postural sway in SLS but although results indicate an increased muscle activity for BM compared to CON, the expected motor contagion effect (MCE) could not be identified. Complementary inhibition processes preventing loss of balance especially in SLS might play a crucial role, masking MCE. Results indicate again that the observed MCE postulated from Tia et al. (2011) could not be verified.

Paper Session 23: Quality of Life and Meaning in Sport

Time: Wednesday, 17/Jul/2019: 2:00pm - 3:30pm · Location: S 9 - Cologne

Session Chair: Jens Kleinert, German Sport University Cologne

2:00pm - 2:15pm

Validation of the sport psychology professional quality of life scale

Ale Quartiroli¹, Christopher Wagstaff², Daniel Brown²

¹UW - La Crosse, United States of America; ²University of Portsmouth, United Kingdom

Scholars within the field of psychology have increasingly reflected on the cost of caring and the quality of life of people in helping professionals. Indeed, the balance between the positive and challenging aspects of the psychology profession has become central in this discourse. As such, researchers have recently examined the construct of Sport Psychology-Professional Quality of Life (SP-PQL; Quartiroli, Etzel, Knight, & Zakrajsek, 2018). This construct encompasses the positive and negative aspects characterising the sport psychology profession, which play an important role in the sustainability of a long-lasting career. In this presentation, we present the findings of a validation study aimed to explore the construct and convergent validity of the SP-PQL Scale, which was recently developed using a Delphi method (Quartiroli, Wagstaff, & Etzel, 2018). The SP-PQL Scale was developed to assess the challenges hindering the SP-PQL as well as the strategies to overcome these challenges, as experienced by sport psychology professionals (SPPs). A sample of N = 560 SPPs (47% females) between 21 and 79 years old (M = 39.9; SD = 12.1) completed the survey. Among these participants, 85% were practitioners and 13.6% were students. Their professional experience ranged between 1 and 49 years (M = 11.2; SD = 10) and about half of their time was dedicated to applied practice (45.2%) and the remaining to teaching (27.8%) and research (26.9%) related activities. Results from analyses examining the factor structure and psychometric properties of the measure will be presented.

2:15pm - 2:30pm

Physical activity self-efficacy and quality of life in older adults

Jiri Mudrak, Katerina Zabrodka

Faculty of Arts, Charles University in Prague, Czech Republic

Regular physical activity (PA) is considered key to successful and healthy ageing and has well-documented benefits for physiological and mental functioning as well as quality of life (QOL) in older adults. However, a large portion of older adults do not participate in sufficient PA and our understanding of the relationship between PA and QOL in older adults, especially from culturally diverse backgrounds, remains limited. This raises a need to further explore the psychological and social processes related to PA participation and its effects.

In the present paper, we examine PA self-efficacy as a psychological variable that may have an important effect both in enhancing PA participation as well as QOL in older adults. In total, N = 546 older Czech adults (M = 68 years) completed a battery of questionnaires assessing indicators of PA, QOL, PA self-efficacy and related social cognitive constructs including social support and self-regulation strategies. Subsequently, structural equation models were used to test the relationships between the social cognitive constructs and PA as well as the mediating role of PA self-efficacy in the relationship between PA and QOL.

In the models, PA self-efficacy was positively associated with PA through social support and self-regulation strategies. Moreover, it mediated the effect of PA participation on perceived physical and mental health status and satisfaction with life. The tested models showed a good fit and thereby provided further support for the key role of PA self-efficacy as a factor in successful ageing of older adults.

2:30pm - 2:45pm

Presence and search for meaning in sport: initial construct validation

Matteo Luzzi, Graig M Chow

Florida State University

According to Frankl (1959), the will to meaning is a fundamental human motive. Sources of such meaningfulness include relationships, achievements, and personal growth among others (O'Connor & Chamberlain, 1996). Further, perceiving life as meaningful has shown to have desirable outcomes, such as higher positive emotion and less depressive symptoms (Pinquart, 2002). Similar findings emerged when looking at domain-specific meaning, such as work (Rosso, Dekas, & Wrzesniewski, 2010). Although the case has been made for an integration of existential psychology ideas in sport psychology (Greenberg & Weise, 2010; Nesti, 2004; Zestcott, Lifshin, Helm, & Greenberg, 2016), very little empirical consideration has been given to meaning and sport, either as a source of meaning in people's lives or domain-specific meaning. The purpose of this two-phase project was to validate the Meaning in Sport Questionnaire (MSQ), a sport-specific meaning measure. Athletes of seventeen sports from all divisions of the National Collegiate Athletic Association (NCAA) partook in this study. Results (n = 329) from phase one provided support for factorial validity, internal consistency, and measurement invariance for the 9-item version of the MSQ. Results from a second sample of athletes (n = 402) confirmed the factorial structure of the MSQ and supported initial convergent validity for its two subscales. The MSQ is a new measure that can be used to investigate the extent to which athletes perceive their sport to be meaningful and search for such meaning.

2:45pm - 3:00pm

Potential impact of aerobic exercise intervention with male refugees living in a refugee camp in Greece: an exploratory study

Florian Knappe, Flora Colledge, Markus Gerber

University of Basel, Switzerland

To date, relatively little is known about suitable treatment options for traumatized refugees. Although a recent meta-analysis suggests that physical activity can be effective in decreasing PTSD and depressive symptoms, few studies have looked at refugee populations. Therefore, our study aimed at examining the effects of regular aerobic exercise training on symptoms of PTSD, depression, anxiety, sleep complaints, quality of life, pain, perceived fitness, cardiovascular fitness, and grip strength in male refugees living in a Greek refugee camp. In total, N = 45 refugees (M = 25.6 years) volunteered to take part in the data assessment. Refugees mostly came from Syria, Iraq, Kurdistan or Palestine, and 74% were Muslim. All participants were invited to engage in an 8-week exercise intervention. A comparison of the 18 subjects who regularly participated in the exercise program (at least once per week; M = 13.3 sessions), with those 20 subjects who did not (M = 2.30 sessions), revealed moderate-to-large time x group effects across nearly all outcome variables (η^2 from .12 to .44). With the exception of sleep complaints, the intervention group improved in all variables, whereas scores remained stable or deteriorated in the control group. Our findings highlight the potential of regular exercise training among refugees living in precarious conditions in a Greek refugee camp. Due to the lack of random assignment, the results must be interpreted with caution. While randomized controlled trials are needed for an advanced evidence base, researchers should be aware that the implementation of such studies will be complicated by multiple environmental constraints.

3:00pm - 3:15pm

Understanding the longitudinal impact of the Homeless World Cup on the lives of its participants

Jordan A. Donnelly¹, Meredith A. Whitley², Rosie A. Arthur¹, Daryl T. Cowan¹

¹University of the West of Scotland, UK; ²Adelphi University, USA

Forecasts have predicted that global homelessness will continue to rise in the coming years (Bramley, 2017). Despite access to housing being considered as a basic human need, it is estimated that there are 100 million people experiencing homelessness, and 1.6 billion people without adequate shelter (United Nations, 2005). Worryingly, even well-established countries in the Western World are not immune to homelessness (Revenhill, 2008). Due to widespread concern, a number of "Sport for Development and Peace" (SDP) programs are working to ease the difficulties associated with homelessness, with a focus on development and reintegration into society. One such program is the Homeless World Cup (HWC), an annual soccer event which seeks to inspire homeless people, with more than 450 players representing 42 countries at the event in Mexico City in 2018. Despite the appeal of this hypothesis, scant research has explored the impact of the event on the lives of the individuals that participate, particularly how the event impacts participants' overtime. Therefore, the purpose of this study was to explore and understand the longitudinal impact of the HWC on players (n = 15) from two countries through in-depth semi-structured interviews over three time points (post-selection, returning from the event, long-term after the event), with supplementary semi-structured interviews with significant others (i.e. family members, friends). Findings unveiled the participants' varying routes into homelessness, with stories of trauma, abuse, and rehabilitation, while outlining the multi-faceted impact of the HWC and related SDP programming on their lives.

3:15pm - 3:30pm

Craftsmanship: a novel approach for exploring meaningfulness of sport

Richard Tahtinen¹, Olli Tikkanen², Michael McDougall^{1,3}, Vidar Halldorson⁴, Niels Feddersen¹, Libby Mitchell¹, Laura Thomas¹, Noora J. Ronkainen¹

¹Liverpool John Moores University, Liverpool, UK; ²Fibion Inc.; ³Turock School of Arts & Sciences, Keystone College, Pennsylvania, USA; ⁴University of Iceland, Reykjavik, Iceland

Craftsmanship has been described as "... an enduring, basic human impulse, the desire to do a job well for its own sake" (Sennett, 2009, p. 9). It has been described as an ethic of excellence, and in education, it has been found to increase the meaningfulness of schoolwork (Thorlindsson, Halldorsson, & Sigfusdottir, 2018). However, the construct has not been studied in sport to understand its relationship with the meaningfulness of sport. The present study explored the relationship between craftsmanship and meaningfulness of 'sport-work'.

Athletes (N = 168, 59.5% male, age \geq 18) from the UK participating in 40 different sports and competing from local to international level completed the Craftsmanship Scale (Thorlindsson et al., 2018) and a modified version of Work and Meaning Inventory (WAMI; Steger, Dik, & Duffy, 2012).

There was no significant difference between male and female athletes in Craftsmanship or WAMI score. The Craftsmanship Scale was significantly correlated with the WAMI [$r(155) = .18, p = .02$], the Positive Meaning subscale [$r(156) = .21, p = .009$], and The Meaning Making Through Work subscale [$r(158) = .17, p = .001$], but not with the Greater Good Motivations subscale. Of the four Craftsmanship subscales, informal learning and tacit knowledge showed highest correlations with meaning, and the relationship was significant with the total WAMI [$r(155) = .24, p = .003$] and the Positive Meaning subscale [$r(156) = .26, p = .001$].

Craftsmanship was associated with the meaningfulness of sport and specifically with striving for personal growth and self-understanding rather than other-oriented meanings.

Paper Session 24: Coaching and Coaches

Time: Wednesday, 17/Jul/2019: 2:00pm - 3:30pm · Location: VSH 118 - Nottingham

Session Chair: Gareth Edward Jowett, Leeds Beckett University

2:00pm - 2:15pm

Coach halftime speech and its influence on players performance

Liat Kuffler-Bakalo, Sima Zach

Zinman college at Wingate institute Netanya Israel, Israel

Understanding the influence of coaches on the feelings, thoughts, and behaviours of the teams they lead may not only help in developing effective ways of encouraging within-team communication but also in influencing the teams' performance. The current study aimed at examining the influence of the coach's halftime talk on players' performance. The study followed a mixed-methods design. Participants were N = 9 basketball players from the top men's elite league in Israel, the team coach, and two assistant coaches. The qualitative approach included observation sheets on behaviours that occurred during the coach's halftime talk, which was also filmed. In the quantitative part, the coach's halftime talks were analyzed into several categories. Each category was coded according to the number of times it was repeated in the coach's talks. Seventeen films of halftime talks were analyzed and categorized into main themes. ANOVA and t-tests were applied. The results demonstrated specific patterns of coaches' talks that were mainly related to the balance of points achieved by the team until halftime. For example, when the team arrived at halftime with a negative balance, a large number of negative feedback in the coach's talk increased the likelihood of losing the game.

2:15pm - 2:30pm

Initial development of the Perfectionistic Climate Questionnaire-Sport (PCQ-S)

Michael C Grugan, Andrew P Hill, Sarah H Mallinson-Howard, Tracy Donachie, Luke F. Olsson, Daniel J. Madigan, Robert Vaughan

York St John University, United Kingdom

Research has consistently found that perfectionism contributes to the experience of youth athletes. However, what is less clear is how perfectionism may develop in youth athletes. One important factor that has received limited attention is the role of the coach. With this in mind, we proposed a new construct, perfectionistic climate, which captures the degree to which coaches are perceived to create an environment that is more or less perfectionistic. To measure this new construct, in the current study we began the development of an instrument to measure facets we consider central to a perfectionistic climate; expectations, criticism, control, conditional regard, and anxiousness. The Perfectionistic Climate Questionnaire-Sport (PCQ-S) was developed in two stages. In stage one items were generated and refined based on the definitions and attributes of each facet and these were then assessed by researchers, sports coaches, and youth sport athletes. In stage two an initial pool of 54 items was administered to N = 487 youth athletes (n = 224 males, n = 260 females, M = 14.17 years, SD = 1.72). Exploratory, confirmatory, and exploratory-confirmatory analyses were then used to develop a final instrument. The result was a 20-item scale that includes five four-item factors that correspond with each facet. Based on this assessment, the PCQ-S offers a valid and reliable instrument to measure perfectionistic climate that can be used to better understand how coaches shape the development of perfectionism, as well as other consequences of insisting that performances must be perfect and less than perfect athletic performances are unacceptable.

2:30pm - 2:45pm

Controlling coaching in team sports: the role of demanding and domineering behaviour in athletes' motivational outcomes

Bart Reynders¹, Maarten Vansteenkiste², Eva Ceulemans¹, Stef Van Puyenbroeck¹, Gert Vande Broeck¹

¹KU Leuven, Belgium; ²UGent, Belgium

Recent research within the context of Self-Determination Theory distinguished between demanding and domineering as separate approaches of a psychological controlling coaching style. This study aimed to examine the role of these controlling approaches in athletes' motivational outcomes when accompanied by need-supportive coach behaviour (i.e. autonomy support and structure). K-means cluster analyses were performed to identify coaching profiles combining controlling and need-supportive approaches. Within a sample of team sport athletes (N = 317), results pointed towards four-cluster solutions (i.e. high-high, high-low, low-high, low-low) when analyzing either the autonomy and demanding scores or the structure and demanding scores. Also, four clusters were found when focusing on the autonomy and domineering variables (i.e. moderate high-high, high-low, low-high, & moderate low-low), and when inspecting the structure and domineering scores (i.e. high-high, high-low, low-high, & moderate low-moderate low). Concerning associations of these profiles with athletes' autonomous motivation, controlled motivation and engagement, adopting a domineering approach showed to be unfavourable in terms of all motivational outcomes, whereas profiles characterised by high levels of demanding did not show negative associations with beneficial motivational outcomes. Yet, a highly demanding approach even provoked the highest scores regarding autonomous motivation and engagement when extended by either high levels of autonomy-supportive or structuring behaviour. Altogether, while coaches are being strongly recommended to avoid domineering coaching behaviour, these results may indicate that being demanding does not necessarily have to harm athletes' adaptive outcomes (i.e. autonomous motivation and engagement), but only when coaches also display high levels of autonomy support or structure.

2:45pm - 3:00pm

The role of coach-created motivational climates in sport and school motivation among adolescent dual career athletes

Milla Saara Anneli Saarinen, Kaisa Aunola, Tatiana Ryba

University of Jyväskylä, Finland

The interpersonal climates student-athletes experience are known to be important determinants of athletes' wellbeing and motivation in dual career development (Fuchs et al, 2016). Coaches are significant agents in terms of athletes' motivation in sport domain. However, no studies have investigated the effects of coach-created motivational climates on athletes' dual career pursuits. The aim of the present study was to examine different motivational climates in sport high schools and the extent to which the climates are associated with student-athletes' motivation for (a) sport and for (b) school. N = 414 student-athletes completed the Empowering and Disempowering Motivational Climate Questionnaire (EDMCQ-C; Appleton et al., 2014) at the end of their second year in high school. Student-athletes' motivation was assessed with a questionnaire measuring their interest, utility and importance values in both sport and academic domains. Based on athletes' reports on the coach-created motivational climates, three types of climates were identified: empowering (39% of the student-athletes), disempowering (43%), and extremely disempowering (18%). Girls were overrepresented among those who reported empowering climates and underrepresented among those reporting disempowering climates, whereas opposite results were true for boys. The results revealed further that student-athletes in the extremely disempowering climate group had lower motivation for sport than the student-athletes in the two other groups. Finally, student-athletes in the empowering climate group showed more motivation for school than the student-athletes in other groups. The results give support to the assumption that coach-created motivational environments play a central role in athletes' dual career development.

3:00pm - 3:15pm

The social dynamics of post-concussion return to sport experiences: an integrated study of athlete-teammate-coach triads

Jeffrey G. Caron¹, Alex J. Benson², Rebecca Steins³, Laura McKenzie⁴, Mark W. Bruner⁴

¹Université de Montréal, Canada; ²Western University, Canada; ³McGill University, Canada; ⁴Nipissing University, Canada

Although research on sport-related concussions has burgeoned over the past decade, little is known about how the team environment impacts concussed athletes' return to sport. Using semi-structured interviews, we investigated the shared experiences of three athlete-teammate-coach triads from university women's soccer (n = 3), women's ice hockey (n = 3), and men's volleyball (n = 3). Whereas athletes shared their return to sport experiences, teammates and coaches described how they perceived the athletes' reintegration into the group. We analysed the interviews as three separate cases using Reissman's (2008) guidelines for thematic narrative analysis. For the women's soccer triad, it was clear that the reintegration process was challenging for the athlete after having missed two consecutive seasons. The language used by teammates and coaches suggested they inadvertently pressured the athlete to return faster - although the athlete did not. Pressure to return was also a common feature from the shared experiences of the women's ice hockey triad. However, unique from the first case, we interpreted that the athlete experienced overt pressure (actions, language used) from the coaching staff, prompting a premature return to sport. For the men's volleyball triad, the athlete's concussion recovery was longer than all of his other teammates' concussions. The resulting constant comparison to other teammates led to an isolating and challenging experience. The present research provides preliminary insights about athletes' reintegration experiences from multiple perspectives. These results may also help inform interventions to assist the reintegration of concussed athletes into the group's social environment.

3:15pm - 3:30pm

The validation of an adult-oriented coaching tool using data from Masters athletes and coaches

Scott Rathwell¹, Matt, D. Hoffmann², Bradley W. Young³, Bettina Callary²

¹University of Lethbridge; ²Cape Breton University; ³University of Ottawa

With the growth of Masters sport (adults, 35+ years), increased attention has come toward quality programming and coaching (Young & Callary, 2018). Although adult sportspersons have unique preferences for coaching and learning, which often diverge from approaches with youth, no existing resources enable coaches to receive feedback on how they tailor their craft to older athletes (Callary et al., 2017, 2018). No tool exists that reliably assesses the use of adult-oriented sport coaching principles. This study tested the factor structure of an adult-oriented coaching survey comprising 51 items derived from dominant themes in qualitative research on the coached Masters context (Callary et al., 2015, 2017). Data were collected from n = 383 coaches (271 male, 110 female, 2 missing) and n = 258 athletes (98 male, 159 female, 1 non-binary), mostly from individual sports (e.g. golf, swimming). Exploratory structural equation modelling with target rotation provided psychometric support for a 16-item four-factor adult-oriented coaching survey for coaches, CFI = .983, SRMR = .024, RMSEA = .027 (90% CI = .000-.043), $\chi^2/df = 1.28$, and $\chi^2 = 79.42$, p = .067, and athletes, CFI = .986, SRMR = .022, RMSEA = .038 (90% CI = .014-.057), $\chi^2/df = 1.38$, and $\chi^2 = 85.61$, p = .025. We discuss the superiority of these emerging scales drawn from sport-specific work on Masters athletes compared to results based on adult learning scales imported from education (Rathwell et al., 2017), the value of establishing conceptual congruency using athlete and coach data, and further considerations pertaining to omitted survey items.

Symposium 18: National and regional journals in sport and exercise psychology – current status, challenges and future directions

Time: Wednesday, 17/Jul/2019: 2:00pm - 3:30pm · *Location:* H 2 - Bern

Session Chair: Johan Michael Wikman, Halmstad University

National and regional journals in sport and exercise psychology – current status, challenges and future directions

Chair(s): Johan Michael Wikman (Halmstad University, Denmark)

Several national and regional journals in sport and exercise psychology exist, and the purpose of this symposium is to set the stage for these to discuss current status, challenges and future directions of these and other national/regional journals. Representatives from four journals, from Germany, Italy, Scandinavia and Spain, respectively, will participate in the symposium.

The symposium will be organised with introductions to each of the journals in the symposium, followed by a panel discussion with the participants, and finalised with questions from the audience and concluding remarks.

In the panel discussion, future directions for and challenges to national/regional journal in sport and exercise psychology will be discussed. The panel discussion will include, but is not limited to a) if and how to preserve national/regional identity in aim, scope and type of publications, b) the role of national/regional journals in a global scientific world, c) considerations on publishing in national/regional languages, English or both, d) considerations on intended target audience (i.e., research vs. applied focus) and e) discussion on working with a scientific journal with a local focus, and the challenges and limitations, as well as possibilities and advantages, that follows.

Presentations of the Symposium

How important is German for the German Journal of Sport Psychology?

Felix Ehrlenspiel

Technical University of Munich

The German “Zeitschrift für Sportpsychologie” looks back on a 30-year tradition. It has faced challenges in the past and made according adjustments such as scaling down from public to scientific readership, such as moving its focus from more applied contributions to a purely scientific outlet with an Impact Factor close to 1.0, or such as finding the appropriate publisher to suit its new focus. What has saved and guided the survival of the journal in a niche market has been its loyal readership – the now 400+ members of the German Association of Sport Psychology.

The key challenge still is how to serve interests of readers and (potential) contributors. How can we make sure contributions are relevant for our (German speaking) readers of whom most are working in applied settings? How can we meet the need and wish by researchers to engage in a discourse with the international scientific community, how can we meet the need of our young researchers for English publications that are demanded by their PhD regulations? Further challenges arise from development in our field, like a move to an “open” science where, e.g., not only publications are shared but also data.

The identified key challenge appears to boil down to a question of language. However, we want to discuss and exchange on ideas whether the challenge rather provides the opportunity for broader adjustments that preserve the regional and niche identity of the journal but offer “openness”, for example for an international discourse.

Revista de Psicología del Deporte/Journal of Sport Psychology: a scientific journal amid regional scope and internationalisation

Victor J. Rubio¹, Aurelio Olmedilla Zafra²

¹University Autonoma Madrid (Spain) & Co-editor-in-Chief, Revista de Psicología del Deporte/Journal of Sport Psychology,

²Universidad de Murcia (Spain) & Co-editor-in-Chief, Revista de Psicología del Deporte/Journal of Sport Psychology

Revista de Psicología del Deporte/Journal of Sport Psychology, was born in Spain and published its first issue in 1992. Originally, the journal, which accepted papers in either Spanish or English, was aimed to promote and consolidate the incipient field of Sport Psychology in Spain. In 2006 there was a significant leap when RPD/JSP, which had opened the submission of manuscripts in Portuguese as well, was included in the most important South American databases (Qualis, CAPES, SciELO, National Library of Health Sciences), attracting submissions from many Latin American countries. On 2007 it was included in the World of Knowledge Thomson Reuters databases. On 2017, coinciding with journal's 25th anniversary, the journal started a new period focused on the internationalisation of the RPD/JSP beyond scholars and professionals from Spain, Portugal and Latin America who had been the main contributors till then. Now RPD/JSP is currently indexed in the major scientific databases reaching high quality standards.

In addition to the issues any scientific journal has to face nowadays, as a regional journal but with an international vocation, RPD/JSP has to face several concerns that will be discussed, among them:

- Difficulties in recruiting and involving good reviewers
- Regional journals being a second-choice for submission
- English vs. regional language: increasing international visibility vs. promoting regional science
- Focus on local professional applied work or international scientific contributions

Scandinavian Journal of Sport and Exercise Psychology – new winds from the north

Knud Rvom¹, Johan Michael Wikman², Peter Elsborg³

¹Aarhus University, ²Halmstad University, ³Steno Diabetes Center, Denmark

In a rapidly changing world, with an increasing pragmatic attitude towards knowledge, we find it important to create a space for reflection of sports psychological interest in Scandinavia. Hence, the purpose of the Scandinavian Journal of Sport and Exercise Psychology (SJSEP) is to collect and disseminate knowledge and experience between researchers, practitioners, athletes, coaches and others with an interest in sports psychology. SJSEP is an open access journal, published annually by the Danish Sports Psychological Forum, and published its first issue in 2018. SJSEP aims to publish high quality articles through two sections: 1) a section disseminating research results relevant to sports and exercise psychology in Scandinavia, and 2) a section presenting applied work within sport and exercise psychology in Scandinavia. SJSEP will publish in Danish, Swedish, Norwegian and English.

The editors of the journal have identified key goals for SJSEP in the coming years. First, a double-blinded peer review process has been established, from which reviewer comments from the review phase itself will be published, to give readers the full picture of the submission process. Second, SJSEP wishes to be internationally acknowledged as peer-reviewed. Third, SJSEP aims to be included in the most important search databases. Fourth, SJSEP will aim to have an impact factor included.

With time, the editors of SJSEP hope that the journal will be primarily chosen for publishing high quality research and applied practice papers, and in particular within Scandinavia.

"Movimento", writing about sport psychology in Italy

Daniela Sepio

University of Roma "Tor Vergata", Italy

The Italian Journal "Movimento" was founded in 1984 by Ferruccio Antonelli, and Alberto Cei is the current editor. It has a four-monthly periodicity. It is published in Italian with abstracts in English. The magazine was born with the purpose of developing the theoretical and practical knowledge of the sports sciences with particular reference to psychology and human sciences.

Over the years, the Journal has undergone several changes, first of all the transition from scientific publications to applied contributions, professional experiences and best practices. In recent years its strong point has been to publish monothematic issues linked to experiences of sport psychology excellence in Italy such those one dedicated to women's football in collaboration with the Italian Football Federation, the leadership of professional basket coaches or that one dedicated to the AS Roma Football Club project on football and children disability.

To spread best practices "Movimento" has also published the articles of an important award, Premio Madella, promoted by Sports School of Italian National Olympic Committee.

It is a Journal not directly linked to scientific and professional associations, owing its permanence on the market to the commitment of the publisher Luigi Pozzi and to the perseverant work of the editorial board, constantly looking for new themes and studies. This Journal has no impact factor and this aspect determined difficulties to receive submissions from the university world.

Symposium 19: Psychological resilience in sports: overcoming and growing from stressors

Time: Wednesday, 17/Jul/2019: 2:00pm - 3:30pm · *Location:* H 3 - Madeira
Session Chair: Ruud J. R. Den Hartigh, University of Groningen

Psychological resilience in sports: overcoming and growing from stressors

Chair(s): **Ruud J. R. Den Hartigh** (University of Groningen, Netherlands, The)

Athletes are regularly facing stressors, such as injuries or defeats. Therefore, sport psychologists have been interested in the question: What determines whether athletes overcome stressors, and how can this 'resilience' be improved? Resilience can be defined as "the dynamic process by which a biopsychosocial system returns to the previous level of functioning, following a perturbation caused by a stressor" (Hill, Den Hartigh, De Jonge, Meijer, & Van Yperen, 2018, p. 367). Although researchers have identified many possible psychological and situational determinants of resilience, they are still confronted with the following challenges: 1) What is the (psychological) mechanism underlying resilience?; 2) What are the best ways to measure resilience?; 3) Can athletes learn to perform better when facing stressors?; and 4) which psychological skills and characteristics help athletes to demonstrate resilience? The purpose of this symposium is to discuss novel approaches to understand and improve resilience in athletes. Specifically, the first presentation will focus on the dynamic interplay between various psychosocial components, and provide a complex systems explanation of resilience in athletes. The second presentation will discuss novel analytic methods to predict when breakdowns in resilience are likely to occur, based on recent empirical research. The third presentation will demonstrate new technologies (e.g. augmented reality and machine learning) to enhance athletes' performance when faced with stressors. Finally, the fourth presentation will focus on practical applications to improve psychological skills and enhance athletes' resilience. These presentations together provide insights into recent theoretical, methodological, and applied developments in the domain of resilience.

Presentations of the Symposium

Resilience in sports through the lens of complex systems

Ruud J. R. Den Hartigh

University of Groningen, The Netherlands

Studying resilience in sports contributes to understanding who can maintain good performance and who may break down. So far, researchers have mostly attempted to find the components that explain resilience. Amongst others, proposed personality trait-components are hardiness, emotion-regulation, extraversion, self-efficacy, and self-esteem, and psychological process-components are motivation, confidence, focus, optimism, stress appraisals, self-regulation strategies, and perceived social support (e.g. Fletcher & Sarkar, 2012). Given this long list, research increasingly suggests that resilience is complex and cannot be reduced to specific components. Accordingly, there is a major quest for a more holistic approach to (a) quantify resilience, and (b) understand the mechanism underlying resilience (e.g. Fletcher & Sarkar, 2012; Hill, Den Hartigh, De Jonge, Meijer, & Van Yperen, 2018; Pincus, Kiefer, & Beyer, 2018). In this talk I aim to outline a new theoretical, holistic perspective on resilience. More specifically, I will explain how a complex systems perspective provides a theoretical and methodological framework to advance insights into athletes' resilience. Furthermore, I will focus on the necessity of studying time-series of psychological and performance variables. By analysing time-series it is possible to accurately capture the process of returning to the previous level of (psychological) functioning, the defining feature of resilience. Besides, by using novel statistics (e.g. a complexity index) it is possible to say something about an athlete's adaptability, a key ingredient of resilience. Altogether the theoretical perspective outlined in this presentation may provide new tools necessary to measure and improve resilience in athletes.

Predicting resilience breakdowns in athletes

Yannick Hill, Ruud J. R. Den Hartigh, Ralf F. A. Cox, Peter De Jonge, Rob R. Meijer, Nico W. Van Yperen

University of Groningen, The Netherlands

In light of the plethora of factors that are linked with psychological resilience, researchers recently reached consensus that resilience is a complex process determined by ongoing interactions between multiple variables. However, we are lacking insight into how the actual process of resilience unfolds over time. To fill this void, Hill and colleagues (2018a, 2018b) suggested that the process of resilience can be derived from time-series data of actual performance depicting how athletes adapt to stressors. In this presentation, I will demonstrate an empirical study in which we focused on dyadic performance during a competitive task (N = 42). Specifically, the dyads were instructed to do a team 'Fitts task' during which they moved between targets in an antiphase (i.e. opposite movement) coordination pattern. Our aim was to identify the occurrence of team-coordination breakdowns following exposure to repeated mental stressors based on manipulated performance feedback, indicating that the team was outperformed by a virtual opponent. However, the observed breakdowns were statistically unrelated to the mental stressors. Instead, the level of performance was highly correlated with a complexity metric that captured how the participants adapted to each other's movement during the task ($r = 0.66$ for coordinated and $r = -0.83$ for uncoordinated behaviour). Furthermore, a change of complexity within the dyadic system seemed to predict future performance breakdowns. This implies that, based on a complexity measure of performance, breakdowns in performance may be anticipated before they occur.

Developing more than elite athletes in sport: The influence of past sporting experience on later life resilience processes

Christopher Bryan, Deridre O'Shea, Tadhg Macintyre
University of Limerick, Ireland

Resilience can be fostered through adverse environments together with high emotional support (Masten, 2001). Sports therefore potentially provides an important context to develop resilience. Accordingly, scientists are increasingly interested in the personal assets and coping strategies that can be developed through sport, but benefit adolescents in all walks of life and future work (Coakley, 2011). In this talk I will discuss research in which we bridged the gap between resilience behaviors of office workers, and the effects of past sporting experiences. This investigation was carried out on office workers across eight Irish companies (n=101) in a four-part longitudinal survey over an eight-week period. R Studio was used to carry out path analyses, model fit and ANOVA chi-squared tests to explore both associated resilience processes and group differences. Results suggest that employees' resilience capacity and their ability to persist in goal directed work during stress was strongly predicted by higher challenge appraisals and lower threat appraisals. Importantly, employees who engaged in sport following secondary education demonstrated higher levels of challenge appraisals and lower levels of threat appraisals compared to employees who disengaged from sporting activities before. No significant differences were found between those who competed at a high- or recreational level. Altogether, results offer empirical evidence for how long term persistence in competitive youth sports may contribute to the development of resilience in later work life.

Fostering resilience in youth athletes through the development of psychological skills and characteristics

Lea-Cathrin Dohme¹, David Piggott², Susan Backhouse², Gordon Bloom³

¹Cardiff Metropolitan University, United Kingdom, ²Leeds Beckett University, United Kingdom, ³McGill University, Canada

Empirical research has identified various psychological skills and characteristics (PSCs) that can buffer the impact of negative stressors on athletes (Fletcher & Sarkar, 2012). Psychological skills are athletes' ability to use learned strategies to regulate and facilitate the enhancement of psychological characteristics, including focus, emotional control, and resilience (Dohme, Backhouse, Piggott, & Morgan, 2017). The importance of the early, proactive, and systematic development of psychological skills in youth athletes to foster psychological characteristics and prevent or treat problems, such as burnout and fear of failure, has been attested to (Gould & Carson, 2008). To better understand and improve the development of PSCs in youth athletes, we conducted a 15-month action research study of 11 competitive British youth tennis players (Mage = 11, SD = 2.12), their coach, and 15 parents. Data was collected through 225 hours of observations, 121 pages of field-notes, athlete workshop data, and 17 interviews. Results suggested that youth athletes' resilience can be enhanced through the development of psychological skills, such as realistic self-evaluation and performance routines. Nevertheless, the explicit education of athletes about the purpose and use of PSCs, as well as the establishment of a subject-specific language throughout the developmental environment, was identified as fundamental to encourage youth athletes' consistent application and regulation of PSCs. Current strategies and challenges of fostering this education from the perspective of parents, coaches, and practitioners are discussed. Finally, recommendations that aim to further enhance the development of resilience in youth athletes are provided.

Symposium 20: Qualitative characteristics of physical-activity interventions on cognition in youth

Time: Wednesday, 17/Jul/2019: 2:00pm - 3:30pm · *Location:* H 4 - Chalkidiki
Session Chair: Spyridoula Vazou, Iowa State University

Qualitative characteristics of physical-activity interventions on cognition in youth

Chair(s): **Spyridoula Vazou** (Iowa State University, United States of America), **Caterina Pesce** (University of Rome, Italy)

An increasing body of literature has emerged investigating the importance of considering the qualitative characteristics of physical-activity (PA) interventions in research examining the effects of PA on motor and cognitive development. This symposium will provide an overview of the literature regarding the role of cognitively challenging PA interventions on whole-child development from multiple research lenses and the translation of research into practice. The first presentation by Kimberley Lakes will describe how unique PA interventions can be developed for children with neuro-developmental disorders and will describe quantitative and qualitative methods that can be used to analyse the qualitative features of PA interventions. The second presentation by Spyridoula Vazou will focus on the growing body of research on the integration of PA with learning in the classroom and the effects of different types of classroom-based PAs on cognition. The third presentation will describe a novel approach to increase PA in youth, named exergaming. Valentin Benzing will provide an overview of exergaming and its impact on cognition in youth. The fourth presentation by Caterina Pesce will share the results of a series of studies on quality physical education for motor and cognitive development and how the "Joy of Moving" program was scaled up from efficacy to effectiveness and to dissemination at a national institutionalization level. Collectively, this symposium will provide a better understanding of the qualitative characteristics of PA interventions and how we could advance research on how to develop, implement, and study effective and engaging interventions for youth.

Presentations of the Symposium

Physical-activity interventions and the promotion of whole-child development in children with neuro-developmental disorders

Kimberley D. Lakes

Department of Psychiatry & Neuroscience, University of California, Riverside, USA

Careful development and analysis of the qualitative characteristics of physical activity (PA) interventions are especially important for children with special needs. Children with developmental and physical challenges often have greater difficulty accessing and participating in PA, which may widen gaps between them and their typically developing peers in both psychological and physical functioning over time. A better understanding of the qualitative characteristics of PA interventions would advance research on how to develop and implement effective and engaging interventions for these groups of vulnerable children. We are studying how PA programs can be developed with a focus on (1) enhancing participant engagement by building on strengths, rather than simply targeting deficits, (2) building supportive learning environments, (3) structuring intervention activities to engage self-regulatory processes while promoting motor development, and (4) using differentiation and scaffolding to ensure individual progress. Using research from several intervention studies conducted with children who have neuro-developmental disorders (e.g. Attention Deficit Hyperactivity Disorder, Autism Spectrum Disorder, Cerebral Palsy), I will illustrate how unique interventions were developed and studied, with a particular focus on results from analyses of the qualitative characteristics of PA interventions using both video-recordings of intervention sessions and interviews with program participants. This work has implications for interventions designed specifically for children with special needs as well as for differentiation within existing PA programs to help facilitate both engagement and individual development.

Integrating physical activity in the classroom is not a break: Effects on learning and cognition

Spyridoula Vazou

Iowa State University, USA

There is an increasing interest for schools to adopt a whole-of-school approach regarding physical activity (PA), meaning infusing PA throughout the school day, including the academic classroom. The growing body of research indicates that PA in the academic classroom is feasible but may also provide an opportunity to increase PA levels in youth and facilitate learning. PA in the classroom can be implemented as an activity break with low levels of cognitive engagement or in integration with the academic subject with high levels of cognitive engagement and/or relevance to the academic content. Although research consistently shows that PA benefits cognition and learning, research on the qualitative characteristics of different types of classroom-based PA and their effect on cognition is limited. This presentation will provide a systematic review of the literature on the effect of different types of PA in the academic classroom on cognition and learning in youth. The presentation will focus on the effectiveness of classroom-based PA interventions on cognition as well as on the differences between the types of PAs that can be implemented in the classroom. Further, we will qualitatively analyse the studies by considering features of each intervention in light of strategies, facilitators and barriers for successful implementation. By understanding the different qualitative characteristics of classroom-based PAs, both research and educational practices will be further informed and developed in order to promote learning and cognitive function in children and adolescents.

Exergaming to enhance cognitive functions in children and adolescents?

Valentin Benzing, Mirko Schmidt

Institute of Sport Science, University of Bern, Bern, Switzerland

Many children and adolescents in Europe are not reaching the recommended amount of physical activity, whilst sedentary screen time is increasing continuously. Since physical activity seems not only to impact physical health, but also cognitive functions (Lubans et al., 2016), innovative approaches to increase physical activity in children and adolescents are warranted. Assuming that exergaming might have the potential to positively impact physical activity levels by replacing sedentary screen time, in the last decade, the interest in exergaming, or active video gaming, is growing. Exergaming is a portmanteau of "exercise" and "game" and refers to "digital games that require body movements to play, stimulating an active gaming experience to function as a form of physical activity" (Benzing & Schmidt, 2018). Since exergaming has shown to be able to increase physical activity levels, exergaming in children and adolescents may also benefit cognition. However, the available empirical evidence on the effects of exergaming on cognition in children and adolescents is very limited. Therefore, the aim of this presentation is to give an overview of (a) our own studies as well as related research on acute and chronic exergaming, covering its impact on cognition in children and adolescents (including two longitudinal investigations on the effects of exergaming on cognitive performance in children with ADHD and childhood cancer survivors), and (b) to derive important factors on exergaming to enhance cognitive functions in children and adolescents.

From locally to globally: A whole-child initiative of qualitatively-enriched PE for motor and cognitive development

Caterina Pesce¹, Rosalba Marchetti², Anna Motta³

¹University of Rome "Foro Italico", Rome, Italy, ²Malpighi School, Rome, Italy, ³Regional School Office Piedmont, Turin, Italy

This presentation aims to describe a whole-child initiative of quality physical education that pursues goals of motor and cognitive development jointly. This initiative, named "Joy of Moving", builds on qualitative enrichment in physical education. The qualitative characteristics of designed physical activity experiences as novelty, diversification, and complexity are exploited to generate a cognitively optimal challenge point. We started by testing small samples to move on with a replication study and finally expand to a large scale in the actual national institutionalisation phase.

First studies have demonstrated the efficacy of "Joy of Moving" for promoting motor and cognitive development jointly, as well as for enhancing creativity and reducing anti-social behaviours in the school-learning context. A further effectiveness study has identified the starting point for a national replication study performed with an ecological, participative evaluation approach. This latter consists of multiple levels of information gathered from the different actors from the school to the community level: school teachers and principals, parents, school coordinators of the "Joy of Moving", and local and regional coordinators of physical education. Key elements of this mixed process and outcome evaluation were an initial needs analysis and the evaluation of facilitators, constraints and barriers acting on the implementation. To spread globally with models of holistic child development through enriched physical education, we propose to rely on an advanced paradigm that considers the bidirectional relationship between implementation and adaptation and the need for impact evidence to be applied in new implementation contexts.

Symposium 21: The research-to-practice gap in sport psychology: Exploring the challenges faced by researchers, consultants, and coaches

Time: Wednesday, 17/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 17 - Westphalia

Session Chair: George Stewart Ely, Liverpool John Moores

The research-to-practice gap in sport psychology: Exploring the challenges faced by researchers, consultants, and coaches

Chair(s): **Frank O. Ely** (University of Windsor, Canada), **Krista J. Munroe-Chandler** (University of Windsor, Canada), **Jenny O** (California State University, East Bay, USA), **Penny McCullagh** (California State University, East Bay, USA)

Discussant(s): **Joan L. Duda** (University of Birmingham, UK)

The goal of a sport psychology researcher is to discover or create new knowledge (Weinberg & Gould, 2015). However, a secondary, and often implied, goal is that this knowledge will be used to enhance development, performance, sport satisfaction, and/or well-being of athletes. But are athletes actually receiving this knowledge and reaping the associated positive outcomes? This is a very complicated and multi-faceted question (Gould, 2016). On the one hand, elite athletes (a relatively small sports population) often have access to mental performance consultants (MPC) or have coaches who have been educated in evidence-based sport psychology frameworks, interventions, and concepts. On the other hand, countless youth and amateur athletes (a relatively massive sports population) receive little to no formal training in research-based self-regulation techniques nor in the use of psychological skills. This represents a significant and understudied gap between research and practice (Eklund & Crocker, 2019). In order to narrow this gap, those who create knowledge (e.g. researchers) and those who disseminate it (e.g. MPC and coaches) must be more cognizant of the challenges that influence the access to, and implementation of, evidence-based sport psychology knowledge in “real-world” sport settings. Thus, the purpose of this symposium is to highlight the importance of, and challenges surrounding, this research-to-practice gap (R2PG). We begin by presenting the history of the R2PG in sport psychology followed by addressing the challenges that researchers, MPC, and coaches face working with amateur athletes. Finally, suggestions for narrowing the R2PG will be provided and open to discussion.

Presentations of the Symposium

History of the research-to-practice gap in sport psychology

Penny McCullagh

California State University, East Bay, USA

While the research-to-practice gap (R2PG) has evolved over time, it has long been a prominent issue within sport psychology (Eklund & Crocker, 2019). Early references to the R2PG centered around the disconnect between sport science and sport practice (Gowan et al., 1979), wherein researchers had limited interaction with coaches and the challenges they faced. In addition, coaches have often had difficulty obtaining evidence-based sport psychology knowledge (Lawson, 1992), let alone training on how to effectively apply that knowledge to help athletes. As a corollary, athletes’ exposure to sport psychology is limited. This lack of transparency between researchers and coaches may leave prominent stakeholders (e.g. sport programmers, parents, athletes) to perhaps question the value of sport psychology as a discipline. Moreover, the recent advances in technology have complicated the R2PG: Issues regarding the accessibility of information are now replaced by issues of validity. With “pay-to-play” mental performance consultants (MPC) offering their services through the unregulated internet, it is difficult to assess which MPCs apply evidence-based sport psychology practices versus those relying predominantly on anecdotal experience, thus casting doubt upon the generalization of their information. While advances have been made over the years (Gould, 2016), researchers, MPCs, and coaches continue to face a large R2PG. This presentation will address the history of the R2PG in sport psychology and the ways in which the discipline of sport psychology has attempted to address this issue.

The research-to-practice gap: Challenges faced by researchers

Jenny O

California State University, East Bay, USA

From a research-to-practice gap (R2PG) perspective, the role of the researcher is to create interventions that will enhance athlete development, performance, and/or experience (O et al., 2017). Contemporary intervention research is often designed with a high degree of systematic design (SD; Woodworth, 1938). This is understandable: SD refers to methodological elements intended to increase experimental control. Increased SD will reduce the likelihood of confounding variables and thus increase the validity of our research findings. However, high-SD designs also often impose experimental settings that are highly contrived, stripping away critical contextual stimuli that is present in the target real world (Brewer, 2000). As such, despite strong validity, the generalizability of some sport psychology intervention research findings must be questioned. A related but distinct R2PG issue facing intervention researchers is that many contemporary intervention research designs may be too complicated for implementation with real-world athletes in real-world sport contexts. Such complexity of intervention design may serve as a deterrent to coaches and other sports administrators. Ironically, in creating more rigorous designs to isolate the psychological concept under investigation, intervention researchers may inadvertently be contributing to the maintenance, rather than narrowing, of the R2PG. In response, some researchers (e.g. O et al., 2019) have suggested that intervention designs should strike a reasonable balance between representativeness of the target environment (to ensure generalizability) and SD elements (to ensure validity). This presentation will discuss the challenges faced by intervention researchers interested in designing sport psychology intervention suitable for real-world use.

The research-to-practice gap: Challenges faced by mental performance consultants

Krista J. Munroe-Chandler

University of Windsor, Canada

Mental performance consultants (MPC) play an interesting, and perhaps, underutilized, role in the research-to-practice gap (R2PG). Despite calls for research exploring how MPCs deliver psychological skills training with youth and amateur athletes (Vealey, 1988), limited research has been conducted exploring the frequency or effectiveness to which MPCs deliver such skills. MPCs are taught to apply their knowledge of research findings and theoretical frameworks with teams, athletes, and coaches. However, with insufficient research exploring this application, it is difficult to “assess” what is actually occurring in real world scenarios. Given the applied focus of this profession, it is concerning how much of the MPCs' interactions with athletes are seemingly left up to anecdotal experience (Foster et al., 2016). This is an issue that relates to the R2PG, as there is limited evidence to guide how MPCs both disseminate knowledge and translate knowledge to athletes. The dissemination of knowledge refers to the ways in which athletes and coaches obtain training in sport psychology (do they have access?). Moreover, knowledge translation is the way in which MPC present evidence-based knowledge as to enhance athletes' and coaches' engagement in, and understanding of, sport psychology (do they understand?). Without clear pathways to both knowledge dissemination and knowledge translation, it may be challenging for MPCs to provide a quality service to athletes on a larger scale. This presentation will detail the challenges that MPCs face and provide some examples in order to overcome these barriers.

The research-to-practice gap: Challenges faced by coaches

Frank O. Ely

University of Windsor, Canada

Coaches are the “gatekeepers” between athletes and their pursuit of knowledge within sport. While technical sport skills are often taught by coaches, mental skills are often overlooked. There are many reasons why coaches often do not use, or misuse, concepts and principles of sport psychology (Gould, 2016), representing a critical reason for why the research-to-practice gap (R2PG) remains problematic. This is not because coaches have “failed” or are at fault for the R2PG. Rather, since coaches have the most interaction with athletes, they are the ones who facilitate and disseminate knowledge to athletes, particularly at the youth and amateur level. Therefore, researchers or mental performance consultants need to think differently about how to impact youth sport. Researchers should conduct research that is meaningful to coaches while being cognizant of the challenges that real-world coaches face to increase the likelihood of coaches actually implementing these findings (e.g. O et al., 2017). While researchers exploring the R2PG often highlight issues around knowledge dissemination (Gould, 2016), constraints such as budget, lack of assistant coaches, parents and the culture of the sport or team also impact the ability of a coach to implement sport psychology. Therefore, the purpose of this presentation is to discuss the challenges that coaches face in real-world youth sport and provide an example of a theoretically-based training program that considers the role of youth sport coaches (Duda, 2013; Duda et al., 2013).

Narrowing the research-to-practice gap: Recommendations for researchers, mental performance consultants, and coaches

Frank O. Ely¹, Krista J. Munroe-Chandler¹, Jenny O², Penny McCullagh², Joan L. Duda³

¹University of Windsor, Canada, ²California State University, East Bay, USA, ³University of Birmingham, UK

It is clear that there is no simple solution to narrowing the research-to-practice gap (R2PG; Gould, 2016). However, when considering the perspectives of researchers, mental performance consultants (MPC), and coaches, it is critical that they work together to narrow the R2PG. Researchers, tasked with creating knowledge, can deliberately balance critical design elements to ensure the generalizability and validity of their interventions with real-world athletes (e.g. O et al., 2019). MPCs, tasked with the dissemination of knowledge, need to ensure they deliver evidence-based knowledge in a way that coaches and athletes can easily access and understand (Gould, 2016) and perhaps serve as a liaison between researchers and coaches. Similarly, while coaches are also tasked with the dissemination of knowledge, they must communicate with MPC about the constraints placed on their team. While most recommendations towards reducing the R2PG have focused on specific strategies or techniques, perhaps the R2PG can be examined another way. Therefore, we would like to propose a model of the R2PG that provides a new conceptualization as to how researchers, MPCs and coaches all play a role in impacting real-world athletes and narrowing the R2PG. This presentation will both outline some potential strategies for doing so and outline this proposed model of R2PG. Additionally, we would like to hear from the audience, to generate a discussion around the R2PG such as challenges or perspectives around this topic or suggestions as to how to move towards narrowing this gap in sport psychology.

Workshop 08: How to use the 3P's model to reduce performance anxiety

Time: Wednesday, 17/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 18 - Edinburgh
Session Chair: Michael Dominick Zito, Morristown Clinical and Sport Psychology

How to use the 3P's model to reduce performance anxiety

Michael Dominick Zito

Morristown Clinical and Sport Psychology, United States of America

A common reason why athletes or performers seek the services of a sport psychologist is for underperformance due to performance anxiety. Performance anxiety is usually generated when an individual focuses attention away from the present, engages in negative self-talk and outcome (i.e., must win) oriented thinking. The 3P's model is an integrated model utilizing evidence-based techniques for performance anxiety from the mindfulness perspective (Khoury et al., 2013) and the traditional change oriented cognitive behavioral approach (Olatunji, Cisler & Deacon, 2010). This model refocuses attention to 3 key areas, the Present, Positive self-talk and Process oriented thinking. Present focus directs attention to the current task to be executed. Positive self-talk can inspire confidence based on prior successful skill execution (i.e., in practice or game situations) Process oriented thinking refers to focusing on how to execute a particular skill. While the ultimate goal is automaticity, the 3P's model can help achieve that as an individual works through their performance anxiety. Application of the 3Ps model is enhanced through imagery (Weinberg & Gould, 2015), focused breathing and growth mindset concepts (Dweck, 2016).

After demonstrating the model through applied cases, participants will apply their gained knowledge through case studies in small work groups. The goals of this workshop will be to 1- introduce participants to the 3P's model, 2- understand the pros and cons of using this model, 3- develop a beginning knowledge of how to apply this model in their own practice. PowerPoint slides will be available electronically following the session.

Workshop 09: Adapting Mindfulness Sport Performance Enhancement (MPSE) to a variety of performance settings and populations

Time: Wednesday, 17/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 19 - Paris
Session Chair: Jacob Cannon Jensen, California State University, Northridge

Adapting Mindfulness Sport Performance Enhancement (MPSE) to a variety of performance settings and populations

Jacob Cannon Jensen

California State University, Northridge, United States of America

Mindfulness Sport Performance Enhancement (MSPE) is a six-session mindfulness program developed by Kaufman, Glass, and Pineau (2017) for athlete populations and is rooted in "Kabat Zinn's mindfulness-based stress reduction and Segal, Williams, and Teasdale's mindfulness-based cognitive therapy" (p. 4). The six sessions focus on both the education and practice of mindfulness and include interventions such as diaphragmatic breathing, body scan, mindful yoga, and sport meditation (p. 5). The workshop's specific learning objectives are to provide participants with detailed information about and practical hands-on experience with how to use and adapt MSPE to a variety of sport, physical activity, and performance settings. The workshop will introduce participants to the MSPE program and illustrate how materials can be adapted to different situations and populations, including physical activity programs for university students with Autism Spectrum Disorder (ASD) and various athletes and performers.

The teaching methods for the workshop will include an overview of MSPE, along with hands-on examples of how the exercises/interventions can be used and taught in a variety of situations. The workshop will include demonstrations of how to adapt and create personalized materials based on the MSPE program for different sport and performance populations using specific case studies. The presenter will draw on his own experience of using MSPE with a variety of populations in his own applied work.

Workshop participants will be given a handout with the presentation slides and examples of MSPE training tools and adaptations of the program that can be incorporated into their own applied work.

Award Symposium: Young Research Award for Oral Presentation

Time: Wednesday, 17/Jul/2019: 4:00pm - 5:30pm · *Location:* Aula im Schloss - Europe

Session Chair: Natalia Stambulova, Halmstad University

Session Chair: Taru Lintunen, University of Jyväskylä

Using situational characteristics to distinguish sports

Sophia Terwiel¹, John F. Rauthmann², Maike Luhmann¹

¹Ruhr-Universität Bochum, Germany; ²Universität zu Lübeck, Germany

Sports are typically distinguished in team versus individual sports or ball games versus cue sports. However, these broad distinctions have only limited utility for psychological research on sports and physical activity because they neglect psychologically relevant characteristics. As sports are highly standardized situations following a clear set of rules, this preregistered study aimed at distinguishing sports based on the eight DIAMONDS situational characteristics: Duty, Intellect, Adversity, Mating, pOSitivity, Negativity, Deception, and Sociality.

In a cross-sectional online survey, using the 24-item version of the S8*-questionnaire measuring the DIAMONDS (Rauthmann et al., 2014), 138 types of sports were rated by N = 7,835 athletes on the eight DIAMONDS dimensions. Descriptive and cluster analyses were performed, and situational characteristics profiles were computed.

The sport-specific profiles describe differences and similarities among and between sports in a face-valid way. Cluster analyses identified groups of sports partly resembling those of other sport categorization, but differing in ways that add relevant information based on the situational characteristics of sports. Describing sports with respect to their situational characteristics presents a promising novel approach towards understanding similarities and differences among sports more precisely and providing a more psychologically meaningful categorization of sports.

Defining and characterizing organizational resilience in elite sport

Kirsten Fasey¹, Mustafa Sarkar¹, Chris Wagstaff², Julie Johnston¹

¹Nottingham Trent University, United Kingdom; ²University of Portsmouth, United Kingdom

Organizational resilience has been investigated in numerous performance contexts outside of sport, although how the term has been conceptualized and operationalized has varied across domains (Tarba et al., 2017). Given the growing interest in sport's organizational environment (e.g., Fletcher & Arnold, 2016; Wagstaff et al., 2016), the purpose of the study was to reach expert consensus on a definition and key characteristics of organizational resilience in elite sport. Using the Delphi method, 62 expert panelists working in or with elite sport organizations (n=45) or having academic experience of resilience in various contexts (n=17), responded to four online iterative surveys over seven months. Following each round, data was analyzed and feedback given to participants regarding items reaching consensus, and for those which did not, how other participants had responded, to allow participants to reconsider their responses. Following analysis, organizational resilience was defined as "the dynamic capability of an organization to successfully deal with significant change. It emerges from multi-level (employee, team, and organizational) interacting characteristics and processes which enable an organization to prepare for, adapt to, and learn from significant change". In terms of characteristics, internal communication, and a desire to learn and improve emerged as the most important, with disagreements appearing in relation to attitudes to risk, failure, and utilization of resources. By proposing a definition of organizational resilience which is appropriate to and endorsed by those in elite sport organizations, and identifying key characteristics of organizational resilience, this study provides a springboard for future research in this area.

Executive functions, motor abilities and quality of life in pediatric cancer survivors – the crucial role of motor coordination

Valentin Benzing

University of Bern, Switzerland

Due to the improved treatment and diagnosis, survival rates for pediatric cancer have increased by over 80%. Nonetheless, Pediatric Cancer Survivors (PCS) bear a high risk for late effects within cognitive functions, such as the executive functions (EFs). In typically developing (TD) children, EFs are related to motor abilities, and they contribute to the development of the physical self-concept which is important for psychological wellbeing. Therefore, the aim of this study was to investigate EFs, motor abilities, physical self-concept and health related quality of life (HRQOL) in PCS.

In total, 81 PCS and 55 TD children and adolescents between 7-16 years of age (M = 11.14; SD = 2.35) participated in this study. EFs were assessed using the Stroop (inhibition, shifting) and the Corsi task (updating); motor abilities using the German Motor Ability Test (fitness, strength, coordination). In addition, Physical Self-Description Questionnaire (PSDQ-S) and the Kidscreen-10 were used to assess physical self-concept and HRQOL.

PCS showed a lower performance in EFs and in motor abilities (ps < .0005), and both were found to be correlated (rs > .315, ps < .005). PCS had lower physical self-concept in the facet of coordination (p < .0005), which also significantly mediated the relationship between actual coordination performance and HRQOL.

In conclusion, the assessment of motor abilities, and in particular motor coordination, should be included in standard aftercare in PCS. Results indicate that physical exercise interventions are warranted, and are also likely to impact HRQOL via improvements in physical self-concept.

Predicting change in out-of-school physical activity using the trans-contextual model

Juho Polet¹, Taru Lintunen¹, Maiken Hansen¹, Martin Hagger^{1,2}

¹Faculty of Sport and Health Sciences, University of Jyväskylä, Jyväskylä, Finland.; ²School of Psychology, Curtin University, Perth, Australia

Physical education (PE) teachers are well placed to promote students' motivation toward physical activity (PA) outside of school through autonomy support. We applied the Trans-Contextual Model (TCM) to examine the effects of secondary school students' perceived autonomy support from their PE teachers on autonomous motivation toward PE in school and, critically, autonomous motivation toward, and actual participation in, out-of-school PA. The research adopted a three-wave longitudinal design enabling the modeling of change in the constructs over time. Secondary school students (N=248) self-reported their perceived autonomy support and autonomous motivation in PE, autonomous motivation toward out-of-school PA, attitudes, subjective norms, perceived behavioural control (PBC), and intentions for PA outside of school, and out-of-school PA participation. Participants completed the same constructs at time 2, 5 weeks later, and reported their out-of-school PA at third point in time a further 5 weeks later. Path analysis using residualized change scores revealed that perceived autonomy support predicted autonomous motivation in PE ($\beta=.29$), and autonomous motivation in PE predicted autonomous motivation for out-of-school PA ($\beta=.40$). Autonomous motivation towards out-of-school PA predicted attitudes, subjective norms and PBC ($\beta=.20-40$). Autonomous motivation towards out-of-school PA ($\beta=.34$), attitude ($\beta=.21$), and subjective norm ($\beta=.13$) predicted intentions toward out-of-school PA. Intentions towards out-of-school PA did not predict out-of-school PA. Results support some of the predictions of TCM on the transfer of autonomous motivation between PE and out-of-school PA when applied to spontaneous behaviour change over time. However, change in intention for out-of-school PA failed to predict change in PA behaviour.

Leading together towards a stronger 'Us': an experimental test of the 5RS shared leadership program in basketball teams

Niels Mertens¹, Filip Boen¹, Alex Haslam², Nik Steffens², Stewart Cotterill³, Katrien Franssen¹

¹KU Leuven, Belgium; ²The University of Queensland, Australia; ³University of Winchester, England

Leadership has been suggested as a key factor to gain competitive advantage. More specifically, research has highlighted that shared leadership constitutes a better predictor of team effectiveness than vertical leadership. Although the benefits of shared leadership are well documented, the evidence on how to implement such a shared leadership structure in practice is sparse. In sport teams, this leaves coaches with three key challenges: (1) identifying the 'right' team members as leaders, (2) defining what roles those leaders should fulfill, and (3) how to further develop the leadership skills of the appointed leaders. The 5RS Shared Leadership Program addresses these challenges by identifying and appointing the best leaders within the team on task, motivational, social, and external leadership (by using social network analysis). Next, we further improved the identity leadership skills of the appointed leaders. To test the effectiveness of this program, we recruited eight Belgium basketball teams at the national level. We adopted an experimental design in which teams were distributed over two conditions (i.e., intervention and control condition), each being measured at two points in time (i.e., pre and posttest). The results show that the 5RS Shared Leadership Program succeeded in creating an effective structure of shared leadership and in strengthening the perceived leaders' ability to create a shared sense of 'us' within their team. Additionally, the program strengthened members' team identification, motivation, commitment to team goals, and well-being.

Paper Session 25: Elite Athletes

Time: Wednesday, 17/Jul/2019: 4:00pm - 5:30pm · Location: S 10 - Münster

Session Chair: Joseph Baker, York University

4:00pm - 4:15pm

Factors affecting elite athletes' mental health: a systematic review

Andreas Küttel, Carsten Hvid Larsen

University of Southern Denmark, Denmark

Aim: The purpose of this study was to provide a systematic mapping review of factors related to mental health (MH) of elite athletes.

Method: Through a systematic database search, a total of 43 empirical studies were included in this review. The studies were evaluated and are reported according to sample characteristics, research design, and factors affecting elite athletes' MH.

Results: Studies examined a wide range of sports and ages. Sample sizes ranged from 8 to 2067 and were recruited both in individual and team sports mainly in Europe and Australia. Researchers used quantitative (84%), qualitative (11%), and mixed-method (5%) designs. Across the studies, we identified a total of 82 correlates related to athletes' MH. 81% of the studies examined personal risk factors (e.g. injury, ineffective coping), while 37% of the studies examine sport-environmental risk factors (e.g. deselection). Personal protective factors (e.g. recovery) were investigated in 30% of the studies, while 25 % of the studies investigated sport-environmental protective factors (e.g. trusting climate).

Conclusions: Previous studies focusing on athletes' MH have mostly investigated the prevalence of athletes' mental ill-health (e.g. depression, anxiety) and the related factors compromising MH. The few qualitative studies provide some insights into potential protective factors and consider MH as a resource for a successful and sustainable sports career. We advocate that future studies include the whole spectrum of the mental health continuum (i.e. from languishing to flourishing; Keyes, 2002) with an increased focus on the role of the (sport) environment and the athlete-environment fit.

4:15pm - 4:30pm

The impact of physiological fatigue and gaze behavior on shooting performance in elite and sub-elite biathletes

Amelie Heinrich¹, Rouwen Cañal-Bruland², Dan Witzner Hansen³, Oliver Stoll¹

¹Martin Luther University Halle-Wittenberg; ²Friedrich Schiller University Jena; ³IT University of Copenhagen

The aim of this study was to examine the effects of physiological fatigue and gaze behaviour on shooting performance in elite and sub-elite biathletes in an ecologically valid setting, thereby extending previous work by Vickers and Williams (2007). n = 10 members of the German national senior team (elite) and n = 13 members of the German national junior team (sub-elite) took part in a standardized performance test at the national team's training site. The performance test (including an adapted test for the junior team) consisted of roller skiing on a treadmill at four increasing intensity levels and shooting series of five shots after each intensity level. We collected measures of physiological fatigue (e.g. blood lactate), shooting performance data (including accuracy and time) as well as eye movement data, using a specifically for this purpose developed eye-tracker. Physiological fatigue (i.e. blood lactate) increased significantly across intensity levels, similarly for both elite and sub-elite biathletes. Results showed that, first, elite and sub-elite biathletes did not differ regarding shooting accuracy; however, elites showed significantly shorter shooting times than sub-elites. Second, increasing physiological fatigue did not influence shooting accuracy; however, shooting times of elites and sub-elites increased significantly in prone shootings well as in standing shooting. Third, preliminary analyses of a subset of nine sub-elite participants' gaze data seem to indicate no effect of fixation duration of the final fixation on shooting accuracy. Together, these findings provide novel insights into the intricate links between physiological fatigue, gaze behaviour and shooting performance in elite biathletes.

4:30pm - 4:45pm

Factors promoting and inhibiting performance and well-being of Indian elite shooters

Shivjot Gill, Sanjeev P. Sahni, Mohita Junnarkar

Jindal Institute of Behavioural sciences, O.P Jindal Global University, Haryana, India

The study aimed to explore the factors that promoted and inhibited the performance and well-being of Indian elite shooters. About N = 10 elite shooters with a mean age of 40.5 years and average experience of 19 years (min exp = 8 years, max exp = 35 years) participated voluntarily in the current study. The data were collected through in-depth semi-structured interviews that lasted for about 90 minutes each. The data was analysed through Gioia method which offers a systematic approach to emerge with new concepts and it brings in transparency to conduct inductive research (Gioia et al., 2012). The analysis resulted in the emergence of five themes, namely (1) self-knowledge, (2) sporting knowledge, (3) mental skill acquisition, (4) mindfulness, and (5) psychological impact of technology. The overall findings demonstrated that shooters came up short on comprehension of their sport and self-managerial skills due to lack of expert sports professionals' support at the early years of their sporting career. Furthermore, constrained knowledge regarding the significance of mental skill training and execution appeared to be a noteworthy restraint resulting in the poor overall well-being of shooters. Henceforth, it is suggested to integrate mental skill training practices with technical and physical training along with addressing the issues arising with athletes in the socio-cultural environment where they are coached or trained.

4:45pm - 5:00pm

Effects of function specific instruction on the effectiveness of frontal midline theta neurofeedback training

Tai-Ting Chen¹, Cheng-Wei Kao¹, Wen-Hsuan Chang¹, Kuan-Fu Chen¹, Kao-Hung Lin¹, Eric Hung², Chih-Yen Chang¹, Chung-Ju Huang³, Tsung-Min Hung¹

¹National Normal Taiwan University, Taiwan; ²Chinese Culture University, Taiwan; ³University of Taipei, Taiwan

Purpose: This abstract reports an on-going study that aims to examine whether function-specific instruction would be more effective on one session frontal midline theta neurofeedback training (NFT).

Method: All participants were assigned into one of the following three groups: function-specific instruction group (FSI; n = 15), traditional instruction group (TI; n = 15), and sham control group (SC; n = 15). Up to writing this abstract, only part of the function-specific instruction group has completed the protocol. N = 9 skilled golfers aged 23.78 years (SD = 9.48) with a handicap of M = 12 (SD = 10.95) were recruited. Before and after NFT, 40 putts were performed. Additionally, resting EEG was recorded to compare the change of theta power. 20 putts without feedback right after the NFT would be compared to 20 putts right before the NFT as another examination of the NFT effects. The NFT session contained 10 blocks with 5 trials in each block.

Results: Function-specific NFT resulted in improved putting rate and lowered frontal midline theta power. However, the effects did not extend to the resting EEG and 40 putts performed afterwards.

Conclusion: Function-specific instruction for the one session frontal midline theta NFT was effective to promote putting performance immediately after the NFT. The study is expected to be completed in the next couple of months, hence, the results from the entire study will be reported at the conference.

5:00pm - 5:15pm

Development of a short form of the self-regulated learning for sport practice survey

Stuart G. Wilson¹, Bradley W. Young¹, Lindsay McCardle^{1,2}, Sharleen Hoar³, Joseph Baker²

¹University of Ottawa, Canada; ²York University, Canada; ³Canadian Sport Institute - Pacific

Self-regulation of learning is a potential antecedent of athletic development of sport expertise (McCardle et al., 2017). The Self-Regulated Learning for Sport Practice (SRL-SP; McCardle et al., 2018) survey effectively showed criterion validity by discriminating athlete skill levels; however, its length likely limits practical use (Horvath & Röthlin, 2018). We aimed to conduct a posteriori analyses to test the factorial and criterion validity of a short version of the SRL-SP. Five SRL researchers, including an athletic mental performance consultant, independently and consensually re-appraised the face validity of 53 items from the initial SRL-SP model, selecting 14 based on conceptual and practical justifications. Exploratory factor analysis (PAF, oblique rotation) on McCardle et al.'s (2018) data set of 482 North American competitive athletes (mean age = 26.45, SD = 12.66) returned two factors (total variance = 39.6%), representing 'motivational' (4 items, loadings .49-.72, $\alpha = .73$) and 'metacognitive' SRL processes (10 items, loadings .46-.72, $\alpha = .87$). A MANOVA tested criterion validity by comparing athletes from four skill levels. A main effect was found for senior (18+ years) athletes, Wilk's $\lambda = .95$, $F(6,730) = 3.33$, $p = .003$, $\eta^2 = .027$; international athletes scored correspondingly higher than national and provincial athletes on both motivational ($p = .027$, $\eta^2 = .046$) and metacognitive scales ($p = .001$, $\eta^2 = .025$). We discuss our results compared to those previously obtained using the six subscales of the SRL-SP and suggest that reliable assessment and criterion validity may not be diminished using a short form.

5:15pm - 5:30pm

A cross-cultural study of the sport happiness perception among Korean, Chinese, and Japanese elite swimming athletes

Chen Gong², Jin Hwang¹

¹Chonbuk National University, Korea, Republic of (South Korea); ²Northeast Electric Power University

While previous research highlights the important impact that sport happiness can have for athletes' quality of life, limited research has examined the sport happiness of elite athletes. The purpose of this study was to examine the difference between Korean, Chinese, and Japanese elite swimming athletes' sports happiness and, if there was any, how the result was similar and different cross-culturally/nationally. Semi-structured interviews were conducted with a total of N = 12 elite swimming athletes. Participants were both males (n = 6) and females (n = 6), who were between 19-23 years old, with an average of M = 13.9 years of swimming experience. Interviews were transcribed verbatim and were analysed with a content analysis procedure, in which raw meaning units were grouped into salient themes. Athletes' responses regarding happiness derived from this in-depth interview revealed five categories: 1) athletes' perception of happiness, 2) happiness in everyday life, 3) happiness in practice and competition situations, 4) coach-athlete relationship, and 5) material happiness. The participants perceived that their happiness to be associated with pleasure and satisfaction. In practice and competition situations, most of the athletes answered that happiness is when they achieve good results. However, material rewards and benefits given to them cannot be seen as happiness but as supporting. Social and cultural processes contributing to these different outcomes will be discussed.

Symposium 22: A holistic perspective on coaching athletes through transitional challenges

Time: Wednesday, 17/Jul/2019: 4:00pm - 5:30pm · Location: S 9 - Cologne
Session Chair: Koen De Brandt, Vrije Universiteit Brussel

A holistic perspective on coaching athletes through transitional challenges

Chair(s): **Koen De Brandt** (Vrije Universiteit Brussel, Belgium)

Discussant(s): **Paul Wylleman** (Vrije Universiteit Brussel, TeamNL NOC*NSF)

Throughout their athletic careers, elite athletes need to develop athletically, simultaneously being confronted with developmental challenges in the psychological, psychosocial, academic/vocational, or financial domain (Wylleman & Rosier, 2016). Development in these domains does generally not occur in a smooth continuous manner, but is rather characterised by a sequence of predictable (i.e. normative) and/or unpredictable (i.e. non-normative) transitions. Furthermore, development is concurrent, reciprocal and interactive, meaning that transitional demands in one domain can impact athletes' functioning in other domains as well. While successfully overcoming transitional challenges can provide the impetus for further development, failure to do so can lead to mental problems, stagnation in development and even dropping out of sports (Alfermann & Stambulova, 2007). Therefore, both coaches and practitioners should assist athletes in preparing for and coping with the transitional challenges they encounter (Wylleman, Rosier, De Brandt, & De Knop, 2017).

This symposium will present research on how athletes, from various sports and countries, can successfully overcome different developmental challenges in different domains, including the psychological support provided to Dutch baseball players in their cultural transition to the United States; the roles and competencies of player-development managers in European football; changing former elite athletes' irrational beliefs about healthy physical activity; psychological counselling of high-potential and elite athletes through the use of planned disruptions; and the support provided to student-athletes in their social life.

Presentations of the Symposium

The cultural transition of Dutch baseball players to baseball in the United States: Tasks and required psychological competencies

Suzan Blijlevens¹, Paul Wylleman², Kayan Bool³, Chris Visscher⁴, Marije Elferink-Gemser⁴

¹Vrije Universiteit Brussel, TeamNL NOC*NSF, Rijksuniversiteit Groningen, ²Vrije Universiteit Brussel, TeamNL NOC*NSF, ³TeamNL NOC*NSF, ⁴Rijksuniversiteit Groningen

To become a baseball player in the Major League Baseball (MLB) in the United States, high-potential Dutch baseball players need to achieve world-class performance levels. Therefore, the Dutch talent-program baseball aims at creating an environment consistent with that in the United States in order to facilitate the development of high-potential players into world-class performers (KNBSB, 2017). In-depth knowledge of the challenges culturally transitioning athletes face, is necessary for providing them with appropriate psychological support during each transitional phase. Applying the Cultural Transition Model (Ryba, Stambulova, & Ronkainen, 2016), this study aimed at providing in-depth insights into the tasks and the psychological competencies required for Dutch baseball players, to successfully transition into the United States. Data were collected through in-depth interviews with N = 10 top-level male baseball players, of whom n = 4 were in the pre-transitional phase, n = 3 in the acute adaptation phase and n = 3 in the socio-cultural adaptation phase. The data, interpreted using thematic analysis, showed that players in the pre-transition phase require competencies for utilising sources and social support in order to obtain contracts and prepare for their relocation. Players in the acute cultural adaptation phase require competencies of adaptability and flexibility that enables them to immediately adjust to the new circumstances, while simultaneously improving their sports performance. In the socio-cultural adaptation phase, players should possess competencies such as effective decision-making, perseverance and resilience, enabling them to deal with the inherent uncertainty characterising professional baseball in the United States.

The roles and competencies of player-development managers in European football

Sofie Smismans¹, Paul Wylleman², Simon Defruyt¹, Koen De Brandt¹

¹Vrije Universiteit Brussel, ²Vrije Universiteit Brussel, TeamNL NOC*NSF

High-quality holistic career support can provide (semi-)professional football players with health-related, developmental and social benefits, enhanced future-employment prospects and positive adaptation to life after sport (European Commission, 2012). The aim of this study was therefore to identify the roles and competencies of player-development managers (PDM's) in (semi-)professional football.

Semi-structured interviews were conducted with 15 player-development experts (73% male, 27% female) from 12 different countries (Australia, Cyprus, Denmark, England, Finland, France, Greece, Ireland, Norway, Scotland, Sweden, Switzerland). Using deductive thematic content analysis (Braun & Clarke, 2006), the specific roles of a PDM were categorised into the different levels of the Holistic Athletic Career (HAC) model (Wylleman & Rosier, 2016) and competencies were categorized into the underlying attributes of a person (i.e. skills, attitudes, knowledge, experience; Roe, 2002). The roles and competencies were inductively identified within the deductive categories (Braun & Clarke, 2006).

The study revealed that on an athletic level, a PDM's role is limited, especially as a player's priority is placed on football performance. On an academic/vocational level, a PDM's role is supporting players to pursue a successful dual career and to prepare for a post-football career. When it comes to the financial, psychosocial and psychological level, the role of a PDM is signposting players to relevant others if help on any of those levels is needed by a player. Knowledge of the football environment, as well as psychological, communication, organisation and cooperation skills, and a professional attitude were considered essential competencies in order to fulfil the aforementioned roles.

Helping former elite athlete changing irrational beliefs about healthy physical activity

Anna Jordana¹, Yago Ramis¹, Javi Vega², Susana Regüela², Miquel Torregrossa¹

¹Universitat Autònoma de Barcelona, ²Centre d'Alt Rendiment Esportiu de Sant Cugat del Vallès

Rational Emotive Behavior Therapy (REBT; Ellis, 1957) in sport and exercise settings is gaining research interest to improve athletes' psychological well-being, decreasing irrational beliefs that cause unhealthy consequences (e.g. depression, withdrawal). Once former elite athletes retire from sports it might be challenging for them to maintain healthy levels of physical activity due to irrational beliefs developed throughout their sports career, and some of them could end developing an inactive lifestyle. The purpose of this study was to examine the effectiveness of an REBT program aimed at building more rational beliefs regarding healthy physical activity. A multiple baseline single case design with N = 8 former elite athletes was used to examine the effectiveness of three one-to-one 45 minutes REBT sessions and three homework assignments. Rational and irrational beliefs were assessed before the intervention and one month after the program, using the Shortened General Attitudes and Belief Scale (SGABS; Lindner, Kirkby, Wertheim, & Birch, 1999) and semi-structured interviews. Seven of the eight participants showed irrational beliefs about the concept of healthy physical activity in terms of frequency and intensity. Statistical analyses and social validation data indicated that REBT intervention led to a decrease of awfulizing, self-depreciation and demandiness, and the establishment of more realistic goals regarding the re-engagement in healthy physical activity. This study contributes to existent literature supporting the efficacy of the use of REBT as an adequate approach in sport and exercise settings.

Exploring coaches' use of planned disruptions in talent development and elite sports

Jolan Kegelaers¹, Paul Wylleman², Raoul Oudejans³

¹Amsterdam University of Applied Sciences, Vrije Universiteit Brussel, ²Vrije Universiteit Brussel, TeamNL NOC*NSF,

³Amsterdam University of Applied Sciences, Vrije Universiteit Amsterdam

Planned disruptions are defined as relatively small and deliberate training activities in which athletes are exposed to increased pressure under controlled circumstances. Increasingly, a case is made in elite sports for the structural inclusion of such planned disruptions. Research suggests that they can increase performance under stress (Oudejans & Pijpers, 2010) and play a role in the development of psychological resilience (Kegelaers & Wylleman, in press). Despite theoretical and practical support, there is a lack of knowledge on which strategies coaches use in an applied context and how or why they use them. Therefore, the present study aimed at exploring the different types of planned disruptions coaches use, and the desired outcomes of these disruptions. To this end, thematic analysis was used to analyse semi-structured interviews with N = 9 talent-development and elite-level coaches (Mean age = 42.9, SD = 8.26). Results indicated that coaches use a combination of nine types of planned disruptions (i.e. location, competition simulation, punishments & rewards, physical strain, stronger competition, distractions, unfairness, restrictions, outside the box). These strategies were used to familiarise athletes with pressure, create awareness, develop or refine personal resources, and promote team processes. Three additional themes emerged regarding the surprise nature of planned disruptions, periodization, and the impact on personal relationships. The findings in the present study can guide further applied and theoretical explorations of the use of planned disruptions.

Supporting student-athletes with their social challenges: Dual career support providers' perspectives

Simon Defruyt¹, Paul Wylleman², Koen De Brandt¹

¹Vrije Universiteit Brussel, ²Vrije Universiteit Brussel, TeamNL NOC*NSF

Balancing education, elite sport and a satisfying social life can be challenging to student-athletes (Gledhill & Harwood, 2015). The time pressure associated with engaging in a dual career (DC) can jeopardise the quality of athletes' relationships with friends and family and in some cases lead to severe loneliness (e.g. Debois et al., 2015; Geranosova & Ronkainen, 2015). To support student-athletes proactively in coping with these and other challenges, the role of DC support providers has become increasingly important (Wylleman, De Brandt, & Defruyt, 2017). As part of the Erasmus+ Sport "Gold in Education and Elite Sport" project, the objective of this study was to gain insight in how DC support providers try to support student-athletes to attain a satisfactory social life. Using a convergent parallel research design (Creswell & Clark, 2011), data was gathered from N = 265 DC support providers from nine European Member States participating in an online survey, as well as from N = 28 DC support providers from four European Member States via four focus groups. Results of the quantitative part of this study showed that DC support providers perceive that student-athletes need (to develop) planning, time management and social competencies to cope with this scenario. From the focus group analyses, several support strategies to enhance these competencies proactively, as well as to optimise student-athletes' social environment, were distilled and will be presented. The current findings provide insight in how DC support providers (try to) enhance student-athletes' coping with social challenges.

Symposium 23: 50 years of performance enhancement: time to shift the future emphasis to mental health and well-being

Time: Wednesday, 17/Jul/2019: 4:00pm - 5:30pm · *Location:* S 8 - Copenhagen
Session Chair: Tadhg E. MacIntyre, University of Limerick

50 years of performance enhancement: time to shift the future emphasis to mental health and well-being

Chair(s): Tadhg E. MacIntyre (University of Limerick, Ireland), Jürgen Beckmann (Technical University Munich)

Discussant(s): Jürgen Beckmann (Technical University Munich)

Mental health is recognised as a global societal challenge and for example, depression alone has the greatest financial burden of disease (WHO, 2017). Sport serves as a microcosm for society, being a domain with high levels of mental health stigma (Gulliver, 2016), service aversion and higher rates of mental health disorder than in the general population (Nixdorf et al., 2016). The topic of mental health in sport has been greatly illuminated by a surge in interest among researchers and the development of position statements (e.g., Moesch et al., 2018; Schinke et al., 2017). A gap in the literature persists, however, with regard to our understanding of mental health stigma, which arguably obscures the real nature and scale of the problem. The large scale survey data from Ireland sheds light on this issue among athletes and support staff in elite sport. Conceptual insights from the dual axes model by Keyes (2002, 2005) suggests that mental health and well-being are different but interrelated constructs. Evidence from a German study supporting this model is presented. A key challenge for our field is the level of mental health awareness among practitioners. Attempts to educate practitioners using mental health literacy programs have been somewhat successful (Sebbens et al., 2016). However, real-world decision making has yet to be evaluated among an international sample. The final paper tackles this issue using a novel vignette scenario based online methodology. Differences among accredited and non-accredited practitioners were evident. Implications for training and practice and insights for research are discussed.

Presentations of the Symposium

Irish athletes' attitudes towards psychological help-seeking: a large-scale online survey

Jessie Barr, Tadhg E. MacIntyre, Giles Warrington

University of Limerick

Despite the psychological benefits of participation in competitive sport, it is suggested that athletes are equally, if not more vulnerable to mental health issues than the general population (Hughes & Leavey, 2012). The main barrier to improved mental health is the perception of stigma and subsequent negative attitudes towards seeking professional psychological help. These negative attitudes and fear of stigmatisation are thought to be most pronounced among athletes (Gulliver et al., 2012). The study aims to firstly measure differences in the perception of stigma between a sample of Irish athletes and sports professionals compared to a sample of non-athletes. Secondly, the study attempts to determine whether perceived stigma predicts attitudes towards mental health help-seeking. The participants, 1,300 athletes, 490 sports professionals and 509 non-athletes, completed an online self-report survey measuring their levels of self-stigma, public stigma and attitudes towards psychological help-seeking. It is hypothesised that athletes and sports professionals will perceive higher levels of public stigma and self-stigma than the general public as a result of their immersion within the sport culture. It is further hypothesised that both public stigma and self-stigma will be significant predictors of help-seeking attitudes across all groups. Hierarchical regression analysis and t-tests will be used to compare levels of stigma and attitudes across groups and to determine whether a significant percentage of the variance in attitudes towards psychological help-seeking is predicted by self-stigma or public stigma.

Applying a two-continua model of mental health to athletes

Insa Nixdorf, Raphael Nixdorf

TUM

While the pursuit of mental illness research in the general population has improved in its quality and prevalence in recent years, this same caliber of progress in research on athletes still lags behind. Current research acknowledges the importance of clinical syndromes in athletes, but still there is only a rough theoretical understanding of mental health in elite sports (Schinke, Stambulova, Si, & Moore, 2017). In 2002, Corey L.M. Keyes introduced a model that conceptualises mental health as a discrete syndrome of positive feelings and functioning, based on subjective measures of affective state and psychosocial functioning, rather than just the absence of mental illness (Keyes, 2002). Keyes integrates this mental health model with a continuum of clinical mental illness into a two-continua model displaying both mental health and mental illness, two variables shown to be correlated but still independent (Keyes, 2005). In shifting the framework around thinking about mental illness and performance in athletes to accommodate more multidimensional conditions, the following study seeks to distinguish between mental illness and mental health within the athlete domain. Using an anonymous online survey this study tries to verify Keyes' model in an international athlete sample. By an analysis with structural equation modelling the two-continua model is tested. Therefore, results provide a deeper understanding of mental health and mental illness, which can possibly improve future research and psychological support for athletes.

A survey of practitioner sport psychologists understanding of mental health issues: a vignette-based approach

Tadhg E. MacIntyre¹, Robert Vaughan², Jürgen Beckmann³, Aisling Holton¹, Marc O'Donovan-Dwyer¹

¹University of Limerick, ²York St. Johns University, ³Technical University Munich

Sport psychologists will often be the athlete's first point of contact when suffering from symptoms of a mental health disorder. Prior research has reported low levels of mental health literacy among practitioners. It is possible that this lack of knowledge may increase service aversion and mental health stigma and have negative consequences for athletes in distress. This study employed a series of scenarios for practitioners to evaluate the risk to mental health for athletes. A sample of sport psychologists (N=126), comprising both accredited (n=66) and non-accredited (n=60) practitioners, were selected via purposive sampling. It was hypothesised that accredited sport psychologists would make better judgements of the scenarios (i.e. diagnose accurately athletes symptoms) and convey greater knowledge of mental health disorder and well-being. Measures included judgements from 4 scenarios, standardised inventories on stigma, help-seeking and knowledge of referral protocols and myths of psychology inventory. A weighted score was calculated for judgements of the vignettes which supported the hypothesis. A metric was used to create an average score for decision making on the vignettes resulting in higher mean scores for accredited personnel (70 points) versus non-accredited personnel (60 points; combined effect size = 0.41). An independent between groups ANOVA yielded a statistically significant result ($p=.63$). Differences in well-being and levels of mental health stigma were also reported. Research on this topic requires further attention to determine whether accreditation pathways are sufficient to equip practitioners to protect athletes from mental health disorders and to promote well-being as a protective factor for psychological disorders.

An investigation of mental health commitment and utilisation among NCAA athletes referred to mental health professionals

Bradley Donohue, Stephen Benning

University of Nevada

Very few studies have been conducted that comprehensively examine factors that may influence commitment (consent to participate, scheduling pre-intervention assessment) and utilization (attendance to pre-intervention assessment, mental health intervention attendance) of mental health services in collegiate athletes (Moreland, Coxe, & Yang, 2018). In this study, mental health commitment and utilization were assessed in 289 collegiate athletes (National Collegiate Athletics Association, club, intramural) who were referred for their consideration of goal-oriented mental health intervention. Preliminary analyses indicated that class standing, mental health symptom severity, referral type, and type of engagement intervention influenced commitment and/or utilization, whereas type of athlete, gender, ethnicity, being in or out of season, and history of counseling, were not found to influence service commitment or utilization. These results, and ones involving examination of the aforementioned factors separated by athlete type, will be reviewed. Also reviewed will be methods of addressing perceived stigma when implementing engagement interventions.

Symposium 24: Mental health in sport case studies

Time: Wednesday, 17/Jul/2019: 4:00pm - 5:30pm · *Location:* Senatssaal - Prague

Session Chair: Stewart Cotterill, AECC University College

Mental health in sport case studies

Chair(s): **Stewart Cotterill** (AECC University College, United Kingdom)

Recent position statements focused on mental health in sport (e.g. Schinke, Stambulova, Si, & Moore, 2017; Moesch et al., 2018) have highlighted both the increased prevalence of a range of mental health conditions, the impact of sporting environments on athletes' and support staff's mental health, and the impact of poor mental health on performance outcomes. However, while this increased focus is welcome, there is still a lack of sharing and dissemination of "real-world" examples and case studies of working with and improving mental health at sport. This is true at the individual, club and national level. As a result, the aim of this symposium is to present contemporary case studies that focus on mental health challenges, athlete support and implementation plans at a range of different levels within the content of sport. The symposium is composed of four specific presentations exploring mental-health focused case studies in different contexts. The four presentations in the symposium will explore mental health in sports from a broad range of perspectives: first exploring the perspective of an elite athlete and their associated care team. Second, at a policy level exploring the development of well-being in a sport action plan at the national level. Third, exploring the approaches taken working with an individual athlete and multi-profession support. Fourth, exploring the development and implementation of a mental health and well-being development strategy at all levels of an amateur sports team.

Presentations of the Symposium

Receiving services from the Canadian Centre for Mental Health and Sport: The perspective of an elite athlete and the care team

Natalie Durand-Bush

University of Ottawa

Athletes face the same risks of developing mental health concerns as the general population (Neal et al., 2013). However, few specialized mental health clinics exist in the world to address the unique needs of high-performance athletes struggling with mental illness (Van Slingerland et al., 2019). The Canadian Centre for Mental Health in Sport (CCMHS) was recently developed by a team of experts to fill this gap. It is the first Centre in Canada to offer collaborative sport-focused mental health care services designed to help athletes and coaches achieve their performance goals while preserving or restoring their mental health and well-being (CCMHS, 2018). In this case-study presentation, we will share the care process of an elite athlete receiving services from the CCMHS, including the referral, screening, and treatment process, as well as the outcomes of this care. We will also discuss the interdisciplinary team approach and the secure telehealth platform utilised to provide the care. Both the perspectives of the team of practitioners and of the athlete will be provided. Finally, we will address some of the challenges encountered in the treatment of mental illness of athletes as well as the logistics inherent in running a nationwide centre offering both in-person and telehealth services.

Four steps in the development of a Wellbeing in Sport Action Plan for Northern Ireland: Research to practice

Gavin Breslin

University of Ulster

Emerging evidence suggests that competitive sport, by nature, can also contribute to poor mental health, in particular when athletes experience insufficient support (Bauman, 2016). A growing number of attempts have been made to create a culture that promotes well-being (Donnelly & Breslin, 2018). Sporting organisations along with the government have shown an increased commitment to better support athletes in some countries. The case study reported here is part of a larger programme of work on athletes' mental health and well-being that is focused on impacting community well-being in sports in Northern Ireland. Through a systematic review (Breslin et al., 2017), the development of a psycho-educational coach and athlete mental-health awareness intervention programme (Breslin et al., 2017), and a public engagement consultation (Breslin et al., 2017), an Action Plan for Well-being in Sport 2018-2023 was developed (Donnelly & Breslin, 2018). The development processes for the plan are summarised into four steps (Breslin & Donnelly, 2018). Step 1: Establish a "Mental Health and Well-being in Sport" Steering Group; Step 2: Research informed practice; Step 3: Public consultation, and Step 4: Writing the Action Plan. In this presentation, the steps followed to develop the action plan, are described and the translation of research-based evidence into policy and community-impact in sport is described as a non-linear process. With the increasing interest in mental health and well-being in sport, what has been achieved to date in Northern Ireland, can be shared for others to emulate.

Rowing to excess: A road to physical and mental health recovery for a division I athlete

Sharon Chirban

Amplify Wellness + Performance, LLC, Owner / Clinical Sport Psychologist, Orthopedics, Boston Children's Hospital

It is quite a well-known concept at this point that athletes often take things too far in the name of their sport (Reynolds, 2000). They over-conform to the sport ethic (Coakley, 1991) and often put their bodies and their minds at risk. There is increasing visibility through personal athlete accounts (Phelps, Love) that some of their biggest challenges occur outside the pool and off the court. This case study will demonstrate an interface between individual characteristics and developmental history that made this 21-year-old rower particularly vulnerable to over-complying to pain-management tactics, costing him physical and mental health at the expense of sports. In this report, we will untangle the interplay between pain management, multi-substance abuse behaviour, depression, anxiety and feelings of despair and low self-worth. We will use the Keyes' (2002) two-continuum model of mental health as a theoretical framework for intervening with this athlete's mental health. This model posits two related but distinct dimensions: One continuum indicates the presence or absence of mental health, the other the presence or absence of mental illness. From this perspective, a number of tactical decisions were made to refer to outside of the University Sports Medicine department for an objective evaluation and a referral to Sport Psychiatry for a work-up, assessing his addiction profile and his need for psychotropic medication. Implications for clinical sport work in a private practice model will be discussed.

Case study of mental health and positive psychological climate development in an amateur rugby club

Stewart Cotterill
AECC University College

While the benefits of exercise, physical activity and sport on mental health have often been reported, the suggested link between these activities and a positive impact on mental health has often been oversimplified. While it is true that engaging in activities such as sport at all ages can have a positive impact on mental health, the specific dynamics of the particular environment (e.g. the club) dictate whether engagement in a sport will have a positive or negative impact on mental health. There is an increasing focus in the mental health in sport literature on the challenges of how to develop a mentally healthy and psychologically positive environment in which junior athletes and children can thrive in terms of their personal development, mental health and sporting performance. This case study will focus on the approach adopted to develop a mentally healthy environment across all youth levels of a local rugby union club in England. The program implemented as part of the case study included specific education for coaches, parents and children, and the provision of in-club mental health support for each of these groups. Focus groups were conducted with each group at the end of the intervention stage to explore the perceived impact of this whole-club approach to developing a mentally healthy environment. Results suggest that each group viewed the club environment as more positive and more supportive and felt that this was a positive change.

Workshop 10: Neuroscience in shooting and team sports – neuroshooting and team flow

Time: Wednesday, 17/Jul/2019: 4:00pm - 5:30pm · *Location:* VSH 19 - Paris
Session Chair: Ágota Lénárt, University of Physical Education

Neuroscience in shooting and team sports – neuroshooting and team flow

Ágota Lénárt¹, Gyula Fábián³, László Pitlik², László Szalóki³, László Endre Lovass³

¹University of Physical Education, Hungary; ²János Kodolányi University; ³Innoria Ltd.

Cognitive performance indicators have a direct impact on current performance. The EEG systems of Innoria Ltd. give the user a real-time biofeedback on the process of shooting or the mental cohesion of a sport team, including analytical action tracking and brain activity. In shooting it was found that before shooting, an alpha phase activates and in low SMR range a top-performance peak frequency is detected. EEG-pattern for the highest score shots is identified, and every best shot has an objectively recognizable pattern. The time-related data line of this index is examined by an AI algorithm which can detect the most characteristic moment of the data line: the point of shooting. The Team Flow system is capable of analysing and visualizing mental status segments of team members compared to each other based on real-time EEG data. Via evaluation of data and correlation of patterns, the most inconsistent team member and the level of team cohesion can be identified. The system makes it possible to increase the team cohesion as such via inbuilt exercises to stimulate and train certain brain activities. Team Flow system tests were run on the semi-professional hand ball team of Debrecen, and the shooting project was carried out with professional shooters – among others - at the Crossbow Europe Cup.

Workshop 11: Critical realism in qualitative and mixed methods research in sport and exercise psychology

Time: Wednesday, 17/Jul/2019: 4:00pm - 5:30pm · *Location:* VSH 06 - Bad Blankenburg

Session Chair: Noora J. Ronkainen, University of Jyväskylä

Session Chair: Tatiana V. Ryba, University of Jyväskylä

Critical realism in qualitative and mixed methods research in sport and exercise psychology

Noora J. Ronkainen¹, Gareth Wiltshire², Tatiana Ryba¹

¹University of Jyväskylä, Finland; ²University of Bath, UK

The expansion of qualitative and mixed methods research in sport and exercise psychology (SEP) in the last two decades has been accompanied by methodological debates and calls for more sophisticated approaches to research rigour. Often the dialogues have focused on the distinction between positivism and relativism/interpretivism, their associated methods, types of analysis and validity procedures, and tensions in mixing methodologies. Absent from these methodological debates has been the engagement with critical realism as an alternative paradigm that seeks to overcome challenges associated with both of these approaches and is increasingly being used to ground empirical research in SEP. The aim of the workshop is to provide a basic understanding of critical realism as a paradigm for qualitative and mixed methods research in sport and exercise psychology.

The workshop discusses the ontological and epistemological assumptions of critical realism and their implications for the choice of methods, data analysis and considerations of research quality. A realist conception of validity is discussed as an alternative to the procedural approaches promoted both in positivist and interpretive approaches. Published qualitative and mixed methods studies drawing on critical realism will be shared as materials on-site and used in small-group discussions to understand how critical realist research is conducted in practice.

In summary, the workshop outlines a case for a critical realist approach as an avenue for engaging in mixed methods research without compromising philosophical coherence and a perspective on qualitative research that acknowledges the complexity of social world while emphasising ontological depth.

Workshop 12: Introduction to the program “I Play (cause) I Feel” addressed to sport psychology practitioners in youth sports.

Time: Wednesday, 17/Jul/2019: 4:00pm - 5:30pm · *Location:* VSH 17 - Westphalia

Session Chair: Alexandra Markati, Kapodistrian and National University

Introduction to the program “I Play (cause) I Feel” addressed to sport psychology practitioners in youth sports.

Alexandra Markati, Maria Psychountaki

National and Kapodistrian University, Greece

This workshop will provide the participants with the opportunity to learn the principles of “I Play (cause) I Feel” (PF). PF is a program that concentrates on the familiarization of young athletes with their own sport/personal identity and with their thoughts, feelings, and behaviors (“3 Sigma”). PF program is grounded on the combination of the principles of two theoretical approaches (CBT Model; Beck, 2011 and PERMA Model; Seligman, 2011) and the outcomes of evidence based practices. PF program takes place on the field of practice and depends on the harmonic cooperation between the consultant and the sports triadic (athletes, coaches, parents). It is implemented through a number of sessions depending on the general purpose of the sport team. Each session includes a variety of psychomotor activities, sport activities and counseling techniques, derived from a range of choices.

The premise of this workshop is based on the understanding that PF program will help athletes to develop psychosocial skills for a life-long engagement within sports. Participants will learn how to develop and apply such activities that promote positive thoughts, feelings, and behaviors. Additionally, PF workshop aims to provide initial guidelines that will enhance sound decision making and behaviors for an athlete-centered philosophy and practice.

The workshop will integrate (a) presentation on what “I Play (cause) I Feel” program involves in terms of objectives and principles, (b) PF examples applied in sports academies, (c) illustrative psychomotor and sport specific activities and counseling techniques and (d) formal and informal interactive and experiential tasks and discussions.

Featured Symposium 07: Physical education teacher autonomy support training to promote leisure-time physical activity in students (petals) intervention

Time: Thursday, 18/Jul/2019: 8:30am - 10:00am · *Location:* S 10 - Münster

Session Chair: Martin S. Hagger, Curtin University

Session Chair: Taru Lintunen, University of Jyväskylä

Featured Symposium: Physical education teacher autonomy support training to promote leisure-time physical activity (Petals)

Chair(s): **Martin Hagger** (Curtin University, Australia and Faculty of Sport and Health Sciences, University of Jyväskylä), **Taru Lintunen** (Faculty of Sport and Health Sciences, University of Jyväskylä, Finland)

Discussant(s): **Glyn C. Roberts** (Norwegian School of Sport Sciences)

Research outlining the rise of chronic health conditions (e.g. obesity) and increases in incidence of risk factors of non-communicable chronic diseases in young people highlights the imperative of promoting physical activity in this population. School physical education is a useful existing network that can be capitalized to deliver messages and interventions to promote physical activity in a large audience of young people. The current symposium comprises a series of presentations outlining the theoretical basis, design, development and acceptability of the Physical Education Teacher Autonomy-support training to promote Leisure-time physical activity in Students (PETALS) intervention. The intervention is an ambitious, large-scale trial that aims to train teachers to support students' motivation toward, and actual participation in, physical activity out-of-school using a cluster-randomized waitlist-controlled design. Core members of the PETALS intervention team will present key aspects of the intervention from inception to acceptability evaluation. First, the conceptual and theoretical basis of the intervention will be outlined. Next, a pilot study aimed at providing formative theory-based research on which to base the intervention will be described. Thereafter, the development of the intervention content to foster autonomy-supportive behaviours in PE teachers will be reviewed. Following this, details of the content of the program to train teachers on autonomy-supportive techniques will be provided. Finally, procedures and methods to assess the acceptability of the PETALS' intervention will be outlined. Together, this symposium will provide a comprehensive overview of a theory- and evidence-based program to promote out-of-school physical activity through physical education at school.

Presentations of the Symposium

Theoretical basis of the PETALS intervention program: the trans-contextual model

Martin Hagger¹, Mary Hassandra², Arto Laukkanen³, Juho Polet³, Nelli Hankonen⁴, Mirja Hirvensalo³, Taru Lintunen³

¹Curtin University, Australia and University of Jyväskylä, ²University of Thessaly, Greece and Faculty of Sport and Health Sciences, University of Jyväskylä, Finland, ³Faculty of Sport and Health Sciences, University of Jyväskylä, Finland, ⁴University of Helsinki, Finland

This presentation will outline the theoretical basis of the Physical Education Teacher Autonomy-support training to promote Leisure-time physical activity in Students (PETALS) program. The PETALS program is guided by the trans-contextual model, a multi-theory integrated model drawing from self-determination theory and the theory of planned behaviour. The model outlines the processes by which students' autonomous motivation toward activities in a physical-education (PE) context relates to (1) autonomous motivation toward activities in a PE context and, critically, autonomous motivation toward out-of-school physical activity, and (2) beliefs about, intentions toward, and actual engagement in out-of-school physical activity. The model has been supported in numerous studies with meta-analytic confirmation. However, few studies have utilized its principles to guide interventions. Formative research adopting the model suggests that change in leisure-time physical-activity participation may be achieved by application of appropriate intervention techniques that target change in autonomy support in PE. The PETALS program aims to promote autonomous motivation in PE among students by training PE teachers to use autonomy supportive techniques. This necessitates (1) matching the defining characteristics of autonomy support with autonomy-supportive techniques and including them in the intervention, and (2) designing an appropriate study to test mediation of intervention effects on physical activity mediated by the model constructs, particularly autonomous motivation in both contexts. Implications for using this model to guide interventions will be discussed.

Predicting change in out-of-school physical activity using the trans-contextual model

Juho Polet¹, Martin Hagger², Maiken Hansen¹, Taru Lintunen¹

¹Faculty of Sport and Health Sciences, University of Jyväskylä, Finland, ²Curtin University, Australia and Faculty of Sport and Health Sciences, University of Jyväskylä

Physical education (PE) teachers are well placed to promote students' motivation toward physical activity (PA) outside of school through autonomy support. We applied the trans-contextual model (TCM) to examine the effects of secondary-school students' perceived autonomy support from their PE teachers on autonomous motivation toward PE in school and, critically, autonomous motivation toward, and actual participation in, out-of-school PA. The research adopted a three-wave longitudinal design enabling the modelling of change in the constructs over time. Secondary-school students (N = 248) self-reported their perceived autonomy support and autonomous motivation in PE, autonomous motivation toward out-of-school PA, attitudes, subjective norms, perceived behavioural control (PBC) and intentions for out-of-school PA, and out-of-school PA participation. Participants completed the same constructs at timepoint 2 5 weeks later and reported their out-of-school PA at the third timepoint another 5 weeks later. Path analysis using residualized change scores revealed that perceived autonomy support predicted autonomous motivation in PE ($\beta = .29$), and autonomous motivation in PE predicted autonomous motivation for out-of-school PA ($\beta = .40$). Autonomous motivation towards out-of-school PA predicted attitudes, subjective norms and PBC (β s = .20–.40). Autonomous motivation towards out-of-school PA ($\beta = .34$), attitude ($\beta = .21$) and subjective norm ($\beta = .13$) predicted intentions toward out-of-school PA. Intentions towards out-of-school PA did not predict out-of-school PA. Results support some of the predictions of TCM on the transfer of autonomous motivation between PE and out-of-school PA when applied to spontaneous behaviour change over time. However, change in intention for out-of-school PA failed to predict change in PA behaviour.

Description of the development of the PE teacher autonomy-support training to promote leisure-time physical activity

Mary Hassandra¹, Arto Laukkanen², Taru Lintunen², Juho Polet², Nelli Hankonen³, Mirja Hirvensalo², Martin Hagger⁴

¹University of Thessaly, Greece and Faculty of Sport and Health Sciences, University of Jyväskylä, Finland, ²Faculty of Sport and Health Sciences, University of Jyväskylä, Finland, ³University of Helsinki, Finland, ⁴Curtin University, Australia and Faculty of Sport and Health Sciences, University of Jyväskylä

This presentation describes the development of the PETALS physical education teacher-training program, targeting the promotion of students' perceived autonomy to be more physically active out of school.

The PETALS teacher training was developed in three stages. In the first stage, we identified the most effective autonomy-supportive techniques and means to deliver them to PE teachers based on a review of current evidence (Reeve, 2009; 2004; Aelterman, 2015) and on acquired teacher training materials from existing autonomy-support training programs and previous interventions (Cheon et al., 2012, Hankonen, 2017). Next, we developed a list of training activities and delivery techniques. Specifically, we conducted a mapping exercise guided by an initial taxonomy of self-determination theory techniques (Teixeira et al., 2016), to ensure that the training activities and delivery techniques precisely matched the theory-based motivational determinants (e.g., autonomous motivation, psychological need satisfaction) targeted in the intervention. The second stage involved the development of a detailed draft of the content of each session (n = 6) including aims, learning outcomes, main instructional points, examples and interactive activities. Accompanying supportive materials (worksheets, printed examples, video demonstrations, presentation slides, and session summaries) were produced to illustrate the program content. The content and materials were reviewed and revised by the core research team. The final stage involved review of the entire program and materials by external stakeholders and teacher educators, with different relevant expertise. Based on their feedback, the program content and materials were further revised by the research team resulting in the final PETALS program.

Implementation of the PETALS program

Arto Laukkanen¹, Mary Hassandra², Juho Polet¹, Marjo Rantalainen¹, Elisa Kaaja¹, Martin Hagger³, Taru Lintunen¹

¹Faculty of Sport and Health Sciences, University of Jyväskylä, Finland, ²University of Thessaly, Greece and Faculty of Sport and Health Sciences, University of Jyväskylä, Finland, ³Curtin University, Australia and Faculty of Sport and Health Sciences, University of Jyväskylä

The aim is to describe the implementation of the PETALS teacher-training program. Secondary-school teachers (N = 16) received the 12-hour autonomy-support training program. The program aimed to familiarize physical education (PE) teachers with techniques aimed at promoting students' autonomous motivation toward out-of-school physical activities. Training began with an introduction to the self-determination theory. It focused on seven key autonomy-supportive techniques: taking students' perspective, using non-controlling and informational language, providing a rationale, displaying patience, providing choices, accepting negative emotions and feelings, and using questions. Furthermore, the techniques were introduced and practised under three teaching-related interaction situations: when providing instructions, when providing feedback, encouragement and praise, and when responding to students discipline and off-task behaviours. Practices aiming to support the teachers' autonomy were mainly based on small group discussions and shared expertise on how to adapt the key techniques in regular lessons. For instance, teachers were asked to share ideas concerning ways of providing a rationale to students for doing key curriculum activities (e.g. track and field, orienteering, dance), both in lessons and out-of-school contexts, and with an emphasis on learning skills and promoting well-being. The training was implemented according to the program. Feedback from teachers during training indicated that some already used autonomy-supportive teaching, while others were sceptical of the use of autonomy support instead of controlling techniques. This was acknowledged and consistency in use of autonomy support across classes was emphasised. In the end, teachers prepared an action plan for reinforcing the implementation of the trained key techniques.

Acceptability of the PETALS program to promote autonomous motivation toward physical activity

Taru Lintunen¹, Mary Hassandra², Juho Polet¹, Nelli Hankonen³, Mirja Hirvensalo¹, Martin Hagger⁴

¹Faculty of Sport and Health Sciences, University of Jyväskylä, Finland, ²University of Thessaly, Greece and Faculty of Sport and Health Sciences, University of Jyväskylä, Finland, ³University of Helsinki, Finland, ⁴Curtin University, Australia and Faculty of Sport and Health Sciences, University of Jyväskylä

Few studies have investigated the experienced acceptability of teacher-training programs to promote autonomous motivation toward physical activity. The Physical Education Teacher Autonomy-Support for promoting Leisure-time physical activity in Students (PETALS) program consisted of a 12-hour, two-day interactive teacher-training program targeting the promotion of students' perceived autonomy to be more physically active outside of school. The aim of the study was to describe teachers' experiences of acceptability of the training, their anticipated acceptability of implementation of the acquired strategies in regular teaching, and their future intentions to use the strategies.

Physical education teachers (N = 26) from lower secondary schools completed a feedback questionnaire on the PETALS program. Teachers self-reported measures of their experienced acceptability of the training (6 items), their anticipated acceptability of later implementing the strategies (6 items), and their intentions to implement the proposed autonomy-supportive motivation strategies (7 items) (Hankonen et al., 2019). Levels of acceptability were high for all dimensions. Participants reported "agree" or "strongly agree" in items relating to acceptability (e.g. 92% "I enjoyed attending the training", 89% "The content of the training was easy to understand"). Teachers also reported high agreement in items on anticipated acceptability of later implementing the strategies (e.g. 96% "I would like to use the techniques", 96% "They would help to motivate students") and intended to use the strategies in their teaching (taking students' perspective, using non-controlling and informational language, providing a rationale, displaying patience, providing choices, accepting negative emotions and feelings, and using questions).

Featured Symposium 08: Mindfulness and acceptance-based interventions in elite sports: moving beyond performance enhancement

Time: Thursday, 18/Jul/2019: 8:30am - 10:00am · *Location:* VSH 118 - Nottingham

Session Chair: Karin Moesch, Swedish Sports Confederation

Session Chair: Johan Ekengren, Halmstad University

Featured Symposium: Mindfulness and acceptance-based interventions in elite sports: moving beyond performance enhancement

Chair(s): **Karin Moesch** (Swedish Sports Confederation, Sweden; Halmstad University), **Johan Ekengren** (Halmstad University)

Mindfulness and acceptance-based interventions have become increasingly popular in sport psychology (Bühlmayer, Birrer, Röthlin, Faude & Donath, 2017). Under this umbrella have different approaches been adopted, such as mindfulness (Kabat-Zinn, 1994), acceptance commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999), and the mindfulness acceptance commitment approach in sports (Gardner & Moore, 2007). Whereas the latter was developed with a clear focus on performance enhancement, mindfulness and ACT are interventions that traditionally focus on other outcomes, such as stress reduction and pain management. Nevertheless, the application of such approaches to sport psychology interventions in elite sports has mostly been within the framework of performance enhancement, as can be seen in the numerous publications in this area, including reviews/meta-analysis (e.g., Bühlmayer et al., 2017; Noetel, Ciarrochi, Van Zanden & Lonsdale, 2017; Sappington & Longshore, 2015), and textbooks (e.g., Baltzell, 2016), and sport-specific mindfulness programmes (e.g., Baltzell & Summers, 2018; Kaufman, Glass, & Pineau, 2018). Not many publications focus yet on testing mindfulness and acceptance-based interventions with elite athletes with other focus than performance enhancement.

The present symposia will stress the usefulness of applying mindfulness and acceptance-based interventions in areas beyond performance enhancement with (young) elite athletes. Different interventions will be presented. Specifically, there will be presentations on school and private life (Maj Nielsen), career planning (Ekengren), anxiety (Hvid Larsen), and injury rehabilitation (Moesch, Fink). A main focus will be laid on presenting the interventions and on practitioners' reflections on the interventions. The participants will receive concrete ideas for their applied work.

Presentations of the Symposium

Less talk and more action please: youth national Handball players' experiences of a Mindfulness Training Program

Line Maj Nielsen¹, Walter Staiano², Ulrich Kirk³, Kristoffer Henriksen⁴

¹Institute of Sport Science and Clinical Biomechanics, University of Southern Denmark, Denmark, ²Department of Sport and Exercise Science, Universidad de Valencia, Spain, ³Institute of Psychology, University of Southern Denmark, Denmark,

⁴Institute of Sport Science and Clinical Biomechanics, University of Southern Denmark

Elite youth athletes are exposed to many stressors and benefit from the ability to be focused in the present moment, which is cultivated in mindfulness training (De Petrillo, Kaufman, Glass, & Arnkoff, 2009, Gardner & Moore, 2012). The athletes experience increasing demands such as increase amount of training, more homework, longer schooldays and a stronger wish to engage with peers (Henriksen & Larsen, 2016, Henriksen, 2018). This project is designed as a randomised controlled trial where the male youth national team in team handball got divided into an intervention group and a control group. The intervention group participated in an introduction weekend and received 20 minutes mindfulness training every day for 7 weeks based on a Mindful Performance Enhancement Awareness and Knowledge (mPEAK) programme (Haase, May, Falahpour, Isakovic, Simmons, Hickman, & Paulus, 2015; Lothes li, Hakan, & Kassab, 2013). The training was carried out with the app "Headspace" supplied by common Sunday sessions. Athletes in both groups participated in pre and post testing. Furthermore, we interviewed eight of the players about their experienced effects of taking part in the (mPEAK) programme guided by a semi-structured interview guide.

Barriers to engaging in the mindfulness training included non-supportive coaches and time constraints. Facilitators included supportive teammates and understanding its relevance. Experienced effects of the program included improved focus and decision-making in sport, increased focus, memory and performance in school, decrease in stress and increased presence in private life. The value of teaching young athletes mindfulness thus transcended contexts.

Letting values guide a career decision: an acceptance and commitment therapy (ACT) intervention with a Swedish handball player

Johan Ekengren
Halmstad University

This presentation will share and reflect upon an ACT intervention based on the core process of values (Hayes, Strosahl, & Wilson, 2012). The intervention was delivered with a male Swedish professional handball player (age 32) facing a decisive career decision (e.g., last professional contract). The player had lived abroad for ten years, and needed to decide, from different contract drafts, which one to sign. The decision would affect for example, income, move with wife and kids, and future career after athletic termination. Recurring stressors such as high expectations, leadership, cultural and logistical issues are common in professional sport (Arnold & Fletcher, 2012). However, the player was stressed with the career decision process, expressing: "I'm standing like a donkey between two wisps of hay". And also realising that he was in conflict with his values. The intervention addressed values, a holistic approach (e.g., reflecting on athletic career, family situation, and personal future). The intervention was structured from four hourly sessions, two in-person and two using online calls due to geographical distance. Home works was used between the sessions for example, mindfulness exercises. After the intervention he signed a new contract. The decision came from clarifying and adhering to his values (e.g., being responsible), and striving for well-being. The presentation will share the practitioner's lessons learned (e.g., to build an alliance, and be mindful as a practitioner), and recommendations to be included in career assistance programmes (e.g., developing life skills, education on difference between goals and values).

Dealing with panic attacks and anxiety: the case of a Danish Olympic swimmer in troublesome waters

Carsten Hvid Larsen

Institute of Sport Science and Clinical Biomechanics, University of Southern Denmark

This presentation describes an intervention programme for a Danish Olympic swimmer and outlines an Acceptance and Commitment Therapy (ACT) intervention aimed at treating panic attacks and performance anxiety. Athletes that experiences panic attacks could develop both anxiety for these attacks and anxiety that the attacks are signs of a disorder or disease. One or more stressors constitute a critical event (e.g., competitions) that potentially trigger anxiety related to the environment or pattern of thoughts (Moerch & Rosenberg, 2005). The negative automatic thoughts of anxiety often imply dramatic, unrealistic, dangerous characteristics of the neutral situations. One way of treating panic attacks could be ACT, in which athletes learn skills to accept thoughts, feelings and bodily sensations of a panic attacks and anxiety (Hayes, Strosahl, & Wilson, 2012). The Olympic swimmer participated in 3 weekly consulting sessions each month across six months in 2018. The sessions took place at either the national training center, on Facetime or on phone. The programme started in January with a focus on functional analysis and clarifying values (Hayes, Strosahl, & Wilson, 2012) and later on defusion techniques and the 3R process for psychological preparation for competitions (Larsen, 2018). Closing in on competitions, the swimmer worked on mindfulness exercises and a plan for the European. The swimmer described the ability to notice thoughts, defusion and ability to refocus despite pressure as results of the programme. Reflections on the intervention programme and the experiences of the practitioner will be discussed.

A mindfulness and acceptance-based intervention with injured athletes

Karin Moesch¹, Andreas Ivarsson², Urban Johnson²

¹Halmstad University & Swedish Sports Confederation, ²Halmstad University

Athletes who get injured can respond with negative thoughts and emotions (see for an overview Brewer & Redmont, 2017), which at times may result in more serious mental health problems (Moesch et al., 2018). Such responses can in turn affect behaviour (e.g., adherence) and the outcome of the rehabilitation (see Wiese-Bjornstal, 2010). Therefore, it has been proposed to add psychological interventions alongside physical rehabilitation (ACSM, 2016). Mindfulness and acceptance-based interventions have been shown to be effective for increasing wellbeing and decreasing psychological suffering (e.g., Keng et al., 2011; Virgili, 2015). However, only few studies have tested such an intervention with injured athletes. The aim of the present project was therefore to investigate the impact of a mindfulness and acceptance-based intervention on mindfulness, acceptance, mental health and adherence during injury rehabilitation.

A single case design with multiple, staggered and non-concurrent baselines was chosen. Six athletes went through a 8-week intervention. Participants answered at 10-12 measurement time points to questions on mindfulness, acceptance, wellbeing, and anxiety/depression, and their physiotherapists to questions on their participants' adherence. Visual analysis and analysis of non-overlap using Tau-U were performed to analyse data.

Participants showed clinical significant changes after the onset of the intervention in the scales non-reactivity (mindfulness), acceptance, wellbeing, and adherence, but not in acting with awareness (mindfulness) and anxiety/depression.

The study suggests that implementing a mindfulness and acceptance-based approach can be beneficial for injured athletes. Practical insights into the application of such an approach with injured athletes will be discussed.

Using mindfulness with an athlete with a long-term injury

Cristina Fink

HPSports

In this presentation I will discuss the steps taken with an athlete who suffered a season ending injury in a professional sport. The athlete and I had a working relationship already and introducing a mindfulness approach (Harris, 2009) to his recovery was easy because the athlete communicated two specific things: he trusted me and he was now willing to try anything that could help. He was going through situational depression and was having trouble sleeping and "controlling" his emotions.

I introduced the idea of becoming aware of thoughts and feelings without judgment (Harris, 2008). This was a difficult concept for an athlete who likes to be in control and thinks he can actually control his thoughts and feelings. We talked about the concept of changing from "trying to control" to "becoming aware" as well as "managing and accepting" feelings and thoughts.

We also talked about D.A.R.E. and F.E.A.R. and explored the following questions during his recovery:

1. What thoughts, feelings and bodily sensations show up during reconditioning?
2. If really fused – what would you do?
3. Who do you want to be?
4. How do you act?

The athlete is fully recovered and has integrated mindfulness to his training every day. He has shared his experience with other athletes who now want to integrate it into their training as well.

Invited Panel 02: Supervision in Applied Sport Psychology: developing good practice for the ISSP-Registry (ISSP-R)

Time: Thursday, 18/Jul/2019: 8:30am - 10:00am · *Location:* Aula im Schloss - Europe
Session Chair: Chris Harwood, Loughborough University

Supervision in Applied Sport Psychology: developing good practice for the ISSP-Registry (ISSP-R)

Chris Harwood¹, Artur Poczwadowski², Tatiana Ryba³, Ernest Hung⁴, Ale Quartiroli⁵

¹Loughborough University; ²University of Denver; ³University of Jyväskylä; ⁴National Taiwan Normal University; ⁵University of Wisconsin-La Crosse

The process, ethics and challenges of supervision represent ongoing features of interest in applied sport psychology (Dosil & Rivera, 2014; Lubker & Andersen, 2014) with considerable responsibility attached to supervision vis a vis assuring professional standards in neophyte practitioners. A key project within the International Society of Sport Psychology (ISSP) is the establishment of an internationally recognized consultant registry that represents the minimum standard of sport psychology practice. Referred to as ISSP-R, the registry aims to support those countries in which applied sport psychology is at a developing phase. The availability of supervision and the processes of engaging with culturally competent supervisors reflect a concern of ISSP given the requirement for supervised practice hours following postgraduate education. The aim of this panel is to share experiences and perspectives of good and poor practice in supervision, and the factors (e.g., competencies, format, frequency, culture, philosophy, fees, supervisee readiness, use of technology) that may impact on supervision quality and the supervisor-supervisee relationship. The panel brings together supervisors, practitioners, and cultural scholars from the United States, United Kingdom, Taiwan, and Finland to debate logistical, cultural and credentialing issues towards ensuring appropriate supervision for ISSP-R. Such discussion alongside engagement from international attendees will help to facilitate the completion of supervisor-supervisee guidelines for ISSP-R, and with appropriate sensitivity to the needs of emerging countries.

Panel 01: Child protection and well-being in sport: what can sport psychologists do to prevent abuse and violence?

Time: Thursday, 18/Jul/2019: 8:30am - 10:00am · *Location:* VSH 219 - Brussels

Session Chair: Anastasiya Khomutova, University of Brighton

Session Chair: Snežana Stoljarova, Tallinn University/ESTIPP OÜ private consultancy

Child protection and well-being in sport: what can sport psychologists do to prevent abuse and violence?

Anastasiya Khomutova¹, Snežana Stoljarova², Konstantin Bochaver³

¹University of Brighton, United Kingdom; ²Tallinn University, Estonia; ³Moscow Institute of Psychoanalysis, Moscow, Russia

The issue of child protection (and violation of such) has been well documented in the academic literature (e.g. Brackenridge, 2002; Lang & Hartill, 2015). As researchers and practitioners in sport psychology, it is likely that we may face dealing with clients who have suffered from such violations in real life, although formal training programs may not have prepared us to deal with problems that arise from these experiences. This panel discussion will consist of researchers and practitioners, who will share their experiences, based on research and applied practice, including case-studies, research interview analysis and overviews of on-going projects from several different countries. Particular attention will be given to the ICES (International Centre Ethics in Sport) and their activities focused on safeguarding in youth sport. The aim of this panel discussion is to share cross-cultural experiences on working with children, their coaches and parents within this sensitive topic. The panel will be arguing for the implementation of safeguarding policies on national and European levels for various sports federations. Indicative content for educational workshops for coaches, parents, and children will be discussed. Panel members will encourage the public to share their good practice experience as well as contribute to discussion of this important topic.

Paper Session 26: Injury and Prevention

Time: Thursday, 18/Jul/2019: 8:30am - 10:00am · Location: Senatssaal - Prague

Session Chair: Daniel John Madigan, York St John University

8:30am - 8:45am

Knowing when to push through the pain: interoception and overuse-injury risk in endurance athletes

Richard Keegan, Rachel Tallent

University of Canberra, Australia

Athletes participating in endurance athletic events are exposed to a relatively high risk of overuse-injuries, with growing evidence suggesting psychological factors may contribute. The potential contribution of internal sensing - interoception - in preventing or managing overuse-injuries is not well-understood. This study investigated the relationship between interoception and overuse-injuries in a sample of competitive long-distance runners and race walkers, covering >40km/week (n = 79). Interoception was assessed via two measurements approached: one subjective and one objective. For the subjective assessment, we measured interoceptive awareness (IAw) using the Multidimensional Assessment of Interoceptive Awareness (MAIA). For the objective assessment, we invited a subset of participants (n = 21) to attend the laboratory to measure interoceptive accuracy (IAc), using a heartbeat tracking task. IAw and IAc are proposed to be distinct and dissociable dimensions of interoception. We recorded self-reported injury history over the preceding two years. Our dependent variable was days of lost-or-modified training time. Results indicated that the MAIA (IAw) was largely independent of IAc, however, the 'Self-Regulation'-subscale was significantly associated with IAc. In addition, there was a significant relationship between IAw and overuse-injury ($t(77) = 2.15, p = .018; d = 0.49$), but not with IAc. In particular, ratings on the subscales of 'Noticing' ($t(77) = 2.28, p = .013; d = 0.52$) and 'Emotional Awareness' ($t(77) = 3.05, p = .002; d = 0.69$) were significantly lower for athletes with more reported time lost to overuse-injury. These findings suggest that interoceptive awareness is significantly associated with the occurrence of overuse-injuries, and may be used in the management and prevention of such injuries.

8:45am - 9:00am

The model of sport injury socioculture: a socio-ecological view of the psychological, social, and cultural aspects of sport injury

Diane M. Wiese-Bjornstal

University of Minnesota, United States of America

Social and cultural influences on sport injury risks and recoveries represent important considerations for sport psychology professionals working within injury prevention and rehabilitation settings. The purpose of this paper is to describe the development of a model of sport injury socioculture that contextualizes the psychological aspects of sport injuries within the broader framework of social and cultural influences (Wiese-Bjornstal, 2018). The first of four model elements comprises five socio-ecological spheres influencing sport injuries (Bronfenbrenner, 1994). These radiate bidirectionally across the intrasystem of individual athletes (e.g. attitudes toward playing hurt) via the microsystem of sport relationships (e.g. coach expectations for toughness), mesosystem of sport organisations (e.g. team medical services), exosystem of sport governing bodies (e.g. league rules governing injured reserves), and macrosystem of sport societies (e.g. state laws concerning concussion care) (Sabo, 2009). The second model element illustrates five sociocultural themes, including conformity to injury-risk norms, conventions regarding sport injury etiquette, character in using injury rules to gain competitive advantage, care aspects of treating sport injuries, and the costs associated with injuries (Hughes & Coakley, 1991). Sport injury outcomes affected by sociocultural influences, the third model element, include personal and collective risks, responses, rehabilitation, returns to play, and retirements (Wiese-Bjornstal, 2010). The fourth model element targets sociocultural interventions benefitting the prevention and care of sport injuries, such as improving injury reporting behaviors (intrasystem), promoting optimal training loads (microsystem), providing equitable health care access (mesosystem), instituting sport safety rules (exosystem), and establishing legal protections against sports violence (macrosystem) (Smith et al., 2019).

9:00am - 9:15am

Sport injury prevention and the reciprocal relationships between self-determination theory and the theory of planned behaviour

Derwin K. C. Chan^{1,2}, Lei Zhang³, Alfred Sing Yeung Lee⁴, Kiko Leung⁴, Martin Hagger^{2,5}

¹Education University of Hong Kong, Hong Kong S.A.R. (China); ²Curtin University, Australia; ³Renmin University of China, China; ⁴The University of Hong Kong, Hong Kong; ⁵University of Jyväskylä, Finland

On the basis of the integrated model of self-determination theory (SDT) and the theory of planned behaviour (TPB), this three-wave longitudinal study examined if autonomous motivation from SDT would be the antecedent of the social cognitive variables (i.e. attitude, subjective norm, and perceived behavioural control (PBC)) from TPB (Hagger & Chatzisarantis, 2009) in the context of sport injury prevention. Participants were N = 4,070 primary or secondary school PE students in China (male = 44.46%; mean age = 14.30, SD = 1.91, age range = 7 to 20) who were asked to complete a questionnaire at T0 (baseline), T1 (1 month after; response rate = 76.71%), and T2 (3 months after; response rate = 69.14%). The included scales were developed and validated in sport injury prevention contexts (Chan & Hagger, 2012). Path analysis on three reciprocal models (Marsh, Chanal, & Sarrazin, 2006), respectively for T0 and T1 (Model 1), T0 and T2 (Model 2), and T1 and T2 (Model 3) exhibited excellent goodness-of-fit (CFI > .98, TLI = .95, RMSEA < .08, SRMR < .05). It was consistently found across the three models that the pathways were all significant and positive when autonomous motivation was the preceding predictor of the prospectively measured TPB variables (i.e. T1 and T2), but the positive pathways were either weaker or not significant when the TPB variables were the preceding predictors of the prospectively measured autonomous motivation. In conclusion, autonomous motivation is likely to be the antecedent of the TPB variables for sport injury prevention among PE students.

9:15am - 9:30am

Importance of affective and motivational states for compliance to physical rehabilitation in hemiplegic and low back pain patients

Mauraine Carlier¹, Paoline Hoba¹, Alexandre Coulomb², Yves Martin², Yvonne N. Delevoeye¹

¹Univ. Lille, CNRS, CHU Lille, UMR 9193 - SCALab - Sciences Cognitives et Sciences Affectives, 59000 Lille, France; ²Centre L'Espoir, 25 Pavé du Moulin, 59260 Lille, France

Motivation is essential when complying to regular physical exercise for rehabilitation purposes. Furthermore, recent research has revealed that affective states experienced during exercise sessions (e.g. pleasure, displeasure, pain) are also strong predictive factors explaining healthy adult individuals' willingness to exercise (Rhodes & Kates, 2015; Ekkekakis & Ariely, 2016). The aim of this study was to assess whether such patterns of results are observed in clinical populations suffering from hemiplegia or lombalgic chronic pain.

N = 17 adults (15 men; 2 women) were recruited from a reeducation centre. The hemiplegic group consisted of eight stroke patients (4 left hemiplegic and 4 right

hemiplegics; mean age = 57.8; SD = 30). The lower-back pain group was composed of nine patients (mean age = 42.4; SD = 32). Motivation was assessed before and after 4 weeks of adapted physical activity (APA) sessions using the EMS-28 questionnaire. Affect valence (positive/negative) was evaluated through the use of the Feeling Scale, while affect intensity (weak/strong) was evaluated using the Arousal Scale.

Lower-back pain patients: (1) Post-program motivation was correlated to pre-program motivation, affect valence and affect intensity, (2) during APA, affect valence and intensity were correlated to the pre-program level of motivation. Hemiplegic patients: (1) Post-program motivation was correlated to the pre-program level of motivation, (2) during APA, affect intensity was correlated to the pre-program level of motivation.

The affective states experienced during APA is an important factor to predict compliance after rehabilitation but is overshadowed by the pre-program level of motivation to try.

9:30am - 9:45am

Psychological risk profiles for overuse injuries in sport: a prospective study

Simon Martin¹, Urban Johnson², Alan McCall³, Andreas Ivarsson²

¹Université de Picardie Jules Verne, APERE, Amiens (France); ²Center of Research on Welfare Health and Sport, Halmstad University (Sweden); ³Arsenal Football Club Performance and Research Department, London, (United Kingdom)

Introduction: Overuse injuries account for a substantial part of sport injury incidence among athletes of various sports and levels (Yang, Tibbetts & Covassin, 2012). Despite the gradual onset of symptoms, athletes often persevere in training and competing. Based on a prospective cohort design, the present study aimed to identify psychological risk profiles for overuse injury.

Methods: One hundred and forty nine athletes representing eight individual and team sports responded to a range of questionnaires regarding personal (athletic identity, perfectionistic concerns, grit and negative life stress) and interpersonal (coach-athlete relationship) psychological traits. Participants subsequently answered the OSTRC Overuse Injury Questionnaire on a weekly basis during a 10-week period. A latent profile analysis was used to identify different psychological profiles, further compared in terms of overuse injury occurrence.

Results: Athletes were classified into 3 latent profiles regarding their psychological characteristics: profile 1 was labelled "perfectionistic overuse injury risk profile", profile 2 "negative stress overuse injury risk profile" whereas profile 3 was called "low risk profile for overuse injury". Indeed, athletes in profile 1 and 2 were found to be significantly more often affected by overuse injuries than individuals in profile 3 (71% and 70% of the time vs 45% of the time), with athletes in profile 1 also experiencing more substantial overuse injuries than in profile 3 (35% vs 21% of the time).

Discussion: Cognitive-behavioral interventions supporting athletes in interpreting their bodily signs and in adopting adaptive subsequent behaviors could be developed for sports burdened by overuse injuries.

Paper Session 27: Sport Participation and Deviant Behavior

Time: Thursday, 18/Jul/2019: 8:30am - 10:00am · Location: S 8 - Copenhagen

Session Chair: Michael Kellmann, Ruhr University Bochum

8:30am - 8:45am

An exploratory study to examine the tenets of Deviance Regulation Theory in relation to adults' physical activity intentions

Alyson J Crozier¹, Kristyn L Taylor²

¹University of South Australia, Australia; ²University of Adelaide, Australia

Informing people that most individuals are active has led to increased physical activity in adults (Priebe & Spink, 2014). However, individuals are often informed that few are active, which can have negative behavioural consequences (e.g. fruit intake; Stok, de Ridder, de Vet, & de Wit, 2012). To counteract this negative effect, deviance regulation theory (DRT; Blanton, Stuart, & Van den Eijnden, 2001) posits that individuals are more likely to depart from behavioural norms (i.e. low physical activity patterns) when positive social implications are also highlighted. While the principles of DRT have been supported in other health-related behaviours (Blanton et al., 2001), its' applicability to physical activity has not been examined. Using a pre-post experimental design, inactive adults (N = 204) were randomly assigned to receive one of four messages, which included both prevalence information about physical activity engagement (high vs. low) and an image appeal (positive vs. negative social implication). Results of an ANCOVA were significant and showed that when the image appeal was positive, low prevalence information led to greater physical activity intentions than the high prevalence information. Results provide preliminary support that physical activity intentions can be positively influenced even when physical activity is not considered the norm. Messages that include low prevalence information (i.e., few are active) should include positive image appeals of those who do engage in physical activity, if aiming to motivate insufficiently active individuals' to be more active.

8:45am - 9:00am

Paradigm shift and challenges in sports participation among Indian women from different regions

Javashree Acharya¹, Alka Navak², Shailaja Mohan³, Shyam Sundar Rath⁴

¹National Sports University, Manipur, India; ²Dept of Physical Education, RDVV University Jabalpur, M.P, India; ³Sports Authority of India, LNIPE, Trivandrum, Kerala, India; ⁴National Sports University, Manipur, India

Over the past decade, sports participation among females in Indian society has increased and changed dramatically. However, stereotypes do still exist in women participation in sports due to the cultural and societal diversities in different regions of India, from far northeast to east, west, north and south of India. The present effort is mainly phenomenology research. In this, the authors interviewed randomly and voluntarily agreed female elite athletes (N = 48) in different sports discipline like athletics, boxing, weight lifting etc from different regions of India. Their age ranged between 18 to 28 years (M = 20.76, SD = 3.81). Athletes had requested to not disclose their identity. Questions were asked regarding the reason for them to take sport as a career, problems from the administration faced by them, preference between male and female coaches etc. The compiled analysis indicated mixed opinions in a few areas but there was a difference between athletes from the south of India as to other parts. Gender discrimination was seen more in the northern and eastern parts than in the south. Sexual harassment by the coach was indicated by more athletes in the north in comparison to the south. Most of the athletes have taken sport as a livelihood due to a lack of educational requirements and poor economic conditions. Athletes from the south prefer male coaches, but they also indicated that if a female counsellor or coach could accompany them, they would share certain feelings with them in a better manner.

9:00am - 9:15am

The relationship between behavior problems and the duration of acute exercise in children with ADHD: the role of frontal asymmetry

Ting-Yu Chueh¹, Yu-Jung Tsai¹, Chung-Ju Huang², Tsung-Min Hung¹

¹Department of Physical Education & Institute for Research Excellence in Learning Science, National Taiwan Normal University, Taiwan; ²Graduate Institute of Sport Pedagogy, University of Taipei, Taipei, Taiwan, ROC

Lower frontal alpha asymmetry (FAA) has been associated with internalising psychopathology such as depression and anxiety, which could result in several behaviour problems in children with ADHD. Thus, further examination of the relationships between FAA and behaviour problems among children with ADHD is warranted. Moreover, previous studies have shown that acute aerobic exercise was effective to increase FAA. However, the effect of exercise duration on FAA in children with ADHD remains unexplored. In study 1, it was examined whether FAA was associated with behaviour problems in children with ADHD. FAA and behavioural problems were measured by resting electroencephalographic (EEG) activity and the Child Behavior Checklist, respectively. Data of N = 44 children with ADHD were analysed. The results revealed that resting FAA was negatively associated with behaviour problems while controlling for age. A subsequent study investigated whether the duration of acute aerobic exercise modulated FAA in children with ADHD. N = 44 participants were randomly assigned to one of the following three groups: a 40-minutes exercise, a 20-minutes exercise, and a 30-minutes video-watching group. The results showed that 40 minutes of exercise resulted in more positive changes (i.e. study 1 - study 2) in FAA than video watching. These findings suggested that lower resting FAA is associated with more behavioural problems and 40 minutes of acute aerobic exercise result in a more positive influence on FAA relative to 20 minutes in children with ADHD.

9:15am - 9:30am

Individually targeted health-apps for families: a content analysis of guided interviews**Hannes Baumann, Charlotte Meixner, Annika Fenger, Christian Spreckels, Bettina Wollesen**

University of Hamburg, Germany

Introduction: Although health apps can potentially improve health status (WHO, 2011), most of the applications are being deleted within a short timeframe after their installation (Christensen & Mackinnon, 2006). Due to this marginal usage adherence, it is necessary to take a closer look at the content and usability of health apps. Since families can be a supportive environment for implementing behavioural change mechanisms (Geene et al., 2016), this study analyses the personality structures of family members and their expectations towards health apps.

Methods: N = 40 parents were asked to identify relevant content for family-based health apps in qualitative interviews. The design of questions allowed an implicit analysis of their personality structure according to the PSI-Theory (Kuhl, 2001). For evaluation, a qualitative content analysis was used and executed with MAXQDA (VERBI Software, 2018).

Results: Even though the composition of personality types in this random sample deviates from the estimated distribution of the population, the need for an increase of daily movement was mentioned equally across all types of personality. Furthermore, creative and social core types were more likely to use gamification-elements whereas dominant and practical core types prefer clear objectives and patterns.

Discussion: If health-apps are being used by families to implement long-term mechanisms for behavioural change, they should adapt to the various preferences and personalities of each family member. Concerning the obtained results, a movement-oriented main-content could be purposeful, whereas the motivational approach and sub-content choices should vary between different types of personality to produce higher usage adherence.

9:30am - 9:45am

This Girl Can: an ecological approach to investigating physical activity behaviour in urban females**Reisha Hull, Rita de Oliveira, Katya Mileva, Lisa Zaidell**

London South Bank University, United Kingdom

Globally, 84% of young females are insufficiently active (WHO, 2010). As a result, they have been the target population for many physical-activity (PA) interventions. However, positive intervention effects have been small (Owen et al., 2017). A recent literature review analysed PA interventions aimed at UK-based females aged 14-25 years and concluded that the settings were limited largely to educational institutions and intervention effectiveness was measured quantitatively through intrapersonal factors (Hull, de Oliveira & Zaidell, 2018). Besides intrapersonal factors, ecological models also consider interpersonal, environmental and organisational, and policy and legislative levels of influence on health behaviour and provide a theoretical framework for rigorous research. Therefore, the aim of this research project was to use an ecological model to investigate participants' and PA providers' perceptions of barriers and facilitators to PA. The research took place in the context of a local authority public health initiative (This Girl Can) based in a borough of London. In a qualitative study, we used focus groups to capture the participants' experiences of PA, and we used interviews to capture the providers' perceptions of participants' engagement. Preliminary analyses of the focus groups highlighted the themes of family, culture and safety as participants' main barriers. Such environmental factors were often stable features of their lives making them difficult barriers to overcome. In contrast, preliminary analyses of the interviews highlighted that providers perceive intrapersonal factors such as body image and self-efficacy to be the main barriers to participation.

Paper Session 28: Body Image and Embodied Cognition

Time: Thursday, 18/Jul/2019: 8:30am - 10:00am · Location: S 9 - Cologne

Session Chair: Ronnie Lidor, The Academic College at Winhgate

8:30am - 8:45am

Examination of actual:ideal discrepancies on body-related pride in adult males

Kristen M. Lucibello, Robert A. Mackowiak, Jenna D. Gilchrist, Catherine M. Sabiston

University of Toronto, Canada

Males often endorse a high drive for large body size and muscularity. Discrepancies between actual and ideal body shapes and sizes have been studied from a pathological perspective, whereby perceiving the body as discrepant from a muscular ideal is associated with body dissatisfaction and negative emotions. However, it is unclear if agreement among actual and ideal perceptions is associated with positive emotion. Pride is elicited by exhibiting socially-desirable traits such as large body size and muscularity, although authentic pride stems from attributions of effort for the desirable traits while hubristic pride results from feeling superior to others. Therefore, men who perceive their body as less discrepant from the ideal may experience greater pride. The present study examined associations between actual:ideal congruence and discrepancies in body size, thinness, and muscularity, and authentic and hubristic pride in adult males. Participants ($n = 218$; $M = 33.91$ years) completed questionnaires measuring actual and ideal body perceptions and pride. Based on polynomial regressions with interpretation of response surface values, actual:ideal discrepancies in body size, muscularity, and thinness independently predicted authentic ($R^2 = .14, .29, .15$) and hubristic pride ($R^2 = .10, .23, .09$), respectively. When actual:ideal discrepancies between size and muscularity increased, authentic and hubristic pride decreased. When actual:ideal muscularity perceptions were congruent, individuals with low or high perceptions endorsed the greatest levels of authentic and hubristic pride. Importantly, these findings indicate that males low on muscularity still experience feelings of pride, provided that they have not internalized a muscular body ideal.

8:45am - 9:00am

Dynamic mechanism of aerobic and resistance training on body image improvement

Lu Guo, Yubu Wang, Zhixiong Mao

School of Psychology, Beijing Sport University

Purpose: The current study researched the dynamic mechanism during an eight-week aerobic and resistance training on body image.

Methods: $N = 66$ collegiate students (male = 33, female = 33) participated in an eight-week training including moderate-intensity aerobic or resistance training (65-75% 1RM). Body satisfaction, objective fitness (including BMI, percentage of body fat, waist-hip ratio and skeletal muscle mass), endurance and strength self-efficacy, as well as perceived fitness (including perceived body fat, perceived endurance and strength) were measured before training, after two, four, six weeks and after training.

Results: Firstly, participants' body satisfaction improved significantly during the whole training period. Secondly, changes in perceived fitness for both male and female students, especially changes in perceived body fat and perceived strength, played significant roles during the early period of training. Additionally, changes in endurance self-efficacy played an important role for female students during the first four weeks. Thirdly, from five to eight weeks, the change in the percentage of body fat mediated both aerobic and endurance training on body satisfaction. Moreover, for male students, change in skeletal muscle mass also had a mediating effect on the relationship between endurance training and body satisfaction.

Conclusion: Chronic exercise could improve body image. Both aerobic training and resistance training have similar dynamic mechanism in improving body image. Changes in perceived fitness play an important role in the early period of training. Changes in objective fitness occur and influence body image later than perceived fitness. Self-efficacy change also has an influence on improved body satisfaction, especially in females.

9:00am - 9:15am

The mirror's curse: body image mediates the relationship between physical activity and life satisfaction among 700,000 teens

Silvia Meyer, Rebekka Weidmann, Alexander Grob

Department of Developmental and Personality Psychology, Faculty of Psychology, University of Basel, Switzerland

Physical activity has been shown to have several physical and psychological benefits (e.g. Fox, 1999; Taylor et al., 2004). Despite its importance, physical activity seems to drop, especially in adolescence (Telama & Yang, 2000). At the same time, puberty is a crucial time for body image (Feingold & Mazzella, 1998). While previous research has shown that physical activity relates to higher life satisfaction, little is known about how the way adolescents see their bodies contributes to this relationship. Moreover, little is known about possible gender and age effects on the link between these variables.

Using data from the Health Behaviour in School-aged Children (HBSC) survey, comprising 44 countries and more than 700,000 observations from 2001 to 2014, we examined the mediating role of body image for the relationship between physical activity and life satisfaction.

Using multilevel mediation analyses, we found that negative weight perceptions mediate the effect of physical activity on life satisfaction in adolescents. The feeling of overweight and life satisfaction are more strongly associated with girls and with increasing age, the relationship between weight perceptions and physical activity or life satisfaction becomes more robust.

The results show that weight perceptions can explain a part of the relationship between physical activity and life satisfaction in adolescents. This suggests that intervention programs using physical activity to improve adolescents' life satisfaction should focus on body perceptions as well.

9:15am - 9:30am

Effect of power poses on emotional experiences during physical activity**Saina Yu, Lizhong Chi**

Beijing Sport University, China, People's Republic of

This research tried to examine the effects of different power poses on the participants' emotional experiences in physical activity and the moderating role of exercise habit and the mediating role of body self-efficacy during exercise. Experiment 1 tested whether engaging in expansive (vs. contractive) "power poses" before a stressful physical activity, preparatory power posing would enhance positive emotional experiences during physical activity. Further, the author tested whether exercise habits serve as a moderator. Experiment 2 tested whether body self-efficacy plays a mediating role in the relation between power poses and emotional experiences. As predicted, experiment 1 shows that among exercise-habituated participants, those who prepared for the physical activity with high- (vs. low-) power poses were more likely to express a positive mood, however, the effect is not significant among the participants who do not regularly exercise. Experiment 2 shows that among those who have exercise habits, power poses have significant effects and body self-efficacy plays a completely mediating role in the relation between power poses and emotional experiences. This experiment reveals a theoretically novel and practically informative result that demonstrates the causal relationship between preparatory nonverbal behaviour and subsequent emotional outcomes in physical activity context.

9:30am - 9:45am

Body-related self-conscious emotions in youth sport: a research program focused on keeping more girls in sport (and liking it)**Catherine M. Sabiston¹, Eva Pila², Alyona Koulanova¹**¹University of Toronto; ²Western University

Concerns related to appearance, body shape, size and weight disproportionally affect adolescent females and may impact their sport experiences. Specifically, female adolescents are less likely to participate in sports, are more likely to drop out of sports, and report enjoying sport less compared to boys. In our mixed-methods program of research, the sporting environment appears to perpetuate negative body-related emotions such as shame, guilt, envy, embarrassment, and suppress pride, which together relate to poor sporting experiences and drop-out. In our longitudinal study of N = 518 adolescent females, the negative emotions significantly increased and the positive emotions significantly decreased over three years. To understand these changing emotions, we interviewed n = 12 female adolescents who had dropped out of sports. The main theme was the high prevalence of weight commentary and body talk in female sport. From these results, we conducted interviews among female athletes (n = 21), parents (n = 11), coaches (n = 13), and referees (n = 6) on the context of weight commentary and body talk among female youth athletes. Themes related to perceptions of competence, social interactions, and the physical environment are consistent. We have also interviewed key sports administrators in female sport to identify body image priorities. Taken together, this program of research has helped understand the association between body image and sport, and has identified strategies to foster positive body images among adolescent female athletes.

9:45am - 10:00am

Body-related self-conscious emotions and physical activity: a latent class analysis**Eva Pila¹, Jenna D Gilchrist², Amy Nesbitt³, Catherine M. Sabiston³**¹Western University, Canada; ²The Pennsylvania State University, USA; ³University of Toronto, Canada

Body-related self-conscious emotions have been identified as important predictors of moderate-to-vigorous physical activity (MVPA), whereby negatively-valenced emotions (i.e. shame) are associated with less MVPA and positively-valenced emotions (i.e. pride) with more MVPA. Researchers have exclusively examined these emotions in isolation, but it is likely that individuals can simultaneously experience a diverse range of emotions about their bodies. The present study aimed to understand how patterns of body-related emotions are associated with MVPA. In an online survey, community-based adults (N = 486; mean age = 35.43, SD = 10.01) reported the extent to which they experienced body-related guilt, shame, pride, envy, embarrassment, and engaged in MVPA in the past week. Latent class analysis was used to identify patterns of emotions, which were then used as predictors of MVPA. A three-class model of emotions provided the best fit to the data, identifying a Mixed Emotions class (30%), a Negative Emotions class (20%), and a Pride class (50%). Individuals who experienced a mixed-range of emotions about their body engaged in greater MVPA than those who experienced only guilt, shame, and embarrassment (b = .007), or those that only experienced pride (b = .004). It is possible that individuals who only feel guilty, ashamed, or embarrassed about their body avoid physical-activity opportunities, while individuals who also feel proud – in addition to negative emotions – may seek opportunities to demonstrate competence and achieve physical-activity goals. These findings extend the literature on emotional diversity, to suggest that a range, rather than exclusively positive emotions may contribute to adaptive health behaviours.

Paper Session 29: Motivation

Time: Thursday, 18/Jul/2019: 8:30am - 10:00am · Location: VSH 116 - Varna

Session Chair: Julia Schüler, University of Konstanz

8:30am - 8:45am

Autonomy support in physical education promotes autonomous motivation towards leisure-time physical activity: evidence from a samp

Kahar Abula¹, Andreas Heissel¹, Michael Rapp¹, Anou Pietrek¹, Jürgen Beckmann^{2,3}, Zhongkai He⁴, Chengwa Cheong⁴, Fuquan Lu⁴, Peter Gröpel⁵

¹University of Potsdam, Potsdam, Germany; ²Technical University of Munich, Munich, Germany; ³University of Queensland, Brisbane, Australia; ⁴Peking University, Beijing, China; ⁵University of Vienna, Vienna, Austria

Purpose: Based on the trans-contextual model, two studies aimed to test whether autonomy-supportive physical education (PE) promotes autonomous motivation towards leisure-time physical activity among Chinese college students.

Methods: Study 1 was conducted in September 2015 and used a cross-sectional design. Participants were students who provided data on perceived autonomy support and motivation for physical activity. Regression analysis was used to analyse the data. Study 2 took place from September to December 2015 and employed an experimental design. Participants were PE teachers and their students. The teachers were randomized to either an intervention or a control group and those in the intervention group received a 3-month-long autonomy-supportive intervention program. Their students provided data on motivation. The data were analysed with a repeated-measures ANOVA.

Results: N = 681 students aged 16 to 26 years participated in Study 1. Perceived autonomy support predicted autonomous motivation in PE ($\beta = .18, p = .001$), which in turn predicted autonomous motivation towards leisure-time physical activity ($\beta = .51, p = .001$). n = 10 PE teachers (28 to 53 years old) and n = 258 students (16 to 26 years old) participated in Study 2. Students who were educated by the intervention teachers had significantly stronger autonomous motivation towards leisure-time physical activity than students educated by the control teachers after the intervention ($F = 12.41, p = .001$).

Conclusion: The results suggest that PE may serve as an effective platform to promote an active lifestyle among Chinese college students when teachers provide students with an experience of autonomy.

8:45am - 9:00am

Does age matter? A qualitative comparison of motives and aspects of risks in adolescent and adult free-riders

Anika Frühauf, Julian Zenzmaier, Martin Kopp

University of Innsbruck, Austria

Recent research has shown multiple motives for high-risk sport participation behind the one-dimensional view of sensation seeking (Barlow, Woodman, & Hardy, 2013). The aim of the study was to provide insights into motives and risk-related aspects in adolescent high-risk sport participants and to compare those findings with adults of the same activity.

Semi-structured interviews were conducted with n = 13 adolescent free-ride skiers (free-riders; 14-18 years) and n = 13 adult free-riders (29-41 years). Analyses were done using MAXQDA software following a code-theme approach.

Both cohorts reported the motives Challenge (adolescents: 92%, adults: 85%), Freedom/Pleasure (adolescents: 85%, adults: 69%), Friends (adolescents: 69%, adults: 85%) and Balance (adolescents: 69%, adults: 69%). Nature was a major motive in adults (85%) but not in adolescents (31%). Most of the adolescents have not experienced a major accident or close call (n = 9; 69%), contrary to adults (n = 2; 13%). All free-riders acknowledged the risks of the activity and reported risk-management behaviours. Adolescents were taught about the risks in free-riding primarily through their families (n = 11) and the ski club (n = 5). Adults reported having realised the risk in free-riding after starting with the activity. "Ten years ago a friend of me died just next to the slope in an avalanche [...] That was a wakening call; I realised you don't just ride next to the slope without safety equipment and experience." (adult1, 32yrs)

Both cohorts were largely motivated by the same motives. Early education about risk-taking behaviour might help to minimise negative outcomes in free-riders.

9:00am - 9:15am

Sport motivation and risk behaviour in adolescents

Jiri Mudrak, Katerina Zabrodská

Faculty of Arts, Charles University in Prague, Czech Republic

Although various forms of risk behaviour appear to be prevalent in adolescent sports, relatively little attention has been paid to psychological processes underlying such behaviour. In this study, we explore how motivational variables, such as achievement goal orientations, sources of sport confidence, and perceived self-determination of sports activity, might be related to attitudes towards various kinds of risk-behaviour (including doping, cheating and winning-at-all cost) in adolescents who participated in competitive and non-competitive sports.

The study included N = 2,851 Czech adolescents (M = 16.2 years) who completed a battery of questionnaires assessing their achievement goal orientations, sources of sports confidence, sports motivation at various levels of self-determination, attitudes toward cheating, winning, and doping in sports. Structural equation models based on the integrative model of behavioural prediction were used to test the relationship among motivational variables and risk-behaviour related attitudes. Within the models, task/mastery orientation and intrinsic motivation were negatively associated with attitudes toward doping, cheating and winning-at-all-cost. Motivational orientations towards ego-orientation, demonstration of ability and physical self-presentation, as well as extrinsic regulation and amotivation, showed the opposite relationships.

The results provide further evidence that sport motivation represents a psychological variable that should be considered in policies, programs, and interventions aimed at the prevention of risk-behaviour in the adolescent population. Specifically, the focus on intrinsic enjoyment, self-referenced criteria of success and self-improvement might be related to more negative attitudes towards various kinds of risk-behaviour, whereas the emphasis on competition, comparison with others and external motivation appear to be related to the opposite outcomes.

9:15am - 9:30am

Linking motivational climate in sport and physical education to day-to-day moral behaviour in adolescents

Nicholas Stanger, Susan Backhouse, Eoin Murray, Jim McKenna

Leeds Beckett University, United Kingdom

Motivational climate has been consistently associated with moral behaviour in sport (e.g. Kavussanu, 2008). However, little research has examined whether motivational climate in sport and physical education is linked to young peoples' day-to-day moral conduct or has investigated potential self-regulatory mechanisms that may mediate these relationships. Accordingly, this study aimed to investigate whether motivational climate in sport and physical education (PE) was associated with day-to-day prosocial and antisocial behaviour in young people, directly and indirectly via general self-regulatory efficacy and social efficacy. N = 466 (n = 225 boys; n = 241 girls) adolescents aged 11-16 years completed measures of coach/PE teacher-created motivational climate (Smith et al., 2008), general self-regulatory and social efficacy (Bandura et al., 1996), and day-to-day prosocial (Carlo et al., 2003) and antisocial (Bendixen & Olweus, 1999) behavior. Bootstrapping analyses revealed that mastery climate was positively related to prosocial behaviour and negatively related to antisocial behaviour, by mastery climate being positively linked to self-regulatory efficacy and social efficacy. In contrast, performance climate was only positively and directly linked to antisocial behaviour. Findings suggest that a mastery climate in sport/PE is associated with more frequent day-to-day prosocial behaviour and less frequent day-to-day antisocial behaviour, by potentially enhancing self-regulatory efficacy and social efficacy. Therefore, creating a mastery climate in physical-activity contexts may help promote self-regulatory processes and positive social behaviours that reach beyond the sport/PE context in young people.

9:30am - 9:45am

Influence of autonomous motivation in PE class on Chinese collegiate student's leisure-time PA: a prospective study

Zhixiong Mao, Lin Liang, Lu Guo

School of Psychology, Beijing Sport University, China, People's Republic of

A two-wave prospective design was conducted to examine the applicability of Trans-contextual Model (TCM) for Chinese collegiate students. N = 404 collegiate students (n = 170 male, age = 18.76 years, SD = 1.139) participated in psychological scale measurements of their perceived autonomy support (PAS), self-efficacy in physical education (PE) class at the beginning of the semester. One week later, leisure-time autonomous motivation (LTAM), attitude, subjective norm, perceived behavioural control, intention about leisure-time physical activity (LTPA), and LTPA behaviour was accessed. SEM was conducted and the model had good goodness of fit, which revealed that PAS in PE class can positively predict LTAM, attitude, subjective norm, perceived behavioural control, and intentions of physical activity through autonomous motivation of PE class, and then predicted their LTPA, by which the whole TCM explained 26% of the variance of LTPA. Multi-group (dislike/like PE class) path analysis showed that TCM could explain either 27% or 31% of LTPA variances of students who dislike/like PE class, which suggested that TCM was fully applicable to Chinese collegiate students. It is concluded that (1) TCM can effectively predict the collegiate students' LTPA across Chinese culture, and (2) TCM can significantly promote LTPA among college students who dislike PE class.

9:45am - 10:00am

Gamification related sport and wellness technology motivating towards physical activity: an intervention study among teenagers

Eeva Kristiina Kettunen, Tuomas Kari, Marja Kokkonen

University of Jyväskylä, Finland

The physical activity levels of teenagers are decreasing (WHO, 2018), and therefore, it is important to find ways to motivate them to be active. This paper reports the findings of a three-months intervention study that was conducted to increase the knowledge about gamification related sport and wellness technologies and its motivational effects on the physical activity of teenagers. By investigating the opinions, wishes and suggestions of teenagers, the aim is to assess whether gamification related sport and wellness technology could be useful for this target group in order to motivate and help them in the pursuit of a healthier and more physically active lifestyle.

The study conducted in the winter of 2018-2019 followed a qualitative methods approach. N = 30 teenagers with a gamification-related sport and wellness technology application participated. The participants were between 13-15 years old and were recruited from four local junior high schools. The data was collected with self-reported surveys related to motivation at the beginning, middle and end of the study period as well as with interviews at the end of the study period. The data was analysed by thematic analysis method.

The results show that gamification related sport and wellness application has potential in motivating teenagers and teaching them about their own physical activity. Rewards can work as motivators for physical activity but tracking one's own training and development was considered equally motivating. The present findings have scientific, educational and clinical importance for professionals, including sport psychologists, working within physical-activity interventions for teenagers.

Paper Session 30: Coaches, Coaching and Coaching Education

Time: Thursday, 18/Jul/2019: 8:30am - 10:00am · Location: VSH 17 - Westphalia

Session Chair: Krista Munroe-Chandler, University of Windsor

8:30am - 8:45am

The development and implementation of a coaching vision of distinguished high performance Ice Hockey coaches

Gordon Bloom¹, David Urquhart¹, Todd M. Loughead²

¹McGill University, Canada; ²University of Windsor, Canada

Recently, a line of research has emerged focusing on highly accomplished coaches who led their athletes/teams to multiple championships. Although researchers have highlighted commonalities relating to the developmental pathways of these coaches, there is a need to understand how these pathways relate to the development of a coaching vision and its influence on creating and sustaining a culture of excellence. The purpose of this study was to explore how expert ice hockey coaches developed, articulated, and implemented their coaching vision. N = 6 highly distinguished coaches participated in individual interviews and the data were analysed using hierarchical content analysis. These coaches were purposefully chosen because they all had a minimum of ten years as head coach, had won at least two national championships as head coach, and had a career winning over 55.0%. The results revealed that the coaching vision was developed and adapted over time. It was derived from life experiences and personal characteristics of the coaches and was facilitated through continuous knowledge acquisition and improvement that led to the articulation of a vision of excellence. Once established, this vision was refined and adapted using the knowledge acquired from peers and successful coaches in other domains. Furthermore, the vision was strengthened after achieving the ultimate goal of winning a national championship by establishing a culture of success. The current findings provide practical information to first-year head coaches that are starting with a new team, as well as experienced coaches that aim to achieve better results with their current team.

8:45am - 9:00am

Exploring the influence of the parasport coach on the personal and professional well-being of female Paralympic athletes

Danielle Alexander¹, Gordon Bloom¹, Shauna Taylor²

¹McGill University, Canada; ²The University of British Columbia, Canada

One billion people, or 15% of the global population, report living with a disability. This population is at higher risk of developing health conditions, including fatigue, obesity, and depression, which have been associated with a lower quality of life. Sport has helped decrease the severity and prevalence of these conditions by providing psychological, physiological, and social benefits for people with a physical disability. The acquisition of these benefits is facilitated by the presence of trained and skilled coaches. Thus, it is disconcerting that research on parasport coaching remains limited. Our study explored how coaching strategies and behaviours influenced the personal and professional well-being of female Paralympic athletes. Semi-structured interviews were conducted with N = 8 female Paralympic athletes who achieved an average of eight combined Paralympic and Parapan American medals. Using hierarchical content analysis, the results revealed that athletes preferred coaches who engaged in effective forms of communication, were knowledgeable, and supported them within and outside of sport. Athletes also discussed experiences with male coaches whom they felt inappropriately addressed their disability and gender, which in turn, negatively influenced their satisfaction as an athlete and a person. These results are troublesome when you consider that people with a disability are approximately four times more likely to be victimized than people without a disability, and females are more susceptible to discrimination and harassment compared to males. This knowledge provides insight on the coaching strategies and behaviours that can influence the personal and professional well-being of female Paralympic athletes.

9:00am - 9:15am

Developing, conducting, and evaluating a life-skills coaching education program for competitive youth football

Lucas Silvestre Capalbo

Michigan State University

Football can be a great platform to instil life-skills given the right conditions. However, many coaches may not know concrete strategies to help their players learn positive lessons from the game. This can be due to most youth sport program leaders, including coaches, having little to no formal training in fostering life skills in sports (Gould & Carson, 2008a). Based on such need, this applied practice report explored the development, application, and evaluation of a life skills coaching education program for competitive youth football coaches in Mid-Michigan (USA). The program, grounded in the model of coaching life skills through sport (Gould & Carson, 2008b), included an assessment of the players' needs, educational meetings between the coaching educator and the coaching staff, on field applications, and reflection. Major practical recommendations yielded from this applied practice, specifically the relationship between the degree of perceived coaching effectiveness and the complexity of each life skill, design of authentic drills by the coaches with the support of a coaching educator, and the elaboration and application of a competitive football season plan with life skills in mind.

9:15am - 9:30am

Mindful sport performance enhancement for a college team: including a coach's perspective**Megan Hut, Thomas O'Connor Minkler, Carol R. Glass**

The Catholic University of America, United States of America

Since the development of MBSR (Kabat-Zinn, 1990), many different mindfulness-based interventions have been researched with diverse populations. More recently, mindfulness research has been applied with athletes, and one such empirically supported intervention is Mindful Sport Performance Enhancement (Kaufman, Glass, & Pineau, 2018). This presentation will focus on the results of an MSPE intervention with a team, including the unique perspective of the assistant coach.

Participants were N = 21 female student-athletes on a collegiate field hockey team. All athletes received six 1-hour sessions of MSPE that began prior to their competitive season. The first author (the assistant coach) also learned the MSPE protocol independent of the team and established her own mindfulness practice.

Analyses showed that competitive state anxiety was significantly lower post-intervention, and improvement in sport mindfulness and depression were also noted (although not statistically significant). Athletes attended 100% of the sessions and reported that MSPE was successful in helping them improve awareness and emotion regulation. From the coach's perspective, her knowledge of mindfulness helped to reinforce what the team learned during the sessions and allowed her to work with the program leader to encourage engagement in the intervention. The coach also observed benefits in team behaviour: mindfulness was often brought up during team huddles, athletes established mindful goals, and would often encourage each other to take a breath, be mindful, and focus on the task at hand. Finally, suggestions will be made for coaches wanting to learn mindfulness and collaborate with a sport psychology consultant working with their team.

10 basic psychological principles of high performance and effective self-regulation**Nico W. Van Yperen**

University of Groningen, The Netherlands

In this state-of-the-art talk, I will present a systematic review on the extant empirical literature on achievement goals and self-regulation in the sport context. This review will be structured on the basis of 10 original and basic psychological principles of high performance. By following these principles, coaches and their athletes likely increase athletes' chances to develop a successful sports career. The 10 principles are:

1. Enhance performance and self-regulation through goal setting.
2. Structure the multifaceted nature of achievement goal pursuit into a hierarchical goal system.
3. Differentiate achievement goals on the basis of evaluative standard and valence.
4. Set approach goals rather than avoidance goals.
5. Develop interventions that focus on self-based and task-based approach goals.
6. Delineate athletes' idiosyncratic developmental trajectories to better understand the process of goal attainment and self-regulation.
7. Work on strengths and weaknesses simultaneously.
8. Distinguish between high pressure situations and athletes' psychological reactions to pressure.
9. Accept fluctuating internal states and focus on goal-relevant cues and contingencies.
10. Control the controllables.

My chapter on these 10 principles will soon be published in the Handbook of Basic Principles, edited by leading scholars in the field of goals, motivation, and self-regulation:

Van Yperen, N.W. (in press, 2019). Achievement goals and self-regulation in the sport context. In: P.A.M. Van Lange, E.T. Higgins, & A.W. Kruglanski (Eds.). *Social Psychology: Handbook of Basic Principles* (third edition). New York: The Guilford Press.

9:30am - 9:45am

Gender invariance of the group environment questionnaire in a collegiate athlete sample**Sebastian Harenberg¹, Kyle Paradis², Luc J. Martin³, Svenja A. Wolf⁴, Erwin Karreman⁵**¹Ithaca College, United States of America; ²University of Windsor, Canada; ³Queen's University, Canada; ⁴University of Amsterdam, The Netherlands; ⁵Saskatchewan Health Authority, Canada

Cohesion has been extensively researched in sport and it remains one of the most important small group variables in sport teams (Carron & Eys, 2012). Carron and colleagues (1985) developed the Group Environment Questionnaire (GEQ) to measure cohesion in collegiate sport teams. The GEQ assesses cohesion via perceptions of individual attractions to the group and group integration in task and social contexts. Although the factorial validity of the scale has been demonstrated in several studies, invariance across gender has yet to be examined. Such information is particularly important because recent qualitative evidence suggests that male and female athletes may differ in their perceptions of cohesion (Eys et al., 2015). Hence, the purpose of the present study was to examine the gender invariance of the GEQ. In total, N = 812 collegiate athletes (female n = 389) from Canada and the U.S. participated in the study. A confirmatory factor analysis across both genders revealed an unsatisfactory fit for the original four-dimensional GEQ (CFI = .87, SRMR = .06, RMSEA = .08, 90% CI = [.07; .08]), which was addressed by removing the only item with an unacceptably low factor loading ($\beta = .29$). The resulting 17-item version of the GEQ yielded an acceptable fit for males, females, and the whole sample (CFIs = .90, SRMRs = .05, RMSEAs = .07, 90% CIs = [.06;.08]). Further analysis revealed strong invariance of the scale across gender ($\Delta\text{CFI} < .01$). Current findings indicate that the GEQ is a useful instrument to measure cohesion in male and female athletes.

Symposium 25: Self-regulation of endurance performance: novel research findings

Time: Thursday, 18/Jul/2019: 8:30am - 10:00am · *Location:* H 2 - Bern
Session Chair: Carla Meijen, St Mary's University, London

Self-regulation of endurance performance: novel research findings

Chair(s): **Carla Meijen** (St Mary's University, London, United Kingdom)

Endurance activities tend to have some common psychological demands athletes experience, including dealing with exercise-related sensations, concerns about optimising pacing, life style sacrifices and time investment, pre-event stressors, and remaining focused despite adversity (McCormick, Meijen, & Marcora, 2018). As part of endurance activities individuals tend to engage in processes that guide them to, or away, from states or goals. Endurance athletes may make decisions about whether to keep going at a certain pace, distract their thoughts from the discomfort to push themselves towards a goal, or think about the satisfaction they may feel afterwards. These processes can occur before (forethought), during (action), and after (reflection) endurance performance. To further our understanding of how psychological interventions can be used when working with endurance athletes, we need to consider these self-regulation processes. The aim of this symposium is to share research findings that have adopted novel or alternative approaches to help understand self-regulation processes. First, Carla Meijen will share why runners may have the urge to stop, quit, or slow down. Second, Paul Anstiss will present findings of two brief online interventions for self-efficacy in endurance performers. Third, Samuele Marcora will present on the regulation of pacing during time trials comparing single and dual task conditions. Fourth, Brad Cooper presents on the notable variability in, and potential optimisers of, mental toughness in endurance athletes. Finally, David Marchant presents an overview of evidence highlighting the dynamic role of executive functioning and the prefrontal cortex (PFC) in underpinning self-regulatory cognitive processes during exercise.

Presentations of the Symposium

RESIST: understanding the urge to stop or slow down in endurance running events

Carla Meijen¹, Noel Brick², Andrew Lane³, David Marchant⁴, Samuele Marcora⁵, Dominic Micklewright⁶, Alister McCormick⁷

¹St Mary's University, ²Ulster University, ³University of Wolverhampton, ⁴Edge Hill University, ⁵University of Kent, University of Bologna, ⁶University of Essex, ⁷Plymouth Marjon University

During long distance running races participants can experience the urge to slow down significantly, deviate their pace, walk at an unplanned time of the race, or stop. This common, but little understood phenomenon is a mental demand (Schüler & Langens, 2007), and can diminish participants' experiences of the event. They may feel negative emotions, such as frustration for not achieving a goal. Exploring perceived triggers of this urge, and what coping strategies athletes have employed can help to inform psychological interventions aimed at facilitating endurance athletes' experiences.

An online survey was used to ask runners if they experienced the urge to slow down significantly or quit during an event. Of the 761 participants who completed the survey, 723 (95%) indicated experiencing the urge to slow down or quit. The main attributions for this were fatigue sensations, physical discomfort, negative thoughts, pain, pacing, terrain, and the environment. When asked about how they felt after giving in to the urge, participants indicated experiencing negative emotions (feeling disappointed and frustrated) for not achieving their (often time-based) goal, but also satisfaction for finishing the event. Resisting the urge led to more positive responses, such as happiness and feeling pleased. To help with resisting the urge, participants indicated employing a variety of strategies, including regulation of attention, motivation, emotion, and confidence. Taken together, the survey findings indicate that the urge to slow down or quit is widespread in runners, and that it can be helpful to implement self-regulation strategies to help manage this phenomenon.

Brief interventions for self-efficacy

Paul Anstiss¹, Carla Meijen², Alister McCormick³, Samuele Marcora⁴

¹University of Birmingham, ²St Mary's University, ³Plymouth Marjon University, ⁴University of Kent, University of Bologna

Self-efficacy has been identified as a key component of effective self-regulation (McCormick, Meijen, Anstiss, & Jones, 2018) and endurance performance (Burke & Jin, 1996). It would therefore be beneficial to identify interventions which can enhance self-efficacy in endurance athletes. Two interventions which have been used with endurance athletes, and are associated with self-efficacy, are self-talk and implementation intentions. These interventions represent brief, inexpensive, and accessible (i.e., through the web) ways of providing psychological support. To examine the effects of the two interventions on self-efficacy and performance, the current study examined the impact upon endurance athletes participating in real world competition. A randomised control trial design was employed in a naturalistic setting. Ninety-four endurance athletes (52 males) were randomised to one of three conditions (self-talk, implementation intentions, and control) prior to an upcoming event. Measures of self-efficacy were collected pre and post-event, whereas goal attainment, performance satisfaction, stress appraisals, and social validity of the interventions were collected post-event. There was no significant effect of group on self-efficacy, goal attainment, or performance satisfaction. Perceptions of stress controllability were significantly higher in the two intervention groups. High levels of satisfaction and use of interventions during the event were reported in both intervention groups. The current study is among the first to examine how brief web-based psychological may influence self-efficacy and performance related variables in endurance athletes. Although there was limited effects of group on the outcome variables, the interventions were deemed useful and suitable by the endurance athletes.

Psychobiology of pace self-regulation (pacing) during endurance competitions

Samuele Marcora¹, Benjamin Pageaux²

¹University of Kent, University of Bologna, ²University of Montreal

A popular model of endurance performance postulates that pace is regulated by a subconscious central governor that (based on afferent feedback from the body and knowledge of the distance to cover) regulates locomotor muscle recruitment in order to cover a set distance without dangerous disruption of homeostasis. Here, we present an alternative psychobiological model in which there is no central governor and the athlete self-regulates his/her pace in order to cover a set distance as fast as possible or cover a set distance before his/her competitors do. Then, we present a randomised crossover experiment in which participants were asked to perform a time trial on a stationary cycle ergometer (perform as much work as possible in 30 minutes) in two different conditions: single-task and dual-task. In the single-task condition, participants performed only the time trial. In the dual-task condition, participants performed the time trial whilst, at the same time, perform a cognitive task requiring self-regulation (Stroop) during three 5-min periods: minute 5-10, minute 15-20, minute 25-30. As hypothesised, compared to the single-task condition, cadence and power output were significantly lower than in the single-task condition during the 5-min periods in which participants performed the Stroop task. Overall time-trial performance was significantly lower in the dual-task condition. By showing a significant cognitive-motor interference during a time trial, these findings support the hypothesis that self-regulation plays an important role in pacing and endurance performance.

Mental toughness variability opportunities

K. Bradford Cooper¹, Mark Wilson², Martin Jones²

¹University of Exeter, US Corporate Wellness, ²University of Exeter

The connection between self-regulation and mental toughness has been previously established (Bahari, Biyabani, & Zandi, 2016). Our findings demonstrate within-person variability in mental toughness, with individuals high in mental toughness at one point in time being low in mental toughness at a separate point in time (Cooper, Wilson, & Jones, 2018). As a result, the ability to utilise self-regulation during endurance pursuits may be both influenced and influenceable. This presentation will demonstrate the notable variability in mental toughness and provide potential optimisers endurance athletes may utilise to improve outcomes related to self-regulation. The initial autoethnographic approach recounts and analyses mental toughness variability and potential optimisers experienced across a three events (Race Across America cycling event, Ironman triathlon, and marathon) over a five-month period. The follow-up pair of concurrent studies investigated the presence of mental toughness variability in 13 elite Masters runners and included the identification of primary influencers of that variability. For each participant, their maximum/minimum reported Mental Toughness Index (Gucciardi, 2015) score was calculated at baseline and across five self-selected high-RPE training or racing sessions. Follow-up interviews were then conducted to explore sources of this variability. Results demonstrated a significant main effect for 'variability'. Interviews revealed that mental toughness was influenced by a number of optimisers, broadly categorised as Thrive (foundational wellbeing), Prepare (situation-specific) and Activate (in the critical moment). Examples included but were not limited to sleep, stress and self-talk. These results have implications for application across a variety of settings, both in sport and general wellbeing.

Self-regulation of endurance performance: a cognitive perspective

David Marchant, Lorcan Cronin, Lars McNaughton, Robert Hyland-Monks

Edge Hill University

Active self-regulatory processes are critical to the tolerance and pacing of endurance exercise. Whilst the nature of such activity is being explored, little is known about the cognitive and neural process that support them. Such self-regulation and metacognitive activity are underpinned by cognitive processes that support active decision making during exercise. Specifically these draw upon or impact components of executive functioning that reside in the prefrontal cortex (PFC) such as attentional control and working memory. Drawing upon various research domains, the aim of this presentation is to frame such self-regulatory activity within the mutually interactive processes that link exercise, cognition and brain function. Important aspects of this relationship will be explored from an endurance performance perspective. Firstly, the dynamic relationship between physical exercise and executive functioning. Secondly, whether psychological interventions in endurance settings impact PFC activity and executive functioning. Thirdly, the role of baseline executive functioning capacity and endurance performance. Finally, the emerging role of the prefrontal cortex in the voluntary regulation of endurance exercise.

Symposium 26: Perception-action coupling in sport: Current perspectives from the UK, the Netherlands, Switzerland, and Germany

Time: Thursday, 18/Jul/2019: 8:30am - 10:00am · *Location:* H 3 - Madeira

Session Chair: André Klostermann, University of Bern

Session Chair: Florian Loffing, Carl von Ossietzky University Oldenburg

Perception-action coupling in sport: Current perspectives from the UK, the Netherlands, Switzerland, and Germany

Chair(s): **André Klostermann** (University of Bern, Switzerland), **Florian Loffing** (University of Oldenburg, Germany)

The study on perception-action coupling in sports and particularly in expert performance is still receiving enormous attention. Over the last years, however, the community has reached the common accord that in addition to fundamental research the practice transfer and the studies' ecological validity must be addressed more thoroughly requiring adapted experimental designs and respective methodological advancements. In this symposium, five different projects will be presented that reflect the breadth of the current research on perception-action coupling with particular emphasis on possible implications. To this end, André Klostermann and Christian Vater (both University of Bern, Switzerland) will address possible functionalities of foveal and peripheral vision in basketball shooting and in basketball defence, respectively. Martina Navarro (University of Portsmouth, UK) will speak about the intertwined relation between gaze, attention and anxiety in soccer, followed by David Mann (Vrije University of Amsterdam, the Netherlands) who will present the potential use of stroboscopic training in batting sports. Finally, Tim Lüders (University of Oldenburg, Germany) will talk about the possible effect of supplemental information (e.g. as to an opponent's action preference) on players' gaze behaviour during the defence of volleyball attacks. Overall, apart from illustrating current issues in perception-action coupling research in sports, each project included in this symposium is expected to stimulate creative efforts and to highlight future directions in the field for the next (50?) years.

Presentations of the Symposium

The Quiet Eye and the especial-skill effect in basketball set shots

André Klostermann

University of Bern, Switzerland

The Quiet Eye (QE) is a gaze phenomenon that has been studied for more than two decades (Vickers, 2016). However, the underlying mechanisms of the expertise effect remain unknown. The inhibition hypothesis (Klostermann et al., 2014) might offer an explanation by assuming that dense task-solution spaces in experts require long QE durations. The current study tested this hypothesis by making use of the especial-skill effect in basketball set shots. It was predicted to find longer actual than predicted QE durations from the free-throw distance. $N = 15$ basketball players performed a total of 150 basketball set shots from five different distances. To test for the especial-skill effect, for shooting accuracy and QE duration, individual linear regressions were calculated on the basis of all distances apart from the free-throw distance. With the individual slope and intercept values, the predicted values for the free-throw distance were calculated and compared to the actual values by means of dependent t-tests (Keetch et al., 2008). From the free-throw distance, higher actual than predicted shooting accuracies, $t(14) = 4.35$, $p < .01$, $d = 1.12$, and longer actual than predicted QE durations, $t(12) = 3.42$, $p < .01$, $d = 0.95$, were revealed. This suggests that when performing free throws, prolonged QE durations are required to inhibit alternative, less optimal task solutions over movement parametrisation within the very dense sub-space of this especial-skill. In contrast, from a motor-programming perspective (e.g. Vickers, 2016), because of increased automatisations, shorter actual than predicted QE durations should have been found.

Testing the costs and benefits of peripheral vision in basketball defence in a VR environment

Christian Vater

University of Bern, Switzerland

So far, the transferability of results on peripheral vision to sports situations must be questioned because tests did not involve natural task conditions. Therefore, in the current study, expert and novice basketball players were tested in defence scenarios where they had to initiate a defensive movement in a VR environment.

$n = 8$ expert and $n = 8$ novice basketball players viewed 360°-videos filmed from the centre position in a cave-like laboratory projection. In a defence situation, participants initiated a movement in response to a player cutting to the basket in four tests. In test 1 to 3, participants fixated one of the four attacking players, (0°-fixation location, 60°, 120°, 180°). While only four attacking players were displayed in test 1, four additional defenders were shown in test 2 to 4. In test 3, the response should be initiated to a non-defending (second) cutting player. In test 4, natural playing scenarios were presented. The head orientation (manipulation check) and foot movements (response time) were captured with an Optitrack system.

In test 1 and 2, response time was about 160ms slower when the cutting player started from eccentricity 4 compared to 1. Experts were between 100ms and 150ms faster than novices. In test 3, experts were particularly faster (270ms) at farthest eccentricities. In test 4, experts responded about 120ms faster across all eccentricities. Results show that larger viewing angles lead to slower reaction times in Basketball defence. Therefore, athletes should anchor their gaze between relevant players to reduce viewing eccentricity and respond faster.

Anxiety during penalty kick in football: Implications on gaze, visual attention and motor performance

Martina Navarro

University of Portsmouth, UK

The penalty in football has been one of the most adopted experimental paradigms to understand the intertwined relation between gaze, attention and anxiety. Given the high level of control and replicability of the penalty task, studies in this area have successfully designed in situ and ecologically valid experiments examining the effect of pressure on visual attention and motor performance of penalty takers. High levels of pressure/anxiety affect the taker's gaze by increasing the amount of time he/she spends looking at the goalkeeper compared to a non-pressure situation. This shift in gaze under pressure is due to a decrease of cognitive resources available for the goal-directed attentional system accompanied by an increased reliance on the stimulus-driven attentional system. As a consequence, shoots become more centralized even when the taker tries to ignore the goalkeeper's actions (goalkeeper independent kicking strategy). Promising results from current studies revealed potential training strategies (including Quiet Eye and implicit learning) that may circumvent the effects of anxiety on the penalty taker's visual control. More specifically, these training techniques have successfully increased performers' attentional resources and kicking performance under psychological pressure. During this talk, I'll highlight key studies in the methodological development of the area, present the most recent findings and discuss current limitations and their implications for future research.

Gaze during stroboscopic training: Less predictive behaviour rather than more?

David L. Mann¹, Hiroki Nakamoto², Gioele Salvadori³

¹Vrije Universiteit Amsterdam, The Netherlands, ²National Institute of Fitness and Sports in Kanoya, Japan, ³University of Bologna, Italy

Stroboscopic training seeks to improve performance in visually guided actions by intermittently occluding vision to improve perceptual processing of a target's motion (Applebaum & Erickson, 2018; Elliott, Chua & Pollock, 1994). Anticipatory timing has been shown to improve following stroboscopic training (Smith & Mitroff, 2012), and vision is known in some cases to be more predictive when motion targets are intermittently occluded (Bennett & Barnes, 2006). This led to the assumption that gaze behaviour may be more predictive during stroboscopic training. The aim of this study was to determine the degree to which predictive gaze behaviour changes during stroboscopic training. N = 18 novice participants learned to intercept balls on a virtual tennis court wearing a virtual-reality headset fitted with a binocular eye-tracker. The post-training improvement for the n = 9 participants in a stroboscopic-training group was indistinguishable from that of n = 9 participants in a control group (p > .05). Crucially, gaze analysis revealed that gaze during stroboscopic training was no more predictive than normal. If anything, gaze was less predictive, i.e. more likely to accurately align with the ball during flight rather than to move ahead of the ball. This should not be surprising: object tracking may be increasingly important when only limited visual information is available (Bosco et al., 2015). Findings question the assumption that stroboscopic training results in more predictive visual behaviour. Any improvements in performance found as a result of stroboscopic training are likely to be a result of better object tracking rather than more predictive behaviour.

On the influence of contextual information on female players' gaze behaviour during the defence of volleyball attacks

Tim Lüders, Jörg Schorer, Florian Loffing

University of Oldenburg, Germany

Knowledge of an opponent's action preference seems to affect visual anticipation of their action outcome (Mann et al., 2014). If an opponent acts (not) according to their purported preference, anticipation is facilitated (unaffected or harmed). The underlying perceptual-cognitive mechanisms of that effect remain unclear. Here we tested the hypothesis that players might change their gaze behaviour once provided with preference information. To this end, N = 27 female volleyball players (second to fifth league in Germany) anticipated the direction (diagonal or longline) of attacks in two test blocks with 40 videos each. Videos were shown on a large screen and stopped 240ms prior to hand-ball contact. Participants simulated defensive reaction while their gaze was recorded using a mobile eye-tracker (SMI). One female attacker directed 75% of shots diagonally (25% longline), while another female attacker distributed shots equally to both directions (preference counterbalanced across participants). After block one, participants were informed that either both attackers preferred diagonal shots in 75% of occasions (group 1) or that both attackers distributed shots equally across directions (group 2). Analysis of the proportion of correct predictions revealed no effect of group or block. A preliminary analysis of gaze suggests a change in group 1, but not group 2, with gaze being directed more often and earlier to the background, possibly towards the predicted hand-ball contact zone (detailed analysis is currently being conducted), and less often towards the trunk in block 2 than block 1. Collectively, being informed of an opponent's preference appears to affect gaze behaviour.

Symposium 27: Resilience in sport and performance psychology: multi-level perspectives

Time: Thursday, 18/Jul/2019: 8:30am - 10:00am · *Location:* H 4 - Chalkidiki
Session Chair: Mustafa Sarkar, Nottingham Trent University

Resilience in sport and performance psychology: multi-level perspectives

Chair(s): **Mustafa Sarkar** (Nottingham Trent University, United Kingdom)

The aim of this symposium is to review recent developments in resilience research in sport and performance contexts from multi-level perspectives (i.e., individual, team, and organisational levels). The symposium is divided into five oral presentations. The first presentation investigates the stability of resilience, using longitudinal growth modelling, during on-going daily behaviours in the workplace, with the results offering empirical evidence of individual resilience change as a function of time. The second presentation evaluates the effectiveness of a pressure training intervention, within an elite female basketball academy, on the development of individual and team resilience, with the results providing preliminary support for the pressure training intervention. The third presentation investigates team resilience development in competitive sport. Through prolonged fieldwork, a season-long ethnography was conducted, and the findings provide practitioners with a platform for creating team resilience interventions in sport. The fourth presentation introduces the audience to a multilevel model of team resilience, relevant to sport and workplace contexts, underpinned by nine key propositions that provide clarity on the what, how, when, and where of team resilience. The fifth presentation reaches expert consensus, using the Delphi method, on a definition and key characteristics of organisational resilience in elite sport. By proposing a definition and identifying key characteristics of organisational resilience, this study provides a springboard for future research in this area. The symposium concludes by opening the floor for an interactive discussion between the presenters and the audience about the topic of resilience in sport and performance psychology from multi-level perspectives.

Presentations of the Symposium

Quantifying resilience as a state-like process: longitudinal growth curve analysis of resilience in the workplace

Christopher Bryan, Tadhg MacIntyre
University of Limerick, Ireland

We investigate the stability of resilience during on-going daily behaviours at work. Resilience across both work and sport conceptualise resilience as a state-like concept that may fluctuate over time through both positive and negative environmental influence (Bryan, O'Shea, & MacIntyre, 2017; Fletcher & Sarkar, 2016). However, in the absence of longitudinal studies the predictive validity of a state-like concept of resilience has yet to be quantified (Galli & Gonzalez, 2015). Analysing construct stability is complex but progression in advanced statistical methodology has enhanced behavioural scientists ability to interpret temporal precedence (Curran & Bauer, 2011). This investigation focuses on time-series data captured within eight Irish companies in common office workers (N = 101) which acts as a rich and dynamic natural laboratory of resilience fluctuations in mentally healthy individuals' undergoing goal-oriented behaviour (Uphill, Lane, & Jones, 2012). R Studio (Version 0.96.122) was used for non-parametric analysis and longitudinal growth modelling.

Kruskal-Wallis test showed that at least one timepoint of resilience scores significantly differed from one or more of the other timepoints ($\chi^2 = 8.3$, $df = 3$, $p = 0.04$). A non-parametric linear mixed model showed the test-retest reliability of resilience was $r = 0.63$ over time which suggests questionable stability. Finally, latent growth curve model analysis showed statistically significant variation in resilience across time in the elevation and rate of change of the individual resilience growth trajectories.

Results offer empirical evidence of individual resilience change as a function of time. Future research should investigate process variables contributing to the rate of resilience change.

Designing and evaluating a preliminary pressure training intervention to develop resilience in female basketball players

Jolan Kegelaers¹, Paul Wylleman¹, Raoul Oudejans²

¹Vrije Universiteit Brussel, Belgium, ²Vrije Universiteit Amsterdam, The Netherlands

It has been suggested that challenging or adverse experiences can – paradoxically – contribute to the development of resilience (Seery, 2011). Scholars have therefore argued that resilience development interventions should be set up in a sufficiently challenging environment, and include deliberate and carefully implemented planned disruptions (e.g., Fletcher & Sarkar, 2016). However, to date no empirical studies have examined the effectiveness of such planned disruptions on resilience development in sports. This study thus aimed to design a pressure training intervention and evaluate its effectiveness on the development of individual and team resilience.

The intervention was set up as a quasi-experimental mixed-methods design, delivered within an elite female basketball academy (N = 18, Mage = 18.2, SD = 2.1). Quantitative measures included the CD-RISC-10 (Campbell-Sills & Stein, 2007) and the CREST (Decroos et al., 2017). Qualitative data was gained through semi-structured interviews with 7 athletes (M age = 18.3, SD = 2.0) and 3 coaches (M age = 38.0, SD = 8.8).

Quantitative results indicated that the intervention was effective in reducing team-level vulnerabilities but did not necessarily lead to increased individual- or team-level resilient characteristics. Qualitative evaluations highlighted that participants perceived the intervention as effective. More specifically, participants reported increased awareness, emerging leadership, stronger communication channels, and the development of shared mental models. These results provide preliminary support for the pressure training intervention. However, this study is limited due to the small population, quasi-experimental design, and lack of a sport-specific resilience scale. Further research is thus necessary.

Developing team resilience: a season-long investigation of a national league winning semi-professional rugby union team

Paul Morgan¹, David Fletcher², Mustafa Sarkar³

¹Buckinghamshire New University, United Kingdom, ²Loughborough University, United Kingdom, ³Nottingham Trent University, United Kingdom

Recent research (Morgan, Fletcher, & Sarkar, 2013; 2015) has provided greater definitional and conceptual clarity of resilience at the team level (i.e., what team resilience is) and explained key underpinning psychosocial processes (i.e., how a resilient team functions). Despite growing interest in team resilience research in competitive sport, an understanding of how team resilience can be developed has yet to be explored. The purpose of this study, therefore, was to investigate team resilience development in competitive sport. Through prolonged fieldwork, a season-long ethnography (11 months) was conducted. The sample consisted of a leading English national league-winning semi-professional rugby union team (N = 27 participants). Multiple data collection methods were employed (i.e., observation, interviewing, field notes, reflexive diary) as part of a holistic ethnographic approach. Following an iterative process of data analysis, findings revealed multiple strategies for team resilience development: inspiring, motivating, and challenging team members to achieve performance excellence; developing a team regulatory system based on ownership and responsibility; cultivating a team identity and togetherness based on a selfless culture; exposing the team to challenging training and unexpected/difficult situations; and promoting enjoyment and keeping a positive outlook during stressors. Cultural expressions and folk terms were also identified to illuminate the context of the ethnography. This study advanced team resilience research in sport by identifying key psychosocial strategies throughout a season as part of building team resilience. The findings provide practitioners with a platform for creating team resilience interventions in sport.

A multilevel and dynamic perspective of team resilience

Daniel Gucciardi

Curtin University, Australia

The dynamic and rapidly changing nature of workplaces in the 21st century means that teams are required to navigate adversities regularly as part of their efforts to drive innovation, competitive advantage, and success. Unsurprisingly, there is intuitive and practical appeal to the idea of team resilience. That is, sustaining healthy levels of collective functioning or recovering quickly after some degree of deterioration when confronted with adversity. Despite their importance within numerous workplaces worldwide, how teams demonstrate resilience and what can be done to optimise the likelihood of teams achieving important and valued outcomes in times of adversity remains unknown. In contrast to the rich literature on individual resilience that spans nearly five decades (e.g., Kalisch et al., 2017; Kossek & Perrigino, 2016), existing scholarly work on team resilience is hampered by limited theoretical development, conceptual ambiguity, and methodological weaknesses (Chapman et al., in press). The next frontier for the science of team resilience requires clarity on the multilevel and temporal dynamics among key determinants and the mechanisms of effect in order to inform pragmatic and scalable training and development efforts. In this presentation, I will introduce the audience to a multilevel model underpinned by nine key propositions that provide clarity on the what, how, when, and where of team resilience (Gucciardi et al., 2018), and consider diverse methodological innovations that can assist researchers to unpack the multilevel and temporal dynamics of this phenomenon.

Defining and characterising organisational resilience in elite sport

Kirsten Fasey¹, Mustafa Sarkar¹, Chris Wagstaff², Julie Johnston¹

¹Nottingham Trent University, United Kingdom, ²University of Portsmouth, United Kingdom

Organisational resilience has been investigated in numerous performance contexts outside of sport, although how the term has been conceptualised and operationalised has varied across domains (Tarba et al., 2017). Given the growing interest in sport's organisational environment (e.g., Fletcher & Arnold, 2016; Wagstaff et al., 2016), the purpose of the study was to reach expert consensus on a definition and key characteristics of organisational resilience in elite sport. Using the Delphi method, 62 expert panellists working in or with elite sport organisations (N=45) or having academic experience of resilience in various contexts (N=17), responded to four online iterative surveys over seven months. Following each round, data was analysed and feedback given to participants regarding items reaching consensus, and for those which did not, how other participants had responded, to allow participants to reconsider their responses. Following analysis, organisational resilience was defined as "the dynamic capability of an organisation to successfully deal with significant change. It emerges from multi-level (employee, team, and organisational) interacting characteristics and processes which enable an organisation to prepare for, adapt to, and learn from significant change". In terms of characteristics, internal communication and a desire to learn and improve emerged as the most important, with disagreements appearing in relation to attitudes to risk, failure, and utilisation of resources. By proposing a definition of organisational resilience which is appropriate to and endorsed by those in elite sport organisations, and identifying key characteristics of organisational resilience, this study provides a springboard for future research in this area.

Workshop 13: Causal inferences in sport and exercise psychology research: what to do when randomization is not an option?

Time: Thursday, 18/Jul/2019: 8:30am - 10:00am · *Location:* VSH 06 - Bad Blankenburg
Session Chair: Andreas Karl Stenling, Umeå University
Session Chair: Andreas Ivarsson, Halmstad University

Causal inferences in sport and exercise psychology research: what to do when randomization is not an option?

Andreas Karl Stenling^{1,2}, Andreas Ivarsson³, Magnus Lindwall^{4,5}

¹Umeå University, Sweden; ²University of Otago, New Zealand; ³Halmstad University, Sweden; ⁴University of Gothenburg, Sweden; ⁵The Swedish School of Sport and Health Sciences

Sport and exercise psychology research is often motivated by an interest in causal connections that explain human behavior. The randomized experiment is considered as the golden standard to generate causal evidence, however, there are many instances where randomization is infeasible; randomization may be unethical, not practically possible, or results might not generalize from the laboratory to the real world. Although methods allowing researchers to make stronger causal claims based on correlational data exist, these methods have been slow to reach the sport and exercise psychology discipline. This workshop will focus on how researchers can strengthen causal inferences with correlational data. We will highlight problems with using correlational data to answer causal questions and discuss the conditions under which causal claims can be made. Research designs (e.g., natural experiments) and statistical methods (e.g., instrumental variables, propensity score methods) to strengthen causal inferences based on correlational data will be presented in the contexts of sport and exercise psychology. Specific learning objectives are to: (1) understand causality and the counterfactual argument; (2) understand challenges to causal inferences with correlational data; and (3) gain knowledge on research designs and statistical methods that can strengthen causal inferences based on correlational data. Target groups are postgraduate students and researchers in sport and exercise psychology and the workshop will include both theoretical (e.g., brief lectures) and practical (e.g., computer exercises) parts. Examples will focus on Mplus and SPSS (R packages will also be suggested), and literature, data, input, and output files for all examples will be provided.

Workshop 14: Heart rate variability in sport psychology: applications of the vagal tank theory

Time: Thursday, 18/Jul/2019: 8:30am - 10:00am · *Location:* VSH 19 - Paris
Session Chair: Sylvain Laborde, German Sport University Cologne
Session Chair: Emma Victoria Mosley, Solent University

Heart rate variability in sport psychology: applications of the vagal tank theory

Sylvain Laborde^{1,2}, Emma Mosley³

¹German Sport University Cologne, Germany; ²Université de Caen Basse-Normandie, EA 4260, France; ³Solent University Southampton, UK

Heart rate variability (HRV) has recently gained a lot of attention in sport psychology. The reason for this is that it allows for non-invasive and cost-effective measurement of the activity within the parasympathetic nervous system regulating cardiac functioning, cardiac vagal activity. Based on a recent theoretical development with the vagal tank theory (Laborde, Mosley, & Mertgen, 2018b), this workshop will introduce how cardiac vagal activity can be used as an indicator for health, stress management, emotion regulation, and executive function, considering the 3Rs of cardiac vagal activity functioning: resting, reactivity, and recovery. Further, practical methodological recommendations will be presented (Laborde, Mosley, & Thayer, 2017), in order to get the most of HRV measurements in sports settings, taking into account the many factors that can influence HRV (Laborde, Mosley, & Mertgen, 2018a).

Learning objectives: Participants will get first-hand experience of learning how to measure HRV with smartphone apps and ECG devices in different situations such as morning measurements, night measurements, preperformance routines, physical activity, post-training or post-competition recovery, psychosocial stress and relaxation methods. Further, they will also discover how to analyze and interpret the HRV data in Kubios software.

All participants will be provided with the slides of the presentation, and those who volunteer to have their HRV measured will be provided with their HRV files at the end of the workshop.

Workshop 15: Evolution of learning for future force readiness

Time: Thursday, 18/Jul/2019: 8:30am - 10:00am · *Location:* VSH 18 - Edinburgh

Session Chair: ChangHyun Ko, Science Applications International Corporation

Evolution of learning for future force readiness

ChangHyun Ko, Andrea Ray

Science Applications International Corporation, United States of America

The Army has acknowledged and emphasized the importance of “cognitive maneuver” (USASOC, 2016) and as cognitive demands increase for Soldiers, cognitive training must continue to incorporate advancements in research and empirically sound techniques. Additionally, the Army Human Dimension Strategy (2015) has outlined a continued commitment to Total Force performance optimization and states that “emerging advances in science and technology provide the Army the opportunity to improve training, education, leadership development, and talent management in pursuit of optimal performance.” Key challenges identified for Army instructors were integration of feedback, facilitating students' skill retention, and accelerating students' expertise (Keller-Glaze, 2016; Knott et al. 2014; Schmidt, 1997).

In order to increase the effectiveness of instructors and address the challenges, the presenters developed an evidence based training that is utilized across various military environments. The goal was to create a library of techniques and strategies to be integrated into multiple instructor environments and be applicable to any learning domain. The purpose of the workshop is for attendees to learn these strategies and have an opportunity to integrate these techniques into their own environments. The authors will focus on blended learning techniques, feedback, and technology integration to facilitate an active learning environment and increase retention of skills. Participants will not only experience how all of these components operate in unison but also have small group sessions to develop concrete examples in their own situations. Participants will receive feedback from the presenters on their examples.

Poster Session Thursday

Time: Thursday, 18/Jul/2019: 10:15am - 11:15am · *Location:* Marquee

Session Chair: Raoul R.D. Oudejans, Vrije Universiteit Amsterdam

3.01 Department of psychology in a Peruvian professional soccer club: creation and implementation in the formative divisions

Dante Nieri

University of Lima, Peru

Starting from an approach of comprehensive sports training (physical, technical, tactical and psychological) the creation of the formative football psychology department was developed for the institution's youth categories. The objective was to create the area, lay the foundations of the structure of the department and implement a clear line of psycho-sports development aimed at forming a greater number of players who reach the highest professional level (first team of the club and national teams), enhancement his performance, to contribute to the growth and development of Peruvian soccer from the psychological point of view. The proposed approach was comprehensive (players, families, communicators and educators, administrators and leaders), interdisciplinary (physiotherapists, doctors, trainers and coaches) and from a human approach, taking care of their healthy psychological development. For this, a detailed planning of the training and development of psychological processes to be developed in stages was established, based on workshops, training, counselling, follow-up, accompaniment, intervention and evaluation.

3.02 Conceptualisation of parental involvement in Asia competitive sports

Ting-Wen Wang

Feng Chia University, Taiwan

In recent years, many studies have documented the roles which parents play in their children's competitive sports involvement. In particular, parental involvement has been identified as one of the significant factors which influence children's competitive sports involvement. The research method was based on qualitative orientation, and adopted purposive sampling to select research participants, included 5 coaches (Mage = 32.4; SD = 8.96), the average teaching time was 9.8 years (SD = 8.81); 5 parents (Mage = 45.8; SD = 2.95); 11 junior athletes (Mage = 11.55; SD = 0.93), with an average training duration of 4.59 years (SD = 1.46) participated in this study. After the collection of the materials to be interviewed, the researchers conducted data analysis based on the grounded theory. The study found that the main core behaviors of parents involved were "extra directive and training", "negative discipline behaviour", "side behaviour" and "social support". On the other hand, based on the interview data and literature, this study further proposes parental involvement conceptual model and point out the possible causal relationship between parents' involvement behaviors. The researchers made the following conclusions based on the results of this study: (1) Parents should try to avoid excessive involvement and provide only the support that children need. (2) Sports education related personnel can use the results of this study as the basis for the formulation of sports education strategies, and develop a positive channel for communication between parents and children to create the best situation suitable for the development of children's competitive sports.

3.03 Medial presentation of mental health problems of elite athletes – An examination of German newspapers and magazines

Marion Sulprizio, Johanna Belz, Sven Serwuschok

German Sport University Cologne, Germany

Due to its stigmatisation, the topic of mental disorders and mental health problems of elite athletes was rarely discussed before 2009 by German media. Since the tragic suicide of the German national goalkeeper Robert Enke in 2009, however, mental disorders and mental health problems of elite athletes have increasingly been covered by German media, creating public awareness and a platform for this topic. Ten years later, more and more elite athletes with psychiatric disorders have turned to the public with their struggles. Our study examines how elite athletes with mental disorders and mental health problems have been portrayed in German articles of newspaper and magazines since 2009. For this purpose, ninety articles of the six most popular German magazines and newspapers addressing mental disorders or mental health problems in elite athletes were selected and analysed. In order to identify how mental disorders or mental health problems have been presented in the media and if stigmatisation has occurred, a qualitative and quantitative analysis was conducted. Analyses revealed that the amount of articles concerning mental disorders or mental health problems has increased significantly over the last ten years. A stigmatisation of athletes with these problems could not be found in the selected articles. Furthermore we could not find precise reports regarding prevalences, detailed symptom descriptions, or treatment options. The preliminary results further indicate that most articles on mental disorders are related to soccer since the medial pressure seems high in this discipline.

3.04 Relative age effect and birthplace effect in 18-19 year-old athletes and how they perceive these environmental effects

Ronnie Lidor, Mavyan Zohar, Michal Arnon
The Academic College at Winhgate, Israel

Two of the most investigated factors that are associated with achieving expertise in sport are the relative age effect (RAE) and the birthplace effect (BE). The purpose of our study was not only to calculate these effects in young Israeli elite athletes (ages = 18-19 y), but also to study how the athletes perceive these effects, if the effects indeed exist. Participants were 1397 athletes (390 female and 1007 male) who competed in five individual (gymnastics, judo, swimming, tennis, and track and field) and five team (basketball, soccer, team handball, volleyball, and water polo) sports. A semi-structured questionnaire was administered to the athletes to gather information on how they assess the contribution of their anthropometrics and their physical and cognitive attributes to their achievement in sports. Data analyses showed that RAE was found to be significant among males in four sports – swimming, basketball, soccer, and team-handball. Those who were born early in the year had a higher representation in the elite youth leagues. BE was found to be significant in most sports in females and males, implying that the probability of achieving a high level of proficiency is greater when the athlete is from a community of less than 2.000 residents or from a community of 50.000-200.000 residents. Athletes who were born early in the year reported that they felt stronger than the rest of the players on the team. Those who were from small communities or medium-size communities claimed that they perceived their environment as supportive of their efforts.

3.05 Developmental changes in the accuracy of performance predictions in rope skipping

Sabine Schaefer, Nicole Frisch
Saarland University, Germany

The ability to correctly judge one's own performance potential and to adjust training intensities accordingly is an important prerequisite for successful sport careers. Research findings in cognitive development indicate that meta-cognitive abilities increase in childhood (Dufresne & Kobasigawa, 1989; Schneider, 2008). We tested performance-predictions in children, teenagers, young, and middle-aged adults (N = 26; age range 5 to 37 years, females only), who were all active members of a rope skipping club. Subjects were repeatedly tested in their maximum single rope speed over the course of 4 sessions. The dependent measure was the number of jumps in 10 seconds. Older participants outperformed younger ones, as reflected in the correlation of age and performance ($r = .710$). For some trials, subjects had to predict how many jumps they would do in the upcoming trial. Subjects received points equivalent to the predicted number if they succeeded, but 0 points if they failed. Children were predicted to show a more pronounced overestimation of their performances compared to teenagers or young adults (Riediger, Li, & Lindenberger, 2006). Results showed that age negatively correlated with the incidence of trials with a 0 score ($r = -.493$), and with the absolute difference between the predicted and achieved performances ($r = -.583$). These findings suggest that children indeed have more problems than teenagers or young adults to accurately judge and predict familiar motor-task performances. Coaches should therefore assure that young athletes do not systematically choose task-difficulty levels that are too high for them.

3.06 The relationship of emotional skills and stress: the mediating role of coping strategies

Alina Schäfer, Fabian Pels, Jens Kleinert
German Sport University Cologne, Germany

According to Lazarus and Folkman (1984), coping mediates the relationship between resources and stress. The purpose of the current work was to examine whether specific coping strategies (focus on positives, support coping, active coping and evasive coping) mediate the relationship between the resource of emotional skills (i.e., acceptance skills, resilience skills and regulation skills) and stress in Physical Education (PE) teachers. The sample consisted of 457 PE (pre-service) teachers. Emotional regulation skills (SEK; Berking & Znoj, 2008), coping strategies (BriefCOPE; Knoll et al., 2005) and stress (PSQ; Fliege et al., 2005) were assessed by self-rating questionnaires. To analyse data, a bootstrapping analysis for mediation was conducted using the PROCESS macro (Hayes, 2017) for SPSS. Results show a significant mediation effect of evasive coping strategies within the relationship between resilience skills and stress (95% confidence interval = $-.08$ to $-.01$) and within the relationship between regulation skills and stress (95% confidence interval = $-.07$ to $-.01$). Moreover, regulation skills have a direct negative effect ($B = -.21$, $t = -5.92$, $p < .001$) on stress. The model is significant ($F(7, 449) = 25.45$, $p < .001$) and explains 28% of variance. This indicates that emotional skills might protect against using negative coping strategies (such as evasive coping strategies) and consequently result in less stress.

3.07 Learning of teenage athletes by psychological skills in realisation by them of "dual" career

Elena Evgenievna Hvatskaya¹, Natalia Leonidovna Ilina²

¹The P.F.Lesgaft National State University of Physical Culture, Sport and Health, Saint-Petersburg; ²Saint-Petersburg State University, Department of Psychology

Educational activity is obligatory for school-age children, but subjectively, teenage athletes often do not accept it that finds reflection in a priority of a social role of "athlete" above "pupil". It makes some more difficulties in combining sports and educational activity ("dual" career). The psychological work by the optimisation of the balance between Athletic Identification and School Identification with teenaged athletes in the different kinds of wrestling (n=16) based point for construction "dual" career in sports (grant №17-06-00883). Learning of young athletes by basic psychological skills in realisation by them of "dual" career at the beginning of stage of sports training: techniques of rational remembering, grow attention's recourse, time management etc. consisted of 20 lessons (by 45-60 minutes). The general attitude is "the athlete is both in sports and in study is the athlete". Intermediate measurements of these indicators after these psychological lessons showed a convergence of identification with the role of an "athlete" and the role of a "pupil" (AIMS; Brewer, Van Raalte, & Linder, 1990; SIMS, Engström & Stambulova, 2010): October, 2017 - 6.50 ± 0.73 and 5.44 ± 0.63 , < 0.05 ; February, 2018 - 13 ± 0.89 and 5.60 ± 0.73 , > 0.05 by the Mann-Whitney U-test. At the same time differences in these indicators in the second measurement are statistically not significant that is important for maintaining internal readiness for the positive relation to two types of activity – educational is being obligatory, and sports – having a voluntary nature.

3.08 Religiosity and the use of religious ways of coping among Christian athletes during sport injury recoveries

Diane M. Wiese-Bjornstal, Kristin N. Wood, Francesca M. Principe, Emma S. Schwartz

University of Minnesota, United States of America

Religiosity and religious coping are strongly evidenced as psychological resilience factors benefiting people facing diverse health challenges (Koenig, 2013). The integrated model of psychological response to the sport injury and rehabilitation process (Wiese-Bjornstal et al., 1998) predicts that personal factors, such as religiosity, influence coping responses, yet research has rarely examined religious coping within specific faith traditions (Wiese-Bjornstal et al., 2018). The purpose of this study was to examine the relationships between religious commitment, religious engagement, God locus of health control, and religious ways of coping during the sport injury recoveries of athletes representing diverse Christian denominations. As part of a larger mixed methods study, physically active adults (N=88) responded to an online survey including questions about their most serious or challenging sport injuries and several religiosity factors. Results showed that religious commitment predicted religious engagement and God locus of health control for sport injuries, and fully mediated the relationship between athletes' Christian denominations and their use of positive religious ways of coping with sport injuries. Positive religious ways of coping were used significantly more than were negative, with seeking spiritual support, active religious surrender, and benevolent religious reappraisal the most frequent. Although negative religious ways of coping were less prevalent, self-directed religious coping, marking religious boundaries, and pleading for direct intercession were most used. Culturally-competent sport psychology practices benefit from recognising that religiously-committed Christian athletes engage in religious activities, believe that God exerts control over their sport injury recoveries, and utilise primarily positive religious ways of coping when injured.

3.09 Certification in sport psychology - reflections of the German and Austrian Qualification Model

Christopher Willis¹, Sebastian Brueckner², Bernd Strauss²

¹Center of Mental Excellence, Austria; ²University of Münster, Germany

The poster will present the work of the certification committee of the asp (German Society for Sport Psychology e.V.) during the last six years (2013 – 2019). The main goal was to optimise the certification programs in applied sport psychology (Kellmann, Gröpel, & Beckmann, 2011) and to address issues regarding admission (Heiss et al., 2014). Furthermore it was necessary to define minimum standards that novice professional sport psychologists in Germany and Austria should meet in order to qualify for private practice in the field of sport psychology (Brueckner, Willis, & Strauss, 2018). Implementing an academic and scientific approach the committee developed a training programme for novice professional sport psychologists that offers content in psychology, sport science and sport psychology combined with supervised applied practice. In a joint effort asp, the Federal Institute of Sport Science (BISp) and German Olympic Committee (DOSB, zks) also established criteria for recertification for experienced professional and senior professional sport psychologists and created more diverse continuing education opportunities. The next step will be to align the asp certification curriculum with the standards proposed by international organisations such as FEPSAC (Schinke et al., 2018).

3.10 Nirvana Fallacy in athletes: when the good and the best do not mean the same

Juan González-Hernández¹, Abel Nogueira-López², Antonio Jesús Muñoz-Villena³, Diana Garita-Campos⁴

¹University of Granada, Spain; ²University of Leon, Spain; ³University Autonomous of Madrid, Spain; ⁴University of Granada, Spain

The Nirvana Fallacy consists of the logical thought error, in which real situations are compared to utopian, unrealisable and idealised situations. In sports contexts aimed at competitions, among an increased number of athletes who play sports to improve their health conditions, it is usual to refer to the tendency to assume that there are perfect solutions for achieving success (formula of success) that always improve the real situations occurring in a certain present or past. Voltaire synthesised it brilliantly in his aphorism "the best is the enemy of the good". The present study aimed at confirming this phenomenon in a group of athletes, associating aspects between perfectionist patterns, appearance of dark personality traits (narcissism, Machiavellianism and psychopathy) and the desire to win or improve what has already been won. A sample of Spanish competition athletes (N = 386) was analysed, of which 43.06% were federated. Results showed that both narcissism, Machiavellianism and psychopathy are positively correlated with achievement expectations and desire for to win, while organisation is negatively correlated. On the other side, external criticism is positively correlated with psychopathy, narcissism and desire for to win, as well as fear over mistakes with Machiavellianism and psychopathy. In predictive analysis, dark triad of personality is positive predicted when expectations achievement and desire for to win are higher and organisation is lower. To study how perfectionistic trends influence dark traits of personality will be an important information to understand the relevance of building cognitive dissonances in psychological responses in athletes.

3.11 Comparing psychological competitive abilities of Japanese Rio de Janeiro 2016 and PyeongChang 2018 Olympic Athletes

Yasuhisa Tachiya, Joyo Sasaki

Japan Institute of Sport Sciences

The purpose of this study was to investigate psychological competitive abilities of Japanese athletes who participated in the Rio de Janeiro 2016 summer Olympics and PyeongChang 2018 winter Olympics using the Scales of Psychological Competitive Ability for Elite Athletes. Tachiya et al. (2015) developed an inventory consisting 40 questions that access 10 mental scales: (1) self-control, (2) concentration, (3) imagining, (4) confidence, (5) consistency, (6) self-analysis, (7) objectivity, (8) goal-setting, (9) motivation, and (10) management of everyday life. The total score of the 10 scales is 200, with each scale having a score of 20. The number of samples was 339 (male: 174, female: 165) in 2016 and 123 (male: 52, female: 71) in 2018. The average total scores were 152.64 (±19.52) in 2016 and 152.99 (±19.22) in 2018, showing no significant differences. In addition, as for one of the 10 mental scales "imagining," it was shown that the average score of individual sports in 2018 was significantly higher than in individual sports in 2016, and the average score of individual sports in 2016 was significantly higher than in team sports in 2018 ($p < .01$). Moreover, as for two of the 10 mental scales "goal-setting" and "consistency", it was shown that the average scores of individual sports in 2018 were significantly higher than that of team sports in 2016 ($p < .01$). The result indicated that the three factors, "imagining", "goal-setting" and "consistency" are important in individual sports.

3.12 Development of psychological skills of coaches at the Coaching Academy in Poland in years 2017-2018

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The Coaching Academy (Polish: Akademia Trenerska, acronym: AT), established by the Institute of Sport in Warsaw in 2009, provides continuing education to coaches, as required by the Ministry of Sport and Tourism in Poland. AT is a not-profit entity, established primarily to expand participants' knowledge, build new skills and develop social attitudes, considered desirable in the sport sector, among coaches. The academy's training programmes are developed in cooperation with Polish sports associations. The academy's practical workshops as well as theory-focused lectures enabled the implementation of professional educational methods and, consequently, contributed to strongly improving training psychological staff's competencies. AT's cooperation with international sport psychologists, coaches, including their presentations frequently highlighting innovative approaches to various aspects of the sport sector, has helped to prepare Polish athletes to compete on the world arena. AT has also worked within an agreement with the International Council for Coaching Excellence (ICCE), and has initiated national and international programmes (CoachTrue, 2011; CoachNet, 2012; Sectoral Qualification Framework, 2015; and ESSA Sport, 2016). This paper presents the results and analyses of the psychological continuing education programme for coaches of national teams in Olympic sports and Paralympic sports in the period 2017-2018. The continuous growth in the number of coaches taking part in the AT project clearly indicates the need for their further education and improvement of professional psychological qualifications.

3.13 Prevalence of burnout syndrome among junior basketball players

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Background: Raedeke et al. (2002) defined burnout as "a withdrawal from sport noted by a reduced sense of accomplishment, devaluation/resentment of sport, and physical/psychological exhaustion" (p. 181). It is estimated that burnout affects 1 to 10% of athletes (Gustafsson et al., 2007). Competition and practice may be a source of chronic psychological stress (Smith, 1986) which increases the risk of burnout among athletes. The combination of increased training loads, restricted time for adequate recovery, and increased competitive stress thereby increases the risk for burnout among athletes (Gould & Diffenbach, 2002). The aim of this study was to examine the prevalence of burnout syndrome among junior basketball players.

Methods: The sample consisted of 181 individuals: 89 women aged 15 - 23 (SD = 2.2) and 92 men aged 15 - 23 (SD = 1.3). Participants were recruited from randomly chosen basketball teams throughout Poland. Chosen teams had to participate in junior league organised by the Polish Basketball Association. Participants completed The Athlete Burnout Questionnaire (ABQ; Raedeke, Smith, 2001), which include the following scales: 1) perceived emotional and physical exhaustion, 2) a reduced sense of athletic accomplishment, and 3) sport devaluation.

Results: In the second scale (reduced sense of athletic accomplishment), over 32% of participants obtained a high score. Additionally, in the first scale (perceived emotional and physical exhaustion), high results were achieved by 26.52% participants, while in the third scale (sports devaluation) 19.89% of the participants obtained high results.

3.14 Understanding personality traits in coach-athlete dyads

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The extent to which coaches and athletes can effectively work together is an essential consideration in the pursuit of athletic success. This is particularly important at the elite level due to the high pressures on tangible outcomes, such as reaching the podium. Research has demonstrated that it is the working relationship, between a coach and athlete, that determines and actions what knowledge is required to achieve these outcomes (Jowett, 2017). Prior quantitative studies have shown that individuals' personality traits may play an important role in coach-athlete relationships (Jackson et al., 2011; Yang, Jowett, & Chan, 2015). However, no research has explained how both coaches and athletes identify these personality traits in themselves and their partner in order to manage and maintain a positive relationship. Therefore, the purpose of the present study was to explore, with a coach-athlete dyad, perceptions of personality traits in both sides of the relationship. Four elite coach-athlete dyads were purposefully recruited from a single sport. Each participant completed a 44-item Big Five Inventory (John & Srivastava, 1999) to establish their own and their partner's perceived personality traits. They then subsequently participated in an individual semi-structured interview, which explored their perception of personality and how this related to their coach-athlete relationship. The data were analysed using thematic analysis to identify themes and patterns (Riessman 2008). The results of the study will be discussed and it is anticipated that findings will be of use to coaches and athletes alike to build effective coach-athlete relationships.

3.15 Connection with Teammates and Perceptions of Engagement in Adolescent Athletes

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Relatedness perceptions associate with adolescent athlete engagement (Podlog et al., 2015), suggesting that connection with others is salient in youth sport. Our study purpose was to extend understanding of athlete engagement by exploring its link with multiple teammate-based social connection constructs. Twice across a season adolescent softball players (N = 32; Mage = 15.6 years) from three teams completed established measures of relatedness and engagement, as well as social network questions about the frequency of speaking with (a) each teammate during practice and (b) teammates identified as a close friend. Participants reported high levels of perceived relatedness (M = 5.9 out of 7.0) and engagement (M = 4.2 out of 5.0). Sociograms showed frequent and dense communication among teammates during practice (at least three times daily for 84% of possible communication ties) and that 56% of reported close friendship ties exhibited reciprocated communication. Three athletes with relatively low perceived engagement (3.0 or lower) at the start of the season frequently spoke with teammates possessing high engagement (4.4 or higher) and relatedness (6.0 or higher) scores at the start of the season and showed increased engagement over time. Two of them had a reciprocated close friendship and increased perceived relatedness over time, whereas the other did not and showed decreased perceived relatedness. These group-level and idiographic findings suggest that connection with well-adjusted teammates may foster adolescent athlete engagement, even when relatedness is challenged by unreciprocated friendship. Future work addressing communication sources, content, and transmission is warranted to extend these findings.

3.16 Psychometric properties of the Spanish version of the Dual Career Survey

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According to the critical review of Stambulova & Wylleman (2019), quantitative research has grown in the field of dual careers, with several new instruments developed and tested during the recent years. To the best of our knowledge, no studies have validated instruments in Spanish. This work presents a preliminary Spanish version of the Dual Career Survey (DCS; Stambulova et al., 2015). The participants were 78 student-athletes (Mage = 21.72, SD = 4.29) from different sports (e.g., football, basketball, tennis) and different levels (e.g., regional, national, international). In the process of translation and cultural adaption, we have followed the strategy of back-translation used in several studies (Latinjak et al., 2015; Viladrich, et al., 2011). The results showed acceptable and excellent levels of internal consistency in all factors (α values ranged from .72 to .92). In addition, confirmatory factor analysis (CFA) supported the original version with two global factors: a) the transition process that comprises of six factors (transition demands, coping strategies, social support, social pressure, personal resources and stress level); and b) the current situation in studies, sport and private life of the student-athletes that comprises of three factors (perceived adjustment at transition process in terms of studies, sport, friends, family, and living outside home, perceived importance of studies, sport, friends and family, and student-athletes' satisfaction with studies, sport, friends and family). In conclusion, this study contributes to the validation of a quantitative instrument for measuring variables of dual careers in Spanish student-athletes.

3.17 Winning relationships: a psychosocial approach to talent development

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Talent development in young athletes has been studied from a psychosocial approach, which refers mainly to Holistic-Ecological Approach (Henriksen, 2010) and Ecological-Dynamical theory dinamica (Davids, Güllich, Shuttleworth, & Araújo 2017). Literature shows that neither young performance nor other physical or psychological markers can predict adult performance, therefore the concept of psychological wellbeing has been introduced to indicate a particularly ground-basic condition for young athletes' potential development (Lundqvist, & Sandin, 2014; Ryff, 2013). According to the psychosocial approach the individual path of development is originated by the interaction of the person itself - made of personal dispositions, story, motivation, interests, emotions and so on - with the people he is surrounded by, thus the relationships he is involved in (Gozzoli, 2005; Manzi & Gozzoli, 2009). Our hypothesis is that psychological wellbeing as a ground basic condition that allows potential development originates from the interaction between individual's and relationship's characteristics. Data were collected with over 400 young Italian Soccer players, both competitive and amateur (Mage=16.2) by questionnaire. Analysis made by structural equation models show that closeness with the coach, effort induced by teammates and learning/enjoyment induced by parents interact with individual motivational orientation on task and self-regulated effort to positively impact on individual psychological wellbeing. Therefore, adopting a psychosocial approach, it has been shown the importance of a complex and multi-actors' approach in creating psychological wellbeing, that can be considered an optimal ground basic condition for athletes to develop their potential, avoiding to use physical/physiological indicators or being biased by RAE effect.

3.18 Doping-related media literacy and social-cognitive mechanisms underpinning doping use

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The aim of the study was to assess the relationships among athletes' doping-related media literacy, such as their awareness of media influence and media realism, their perceived capacity to use media correctly and/or to resist to media pressure, and their beliefs (i.e., attitudes, subjective norms) and social-cognitive mechanisms (i.e., self-regulatory efficacy, moral disengagement) underpinning doping use. The study was financed by the Italian Ministry of Health (convenzione 2017-4; CUPB86G17000660005) and involved 581 Italian university sports science students (55.6% Female; Mage=22.6, SD=2.24), practicing fitness activities (32.7%), individual (34.4%) and team sports (32.9%) who filled out questionnaires measuring media literacy, including perceived media influence (Cusumano & Thompson, 2001) and realism of media (Austin et al., 2005), perceived self-efficacy in dealing with media messages (Austin et al., 2005) and in resisting to media pressure (Pinkleton et al., 2008), and validated measures of beliefs and mechanisms underpinning doping use, including attitudes, subjective norms, self-regulatory efficacy, doping-moral disengagement and intention (Lucidi et al., 2008). Perceived media influence resulted positively related to pro-doping attitudes ($r=.28$), subjective norms ($r=.12$), moral disengagement ($r=.20$) and intention to use doping ($r=.25$), while negatively related to doping self-regulatory efficacy ($r=-.19$). Perceived media realism was also positively related to doping attitudes ($r=.15$), moral disengagement ($r=.17$) and intention ($r=.17$), and negatively to doping self-regulatory efficacy ($r=-.19$). The perceived efficacy in resisting to media pressure instead was negatively related to pro-doping attitudes ($r=-.23$), subjective norms ($r=-.20$), moral disengagement ($r=-.30$) and intention to use doping ($r=.24$), and positively to doping self-regulatory efficacy ($r=.40$).

3.19 An exploration of the relationship between representativeness of warm-up drills and performance in elite baseball players.

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Research suggests that when practice tasks are more representative of competition, it positively influences skill acquisition and performance (Rosalie & Müller, 2012). Although batting in baseball is an extremely challenging perceptual-cognitive-task, the typical warm-up and practice environment involves activities that are devoid of competition specific information. This study explored the influence of warm-up tasks on the decision-making performance of 28 elite baseball players. Athletes participated in one of four warm-up conditions (varying in competition representativeness) prior to completing a simulation where they predicted pitch type and location over three temporal occlusion segments. No significant effects of warm-up condition (i.e., representativeness) on decision-making performance were observed. However, the analysis of total correct predictions revealed a main effect of occlusion, $F(2, 48) = 6.65, p = .003$, with athletes predicting more correct decisions in the early occlusion segment. Additionally, analyses of correct pitch type predictions demonstrated a main effect of pitch type, $F(2, 26) = 30.90, p < .0001$, as well as significant interactions of pitch type x handedness, $F(2, 26) = 5.03, p < .05$, and pitch type x occlusion, $F(4, 52) = 19.18, p < .0001$. Accordingly, left handed batters performed better, and batters were significantly better at predicting fastballs than other pitches which was amplified by earlier occlusion times. The lack of a warm-up condition effect may have been due to the advanced skill level of these athletes. Going forward, the influence of skill level and handedness appear to be promising directions for future studies.

3.20 What Good are Positive Emotions (PE) for Athletes? Mental resources mediating the link between PE and thriving in ice hockey

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Introduction: The Broaden-and-build theory (BBT) of PE (Fredrickson, 2001) predicts that PE is linked to diverse outcomes of mental and physical health, as well as psychological resources (Davidson et al., 2013; Fredrickson et al., 2003; McCarthy, 2011; Lyubomirsky et al., 2005). Despite its relevance for sport-performance, BBT has not been empirically tested in the sports context. This study examines the predicted theoretical effects among German ice hockey athletes in a longitudinal study design.

Methods: So far, athletes from sixteen different teams (N total = 213; 7 U17, 8 U20, 1 DEL2) have participated during the season 2018/19 in the online survey. Across three measurement points during the season (t_0 = baseline, t_1 and t_2 = 5-6 days after a game loss or win, respectively), athletes completed the study about their emotional experiences (Fredrickson, 2013), thriving (Su et al., 2014), and psychological resources like resilience (Leppert et al., 2008), self-efficacy (Schwarzer et al., 1995), creativity (Kaufman et al., 2004), perceived psychosomatic illness symptoms (Mohr & Müller, 2014), and symptoms of depression (Eaton et al., 2004). **Results:** Data collection ran until March 2019. The authors expect psychological resources (resilience, self-efficacy and creativity) to mediate the relationship between PE and thriving and a faster recovery after game loss when PE at baseline were high.

Discussion: Based on BBT and the results of the study, recommendations for athlete's performance capability and recovery will be developed. The current study integrates theoretical approaches of positive psychology in the context of applied sport psychology.

3.21 Development and evaluation of a value-based doping prevention program for young athletes

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Doping or the use of banned substances to enhance performance is a prevalent phenomenon in sports and has negative consequences for athletes and the integrity of sports. Looking at the psychosocial factors associated with doping intentions and behaviour, Donovan, Egger, Kapernick and Mendoza (2002) suggest considering both personal and environmental factors, and a meta-analysis of Ntoumanis, Ng, Barkoukis and Backhouse (2014) revealed that variables of moral nature are important. Kavussanu, Elbe and Hatzigeorgiadis (2015), for example, identified athletes' moral disengagement as well as the moral atmosphere in the team as predictors for doping intentions. The purpose of this study is the development, implementation, and evaluation of an intervention program that focuses both on personal and environmental value-based variables. The proposed methodology is as follows: After development of the intervention in collaboration with the German NADA and elite sport stakeholders in Saxony, the intervention's effectiveness will be evaluated with a sample of 200 male and female young elite athletes from team- and individual sports. Eighty athletes will receive the psychosocial intervention during a six-week intervention phase whereas another 80 athletes will receive a knowledge-based intervention. Forty athletes will be assigned to a waiting control group. Doping intentions will be measured through hypothetical doping scenarios whereas the psychosocial variables (e.g., ethical climate, moral disengagement) will be assessed with standardised questionnaires at pre- and posttest and at a three-month follow-up. The main goal is then to design a teachers' manual that can be used for value-based doping prevention at elite sport schools.

3.22 Health psychological case study of high intensity, low impact, physical training programme

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This case study reports on the health psychological evaluation of an integrated, high intensity, low impact, physical training programme for a 31-year-old, male accountancy teacher. High intensity components consisted of running, cycling and the Canadian Airforce 5BX program. Low impact components comprised walking and Chi-gung inspired Pilates. Squash and swimming were also occasional activities. The pre- and post-test, process and outcome evaluative, research design included qualitative and quantitative components in the form of psychometric testing, diarising of physical activity, experiential descriptions of the various components and programme outcome evaluation. Quantitative findings indicated significant improvements in psychophysiological coherence, mood, resilience and general health. Qualitative experiential descriptions provided further evidence of health psychological growth. Integrative findings emphasize the importance of physical training programmes based on client individual preferences. The client reported that he found the programme to be enjoyable, flexible, invigorating and readily adaptable to suit the needs of various individuals who face time and space constraints in their daily lives. With minimal innovation for greater complexity, control and/or challenges, such programmes may readily yield enjoyable flow experiences.

3.23 A self-determination theory-based preventive intervention programme for pre-service PE teachers

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Social changes in the teaching context, like more heterogeneous teaching groups, are accompanied by increasing stress and strain in physical education teachers (Abele & Candova, 2007). In comparison with other career stages, teachers show highest levels of job-related stress and lower mental health during their pre-service phase (Schäfer, Pels, & von Haaren-Mack, 2018).

Based on self-determination theory (Deci & Ryan, 2000), the link between lack of satisfaction of the three basic psychological needs for autonomy, competence and relatedness and burnout has been well investigated (Bartholomew et al., 2014). There is a deficit in feasible and effective theory-based preventive interventions for the pre-service teacher phase. Therefore, the aim of this three-year study programme is the development, implementation and evaluation of preventive interventions to increase job-related need satisfaction to prevent burnout symptoms of pre-service teachers.

The planned intervention programme consists of three steps: 1. the implementation of a feasibility study evaluating structural conditions, 2. the development of theory- and evidence-based interventions for increasing basic psychological needs, and 3. the implementation and evaluation of the interventions with the aim of decreasing burnout symptoms.

The target group consists of 60 pre-service-students, and 60 University PE teacher students as comparison group. The interventions will be evaluated at three points of measurement: Before and after the implementation of the preventive interventions and four months after termination as a follow-up.

Results of the feasibility study as well as first contents of the developed preventive interventions will be presented at the FEPSAC conference.

3.24 The habit strength of physical activity: Characterisation and properties compared with smoking and pinball game

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Reinforcement of habit strength is a more essential goal of physical activity promotion than behaviour modification in short term. There are two scales measuring habit strength of physical activity. One is Exercise Habit Strength scale (EHSS) by Grove et al. (2014) and Takami (Japanese version, 2015). The four sub-scale of EHSS (Automaticity, Stimulus-Response Bonds, etc.) could measure psychological processes of exercise habit from various aspects. The other scale is the Self-report Habit Index (SRHI) by Verplanken & Orbell (2003). Advantages of SRHI are simplicity of 11 items and availability for kinds of behaviour. The purpose of this study is to examine characterisation and properties of habit strength of physical activity using the SRHI. The behaviour for comparison were smoking and Japanese pinball game. Data of physical activity were 1130 collegiate students (28.5% female, mean of age was 19.2). The data of smoking and pinball game were collected by web research. The data of smoking were 414 adults (50% female, 45.9 years old). And the data of pinball game were 412 adults (male, 47.9 years old). Results of exploratory factor analysis showed that all three behaviour had a single factor structure. It seemed that the psychological processes of habit among these behaviour bears a resemblance. The correlations between items of the SRHI and frequency, quantity, stages of change, and spending money of each behaviour were suggested to characterise each behaviour. The traits of physical activity habit were necessity of patterned action, a period of duration, and sense of one's own self.

3.25 The role of exercise participation on body dissatisfaction, drive for thinness and muscularity, and exercise dependency

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Body image has received much attention in the scientific literature due to a number of factors, including the strong relationship between body dissatisfaction and eating disorders (Cohen & Petrie, 2005). This research aimed to examine whether there is a relationship among exercise participation, body dissatisfaction, drive for thinness, drive for muscularity and exercise dependency. Another aim was to identify whether gender differences exist.

Young exercisers (N = 317; M age = 26.8 years, SD = 4.7, range = 18 to 35 years) completed self-report measures assessing exercise dependency, drive for muscularity, drive for thinness, body dissatisfaction and PA levels. Independent sample t-tests and Pearson product-moment correlation coefficients were used to analyse the data.

Although non-significant ($p > .005$) body image differences were found between the low-exercise group and high-exercise group, individuals with low participation in exercise appeared to have a higher drive to become muscular while individuals who took part in more exercise scored higher on exercise dependency. Additionally, females appeared to have higher drive for thinness and muscularity, while males appeared to have higher levels of exercise dependency. This research highlights that more insight is needed into the influence exercise participation has on muscularity and thinness drives as well as exercise dependency.

3.26 Effects of sprint interval and continuous aerobic exercise training on motivation in patients with major depressive disorders

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Sprint interval training (SIT) seems to be a promising exercise strategy to increase fitness in healthy people. Nevertheless, some scholars are sceptical whether SIT is an appropriate training protocol for largely physically inactive populations. We therefore explored in a sample of patients with major depressive disorders (MDD) whether participation in twelve SIT sessions would lead to different changes in self-determined motivation, affective responses to exercise, cardiorespiratory fitness, and depressive symptom severity as continuous aerobic exercise training (CAT). We randomly assigned 50 patients (39 women, M=36.4 years,) with unipolar depression to SIT or CAT. Data was assessed at baseline and post-intervention. Self-determined exercise motivation was assessed with a 12-item self-rating questionnaire, whereas affective valence was assessed in each session, prior, during, and after the exercise training using the Feeling Scale (FS). Depressive symptom severity was measured with the Beck Depression Inventory (BDI-II). The SIT and CAT groups did not differ with regard to their changes in self-determined motivation from baseline to post-intervention. Similar (positive) affective responses during and after the training sessions were observed in the SIT and CAT groups. Cardiorespiratory fitness, self-perceived fitness and depressive symptom severity similarly improved in the SIT and CAT group. SIT seems similarly suitable from motivational point of view as CAT in the treatment of patients with MDD. This is an important finding because from a self-determination perspective, it seems advantageous if patients can choose between different exercise therapies, and if their preferences regarding exercise type and intensity are taken into consideration.

3.27 Dynamics of well-being of participants in Antarctic expeditions

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The mental well-being of participants in the extreme conditions of Antarctic expeditions depends on many factors. The aim of the present research is to study the dynamics of well-being, anxiety and perceived stress in high-risk activities in an extreme climatic and social environment. The research was done among 34 participants in the XXIII and XXV Bulgarian Antarctic expeditions, mean age 25 and 70. We have used WHO-5, Well-being Index; Bulgarian adaptations of: Spielberger's Anxiety Inventory (STAI) and Questionnaire for perceived stress (PS-1). The tests were applied before the departure to Antarctica and prior to the return to Bulgaria. The well-being at the end of the expedition was statistically significantly higher than the one at the beginning of the expedition ($t = 2,34^*$) (Wilcoxon criterion). The level of perceived stress at the beginning of the expedition was significantly higher compared to the results obtained at the end of the expedition ($t = 2,32^*$). Similar results were observed in terms of situational anxiety ($t = 2,38^*$), which refers to the dynamic mental states. The results from the regression analysis showed that the high levels of trait anxiety had the biggest impact on the level of well-being at the beginning of the the expeditions ($\beta = -.499, p < .005$), and perceived stress – on the level of well-being at the end of the expedition ($\beta = .77, p < .0001$). The present study adds knowledge to the understanding of the influence of anxiety and perceived stress on well-being in difficult and challenging missions, in extreme conditions and in highly risky activities.

3.28 Necessity of life skill programmes for female collegiate aesthetic athletes: review of studies of life skills of athletes in Japan

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OUHS has conducted the special project supported by Japan Sport Agency (JSA) for developing and strengthening female athletes through psychological and educational programmes, including the life skill programmes (LSP) for both their active and after-retirement carrier. This study is designated to review studies of life skills of collegiate athletes which focused on a specific sport in Japan. The search combined following terms: (a)colligate, (b)life skills, (c)sport, and (d)athlete. 56 articles were indicated by 3 Japanese digital databases (CiNii, J-stage, and magazine plus), and 13 focused on collegiate players of a specific sport and how characteristics of the sport effected players in terms of acquisition of life skills, such as soccer (Ueno, 1995), wrestling (Shimizu et al., 2012), and judo (Kakita, 2015; Yamamoto et al.,2018). Authors of each paper mentioned that the characteristics of sports influenced players' acquisition of life skills. These studies focused on open skill sports, and not worked on female aesthetic athletes. Moreover, LSP for colligate athletes have not established yet in Japan (Tsuda, 2007). According to Nose et al. (2015), 34% of elite female aesthetic athletes were amenorrhic, and 27% of them have experienced stress fracture, which are the largest compared to other kinds of sports respectively. In addition, JSA promotes women's continuous participation in sports (JSA,2016). Also, Doi (2017) convinced that female athletes needed to make their future plans before they retired. Thus, LSP should be developed especially for female aesthetic collegiate athletes to help them acquiring self-management skills and goal setting skills for carrier development.

3.29 Adapted sport and quality of life: the Equal Sport For All (ESFA) project

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Disabled adults are often excluded from common sports, and less than one-third is active enough to benefit from physical activity (Temple, Frey, & Stanish, 2006). Also, the cost of adequate health care services represents a global burden (Maulik, Mascarenhas, Mathers, Dua, & Saxena, 2011) and guidelines for involving disabled people in sport activities are missing.

A group of seven European countries developed a three-year-long collaborative partnership (Erasmus+ Sport) involving three intervention-periods with the aim to improve bio-psycho-social health and physical fitness of young adults with intellectual disabilities (ID) through adapted sport-sessions. This quasi-experimental study presents preliminary results of the first intervention-period, comparing two groups of young adults with ID and with/without behavioural disorders. The experimental group (19 participants) completed 6 months of intervention module that included adapted swimming and basketball activities, while the control group (15 participants) was involved in gym-based physical activity.

A set of scales adapted for ID people were administered to assess enjoyment, motivation, self-efficacy, global physical activity, quality of life, mental health, and social functioning. Systematic observations to monitor motor skills and social development were conducted before, during, and after intervention. RM-ANOVA 2 (groups) x 2 (tests) showed significant differences in the level of motivation ($p = .02$), while RM-ANOVA 2 (group) x 3 (observations) yielded differences in motor skills ($p < .01$). After the intervention, the experimental group showed higher motivation and motor skill levels than the control group. Semi-structured interviews with the legal tutors supported the quantitative results.

3.30 Psycho-social determinants of sedentary behaviour among older adults: a qualitative study

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In recent years, there has been progressive research into sedentary behaviour. However, the empirical evidence is still scarce regarding the psychosocial determinants of the sitting time in older adults. Thus, the main purpose of the study was to identify and understand the psychosocial factors that determined the different sedentary behaviours of older adults. A total of 20 elderly persons, aged between 65 and 75 years ($M = 68$ years; $SD = 1.6$ years), participated in this study. The participants were selected intentionally and data were collected through a semi-structured interview guide and data analysis followed an inductive process. Results indicated the following psychosocial determinants of the sedentary behaviour in older adults:

Strength of habit, compensatory behaviours, positive representation of sedentary behaviours and social support. It seems that sedentary behaviours of the elderly can be determined by automatic and intentional processes. The older adults may also use cognitive strategies with the intent to compensate for sitting time through active behaviours and social support of older adults can contribute to the promotion of sedentary time or the interruption of the same. In this way, the understanding of psychosocial factors constitutes an important contribution to the explanation of the sedentary time of older adults.

3.31 Fundamental movement skills and physical self-concept: direct and indirect effects on physical activity of young children

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With the aim of promoting physical activity (PA) in children, the roles of physical self-concept and fundamental movement skills (FMS) proficiency have been examined across population groups and school-age ranges. Conclusive evidence has shown that physical self-concept and FMS are positive contributors to enhanced PA uptake, but the mechanisms and patterns through which they influence PA have been less clear. This study examined the relationship of FMS and physical self-concept with PA in young children. It was hypothesised that physical self-concept mediates the effects of FMS on PA.

Participants consist of 5- to 6-year-old children in an international school in Hong Kong (N=230; 121 girls, 109 boys). FMS was measured using the Test of Gross Motor Development-2, and physical self-concept was measured using the physical skills domain of the Pictorial Scale of Perceived Competence for young children. PA was measured using pedometers, monitoring daily step counts over a 5-day period in a subsample (n=115).

After controlling for sex and age, FMS was found to have a significant effect on physical self-concept (B=.174, p=.015). FMS (r=.184, p=.04) and physical self-concept (r=.287, p=.008) were found to have significant associations with PA. Using conditional process analysis, physical self-concept was found to mediate the direct (B=58.37, CI=17.75 to 98.98) and indirect (B=-27.00, CI=-46.13 to -11.34) effects of FMS on PA. These findings suggest that we could promote PA in young children by training FMS, but we need to consider the development of physical self-concept to achieve the desired effects.

3.32 Exploring perspectives of power in athlete-to-athlete sexual experiences in sport

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Sexual violence, often studied within the coach-athlete relationship, is of salient interest to scholars in sport and in recent years has received significant societal attention. Current research in the field strongly suggests that the 'position of power' held by the coach and the potential misuse of that power creates an environment for athlete vulnerability to maltreatment. However, sexual violence often occurs between peers. Statistics Canada reported that 1 in 3 sexual assaults were committed by someone close in age to the complainant (Rotenberg, 2017). Similarly, a study by Fasting, Brackenridge and Sundgot-Borgen (2003) found that 37% of female athletes experienced sexual violence by a male peer in sport. Athletes' understanding of power and their negotiations of sexualised experiences with peers is relatively under researched and poorly understood. The purpose of this research therefore, was to explore athletes' perspectives on sources of athlete power and the influence of power on sexualised experiences with peers in sport. Semi-structured interviews were conducted with 12 student-athletes from Canadian and U.S. university athletic organisations. Findings from the study showed that athletes were able to recognise power in sport and how that power may influence their negotiations of sexualised experience with peers. Recommendations are posed for ways in which sport can better support healthy sexual experiences between peers and inform future initiatives for the prevention of peer-based violence.

3.33 Achievement goals of Brazilian athletes: a study about gender and types of sports

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The aim of this study was to compare achievement goals of athletes according to their gender and their type of sport. A sample of 211 Brazilian athletes (128 males and 83 females; Mage = 25.4; SD = 8.72) from collective sports (Volleyball, Soccer, Handball, Rugby Union and LOL) and individual sports (chess, cycling and powerlifting) responded voluntarily the Brazilian adapted version of 3x2 Achievement Goal Questionnaire for Sport (Picoli, Gomes, & Bueno, manuscript in preparation) approximately one hour before competition. The six possible achievement goals for each athlete were calculated. Descriptive analysis showed that, in general, athletes scored higher in task-based and self-based goals than in other-based goals. Major scores were obtained in task-approach (M = 4.78) and self-approach goals (M = 4.70), task-avoidance (M = 4.27) and self-avoidance goals (M = 4.27). Non-parametric Mann Whitney-U test was used to compare data by groups. Collective sports athletes scored higher (Mdn = 5.00) than individual sports athletes (Mdn = 4.33) in self-avoidance goals (U = 3948.00; p = .008) and in other-avoidance goals (Mdn = 3.66) than individual sports athletes (M = 3.00; U = 3786.00; p = .004). For gender analyses, other-approach goal was higher for females (Mdn = 4.00) than for males (Mdn = 3.00), suggesting more concern in females to demonstrate competence relative to others (U = 4320.5; p = .021). Although general results fits in 2x2 achievement goal model, group comparisons indicate the importance to discriminate task and self-based goals postulated by the 3x2 achievement goal model.

3.34 Motivation for running in a half-marathon among university students

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The purpose of the study was to examine the motivations to participate in a half-marathon among two groups of university students (local university students and sport-tourism university students) and also to evaluate the differences between them. Material and methods: The sample comprised 178 university students (59% male and 41% female) that participated in the 6th Poznan half-marathon. To evaluate the motivation to participate in the half-marathon event, a self-constructed questionnaire was used. Results: Results indicated that local university students and sport-tourism university students have similar forms of motivation and similar meanings to the event participation with some differences in significance. Conclusions: In general, the findings of the present study provide an understanding of motivation to participate in a half-marathon event in different university student groups. These results might be useful for sport managers to analyse consumer behaviour and utilise the results in their everyday practice, especially in the strategic planning, marketing and implementation of massive sport events

3.35 How is parental activity related to children's physical activity behaviour?

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Objectives: Social support from parents is considered a primary influence of youth' physical activity (PA; Beets, Cardinal, & Alderman, 2010). However, the mechanisms of parental influence are still poorly understood. As the Theory of Planned Behavior (TPB; Ajzen, 1985) is a well-supported theoretical framework to study youths engaging in PA, this study wants to investigate if an increased PA of the parents is enhancing the PA of their children and is related to different constructs of the TPB.

Method: 264 students (52,6% females) from 11 to 21 years participated in the study. Via a digital questionnaire the students indicated if they are active at least 60 minutes a day, if their mother and father is physically active on a regular basis and if they are active together with their parents. Regarding the TPB, attitudes, subjective norms, perceived behavioral control and intentions towards PA were assessed (Hagger, Chatzisarantis, Culverhouse & Biddle, 2003).

Results: A multivariate ANOVA revealed that children reported higher PA rates, more intense attitudes and higher subjective norms towards PA when the father was physically active and when being active together with their parents. However, the perceived behavioural control was higher when children indicated that their mother was physically active.

Discussion: As expected, results suggest that the reported PA of parents are related to the self-reported PA of children, and furthermore to the different constructs of the TPB. Especially fathers seem to be an important role model regarding PA, attitudes and subjective norms toward PA.

3.36 Using text mining to analyse female students' introspective reports after yoga

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To clarify yoga students' personal experiences, their post-yoga introspection reports were analysed using text mining. Twenty-six female students (18-20 years) described their feelings after a yoga programme. The yoga programme comprised six sessions (each lasting about one hour) including breathing methods, basic postures, "sun salutation," upper-body poses, lower-body poses, twisted poses, and whole-body poses. Reports were revised only for spelling and analysed using KH Coder. Morphological analysis was performed on the reports (extracted words = 3330) after the first and last sessions. More than 5 frequently occurring words were used for co-occurrence network analysis. Results revealed that the terms "body," "thinking," "sun salutation," "yoga," "breathing," and "today" appeared frequently. Additionally, "body," "hard," "foot," and "difficult" co-occurred; "sun salutation," "doing," "stretching," and "pleasant" co-occurred; and "sleepy," "relaxed," and "refreshing" co-occurred. A correspondence analysis was performed to compare the characteristics of the words shared after the first and last sessions. Results revealed that the terms "relaxed," "sleepy," "refreshing," "feeling good," and "poka-poka (feeling warm)" appeared frequently after the first session. However, "downward facing dog," "stretching," "head," "hand," "body," "foot," and "breathing" appeared frequently after the last session. In sum, after the first session, many words were related to mood or emotions; however, after the last session, many words were related to the body and yoga poses. This shows that students had introspective changes after practicing yoga.

3.37 Social identity shapes the perception and interpretation of social support in spatially peripheral group members

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Social support is recognised as a key resource for athletes, impacting well-being and performance (Rees & Freeman, 2010). Examining the antecedents of social support is of significant interest for researchers in order to provide a greater understanding of the conditions under which social support operates. As highlighted in Rees, Haslam, Coffee, and Lavallee (2015), this study adopts a social identity approach to examine the effect of spatial centrality upon the perception and interpretation of social support in a basketball free throw task. A 2 (social identity: high/low) x 2 (spatial centrality: central/peripheral) design was employed. Participants (N = 40, Mage 23.93 ± 7.06 years) were informed that they would be competing on behalf of their university (vs. their faculty) in a basketball free throw task. A row of four basketball hoops were set-up in a laboratory with participants positioned at the two peripheral hoops. Confederates were positioned at two central basketball hoops and provided a standardised amount of social support. Participants completed measures of perceived social support, self-efficacy, and received social support. Results revealed that participants in the high social identity condition, on the periphery of the group: perceived more social support to be available, were more confident in their performance, and reported higher levels of received social support, than those in the low social identity condition. The findings highlight the role and importance of shared group memberships in the perception and interpretation of social support.

3.38 Phenomenological differences between individual flow and group flow

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Research suggests that the experience of individual flow (IF; as conceptualised by Csikszentmihalyi, 1990) might differ from the experience of group flow (GF; Hart & Di Blasi, 2013). Therefore, the aim of this study was to compare components of the GF experience and components of the IF experience in sport. Qualitative interviews were conducted with five experienced basketball players (Mage = 22 years, SD = 3.29). Based on a definition of IF and GF, participants were asked to remember own IF and GF situations. Subsequently, participants' experiences of these situations were explored based on a semi-structured, open-ended interview guide which comprised the nine typical components of IF (Csikszentmihalyi, 1990) and four known GF components (Hart & Di Blasi, 2015). Data were analysed using content analysis. For IF situations, results show that all nine components of IF were found in the sample. "Action-awareness merging" and "transformation of time" are the most prominent characteristics. During IF, only few GF characteristics are present. For GF situations, results show that all four components of GF could be found, with "interactional synchrony" being the most prominent one. While describing the GF phenomenon, each participant mentioned several IF characteristics. In addition, there seem to be new elements playing a role in experiencing flow, e.g. self-confidence. In conclusion, the findings have implications for future research to better define the phenomenon of group flow and further investigate its experience in the sport context.

3.39 Physically active college students have a better sexual health

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Due to a global lack of research on correlation between physical activity and sexual health in people with no diagnose of sexual disturbances, the aim was to examine the correlation between the level of physical activity and sexual health among 1030 Croatian college students aged 18 to 30 (M=19.7; SD=1.2; 50.5% female). Data has been gathered by IPAQ-SF (Craig et al., 2003), FSFI-6 (Isidori et al., 2010), IIEF-5 (Rosen et al., 1999), Sexual Satisfaction Scale (Štulhofer & Buško, 2008) and Figure Rating Scale (Stunkard et al., 1983). Sufficiently physically active students have a significantly higher level of sexual desire and sexual satisfaction than insufficiently active. Physically active women have a better sexual function and fewer problems in sexual arousal and lubrication, while no correlation with orgasm and dyspareunia were obtained. Physically active men have a better erectile function, while the significant correlation for premature ejaculation was not observed. Men who are more satisfied with own figure have a better erectile function. The level of physical activity is positively related to sexual health factors, regardless of whether the dominant aerobic or anaerobic type of activity is practiced. Beside potential physiological and social effects, important psychological benefits of physical activity were explained, especially in the context of self-confidence, self-competence, focus, stress, anxiety, mood disorder, tension, fear and depression. Although previous studies suggest a positive correlation between physical activity and sexual health in older age groups, this study points to a better sexual health of physically active people already in the college period.

3.40 Functional role of environmental perception of motor performance under pressure

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Increasingly, changes in motor performance under pressure have been understood from the perspective of the relationship between perception and action. We experimentally investigated the following hypotheses: (1) Participants would perceive a target as smaller before a dart throwing task conducted under pressure, and (2) dart throwing performance would decline for trials in which participants perceived the target to be smaller before conducting the task under pressure. Novice university student participants (N = 20) conducted 40 non-pressure and 40 pressure trials in counterbalanced order after performing practice trials. The participants judged the target size (20, 25, 30 cm) before each trial by choosing a comparison circle that was 2% smaller, or 2% larger than the actual target. Performance-contingent competitive rewards and comparative others were used to manipulate pressure. Psychological and physiological stress responses were successfully induced as indexed by significant increases in state anxiety and heart rate under pressure. The results indicate no significant difference in size perception before the task between pressure and non-pressure trials did not support the first hypothesis. Moreover, contrary to the second hypothesis, success rates in the task increased significantly in pressure trials compared to non-pressure trials when participants perceived the target to be smaller, as indicated by choice of the 2% smaller circle before the task. These results suggest that the perception of the environment plays a functional role in motor performance under pressure.

3.41 The influence of core affect on cyclo-ergometer endurance performance

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Core affect is defined as a state at heart of mood and emotion (Russel, 2003), which is predicted to influence performance results (Spindler, Allen, Vella, & Swann, 2018). The purpose of this study was to examine the effect of positive and negative core affect on cyclo-ergometer endurance performance. We recruited 30 sport science students aged from 20 to 28 years (M = 24.1, SD = 2.6). Core affect was randomly elicited by two sets of positive and negative pictures chosen from the International Affective Picture System (IAPS; Lang, Bradley, & Cuthbert, 2008). Pictures were displayed to the participants during a cyclo-ergometer performance in two different days. Perceived effort (Borg Scale, CR-10; Borg & Borg, 2001) was collected every minute to detect participants' exhaustion. Arousal and hedonic tone were then collected immediately after exhaustion (Affect Grid; Russel, 1989) to assess the impact of the two sets of pictures on activation and valence. Within subjects RM-MANOVA revealed significant differences in hedonic tone ($p < .001$), with higher positive affect elicited by positive pictures. Significant differences did not emerge between arousal levels and performances. Moreover, the two sets of pictures induced high levels of arousal associated with both positive and negative affect. Finally, positive and negative pictures elicited idiosyncratic effects on performance consistently with the individual zones of optimal functioning (IZOF) model (Kamata, Tenenbaum, & Hanin, 2002). Findings suggest that performers should be aware of their emotional reactions under demanding performance conditions in order to self-regulate and improve performance.

3.42 Learning from the past: the role of growth in sport-related memories

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To succeed in sport, staying motivated overtime is a sine qua non condition that allows athletes to thrive in their passion. During their career, most athletes are going to feel disappointed, frustrated, or will live major setbacks. Understanding how to process such experiences is therefore crucial. In this prospective study, we used a memory perspective embedded within the framework of self-determination theory to explore this question.

Athletes took part in an online study. At time 1, participants completed self-report measures (sport accomplishment, sport motivation, progression in their sport, and performance satisfaction). They then described a significant sport-related memory and rated it for need satisfaction (autonomy, competence, relatedness) and growth (e.g., "This event allowed me to grow in my sport."). One year later (time 2), participants completed the same scales again and rated the same memory for need satisfaction and growth.

We found that athletes who grew from a past experience over a one-year span had higher levels of sport accomplishment, sport motivation and performance satisfaction. Furthermore, athletes who grew from a need thwarting experience were those who increased the most outcomes such as sport motivation, performance satisfaction and progression.

Focusing on the "dark side" might have long-term benefits, provided that athletes adopt a growth mindset toward frustrating experiences. These findings highlight the importance for athletes and coaches to value negative experiences in a constructive way.

3.43 Effects of coordination exercise intervention on motor skill and interference control in children with ADHD: an ERP study

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Previous studies have reported an association between fundamental motor ability and inhibition performance in children with attention deficit/hyperactivity disorder (ADHD). However, the cross-sectional design used in previous studies, prevented the inference of a causal relationship. Therefore, the purpose of this study was to investigate the effect of coordinative exercise intervention, a type of exercise targeting on improving the fundamental motor skills, on interference control (behavioural, and event-related potential) and motor skills in children with ADHD. Fourteen participants previously diagnosed with ADHD were assigned to either an exercise or control conditions, and cross-over half year later. The exercise condition consisted of a coordinative exercise (e.g., basketball exercise) programme, 3 times per weeks, 50 minutes per times, for 10 weeks, whereas the control condition was a classroom reading program. Results showed that neither motor skills, nor the interference control were affected by the coordinative exercise, possibly due to the small sample size. Nevertheless, examination of the means revealed a trend that were consistent with the hypothesis. The lower power was due to dropout. Future studies should consider strategies to prevent the dropout of the participants to ensure enough participants for statistical power.

3.44 The objectivation of exercise-induced affect by facial expressions analysis: a methodological approach

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In recent years the role of affect and automaticity has gained increasing attention in exercise psychology. In contrast to social-cognitive theories of behaviour change, dual process models, highlighting the role of affective and automatic processes, have shown to be promising in explaining differences in exercise motivation. However, a challenge researchers are facing from this perspective is the measurement of the affective automatic process. The difficulty is, that as soon as a person is asked to report his or her affective experience, the response will include cognitive beliefs about it, thereby violating theoretical assumptions of core affect.

This study presents a new approach to the measurement of exercise-induced affect during exercise. Using an automatic coding software enables us to examine changes in facial expressions from video recordings. 33 facial landmarks are continuously monitored and an algorithm (iMotions Affdex) applies a set of rules based on psychological theories and statistical procedures to classify facial expressions. This method provides insight into affective experience by comparing actual facial expression with normative face datasets.

Thus far, 120 participants followed a standardised exercise protocol with increasing intensity until volitional exhaustion, while their faces were video-recorded and analysed. Additionally, affective valence and perceived exertion were measured every two minutes by verbal self-report. Multilevel analyses were used to model how ratings of perceived exertion and affective valence covariate.

Preliminary analysis suggests that changes in facial micro-expressions can predict self-reported affect during exercise. Data collection and analysis will be completed by the end of January 2019.

3.45 Effects of physical-exercise-induced stress on psychological condition and cortisol concentration of collegiate athletes

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Athletes have a high degree of stress caused by poor performance, pressure by teammates, and psychological and physical fatigue from overtraining (Nakagomi, 2004). Cortisol is increased by psychological stress, and stress induced by physical exercise. Therefore Cortisol can be an index of stress. The chronic secretion of cortisol causes depression, neurosis, and burnout. The effects of physical exercise-induced stress caused by the training load of the day on the psychological condition and the cortisol concentration were investigated in athletes. Participants were male collegiate athletes (N = 12) in university tennis club. Their heart rate (HR), blood lactate concentration and the rating of perceived exertion (RPE) were assessed as indicators of physical-exercise-induced stress during training. The pre- and post-training psychological condition was assessed using the short form of the Profile of Moods States (POMS-S). In addition, saliva samples were collected pre- and post-training and analyzed for salivary cortisol concentrations using enzyme-linked immunosorbent assay. The daily training load was also measured. The results indicated that cortisol concentration tended to decrease post-training. However, there were no significant differences in pre- and post-training POMS-S scores. These results suggest that the training load of the day affects the cortisol concentration but not the psychological condition.

3.46 The impact of aerobic fitness level on exercise effects on motor skill learning: a pilot study

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Findings suggest motor learning is enhanced when motor skill practice is immediately followed by aerobic exercise (Roig, Skriver, Lundbye-Jensen, Kiens, & Nielsen, 2012). However, studies have mainly investigated these effects in aerobically trained individuals. It is unknown whether aerobically untrained individuals would also benefit from exercise effects on motor learning. This pilot study investigated how aerobic fitness level (aerobically trained (AT) vs. aerobically untrained (AU)), as determined by peak oxygen uptake (VO₂peak), affects an individual's ability to learn a motor skill after aerobic exercise. Eight participants were randomised to Exercise (2 AT, 3 AU) or Rest (1 AT, 2 AU). Participants learned and practiced a visuomotor tracking skill (six blocks of 20 trials; Centeno et al., 2018), cycled (exercise) or sat (rest) for 25-minutes, and completed a 24-hour retention test (one block of 20 trials). We hypothesised that after exercise, AU would have worse motor skill retention than AT. Average VO₂peak (ml/kg/min) for AT-exercise = 45.53, AT-rest = 45.14, AU-exercise = 31.73, and AU-rest = 26.54. During exercise, AT-exercise cycled at an intensity equivalent to 86.0% HRmax and AU-exercise at 85.7% HRmax. Retention (Ret) was assessed as the score difference between the retention test and last block of practice. Preliminary results show that AT-exercise had worse retention compared to AU-exercise (Ret-AT-exercise = -3.58, Ret-AU-exercise = -0.49). However, due to the small sample size, results are inconclusive. Further research is needed to understand which populations could be more responsive to exercise to improve motor learning.

3.47 The impact of reward on motor skill learning

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Providing rewards in motor adaptation and sequence learning tasks results in better retention performance (Galea et al., 2015). However, there are no studies examining the effect of reward on motor skill learning that also scrutinised the mechanisms underlying motor learning (i.e., adaptation and reinforcement learning). Therefore, the aim of this study was twofold: first, to test the impact of rewards on learning a golf putting task, we applied a classical pre-test, intervention, post- and retention-test design including an intervention group (N=15, receiving rewards after successful trials) and a yoked control group (N=15, receiving matched rewards independent of successful or unsuccessful trials). Second, to examine the underlying learning mechanisms, we analysed the adaptation rate on a trial by trial basis during the acquisition phase. To realise both aims, participants performed golf putts on a target circle (14cm in diameter) from a distance of 2m. Results revealed that, irrespective of group, radial distance to the target's centre decreased from pre- to post- and retention-test, indicating that both groups improved, but rewards did not result in better retention performance. The trial by trial analysis for the acquisition phase showed an interaction for the adaptation rate between group and the hits and misses; the reward group showed higher autocorrelations after hits and lower autocorrelations after misses when compared to the yoked group. This finding seems to indicate that despite the lack of an effect of reward on retention performance, reward seemed to still affect the underlying adaptation and reinforcement mechanisms during the acquisition phase.

3.48 Methodological considerations when using fNIRS in the assessment of cognitive control during whole-body motor behaviours

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Getting individuals to engage in regular physical activity is a complex phenomenon, which depends not only on the pleasure felt but also on the functioning of the executive functions of the brain to inhibit the urge to stop when the exercise gets too effortful. The objective of the present study was to develop the use of fNIRS to assess frontal lobe involvement in moderate physical exercise.

fNIRS is a non-invasive imaging technic that makes use of optical proprieties of light to evaluate local haemodynamic responses in a given cortical area. This tool is particularly salient to exercise-related protocols, given that it is far less sensitive to movement than traditional scanning techniques such as fMRI or EEG. However, the scientific community is sorely lacking of validation studies systematically comparing fNIRS suitability in simple vs. whole-body movements. To address this methodological ellipsis, participants performed both a finger-tapping task and a cycle ergometry task while synchronising to an external metronome. Changes in oxygenated haemoglobin concentrations in both frontal and motor areas were recorded.

Results indicated that the cycle ergometry task was more prone to motor artefacts and physiological contaminations compared to the finger-tapping task. Furthermore, shifts of the headset were observed. These results provide strong evidence for the need to implement technical developments using (1) 3D motion capture for online control of headset positioning, and (2) data-processing to implement objective rejecting frequency bands of physiological noise. These implementations are required to offer sound data sets of brain dynamics when using fNIRS during whole body physical exercise.

3.49 Linking decision-making processes and executive functions in young soccer players

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Due to the dynamic and variability of a soccer match, players often have to generate options and make decisions under time pressure. It is known that sports experts differ from novices in their cognitive processes and decision-making behaviour (de Oliveira et al., 2014; Musculus et al., 2017; Ward et al., 2003). However, empirical studies on cognitive processes that underlie decision-making behaviour are lacking. Working memory, cognitive flexibility and inhibition, i.e., executive functions, seem to play an important role (Best et al., 2009; Roberts et al., 1996). On the basis of previous research, it is expected that younger children show lower abilities in executive functions than older children and that older children will generate fewer options and more frequently choose the first one. It is also expected that increased working memory performance will result in more options generated and improved inhibition performance will result in fewer generated options. A cross-sectional study with 110 soccer players (age 9-13) was conducted. In order to examine option generation and decision-making a video-based test was used. Executive functions were assessed using computer-based tests (Stroop, TicTacToe, Dots-Triangles; Huizinga et al., 2006). Developmental changes could be identified for executive functions and partly for option-generation processes. Furthermore, results indicate a relationship between decision-making behavior and executive functions. Practical implications for the applied setting will be discussed. Additionally, it will be discussed to what extent cognitive-psychological measures, such as of executive functions, can be used for talent identification and selection. Recommendations for age-specific cognitive training will be provided.

3.50 A single case study of concentration and stress for a shooting athletes with disabilities: EEG intervention

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The purpose of this study was to investigate the optimal concentration level, stress level and alpha wave level by EEG measurements during shooting with Korean disabled athletes shooting and apply them to psychological skill training suitable for each athlete. Participants were four disabled shot athletes in Chonbuk area. EEG data were collected using QUICK-20 DRY HEADSET, Cognionics Acquisition Beta program and Telescan program. The measurement area was measured in F3, F4, F7, F8, Fz, Fp1 and Fp2 of the frontal and prefrontal lobes. And we also used concentration data (SMR + MID Beta) / theta wave, stress index (SEF 95%), and alpha wave data for the study. As a result, there was a positive correlation between concentration and stress level, and there was a negative correlation or a positive correlation with alpha wave depending on the subjects. Therefore, in order to maintain the relaxed concentration state for the optimum state of the athlete, based on the concentration of brain waves, stress index, activation data of alpha waves, and related to the psychological problem through the initial interview of each athlete. It will be possible to receive appropriate psychological skills.

3.51 When in doubt, it's not out: LBW decision making in elite level cricket umpires across match types

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Leg before wicket (LBW) judgements are arguably the most difficult decisions umpires are required to make in cricket. Umpires must decide whether a ball that has hit the batter would have gone on to hit the stumps in a highly temporally constrained environment (see Law 36 in MCC, 2017). Previous work has shown that cricket umpires possess superior flight prediction expertise in a lab setting (Chalkley et al, 2015), however no work to date has explored LBW decision-making expertise in a naturalistic context. This project utilised historical LBW decision data from Australian first-class matches in three match types (four-day, one-day, and T20). Decisions were rated as correct or incorrect by a match referee, which were then used to calculate umpire sensitivity (A) and response bias (B) in an exploratory signal detection paradigm. Overall, umpires showed high levels of sensitivity, and tended to be conservatively biased to respond not-out. Umpires showed highest levels of sensitivity in four-day matches, followed by one-day and lowest in T20 matches. Umpires were significantly more conservative in T20 matches than in four-day matches. These exploratory findings will be discussed in relation to recent work by Russell et al. (2018) which suggests that officials' decisions are not driven by traditional notions of accuracy, but rather by what the 'game' expects of the official (e.g., cricket expects umpires to give the 'benefit of the doubt' to the batsman). Further, we will suggest that contextual differences between match types may shape officials' decisions.

3.52 The sport mental training questionnaire: development and validation

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Research in sport psychology has revealed that mental training is essential in the development of successful athletes. This project, comprised of five studies (a total of N = 2,015) resulted in a novel approach towards the measurement of mental skills in sports. In Study 1 (N = 797) and Study 2 (N = 405) we used principal component analysis to identify and confirm the structure of a wide range of identified sport mental skills. Study 3 (N = 429) and Study 5 (N = 330) confirmed factorial structure of Polish and English versions. Study 4 documented how both versions of the scale were developed, and how these two versions converge supporting their cross-cultural validity. The final version contains 20 items grouped into 5 subscales (foundational skills, performance skills, interpersonal skills, self-talk and mental imagery). The Sport Mental Training Questionnaire is a reliable and valid brief questionnaire that will facilitate the psychological evaluation of mental preparation among athletes.

3.53 Markers of the drop-out phenomenon between the 1st and 2nd stage of the transition phase of girls in basketball

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The theory of transition is described with special attention to the 1st and the 2nd stage which is relevant to the period from mini-basketball to the real training. The transition point is sensitive due to a lot of hypothetic markers related to various sports.

The aim of the study was to discover markers of drop-out phenomenon.

The girls, former participants of mini-basketball, were interviewed 4 – 10 years after their drop-out from basketball and their further career was uncovered. Girls' interviews were completed with dialogues with parents. The strongest markers influencing drop-out from basketball were the coach's approach, the family environment was linked to further girls involvement in other sports or leisure time activities or no activities.

3.54 A longitudinal mixed-methods investigation of tajik coaches' experiences in a sport for development exchange training program

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A key factor to effective sport for development and peace (SDP) programming is the training of local facilitators to implement and sustain programs. By training local coaches, there is an investment in individual change, leading to community change (Ricigliano, 2012). More specifically, the SDP International Working Group recommends that "coaches and trainers are well trained in sport, conflict management, and peace-building techniques" (p. 237, 2008) when working in SDP programs. This study was designed as a longitudinal mixed-method investigation to understand experiences of Tajik coaches who participated in the Sport for Social Change (SSC) program. The SSC is an exchange training program designed to help coaches learn how to use soccer to develop leadership and peaceful-living skills in their youth. N = 6 Tajik coaches participated over four years, with data collected in May 2014 (interview in Tajikistan), October 2014 (survey, journals, and focus groups in the U.S.), May 2014 (interviews and survey), and an interview in March 2018 in Tajikistan. A case-study phenomenology approach was used to examine the raw data coded into lower-order themes and then higher-order themes. Data indicates that participants 1) regularly use conflict prevention and resolution skills with their athletes, 2) have adopted a more positive approach to coaching, 3) report that their youth are more respectful, engaged, and positive, 4) are teaching other coaches about the coaching skills, and 5) are including more children in soccer, especially girls. Overall results indicate that the program was impactful in the local Tajik communities and sustained over time.

3.55 A phenomenology of violence in hand-to-hand in combat sports: from the MMA (Mixed Martial Arts) case to a normative criterion

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Some sports are included in those phenomena whose public appreciation is on the brink of violence or witnesses the violence. In contact sports, hand-to-hand situations in which physical integrity is threatened or violated, are typical. When it happens, if there is decision, negligence or imprudence by the athlete, their actions are marked by the transgression defined as violent. Vigour and aggression are no strangers to sports. Thus, it is due to a phenomenological exploration on the conditions that push sport practice to its limits and, in extreme cases, to the rupture of the very sports phenomenon: it gives way to violence. The structure of intersubjective tensions that bring about sports excellence and also risk rupturing its core features, is evidenced. Every sport is made up of a dispute for an object to be dominated, the competition-structuring mediator. When aggressive efforts cross the object of the dispute and directly and intentionally reach the other, a boundary is crossed into the sphere of violence. Instrumental aggression, a common concept in sport psychology, proves improper to designate combat sports, where the object of the dispute is the physical domination of the opponent's body. In MMA, among other combat disciplines, this domination takes place according to the rules, allowing injuries and lesions between the opponents. Empathic experience from both opponents and a third party, who is the referee, is central to determine whether there is a rupture to violence or not according to an internal and dynamic criterion, the norm of sensitivity.

3.56 A comparison of situational motivation, affective response, perceived climate and perceived success in baskin and basket players

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Background and purpose: Baskin, the name is a portmanteau of “basket” and “inclusion”, is a new sport-inspired to basket, but with specific characteristics and rules, created for allowing participants with and without disabilities (i.e. with different abilities) to play together (Bodini, Capellini, & Magnanini, 2010). The purpose of this cross-sectional study was to compare situational motivation, positive and negative affect, perceived motivational climate, and perception of success in baskin and basket players.

Methods: 183 able-bodied athletes (63.4% males, mean age 25.5 ±9.2 years) playing baskin (43.2%) or basket filled-in at the end of the sport season 2017-2018 the Situational Motivation Scale (SIMS, Guay, Vallerand, & Blanchard, 2000), the Physical Activity Enjoyment Scale (PACES, Motl et al., 2001), the Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2, Newton, Duda, & Yin, 2000) and the Perception of Success Questionnaire (POSQ, Treasures & Balague, 1998).

Results: Significant differences were found in the task and ego subscales of the PMCSQ-2 ($t=11.97$, $p<.001$ and $t=12.09$, $p<.001$ respectively) and in the ego subscale of the POSQ ($t=8.7$, $p<.001$), with baskin players perceiving their activity more task-oriented and less ego-oriented than basket players. No significant differences were found in the POSQ task subscale nor in all the SIMS and PACES subscales.

Conclusions and implications: Findings support the notion that baskin is perceived similarly enjoyable and motivating than basket, with a more task-oriented climate and a less ego-oriented perception of success. These results can support the promotion of baskin, as an inclusive game in sport and educational settings.

3.57 Social emotional learning of male adolescent soccer players in relation to level of courage and individual variables

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The exact nature of the relationship between social emotional learning and courage in soccer are still uncovered. Therefore, purpose of this study was to research social emotional learning (including 3 factors; task articulation, peer relationships and self-regulation) of male adolescent soccer players in relation to level of courage (consisting of 5 factors; mastery, determination, assertiveness, venturesome and sacrificial behavior) and individual variables (for example; age, body mass index, years of experience, formal education, type of game preferences, perception of parent attitudes, personal health problems including injury past, visual impairments, hearing and hyperactivity attention deficit problems). Data were collected from 266 male adolescent soccer players aged 13 to 18 ($M=14.58 \pm 1.47$). Soccer players administered the validated Sport Courage Scale (Konter and Johan, 2012) and the Turkish adapted version of Social Emotional Learning Scale (Arslan and Akın, 2013) with the personal information form. Collected data was analyzed by Spearman correlations, various non-parametric tests including Kruskal-Wallis and Mann-Whitney U Tests. Analyses revealed a number of significant ($p<.05$) differences between Social Emotional Learning of soccer players and level of Courage (low and high) including indicated various individual variables above. In general, soccer players with high points of soccer courage have significantly higher points of task articulation, peer relationships and self-regulation. Courage and Social Emotional Learning of adolescent soccer players seem to have an important role for their various indicated individual variables. More research is needed to have more conclusive results.

3.58 THE OTHER SIDE

Mohamed Chelali, Mohamed Yakout

university of zayan achour, Algeria

The goal of the poster presentation is the necessity of a focus on the emotional estate, too rather than the performances of athletes only, these perspectives contrast the theoretical part. Our personality is a key element in this. For instance, self-esteem is an important factor which might affect the real image of a talented person. Today, it is sometimes more convenient to keep performance of athletes apart from their personality to achieve the big picture in practice. This contributions aims to answer two research questions: Can a focused analysis of emotional estate “the high feeling” drive research on this field into more comprehension of personality for effective performance? Could the understanding of emotional estate help in a way that new systems and structures will be invented to make the athlete more competitive?

3.59 Brain dynamics during visual anticipation in sport

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Scarce literature has investigated anticipation in sport comparing the effect of 2D and 3D modes of presentation on the underlying brain activity (Smith, 2016). Therefore, the purpose of the current investigation was to characterise the dynamics of brain activity during anticipation processes in tennis players using two different modalities. $N = 30$ tennis players (all males, $M = 24$ years, $SD = 6$) were categorised into two groups: $n = 14$ elite players (EP) and $n = 16$ less expert players (LEP). Anticipation was investigated by presenting a series of images in both 2D and 3D modalities, erasing body parts from the images: full body, no legs, no trunk, no racket and arm, no ball (spatial occlusion, Jackson and Morgan, 2007), and predicting the ball’s landing position. Simultaneously, high density (128 channels) EEG was recorded. Results revealed that accuracy was lower in the no-trunk condition compared to other occlusions and that EP’s had generally higher accuracies than LEP. Reaction times in the 3D condition were higher than in the 2D condition. Considering the ERP components, N2 was lower in the trunk-occlusion, P3a lower in the no-trunk and no-ball condition, P3b higher in the no-trunk and full-body condition, and LRP lower in the trunk occlusion. Moreover, for LRP, a main effect of Mode was found, with the 2D potential lower than the 3D potential. Our results showed a larger information processing in a more ecological context (3D with respect to 2D). Moreover, the importance of racket-arm and trunk should be reconsidered in anticipation processes in tennis.

3.60 Exploring the relationship between chronic stress and sport orientation in young elite athletes

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Karlsruhe Institute of Technology, Germany

Background: Young elite athletes experience high stress levels due to the dual career of sports and education. This may affect their sport orientation based on the transactional stress model (Lazarus & Folkman, 1984) and the attentional control theory (Eysenck et al., 2007). Lower competitiveness and higher win orientation lead to anxiety and less success. Goal orientation is associated with less anxiety, intrinsic motivation and enjoyment.

Aim: To explore the relationship between chronic stress and sport orientation in young German elite athletes.

Methods: Participants (N=33; male=51.5%; mean age=16.9 [SD=2.3]; 84.4% high school students) completed the sport orientation questionnaire (Elbe, Wenhold, & Beckmann, 2008) and the chronic stress screening scale (Schulz, Schlotz, & Becker, 2004).

Results: Regression analysis showed that chronic stress explains 31% of variance in competitiveness ($F[1,29]=13.15$; $\beta=-.56$; $p<.01$) and 13% of variance in win orientation ($F[1,30]=4.33$; $\beta=-.35$; $p<.05$), but is not related to goal orientation ($p>.05$). Male athletes scored higher in sport orientation while female athletes experience more stress ($p<.01$). No significant differences could be found between athletes attending elite sport schools and those not doing so ($p>.05$).

Discussion: Chronic stress affects the competitiveness of young elite athletes, which may lead to less success in sports. Female elite athletes experience more stress than their male counterparts, while males score higher in win orientation that may be associated with increased competitive anxiety and less success. Therefore, young female elite athletes should be specifically addressed when it comes to stress prevention, while win orientation should be reduced in young male athletes.

3.61 Friendship selection and friends' influence in physical education. Joint dynamics of network and behaviour.

Jennifer Schmitz

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Recent findings in the context of physical education indicate that in addition to motor skills, also social relationships are seemingly necessary to gain access to physical education practices and are therefore closely related to student's individual degree of participation (Munk & Agergaard, 2015). The interdependency of peer relationships and participation behaviour within physical education research has, however, not yet been taken into account explicitly so far (Smith, 2003). Therefore, this study aims to investigate the mutual dynamic development of peer relationships among students and their participation behavior within physical education by applying a social network approach (SNA). The main research question is to what degree and how the social friendship network mediates the participation level of classmates and whether and how, in turn, their degree of participation affects the social relations among them. The application of a stochastic actor oriented coevolution model allows for investigating underlying mechanisms - influence as well as selection. Hypotheses derived from this interdependency that are currently being analysed are as follows: friends tend to become increasingly similar in their participation level over time, as indication of influence driven processes. Under the assumption of selection driven behavioural changes, students with similar participation level are more likely to become friends over time. Results are expected to provide insight in the relative strength of each mechanism. The study was set up as a longitudinal study with two measurements, divided over the first year of secondary school. Data analysis is still ongoing and expected to be completed by late march.

3.62 Guiding youth sport coaches integrate psychological skills in their coaching practice in Iran

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Introduction: In recent years, a growing number of empirical studies have demonstrated how psychological skills training (PST) effectively enhances athlete performance and that athletes enjoy using psychological skills Vealey (1988) defined PST as the implementation of strategies designed to help sport participants learn psychological skills that allow for the assessment, monitoring and adjustment of thoughts and feelings.

Researchers have demonstrated the benefits of psychological skills training for athletes, but few studies have examined how coaches integrate such skills in

their coaching practice (e.g., Rogerson and Hrycaiko, 2002; Thelwell et al., 2006). Empirical evidence indicates that the coaches have a preference to learn psychological skills in a user-friendly manner with consultant support.

Purpose: The purpose of the current study is to help youth sport coaches integrate psychological skills (leadership, goal-setting, self-awareness, visualization) in their coaching practice.

Methodology: Researchers worked with nine high school coaches from the sport of Iranian football during an entire season conducting interviews, workshops and observations.

Finding: Findings indicated that the researcher was able to put in place an initiative that helped the coaches integrate psychological skills in their coaching practice. Generally, the coaches indicated that the partnership was beneficial but also mentioned how it could be improved in various ways.

Discussion: Findings are discussed using the current literature on youth development through sport and suggestions are offered to professionals working with youth sport coaches.

3.63 Effect of mental and combined (mental and physical) practice on learning motor skills in volleyball

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National Institute of Technology, India

The effect of mental and combined practice on learning motor skills of volleyball was studied by carrying out experiments with randomly selected men subjects. They were divided into three equal groups of thirty each named as group of mental practice, combined (mental and physical practice) and control group. The subjects were administered mental practice and combined practice for duration of thirty minutes over a period of twelve weeks. The AAPHER volleyball skill test was selected as criterion variable to test the skills ability of subjects for the experiment. Mental practice and combined practice methods were found to be significantly better in improving learning motor skills i.e., volleying, serving, passing, and setup in comparison to control group. The effect of mental practice and combined practice methods on the learning rate in the motor skills of volleyball at periodic interval of first two weeks of duration of an experiment revealed that there was no significant improvement in any of the skill mentioned above due to mental practice, combined practice and control group. However significant improvement was found in all the skills performance due to mental practice and combined practice methods, from fourth week onwards. The findings also revealed that there was no significant improvement in learning of motor skills of volleyball neither over a period of twelve weeks duration nor two weeks duration in the case of control group. The twelve weeks of mental practice and combined practice was effective method to improve performance and learning rate in motor skills of volleyball.

3.64 The discriminative competencies of world-class beach volleyball players and their development in high-potential players

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An athlete's actual behaviour in dealing with developmental challenges plays a key role in their progressive accumulation of expertise. Questions of how psychological competencies are reflected in athletes' actual behaviour during training, competition and in their daily lives, and how these competencies influence their actions in the face of challenges, remain underexplored. The primary aim of our research was to determine the psychological competencies that distinguish world-class beach volleyball players from competitive players and how these are reflected in their behaviour. A secondary aim was to explore whether the competencies of world-class athletes are already present in high-potential beach volleyball players. Data were gathered from in-depth interviews held with 28 beach volleyball players (both male and female), of whom 8 were world-class, 7 competitive and the remaining 13 were high-potential beach volleyball players in the initiation and development phase of their athletic development. The data were interpreted using thematic analysis. World-class players were differentiated based on 10 self-reported competencies within four thematic clusters: (1) knowing what to do and actually doing it, (2) focusing on personal development, (3) internal attribution of actions and (4) proactive behaviour and a hands-on attitude. These self-reported behaviours were also identified by high potential beach volleyball players, with the exception of a proactive approach when under pressure. The results yielded qualitative insights about the psychological competencies of world-class athletes and how they should be developed in high-potential athletes to enable them to perform at a world-class level.

3.65 Relationships between psychological stressors, rumination, and mental health among Japanese university athletes

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"Rumination" is defined as repetitively and passively thinking about one's symptoms, possible causes, and result and depression. Rumination is known as a related factor of mental health, but how it is associated with stressors and the mental health of athletes has not been clarified. This study aimed to examine the relationships between psychological stressors, rumination, and mental health among Japanese university athletes. The participants were 821 Japanese university athletes (559 men, 262 women, Mage = 20.0 years, age range: 18–23 years). The psychological stressors were measured using the Daily and Competitive Stressor Scale (DCSS), frequency of rumination using the Rumination Responses Scale (RRS), and mental health using the General Health Questionnaire-30 (GHQ-30). The relationship between these variables were analysed using Spearman's rank correlation coefficient. The results showed a moderate positive correlation between the total scores on the DCSS and RRS in both male and female athletes ($r_s = .50$ and $.49$, $p < .01$). There was a moderate positive correlation between total scores on the RRS and GHQ-30 in both male and female athletes ($r_s = .47$ and $.49$, $p < .01$). Similarly, total scores on the DCSS and GHQ-30 showed a moderate positive correlation in both male and female athletes ($r_s = .44$ and $.44$, $p < .01$).

The study findings revealed that psychological stressors, rumination and mental health are closely related among male and female Japanese university athletes. This finding implies that reducing one's negative thinking helps maintain good mental health.

3.66 Intercultural learning and cross-cultural research help to enhance a physical active lifestyle and positive physical self-concept

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The statement physical activity is healthy and important for an overall development for children is well-known and empirically generalised (Ghanbari, 2015; Marsh & Craven, 2006). But it depends on how children are physically active. Incorporating findings from the study researching the movement behaviour of children in Nigeria and Germany the empirically findings demonstrated that adolescents, who are more active, have a more positive physical self-concept than those who are inactive and that cooperative, self-organised physical activity has a positive effect on the self-concept instead competitive physical activity. (Data Nigerian $t_1 = 369$, $t_2 = 240$, $t_3 = 160$ and German $t_1 = 348$, $t_2 = 327$, $t_3 = 301$). Structural equation model/test of invariance confirmed the reciprocal effect between physical self-concept, physical fitness and physical activity ($p < .05$, $.13 < \beta < .28$, $CMIN/DF = 2.694$, $CFI = .966$, $TLI = .946$, $RMSEA = .049$). Using these empirical findings, the 'sportpatenproject' is an example on how practitioners can learn from different socialisations systems and get a better understanding of children with unfavourable development conditions. The project is targeting refugee children and socially deprived children in Germany to offer them equal opportunities. It strengthens and encourages children with the help of a sports mentor and physical activities to increase the self-concept, motivation, and empathy. The participatory and collaborative nature of the 'sportsmentorproject' has helped refugee children integrating more readily into German society. Using self-organised, cooperative physical activity and keep-fit methods to strengthen children encourages them to believe in themselves.

3.67 How does the intensity of physical activity Influence Executive Control In Children? An Electrophysiological Investigation

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It is widely accepted that a physically active lifestyle is beneficial for health; however, getting people to exercise and maintain an active lifestyle has proven to be a significant public health challenge. There is evidence suggesting that self-regulation may be one characteristic that could drive behavior change and that exercise interventions might help improve and maintain self-regulatory processes such as executive functions (EF). Indeed, there is evidence that exercise interventions improve children's EF (Vazou, Pesce, Lakes, & Smiley-Owen, 2016). There remain multiple gaps in this literature, in particular with regard to the mechanisms through which interventions improve EF. We examined how and why exercise impacts important self-regulation sub-processes and the engagement of attention and inhibitory control during rigorously controlled exercise conditions. Our protocol employed executive and attentional tasks administered before, during, and after a bout of exercise. After a fitness assessment, participants completed three 22 – minute interval exercise sessions (low, medium, and high intensity) with the order of sessions counterbalanced across participants. We collected electroencephalographic (EEG) data before and after each bout of exercise with a subset of the sample (five pre-pubertal children ages 10-12), which we report here. We hypothesised that key EEG markers of executive control (e.g., fronto-central N2) would increase in amplitude following exercise, in a way that may scale with intensity and performance on EF tasks. We present the results of this electrophysiological investigation and discuss how EEG can be used to study both short and long term effects of exercise on executive control.

3.68 Psychological competences of athletes in collective sports

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The psychological competences can influence the athlete's performance. The aim of this study was to characterise the emotional and cognitive athlete's aspects of collective sports modalities. So, we evaluated 94 athletes (47 females) of soccer, futsal and volleyball with the following instruments: Identification Card, Profile of Mood States (POMS), Sport Competition Anxiety Test (SCAT), Competitive State Anxiety Inventory-2 (CSAI-2), Beck Anxiety Scale (BAI), Stress and Recovery Questionnaire for Athletes (RESTQ-76 SPORT), Rosenberg Self-esteem Scale, Resilience Scale, Physical Activity Practice Motivation Inventory (IMPRAFE-54), Trait Sport-Confidence Inventory, Body Image Measurement Scale, Bredemeier Athletic Aggression Inventory (BAAGI), The World Health Organization Quality of Life (WHOQL-Bref), Concentrated Attention Test (ACT), Pictorial Memory Test (TEPIC-M), Subtest Codes and Matrix Reasoning from the Wechsler Adult Intelligence Scale (WAIS), Colored Track Testing (TTC). The results showed statistically significant differences in levels of cognitive anxiety ($p = 0.0224$), with higher averages in volleyball when compared to soccer. The volleyball modality presented higher levels of general quality of life ($p = 0.0023$) when compared to soccer and futsal and in the environment of quality of life ($p = 0.0027$) when compared to soccer. Considering cognitive aspects, the volleyball modality presented statistically significant differences in information processing ($p = 0.004$), memory ($p < 0.001$) and executive functions ($p < 0.001$). With these data, it was possible to define a protocol of psychological assessment for athletes of collective modalities that is functional and practical to measure the emotional and cognitive competences, being able to be used as a guide for an intervention and psychological sports preparation.

Featured Symposium 09: Leveraging the social environment to promote physical activity

Time: Thursday, 18/Jul/2019: 2:00pm - 3:30pm · *Location:* S 10 - Münster
Session Chair: Cecilie Thøgersen-Ntoumani, Curtin University

Featured Symposium: Leveraging the social environment to promote physical activity

Chair(s): Cecilie Thøgersen-Ntoumani (Curtin University, Australia)

In our symposium, we will explore the role of understudied aspects of the social environment in terms of physical activity promotion. Five papers, showcasing research conducted in three countries, will be presented. These papers consider the social environment from different conceptual and applied perspectives and have employed a range of methodologies. Ntoumanis will present the results of a systematic review and meta-analysis examining the effects of dyadic approaches on physical activity and sedentary behaviour in adults. Sabiston will explore the development and preliminary evaluation of an online physical activity matching program among cancer survivors using a mixed-methods approach including focus groups, a small daily diary study, and descriptives from an online matching program. Stebbings will outline qualitative data from a longitudinal UK-wide study of social jogging groups, and explore the role of the jog leader in promoting physical activity adherence and health and well-being outcomes for joggers. Crozier will present the effects of experimentally manipulated levels of cohesion and groupness on exercise adherence perceptions using a hypothetical exercise scenario. Finally, Thøgersen-Ntoumani will present results pertaining to the feasibility and efficacy of a motivationally-embellished peer-led walking cluster randomised controlled trial on physical activity and sitting outcomes in insufficiently active employees. The findings from the series of studies presented in the symposium highlight the importance of considering a range of social environment dimensions (dyads, peer leaders, groups) in physical activity promotion, and their results can inform both theory and practice.

Presentations of the Symposium

Dyadic interventions to promote physical activity and reduce sedentary behaviour: systematic review and meta-analysis

Nikos Ntoumanis¹, Carr Rachel¹, Andrew Prestwich², Dominika Kwasnicka¹, Cecilie Thøgersen-Ntoumani¹, Daniel Gucciardi¹, Eleanor Quested¹, Louise Hall²

¹Curtin University, ²University of Leeds

We present the results of a systematic review and meta-analysis on interventions using dyads to promote physical activity and reduce sedentary behaviour. Reviewing a variety of databases, we identified 69 studies, of which 59 studies were included in our review (72 independent datasets). We coded for dyad type, dyadic goal pursued, participant characteristics, and methodological quality of the studies, and examined whether those moderated the overall effect size. We also conducted sensitivity analysis to test the robustness of the effect sizes to statistically significant moderators and outliers. We used that the Transactive Goal Dynamics theory (Fitzsimons, Finkel, and van Dellen, 2015) to categorise the type of goals pursued by the dyads. We found that dyadic interventions had a small positive, highly heterogeneous, effect on physical activity ($g = .203$, 95% CI [0.123–0.282]), compared to comparison conditions including equivalent interventions targeting individuals. Shared target-oriented goals (where both dyad members hold the same PA goal for the main target of the intervention) and peer/friend dyads were associated with larger effect sizes across most analyses. Dyadic interventions produced a small homogeneous reduction in SB ($g = .19$, 95% CI [0.10 - 0.28], $k = 20$). Given dyadic interventions promote physical activity over-and-above equivalent interventions targeting individuals, these interventions should be more widespread. However, uptake of such interventions (relative to those targeting individuals) should be compared, along with their acceptability, to further ascertain the feasibility of such approaches

Instigating preferred social support for physical activity through a match-making platform for women cancer survivors

Catherine M. Sabiston¹, Angela J Fong², Steve Amireault³, Kelly Arbour-Nicitopoulos¹, Jennifer M Jones⁴, Katherine Anne Tamminen¹, Jackie Bender⁴

¹University of Toronto, ²Queen's University, ³Purdue University, ⁴University Health Network, Toronto

Physical activity (PA) is safe, feasible, and effective for cancer survivors. Yet nearly 90 % of cancer survivors are not active, and social support is a key barrier for women. This study developed an online PA partner-matching platform for women diagnosed with cancer, and evaluated the feasibility and acceptability of peer-matching for PA within this population. Three focus groups with women cancer survivors ($N = 11$) were held to identify PA partner characteristics and matching criteria. An online platform to match women with other women for PA, called ActiveMatch, was developed and launched. Over 18 months, $N = 32$ purposely-selected women participated in focus groups to evaluate ActiveMatch while $N = 228$ women have used the platform. Eight women were also followed daily for 28 days to explore acute social support and physical activity characteristics. Similarities in age, life phase, location, history of PA, type of cancer, severity of cancer, and personality were integral to the PA partner matching algorithm. In follow-up focus groups, women expressed concern with online security, similarity in goals, and expressed an interest for opportunities for physical activity. Based on the daily diary study, on days when the women connected with their partner, they were more active. Connections were either in person, by telephone or text, or email. Access to physical activity programs and social support are key barriers to participation, and ActiveMatch has been translated into practice to help overcome these barriers. Preliminary findings provide evidence of effective implementation of ActiveMatch in Canada.

The role of the jog leader to promote physical, mental and social health benefits for social jogging group participants

Juliette Stebbings¹, Daryl T. Cowan²

¹University of Portsmouth, ²University of the West of Scotland

Community-based jogging initiatives facilitated by 'Jog Leaders' are increasingly popular in the UK, and are promoted as a convenient, low cost way of improving individuals' physical activity levels and social networks. The purpose was to document the myriad benefits of group involvement, understand the motivational role of the Jog Leader, and understand which aspects of these group environments encourage versus undermine prolonged participation. Online surveys were distributed to social jogging group Leaders and joggers across the UK. 161 joggers and 438 Leaders, responded to a series of open-ended questions, exploring their experiences of participating in/leading their groups, the impact of being involved, and ways in which their experiences could be enhanced. Joggers derived a number of physical (e.g., weight loss, increased energy), psychological (e.g., self-esteem, life satisfaction, overcoming adversity) and social (e.g., new friends, tackling loneliness) benefits from participating. Data also indicated the importance of specific Jog Leaders' interpersonal strategies (e.g., personalisation of sessions, understanding individual goals, social support). Last, joggers revealed a number of aspects of the group sessions which encourage (e.g., 'family' ethos, social events) versus thwart (e.g., competitiveness of sessions, lack of leader involvement and knowledge) their motivation to remain involved. Social jogging groups offer a range of benefits but the extent to which individuals experience such beneficial outcomes may depend on the group environment, and the way the leader facilitates the group. The findings offer evidence of strategies that Jog Leaders can employ to support joggers' sustained involvement.

An experimental study exploring the effects of groupness and cohesion on adherence to hypothetical exercise groups

Alyson J Crozier

University of South Australia

Understanding group constructs has served as a useful foundation for examining exercise adherence. Two group constructs that have been related to adherence in exercise settings include cohesion (i.e., unity; Spink & Carron, 1992) and groupness (i.e., perceptions of being a group versus collection of individuals; Spink et al. 2010). While there is recognized overlap between these two group constructs, support has been found in sport settings for their unique contribution to adherence (Spink et al., 2015). To explore whether similar contributions would be found in an exercise setting, the current study employed a between-subjects experimental design to examine the effect of varying levels of cohesion and groupness on individuals' exercise class adherence. Participants (N = 203) were assigned to read one of four vignettes describing hypothetical exercise classes that differed in levels of cohesion (high [HC] versus low [LC]) and groupness (high [HG] versus low [LG]). While imagining themselves as a member of the exercise class described, they rated their intention to return to, and intensity of effort, with the group. Overall ANOVA models were significant ($p < .01$), with small effect sizes found ($\eta^2 = .05-.13$). Post-hoc analyses revealed that intentions to return were lowest after imagining the LC/LG class, with significantly higher intentions in all other groups. The only significant difference found for intensity of effort was between the HC/HG and LC/LG groups. While in need of real-world replication, the findings provide support for the independent effects of groupness and cohesion on individual adherence outcomes in an exercise setting.

The feasibility and efficacy of a peer-led motivationally-embellished workplace intervention on physical activity and sitting time

Cecilie Thøgersen-Ntoumani¹, Brendan Smith¹, Joanna Nicholas¹, Eleanor Quested¹, Daniel Gucciardi¹, Joanne McVeigh¹, Sally Fenton², Emmanuel Stamatakis³, Sharon Parker¹, Nikos Ntoumanis¹

¹Curtin University, ²University of Birmingham, ³University of Sydney

Using Self-Determination Theory (Ryan & Deci, 2017), we examined the feasibility and efficacy of a 16-week peer-led motivationally-embellished workplace intervention on physical activity (PA) and sitting time. A cluster randomised controlled trial design was employed. Insufficiently physically active employees (N = 97; M [SD] age= 44.40 [10.29]; 82.50 % female; M [SD] BMI= 29.24 [6.11]) from 8 worksites were randomised into an experimental or a control group. The experimental group had assigned peer leaders (n = 8) who were trained via workshops in need supportive strategies and led small group led walks. Experimental participants also had motivation training and access to an app with behaviour change techniques, plus received a Fitbit. The control group participants received a Fitbit and a generic daily step count goal. Intervention feasibility was assessed via retention rates and via an acceptability questionnaire. Retention (88.24 %) and reported acceptability with the intervention (M [SD] = 5.73 [1.04]; max = 7) was high with no differences between the groups. Changes from baseline to post-intervention in daily steps, stepping time and minutes sitting per day between groups were assessed via an activPAL. Intention to treat analysis with linear mixed modelling, accounting for time and worksite clustering, showed that daily steps increased by 839 steps ($p = .10$), stepping time by 11 minutes per day ($p = .05$), while sitting time was reduced by 29 minutes per day ($p = .17$) in the experimental condition. However, there were no significant differences between the groups. The intervention was feasible and acceptable to participants, but the efficacy of the intervention should be further tested.

Gimme-Five 04: Gimme-5 Talks

Time: Thursday, 18/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 06 - Bad Blankenburg
Session Chair: Norbert Hagemann, University of Kassel

When thinking matters: How task type influences the effect of cognitive fatigue on physical performance

Blair Aitken, Clare MacMahon
La Trobe University, Australia

While there is evidence that cognitive fatigue leads to interference in performing physical tasks (Marcora, Staiano, & Manning, 2009), the details about this relationship have not been extensively explored. For instance, differences have been found based on the nature of the physical demand, wherein all-out efforts such as maximal contraction have been uninfluenced (Martin et al., 2015) in comparison to more endurance (Marcora et al., 2009) and cognitively demanding physical tasks, such as passing a ball (Smith et al., 2016). This study investigated the effects of cognitive fatigue on physical performance. Ten participants completed both an unmatched (cognitive fatigue) and matched (control) Stroop test followed by three different sprint tasks with different levels of cognitive demand: a straight sprint, a change of direction (CODS) test and an agility test. There is a suggestion that motivation may influence whether cognitive fatigue triggers a decline in performance (Inzlicht, Schmeichel, & Macrae, 2014), and thus motivation to perform the sprints was also examined, with questionnaire items related to intrinsic and extrinsic aspects. The results showed no difference in physical performance between the conditions. Participants' relatively more intrinsic motivation was also similar between both conditions. These findings suggest that participants' performance during sprint type tasks, even when involving a reactive component, are not affected by cognitive fatigue and that motivation can also be maintained. Future research will continue to explore both the cognitive demand of the physical task and more specific assessments of motivation.

Perfectionism in aesthetic performers: is it related to early specialization?

Charlotte Downing, Sanna Nordin-Bates, Karin Redelius
Swedish School of Sport and Health Sciences, Sweden

Recent research largely advises against specialization before age 12, due to the risks to physical and psychological health (Côté, Lidor, & Hackfort, 2009). However, early specialization is commonly considered necessary for high-level performance in aesthetic activities, such as gymnastics and dance. Perfectionism, a personality trait with the potential for negative outcomes, is also considered to be highly prevalent in aesthetic activities.

An association between early specialization and perfectionism has been speculated (Curran & Appleton, 2016), yet no research has been specifically conducted to explore this notion. As part of a larger study, this presentation will report on the results from an investigation into the relationship between early specialization and perfectionism in high-level aesthetic performers. Data collections are currently underway with gymnasts, dancers, divers and figure skaters, aged 12 – 20, who train ≥ 4 times per week. A study-specific measure, incorporating factors such as age of specializing, training volume at different ages (0-6 years, 7-9 years, and 10-12 years), age of selection to a high level group/school and number of sports previously sampled, is being used to capture early specialization. Perfectionism is being measured via (a) the Multidimensional Perfectionism Scale (Frost, Marten, Lahart, & Rosenblate, 1990), and (b) the Multidimensional Inventory of Perfectionism in Sport (Stoeber & Otto, 2006). It is expected that the results will contribute important data regarding if/how early specialization is related to perfectionism. These results will also be a first step towards sound recommendations for early specialization in aesthetic performers.

Exploring judgments and gaze behavior while evaluating gymnastics movements: influence of kinematics and expertise

Melanie Mack
Leipzig University, Germany

The evaluation and judgment of the actions of other people plays an important role in artistic gymnastics for coaches, judges and the athletes themselves. Cognitive processes and visual search pattern differentiate people with different motor and visual expertise in their ability to detect and use salient information (del Campo & Gracia, 2017; Heinen, Vinken & Velentzas, 2012; Mann, Williams, Ward & Janelle, 2007; Pizzera, Möller & Plessner, 2018). Salient information for an accurate judgment seems to be the kinematics pattern of the gymnastics movement (Lee, 2002; Takei, 2007). Therefore, the aim of this study was to examine the effect of manipulating the movement regarding the content of kinematics information for people with different motor and visual expertise in gymnastics. N = 45 participants (high visual expertise in gymnastics: n = 15, high motor expertise in gymnastics: n = 15, and no gymnastics expertise: n = 15) were asked to judge 20 videos of a floor routine (round off, back handspring, backward layout somersault) on a visual analog scale that was anchored to six points according to the judgment guidelines of the German Gymnastics Federation for young talents. The 20 videos showed ten different skill realizations which were either presented as conventional videos or stick figure videos. Visual behavior was recorded while watching the videos. Judgement scores and perceptual pattern will be analyzed regarding the video- and expertise conditions. Data collection is nearly finished yet. Results will be presented and discussed referring to the theoretical background and the actual state of research.

Sport-related concussion & disproportionality in schools

Courtney Hess

University of Massachusetts Boston, United States of America

Sport-related concussion is a complex and challenging experience that many athletes face with recent estimates suggesting that between 1.1 to 1.9 million concussions occur annually among youth in the United States (Bryan et al., 2016). Reporting rates, however, have been suspected to be as low as 50%, thereby suggesting much higher rates of injury in this population (Rivara et al., 2014). Concussion symptomatology includes physiological (e.g., dizziness, vomiting), psychological (e.g., irritability, anxiousness), cognitive (e.g., inattention, poor memory), and sleep (e.g., fatigue) related symptoms that prompt attention within this population given the potential disruption to functional domains (e.g., school) and long-term negative impact on adolescents' developing brains (Alosco et al., 2017). Researchers have explored the impact of sport-related concussion on academic achievement among youth, however, research remains limited in scope, and plagued by theoretical and methodological gaps. Specifically, researchers have not comprehensively examined the intersection of individual student factors and concussive injury in understanding the potential impact on academic disruption. In light of established disproportionality research which suggests that unexpected individual student factors (e.g., race, socioeconomic status, gender) do impact treatment, experiences, and outcomes in US schools (Skiba et al., 2011; Sullivan et al., 2013), examining this intersection following concussion is warranted. Therefore, the purpose of the current talk will be to provide a conceptual link between these two disparate bodies of literature, specifically in understanding disparate outcomes following sport-related concussion among students. Next steps for researchers as well as implications for professional practice will be discussed.

The impact of self-talk on performance under competitive conditions: a pilot-study

Justin Worley¹, Zachary McCarver², Shelby Anderson³, Allison Yule¹, Shannon Stone⁴, Margaret Nieto¹, Justine Vosloo¹, Sebastian Harenberg¹

¹Ithaca College, United States of America; ²University of Northern Colorado, United States of America; ³University of North Carolina at Greensboro, United States of America; ⁴Averett University, United States of America

A large body of evidence suggests that self-talk is an effective mental skill to enhance athletic performance (e.g., Hardy, 2006). Self-talk strategies are based on the notion that an individual's thoughts influence their actions (Hatzigeorgiadis et al., 2011). As such, positive automatic thoughts (e.g., instructional, motivational) may facilitate athletic performance by orienting athletes towards positive actions. An important limitation of the existing body of literature is that interventional studies testing the effectiveness of self-talk have been conducted under non-competitive conditions. Nonetheless, athletes are encouraged to use self-talk under competitive conditions (e.g., in games or events). Hence, the purpose of the present study was to examine whether self-talk enhances performance under non-competitive and competitive conditions. Twenty-five undergraduate students (Mean age = 19.60, SD = 1.12, female n = 16) were randomly assigned to an intervention or control group. The intervention group received two individual mental skills sessions focusing on instructional and motivational self-talk with a trained Masters student. Performance was assessed via reaction time, grip strength, and planking at three time points (baseline, non-competitive post-test, competitive post-test). Mixed-models ANOVAs revealed that the experimental group outperformed the control group under competitive but not under non-competitive conditions in planking ($F_{2,46} = 4.39, p < .05, \omega^2 = .02$). Similar non-significant trends were detected for reaction time. The findings indicate that self-talk may be particularly effective when applied under competitive conditions. Limitations and future research directions will be discussed.

The role of sports video games in developing sport-specific declarative knowledge

Todd Pickering^{1,2}, Lucy Parrington³, Lisa Wise², Clare MacMahon¹

¹La Trobe University, Australia; ²Swinburne University, Australia; ³Oregon Health and Science University, USA

Knowledge base is an important marker of development and learning in sport (Allard, Deakin, Parker, & Rodgers, 1993). While knowledge typically develops through physically playing a sport (McPherson & Thomas, 1989), the pervasiveness of sports video games provides an alternative experience through which athletes can learn. This study investigated whether sport-specific declarative knowledge learned through sports video game play was comparable to that learned through physical play. The declarative knowledge of three groups of participants with different experience in ice hockey was assessed. These groups were: a video gaming group (VG; n = 12), who completed five-hours of video game play (NHL14); a physical play group (P; n = 18), of novice learner participants competing in an amateur league; and a control group (C; n = 29), who completed no physical or video game play. A 19-question knowledge test assessed knowledge of rules, gameplay, and other aspects of the sport. Both the physical and video game groups scored significantly higher on this test (P: M = 90.30%; VG: M = 58.35%) than the control group (C: M = 36.70%), $F_{(2,56)} = 103.70, p < .001, \eta^2 = .80$; however, the physical group also scored significantly higher than the video game group. These results suggest that, while sport-specific knowledge base is best developed with physical play, video games can provide some learning at early stages of development. Therefore, sports video games can play a knowledge development role in initial skill acquisition efforts.

Implicit learning and visual reaction time in taekwondo athletes

Ezgi Aypar¹, Gökhan Deliceoğlu², Erkan Tortu³, Tuğba Kocahan³

¹Middle East Technical University, Ankara, Turkey; ²Kırıkkale University, Ankara, Turkey; ³Ministry of Youth and Sports, General Directorate of Sports, Directorate of Health Affairs Section, Ankara, Turkey

Implicit learning includes unconscious learning without rules and instructions (Vanbrugh, Scherder, Lange & Oosterlaan, 2016). The aim of this study is to discover the implicit learning and difference among three different visual reaction time tests; basic, choice and serial. 47 taekwondo athletes (Female=26) aged 12 to 14 (M=13.85, SD=0.60) were recruited from the national team. For visual reaction time, a device comprised of a fixed panel with 8 lamps was used. The study consisted of two phases: learning and main phases. At main phase, each athlete completed three different reaction time tests consisting of 30 touches on each: the basic, choice and serial reaction time with 6 blocks, each block consisting of repeating pre-defined positions of 5 touches (one block). All three reaction tests were found significantly different from each other ($p < .001$). Serial reaction time test (M=16.02; SD=1.76) was significantly less than both basic (M=19.13; SD=1.74) and choice reaction time tests (M=25.25; SD=2.35). In addition, the main effect was found for 6 blocks of serial reaction time test ($p < .001$). At the end of the study, two manipulation check questions were asked to the athletes; which test they found easy and why. 38 of the athletes found serial test as the easiest one. None of the 47 athletes could indicate the existing of pre-defined positions of 6 blocks of 5 touch. Significant difference among tests and decrement in reaction time of repeated blocks in serial test displayed implicit learning.

The parental involvement and parent autonomy support In youth sport: relationship with passion

Duygu Karadağ¹, F. Hülya Aşçı²

¹Haliç University, Turkey; ²Marmara University, Turkey

A total of 350 (Mage=14.90±1.80) athletes including 166 girls (Mage=14.43±2.12) and 184 boys (Mage=13.97±1.87) voluntarily participated in the study. "Personal Information Form", "Passion Scale", "Parental Involvement Scale" and "The Perceived Autonomy Support Scale (Parent form)" were administered to all participants. Hierarchical regression analysis, 2 x 3 (sex x most involved parent group-mother, father, both mother & father), MANOVA and ANOVA were used to analyze data. Two separate hierarchical regression analysis were performed at four steps, the control variables of gender, the perceived parent autonomy support, mother parental involvement, and father parental involvement were entered into model, respectively.

Regression analysis revealed that perceived parent autonomy support, perceived mother and father involvement were not significant predictors of harmonious and obsessive passion in youth athletes ($p > 0.05$). 2 x 3 MANOVA and ANOVA's results indicated that there were no significant differences in the perceived parent autonomy support, mother and father involvement in terms of sex and most involved parent ($p > .05$). On the other hand, analysis showed significant sex differences in harmonious passion favouring boys. Sex x Most Involved Parent Interaction was only significant for the perceived father involvement in which girls whose father most involved in sport had higher scores on praise and understanding subscale than other groups.

In conclusion parent has no significant influence on the development of passion toward sport in youth athletes.

Effects of attachment styles on perceived team cohesion: a perspective from social network analyses (SNA)

Helga Dizdaji, Roland Seiler

University of Bern, Switzerland

Several meta-analyses have consistently revealed the positive relationship that exists between team cohesion and team performance (Carron et al., 1998; Evans & Dion, 2012). Apart from the traditional ways of measuring team cohesion such as self-report questionnaires, SNA has emerged as an alternative tool in capturing team cohesion (Anderson & Warner, 2012). Among the factors affecting team cohesion, players' personality is thought to play a key role in the process. In the last years, attachment theories, considered as 'ground theories' in personality research, have been used with the aim of better understanding group dynamics and processes (Smith et al., 1999). The aim of this study was to gain more insight regarding team cohesion from the perspective of players' attachment style through the methodology of SNA. We examined associations between players' attachment style, perceived team cohesion and network measures of centrality, reciprocity and multiplexity. The study was conducted with nine teams from interactive sports (N = 177), where players were asked to complete a multiple-sectional questionnaire containing measures of attachment (ASQ; Hexel, 2004), cohesion (MAK0-02; Lau & Stoll, 2002) and had to answer specific questions regarding their relationship with other team members. Data showed that securely attached players perceived the team to be more cohesive than their insecure teammates. Furthermore, it was noted that they held more positions that are central, were assigned more task and social roles and were highly reciprocated in their relationships in comparison to the insecure players.

Invited Symposium 04: Various pathways, one destination - young specialists' journeys toward becoming sport psychology professionals in Europe

Time: Thursday, 18/Jul/2019: 2:00pm - 3:30pm · Location: Aula im Schloss - Europe

Session Chair: Michala Bednáriková, Pro Performance

Invited: Various pathways, one destination - young specialists' journeys toward becoming sport psychology professionals in Europe

Chair(s): **Michala Bednáriková** (Pro Performance, private practice)

Discussant(s): **Xavier Sanchez** (Halmstad University)

Elite athletes and coaches almost always have support teams behind them (e.g. nutritionists, physiologists, psychologists) to help them achieve their goals. Many sport psychology practitioners also have support networks to assist in their development and growth as professionals. Collaboration and cooperation among peers, within supervision dyads and at conferences are what we do as part of our professional lives. Cooperation and peer support are not only desirable, they are necessary, and the importance of networking is indisputable. The European Network of Young Specialists in Sport Psychology (ENYSSP) is an international non-profit organisation concerned with the promotion and dissemination of knowledge in the field of sport and exercise psychology (SEP) in the areas of research, education and applied work (ENYSSP, 2018). Presenters of this symposium are ENYSSP members who have served in ENYSSP's managing council for at least four years, come from six countries, and were educated in ten countries. In this presentation, we will share our personal stories: journeys of SEP career development within the fields of education, applied work and research. The first presenter will tell the story of establishing a career in academia after completing a PhD. During the second presentation, applied practitioners will share what it takes to establish a business in SEP. Finally, applied practitioners will share their stories of coming back to school and pursuing their doctoral research. All our stories, although following various pathways, are connected to ENYSSP, and we will share with you how this network is helping us to grow.

Presentations of the Symposium

'So I got my degree, now what?': Through PhD to career in academia via ENYSSP

Anastasiya Khomutova

University of Brighton

There are generally three areas in the field of sport psychology a practitioner can focus on: teaching, applied practice and research. Not coincidentally, these are the exact three departments of ENYSSP. Each of them aims to help novice practitioners to develop their skills in a particular area. From my colleagues' and my own experience, it became obvious that doing a PhD does not really prepare you for the world of academia, in particular, it does not provide you with the skills necessary to become a good teacher (Channon, Matthews, Khomutova, 2018). Having been through the experience of constant self-reflection (Schön, 1983) and peer communication within ENYSSP network, it became apparent that this lack of knowledge of how to teach others is a common concern among novice academics and practitioners, who also need the skill of teaching (e.g. for the organisation of applied workshops). In this presentation, I will discuss my journey from being a doctoral student to becoming a full-time lecturer in the frame of ENYSSP membership. This journey started in Ukraine, continued in the Czech Republic, and is currently on-going in the UK: a journey that would have been much more difficult without the support of ENYSSP and its members. The aim of this presentation is to discuss the common obstacles that novice academics might face, and share the best experience in dealing with such challenges.

Carving a pathway into full-time applied practice of sport psychology

Grzegorz Więcław¹, Snežana Stoljarova²

¹Głowa Rządu, private practice, ²ESTipp, private practice; Tallinn University

Stories of renown people in the field of sport psychology show that there are different routes to becoming a practicing professional. The educational origins of one's practice can range from physical education, sport science, through general psychology and all the way to psychiatry (cf. McCarthy & Jones, 2013). As much as the field of sport psychology still seems attractive for hundreds of students with different backgrounds, the pathway into applied practice after graduation remains vague and the job market volatile. According to our own experiences and stories of others, there are little opportunities available for internships, let alone jobs for students and fresh graduates. If one does not want to choose a somewhat more regulated career path in academia, many sport and exercise psychology (SEP) graduates are challenged to work full-time applied or drop out of this field altogether. Moreover, given the developmental phase of the field in many countries, the ones who keep striving often find themselves lacking mentorship and go pioneering on their own. In this presentation, we will share our stories of building a SEP consultancy from scratch in Poland and Estonia into a position where we can call ourselves full-time consultants. We will speak about our fresh experiences, challenges and roadblocks, as well as the role ENYSSP played in our making.

How the power of practice produces potent PhDs

Peter Schneider¹, Michala Bednáriková², Cristiana Conti³

¹FC Augsburg, ²Pro Performance, private practice, ³BIND-Behavioral Imaging and Neural Dynamics Center, Department of Medicine and Aging Sciences, "G. d'Annunzio" University of Chieti-Pescara

Just as life inspires art, so can the daily grind of applied sport psychology inspire practitioners. This inspiration comes in many forms: a strange relationship between teammates and coaches, a pattern of choking not yet experienced by the psychologist or the athlete, or perhaps an unexpected win streak. In our daily work, we are constantly bombarded with new tasks and new questions. For many of these issues we have at least some explanation, for a few, we must look back into our books and notes, and for some others there seems to be no scientific grounding for why athletes, coaches, parents, or sport psychologists behave the way they do. At ENYSSP, we take these questions to our more research-focused partners, looking for answers. Through these conversations, we were inspired to head back to the university and put our dent into the unknown knowledge of sport psychology research. Due to our background as practitioners, we bring a critical and meticulous eye to our research partners, consistently asking the question "so what?" Our motivation is different. We are not at the university to publish papers, to advance in academia, but rather to focus on how knowledge gained from our research will help the athletes, coaches, and fellow young sport psychologists after the conclusion of our potent PhDs. We will share with you what challenges arose from doing PhD while working applied, and how we use our networks to find creative solutions and handle them.

Panel 02: Signature experiences: when “experts” on stress and coping battle burnout

Time: Thursday, 18/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 219 - Brussels
Session Chair: Stilian "Ani" Chroni, Inland Norway University of Applied Science

Signature experiences: when “experts” on stress and coping battle burnout

Stiliani Chroni¹, Vana Hutter², Tatiana Ryba³, Göran Kenttä⁴

¹Inland Norway University of Applied Sciences, Norway; ²Vrije Universiteit, Netherlands; ³University of Jyväskylä, Finland; ⁴The Swedish School of Sport and Health Sciences, Sweden

In this panel three sport psychology professionals (experienced in academia and applied settings) will share their lived experiences with burnout; what brought it on, how they worked their way through and out, what they learned, and life after it. Moreover, an authentic case story about burnout and withdrawal from an elite coach will be integrated into the panel. The objective is to discuss a difficult and sensitive topic in an open and safe-for-all way that of a mental health challenge, experienced by so called experts in the field. We teach about burn-out, we research it, we work to prevent it in others and to aid individuals to overcome it and return to the field of play. And now we've lived it. Sport psychology experts and sports coaches are commonly viewed as experts on the subject matter of dealing with stressors and pressures effectively and timely, and capitalizing on their work. Nonetheless, research shows that being a human also means being vulnerable to mental health (Moesch et al., 2018; Schinke et al., 2018). In fact, specialized knowledge, skills, and competences may create a false illusion of being completely resilient to any mental health challenges. The panel discussion will start with a brief introduction on burnout from a research standpoint (Schaufeli et al., 2009; Gustafsson et al., 2011), continue with the storying of the lived experiences, and will close with a discussion contribution that aims to bring together lessons we can learn about burnout as well as from openly talking about it.

Paper Session 31: Burnout and Resilience

Time: Thursday, 18/Jul/2019: 2:00pm - 3:30pm · Location: Senatssaal - Prague

Session Chair: Daniel Gould, Michigan State University

2:00pm - 2:15pm

Raising teachers' awareness for health through recovery-stress-monitoring

Jahan Heidari¹, Michael Kellmann^{1,2}

¹Unit of Sport Psychology, Ruhr University Bochum, Germany; ²School of Human Movement and Nutrition Sciences, The University of Queensland, Australia

Increased stress and insufficient recovery facilitate detrimental health developments in teachers (Volman, Bakker, & Xanthopoulou, 2013). Providing individual feedback about these developments may help to improve teachers' awareness of their health. This study aimed to collect data on coping strategies, stress, and recovery development of teachers and use the information to provide individualized feedback to participating teachers.

N = 37 German secondary teachers completed questionnaire packages online on eight measurement points (T1-T8) during a school term with a specific focus on pre-post assessments of the Easter and Summer break. Sociodemographic and psychometric data were gathered using the Recovery-Stress-Questionnaire Work (RESTQ-92; T1-T8) and the Stress Coping Questionnaire (SCQ; T1).

Repeated measures ANOVAs indicated significant differences for overall stress ($F(7,119) = 5.31, p < .001, \eta^2 = .24$) and overall recovery ($F(3,7,67.7) = 4.33, p < .01, \eta^2 = .20$). Overall Stress significantly decreased, while overall recovery significantly improved (T6-T7, Summer Break). These improvements did not transfer to the follow-up measurement (T8) since the values of overall stress and overall recovery returned to the baseline level.

The results of this study indicate that holiday periods contribute to the re-establishment of personal resources. However, these developments are only short-term which warrants for strategies to provide long-term solutions to stabilize teacher health. This study could serve as a foundation to implement health monitoring in teachers and other professions. Based on that data collection, health-related feedback could be provided aiming to sensitize teachers for their health status and to design subsequent interventions.

2:15pm - 2:30pm

Estimating the prevalence of athlete burnout based on clinical cut-off scores

Erik Lundkvist¹, Henrik Gustafsson², Daniel J. Madigan³

¹Swedish school of sport and health sciences, Sweden; ²Karlstad University, Sweden; ³York St John University, United Kingdom

Burnout is a psychosocial construct that has been extensively studied in athletes. Burnout is a significant threat to an athlete's mental health and increases the risk of dropout from sport (Gustafsson, Madigan, & Lundkvist, 2017). However, little is known about the prevalence of clinical-levels of burnout in athletes. This study, therefore, aimed to estimate the prevalence of athlete burnout based on clinical cut-off scores taken from the Shirom Melamed Burnout Questionnaire (SMBQ). To do so, cut-off scores were converted from the SMBQ to the Athlete Burnout Questionnaire (ABQ). This provided a cut-off score of 3.14. Data were derived from one cross-sectional sample (N = 1,931) and one 10-week longitudinal sample (N = 186; 10 waves) of athletes. Analyses focused on the physical and emotional exhaustion subscale of the ABQ. In the longitudinal sample, the stability of the cut-offs was examined (i.e. those athletes scoring over 3.14 for over 50% of the time-points, versus those who never scored above 3.14). For the cross-sectional sample, 13% of athletes scored above the clinical cut-off score. For the longitudinal sample, 7.1% of athletes scored above the cut-off on over 50% of occasions, while 77.6% of athletes never scored above the cut-off score on any occasion. The present findings suggest that the estimated prevalence of athlete burnout differs when cross-sectional data are analysed than when longitudinal data are utilised. The findings reiterate that a significant proportion of athletes are at risk of burnout and that prevalence seems to be similar compared to student- and working populations.

2:30pm - 2:45pm

Resilience at work and in elite sport – a comparative analysis among German elite athletes, dual students and employees

Carl Richard Hossiep, Daniel Westmattmann, Maïke Bruckes, Nicola Rössler, Gerhard Schewe

University of Muenster, Germany

In today's increasingly fast-paced and stressful working world resilience, or the ability to effectively deal with stress and bounce back from adversity, has become an essential skill, which has attracted growing interest in organizational and applied settings including personnel selection and sport. Based on the grounded theory of psychological resilience and optimal sport performance by Fletcher and Sarkar (2012), the aim of this study is to (1) examine the relationship between resilience and personality traits, (2) compare the resilience level of elite athletes and employees, and (3) investigate the relationship between resilience and sporting success.

Using a structured online questionnaire, we collected a sample of N = 689 participants, with n = 250 elite athletes, n = 107 dual students and n = 332 employees. To measure psychological resilience the Connor-Davidson Resilience Scale (CD-RISC10, 2003) was used.

First, using confirmatory factor analysis, we found a strong relationship between resilience and the two personality facets self-confidence (Neuroticism) and optimism (Extraversion). Second, the ANOVA showed that elite athletes have a significantly higher level of resilience than employees and dual students. Finally, in our sample resilience – unlike assumed by Fletcher and Sarkar (2012) – was not an adequate predictor of sporting success. Overall, the results implicate that elite athletes embody a huge potential for the workforce and thus should be given increased attention in recruiting.

2:45pm - 3:00pm

Process evaluation of the receipt of an exercise intervention for burnout employees: the role of exposure and exercise experiences

Juriena de Vries^{1,2}, Madelon van Hooff², Sabine Geurts², Michiel Kompier²

¹Erasmus University Rotterdam, Netherlands, The; ²Radboud University Nijmegen, Netherlands, The

The purpose of this study was to conduct a process evaluation of an exercise intervention aimed at decreasing burnout symptoms among employees. We examined how process factors were related to the development of various indicators of health and well-being (H&W) during the course of the intervention. Specifically, we investigated (a) whether actual exposure to the exercise sessions was related to differences in employees' H&W trajectories, (b) the amount of exposure to the exercise intervention that is minimally required before H&W effects become visible, and (c) whether exercise experiences (pleasure, psychological detachment, and effort) were related to differences in H&W trajectories. Employees experiencing burnout symptoms were randomly allocated to a 6-week exercise intervention (n = 49) or waitlist (n = 47). All participants were measured before, 5 times during, and at the end of the intervention period. Latent growth curve modelling showed that exercisers with high exposure showed increasing H&W over time compared to exercisers with low exposure. As regards minimal exposure, it was found that favourable H&W effects became visible after 3 to 4 intervention weeks. With regard to exercise experiences, results showed that high pleasure, high psychological detachment, and low effort during exercise were related to favourable H&W trajectories. We conclude that optimal effects of exercise on H&W among burnout employees occur when – during exercise – pleasure and psychological detachment are high, and effort is low. We also conclude that the minimum duration of an exercise intervention for burnout employees is four weeks.

3:00pm - 3:15pm

Why are athletes burning out? A meta-analytic review of 18 years of research

Daniel J. Madigan¹, Luke F. Olsson¹, Thomas Curran², Andrew P. Hill¹

¹York St John University, UK; ²University of Bath, UK

Athlete burnout is an extreme form of sport disaffection. It is comprised of three symptoms, namely a reduced sense of accomplishment, sports devaluation, and physical and emotional exhaustion (Raedeke & Smith, 2001). Not only is athlete burnout associated with worse performance, but it also leads to diminished physical and psychological well-being and can ultimately result in dropout from sport. The last review of research examining athlete burnout was conducted over ten years ago (Goodger et al., 2007). In addition, as yet, no study has meta-analysed the relationships between athlete burnout and factors associated with increased or decreased risk of development of its symptoms. Consequently, the purpose of the present study was to do just this and, in doing so, also identify possible moderating factors. A literature search returned 145 studies including over 25,000 athletes. Random-effects meta-analyses identified numerous motivational (e.g. achievement goals), personal (e.g. perfectionism), social (e.g. social support), and organisational (e.g. organisational stressors) factors that were associated with athlete burnout. Several moderators of these associations were also found (e.g. age, gender, and type of sport). This meta-analytical review provides a touchstone for researchers and practitioners who seek to better understand the development of athlete burnout and a means of developing empirically supported interventions.

3:15pm - 3:30pm

A longitudinal examination of stress, physical activity, and resilience resources via naturalistic periods of stress

Robin Lines¹, Kagan Ducker¹, Nikos Ntoumanis¹, Thogersen-Ntoumani Cecilie¹, Fletcher David², Gucciardi Daniel¹

¹Curtin University, Australia; ²Loughborough University

Stress is an important consideration for understanding why individuals take part in limited or no physical activity (PA). A systematic review of 168 studies examining the association between stress and PA found a majority identified a negative association between stress and PA (Stults-Kolehmainen & Sinha, 2014). However, the effects of stress on PA does not hold for everyone, so examinations of possible moderators that protect individuals from the harmful effects of stress are required. This notion is consistent with the concept of resilience in which an individual's available resources are said to buffer the deleterious effects of stress on functioning (Luthar et al., 2000; Masten, 2011). We used a longitudinal measurement-burst design to examine stress, PA, and resilience resources among a sample of N = 52 university students. Three six-day bursts were separated by an eight-week gap to capture naturalistically different periods of stress before, during, and after an examination period. At the beginning of each burst, students self-reported subjective levels resilience and provided a hair sample to capture a marker of chronic stress (i.e. cortisol). During each burst, participants wore an accelerometer and completed a daily diary assessment of perceived stress. In this presentation, we will provide an overview of the results, focusing on the multilevel (i.e. days nested within bursts nested within individuals) and dynamic nature of the associations among self-reported and biological markers of stress, device-based PA, and self-reported resilience resources, and the implications of the findings for theory and practice.

Paper Session 32: Disability, Functional Disorders and Aging

Time: Thursday, 18/Jul/2019: 2:00pm - 3:30pm · Location: S 8 - Copenhagen

Session Chair: Brett Smith, University of Birmingham

2:00pm - 2:15pm

Disability activism through Paralympic sport: an elite athlete perspective

Damian Haslett, Inhyang Choi, Brett Smith

University of Birmingham, UK

There has been a recent growth of research on sport and social justice issues, such as a focus on athlete activism (Schinke et al., 2018). However, studies have predominantly focused on how non-disabled athletes use their sporting platforms to draw attention to social issues such as race or gender. In contrast, little focus has been given how disabled athletes use their platforms to address disability issues in sport or society (e.g., Smith et al., 2016). Therefore, the purpose of this study is to understand disability activism through Paralympic sport contexts. Theoretically, this study is underpinned within the 'activist' theoretical field of critical disability studies (e.g. research that can help to challenge the socio-political and psycho-emotional exclusion of people with impairments) (Goodley, 2016). Data were collected using a qualitative methodology (one-to-one interviews and observations of social media accounts). 28 Irish elite-level Para athletes were recruited using purposive sampling strategies. The data set was rigorously analysed using thematic analysis. The analysis produced three resulting themes: activist identity; activist orientation; activist expression. Within these themes, links are made to psycho-emotional disability, types of advocacy, disability identity and intersectionality. The central theoretical contribution is explaining Para athlete activism in terms of a contextually informed continuum of change, flux, and degrees of identity performance. Practical offerings are discussed in relation to sport psychologization, (un-)troubling identity politics, social legacy value and valorising difference. This study contributes an evidence base for para-sport cultures to think differently about the value of disability activism.

2:15pm - 2:30pm

Exploring activism type in social justice and disability: current status and future prospects of the disability social movement

Inhyang Choi, Brett Smith

University of Birmingham, United Kingdom

The disability movement developed from an initial stage with an emphasis on empowering discriminated people towards an emphasis on enabling human rights. Accordingly, throughout history, disabled people have participated in various forms of activism, including sports. Since the establishment of the Paralympic games, disability sport has become a potentially useful platform to raise public awareness on the disability right movement. That is because elite disabled athletes are given much attention in various public spaces (e.g. the media) in comparison to other disabled people. The current study aimed to expand the literature on disabled athlete activism by categorizing the forms of activism that disabled people engage in and identifying commonalities and differences across three sports status levels (elite athletes, recreational athletes, and non-athletes). Participants were $n = 11$ elite and $n = 9$ recreational disabled athletes from various sports backgrounds as well as $n = 6$ non-athletes in South Korea. Data was collected through semi-structured life-story interviews and analysed using narrative analysis with regards to style and type of activism, consequences of activism, and comparison of activism among the three different sports status levels. The results were categorised into 'social activism' (e.g. motivational speech), 'scholar activism' (e.g. research), 'political activism' (e.g. candlelight protest), 'sport-based activism' (e.g. athletes), and 'online activism' (e.g. blog). Compared to non-athlete activism, which focused mainly on political activism, athlete activism focused mainly on social, scholar, and sport-based activism. These findings provide key insights into the current status of the sport-disability activism movement and highlight possible directions of its near-future development.

2:30pm - 2:45pm

Personality as a predictor of leisure time physical activity during menopausal transition

Tiia Kekäläinen¹, Sarianna Sipilä¹, Timo Törmäkangas¹, Matti Hyvärinen¹, Tuija Tammelin², Vuokko Kovanen¹, Eija K. Laakkonen¹, Katja Kokko¹

¹Faculty of Sport and Health Sciences, University of Jyväskylä, Finland; ²LIKES Research Centre for Physical Activity and Health, Jyväskylä, Finland

Of personality traits, higher levels of extraversion and lower levels of neuroticism have been related to a physically active lifestyle in previous studies. In women, leisure-time physical activity (LTPA) may attenuate the menopause-related decline in physical performance. The association of personality traits with LTPA during menopausal transition has not been studied before, hence the focus of this study. This study used longitudinal data collected in the Estrogenic Regulation of Muscle Apoptosis (ERMA)-study. Perimenopausal women who reached the postmenopausal stage during the follow-up were included in the analyses ($N = 234$). The average follow-up time was 14.9 months ($SD = 8.8$). LTPA was measured at baseline and follow-up by both self-reports (MET-values per week calculated from reported frequency, duration and intensity of LTPA) and using hip-worn accelerometers for seven consecutive days allowing for the assessment of leisure-time spent sedentary or doing light and moderate-to-vigorous activities (min/week). Extraversion and neuroticism were measured by the Eysenck Personality Inventory at baseline. The preliminary results showed that on average, self-reported LTPA decreased during the menopausal transition. No changes were found in accelerometer-measured LTPA. Extraversion was positively and neuroticism negatively associated with self-reported LTPA at baseline, whereas no associations with the level of accelerometer-measured LTPA were found. Women with high scores in neuroticism at baseline were more likely to increase their accelerometer-measured moderate-to-vigorous LTPA during the menopausal transition. It seems that neuroticism may predict LTPA-change during the menopausal transition. Future studies should take into account that personality traits may be differently related to self-reported and accelerometer-measured LTPA.

2:45pm - 3:00pm

Mindfulness (MSPE) adaptations for university students with autism spectrum disorder participating in a physical activity program

Jacob Cannon Jensen

California State University, Northridge, United States of America

This study consisted of a 6-week Mindfulness Sport Performance Enhancement (MSPE) program conducted with a group of 10 university students diagnosed with Autism Spectrum Disorder (ASD) who were participating in a weekly physical activity and workout program. Using a modification of the MSPE program (Kaufman, Glass, & Pineau, 2017), the researcher led students through six mindfulness sessions at the beginning of their weekly workout session. ASD is one of the most common neurodevelopmental disorders, and the purpose of this program was to assess both the openness to and effectiveness of incorporating mindfulness interventions within this particular population (McPartland, Reichow, & Volkmar, 2012). The N = 10 students diagnosed with ASD, as well as their peer mentors, participated in the program. At the start of the program, the researcher led a separate focus group for the ASD students and their peer mentors, assessing their knowledge about mindfulness, openness to learning about mindfulness, and overall impressions of mindfulness. The researcher conducted weekly mindfulness sessions based on the MSPE program, including breathing exercises, sitting and walking meditation, body scans, relaxation techniques, and yoga. A focus group was then conducted at the end of the program with both participants and peer-mentors, as well as a post-program questionnaire with participants providing feedback on preferences for the different mindfulness exercises. The overall response was very positive and suggests that mindfulness interventions can be effective for those with ASD in reducing anxiety, managing stress, being more present, and can be effectively incorporated into physical activity programs.

3:00pm - 3:15pm

The effect of life meaning on subjective well-being of the elderly: mediating effect of physical exercise

Guoli Zhang, Yang Yang, Qi Zhang

Beijing Sport University, Beijing, China

Objective: The present study aims to explore the relationship between the meaning of life and subjective well-being of the elderly, and to further verify the mediating role of physical exercise of the meaning of life and subjective well-being of the elderly.

Methods: By using Chinese Life Meaning Scale, University of Newfoundland Scale of Happiness and Exercise Habits Questionnaire, N = 352 elderly people were investigated in Yueyang, Hunan Province. SPSS 18.0 software was used for statistical analysis.

Results: The higher the meaning of life of the elderly, the more physical exercise they engaged in ($F = 41.42, p < .01$), and the higher the level of subjective well-being experience ($F = 42.02, p < .01$). Moreover, the level of physical exercise has a partially mediating effect of the meaning of life on the subjective well-being of the elderly, and the mediating effect value is 0.14, accounting for 42.42% of the total effect.

Conclusion: The perceived level of meaning of life in the elderly predicts the subjective well-being both directly and through the mediating role of physical exercise.

Paper Session 33: Teamsports (Varia)

Time: Thursday, 18/Jul/2019: 2:00pm - 3:30pm · Location: S 9 - Cologne

Session Chair: Frank Jing-Hong Lu, Chinese Culture University

2:00pm - 2:15pm

Using situational characteristics to distinguish sports

Sophia Terwiel¹, John F. Rauthmann², Maike Luhmann¹

¹Ruhr-Universität Bochum, Germany; ²Universität zu Lübeck, Germany

Sports are typically distinguished in team versus individual sports or ball games versus cue sports. However, these broad distinctions have only limited utility for psychological research on sports and physical activity because they neglect psychologically relevant characteristics. As sports encompass highly standardized situations following a clear set of rules, this preregistered study aimed at distinguishing sports based on the eight DIAMONDS situational characteristics: Duty, Intellect, Adversity, Mating, Positivity, Negativity, Deception, and Sociality.

In a cross-sectional online survey, using the 24-item version of the S8*-questionnaire measuring the DIAMONDS (Rauthmann et al., 2014), 138 types of sports were rated by N = 7,835 athletes on the eight DIAMONDS dimensions. Descriptive and cluster analyses were performed, and situational characteristics profiles were computed.

The sport-specific profiles describe differences and similarities among and between sports in a face-valid way. Cluster analyses identified groups of sports partly resembling those of other sport categorisation but differing in ways that add relevant information about the situational characteristics of sports. Describing sports with respect to their situational characteristics presents a promising novel approach towards understanding similarities and differences among sports more precisely and providing a more psychologically meaningful categorisation of sports.

2:15pm - 2:30pm

Using grounded theory to explore sport-related concussion under-reporting by elite adolescent athletes

Kaleigh Ferdinand Pennock, Lynda Mainwaring

Faculty of Kinesiology and Physical Education, University of Toronto, Canada

In order to assess and treat sport-related concussions (SRCs) effectively, athletes need to promptly report symptoms. Disclosure is particularly urgent for adolescent athletes, who may have an increased risk of sustaining SRCs and protracted recovery compared to adults (Institute of Medicine, 2013). However, considerable evidence indicates adolescent athletes regularly fail to report SRC symptoms (Chrisman, Quitiquit & Rivara, 2013; Williamson & Goodman, 2006), and results of educational programs for improving SRC reporting behaviours are largely equivocal (Kerr et al., 2014). Consequently, a greater emphasis on the examination of social and cultural influences on reporting, and the engagement in more athlete-centred qualitative research addresses a significant gap within concussion literature. Therefore, the purpose of the research was to understand why adolescent athletes under-report concussions; particular consideration was given to the athlete experience and the psychosocial and social normative influences in the sporting environment. Eighteen elite adolescent athletes between 16-18 years old participated in an iterative, intensive interviewing process, representing a range of sports, ethnicities, and years of playing experience. Athletes were invited to discuss their knowledge of SRCs, attitudes and beliefs towards reporting, and the perceived team culture regarding concussions. Using constructivist grounded theory methodology (Charmaz, 2014) to co-construct the meaning of SRC under-reporting, findings indicate athletes contextualise under-reporting through frameworks of risk/reward, social networks, and perceptions of the current and future athletic self. Findings will be discussed in relation to the creation and implementation of SRC educational materials, and interventions for athletes, coaches and key stakeholders.

2:30pm - 2:45pm

Are repetitive head impacts putting athletes at risk? Reviewing the 'subconcussion' literature and implications for athletes

Lynda Mainwaring, Kaleigh Ferdinand Pennock, Sandhya Mylabathula, Ben Alavie

Faculty of Kinesiology and Physical Education, University of Toronto, Canada

Repetitive head impacts (RHIs) that do not result in concussions are often classified as 'subconcussion' and are of increasing concern to sports scientists and the athletic community. Although the term is widely used, it is not well understood and requires further investigation. The purpose of this study was to systematically review the literature and address two objectives: 1) To determine how 'subconcussion' is characterized in the current literature and 2) to evaluate the evidence on subconcussive impacts in athletic populations. Six electronic bibliographic databases were searched for eligible articles, including Medline, PsycINFO and Embase. Studies were reviewed at the title/abstract level, followed by independent full-text screening. A total of 1966 articles were screened; 56 met inclusion criteria and were assessed for quality and rigour.

Studies were classified into three main categories based on primary focus: neurobiological, neuropsychological, and impact exposure metrics. The neurobiological studies suggested that in male athletes, functional and microstructural deterioration was associated with repetitive head impacts. There was insufficient to weak evidence for the relationship between RHIs and deterioration in neurocognitive performance as assessed by standardized neuropsychological tests. Further, insufficient evidence was presented to determine a minimal injury threshold for RHIs for all athletes, and female athletes in particular. Across all categories of studies, there was a lack of consistency and clarity in defining and measuring variables related to the concept of 'subconcussion'. Findings and recommendations will be discussed with relevance to continued sport participation for athletes and the implications for short- and long-term health outcomes.

2:45pm - 3:00pm

Passion of soccer players in relation to level of courage, individual and performance variables**Erkut Konter**

Dokuz Eylül University, Sport Science Faculty, Turkey

The exact nature of the relationship between passion and courage in soccer performance are still uncovered. Therefore, purpose of this study was to research passion (including harmonious passion and obsessive passion) of male soccer players in relation to level of courage (comprising 5 factors; mastery, determination, assertiveness, venturesome and sacrificial behavior), individual (age, body mass index, years of experience, formal education, and playing position) and performance (a number of national team representation, performance response in adverse decisions, performance response against weaker and stronger opponents, and level of soccer) variables. Data were collected from 278 male soccer players aged 13 to 38 ($M=17.42 \pm 4.36$; 233 amateur, 43 professional and 2 unstated). Soccer players administered the validated Sport Courage Scale (Konter and Johan, 2012) and Turkish adapted version of the Passion Scale (Keleşek and Aşçı, 2013) with the personal information form. Collected data was analyzed by Spearman correlations, various non-parametric tests including Kruskal-Wallis and Mann-Whitney U Tests. Analyses revealed a number of significant ($p < .05$) differences between Passion Scale scores of soccer players and level of Courage (low and high), and their various individual and performance variables indicated above. In general, soccer players with high points of soccer courage have significantly higher points of harmonious passion and obsessive passion (except mastery). Courage and Passion of soccer players seem to have an important role for indicated individual and performance variables. More research is needed to have more conclusive results.

3:00pm - 3:15pm

Comparison of effect of elastic therapeutic tape with nonelastic tape on preventions hamstrings injuries in soccer players**Ahmed Fadhil Farhan^{1,2}, Sameera Abdulrasool Alattabi³**¹College of physical Education and Sport Sciences, AL-Ayen University, Al-Nasiriya-64001, Thi-Qar, Iraq; ²Department of Physiotherapy, Faculty of Health Sciences, Universiti Teknologi MARA, 42300 Puncak Alam Campus, Selangor, Malaysia.;³College of physical Education and Sport Sciences, Baghdad University, Baghdad -10001, Iraq

Background: The rates of soccer injuries are among the highest in sports, as well as injuries are also one of the major reasons for players to drop out, particularly among soccer players.

Objective: The aim of this study was to investigate the effectiveness of elastic therapeutic tape (ETT) in hamstrings injuries.

Methodology: N = 25 male soccer players (mean age = 19 years, SD = 4.16; stature = 1.87m, SD = 0.47) from Al-Nasiriya club divided randomly into (n = 13) experimental (EXP) or (n = 12) control (CON) groups. The ETT was applied once and maintained for three consecutive days on EXP group, while the nonelastic tape was applied once and maintained for three consecutive days on CON group. Players performed three physical performance tests (vertical jumping heights, figure-of-8 hop test and 50m sprint). The (one-way) ANOVA test with repeated measures with a level of significance set at $p < .05$.

Results: There was a significant between-group difference at each time point after application ($p < .001$), with fewer hamstrings injuries in the kinesiotopeing group. There was a statistically significant effect in strength for hamstrings muscles by improving physical performance in the ETT group ($p < .001$).

Conclusion: The ETT can easily be applied to improve physical performance and preventions hamstrings injuries among soccer players.

3:15pm - 3:30pm

War and peace: the effect of footballers' pitch behavior on spectators**Muhammet Cihat Ciftci¹, Fazilet Bektaş², Ayşe İrem Bulut²**¹Ankara Yıldırım Beyazıt University, Turkey; ²Ankara Yıldırım Beyazıt University, Department of Psychology, Turkey

The aim of this study is to investigate the effects of aggressive behaviour of football players on spectators' aggression level. N = 91 sport science students (mean age= 20.46 years, SD = 2.11, n =49 males n = 42 females) participated voluntarily for course credit. Three compilations of videos (aggressive, fair-play, neutral) consisting of diverse scenes from different football matches were used to trigger participants' emotions. Participants completed an aggression scale after videos were shown. Data were collected with the Buss-Perry Aggression Scale, consisting of 29 items and 4 subscales (Madran, 2012; Buss & Perry, 1992). The Cronbach Alpha score of BPAS was found 0.85 in the validity study. We found 0.88 for this study. This study was conducted with a between-subject design. Results show that, overall scores of the aggressive video group was lower but not significant in BPAS except verbal aggression subscale. In fact, a negative significant difference was found in verbal aggression between aggressive video and control group. Results indicated that the participants in the control group scored higher. There was no significant difference found between the fair-play video and the control group. Outcomes of the study show that the aggressive behaviour of players had no significant effect on spectators' level of aggression. This study shows the importance of the identity factors underlying the aggressive behaviour of spectators' from a different perspective.

Paper Session 34: Young Elite Athletes

Time: Thursday, 18/Jul/2019: 2:00pm - 3:30pm · Location: VSH 116 - Varna

Session Chair: Alan Lyle Smith, Michigan State University

2:00pm - 2:15pm

Types, sources, and debilitating factors of sport-confidence in elite early adolescent academy soccer players

Owen Thomas¹, Sam Nicholas Thrower², Andrew Lane¹, Jazmine Thomas¹

¹Cardiff Metropolitan University, Cardiff, United Kingdom.; ²University of Roehampton, London, United Kingdom.

Confidence has been recognized as a critical psychological characteristic influencing the development of elite sports performance, with a number of studies associating high levels of confidence with a range of desirable cognitive, affective, and behavioural responses (e.g. Hays, Thomas, Maynard, & Bawden, 2009). Whilst existing sport confidence research has acknowledged that demographic, personality and organisational factors influence the sources of sport-confidence used by collegiate, world-class, and masters athletes (e.g. Hays, Maynard, Thomas, & Bawden, 2007; Vealey, Hayashi, Garner-Holman, & Giacobbi, 1998; Wilson, Sullivan, Myers, & Feltz, 2004), the sport-confidence needs of junior athletes are yet to be fully explored. The aim of the current study, therefore, was to qualitatively examine sport-confidence in elite academy soccer players. Based on the notion of 'Confidence Profiling' (Hays, Thomas, Butt, & Maynard, 2010), pre-interview booklets followed by individual semi-structured interviews were used to identify the types, sources, and debilitating factors of sport-confidence in N = 28 early adolescent elite academy soccer players within the youth development phase of the Elite Player Performance Plan (The Premier League, 2011). An abductive approach to hierarchical content analysis identified three types of sport-confidence: Skill execution, physical factors, and psychological factors that were generated from five sources of sport-confidence: Accomplishments, social support, preparation, vicarious experience, and innate factors. Five confidence debilitating factors: Lack of social support, poor performances, poor preparation, pressure and expectations, and injury/illness were also identified. Applied implications and directions for future research will be discussed within the context of previous sport-confidence literature and adolescent player development.

2:15pm - 2:30pm

Development of perfectionism in sport: examining the role of actual and perceived parental perfectionism in athlete–parent dyads

Luke F. Olsson¹, Andrew P. Hill¹, Daniel J. Madigan¹, George Woodley²

¹York St John University, United Kingdom; ²University of Leeds, United Kingdom

Few studies have examined how perfectionism develops in athletes. However, research outside of sport, and initial research inside of sport, suggests that parents' perfectionism may be important. The present study built on existing research and had two aims. First, we tested the predictive ability of actual versus perceived parental perfectionism on athletes' perfectionism. Second, we tested whether athletes' perceptions of their parents' perfectionism mediated the relationship between their parents' actual perfectionism and the athletes' own perfectionism. A sample of N = 150 athlete–parent dyads completed measures of perfectionism (perfectionistic strivings and perfectionistic concerns). Athletes completed two measures, one of their own perfectionism and one of the perceptions of their parents' perfectionism. Parents completed one measure of their own perfectionism. Regression analyses showed that parents' actual perfectionism predicted athletes' own perfectionism. After controlling for parents' actual perfectionism, athletes' perceptions of their parents' perfectionism explained additional variance in athletes' own perfectionism. Mediation analyses revealed that athletes' perceptions of their parents' perfectionism mediated the relationship between their parents' actual perfectionism and the athletes' own perfectionism. The effects were evident for both perfectionistic strivings and perfectionistic concerns. The findings suggest that parents may play an important direct (perceptions of perfectionism) and indirect (actual perfectionism) role in the development of perfectionism in junior athletes.

2:30pm - 2:45pm

Profiles of psychological flexibility: an analysis of youth athletes' subjective experience of their well-being and performance

Stefan Holmström

University of Umeå, Sweden

There has been an increasing interest in applying the concepts of acceptance-, mindfulness-, and compassion-based intervention in sport psychology (Noetel et al., 2017). Studies have shown that athletes' level of psychological flexibility and self-compassion have shown to be important for athletes' performance and well-being (e.g. Baltzell, 2016; Gardner & Moore, 2012). For athletes with dual careers who are under pressure to develop both as athletes and students, it's of importance to evolve psychological factors that will shield the individual.

The purpose of this study was to explore how different profiles of psychological flexibility are related to fear of failure, burnout, general health and how satisfied the athletes are with their performance in their sport and academically. A total of N = 107 athletes in the age between 16 and 19 years old participated in the study. The athletes were enrolled at a Swedish sports academy, and they were competing on an elite level in both team and individual sports. K-means cluster analysis with a three-cluster solution was used.

The results show that the profile with high psychological flexibility had significantly lower levels of fear of failure, burnout, and higher levels of satisfaction of their performance in school than the other two clusters. There were no significant differences between the different clusters on general health (GHQ-12) and satisfaction of sports performance. These results are not in line with the results of earlier studies. The sample size is small, and therefore, caution is needed when interpreting the result.

2:45pm - 3:00pm

And if fear of success could be a question of lactatemia too? Links between psychology and physiology in combat sport competition

Elisabeth Rosnet^{1,2}, Philippe Dedieu^{1,2}, Maxime Bourdageau², Olivier Hanicotte², Eric Srecki², Michel Salessé², Jean-Pierre Philippon²

¹PSMS Laboratory EA 7507, University of Reims Champagne Ardenne, France; ²Fédération Française d'Escrime (FFE), Bagnolet, France

Fear of success is often required to explain dramatic issues of some competitive matches, especially when an athlete is leading and finally loses the match.

Fencing matches include offensive and defensive actions with repeated back and forth movements (Bottoms et al., 2011) before and during the final action leading to the hit. These movements are of high intensity and are mixed with low-intensity periods allowing for recovery. They also require adaptation to the opponent's activity.

The issue here is to explore the possible relationships between heart rate, lactatemia and psychological states during performance in a competitive context.

Methodology: N = 37 fencers (international level) aged between 18 and 20 years old participated in the study during six national competitions, one for each weapon and gender (foil, epee, sabre x male and female). Lactate was determined from 20 µl of capillary blood. Heart rate was registered all day long with a heart rate monitor. Psychological states include perceived stress, perceived activation, perceived fatigue, and perceived stake rated with 10cm visual analogic scales. Measures were done upon arrival on site, at the end of the warm-up, before and after each match during the pool phase, and before and after each match during the KO phase.

Results: Analyses are presented according to weapon, gender and opponent's level. They show significant relationships highlighting and reinforcing the processes explaining the efficiency of mental preparation. Some phenomenon like "fear of success" could also be seen as a consequence of a decrease of the capability to neutralize lactate.

3:00pm - 3:15pm

Educating and supporting parents in elite sports: an action research study

Noémie Lienhart, Virginie Nicaise, Emma Guillet-Descas

University of Lyon, University of Claude Bernard Lyon 1, France

Existing literature have demonstrated the complexities and challenges of being a sport parent (Harwood & Knight, 2015). The purpose of the present pilot study was to design, implement, and assess an evidence-based education program for parents in elite sports.

The experimental group consisted of n = 64 adolescent elite athletes (44 girls, 20 boys; mean age = 14.39 years) and n = 99 of their parents (53 mothers, 46 fathers, including 32 couples) who participated in the education program. The control group included 56 adolescent elite athletes (34 girls, 22 boys, mean age = 15.66 years), whose parents did not participate in the education program. The education program included two workshops and an illustrated guide. A mixed method approach was used to assess the program. Athletes completed questionnaires before the first workshop and three months after the second workshop. Parents of the experimental group answered social validation feedback forms at the end of each workshop and for the guide.

Results indicated that parents of the experimental group have had positive experiences. The majority of them reported that they intended to change their behaviours toward their child. In contrast, athletes of the experimental group did not perceive any significant changes in their parents' behaviours and motivational processes compared to athletes of the control group.

The results suggested that parental support could positively influence their experiences. However, they also showed the difficulties encountered in obtaining perceptible changes in the behaviours of their parents, who have been involved as parents of athletes for several years.

3:15pm - 3:30pm

Injury status influences how a performer is perceived and played in sport

Liis Uiga¹, Gregory Holt², Rich S. W. Masters¹

¹Faculty of Health, Sport and Human Performance, University of Waikato, New Zealand; ²School of Psychology, University of Waikato, New Zealand

The transitory status of sporting icons (e.g. David Beckham) has been shown to influence perceptions of their size (Masters, Poolton, & van der Kamp, 2010). Here, we examined whether injury status influences perceptions of performers' size or actions towards the performer. We investigated whether wearing bandages (indicative of injury), compared to not wearing bandages, caused people to perceive rugby players as shorter than they are when estimating their size relative to a goalpost (Study 1), and penalty takers to shoot closer to the goalkeeper when attempting to score a goal against them (Study 2). In Study 1, N = 65 young adults (M = 18.8 years ± 2.0) viewed images of rugby players who were wearing knee, arm, wrist or no bandages, and were required to make judgements of their height. The results revealed that rugby players were perceived as shorter when they were wearing bandages as to when they were not wearing bandages (t (64) = -2.03, p = .047). In Study 2, N = 40 football players were instructed to score a goal by shooting towards static images of a goalkeeper wearing knee, arm, wrist or no bandages. Preliminary results (n = 20 participants; M = 22.2 years ± 3.2) revealed a trend (p = .076), suggesting that penalty takers may shoot closer to the goalkeeper when the goalkeeper is wearing bandages than when not wearing bandages. These results indicate that a performer's injury status is a likely indicator of their potential action capabilities, which can modify perceptions of their size and influence actions towards them.

Paper Session 35: Violence, Substances and Gender (Varia)

Time: Thursday, 18/Jul/2019: 2:00pm - 3:30pm · Location: VSH 19 - Paris

Session Chair: Maria Kavussanu, University of Birmingham

2:00pm - 2:15pm

A scoping review on interpersonal violence towards young athletes

Sylvie Parent, Sophie-Émilie Poulin-Lapierre, Marie-Denise Lavoie, Élise Marsollier

Laval University, Canada

The purpose of this study was to conduct a scoping review to identify the empirical evidence regarding interpersonal violence towards young athletes (VTA) in the sporting context. This study was based on the methodological framework for scoping reviews of Arksey and O'Malley (2005). The search strategy used involved a combination of subject headings, keywords, related synonyms and Boolean operators. We focused on three main concepts: violence AND young athlete AND sport. This search strategy was performed in 14 electronic databases such as SPORTDiscus, PsycINFO, Academic search premier, Dissertations and theses-full text, PubMed and Web of Science. Reviewers independently performed an initial screening of all titles and published abstracts for inclusion criteria to determine if the full text was required. The search strategy identified 28 relevant studies, and researchers applied the following inclusion criteria: (a) original data published in peer-review literature including dissertations, (b) violence towards young athletes, and (c) English and French language. Reviewers independently assessed the content of the final references using the public health steps (Sleet, Hopkins, & Olson, 2003) and the checklist for the assessment of the methodological quality of scoping reviews – PRISMA-ScR (Tricco et al., 2018). Based on the interpretation of the data, we will discuss surveillance, consequences, risk factors, interventions and evaluation of interventions regarding VTA. Practical recommendations will be made in order to help public-decision makers and the sporting community to prevent VTA.

2:15pm - 2:30pm

Development and initial factor validation of the Violence Toward Athletes Questionnaire (VTAQ) in a sample of young athletes

Sylvie Parent¹, Kristine Fortier¹, Marie-Pier Vaillancourt-Morel², Geneviève Lessard¹, Claude Goulet¹, Guylaine Demers¹, Hélène Paradis¹, Mike Hartill³

¹Laval University, Canada; ²Université du Québec à Trois-Rivières; ³EdgeHill University

This study sought to develop and validate a questionnaire about violence experienced by children in sport. A convenience sample of N = 1,055 French-Canadian athletes between 14 and 17 years old was recruited to participate in an online study assessing their experiences of interpersonal violence in sport. The Violence Toward Athletes Questionnaire (VTAQ) includes three subscales: athlete version (VTAQ-A), coach version (VTAQ-C), and parent version (VTAQ-P). Exploratory structural equation modelling (ESEM) was used to identify latent factors underlying versions of the VTAQ. The VTAQ-Athlete includes nine items with three factors: psychological (4 items), physical (2 items) and sexual (3 items). The VTAQ-Coach includes 36 items with three factors: psychological/neglect (16 items), physical (9 items) and sexual (11 items). The VTAQ-Parent includes 25 items with two factors: psychological/neglect (17 items) and physical (8 items). The VTAQ provides initial validation of the first measure by questioning children directly about their experiences of interpersonal violence in sport.

2:30pm - 2:45pm

Analysis of progressive vs. selective gender-related developments in volleyball from a sport psychological view

Christina Plath

University of Vechta, Germany

The media visibility of sports is generally characterized by a male perspective (Horky & Nieland, 2014). The reporting often shows gender stereotypical connotations (Hartmann-Tews & Rulofs, 2016) as well as a marginalization of female athletes (Godoy-Pressland & Griggs, 2014). At first glance, volleyball in Germany is an exception in this respect (Landwehr, 2018) and is therefore used as a research object. Within the framework of the study, the media visibility, existing gender relations and gender-related staging within volleyball teams are analyzed. The results show that especially the live TV broadcasts show at least a balanced media representation of the female and male Bundesliga teams as well as the national teams (Plath, 2018). The officials cite a comprehensive professionalization as the reason for this progressive development (DVV, 2018). In contrast, women are extremely underrepresented in management, responsible and powerful positions or simply do not occur. Reasons for this include non-transparent recruiting, gender-specific promotion of young talents and traditional gender stereotypes (Sinning & Hofmann, 2017). These results reveal ambivalent developments which have received little attention so far within sport-psychology research. In view of the possible effects of non-compliant behaviour and the potential negative consequences for individual athletes, the emergence of subjective theories about gender-related behaviour in sports, and the devaluation of female performance, only a few relevant aspects are mentioned. The results refer to both progressive and selective developments. On the basis of these results, research desiderata and implications for sport psychological practice are derived.

2:45pm - 3:00pm

The impact of emotional abuse on retired athletes**Erin Willson, Gretchen Kerr, Ashley Stirling**

University of Toronto, Canada

Emotional abuse is a commonly experienced form of maltreatment in sport, with reports of up to 75% of athletes experiencing emotionally abusive coaching practices (Stafford, Alexander, & Fry, 2015). The frequency of this type of abuse is particularly high due to the cultural acceptance of many emotionally abusive behaviours in sport including screaming at athletes, comments that are threatening and belittling (Stirling, 2008). While the child abuse literature highlights significant negative long-term effects of emotional abuse, including decreased mental well-being (Kim & Cicchetti, 2010; Mulen et al., 1996), the long-term effects of these abusive behaviours on athletes have yet to be empirically explored. Therefore, the purpose of this study was to explore the impact of emotionally abusive coaching practices on athlete's post-retirement. Female National Team athletes, who had retired within the last 6 years from aesthetic sports, were interviewed using semi-structured methods. Data were coded and analysed thematically. Results indicated that athletes who experienced emotional abuse from their coaches were negatively impacted post-retirement, including mental health challenges that required professional psychological assistance, loss of pride in their sport accomplishments, desire to disassociate from their sport, and difficulty forming new relationships. Findings are interpreted to inform future education on positive coaching practices and strategies for safeguarding athletes' mental health.

3:00pm - 3:15pm

Cannabis use and physical activity among 94,752 adolescents aged 12-15 years from 25 low- and middle-income countries**Garcia L. Ashdown-Franks^{1,2}, Catherine M. Sabiston¹, Ai Koyanagi³, Brendon Stubbs^{1,2}**¹University of Toronto, Canada; ²King's College London, UK; ³Parc Sanitari Sant Joan de Déu, Barcelona, Spain

Marijuana legalisation and use are becoming more widespread worldwide, however, little is known about marijuana's associations with health behaviours, and the nature of the relationship between marijuana and physical activity (PA) remains controversial. The extent to which marijuana use is associated with PA in adolescents has yet to be explored in low- and middle-income countries (LMICs). As such, this study examined the association between PA and cannabis use among adolescents in LMICs using data from the publicly available 2010-2016 Global School-based Student Health Survey. A multivariable multinomial logistic regression analysis was performed with the final sample consisting of N = 94,752 adolescents (49.5% females) aged 12-15 years (M = 13.7 years, SD = 0.9). The overall prevalence of past (i.e. lifetime) and current cannabis use were 1.0% and 2.8% respectively, while the prevalence of low physical activity (< 5 days/week of 60 minutes of PA) was 76.9%. The prevalence of both past and current cannabis use was higher among those with low levels of PA (1.5% and 3.2% respectively) compared to those with adequate levels of PA (0.6% and 1.1%). Low PA was associated with a significant 1.75 (95%CI = 1.30-2.37) times higher odds for current cannabis use (vs. never use), while the association between low PA and past use was not statistically significant (OR = 1.39; 95%CI = 0.97-2.00). The results underscore the high prevalence of low PA among adolescents in LMICs and emphasise the need to understand behavioural factors that may affect PA levels such as marijuana use when designing health interventions.

3:15pm - 3:30pm

Development and validation of the doping willingness in sport scale**Nicholas Stanger¹, Lisa Whitaker², Susan Backhouse¹**¹Leeds Beckett University, United Kingdom; ²UK Coaching, United Kingdom

Research investigating doping in sport is burgeoning. However, there is a lack of proxy measures of doping behaviour that have undergone extensive psychometric testing. In this project carried out with support from the World Anti-Doping Agency, we developed and tested a doping willingness in sport scale (DWSS) in four studies. In Study 1, after support for the content validity of the items, the DWSS was completed by N1=205 athletes. Confirmatory factor analysis (CFA) revealed the 9-item scale comprised an excellent model fit with all items possessing a high factor loading. In Study 2, in a sample of N2=242 athletes, CFA confirmed the DWSS comprised an excellent model fit. Concurrent validity for the DWSS was supported via scores being positively associated with antisocial behaviour, and discriminant validity was supported via scores being unrelated with prosocial behaviour. In Study 3, athletes (N3=144) completed the DWSS and then rated their moral judgments and affective reactions to pictures of doping at a later time-point. Predictive validity of the DWSS was supported via scores being associated with more unpleasant affective reactions towards doping, and perceptions that doping was more morally wrong. In Study 4, athletes (N4=74) completed the DWSS twice over a two-week interval, which provided support for the test-retest reliability and stability of the items. Lastly, a CFA on the composite sample across all four studies confirmed an excellent model fit and all items possessed a high factor loading. In conclusion, findings provide psychometric support for the DWSS to measure doping willingness in athletes.

Symposium 28: Psychology of sports injuries: from pre-injury to return to sport. Current research and practical implications

Time: Thursday, 18/Jul/2019: 2:00pm - 3:30pm · *Location:* H 2 - Bern
Session Chair: Ulrika Tranaeus, The Swedish School of Sport and Health Sciences, GIH

Psychology of sports injuries: from pre-injury to return to sport. Current research and practical implications

Chair(s): **Ulrika Tranaeus** (The Swedish School of Sport and Health Sciences, GIH, Sweden)

In addition to the physical consequences of sport injuries, athletes must contend with a range of psychosocial challenges – both in the immediate injury aftermath (pain, loss of function) and throughout the recovery process (motivational decrements, lack of confidence in return to play). It is therefore important to identify factors influencing injury risk, recovery, and return to play. Evaluation of injury prevention strategies are also of evident importance.

The purpose of this symposium is to examine psychosocial factors and interventions influencing injury risk, rehabilitation and return to play. By doing so, each presenter highlights empirical and applied implications. This symposium includes five presentations.

The initial presentation overviews psychosocial risk factors for traumatic and overuse injuries and discussion regarding prevention strategies.

A presentation of methodological implications for research on psychosocial risk factors will follow. This presentation includes how interactions of risk factors influence injury risk and recommendations for statistical analyses.

The third presentation gives an example of a cognitive-behavioural therapy smartphone-based intervention programme. The intervention consists of daily use of a stress management programme delivered in a smartphone app aiming to reduce stress and prevent injuries.

The fourth presentation articulates reviews some examples of future research strategies in rehabilitation. Longitudinal study designs that examines intra-individual changes will be discussed.

Finally, the fifth presentation examines the role of psychosocial factors influencing return versus non-return to sport following injury, as well as the quality of post-injury performance. This will be discussed in the framework of the self-determination theory.

Presentations of the Symposium

Psychosocial risk factors for traumatic and overuse injuries in sport

Ulrika Tranaeus

The Swedish School of Sport and Health Sciences, GIH

Despite the health benefits of sport participation, involvement in competitive sport is associated with injury risk. Injuries are classified into two kinds with different causation – traumatic injuries and overuse injuries. Traumatic injuries have a sudden onset with or without contact, while overuse injuries occur after repetitive load without feasible recovery (Fuller et al., 2006). The psychosocial risk factors for these kinds of injuries differ. Risk factors for traumatic injuries are described in various models, the most prominent and well-tested being the Williams and Andersen's (1998) Stress-Injury Model. An evaluation of the model showed that the stress response had the strongest relationship to injury rates (Ivarsson et al., 2017). The magnitude of the stress response and the athlete's appraisal of a stressful situation are suggested to be influenced by the interplay between various psychosocial factors: personality factors, history of stressors, and coping resources. With this knowledge, prevention programmes designed to address injury risk factors (e.g., stress perceptions) and subsequent injury occurrence have been evaluated. Risk factor studies for overuse injuries and overtraining have showed similarities such as intrapersonal factors (e.g., motivation, dealing with pain), interpersonal factors (e.g., communication, social support), and situational factors (e.g., stress in sport and/or from life events) (Richardson, Andersen, & Morris, 2008; Tranaeus, Johnson, Engström, Skillgate, & Werner, 2014). These factors are suggested to influence athletes' excessive behaviours and limited recovery which may lead to overuse injuries. This presentation is germane for researchers and practitioners hoping to mitigate acute and overuse injury occurrence.

Methodological implications for future research on psychosocial risk factors for injuries

Andreas Ivarsson

Centre for Research of Well-being, Health and Sport, Halmstad University, Sweden

To develop effective injury prevention strategies/programmes it is important to identify factors that might influence the risk of becoming injured. A majority of previous studies targeting, for example psychosocial, risk factors for sport injuries "have assumed a reductionist view in which a phenomenon has been simplified into units and analysed as the sum of its basic parts and causality has been seen in a linear unidirectional way" (Bittencourt, et al., 2016, p. 1309). This is surprising because most theoretical frameworks suggest that it is an interaction between several variables that are likely to influence injury risk. More specifically, based on theoretical frameworks (e.g., stress-injury model; Williams & Andersen, 1998) it is likely that it is patterns of risk factors, for example, high level of anxiety in combination with poor coping resources and high levels of stress, that might increase the risk of becoming injured.

Therefore, researchers are recommended to focus more on the interactions between several different risk factors (e.g., psychosocial), and use appropriate statistical analyses (e.g., classification and regression tree analyses), to investigate how these complex interactions may influence injury risk. This presentation will (1) discuss the potential limitations of the traditional reductionist approach of research, (2) present the advantages of using an injury pattern recognition approach in risk factor research, and (3) present risk factor studies that have used statistical analyses for pattern recognition.

A low-intensity CBT mobile phone-based intervention for preventing sport injuries: a case study in Spanish youth sport

Victor J. Rubio¹, Felipe Turbay², Sergio Parra¹, José Manuel Hernández¹

¹Universidad Autónoma Madrid (Spain), ²Comité Olímpico Colombiano (Colombia)

Conditions such as feeling pressured, overwhelmed by competitive or training burdens, tackling personal traumatic experiences, and/or coping with family issues are stressful situations that incidental observations and empirical research have frequently associated with an increase in athletes sport injury (SI) vulnerability. In order to cope with that, several cognitive-behavioural therapy (CBT) interventions aimed at managing stress response have shown to be effective in reducing SI incidence. However, such programmes usually request strongly structured interventions delivered by qualified psychologists in controlled contexts. All of these conditions are far from being generalised in the Spanish's common grass-root sport organisations which usually lack of a full-time trained psychologist and have limited possibilities to introduce another structured activity in a usually crowded schedule and facilities, not to say change resistance coaches and staff frequently show.

In that light, we have developed a low-intensity CBT mobile phone-based intervention programme for young athletes: The UAMSportPsychapp, which consists of a stress management program including progressive muscle relaxation and mindfulness. It has two profiles available. Player profile prompts a daily self-administration of the techniques using the audio and video clips provided and gives achievement assessment and feedback. Coaches using the corresponding app feature monitor athletes' implementation to encourage them. Coaches' profile also offers feedback of pupils training satisfaction. The programme itself and the results regarding evaluation of accessibility, acceptance and usefulness as well as in stress management in two youth sport teams are presented. The effects on reducing young athletes' vulnerability to sustain SI are also discussed.

Sport injury psychology and rehabilitation: examples of promising and future research strategies

Urban Johnson

Centre for Research of Well-being, Health and Sport, Halmstad University, Sweden

Several research studies have been conducted the last 30 years in the area of sport injury psychology and rehabilitation. In this review some examples of promising future research strategies will be given. One such strategy is to give attention to female and young athletes since they are largely underrepresented in research which is surprising given the high incidence of injury in especially senior female sport and that injury is one of the leading causes of sporting retirement for these groups of athletes. Much in the same vein it seems commendable to study the influence of psychological factors among chronically injured athletes attempting to continue sport participation. Another line of wanted research strategy is the use of multi-wave, longitudinal, prospective research that examines intra-individual changes in constructs. This allows researchers to explore both the temporal nature of psychosocial factors and their influence during the rehabilitation process. From previous research we also know that relatively threat-free environments and relationships that are secure and caring with non-contingent positive regard might down-regulate cortical and subcortical stress circuits and facilitate recovery behaviours. Thus, future research should closer study behavioural patterns among coaches and medical teams and how climates develops in which injured athletes feel secure to talk freely because of the restorative nature this environment has for adaptive healing. Summing up, there still remain several important and major challenges for future research strategies within the area of sport injury psychology and rehabilitation. Examples of some promising ones are presented in this summary.

A self-determination perspective on psychosocial factors influencing the return to sport following injury

Leslie Podlog¹, Robert C. Eklund²

¹University of Utah, USA, ²Florida State University

For competitive athletes incurring a sport injury, a return to sport at a high level is the ultimate goal of injury rehabilitation. A multitude of psychosocial challenges however, require effective mastery in order to surmount the difficulties inherent in the return to sport process. Indeed, empirical findings reveal that psychosocial factors – over and above physical factors – may ultimately discriminate between returning and non-returning athletes (Ardern, Taylor, Feller, & Webster, 2013). This presentation examines the role of psychosocial factors influencing return-versus non-return to sport following injury, as well as the quality of post-injury performances. In so doing, we draw on Self-Determination Theory (SDT; Ryan & Deci, 2000), a motivational theory that has been used as a framework to understand key conceptual issues in guiding empirical work on the return to sport transition. The return transition includes the time-frame extending from completion of athletes' physical rehabilitation to a return to competitive activities or, in the case of non-returning athletes, their segue out of sport. The presentation includes (1) a description of key SDT tenets relevant for understanding the return to sport following injury, (2) a synthesis of empirical research on the return to sport, (3) a discussion of practical implications; and finally, (4) suggested avenues for further inquiry.

Symposium 29: Uncharted perspectives on emotions in sport

Time: Thursday, 18/Jul/2019: 2:00pm - 3:30pm · *Location:* H 3 - Madeira

Session Chair: Svenja Anna Wolf, University of Amsterdam

Session Chair: Franzi Lautenbach, Leipzig University

Uncharted perspectives on emotions in sport

Chair(s): **Svenja A. Wolf** (University of Amsterdam), **Franzi Lautenbach** (Leipzig University, Germany)

Emotions are crucial factors to consider when it comes to optimizing performance, health, and participation in sport (cf. Ivarsson & Johnson, 2010; Way, Jones, & Slater, 2012; Woodman, Davis, Hardy, Callow, Glasscock, & Yuill-Proctor, 2009). Congruently, emotions have received substantial attention in both research and application. To date, however, this attention has centred on a limited number of phenomena such as anxiety and in-game emotion regulation (e.g. Stanger, Chettle, Whittle, & Poolton, 2018; Wolf, Eys, & Kleinert 2014). In this symposium, we aim to focus on additional, less well-investigated aspects of emotion in sport and demonstrate their prevalence and relevance across actors in a sporting context. Specifically, our symposium will address (a) emotion-related personality traits in the form of emotional intelligence, (b) the largely neglected area of positive emotions, (c) the emerging phenomenon of collective emotions, (d) social emotions as exemplified by Schadenfreude, and (e) a digitally supported approach to post-performance emotion regulation. Together, these presentations will show that emotions and emotion regulation in sport need to be approached from various angles in order to understand and influence them optimally.

Presentations of the Symposium

Emotion related traits and their influence on sports performance: An overview

Emma Mosley

Solent University

Emotion-related traits can be considered as stable characteristics that can influence the way in which individuals experience their own and others emotions. These traits fall under an umbrella term called personality-trait-like individual differences (PTLID). PTLIDs reflect psychological individual differences at the trait level but do not fall into the traditional classifications of personality such as the Big Five (Laborde & Allen, 2016). This phenomenon is of interest in sport psychology given the need to have to regulate emotions and manage behavioural reactions when performing in demanding and pressurised environments. For example, trait emotional intelligence is considered a personality trait rather than a cognitive ability and involves self-perceptions, which embrace the subjective nature of emotion (Petrides, Pita, & Kokkinaki, 2007). It has been shown to facilitate coping under stress and better emotional responses to competition (Lane & Wilson, 2011). Another example is alexithymia, whereby individuals cannot identify emotions within themselves but may experience blunted emotional responses, which could aid performance in pressurised environments (Robert & Woodman, 2017). However, emotion-related traits have yet to be clearly defined within the current literature and consistently linked to sporting performance. Therefore, the aim of this overview is to highlight emotion-related traits and discuss how they may play a role in sports performances. Traits within this overview include trait emotional intelligence, alexithymia, trait anger, trait emotion suppression, and trait emotion regulation.

Focus on the positive: Positive emotions in sport psychology

Franzi Lautenbach

Leipzig University

Emotional research within sport psychology has mainly been interested in phenomena such as stress and anxiety and their impact on cognition and performance, whereas little attention has been paid to positive emotions (Lautenbach, 2018). This seems surprising, as athletes do not just experience unpleasant emotions during training, competition and their career but report a variety of emotions including joy, serenity, or interest (Moen et al., 2018). Positive emotions can be described as an organized psychophysiological positively valenced reaction (Lazarus, 2000, p. 230).

In this talk, I will first present potential theoretical approaches that could be considered relevant for research concerned with positive emotions in sport psychology. Second, I will focus on the empirical evidence that has been gathered on athletes and, building on that, finally propose future research ideas.

Catch me if you can: Emotions as collective phenomena

Svenja A. Wolf

University of Amsterdam

To date, we have treated emotions largely as individual, isolated phenomena and neglected social influences. Particularly in sport, however, athletes are frequently nested within teams and first evidence suggests that these teams develop unique emotional properties in the form of collective emotions, that is "the [agreement] in affective responding across individuals towards a specific event or object" (von Scheve & Ismer, 2013, p. 406). In other contexts, collective emotions have been found to influence both teams' task performance and social integration (Knight & Eisenkraft, 2015). In this talk, I will review existing evidence (i.e. Tamminen et al., 2016; Totterdell, 2000; van Kleef, Cheshin, Koning, & Wolf, 2018) and summarize my own findings to provide an overview and demonstrate the importance of collective emotions in sport. First, I will present conceptual evidence for the existence of collective emotions in various types of sports (e.g. cricket, soccer, volleyball). Second, I will discuss findings linking collective emotions to performance (e.g. team anxiety to losing) and socio-affective outcomes (e.g. enjoyment). Third, I will review pertinent boundary factors such as timing (i.e. agreement increases over the course of competition) and type of emotion (i.e. greater agreement for anxiety than excitement). Fourth, I will summarize research on the origins of collective emotions in terms of both emotional congruence (e.g. leadership, common stimuli, team personality) and emotional convergence (e.g. emotion norms, emotional mimicry). Finally, based on this evidence, I will synthesize possible approaches to regulate collective emotions in order to optimize sport performance, health, and participation.

One team's pain is another team's pleasure

Lea Boecker

Leuphana University of Lüneburg

The social emotion *Schadenfreude*, defined as taking pleasure in the misfortune of others, is often experienced in the context of sports when a rival team fails (REF). Social emotions in sports are particularly interesting as they shape ingroup processes and predict (harmful) behaviour towards outgroups. In study 1, I compared the facial emotional reactions in response to successful penalty kicks of the German national soccer team (joy) with the facial reactions in response to failed penalty kicks of the Dutch national soccer team (*Schadenfreude*) by using facial electromyography. The facial reactions of N = 32 participants revealed that they smiled more strongly in response to the Dutch team's failures compared to the German team's successes. The same muscles (*zygomaticus major*, *orbicularis oculi*, *corrugator*) were involved in *Schadenfreude* and joyful smiles. In study 2, I used the elimination of the German national soccer team in the world soccer championship 2018 to explore identification as a factor that may trigger *Schadenfreude* by assessing the emotional reactions of n = 133 mainly British (i.e. outgroup) and n = 111 German (i.e. ingroup) participants. Outgroup members expressed more *Schadenfreude* and less sympathy in response to the failure of the German team than ingroup members. The more the German team was disliked, the more the misfortune seemed deserved, and the more dominant the team was perceived, the more *Schadenfreude* was experienced. These variables mediated the effects of group membership on *Schadenfreude*. These findings have important implications for the prevention of *Schadenfreude* and hostile feelings between rival teams.

Meet CATO, a chatbot to improve athletes' post-performance emotions

Yannick A. Balk, Gerald Weltevreden, Elke Reisch, Svenja A. Wolf

University of Amsterdam

Traditionally, research has focused on how athletes cope with stress and regulate emotions before and during performance (e.g. Gaudreau, Nicholls, & Levy, 2010; Mellalieu, Hanton, & Shearer, 2008). Preliminary evidence indicates, however, that athletes also experience a range of positive and negative post-performance emotions (e.g. Polman, Nicholls, Cohen, & Borkoles, 2007). Moreover, regulating these emotions is important for athletes' recovery and well-being (Balk, 2018). Yet, it is often a challenge for athletes to successfully regulate their emotions, particularly when they are tired. The next innovative step towards sustainable performance is, therefore, to promote emotion regulation through an individualized approach. Specifically, athletes need to be supported in regulating their thoughts and emotions after training and competition. In order to support athletes' post-performance emotion regulation, we have set out to develop a chatbot prototype named CATO (Chatbot-Assisted Thriving Optimization). CATO helps athletes to recognize and express thoughts and emotions. More importantly, CATO provides athletes with tools and strategies to regulate their thoughts and emotions. Through the self-learning capability of CATO, it can give personal advice on strategies that work best for the individual athlete. These strategies are based on a variety of methods stemming from CBT and positive psychology. Consequently, CATO can assist athletes in regulating their emotions when they are, for instance, tired or alone. As such, CATO is the coach who never sleeps. In this presentation, the theoretical and empirical background of CATO will be presented in more detail together with preliminary findings regarding its effectiveness and user experiences.

Symposium 30: Holistic Movement Practices – a new direction for exercise psychology?

Time: Thursday, 18/Jul/2019: 2:00pm - 3:30pm · *Location:* H 4 - Chalkidiki
Session Chair: Ineke Vergeer, University of Southern Queensland

Holistic Movement Practices – a new direction for exercise psychology?

Chair(s): **Ineke Vergeer** (University of Southern Queensland, Australia)

Discussant(s): **Taru Lintunen** (University of Jyväskylä, Finland)

Holistic Movement Practices (HMPs) are non-competitive and non-performance-oriented physical practices that are embedded in integrated philosophies of holistic well-being. As such, they go beyond typical physical-fitness goals to include mental and sometimes spiritual elements. The most well-known HMPs are yoga, tai chi and qigong, but there are a range of less well-known practices emerging in western societies (e.g., 5Rhythms®, Biodanza). While exercise, or physical activity in general, is known to have beneficial effects on psychological outcomes (e.g., well-being, anxiety, depression, self-esteem, cognitive functioning), physical activities are not typically designed with these outcomes in mind, they tend to be by-products. In HMPs, however, mental and/or spiritual elements are structurally embedded in the philosophy of the practice and integrated with its physical elements. While there is an increasing presence of HMPs in western societies, they have not yet received much attention in the field of exercise psychology. However, the holistic nature of HMPs offers unique opportunities for exercise psychology to study the psychological components and processes that are distinctive to HMPs, and to determine what role they could play as health-promoting physical practices. The purpose of this symposium is to highlight what HMPs are, explore why and how they can be relevant to exercise psychology and present some of the research occurring in this area. The symposium will involve four presentations and one discussion. The introductory presentation will be conceptual, while the remaining three will report on research of specific practices, covering participation motives, barriers, and outcomes, respectively.

Presentations of the Symposium

What are Holistic Movement Practices and how are they relevant to exercise psychology?

Ineke Vergeer

University of Southern Queensland, Australia

Holistic Movement Practices (HMPs) are physical practices embedded in holistic philosophies of well-being that link the physical forms to mental, and sometimes spiritual, elements. Some practices have been around for a long time, are relatively wide-spread, and have comprehensive and extensively documented philosophies (e.g., yoga, tai chi), while other practices are newer, less wide-spread, and/or have less comprehensive philosophies (e.g., Biodanza, 5Rhythms®, Pilates). This presentation will provide examples of several Holistic Movement Practices and their philosophies, and consider potential research questions for exercise psychologists. Philosophies may be written down and published in more or less detail. They will be explicitly and implicitly incorporated in teacher training courses and subsequently conveyed to a greater or lesser extent in the taught classes and workshops that participants experience. HMPs vary in the forms and nature of the physical components of the practices, however, common holistic elements can be found across practices, although in different amounts and combinations for different practices. Such elements include, for example, mindful attention, self-exploration, subtle body awareness, authentic communication, meditation and spiritual aspects. Potential research questions for exercise psychologists include: To what extent and in what way do HMPs offer mental-health benefits? Do these go beyond those offered by exercise alone? What is the psychological climate created by HMP teachers? How is this different from the climate typically found in exercise contexts? Are there psychological risks associated with participating in HMPs?

Participation motives for Holistic Movement Practices – the pull and push of a holistic philosophy

Ineke Vergeer

University of Southern Queensland, Australia

The purpose of this presentation is to use data from two qualitative studies on Holistic Movement Practices (HMPs) to show how the holistic nature of these practices is reflected in participants' motives over time. One study comprises a qualitative email survey investigating participation motives of N = 98 practitioners of 5Rhythms® dancing, the other involves in-depth interviews with N = 7 experienced yoga teachers, examining their motives for starting and continuing both their personal yoga practice and their teaching practice. Both studies were analysed using thematic analysis (Braun & Clarke, 2006). Initial attraction to both HMPs reflected a combination of knowledge, needs or interests and opportunities. Knowledge about the extent of the holistic nature of the practice was generally limited at this point, and the physical form of the practice was often an important attraction. Many participants did have an explicit or latent interest in one or more of the holistic components of the practice, however, these were generally not well-defined or entailed more surface-level aspects of the practice. A small proportion of participants in both studies were initially pulled by some of the deeper, more hidden elements of the practices (e.g., personal growth, spirituality). Most participants described a process of gradually discovering, and starting to value, the more holistic elements of the practice, which motivated them to continue. Both studies clearly showed that the holistic elements of these HMPs had some but generally more superficial motivational value for initial attraction, but then acquired significant motivational value for continued participation.

What stops people from practising yoga? A scoping review of barriers to yoga participation among healthy adults

Jonathan Cagas¹, Stuart Biddle², Ineke Vergeer²

¹University of the Philippines, Philippines, ²University of Southern Queensland, Australia

Yoga is a holistic movement practice embedded within India's philosophical system concerning health and well-being. Despite its increasing popularity and many potential health benefits, participation in yoga remains low and seems to be restricted to certain groups of people. This presentation focuses on barriers to participate as identified in a scoping review of existing literature that aimed to identify both barriers and facilitators for yoga participation among adults. The study followed the enhanced Arksey and O'Malley's framework (Arksey & O'Malley, 2005; Levac, Coquhoun, & O'Brien, 2010), and studies were included if they involved posture-based yoga, targeted healthy adult (18 years or older) yoga participants or non-participants and mentioned any perceived barriers and facilitators to yoga participation. After screening N = 3,936 potential records identified from electronic database searches and other sources, 56 studies reported in 64 papers were included in the review. Most study participants were female. Eight studies included yoga non-participants. Relevant statements were extracted from the 56 studies and analysed using thematic analysis. Barriers to yoga participation involved a range of factors, including social (instructor, negative experience, media, lack of social support), psychological (fear, self-efficacy, lack of interest), physical (having health issues) and spiritual (conflict with personal beliefs) barriers. Other barriers included negative impressions (feminine activity, inconsistent with training goals), and lack of resources (time, access, money, knowledge). Findings suggest that barriers to yoga were generally similar to conventional physical-activity barriers. However, specific strategies may need to address spiritual barriers and negative impressions to promote and increase yoga participation.

Befriending the body through dancing: A holistic free dance intervention enhancing positive body perceptions, mood and mindfulness

Mattias Johansson¹, Therése Skoog², Carolina Lunde²

¹Örebro university, Sweden, ²University of Gothenburg, Sweden

Exercising provides physical and mental benefits. Nevertheless, many forms of physical activity focus on appearance, competition and instrumental values, which may be unappealing to some people. In addition, research shows that appearance-motivated exercise behaviours can lead to body-image problems. In this research project, we investigated how a holistic free dancing activity (Free Dance in Mindfulness; FDiM; Grundel, 2016), a dance form with free improvised movements to music, may affect body perceptions, mindfulness, mood, and mental health of adult women. Participants were randomized to either a 10-week dance intervention (n = 11) or a wait-list control group (n = 32). Dance sessions lasted 75 minutes. T-tests revealed no differences between groups at baseline, suggesting successful randomization. ANCOVAs were performed, controlling for pre-test scores, age and previous dance experience. At post-test, groups differed on depression (p = .047), anxiety (p = .057), the Surveillance (p = .030) and Appearance subscales (p = .043) of the Objectified Body Consciousness Scale-Youth, the Weight subscale (p = .006) of Body Esteem for Adolescents and Adults, the Mindful Attention Awareness Scale (p = .057), and the Positive subscale (p < .001) of the Positive and Negative Affect Schedule. In all cases, the intervention group scored more favourable. In conclusion, findings suggest that the dance intervention, with a focus on sensing and expressing oneself freely with less focus on comparison and appearance, may enable women to become more accepting about their physical appearances, and more mindful while enjoying themselves. This may have important implications for women's body image.

Workshop 16: Going green for well-being: a practical workshop on the use of nature-based Interventions in the sport context

Time: Thursday, 18/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 118 - Nottingham
Session Chair: Tadhg E. MacIntyre, University of Limerick

Going green for well-being: a practical workshop on the use of nature-based Interventions in the sport context

Tadhg E. MacIntyre¹, Jürgen Beckmann²

¹University of Limerick, Ireland; ²Technical University of Munich

Nature contact has been linked to positive effects for physical and mental well-being (Capaldi et al., 2014; Frumkin et al., 2017). For athletes and sport science support staff, nature-based interventions can offer a low-cost non-invasive intervention to enhance well-being increase attention, and reduce stress (Donnelly et al., 2016). This workshop provides an opportunity for those engaged in consulting, those interested in system-wide interventions and researchers in sport psychology, physical activity and health promotion to learn about nature-based interventions, engage in practical activities and reflect on their utility. We propose during the interactive workshop to use a series of idiographic tasks and pose solutions using a combination of nomothetic evidence and case-study approaches. In this workshop participants will be introduced to a variety of nature based interventions, from green exercise (Barton et al., 2016) to therapeutic landscapes (Bell et al., 2017), nature savouring (Passmore & Holder, 2016) and micro-breaks (Lee et al., 2015). Participants will apply standardised tests of psychological recovery, well-being, nature connectedness and attention restoration and reflect on their utility in an ecologically valid context. Participants' will review a series of case studies of athletes in the outdoors and will be invited to explore their own individual narrative of nature contact across the lifespan. An outdoor based walk will be employed to give participants an opportunity to identify different natural stimuli from fractals to biodiversity and subsequently determine their own preferences for nature. A reflective group task will ensure participants have a clear take-home message on evidence-based approaches.

Featured Panel 03: Round Table Discussion: International perspectives on professional accreditation: Balancing localized cultural infusion and proposed global guidelines

Time: Friday, 19/Jul/2019: 8:30am - 10:00am · *Location:* VSH 219 - Brussels
Session Chair: Sebastian Brückner, Westfälische Wilhelms-Universität Münster

International perspectives on professional accreditation: Balancing localized cultural infusion and proposed global guidelines

Amy Baltzell¹, Chris Harwood², Karin Moesch³, Peter Schneider⁴, Oliver Stoll⁵, Liwei Zhang⁶

¹Boston University, USA; ²Loughborough University, United Kingdom; ³Swedish Sports Confederation, Sweden; ⁴FC Augsburg e.V., Germany; ⁵Halle-Wittenberg University, Germany; ⁶Beijing Sport University, China

Certification and accreditation of applied sport psychology consultants is a topic that has become increasingly relevant for sport and exercise psychology (SEP) organizations on a global scale (Schinke et al., 2018). Reflecting this increasingly dynamic development, in 2018 four key international SEP associations - AASP, ASPASP, FEPSAC and ISSP - published a joint position stand on professional accreditation (Schinke et al., 2018). Expanding on the reflections and conclusions proposed in 2018 and integrating recent developments regarding professional certification within the respective associations, this round table will offer unique insights into this complex issue pertaining to SEP practitioners' professional development. Recent developments include: creating a FEPSAC certification program "Specialists in Applied Sport Psychology" (FEPSAC, 2019); establishing the "ISSP Consultancy Registry" (ISSP-R; ISSP, 2019); implementing major changes to the "Certified Mental Performance Consultant" program (AASP, 2019); and launching the ASPASP "Mentoring Program" (ASPASP; 2019). With ENYSSP and the German Society for Sport Psychology (asp) two additional associations that provide services for SEP practitioners have been invited to join the round-table discussion.

Given the fact that many applied practitioners are expected to attend the congress in Muenster and that many representatives from international and national sport psychology associations will be in Muenster to celebrate 50 years of FEPSAC, this is a unique opportunity to host such an event focusing on this increasingly important topic. Representatives from international and national SEP organizations will be provided with an opportunity to discuss challenges, best-practices and specific standards that have been developed and established.

Attendees will gain insight into current developments regarding professional accreditation and certification, which can enrich their individual professional development in the field.

Featured Symposium 10: Preventing doping in sport: Moral, psychological, and knowledge-based interventions in young British and Greek athletes

Time: Friday, 19/Jul/2019: 8:30am - 10:00am · *Location:* S 10 - Münster
Session Chair: Maria Kavussanu, University of Birmingham

Preventing doping in sport: Moral, psychological, and knowledge-based interventions in young British and Greek athletes

Chair(s): Maria Kavussanu (University of Birmingham, United Kingdom)

Doping is a major threat to the health of athletes as well as the integrity and image of sport. Although our understanding of the factors that facilitate doping has increased in the last decade, little progress has been made in developing evidence-based interventions aimed to prevent doping. In this symposium, we discuss the development and evaluation of three such interventions, delivered in independent samples of young British and Greek athletes. The work presented here has been funded by WADA (Paper 1) and IOC (Papers 1-3). First, we discuss the development and evaluation of an intervention in which we targeted three moral variables: moral identity, moral disengagement and moral atmosphere. We call this the “moral” intervention. Then, we discuss the development and evaluation of an intervention in which we targeted moral disengagement, anticipated guilt, and self-regulatory efficacy. We call this the “psychological” intervention. In two independent projects, the moral and psychological interventions were compared with a standard knowledge-based intervention, which we also developed as part of this programme of research. Next, we present qualitative evidence for the effectiveness of the psychological and knowledge-based interventions. Finally, we discuss a web-based version of the psychological intervention and present the results of a study in which we examined whether this intervention was effective in reducing doping likelihood over time. In all studies, our primary outcome variable is doping likelihood, and our overall aim was to develop interventions that would reduce doping likelihood and ensure that this effect would be maintained over time.

Presentations of the Symposium

To cheat or not to cheat? A moral intervention can prevent doping in sport

Maria Kavussanu¹, Ailish King¹, Philip Hurst², Evangelos Galanis³, Antonis Hatziogeorgiadis³, Christopher Ring¹

¹University of Birmingham, ²Canterbury Christ Church University, ³University of Thessaly

The purpose of this WADA-funded study was to examine the effectiveness of an evidence-based moral intervention compared to a standard knowledge-based intervention in reducing doping likelihood in young athletes. Male and female athletes (N = 159), aged 16-22 years old, taking part in individual or team sports, were recruited from sports colleges and clubs in the UK and Greece. They were assigned to either the moral or the knowledge-based intervention and participated in six one-hour sessions delivered by a trained facilitator. The sessions were delivered in groups of 4-14 athletes once a week, over a period of six weeks. Measures of doping likelihood, moral identity, moral disengagement and moral atmosphere were taken before and after the interventions, as well as three and six months after the interventions ended. A 2 Intervention (Moral, Knowledge-based) × 2 Country (UK, Greece) × 4 Time (pre, post, follow-up 1, follow-up 2) repeated measures MANOVA on doping likelihood, moral identity, and moral disengagement, showed that both interventions were similarly effective in decreasing doping likelihood and moral disengagement in both Greece and the UK. Doping likelihood continued to decrease at follow-up in the moral intervention but not in the knowledge-based intervention. The findings have significant implications for doping prevention and suggest that there is particular value in delivering a moral intervention to prevent doping. Our findings could inform anti-doping policy and practice of national anti-doping organisations.

Preventing doping in sport: A psychological vs a knowledge-based intervention

Philip Hurst¹, Maria Kavussanu², Vassilis Barkoukis³, Ailish King², Lida Skoufa³, Christopher Ring²

¹Canterbury Christ Church University, ²University of Birmingham, ³Aristotle University of Thessaloniki

The purpose of this IOC-funded research was to develop and evaluate an anti-doping intervention aiming to reduce athletes' likelihood to dope by targeting their moral disengagement, anticipated guilt, and self-regulatory efficacy. Athletes (N = 206) from individual and team sports, recruited from Greece and the UK, were randomly assigned to either a psychological (n = 95) or a knowledge-based intervention (n = 112). The psychological intervention focused on challenging moral disengagement mechanisms, accentuating anticipated guilt and strengthening self-regulatory efficacy to resist doping. The knowledge-based intervention included information about anti-doping rules and regulations, health consequences of banned substances, sport supplements, nutrition, and whistle blowing. Both interventions consisted of six one-hour sessions. Athletes completed questionnaires about doping likelihood, moral disengagement, self-regulatory efficacy, and anticipated guilt pre- and post-intervention, and two months after the end of the intervention. A 2 Intervention (Psychological, Knowledge-based) × 2 Country (UK, Greece) × 3 Time (pre, post, follow-up) showed a decrease in doping likelihood and moral disengagement from pre- to post-test for both the psychological and the knowledge-based intervention. These effects were maintained at follow-up. Self-regulatory efficacy increased for participants in the knowledge-based but not in the psychological intervention. Our findings suggest that our anti-doping interventions can be effective in reducing doping likelihood. The findings have significant implications for anti-doping and can inform both policy and practice.

A qualitative evaluation of the effectiveness of the psychological and knowledge-based interventions

Lida Skoufa¹, Philip Hurst², Ailish King³, Vassilis Barkoukis¹, Maria Kavussanu³

¹Aristotle University of Thessaloniki, ²Canterbury Christ Church University, ³University of Birmingham

In the IOC-funded project, the effectiveness of a psychological intervention in reducing doping intentions was compared to a knowledge-based intervention. The two interventions were implemented with competitive athletes who were at risk for doping. The purpose of this study was to explore participants' experiences and evaluate the effectiveness of these interventions using a qualitative approach. Athletes from individual and team sports who attended the two interventions took part in focus groups of 4-7 participants per group. The interview guide included questions pertaining to the content and delivery mode of the interventions, the most effective elements of the interventions, and suggestions for improvement. Thematic analysis indicated that participants enjoyed the sessions and liked their interactive nature. Also, they perceived that their views about doping changed as a result of the interventions. In the psychological intervention, the consequences of doping for others emerged as the most interesting aspect of the intervention. In the knowledge-based intervention, knowledge on doping control procedures, consequences of doping and nutritional supplement use were reported as the intervention aspects that were most appreciated. The qualitative evidence obtained in this study suggests that the participants valued the experience of both interventions and identified certain elements of the interventions as particularly useful in influencing their views about doping.

Evaluation of a web-based version of the psychological intervention

Vassilis Barkoukis¹, Paul Anstiss², Philip Hurst³, Lida Skoufa¹, Maria Kavussanu², Christopher Ring²

¹Aristotle University of Thessaloniki, ²University of Birmingham, ³Canterbury Christ Church University

The purpose of this IOC-funded project was to "translate" the face-to-face psychological intervention, into a web-based intervention, and determine (a) whether the intervention is effective in reducing doping likelihood in two countries, and (b) whether these effects are maintained at a two-month follow-up. We used a 2 Group (Intervention, Control) x 2 Country (UK, Greece) x 3 Time (pre, post, follow-up) experimental design. Athletes (N = 180) from individual and team sports will be recruited from the UK and Greece and will be randomised to either the intervention group (n = 90) or the control group (n = 90). The intervention consists of five forty-minute sessions, which focus on challenging mechanisms of moral disengagement, increasing anticipated guilt, and strengthening self-regulatory efficacy. The control group is a passive control. All athletes complete questionnaires about doping likelihood, moral disengagement, anticipated guilt, and self-regulatory efficacy pre- and post-intervention, and two months after the end of the intervention. It is expected that doping likelihood and moral disengagement will decrease, while anticipated guilt and self-regulatory efficacy will increase from pre- to post-test and will be maintained at follow-up.

Paper Session 36: Affect and Enjoyment

Time: Friday, 19/Jul/2019: 8:30am - 10:00am · Location: S 8 - Copenhagen
Session Chair: Daniel Gucciardi, Curtin University

8:30am - 8:45am

The relationship between achievement motivation and physical activity enjoyment over a school year: cross-lagged effects

Johan Michael Wikman¹, Andreas Ivarsson¹, Glen Nielsen², Malte Nejst Larsen³, Peter Riis Hansen⁴, Peter Krstrup³, Anne-Marie Elbe⁵

¹Halmstad University, Denmark; ²University of Copenhagen, Denmark; ³University of Southern Denmark, Denmark; ⁴Herlev and Gentofte University Hospital, Denmark; ⁵University of Leipzig, Germany

The purpose of this study was to investigate how task and ego orientation and physical activity enjoyment develop and was related to each other over a school year in third-grade children. N = 437 children in third grade (M age = 9.30) from eight schools in Denmark participated in the study. The Task and Ego Orientation in Sport Questionnaire (Duda, 1989) and the Physical Activity Enjoyment Scale (Kendzierski & DeCarlo, 1991), were used to measure task/ego orientation and physical activity enjoyment, respectively, and administered at the beginning, middle and end of the school year. To investigate the cross-lagged, within-person effects between task/ego orientation and physical activity enjoyment, two random intercepts cross-lagged panel models (Hamaker, Kupier, & Grasman, 2015), one for each motivational orientation, were estimated. Both models showed good fit to the data, and there were positive, statistically significant, cross-sectional correlations between task/ego orientation and physical activity enjoyment at all three time-points. In addition, both models showed positive, statistically significant, cross-lagged effects from task/ego orientation to physical activity enjoyment and vice versa, both between beginning and middle as well as middle to end of the school year. The results suggest that there is a reciprocal effect between achievement motivation and physical activity enjoyment in grade school children.

8:45am - 9:00am

Perceived control, hedonic tone, and performance in tennis: three case studies

Elena Uberti¹, Francesca Marino², Maurizio Bertollo², Claudio Robazza²

¹Department of Psychology, Goldsmiths University of London, London, United Kingdom; Department of Psychology, University of Milano Bicocca, Milano, Italy; Federazione Italiana Tennis, Istituto di Formazione "R.Lombardi", Roma, Italy; ²Department of Medicine and Aging Sciences, BIND—Behavioral Imaging and Neural Dynamics Center, University "G. D'Annunzio", Chieti-Pescara, Italy

The purpose of the study was to examine the relationship between perceived control, hedonic tone, stroke velocity, and performance outcome of elite-level tennis players according to the tenets of the multi-action plan (MAP) model (Robazza, Bertollo, Filho, Hanin, & Bortoli, 2016). Three Italian male tennis players (age = 20, 25, and 28 years), ranked in the top 100 national athletes, took part in the study. They were asked to (a) identify their most relevant core components (e.g. throwing the ball) of each tennis fundamental (i.e. serve, forehand, backhand), and (b) perform 60 serves (a closed motor skill), 60 forehands, and 60 backhands (open motor skills) to hit target areas in the tennis field. Performance scores could range from 8 (most difficult target area) to 1 (easiest area) or 0 (target missed). Stroke velocity was assessed using a wearable tennis swing analyser. Before each stroke, participants rated their perception of hedonic tone on a modified 11-point Borg scale. After each stroke, perceived control of the core component of action was also rated on the same scale. The relation of performance level to perceived control, hedonic tone, and stroke velocity was examined using logistical ordinal regression analysis (Johnson, Edmonds, Kamata, & Tenenbaum, 2009). Findings showed large within and between individual differences and fluctuations of perceived control, hedonic tone, and stroke velocity across the three tennis fundamentals. According to the study results and the MAP model, athletes are recommended to use action- and emotion-centered strategies in combination to attain optimal performance states.

9:00am - 9:15am

Does perceived stress in daily life affect the enjoyment of sports?

Eliane Stephanie Engels, Freya Dunker, Philipp Alexander Freund

Leuphana University, Germany

Sport enjoyment is inevitable for the continued engagement in sports and predicts whether someone engages in physical activities regularly or not (Scanlan, Carpenter, Schmidt, Simons, & Keller, 1993). Additionally, it is well established that regular physical exercise is beneficial for our physical and mental health during stressful times (Janssen, 2007). No previous study specifically examined whether perceived stress in daily life affects the perception of enjoyment in doing sports. Therefore, the aim of the present study was to investigate the relationship between perceived everyday stress and sport enjoyment. N = 244 athletes (M = 28.37 years, SD = 11.01, 61.3% female) of diverse sport types (competitive and recreational) took part in the online survey. Enjoyment of sports was measured by three facets (pleasure, flow-experience, recovery) with a modified version of the Questionnaire for the Assessment of Enjoyment in Physical Education (QUAEPE; Engels, & Freund, in press). Perceived stress was assessed using the German version of the Perceived Stress Scale by Cohen, Kamarck, and Mermelstein. (1983). Regression analyses revealed that perceived stress is a significant predictor for all three facets of sport enjoyment. The higher the perceived everyday stress in athletes, the less they enjoyed doing sports (β pleasure = $-.23$, $p < .001$; β flow = $-.22$, $p < .001$; β recovery = $-.15$, $p = .022$). The results of this study show evidence of athletes' experience in sports during stressful times. The insights into this relationship provide a basis to achieve a long-term-oriented sport activity.

9:15am - 9:30am

Affective, behavioural and cognitive responses of competitive athletes during the 4 R's of the ACL rupture recovery process

Heinrich Grobbelaar¹, Anel Borman¹, Wayne Derman²

¹Department of Sport Science, Stellenbosch University, South Africa; ²Institute for Sport and Exercise Medicine, Stellenbosch University, South Africa

For competitive athletes, sustaining serious Anterior Cruciate Ligament (ACL) injuries often comprise of the following four R's: Rupture, Reconstruction surgery, Rehabilitation and Return-to-sport. The aim of the study was to explore the experiences of N = 7 competitive male athletes who sustained unilateral ACL ruptures and underwent ACL reconstruction (ACLR) surgery at six time-points during their recovery. Semi-structured interviews were conducted post-injury, preoperative, postoperative, during early and late rehabilitation, as well as upon return-to-sport. Information was elicited about the personal and situational factors that influenced each athlete's affective, behavioural and cognitive response to the injury, surgery and recovery process. A total of 42 interviews were transcribed and analysed through the use of thematic analysis (TA). Six superordinate themes emerged: 1) establishing identity (athletic and personal), 2) cognitive appraisal, 3) responses (emotional and behavioural), 4) coping strategies (approach- and avoidance orientated), 5) types of social support (emotional, informational and tangible) and 6) advice by the participants to other injured players. Direct quotes were used to elaborate on each superordinate theme. A better understanding of the experiences of athletes during each of the four R's of the ACL injury recovery process may enable medical professionals, coaches, teammates, friends and family members to support the injured athletes' more effectively, thereby potentially enhancing their recovery and future performance.

9:30am - 9:45am

Athlemaphilia / 'aTH lē mə'filēə/: (n) meaningful affective connections with sport

Xander Hodge¹, Emily Oliver¹, David W. Eccles²

¹Durham University, United Kingdom; ²Florida State University, United States

Athlemaphilia is a protologism of the Greek "áthlima-" meaning sport, and "-philia" meaning love for or a disposition towards something. Athlemaphiles are individuals who experience meaningful affective connections with sport. Athlemaphilic relationships exist, support well-being and the development of attachments, and are sought to improve well-being. This presentation outlines a three-study, multi-theoretical, mixed-methods programme of research, which explored whether, how, and why individuals experience, benefit from and seek out athlemaphilic relationships. Study 1 identified the shared features of significant human and sporting relationships. Ratings of attachment to, and features of, athlemaphilic relationships improved the ability of interpersonal relationships to predict environmental mastery and a sense of relatedness. Study 2 asked athletes to discuss how they experience relationships to further illuminate athlemaphilia. Participant's experiences demonstrated that intense experiences of athlemaphilia can influence internal working models of interpersonal attachment, and highlighted that athlemaphilic relationships offer participants things they cannot experience in human relationships (e.g. omnipotent control). Study 3 tested whether athlemaphilia is specifically pursued to recuperate depleted well-being caused by faulty interpersonal relationships. Results demonstrated that engaging with an important athlemaphilic other improved well-being, though these results were not significantly different from the control group. Cumulatively, these results broaden the scope of attachment theory (Keefer, Landau, & Sullivan, 2014), challenge the interpersonal requirement of relatedness in Self-Determination Theory (Ryan & Deci, 2000), and demonstrate the utility of the three-factor theory of anthropomorphism (Epley, Waytz, & Cacioppo, 2007) in sport. The need for further theoretical and applied consideration of athlemaphilia will be discussed.

9:45am - 10:00am

Great expectations: a qualitative analysis of the factors that influence affective forecasts

Amanda Jane Calder, Elaine Anne Hargreaves, Ken Hodge

University of Otago, New Zealand

The extent to which people believe they will feel pleasant or unpleasant during a future exercise session (their affective forecast) has been proposed to influence decisions to participate in exercise (Williams et al., 2005), yet no research has examined how affective forecasts are determined. Using a qualitative methodology, this study was designed to explore the factors that influence the creation of an affective forecast for moderate-intensity exercise. N = 33 (2 male) inactive participants (mean age = 38 years, SD = 9) completed 20 minutes of moderate-intensity treadmill exercise (M% HRmax = 61.6, SD = 0.1). Participants reported their affective forecast for future moderate intensity exercise using the Global Affective Forecast scale (Schreiber & Kahneman, 2000). Immediately after giving this forecast, participants were asked a series of questions to verbally explain what influenced their affective forecast given. This data was audio-recorded, transcribed and subjected to an inductive thematic analysis. Four key themes were identified: (1) interpretations of the exercise intensity (the physical demands of the intensity and ability to meet demands), (2) the outcomes of exercise (physical and psychological), (3) the exercise context (motivations and exercise environment), and (4) enjoyment of exercise. These themes illustrated that affective forecasts were created based on experiences (memories) from previous exercise as well as anticipating how the structure of the future exercise would make them feel. Results suggest that to ensure pleasant affective forecasts are created consideration must be given to how the future exercise is constructed and the individual should be encouraged to remember positive previous experiences.

Paper Session 37: Understanding Physical Activity Behaviour

Time: Friday, 19/Jul/2019: 8:30am - 10:00am · Location: S 9 - Cologne

Session Chair: Claudio Renato Nigg, Karlsruhe Institute for Technology

8:30am - 8:45am

Can the theory of planned behavior predict Chinese university students' physical activity intentions?

Cecilia Ma, Catie Lai, Ada Ma

The Hong Kong Polytechnic University, Hong Kong S.A.R. (China)

The theory of planned behaviour (TPB; Ajzen, 1985) has been a prominent theory in predicting physical activity intentions. Previous reviews suggested that self-efficacy and social support might be important additions to the model in predicting intention to participate in physical activity (e.g. Beauchamp, Crawford, & Jackson, 2018; Hagger & Chatzisarantis, 2009; Wang, 2011). To extend the TPB, self-efficacy and social support were included in an integrated model to test the associations of the TPB variables (i.e. subjective norm, attitudes, perceived behavioural control) and intention to participate in physical activity.

Structural equation modelling was employed to test the hypothesised associations using a sample of N = 1,187 Chinese university students. Analyses showed that TPB variables were significant predictors of intentions to participate in physical activity. The mediation effects of self-efficacy and social support were supported. In addition, the moderation effect of gender was demonstrated. Social support was more influential on female participants compared to their male counterparts. This study provided empirical evidence for the applicability of the TPB with other psychosocial variables on predicting physical activity intentions in a Chinese context. In particular, the present findings shed light on the potential of increasing self-efficacy and social support as useful ways of promoting physical activity. The current study highlights the application of an integrated approach when using the TPB as a framework to design effective programs for Chinese university students.

8:45am - 9:00am

The associations of temperament and personality traits with frequency of physical activity in adulthood

Jenni Karvonen^{1,3}, Timo Törmäkangas^{1,3}, Lea Pulkkinen^{2,3}, Katja Kokko^{1,3}

¹Gerontology Research Center and Faculty of Sport and Health Sciences; ²Department of Psychology; ³University of Jyväskylä, Finland

Research on temperament and physical activity (PA) has focused mainly on children and adolescents. This study aimed to investigate the associations of temperament with the frequency of overall and vigorous PA in adulthood. Adult temperament consists of four traits: negative affectivity, surgency, effortful control and orienting sensitivity (Evans & Rothbart, 2007). The associations between temperament and personality were examined by including personality traits in the analyses.

The study is based on the Jyväskylä longitudinal study of personality and social development (Pulkkinen, 2017). The data was collected from 42- and 50-year-old participants in 2001 and 2009 (N = 214–261). All analyses were conducted separately for women and men. Temperament was measured at age 42 with the Adult Temperament Questionnaire (Evans & Rothbart, 2007) and personality traits with a shortened 60-item version of the NEO-PI at age 50 (Costa & McCrae, 1989). PA was measured at age 50.

Multinomial logistic regression analyses revealed that higher scores in 'orienting sensitivity' were associated with an increased likelihood of frequent participation in overall and vigorous PA in women, whereas higher scores in 'negative affectivity' were associated with a decreased likelihood of frequent participation in overall and vigorous PA in men. From personality traits, higher scores in extraversion in women and higher scores in agreeableness in men were associated with an increased likelihood of frequent participation in vigorous PA.

The present observations on adult temperament and PA are the first of their kind. The results can be utilised in the development and targeting of health interventions.

9:00am - 9:15am

Item-order inflates the predictive power of the theory of planned behaviour on physical activity? A randomised controlled trial

Derwin K. C. Chan^{1,2}, Andreas Karl Stenling³, Cleoputri Yusainy⁴

¹Education University of Hong Kong, Hong Kong S.A.R. (China); ²Curtin University, Australia; ³Umeå University, Sweden;

⁴Brawijaya University, Indonesia

This randomised control trial (RCT) examined if the prediction of the theory of planned behaviour (TPB) on physical activity (PA) could be manipulated by changing the item-order. According to response set theory (Cronbach, 1946, 1950) and the findings of a previous study (Chan, Ivarsson et al., 2015), it was hypothesised that the inter-factor correlations of TPB would be stronger when the items were arranged in an alternate-order (i.e. consistency tendency facilitated) than in an ensemble-order (i.e. consistency suppressed). Under the design of a cross-over RCT, we randomly assigned the recruited sample (770 undergraduate students from Indonesia) into two groups. Each group completed the PA version of TPB scale (Ajzen, 2002) in T1 (baseline) and T2 (one week after), and the items were arranged in either of the order. At T3 (one month after) both groups reported their PA level in the International Physical Activity Questionnaire (IPAQ Research Committee, 2005). Multi-group structural equation modeling showed that the model of TPB fitted the data acceptably well (CFI > .92, TLI > .90, SRMR < .08, RMSEA < .08) for all groups and conditions. Consistent with the hypothesis, alternate-order produced stronger cross-sectional relationships (i.e. links between attitude, subjective norm, perceived behavioural control, and intention) than ensemble-order, but such pattern was not observed in the relationship between intention and behaviour. In conclusion, ensemble-order appears to be a better item-order than alternate-order in measuring TPB variables of PA because it does not manipulate the cross-sectional relationships within the theory.

9:15am - 9:30am

Let's Go! Examining the psychological, psychophysical, and physiological effects of music during sprint interval exercise

Matthew J Stork¹, Costas I Karageorghis², Kathleen A Martin Ginis¹

¹University of British Columbia, Canada; ²Brunel University London, UK

While sprint interval training (SIT) is time-efficient and can elicit meaningful health benefits among insufficiently active adults, one major drawback is that people tend to find it unpleasant. Consequently, researchers have begun to investigate the use of music to enhance people's pleasure during SIT. To date, little is known about the application of music to SIT protocols designed for insufficiently active individuals. The purpose of this study was to investigate the psychological (affect, arousal, enjoyment), psychophysical (perceived exertion), and physiological (heart rate [HR], power output) effects of researcher-selected motivational music during a practical SIT protocol performed by insufficiently active adults. Using a randomized counterbalanced design, $n = 24$ insufficiently active adults (12 women; $M = 24$ years, $SD = 5$) inexperienced with SIT completed three SIT trials (3x20-s "all-out" sprints with 2-min recovery periods) under different conditions: motivational music, podcast control, no-audio control. Listening to motivational music during SIT led to greater post-exercise enjoyment of SIT, elevated HR responses, and enhanced peak power output when compared to the podcast or no-audio control conditions ($ps < .05$). Further, affective responses tended to be more positive over the course of the SIT trial in the music condition when compared to the control conditions, and affect increased from pre-exercise to 5-min and 10-min post-exercise in all conditions ($ps < .05$). The application of music during SIT has the potential to increase feelings of pleasure, improve enjoyment, and enhance the performance of SIT for insufficiently active people, which may ultimately lead to better adherence to SIT.

9:30am - 9:45am

Towards a better understanding of the relationship between mentally demanding jobs and physical inactivity during leisure time

Sven van As, Debby G. J. Beckers, Harm Veling, Michiel Kompier, Sabine Geurts

Behavioural Science Institute, Radboud University

Despite being identified as an urgent physical health priority, levels of physical activity have not increased over the past few years (Andersen, Mota, & Di Pietro, 2016). Recent findings (Fransson et al., 2012) and theorising (Häusser & Mojzisch, 2017) suggest that demanding psychosocial work characteristics, such as high mental job demands, can have a detrimental impact on leisure-time physical activity (LTPA). The mechanisms and potential moderating factors of this relationship are still largely unknown. The current study therefore aimed at identifying such mediators and moderators. Based on the compensatory control model (Hockey, 1993), we assumed work-related fatigue to be a key factor in the hypothesized adverse pathway from mentally demanding work to low LTPA. Additionally, we expected job control, autonomous exercise motivation and spontaneous action planning to attenuate the relationship between job demands and LTPA. To investigate these assumptions, a large-scale longitudinal survey study was conducted. A representative sample of Dutch employees working in sedentary jobs reported on the constructs of interest in 2017 and 2018 ($N = 1,281$ and 772 , respectively). Our assumptions will be tested by means of Structural Equation Modelling to gain insight into both the cross-sectional as well as longitudinal relationships. This will be the first preregistered study on the relationship between job demands, LTPA and its mediating and moderating factors. The study will thereby contribute to our understanding of the way in which mentally demanding work influences LTPA and aims to uncover key factors that can help reduce physical inactivity among employees with demanding work.

9:45am - 10:00am

The longer you run, the crazier you are? A study on the personality of extreme long-distance runners

Michele Ufer^{1,2}

¹Institute of Sports & Management Psychology, Germany; ²Institute of Running Psychology, Germany

Long distance races are becoming more and more popular, in particular, extreme variants over several hundred kilometres in exotic areas far from civilization, e.g. in the desert, rainforest or Arctic (Ufer, 2017). Frequently, the participants of such competitions are called "crazy" by outsiders and media representatives, although, some studies have shown that there are no differences in the personality of (ultra) long-distance runners and the normal population (Janouch, 2016, Stoll & Rolle, 1997). But is that also true for extreme forms of running, covering distances of more than 160 km in hostile environments? Do the participants of extreme ultra-endurance competitions differ in their personality traits from the normal population and less extreme runners? In total, $N = 437$ runners participated in an online survey. In addition to sociodemographic data, athletes' Big Five personality traits were recorded using the BFI-10 (Rammstedt, Kemppe, Klein, Beierlein, & Kovaleva, 2013). The sample was divided into five sub-groups depending on the longest distance they have ever run: 22/45/100/160/>160 km. Surprisingly, the extreme runners (>160 km) was the only group that did not differ significantly in any of the Big Five personality traits from the norm sample. However, (half) marathon runners differed significantly in four dimensions from the extreme runners: extraversion, neuroticism, agreeableness and conscientiousness. Detailed results and implication for future research are discussed.

Paper Session 38: Athletes, Coaches and Parents in Youth Sport

Time: Friday, 19/Jul/2019: 8:30am - 10:00am · Location: VSH 06 - Bad Blankenburg

Session Chair: Gretchen Kerr, University of Toronto

8:30am - 8:45am

Behaviours employed by parents and coaches to promote the psychological development of elite youth tennis players

Lea-Cathrin Dohme¹, Gordon Bloom², David Piggott³, Susan Backhouse³

¹Cardiff Metropolitan University, United Kingdom; ²McGill University, Canada; ³Leeds Beckett University, United Kingdom

Limited resources exist that support coaches' and parents' efforts to proactively and systematically foster youth athletes' psychological development. As a result, coaches and parents are frequently left to their own devices when aiming to stimulate such development. The purpose of this study was to identify and understand the behaviours coaches and parents employed to foster youth athletes' psychological development. A nine-month qualitative research study was conducted that consisted of 15 parents of 11 elite British male tennis players (M = 11 years) and their coach. Data were collected through semi-structured interviews, 185.5 hours of observations, and 87 pages of field notes. Results revealed that the coach and parents employed five behaviours to foster the athletes' development: (1) providing verbal, tangible, tacit, and social media recognition; (2) reinforcing rules; (3) providing observational learning opportunities; (4) establishing positive athlete relationships; and (5) engaging in purposeful conversations. Additionally, parents provided athletes with a choice regarding their involvement in tennis. Commonly, the behaviours were employed reactively to "fix" athletes, rather than proactively to "prepare" athletes. The results extend the talent development literature by outlining the recent importance and value played by social media recognition, the type and amount of athlete input, and the purposeful facilitation of athlete relationships and guiding conversations, which were the most frequently employed behaviours. Understanding these behaviours provides a foundation upon which recommendations for resources supporting coaches and parents' efforts to promote youth athletes' psychological development can be made.

8:45am - 9:00am

Talent development in football – a holistic perspective: the case of KRC Genk

Knud Ryom¹, Mads Ravn¹, Rune Düring¹, Kristoffer Henriksen²

¹Aarhus University, Denmark; ²University of Southern Denmark, Denmark

Professional football has skyrocketed in terms of economy, globalization and professionalism. Thus, an increased interest in the demands of developing professional footballers arise. Research in football, however, primarily focused on individual development and external factors affecting performance. While research from a holistic and ecological approach in other sports has examined the successful environment, indicating that though such environments are unique, they also share features. Using a single-case study design and based on the holistic ecological approach, the present study investigated The Jos Vaessen Talent Academy of the Belgium club KRC Genk. Desk research, extended fieldwork, interviews and observation of the environment was made during the season 17-18. Results suggest that the environment in many regards is consistent with the shared features found in other successful environments, including training groups with supportive relationships, support of sporting goals by the wider environment, support for the development of psychosocial skills, focus on long-term development, strong and coherent organizational culture, and integration of efforts. Two other features of previously investigated environments, proximal role models and training that allows for diversification, were observed but in new forms. Two additional features were observed as unique traits. Cultural awareness described the academy's ability to accommodate a broad diversity of players, and an open sharing culture described an openness towards new ideas and learning at all levels of the organization. Our results indicate that the successful talent development environment in football shares some features with successful environments in other sports, while at the same time presenting unique traits.

9:00am - 9:15am

"Punishments made me hate hockey": exploring the link between youth athletes' punishment experiences and dropout from hockey

Anthony Vincent Battaglia, Gretchen Kerr, Ashley Stirling

University of Toronto, Canada

Unsupportive coaching behaviours, dislike for the coach, and conflicts with the coach have been cited by athletes as reasons for ceasing sport participation (Crane & Temple, 2015). It is suggested that a specific coaching behaviour – namely the use of punishment tactics – may contribute to negative sport experiences and perhaps extend to decisions to cease sport participation. This proposition is supported by a wealth of information on the consequences of punishment use in the parenting and education literature, such as a loss of self-esteem, development of counter-productive behaviour, avoidance of a punitive adult, increased risk of poor mental health, and erosion of relationships (Gershoff, 2002). However, few researchers have examined the use of punishment in sport, empirically. This study examined athletes' experiences of punishment in competitive hockey and the potential influence of these experiences on their decisions to cease participation in the sport. Semi-structured interviews were conducted with N = 10 former female and male competitive hockey athletes, 18-19 years of age. Data were analysed using inductive thematic analysis (Braun & Clarke, 2006). Participant accounts revealed that yelling, benching, and physical-conditioning exercises were forms of punishment experienced regularly throughout their youth hockey involvement. These punishment experiences reportedly had negative effects on the participants' perceived athletic worth, enjoyment and fun in hockey as well as sport relationships and enhanced their interests in other activities. Findings are interpreted to suggest that punishment experiences contributed to athletes' decisions to cease participation in competitive hockey. Recommendations for future research and practice are suggested.

9:15am - 9:30am

“The best parent is the dead parent”: parental involvement in team sports**Safer Elmas, Aydan Gözmen Elmas, Ali Yıldız, F. Hülya Aşçı**

Marmara University, Sport Sciences Faculty, Turkey

Purpose: This study was aimed to identify and explore the experience of parental involvement in youth team sports from a coach, athlete and parent perspectives.

Methods: Participants were n = 18 youth athletes (U18), n = 14 parents (7 fathers and 7 mothers) and n = 3 coaches from professional football, basketball and volleyball clubs. Data were gathered by qualitative semi-structured in-depth individual and focus group interviews. Data were interpreted using a thematic analysis approach.

Results: Based on the parental framework, positive psychosocial support, monitoring athletes' sport life, positive communication, and distanced coach-parent relationships arose from all three groups (coaches, athletes, parents) as common themes for empowering parent patterns. In contrast, parental oppressive attitude, parents' coaching tendency, negative communication, unrealistic parental evaluations about athlete, immoral parental behaviours on sideline (coaches, athletes, parents); parent-athletes over-identification, parents' over-expectations to keep in touch with the coach (coaches, athletes); dual-career pressure (athletes); success expectancy in exchange for investment (parents), and so forth were revealed from most common to self-contained themes for disempowering parent patterns.

Conclusion: Apart from gathered themes, it was considered that existing problems concerning parental involvement did not only stem from parents but also other stakeholders.

9:30am - 9:45am

Using ethnodrama to encourage reflection: workshops to support youth sport parents**Francesca Cavallerio**

Anglia Ruskin University, United Kingdom

Over the past decade, creative analytical practices (e.g. creative non-fiction, ethnodrama, poetry, CAP) have been encouraged as a way to represent research findings to effectively reach non-academic audiences, facilitating increased awareness of issues, and encouraging discussion and reflection (Smith, McGannon, & Williams, 2015). Recently, researchers highlighted the importance of parents in youth athletes' sport experiences and provided a more in-depth understanding of the stressors faced by these stakeholders (e.g. Harwood & Knight, 2009). In order to offer sport parents the support needed, Knight and Newport (2017) encouraged the development of interventions that are engaging and effective. Therefore, the present study aimed to evaluate the effectiveness of using ethnodrama in educational workshops with youth sport parents, to increase awareness and facilitate discussion and reflection of the challenges faced in their role. Ten parents of under 16-year-old competitive athletes were invited to take part in four educational workshops dedicated to youth sport parents. Each session began with the reading of a scene from an ethnodrama on the experiences of sport parents based on the author's previous research. Data was collected using unstructured diaries completed by the participants following each workshop, transcripts from the video-recorded sessions, and the researcher's reflective journal. It was then analysed adopting thematic analysis. Positive and negative aspects of using CAP within an educational setting with sport parents were identified and will be discussed, together with reflections on best practices in designing workshops that aim to be interactive and co-constructed.

9:45am - 10:00am

The value of delivering a trauma-informed sport programme: a pilot study of leaders' learning experiences**Majidullah Shaikh¹, Tanya Forneris², Diane Culver¹**¹University of Ottawa, Canada; ²University of British Columbia, Canada

Traumatic exposure in childhood can result in impairments of social relatedness as well as cognitive and emotional dysregulation (Cook et al., 2005). Programme leaders trained in trauma-informed approaches can design and deliver sport-based programming that can help restore youths' social and self-regulatory capacities and orient them toward thriving (Bergholz et al., 2016). However, little research has explored the learning experiences of programme leaders as they apply trauma-informed approaches in youth sport. Wenger and colleagues' (2011) value-creation cycle offers a useful framework to assess the value that is enabled (e.g. changes to one's self and/or one's social environment) from leaders' learning interactions (e.g. training workshops). The purpose of this study was to assess the learning experiences of programme leaders who implemented trauma-informed sport programming in a national youth organisation. N=12 leaders participated in multiple workshops as they implemented programming in three pilot sites across Canada for eight months. The data were gathered through interviews and observations. The value-creation framework was used to categorise learning experiences based on the interactions and perceived values that leaders discussed. The results indicate that leaders encountered various learning interactions (e.g. training workshops, applied practice, peer discussions), and discussed gains in immediate value (e.g. enjoyment, peer-relationships), perceived value (e.g. knowledge and awareness of neuroscience/trauma, programme delivery strategies), applied value (e.g. coaching skills, youth-support skills, youths' receptivity), realised value (e.g. expertise, youths' behaviour change), and transformative value (e.g. transfer of skills, influence on club culture). Implications are discussed for programme improvement and ongoing programme leaders' education.

Paper Session 39: Motor Control and Performance

Time: Friday, 19/Jul/2019: 8:30am - 10:00am · *Location:* VSH 116 - Varna
Session Chair: Claudia Voelcker-Rehage, Chemnitz University of Technology

8:30am - 8:45am

Interindividual differences in the capability to change automatized movement patterns

Laura Sperl, Rouwen Cañal-Bruland

Friedrich Schiller University Jena, Germany

Changing automatized movement patterns can be a particularly problematic process. One possible explanation for this difficulty is that the established movement pattern interferes with the acquisition of the new movement pattern, referred to as proactive interference. According to May et al. (1999), individuals may quite largely differ with respect to their interference-proneness. The aim of the present study was to examine potential inter-individual differences in a motor skill modification task by scrutinizing the role of executive functions, age, expertise and gaze behaviour. Skilled touch-typists typed short texts as fast and accurately as possible on a regular computer keyboard. After typing in their habitual manner, a rule change was introduced that prohibited the use of the left index finger for subsequent typing, which immediately disrupted participants' automatized typing performance, measured as typing time, inter-keystroke intervals and typing errors. Results revealed that the performance decline after rule change was significantly associated with age and gaze behaviour (screen vs. keyboard). Following a median-split performance decrements were also related to resistance to proactive interference, but not to the other executive function measures (i.e. working memory, task-switching and prepotent response inhibition) or expertise (measured by baseline typing speed). We conclude that individual differences may predict the costs experienced when changing automatized movement patterns. These findings will be critically discussed in the light of current theories concerning technique change in sports and changing automatized movement patterns in more general.

8:45am - 9:00am

Performance advantages of an external relative to an internal focus of attention is independent from vision

Reza Abdollahipour¹, William Land², Suzete Chiviawsky³

¹Palacky University Olomouc, Czech Republic; ²University of Texas at San Antonio, USA; ³Universidade Federal de Pelotas, Brazil

Several experiments have shown that an external relative to an internal focus of attention is more beneficial for motor performance and learning across various tasks, contexts and populations. To elucidate possible underlying mechanisms of such effects, we investigated the impact of attentional focus instructions on discrete (golf putting, countermovement jump; Land, Tenenbaum, Ward, & Marquardt, 2013; Abdollahipour, Psotta, & Land, 2016,) and continuous-based (pedalo cycling; Abdollahipour, Land, Cereser, & Chiviawsky, in press) motor tasks under various visual constraints (vision, no vision, and impaired vision). Our findings indicate that, regardless of visual constraints, participants adopting an external focus of attention uniformly outperformed participants adopting an internal focus of attention. This finding was consistent across all task types (e.g. discrete and continuous motor tasks). Our results support the existence of an underlying cognitively mediated mechanism independent of vision to account for the performance and learning advantages observed for an external focus of attention (Wulf & Lewthwaite, 2016). Theoretical implications from our body of research will be presented. This work was supported by the Czech Science Foundation under grant GAČR 18-16130S.

9:00am - 9:15am

Motive-task congruence and motor performance in dart throwing

Florian Müller, Rouwen Cañal-Bruland

Friedrich Schiller University Jena, Germany

A number of studies have investigated the relationship between individuals' motives and motor learning or performance. However, the majority of these studies have focused on the effects of the achievement motive only. One exception is Sorrentino and Sheppard's (1978) study documenting that high affiliation (approval-oriented) swimmers' speeds were higher in a team relay compared with individual competition. Rejection-threatened swimmers showed the reverse pattern of performance. In a conceptual replication, we hypothesised that congruence between participants' motives and situational incentives yields increased the motor performance. To put this hypothesis to test, after assessment of the achievement, affiliation, and power motives with the Multi-Motive-Grid, participants took part in a dart throwing contest where winning was either dependent on a) succeeding in an individual competition, or b) succeeding in a team competition. Performance gains relative to baseline measures were expected to be dependent on the congruence of participants' motives with the respective experimental condition. Specifically, performance gains were expected to be positively related to a) the power motive in the individual competition and b) the affiliation motive in the team competition. Whereas no effects of motives on the change in participants total performance were found, the performance gains across trials were related to motives. In particular, affiliation was related to performance decrements in the individual competition. Thus, the data provide initial supporting evidence for the role of the affiliation motive in motor performance as first documented by Sorrentino and Sheppard (1978).

9:15am - 9:30am

Skilled deceivers are better action perceivers**Ryan Raffan¹, David L. Mann², Rosa Du Randt¹, Geert Savelsbergh²**¹Nelson Mandela University, South Africa; ²Vrije Universiteit Amsterdam, The Netherlands

Skilled performers rely on deceptive actions to sabotage the perceptual ability of opponents who seek to anticipate action intentions. Common-coding theory (Prinz, 1997) purports that the ability to "see through" a skilled deceptive action would be associated with the capacity to perform the same action. The aim of the study was to investigate whether the ability to anticipate the outcome of a deceptive action would be related to the ability to perform the same action. N = 16 skilled rugby players performed deceptive (side-step) and non-deceptive actions while running towards a camera. The "deceptibility" of those participants was determined by testing the ability of a separate group of n = 8 skilled observers to anticipate the impending running directions using a temporally occluded video-based test. Based on their response accuracies, high- and low-deceptibility groups were defined respectively as the six most and least deceptive in the video test. These two groups then performed the same video-based test. Results revealed that the ability to discriminate between deceptive and non-deceptive actions was indistinguishable between the groups when viewing less-deceptive actors ($p = .705$). However, when viewing highly-deceptive actors, only the high-deceptibility group retained their anticipatory ability as the action unfolded, with the performance of the low-deceptibility group decreasing late in the action ($p = .020$). These findings suggest that consistent with common-coding theory, the perception of deceptive actions is influenced by the capacity to produce the same action.

9:30am - 9:45am

Deceptive actions bias responses and impair discriminability: signal detection analysis of rugby sidesteps**Laurence S. Warren-West, Robin C. Jackson, Michael J. Hiley**

Loughborough University, United Kingdom

Researchers who have used the temporal occlusion paradigm to study responses to deceptive actions have focused on the time window in which players resolve deception, improving from low to high response accuracy. Remarkably, the window of time during which players become deceived has yet to be examined. In the present study we address this by examining both susceptibility to, and detection of, deception in rugby union players using signal detection analyses. High-skilled and low-skilled participants (n = 19 per group) responded to 168 trials, showing a player 'cutting' left or right, with or without a deceptive sidestep. Physical responses were recorded using force plates and three-dimensional motion capture cameras. Each trial was occluded at one of seven time points relative to the footfall after the initial (genuine or fake) reorientation (deception window: -600ms to -300ms; resolution window: -300ms to 0ms). High-skilled (M = 0.40) and low-skilled players (M = 0.39) were found to be equally susceptible to deception ($p = .62$, $\eta^2 = .01$) but high-skilled players were significantly better at resolving deception ($p = .004$, $\eta^2 = .21$), indicated by better discriminability ($p = .001$, $\eta^2 = .25$), reduced bias toward judging actions to be genuine ($p = .02$, $\eta^2 = .14$), and earlier improvements in both these indices ($p = .01$, $\eta^2 = .12$). We conclude that experts are highly susceptible to deception but are able to respond more effectively than lesser-skilled players through earlier detection of deceptive intent.

9:45am - 10:00am

Probability information and skilled visual anticipation of tennis serve direction**Florian Loffing, Maria Walden**

Carl von Ossietzky University Oldenburg, Germany

Providing players with probability information about their opponent's action tendency is common practice in competitive sports. Doing so may, but not necessarily must, facilitate players' visual anticipation of their opponent's action intention (Alain & Proteau, 1980; Mann et al., 2014). Here, in a video-based experiment we tested the effect of providing probability information that either indicate an opponent's action preference or not on tennis players' prediction of tennis serve direction against opponents who actually had a preference or not. N = 32 skilled male players anticipated the direction (left vs. right) of temporally occluded serves (160ms, 80ms prior to or at the moment of racket-ball-contact) against two opponents separately in two consecutive two-set matches comprised of serves only. For half of the participants, opponents distributed their shots equally (group-50), whereas for the other half, opponents directed 80% of their shots to the participants' right side (group-80). Between sets 1 and 2, participants received information on an opponent's purported serve strategy (no preference or 80% right; order counterbalanced). Prediction accuracy of group-80 improved (decreased) from set 1 to set 2 when provided with 80% (50%) probability information, whereas no meaningful changes between sets were found for group-50 in any probability condition, $F(1, 30) = 7.08$, $p = .012$, $\eta^2 = .19$. Thus, providing players with probability information seems beneficial only when pointing towards an opponent's action preference that actually exists (e.g. 80% right), but not when an opponent does not act according to their preference or does not have a preference at all.

Symposium 31: Motives for participation in sport and physical activity: new approaches

Time: Friday, 19/Jul/2019: 8:30am - 10:00am · *Location:* H 2 - Bern
Session Chair: Anthony Michael Morris, Victoria University, Melbourne, Australia

Motives for participation in sport and physical activity: new approaches

Chair(s): **Tony Morris** (Victoria University, Melbourne, Australia, Australia)

Discussant(s): **Tony Morris** (Victoria University)

Acknowledgement of the importance of physical activity (PA) for health and wellbeing is increasing. With this recognition, researchers and practitioners in sport and exercise psychology globally focus attention on strategies to promote activity for health benefits. One established approach to increasing individuals' involvement is through motives for PA participation. We present research on motives for PA participation that aims to increase individuals' enjoyment of PA, so they maintain long-term high activity levels. Following a brief introduction (5 mins), Roychowdhury et al. review theory and research linking mindfulness to motives for participation in PA, based on which mindfulness interventions can be developed to increase major motives (12 mins). Next, Liu et al. report a study examining the relationship between motives and stages of change (12 mins). Morris et al. then use several data sets from different populations to present motivation profiles, discussing potential to apply this approach to enhance PA participation (12 mins). Next, Chlebosz et al. describe research designed to measure motives for participation in Poland and link them to increases in quality of life (12 mins). While participation in traditional sports has declined in recent times, involvement in extreme sports has increased substantially. Zhou et al. describe face and content validity research on items designed to measure vertigo and catharsis, new motives identified in qualitative research on extreme sports in China, allowing researchers to compare motives between traditional and extreme sports (12 mins). Finally, the session is opened for discussion of the ideas and research presented (25 mins).

Presentations of the Symposium

Motives for participation in exercise in different stages of change among university students

Kien Ting Liu¹, Yee Cheng Kueh¹, Garry Kuan¹, Tony Morris²

¹Universiti Sains Malaysia, ²Victoria University

In this study, we aimed to examine the level of motives for participation in physical activity (PA) in different stages of change regarding exercise (SOC), among students in Universiti Sains Malaysia. A cross-sectional study was conducted by inviting university students to complete the 40-item Physical Activity and Leisure Motivation Scale (PALMS), and one question related to SOC, which consists of 6 stages (i.e., pre-contemplation, contemplation, preparation, action, maintenance, relapse). PALMS consists of eight motives for participation in PA, mastery, enjoyment, psychological condition, physical condition, appearance, affiliation, others' expectations, competition/ego. A total of 562 students with mean age of 19.81 (SD = 1.22), comprised of female (79.3%) and Malays (67.3%) participated in this study. One-way MANOVA was used to identify significant differences in means of motives among SOC stages. There were statistically significant differences between SOC stages on each motive for participation in PA, the motives included mastery ($F(5,556) = 3.502, p = .004$), physical condition ($F(5,556) = 2.698, p = .020$), psychological condition ($F(5,556) = 3.072, p = .010$), appearance ($F(5,556) = 3.197, p = .007$), enjoyment ($F(5,556) = 6.013, p < .001$) and competition/ego ($F(5,556) = 2.775, p = .017$). Overall, participants in the maintenance stage had higher levels of all motives than participants in other SOC stages of change. The findings suggest that motives for participation in PA varied among different levels of SOC. Students with high motives were more likely to maintain their exercise routine. This indicated that motives for participation in PA are important in sustaining students to maintain their exercise practices.

The role of mindfulness in enhancing participation motivation in sport and exercise

Dev Roychowdhury¹, Tony Morris²

¹University of Canberra, ²Victoria University

Researchers have highlighted the importance of motivation in physical activity involvement. Studies examining motives people nominate for engaging in a range of physical activities have consistently shown that individuals demonstrate motivational differences based on the type of physical activity in which they are involved (Molanorouzi, Khoo, & Morris, 2015). Research findings also suggest that discrete motives for participation distinctly demarcate between diverse types of physical activities (Roychowdhury, 2018). Despite the well-documented relationship between motives and physical activity involvement, the determinants of participation motivation have received scant attention. One of the variables that enables motivational tendencies is mindfulness. Mindfulness may be described as involving intention to direct one's attention to the present moment in a non-judgemental way that leads to a state of acceptance and inner calmness (Kabat-Zinn, 1994). Mindfulness is found to enhance individuals' ability and overall quality of self-attention and awareness, which may facilitate intrinsic motivation and self-regulated behaviours (Brown & Ryan, 2003; Levesque & Brown, 2007; Ruffault, Bernier, Juge, & Fournier, 2016). Overall, research indicates that mindfulness plays a significant role in mediating and enhancing motivation. Moreover, research on mindfulness-based interventions has shown encouraging results for increasing motivation and promoting physical activity involvement (Butryn, Forman, Hoffman, Shaw, & Juarascio, 2011). In this presentation, we describe the relationship between primary characteristics for activity types and motivational tendencies of individuals for engaging in those activities. We further examine the association between mindfulness and participation motivation within sport and exercise psychology and propose new directions for research and practice.

Applying motivational profiling in sport and physical activity

Tony Morris¹, Dev Roychowdhury², Selina Khoo³

¹Victoria University, ²University of Canberra, ³University of Malaya

There is now strong evidence that physical activity (PA), including sport, plays a major role in promoting physical health and psychological wellbeing (WHO, 2017). However, globally, around half the adult population does not do sufficient, sustained PA to achieve health benefits (WHO, 2017). Children and adolescents' participation in traditional forms of PA and sport are also declining (Hu et al., 2018). Motivation is a key driver of participation in PA. Research indicates that higher levels of motives for PA participation are directly associated with participation in a larger amount of PA among youth (Hu et al., 2018) and adults (Molanorouzi et al., 2015). Researchers have also shown that different patterns of motives are associated with participation in different types of PA. A major challenge for researchers and practitioners is to develop techniques through which individuals can be advised about the type of PA that their profile of motives for PA participation indicates is likely to lead to long-term participation at levels sufficient to promote health and wellbeing. In this presentation, we describe a method of profiling motives for participation that we have developed to depict patterns of motives based on the Physical Activity and Leisure Motivation Scale (PALMS; Morris & Rogers, 2004). We demonstrate the profiles for different populations and different PA types from a number of data sets using the adult PALMS and the youth PALMS (PALMS-Y; Hu et al., 2018). Then we discuss ways in which profiles can be used to promote long-term PA.

Motivation and quality of life in sport

Maciej Tomczak¹, Małgorzata Walczak², Paweł Kleka³, Małgorzata Sławińska⁴, Karolina Chlebosz⁵, Tony Morris⁶

¹University School of PE at Poznan, ²University School of Physical Education in Poznan, ³Adam Mickiewicz University,

⁴European Network of Young Specialists in Sport Psychology, ⁵University of Poznan, ⁶Victoria University

Physically active lifestyle can influence mental health, social relations, and self-confidence (Leslie et al., 2001), leading to increased quality of life (QoL; Gill et al., 2013). Adult physical activity (PA) levels are declining globally (WHO, 2017). Numerous studies have examined people's PA participation (Lavigne et al., 2009; Ryan & Deci, 2000). Often, measures used were not broad enough to reflect all the reasons for PA participation. The 40-item Physical Activity and Leisure Motivation Scale (PALMS; Rogers & Morris, 2004) is a comprehensive tool measuring motives for PA participation, among adolescents and adults. Five items constitute each of the eight subscales (mastery, enjoyment, psychological condition, physical condition, appearance, others' expectations, affiliation, competition/ego), reflecting motives for PA participation that can be categorised as features of intrinsic and extrinsic motivation based on self-determination theory. The aim of study 1 in this programme is to validate the PALMS in the cultural context of Poland. We will invite >300 participants from different sport disciplines, gender, and age to examine whether PALMS demonstrates acceptable factor structure, internal consistency, test-retest reliability, and criterion validity in Polish. Study 2 will examine relationships between motivation, physical activity, and health-related QoL. Participants will complete PALMS, the International Physical Activity Questionnaire (IPAQ; Craig et al., 2004), and to measure QoL the Nottingham Health Profile, Short-Form Health Survey (SF-36), and WHOQOL-BREF. Correlation and regression analyses will be used to explore relationships. In Study 3, these variables will be examined further using more sophisticated modelling techniques.

Developing vertigo and catharsis motives for the Physical Activity and Leisure Motivation Scale (PALMS)

Jane Zhou¹, John Tower², Karolina Chlebosz³, Tony Morris²

¹Zhejiang University, ²Victoria University, ³University of Poznan

Researchers have shown that motives for physical activity (PA) participation influence the amount of PA people perform (Molanorouzi et al., 2015). However, measures of such motives, such as the 40-item, 8-motive Physical Activity and Leisure Motivation Scale (PALMS), have been developed and validated in traditional sports and leisure activities. In a recent, qualitative study, Zhou et al. (submitted) explored reasons for involvement among Chinese extreme sports participants. They found dimensions reflecting seven of the eight motives in PALMS. In addition, two new motives emerged, namely vertigo, the motive to do something risky or dangerous, and catharsis, refreshment of the spirit associated with extreme experiences. We have developed items to measure vertigo and catharsis to add to PALMS, making it possible to compare motivational profiles in traditional and extreme sports, as well as different types of extreme sport. We generated a number of items for vertigo and catharsis, by examining the themes in the Zhou et al. study, considered the degree to which each reflected the vertigo or catharsis motive, and selected the five most suitable for each motive through a consensus process. Then we asked six experts in the area of motives for PA participation to comment on the face and content validity of these items. Based on their feedback, we modified the items and created a 10-motive, revised version of PALMS, with 50 items, five measuring each sub-scale, in random order. Here, we describe the development process and present the revised PALMS for feedback and testing.

Symposium 32: Understanding and facilitating effective goal striving

Time: Friday, 19/Jul/2019: 8:30am - 10:00am · *Location:* H 3 - Madeira

Session Chair: Nikos Ntoumanis, Curtin University

Understanding and facilitating effective goal striving

Chair(s): **Nikos Ntoumanis** (PAW Lab, School of Psychology, Curtin University, Australia)

Five papers in this symposium discuss the role of effective goal striving in sport and physical activity. Using diverse methodologies and designs (lab experiments, cross-sectional and diary surveys, interviews and meta-analysis), we identify conditions that hamper versus promote effective goal striving. The first study presents a conceptual model of antecedents and consequences of self-regulatory responses to goal challenges, and makes the case for the role of mental contrasting with implementation intentions and goal motivation. The second study extends work on goal motivation by examining team goals, in addition to individual goals. The third study makes the case for examining the direction of the goal (i.e. inhibition or activation of behaviour) in trying to understand predictors of goal attainment. The fourth study looks at the role of the social environment and achievement goals on goal progress. The last study provides a quantitative synthesis of the literature, showing that goal setting can result in sustained improvements in physical activity, even after the completion of an intervention.

Taken together, these findings have implications for understanding the multitude of antecedent factors, as well as goal characteristics, that affect the setting, pursuit, and attainment of goals in sport and exercise settings.

Presentations of the Symposium

A new tripartite model of goal striving

Nikos Ntoumanis¹, Contantine Sedikides²

¹PAW Lab, School of Psychology, Curtin University, Australia, ²Department of Psychology, University of Southampton, UK

A great deal of research in the psychological literature has examined how goals should be framed for facilitating persistence and performance. Alas, much less is known about persistence in the face of difficult goals or strategic goal disengagement. In sport and in life there are situations where persistence is futile (e.g. due to time constraints or new capacity demands). How can individuals become better in deciding whether to hold on or let go of their goals?

We outline a new tripartite model of goal striving (Ntoumanis & Sedikides, 2018) which provides answers to this question. This is a new integrative model of goal motivation and goal regulation. The model outlines how three important self-regulatory responses during goal pursuit (goal persistence, disengagement, reengagement) can be influenced by the intersection of two pivotal mechanisms: the motives for goal pursuit (autonomous vs controlled) and the cognitive strategy of mental contrasting combined with implementation intentions (MCII). The interplay between these goal motives and MCII is yet unexplored, but holds promise for several conceptual and practical advancements in understanding the pursuit of challenging life goals, the balancing of multiple goals, and concomitant affective and behavioural responses.

We will present research that tests aspects of the model. We will also generate several research questions, thus mapping out an empirical agenda for the future. We address a significant problem, as appropriate responses to goal striving difficulties can enhance goal attainment, personal and social well-being, and health in sport and other life domains (Carver & Scheier 2005).

Understanding the “I” and the “team”: an exploration of individual and team motives for shared goal pursuit

Laura C. Healy, Julie Johnston, Mustafa Sarkar

SHAPE Research Group, Department of Sport Science, Nottingham Trent University, UK

Goal setting is a technique commonly employed to improve performance in a range of achievement contexts including sport. Research has demonstrated that the autonomous and controlled personal motives underpinning goal pursuit are important factors for goal attainment, goal self-regulation, and well-being (e.g. Healy et al., 2016; Sheldon & Elliot, 1999). However, and despite the prevalence of goal setting within sport teams, no research has examined the role of goal motives when individuals are working collectively towards a shared goal.

Using a cross-sectional survey design, the purpose of the present study was to explore the association between perceptions of personal and team motives when sport teams pursue a shared goal. Team sport athletes individually completed a battery of questionnaires related to their shared goal. This included surveys to assess their personal and team autonomous and controlled motives for their team goal (Healy et al., 2016; Smith et al., 2007), perceptions of coach autonomy-supportive and controlling behaviours (Bartholomew et al., 2010; Williams et al., 1996), team cohesion (Carron et al., 1985), social identity (Bruner & Benson, 2018), and self-reported goal attainment. The data were analysed using multi-level modelling to examine the associations between individual and team motives, and how these factors relate to perceived goal attainment.

The results of the study will be discussed and it is anticipated that the findings will be of use to team sport athletes, as well as to coaches and practitioners supporting teams, to facilitate the effective pursuit of team goals.

The role of self-control resources and effort on physical activity goal attainment in primary and tertiary prevention

Cyril Forestier¹, Benoit Allenet², Philippe Sarrazin³, Jean-Philippe Heuzé³, Aurélie Gauchet⁴, Aïna Chalabaev³

¹Sport and Exercise Psychology, University of Potsdam, Germany, ²Laboratoire TIMC-IMAG, Université Grenoble Alpes, France, ³Laboratoire SENS, Université Grenoble Alpes, France, ⁴Laboratoire LIP-P2C, Université Grenoble Alpes, France

Today, 50 % of the adult population worldwide, and 66 % of European individuals with cardiovascular diseases (IWCD) fail to reach recommended amounts of physical activity (PA) (e.g. Ford, Zhao, Tsai, & Li, 2011; WHO, 2014). Indeed, intentions do not systematically translate into behaviour, a phenomenon known as the "intention-behaviour gap". The self-control model (SCM) of Hofmann, Baumeister, Förster, and Vohs (2012) is promising to address this limitation. Self-control represents self-regulation operationalisation for goal pursuit and attainment, through a set of capacities. SCM considers that when a conflict is detected between a desire (e.g. rest on the couch) and a long-term goal (e.g. increase physical activity), self-control effort will increase to override conflict, if resources are available.

Two questions remain: (1) do SCM factors permit goal attainment only for goals requiring inhibition (e.g. unhealthy behaviours) or also for goals needing activation (e.g. healthy behaviours)? (2) Is SCM applicable to different populations (i.e. individuals in primary and tertiary prevention)? Through experience sampling method, 34 students and 14 IWCD completed during a week 7 daily forms on their smartphone assessing self-control components, wore accelerometer assessing PA and sedentary time, and self-reported their intention.

Multilevel analyses revealed that self-control resources predicted activatory goal attainment in students and IWCD (respectively $b_{within}=1.52$, $p=.00$, $b_{within}=1.77$, $p=.00$), and self-control effort predicted inhibitory goal attainment in students and IWCD (respectively $b_{between}=-9.45$, $p=.08$, $b_{within}=-10.81$, $p=.03$). These results suggest the necessity to distinguish predictors of goal attainment depending on the direction of the goal (i.e. inhibition or activation of behavior).

Mastering 'The Ball's in Your Court': the development of a sport-specific supportive care intervention for testis cancer survivors

Anika R Petrella¹, Roxy O'Rourke¹, Daniel Santa Mina², Catherine M. Sabiston¹

¹Faculty of Kinesiology and Physical Education, University of Toronto, Canada, ²Faculty of Kinesiology & Physical Education; Princess Margaret Cancer Centre, University of Toronto, Canada

Testicular cancer is the most prevalent male cancer diagnosed in young men. While they tend to be more active, they do not engage in supportive care that could improve wellbeing and quality of life. Sport may be a mechanism to engage these men in supportive care interventions. This two-phase study developed and evaluated a mastery-oriented sport-based supportive care intervention for testicular cancer survivors.

In phase I, qualitative interviews ($n=24$) were conducted with survivors, clinicians, and sport leaders exploring intervention goals and preferences to inform the development of the pilot sport intervention. The main program themes included (I) physical training provides outlet for supportive care, (II) fun not competitive, (III) importance of varsity and oncology team endorsement; (IV) group-based, (V) training and skill development, and were all consistent with Epstein's TARGET structures. The Balls in Your Court program was implemented for 5 weeks. In phase II, a purposeful sample of testicular cancer survivors ($n=6$) participated in a focus group following the sport intervention to better understand their experiences.

Themes from this focus group included the positive impact of engaging in each task (physical training, sport play, and supportive care), a supportive and encouraging environment fostered by coaching staff, group-based while promoting individual self-evaluation, access to varsity centre without fitness testing, and routines promoted mastery, all consistent with goal achievement theory. Long-term impact of this type of intervention needs further study in this specific population. Creating sustainable community partnerships may be instrumental in continued engagement from these men in evidence-based supportive care.

Examining the long-term effects of goal setting on physical activity

Desmond McEwan¹, Mark R. Beauchamp²

¹Department of Health, University of Bath, UK, ²School of Kinesiology, University of British Columbia, Canada

A recent meta-analysis of 52 controlled intervention studies found a medium effect (Cohen's $d = .55$, $p < .001$) of goal-setting on physical activity (PA) from pre- to post-intervention (McEwan et al., 2016). Hence, having individuals set PA goals appears to represent an effective behaviour change strategy for improving PA, at least over the short-term. However, it is not yet evident whether goal-setting results in sustained improvements in PA - that is, after an intervention has ended.

As such, the purpose of this study was to re-analyse the data from interventions cited within the aforementioned meta-analysis that included follow-up estimates of PA ($k = 15$). Similar to the results from the original meta-analysis, there was a medium effect ($d = 0.53$, $p < .001$) with regard to improvements in PA from baseline to post-intervention among the 15 interventions wherein participants set goals compared to participants in control groups who did not set goals. There was a small-to-medium effect ($d = 0.37$, $p < .001$) of goal setting on PA from baseline to follow-up, which, on average, took place approximately 22 weeks (range = 3 – 52 weeks) following the completion of the intervention. Most notably, there was no significant decrease in PA from post-intervention to follow-up ($d = -0.13$, $p = .13$).

The effect sizes were not moderated by any intervention characteristics (e.g. length of intervention) or goal characteristics (e.g. specificity). These results suggest that goal-setting can result in sustained improvements in PA, even after the completion of an intervention.

Symposium 33: Dual careers in sport - latest research findings from across Europe

Time: Friday, 19/Jul/2019: 8:30am - 10:00am · *Location:* H 4 - Chalkidiki
Session Chair: Robert Morris, Liverpool John Moores University

Dual careers in sport - latest research findings from across Europe

Chair(s): **Robert Morris** (Liverpool John Moores University, United Kingdom)

A dual career (DC) in sport is the pursuit of a sporting career alongside an education or vocational career. Research in this area has evolved dramatically during the last decade, with several new projects being conducted in this field. This symposium brings together five research projects from five different countries with a twofold purpose: (a) presenting the most recent results of the ERASMUS+ Ecology of Dual Career (ECO-DC) project, a European Commission funded project on understanding environmental factors influencing athletes' DC experiences, and other research projects in the topic, and (b) outlining some of the research and practical considerations which arose from these projects. The organiser will begin with a brief overview of the recent research and trends in the DC topic, including a brief outline of the ECO-DC project. Following this, the first presenter will provide an outline of DC development environments (DCDE), which commonly occur across seven countries in Europe, and the criteria used for assessing the effectiveness of these environments. Second, the insights from four case studies will be presented: (1) the central DC processes of a Swedish university environment, (2) the barriers and facilitators to DC within a Catalonian water sports club that combines sport with school-level education, (3) the structure of a Belgium university DC support program, which aims to support athletes to develop within their own sporting environment, and (4) the DC philosophies that encourage the construction of DC pathways within a Finnish DCDE.

Presentations of the Symposium

Exploring dual career development environments in sport: A European taxonomy of practice

Emily Deason, Robert Morris

Liverpool John Moores University

Previous research in dual careers has indicated a broad spread of approaches taken to provide support to dual-career athletes, with different countries, sports, and educational systems adopting different methods, due to their key structures and systems, when supporting athletes during their development. The aim of this research was, therefore, (1) to identify and classify the types of dual-career development environments (DCDE) that are common across Europe, and (2) to identify the criteria dual-career stakeholders use to evaluate their environment's effectiveness in delivering dual-career services. To identify and classify different types of DCDEs, researchers conducted interviews and focus groups with national-level stakeholders, and explored publicly available documentation (e.g. websites) on the existing DCDEs in the seven participating countries across Europe (i.e. Sweden, Spain, Belgium, Slovenia, Finland, and United Kingdom). Analysis of the data collected, using a thematic approach, resulted in the identification of eight types of DCDE that exist across Europe, classified according to key features such as primary stakeholder, educational level targeted, and sporting level targeted. DCDEs identified include elite-sports schools, combined dual-career programs, and national sports programs. The results also highlighted the criteria environments use to evaluate their effectiveness, which includes dual-career athletes' overall satisfaction, academic achievements, and sporting achievements. The presentation is concluded by the implications of this work: (a) to clarify the diversity in approaches to dual-career support across Europe, (2) to enable like-for-like comparisons of DCDEs, and (3) to present the diversity in criteria to assess the effectiveness of an environment.

"Support upon request": Exploring a dual-career development environment at a Swedish university

Lukas Linnér¹, Natalia Stambulova¹, Kent Lindahl²

¹Halmstad University, ²Swedish Sports Confederation

This presentation shares a case study of a dual-career development environment (DCDE) at a Swedish university based on the holistic ecological approach (Henriksen & Stambulova, 2017). The goal of the study was to explore the DCDE's structure, DC processes, and philosophy of the DC support team. Data were collected through 10 semi-structured interviews (with n = 8 university and sports staff members and n = 2 collaborative partners) and two focus groups (with n = 4 student-athletes, and n = 4 coaches). Participants were asked about their perceptions of the environment, key relationships, philosophy, and support. Observation of real-life events (e.g. meetings, training sessions), informal talks with 13 student-athletes and 21 staff members and stakeholders during eight full days, and analysis of relevant documents (e.g. webpage) provided additional insights into the environment. Results highlighted that the structure of the environment was characterised by a strong regional sports culture and collaboration between stakeholders with geographical and relational proximity and strong DC coordination. The coach-athlete relationship was the key relationship for DC support. The central DC processes were university regulations providing the student-athletes with the right to study flexibly, integrated DC planning between the coach and the athlete, and access to expert support. The philosophy of the DC support team was characterized by treating the student-athletes as "whole persons" and responsible grown-ups, meaning that no support was provided if the student-athletes did not request it. Implications of the approach taken by this DCDE are outlined at the conclusion of this presentation.

Testing the waters of dual career: An ecological assessment of a Catalonia water sports club

Yago Ramis, José Mejías, Joan Pons, Juan Muñoz, Miquel Torregrossa
Universitat Autònoma of Barcelona

This presentation depicts a case study based upon a historical water sports club from Catalonia. The club has a big history in terms of training world-class athletes and Olympic medallists, and it is considered one of the biggest sports clubs in the region based upon the number of members. As a differentiating factor, the club has its own school where student-athletes can engage in primary and secondary education and have access to specific adaptations in terms of flexible study and reduced teaching hours in order to facilitate the combination of athletic and academic careers. Case study data were collected via individual and focus group semi-structured interviews with multiple club participants (i.e. athletes, managers, coaches, teachers and psychologists) along with environmental observation. Results suggested that student-athletes' micro and macro environments have multiple potential facilitators as well as some barriers that influence the development of a dual career. Specifically, considering immediate social interactions, family support and teammate modelling were considered as fundamental elements to develop adequate attitudes towards dual-career development. Conversely, poor communication among teachers, coaches, and athletes, and a perceived lack of leisure time were potential barriers to a dual career. At an institutional level, the school was perceived as having a competitive advantage when compared with regular schools, as it allows more flexible time schedules and academic agendas. Additionally, other environmental factors that were perceived by participants as influencing dual career were club cultural awareness, sport-career programs from specific federations, and club's own initiatives to support student-athletes' careers.

Optimizing student-athletes' dual career "elite sport and higher education" pathway at the Vrije Universiteit Brussel

Koen De Brandt¹, Paul Wylleman², Paul De Knop¹
¹Vrije Universiteit Brussel, ²Vrije Universiteit Brussel; NOC*NSF

Flemish athletes' dual-career pathways in higher education are characterized by a decentralized system, with student-athletes having to commute between their home, training centre, and university (De Brandt, Wylleman, & De Knop, 2015). Therefore, in order to facilitate the combination of elite sport and academics, Flemish universities offer specific arrangements to student-athletes (e.g. individual study routes, legitimate absence from practical courses, setting alternative exam dates, e-learning) to support their development. The current presentation focuses on one specific dual-career environment, the Vrije Universiteit Brussel (VUB), which has provided holistic support (i.e. academic, sporting, logistic, performance, and lifestyle) to 991 student-athletes of different performance levels since 1987. The specific objectives of the presentation are to (1) explain the organization of and support provided by "Topsport and Study", (2) highlight the research carried out and measures taken to assess its effectiveness on a holistic level (e.g. athletic, academic, and psychological monitoring), and (3) illustrate how research findings are implemented in its daily DC support provision. VUB's department "Topsport and Study", aims to provide maximum flexibility so that student-athletes can optimally develop within their own elite sports environment. The university received international recognition in the EU Guidelines on Dual Careers of Athletes (European Commission, 2012) for its individualized study pathway for student-athletes within the Bachelor and Master programs of Physical Education and Movement Sciences, which enabled elite student-athletes to apply the theoretical knowledge and applied skills acquired in their degree programs to the analysis, evaluation, and continued development of their own dual career.

Uncovering basic assumptions of the dual career philosophy: A Finnish case of dual-career development environment

Noora J. Ronkainen¹, Natalia Korhonen¹, Aku Nikander², Milla Saara Anneli Saarinen¹, Tatiana Ryba¹
¹University of Jyväskylä, ²University of Jyväskylä; KIHU – Research Institute for Olympic Sports

Research into athletes' dual careers has shifted from exploring individual experiences towards understanding the impact of the talent development environment (TDE) and broader cultural context on individuals' developmental trajectories. Drawing on the holistic ecological approach (Henriksen & Stambulova, 2017) and Schein's (1990) model of three levels of organisational culture, the present case study aimed to understand how various actors in a Finnish dual career development environment (DCDE) constructed their dual career philosophies and the degree to which these philosophies were shared, contested or rejected by different actors of the environment. Semi-structured interviews were conducted with the director of the sports academy, six coaches, six student-athletes, the headmaster of the sports high school, and three teachers. Onsite observations and collection of official documents supplemented the interviews. The research is on-going and the data will be analysed using thematic analysis. Based on previous European and Finnish research on dual careers, we anticipate that the official philosophy of the DCDE will be encouraging the construction of dual-career pathways, but some tension exists on different levels of the organisational culture and between individual actors' aspirations and conceptions of the "ideal" athlete pathway.

Symposium 34: Heart rate variability as a self-regulation marker

Time: Friday, 19/Jul/2019: 8:30am - 10:00am · *Location:* VSH 17 - Westphalia

Session Chair: Sylvain Laborde, German Sport University Cologne

Heart rate variability as a self-regulation marker

Chair(s): **Sylvain Laborde** (German Sport University Cologne, Germany), **Fabrice Dosseville** (Université de Caen Normandie - EA 4260 - France)

Heart rate variability, the change in time interval between adjacent heartbeats, has become very popular in sport psychology, due to its ability to index non-invasively and for a low cost the activity of the parasympathetic nervous system regulating cardiac functioning, cardiac vagal activity. This symposium aims to bring together research realised within the sport and clinical settings based on the vagal tank theory (Laborde, Mosley, & Mertgen, 2018), which makes predictions based on the 3 R's of cardiac vagal activity functioning : resting, reactivity, and recovery. This symposium will first present research investigating the effects of slow paced breathing, a relaxation method known to increase cardiac vagal activity, on the cognitive performance of athletes (Mosley & Duncan), and on the symptoms of ADHD children (Eckardt & Laborde). Another method to increase cardiac vagal activity, transcutaneous vagus nerve stimulation, will then be presented, as well as its effects on core executive functions (Borges, Laborde, & Raab). The symposium will go on with a study displaying the relationship between cardiac vagal activity and the subjective core components of the action and psychobiosocial states (Ruiz, Luojumäki, Karvinen, Laborde & Robazza). Finally, the symposium will be concluded by a study presenting the influence of a stress manipulation on sports coaches' recognition of emotion and cardiac vagal activity (Watson, Kleinert, & Laborde). Taken together, the findings presented in this symposium will contribute to show how heart rate variability measurements may help to understand a large range of self-regulation phenomena in sports and other settings.

Presentations of the Symposium

The influence of a short-term slow paced breathing intervention on HRV and cognitive performance: preliminary results

Emma Mosley, Shelley Duncan
Solent Southampton University

Slow paced breathing (SPB) interventions require participants to breathe at a particular rate (6 cycles per minute), also called the resonant frequency, a phenomena which couples respiratory and cardiovascular systems (Lehrer, 2013). This increases cardiac vagal activity, the activity within the vagus nerve regulating cardiac functioning and indexed through heart rate variability, which has been shown to be beneficial for executive cognitive performance (Thayer, Hansen, Saus-Rose, & Johnsen, 2009). However, there have been limited endeavours to explore the direct effects of a short-term SPB intervention on cardiac vagal activity levels and subsequent cognitive performance, specifically inhibitory control, which forms the aim of the current study. First, participants attended a familiarisation session, in which they were introduced to the slow paced breathing technique, the breathing app and the modified Flanker task. Participants attended two counterbalanced sessions: a control (audiobook) and intervention (SPB). Upon arrival to the laboratory participants completed a 5-minute seated baseline, in which heart rate variability was collected. Participants then completed the SPB intervention which was administered at a rate of 6 cycles per minute (4.5 second inhale and 5.5 second exhale), and performed it for 3 x 5 minutes, with a 1-minute break in between. In the control condition participants listened to an audiobook for the same time period of the SPB intervention (17 minutes). After this participants completed the modified Flanker task which lasted for 12 minutes, followed by a 5-minute recovery period. Data collection is ongoing and full results will be presented at the conference.

Slow-paced breathing as an evening ritual for children with Attention-deficit/Hyperactivity disorder (ADHD) and their parents

Valeria Eckardt, Sylvain Laborde
German Sport University Cologne, Institute of Psychology

Introduction: Besides ADHD core symptoms of inattention, hyperactivity and impulsivity, individuals and their caregivers often suffer from secondary impairments in social, familial, cognitive and emotional functioning (DuPaul et al., 2001). Previous evidence suggests altered central and peripheral nervous system activity in ADHD (König et al., 2017). Slow-paced breathing at six cycles per minute provokes a resonance in the cardiovascular system and can increase cardiac vagal tone (Lehrer, 2013). Thus, based on the neurovisceral integration model (Thayer et al., 2009), which links cardiac vagal tone to executive performance, emotional and health regulation, this study aimed to assess the effects of slow-paced breathing on ADHD symptomatology, children's emotional dysregulation, parental stress levels and the parent-child-relationship. Methods: The study design is a randomised controlled trial with waiting-list control group. To date, 44 parents (male = 10; M age = 41.33 ± 9.15) of 48 children (male = 44; M age = 9.96 ± 1.99) completed ADHD diagnostics (FBB-ADHS; Döpfner et al., 2008), self-report and 360-degree measures on emotional intelligence (TEIQue; Petrides, 2009), the Perceived Stress Scale (Cohen et al., 1983) and the German adaptation of the Parenting Scale (EFB; Naumann et al., 2010). Parent-child relationship was assessed with the Parent-Child Relationship Inventory for children (Schacht et al., 2007). Participants in the experimental group practiced slow-paced breathing fifteen minutes daily via a smartphone app for four weeks as a shared evening-ritual. Cardiac vagal tone data of children and parents were obtained pre and post intervention via heart rate variability measurements. Results: Data collection is still ongoing.

Does transcutaneous vagus nerve stimulation improve core executive functions? An investigation using heart rate variability

Uirassu Borges, Sylvain Laborde, Markus Raab
German Sport University Cologne, Institute of Psychology

Transcutaneous Vagus Nerve Stimulation (tVNS) is a technology used to electrically and non-invasively modulate afferent vagal activity. According to the neurovisceral integration model (Thayer, Hansen, Saus-Rose, & Johnsen, 2009), cardiac vagal functioning, as measured via heart rate variability, is positively associated with cognitive performance. Despite previous studies addressing rather complex cognitive functioning such as creativity (Colzato, Ritter, & Steenbergen, 2018) and multitasking (Steenbergen et al., 2015), attempts to better understand the relationship between tVNS and more basic executive functions are still scarce. Higher-order executive functions are thought to be built from working memory, inhibitory control and cognitive flexibility, which are considered core executive functions (Diamond, 2013). The objective of the present study is to for the first time systematically investigate the effect of tVNS on these three executive functions by taking behavioural (cognitive tasks) and physiological (HRV) measurements into account. Within a sham-controlled, randomised cross-over within-subject design, 40 healthy young volunteers performed six tasks which are thought to rely on working memory (verbal and visuospatial working memory), inhibitory control (selective attention and response inhibition), and cognitive flexibility (task-switching and set-shifting). It was hypothesised that active tVNS, compared to sham stimulation, enhances vagally-mediated HRV parameters such as root mean square of successive differences (RMSSD), as well as performance on the six cognitive tasks (measured by means of reaction times and accuracy). Data collection is ongoing, and full results will be presented at the conference.

Core components of the action and psychobiosocial states in high-level ice-hockey players

Montse C. Ruiz¹, Reko Luojumäki¹, Samppa Karvinen¹, Sylvain Laborde², Claudio Robazza³

¹Faculty of Sport and Health Sciences, University of Jyväskylä, Finland, ²German Sport University Cologne, Institute of Psychology, ³BIND–Behavioral Imaging and Neural Dynamics Center, Department of Medicine and Aging Sciences

We examined core components of the action and psychobiosocial states in 39 high-level ice hockey players (M age = 20.23 years, SD age = 1.88). Participants recalled one of their best games, identified two visual and two behavioural core components critical for optimal performance, and rated perceived control and execution accuracy for each on a 0-11 Borg scale. Psychobiosocial states were rated using the Psychobiosocial States Scale (PBS-S), and heart rate variability was assessed. Participants also rated action components and states related to one of the worst games. Separate MANOVAs revealed significant differences for visual (Wilks' $\lambda = .160$, $F(1, 38) = 199.168$, $p < .001$, $\eta^2 = .840$) and behavioural core components (Wilks' $\lambda = .108$, $F(1, 38) = 312.595$, $p < .001$, $\eta^2 = .892$) across best and worst games. Similarly, significant differences were found in the intensity of functional (Wilks' $\lambda = .199$, $F(1, 38) = 152.477$, $p < .001$, $\eta^2 = .801$) and dysfunctional (Wilks' $\lambda = .196$, $F(1, 38) = 155.935$, $p < .001$, $\eta^2 = .804$) states, as well as in the perceived impact of functional (Wilks' $\lambda = .151$, $F(1, 38) = 213.782$, $p < .001$, $\eta^2 = .849$) and dysfunctional (Wilks' $\lambda = .471$, $F(1, 38) = 42.742$, $p < .001$, $\eta^2 = .529$) states across games. Findings showed different patterns of core action components and emotional states during best and worst performances. Results also support the use of both action- and emotion-centered strategies for performance enhancement. Future research including other psychophysiological markers is warranted.

The effect of stress on sports coaches' recognition of emotion: preliminary results

Matt Watson, Ann-Christin Engler, Jens Kleinert, Sylvain Laborde
German Sport University Cologne, Institute of Psychology

Sports coaches must be able to recognise their athletes' emotions to support their performance, although this ability may be impaired by the numerous stressors that coaches face. Reflecting recent developments in psychophysiology (e.g., vagal tank theory, Laborde, Mosley, & Mertgen, 2018), this study examined (1) effects of a stress induction procedure on coaches' recognition of facial displays of emotion and (2) the role of cardiac vagal control (Laborde, Mosley, & Mertgen, 2018) within this relationship.

Competitive sports coaches were randomised into experimental (N = 8, male = 87.5%, M = 26.00 years, SD = 5.76) or control (N = 9, male = 100%, M = 32.44 years, SD = 9.89) groups. The experimental group received a stress induction involving planning and presenting a training session whilst subject to various socio-evaluative components (i.e., filmed, timed, interruptions). The control group planned a session without any socio-evaluative components. Coaches subsequently rated a series of facial images in an emotion recognition test. Mean pre and post perceived stress scores from visual analog scales were 1.53 and 3.65 for the experimental group and 1.56 and 2.26 for the control group. A repeated measures ANOVA revealed a significant effect of the stress induction (Wilks' $\Lambda = .678$, $F(1,14) = 6.661$, $p = .022$). An independent samples t-test showed no difference in recognition scores between experimental (M = 51.39%, SD = 5.42%) and control (M = 49.54%, SD = 4.12%) groups. These results suggest the stress induction procedure was successful. Data collection is ongoing, and full results related to the emotion recognition task and HRV will be presented at the conference.

Workshop 17: LoL generation: in the field with a professional team in Esports "Misfits Gaming".

Time: Friday, 19/Jul/2019: 8:30am - 10:00am · *Location:* VSH 19 - Paris
Session Chair: Ismael Alfonso Pedraza Ramirez, German Sport University Cologne

LoL generation: in the field with a professional team in Esports "Misfits Gaming".

Ismael Alfonso Pedraza Ramirez

German Sport University Cologne, Germany

Nowadays politicians and sports governing bodies continue with the debate on whether esports or competitive gaming should be considered a sport or not. The industry is still growing in numbers and popularity. Consequently, due to this growth, the professional teams and players are starting to experience what is like to perform in a professional environment. Therefore, there is a recent increased demand for sport psychology practitioners who can facilitate that edge that players need to face the challenges that are at stake and to promote a healthy development. Certainly, this modern competitive industry shares most of the aspects and needs of highly competitive performance. Thus, I am bringing the experience, I have collected working with a professional team "Misfits Gaming" during three seasons and a world championship. Hence, the participants will, first, comprehend how the environment of a professional team in League of Legends looks like, and second, to bring awareness about the importance of sport psychology practitioners working in esports and its challenges. To begin with, the workshop will offer first-hand experiences of esports training and competition via pictures, videos and audios to develop the understanding of esports performance. Then, through a collaboratory method participants will be given different real cases to be discussed that practitioners can encounter while working in the field. Lastly, participants will experience a short session about the implications of intercultural communication for players' performance via worksheets and group interaction.

Workshop 18: Reframing good character: strengths-based positive psychology interventions to promote character development in sport

Time: Friday, 19/Jul/2019: 8:30am - 10:00am · *Location:* VSH 18 - Edinburgh
Session Chair: Penelope Ann-Scott Murdock, Universität Bremen

Reframing good character: strengths-based positive psychology interventions to promote character development in sport

Penelope Ann-Scott Murdock

Universität Bremen, Germany

How do you define good character in sport? Despite myriad descriptions thereof, a universally accepted definition remains elusive. Existing approaches to the development of character and moral action (Shields & Bredemeier, 1995) certainly facilitate understanding of positive sporting behaviour; however, these ought to be complemented by Positive Psychology, the compelling science of human strengths. Dedicated to the study of promoting human potential, wellbeing, and flourishing (Seligman & Csikszentmihalyi, 2000), it has advanced an evidence-based framework through which to measure and ultimately cultivate universally valued character strengths. The VIA Inventory of Strengths (Peterson & Seligman, 2004) offers an empirical classification of six overarching virtues subcategorized into twenty-four character strengths—the catalysts for positive sport behaviour. This interactive and experiential workshop will introduce practitioners to empirically validated tests to assess character strengths and research-based practical interventions (Niemiec, 2017) which foster active cultivation of strength awareness, exploration, development, and regulation. We will examine strengths such as gratitude, hope, perseverance, self-regulation, and zest because they foster positive emotions, optimism, and meaningful engagement—all of which contribute to flourishing (Seligman, 2011). The core learning objectives include providing a current perspective on research in character strengths and engaging in a selection of accessible interventions for use with oneself and others. Subsequently, participants will be able to identify, label, explain, and affirm character strengths; recognize common behavioural pitfalls and strategies to circumvent them; and select and implement desired practical interventions. In addition to worksheets provided on-site, participants will receive supplementary materials electronically as templates for future use.

Poster Session Friday

Time: Friday, 19/Jul/2019: 10:15am - 11:15am · Location: Marquee

Session Chair: Urban Johnson, Halmstad University

4.01 Athletes' descriptions of disordered body movement during psychotherapy shed light on their psychological problems

Shiro Nakagomi, Shigeki Akiba

Kokushikan University, Japan

Athletes often talk about their “disordered movement and body problems” during psychotherapy. The symbolic implications of these narratives help both therapists and clients gain deeper understandings of client's inner experiences. Descriptions of “disordered movement and body problems can be unique windows to an athlete's inner experience and a distinguishing trait in psychotherapy for athletes. The purpose of the present study is to offer the case of a top college swimmer and examine the coincidence between her narrative on her performance trouble and her psychological problems. At her first psychotherapy session she complained that: 'I have been swimming competitively for 15 years but have not improved my times in several years. I've lost my self-confidence and suffer from growing competitive anxiety. I want to strengthen myself mentally and do my best in the upcoming Olympics. The author had about 30 sessions for one year, with her symptoms being weakness in the lower half of the body (decreasing the driving force she needed) and trouble improving her times. Her 'driving force' problem coincided with a lack of intrinsic motivation which she was able to overcome by recognising, through psychotherapy, her over-dependence on her coach and parents. Though she could not take part in the next Olympics, she eventually was able to achieve a shift in both physical and psychological driving forces and record her best times during that year of psychotherapy. In this presentation, the author will focus on the client's interview records and her drawing works (Landscape Montage Technique).

4.02 Brief report on a resilience workshop for professional Rugby players

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Once rugby became a professional sport in 1995, there were associated increases in stress on players. Consequently, stress management programmes, including psychological well-being and resilience workshops, became integral components of public health promotion in many countries. The aim of this research was to provide a brief, evidence based, evaluative report of a resilience workshop for future research and interventions. The sample consisted of 328 male professional rugby players, with a mean age of 25 and standard deviation (SD) of 4.7 years. A psychological well-being workshop, based on an energetic, cognitive-behavioural model was used, with specific focus on resilience, defined as the capacity to prepare for, recover from and adapt in the face of stress, challenge or adversity. As measured on the Brief Resilience Scale, quantitative findings revealed significant changes in pre-test to post-test resilience scale scores. Using thematic content analysis, qualitative findings indicated helpful experiential dimensions and those needing change. Integral findings pointed towards ongoing, humanistic, dynamic and systemic approaches involving all stakeholders in the professional rugby fraternity are recommended.

4.03 Argentine football players adapting to Europe

Camila Posadas Morales

UBA, Argentine Republic

According to Loehr (2000), there is a direct connection between emotions and performance. Some positive feelings create the ideal status in order to achieve the best sporting performance. A study was conducted on a group of Argentinian football players who live in Europe and the connection between the necessary adaptations and their sporting performance. Different variables were found regarding the adaptations, such as language, culture, new partners, far distance from their hometown, etc.

It was investigated that the sporting performance and behaviour of these abroad football players, searching for their strengths and weaknesses and the evidence required to work different psychological skills, help to keep them focused and improve their performance. Through a qualitative method, information of the athletes' emotions and thoughts was obtained, determining the suitable type of psychological/sportive accompaniment/support they should have.

The data analysis concluded that the type of pre-established beliefs/thoughts from each athlete about the foreign cultures has a high grade of influence. It was shown that the more open and flexible the thoughts are, the easier it is for the athlete to adapt. In addition, those who are more attached to their family circle where the most affected at the beginning.

4.04 Relationship between coaching efficacy, emotional intelligence and leadership style among Bulgarian football coaches

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Coaches' confidence in their own skills, their awareness of their emotions and the ability to control them, as well as their choice of behaviour, according to a number of authors, influence their realisation and the achieved sports results.

The aim of the present study was to reveal the interdependence between coaching efficacy, emotional intelligence and leadership style among Bulgarian football coaches.

Methods: The research was done among 50 football coaches aged between 23 and 45 years with different level of qualification. In order to fulfill the aim, we used: 1) Coaching Efficacy Scale (CES, Feltz et al., 1999); 2) Emotional Intelligence Scale (EIS, Schutte et al., 1998); 3) Revised Leadership Scale for Sport (RLSS, Zhang et. al., 1997).

Results and discussion: The results reveal significant correlation and interdependence between the subscales of coaching efficacy, emotional intelligence and part of the subscales of leadership style, as well as between the subscales of emotional intelligence and leadership style. Our results confirm the data in the literature. We have found a slight correlation between coaching efficacy and leadership style, which is different from the published data.

There are significant differences along some of the researched indexes depending on licenses, ages of players, coaching experience and experience as a player.

The results from the regression analysis reveal that emotional intelligence serves as a predictor of coaching efficacy and leadership style. Coaching efficacy does not influence directly the subscales of leadership style.

Key words: Coaching efficacy, emotional intelligence, leadership style, coaching behavior, football coaches

4.05 Towards social representations of the professional athletes' trajectories in the modern society

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For many years, international competitive sport has reinforced an image of a "champion-victim" in the society: An athlete who puts health and personal life "on the altar" for the sake of his country's dominance.

The aim of the study was to identify the social representations of elite sport (Moscovici, 2000) taking place in modern Russian society.

Methods and sample: The study involved 85 volunteers (Mage = 27) randomised by profession, who wrote essays on three proposed topics ("Sport: a hobby or a profession?", "Will I give my child to professional sports?", "How does the life of an athlete look like after a career?"). Qualitative content analysis was used to analyse the obtained data (Leavy, 2014; Smith, 2015).

Results: The study showed a high frequency of polar ideas on a sport trajectory. Along with the benefits of sports ("fame, money, exciting experience"), there are negative attitudes ("injuries, early retirement, refusal of pleasures"). In terms of health, the attitude is also ambivalent. The greatest merit of sport in human life is represented as the development of mental skills and stress resistance.

Discussion: An important aspect of parents' choice of sport activities for their child is the desire and interest of the child itself. However, this is combined with a high risk of parental ambitions and their influence on the child. Young athletes are brought up in a contradictory semantic field, and the harmony of their pathways is largely determined by family ideas that can reinforce the negative or positive image of sport.

4.06 Impact of personal determinants on boxers' aggressive reactions

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The ability to channel aggression and self-control skills is important for the final results in boxing and largely related to the presence of high mental stability and awareness of the personal abilities. The aim of the present study was to reveal interrelationships between the typological features, self-control skills and attitudes towards aggressive response of boxers, differentiated by gender and ranking. The research was done among 95 athletes involved in boxing - 44 women and 51 men. The average age of the researched individuals was 20.5 +/- 3.2 years. Athletes were divided into two groups according to their ranking - 48 medalists, 47 ranked after third place. We used Eysenck Personality Questionnaire (EPQ) scale for measuring the level of self-control (SCS) and Buss – Durkee Hostility Inventory (BDHI). The medalists were characterised by statistically significantly higher levels of self-control (U = 2.22; $\alpha = 0,027$) (criterion Mann-Whitney), lower levels of personal aggression and aggressive irritability (U = 1.96; $\alpha = 0,05$) compared to athletes ranked after third place. The high level of self-control is associated with low levels of emotional lability ($r = -.220$, $p < .05$) and psychoticism ($r = -.331$, $p < .001$) as typological characteristics of the personality. The results from the regression analysis show that the high levels of neuroticism and psychoticism increase the tendency towards aggressive reactions, while high levels of self-control skills decrease those tendencies. This study is the basis for the solution of a number of practical problems in the field of boxing related to an increase in the level of self-control.

4.07 Coach–athlete communication patterns and their role in children's swimming skills development

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Research indicates the importance of appropriate communication with significant others (i.e., coaches, parents, peers) and its considerable influence on children's sports experiences, involvement, and development (Fraser-Thomas et al., 2008). Still, there is a need for studies measuring the actual impact of various communication methods on drop-out, motivation, and athlete satisfaction (Capstick & Trudel, 2010).

The purpose of this study was: (a) to examine how swimming coaches perceive their communication skills and preferences; (b) to better understand the patterns of coach-athlete communication during practice sessions; (c) to explore similarities and differences between coaches' declared and actual communication patterns.

To accomplish this purpose, 10 swimming coaches (6 males, 4 females; M=31 years) were invited to take part in two-part study. First, the participants were asked to answer 6 questions about their communicational behaviors towards children during typical swimming practice. Then, during a real swimming sessions both verbal and non-verbal communication was recorded.

The results obtained show that the coaches used six patterns of communication: (1) task descriptions (39.5%); (2) performance improvement (25%); (3) children's behaviors (21.4%); (4) tasks accomplishment (11.3%); (5) outcomes achieved (1.6%); (6) motivational climate (1%). The results revealed a discrepancy between the coaches' declared and observed communication preferences. The data analysis showed that the coaches provided both feedback (40.7%) and feedforward (59.3%). Most of their communication (63.3% of verbal expressions) met the criteria of effective communication.

Results are discussed in the context of sport performance and structural analysis of social behaviours. Also, implications for teachers and coaches are presented.

4.08 Development of a system of dual career support for university student-athletes: Swedish national dual career guidelines

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In 2012 the European Commission issued European guidelines on dual careers (DC) of athletes to inspire “the formulation and adoption of action-oriented national dual career guidelines and to raise awareness at national level about the concept of dual careers” (p.3). In parallel with the ongoing expansion of the Swedish DC system to include the higher education level, the Swedish Sports Confederation initiated a working group to develop a system of DC support at Swedish National Sports Universities (RIUs) and Elite Sports-friendly Universities (EVLs) summarised in the Swedish national DC guidelines (2018). The working group consisted of four practitioners representing RIUs/EVLs (e.g., DC-coordinators, study counsellors), two Swedish DC researchers, and two officials of the Swedish Sports Confederation. Six two-day working group meetings were conducted over two years (2016-2018) to develop this policy document as a culturally informed synthesis of national and international DC research, EU guidelines on DCs, experiences and knowledge from RIUs and EVLs including best practice examples, and in line with the Swedish strategy for Sports. The Swedish national DC guidelines outline the organisational model for RIUs and EVLs and provide 36 guidelines in how to facilitate (a) an environment for DCs, (b) academic development, (c) athletic development, (d) a balance between sport, studies and private life and (e) student-athletes' career transitions. The Swedish national DC guidelines currently set a national standard for DC support across the country and inspire universities to further develop their support in line with recommendations from national and international DC research.

4.09 The benefits of the mixed methods approach for the examination of explorative research topics within sport psychology

Christina Plath

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The investigation of new research topics is always confronted with a lack of proved theoretical models and/or survey instruments. The mixed methods approach according to Kuckartz (2014) represents a possible solution for the examination of research objects that have received little attention so far. The approach enables a holistic view of the research object by applying different methods. Furthermore, the approach provides for a compilation, which goes beyond a mere addition of the individual study results. The integration of the results constitutes an independent part of the empirical analysis itself, which leads to a further gain of knowledge. Consequently, the approach also offers an interesting extension for sport psychology. The method is illustrated by an example which focuses on the value of trust within volleyball teams from a differential-psychological perspective. The integration of results takes place in two points: first, at the construction of a questionnaire by transferring qualitative outcomes and second, at the final consolidation of the qualitative and quantitative outcomes. The results are presented as joint displays (Guetterman, Fetters, & Creswell, 2015) in order to make the connections comprehensible and comparable. For example, the approach enables to combine evidence-based types of trust and psychological clusters, which differ significantly in their subjective experience of trust within volleyball teams. The application of the mixed methods approach represents a possibility to compensate limitations of individual research methods. By using this approach, similarities between the results can be identified and a holistic perspective on the research object can be gained.

4.10 Insight into the experiences of women coaches at the community-level: a multiple case study

Jenson Price

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The underrepresentation of women in coaching positions at competitive levels is a well-documented problem. Researchers suggest there may be larger contextual factors that prevent women from obtaining and maintaining coaching positions (Burton, 2015). However, there is limited research examining the influence of contextual factors on women coaches' experiences at lower levels of sport (Norman, Rankin-Wright, & Allison, 2018). Therefore, this project sought to explore personal and sociocultural influences that may impact the experience of women coaches at the community-level. Two women coaches equivalent in age with diverse experiences were purposively selected to complete interviews and oral histories. Interpretative phenomenological analysis of data was guided by a feminist post-structural perspective. Three themes emerged regarding these women's experiences coaching: (1) the environment - some things never change, (2) putting your best foot forward, and (3) learning and growing. Both women described the experience of being an 'other' in an environment that traditionally consists of male, middle-aged coaches. This influenced the way these women conducted themselves and contributed to the perception that they approached and interacted with other members of the sport community more than their male counter-parts. Despite this, both women acknowledged the benefits that emerged from coaching in a male-dominated environment and felt this contributed to their own growth, personally and professionally. The narrative from the coaches' experiences emphasise the need for key stakeholders in sport to further explore/recognise structural and relational experiences that may facilitate or constrain the progression of women in coaching to engage and retain potential women coaches.

4.11 Management of a sports team through studying sportsmen's reflection

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Reflection is considered as a mechanism of a person's influence on himself with the subsequent change and coordination of his activity, emotions and thoughts (S. L. Rubinstein, 1976). In this regard, the study of the reflection of athletes is a factor in the management of a sports team. The study involved athletes of the student mini-football team who were asked to answer the questions: "What do I want to achieve in sports? What can I do? Am I ready?" These questions allowed determining the attitude of an athlete to sports activities, to assess their capabilities and readiness to solve problems and difficulties. The study revealed that 30% of athletes believe that they can achieve high results, 60% plan to go for sports at a high level for 3-4 years, and 40% for 1-2 years. At the same time, 80% are ready to take responsibility for their sports results. Answering the question "What should I do to achieve my goal?", 75% of the athletes said that they must withstand the fully necessary training regime. The obtained data allowed the coach to correctly built a motivational strategy, and to determine the target setting for the season for each athlete. This in turn made it possible to create an optimal climate in the team. The team successfully spent the season and entered the European Championship among student teams.

4.12 The effects of coaches' use of non-verbal communication on interpersonal trust between athlete and coach

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Non-verbal communication including facial expressions and body language is important as well as verbal communication in sport (Burke, 2010). It is known that an effective verbal communication contributes to building a relationship between coach and athlete, it seems that non-verbal communication would also play a significant role in an interpersonal relationship. Recently, in Japan, coaches' use of negative communicative behaviours to their athletes has been reported to be a concern, which might hinder building the athlete-coach relationship. Up to date, the effect of non-verbal communication on interpersonal relationship has not been fully clarified in empirical research within sport settings. The aim of the current study was therefore to examine the relationship between coach's use of non-verbal communication and athletes' interpersonal trust toward their coach.

Ninety-two university student athletes ($M = 19.68 \pm 1.02$ years) completed a Questionnaire of Nonverbal Communication Scale for Coaches (Shimazaki & Kikkawa, 2012) with two dimensions: positive (e.g., "talk with gesture") and negative (e.g., "No eye contact") non-verbal communication, and a modified version of Students' Trust for Teachers (Nakai & Shoji 2008) to measure interpersonal trust after gaining an approval of a consent form.

The results showed that athletes who experienced less negative non-verbal communication perceive higher levels of interpersonal trust to his/her coach compared to athletes who experienced more frequent coach's negative non-verbal communication ($t(90) = 3.31, p < .05$). The results of the current study suggested the importance of non-verbal communication in building an interpersonal trust. Further examination would be needed to identify an effective non-verbal communication for application in sport coaching.

4.13 Examining athlete leadership skills and their development: from the perspectives of athlete leaders, teammates, and coaches

Moe Machida-Kosuga, Sora Aita, Nijika Tanaka

Osaka University of Health and Sport Sciences, Japan

Developing athletes into leaders is one of the major goals for coaches and the practitioners. Athlete leader development programmes have been taken place and their effectiveness has been examined in several studies (e.g., Duguay et al., 2016; Voight, 2012). However, there is a lack of systematic studies on development of athlete leaders, and further investigations are needed to clarify what skills should be developed for these leaders to be effective. Thus, being informed by theories of leadership (Mumford et al., 2007; Van Velsor et al., 2015), the purpose of the present study was to examine the athlete leadership skills and the factors that influence their development. The study was conducted in phenomenological paradigm. The participants were 111 female and male players of three interactive sport teams that compete in division I of Japanese collegiate sport leagues. Players identified their leaders in their teams with a questionnaire. The identified leaders and their teammates, as well as the head coaches of their teams participated in semi-structured interviews (N = 19). Transcripts were coded and analysed through a modified inductive process. Three general categories emerged from the analysis: (a) athlete leadership skills (i.e., cognitive, interpersonal, management, and strategic skills), and factors that have impact on athlete leader development, (b) developmental experiences and context (e.g., challenges, feedback, support, modeling other leaders) and (c) individual developmental factors (e.g., competitive abilities, dispositions and attitudes, knowledge, assigned leadership roles). The results inform athlete leadership theory and practice on athlete leader development. Future research directions are discussed.

4.14 A qualitative content analysis of sports-related thoughts in competitive athletes

Alena Kröhler, Stefan Berti

Johannes Gutenberg-University Mainz, Germany

The present study aims at content analysis of sports-related thoughts in the context of competitive sports. We collected 788 negative thoughts within an online survey of 101 athletes (59 female; 42 male) aged between 15 and 30 years (M = 20.61; SD = 3.70) from different individual and team sports. An initial qualitative content analysis identified seven main categories including everyday life stress, self-esteem, performance pressure, current competition, sportive and physical load, general training and sports-related stress and worry. Athletes also rated the impact of these thoughts, which was estimated to be comparable relatively small. This comes to surprise because subjective reports by athletes and coaches stress the importance of mostly dysfunctional thoughts on competitive performance. Therefore, we carried out a second content analysis on a structural level in order to search for underlying cognitive errors as described in the categorisation system provided by Beck (1976; see also Freeman et al., 1990). This shows that two cognitive errors are quite common, namely overgeneralisation and "have-to" statements. This suggests that the impact of negative thoughts depends on the specific pattern of the thought. In other words, future studies should identify the underlying cognitive error in order to unravel a potential negative impact of competition-related thoughts on athletes' performance. This may also lead to diagnostic tools identifying those athletes, who are especially vulnerable to these dysfunctional cognitive mechanisms.

4.15 Overtraining in adolescent athletes: the role of personality and motivational factors

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It is well known that the overall demands placed on athletes are steadily increasing. Highly intensive training together with not allowing sufficient regeneration may lead to the development of maladaptive response of the organism in the form of overload or overtraining syndrome. Recently, the overtraining syndrome is considered as a multicausal phenomenon and research efforts focus also on psychological correlates. The aim of this study was to determine the linkage between personality traits (Big Five Inventory - 2), motivational factors (Sport Motivation Scale II) and overtraining (Société Française de Médecine du Sport's questionnaire). Regression analysis on a sample of 229 students of dedicated sports high school (49.3% males) in the age range 14 - 19 years revealed that the level of overtraining can be predicted by neuroticism and negatively by conscientiousness. More importantly, motivational factors contribute to the prediction of overtraining above and beyond demographic characteristics and personality traits. It was found that with higher level of intrinsic motivation, the frequency of overtraining symptoms decreases, while with higher level of extrinsic motivation and amotivation the frequency increases.

4.16 Human adaptation to stress in sport contexts: implications for intervention and research

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Sports is a well-known potentially triggering environment for athletes' stress. However, much less is known about how the process of adaptation to stress takes place and how different factors involved in this adaptation interact and influence each other. Based on the Cognitive, Motivational and Relational Theory (Lazarus, 1991; 1999) and on the Interactive Model of Human Adaptation to Stress (Gomes, 2014), this study aims to discuss the integration of cognitive appraisal, coping, emotions, and human functioning in stress situations into a single framework. Currently, the major challenge of comprehending human adaptation to stress is how to integrate in one study all factors involved. Therefore, we propose one quantitative (Adaptation to Stress Questionnaire; ASQ) and one qualitative approach (Interview Guide of Adaptation to Stress; IGAS) to analyse the process of human adaptation to stress in sports. Both instruments analyse how athletes adapted to a stressful sport event, selected from their own sports experiences. Then, athletes answered questions on the properties of the stressful event, primary and secondary cognitive appraisal, emotional reactions, and final adaptation to the event. The main difference between instruments is that the ASQ allows for in-depth comprehension of each athlete, while the IGAS allows establishing patterns of human adaptation to stress by comparing several athletes' experiences. Finally, we discuss implications to sport psychologists working with athletes experiencing high levels of stress due to sport demands. It is expected that a deeper understanding of these factors will allow them to more effectively help athletes undergoing stressful situations.

4.17 Working with athletes' irrational beliefs using Rational Emotive Behavior Therapy (REBT): A systematic review

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Following the CHIP tool (i.e., context, how, issues and population), and the Preferred Reporting Items for Systematic Reviews and Meta-Analysis method (PRISMA), we conducted a systematic review on interventions with athletes using Rational Emotive Behavior Therapy (REBT; Ellis, 1957). A literature search was undertaken on the following databases: Web of Science (N = 17), PsycINFO (N = 42), Scopus (N = 21), SPORTDiscus (N = 11), and Pubmed (N = 2). Considering peer review as an inclusion criteria, we excluded books, and gray literature (e.g., doctoral theses, newspaper articles). As a result, 16 empirical studies published or in preprint version up to 2018 were included. The increase in the number of publications, especially since 2016, shows that REBT is attracting the attention of researchers in the field of sports. The most commonly adopted research methods are multiple baseline single-case designs with more than one REBT session, and the most targeted variables are irrational beliefs, anxiety, and performance. Rationalisation of beliefs, decreases in anxiety, and increases in performance, regardless the type of sport, competitive level and age of the participants, suggest that these types of interventions are effective in all cases. This work contributes to the extant literature by compiling the work reporting the use of REBT in the athletic settings, supporting its benefits in promoting, restoring and maintaining the psychological wellbeing of athletes, in addition to optimising their sport performance.

4.18 A narrative review of emotional intelligence training activities in sports

Ann-Christin Engler, Pia Zajonz, Fabian Hofmann, Jonas Akpetou, Julia Eyre, Justin Klandermann, Yannik Klein, Vanessa Martins, Martin Leo Reinhard, Dr. Sylvain Laborde

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Emotional Intelligence (EI) refers to the concept of how individuals deal with intrapersonal or interpersonal emotional information along five main competences: identification, expression, understanding, regulation and use of emotions (Mayer, 1997). Previous research postulates that higher levels of EI not only improve performance in sports in general (e.g., Lane et al., 2009) but also lead to better coping strategies (e.g., Laborde et al., 2011). This narrative review consists of presenting an EI training based on the Tripartite Model (Mikolajczak, 2009). Accordingly, activities targeting the training of the five EI competences are described in two steps: knowledge and ability, leading to the integration of competences as traits. In the first step, knowledge about the five dimensions is explained and illustrated with examples taken from the sport settings. Activities to translate this knowledge into abilities – this means not only knowing what to do, but also being able to do it – are presented, with different levels of difficulty. The third step is then an integration of knowledge and abilities as part of individuals' personality (Laborde, Furley, Musculus, & Ackermann, 2017), which occurs with repeated practice. The more often knowledge is applied in different situations, the more able the person will be to make an appropriate use of emotional competences, and the more this behaviour will be internalised. The integration of activities into sport training and everyday life is discussed, while a claim is made to encourage testing the effectiveness of EI training programmes in sports.

4.19 "True Track-and-field is for senior": coach-athletes relationship and focus on long term development in a successful Italian ATDE

Chiara D'Angelo, Eleonora Reverberi, Sara Vivirito

Università Cattolica del Sacro Cuore Milano, Italy

The present work is based on the Holistic-Ecological Approach (Henriksen, 2010) to examine the competitive section of CUS-Palermo (CP), a particularly fruitful context for the development of Italian young track and field athletes. CP has been selected for its national and international results: Since 60 years 38 athletes have been selected for the national Italian team and 32 for the young Italian team.

It has been conducted a case study (Hodge & Sharp, 2017), following ATDE - ESF Working models (Henriksen, 2010), involving 139 competitive athletes of 14-25 years old, their coaches and parents. Data have been collected by observations and interviews. Micro-social ATDE is based on the relationship between competitive athletes and their coaches, role models and a team of specialists (e.g., physiotherapist, doctor, nutritionist). At micro-social CP offers extra-sporting opportunities for athletes (i.e., agreement with a School, working opportunities within CP services, free residential arrangement). Parents are an emotional and material source of support and their reserved behaviour is seen functional by athletes and coach for effective development. At macro-level, CP has many collaborations with other sport organizations and Universities in Sicily. ESF allow to identify an organisational culture characterised by a familiar-like climate with a strong focus on coach education. Outcomes on individual level are long term development and late high-level results of athletes, while for the organisation are the ability to re-organise and manage unforeseen events. These results will be compared to the existent contribution (Henriksen, Stambulova, & Roessler, 2010; 2010; 2011; Henriksen, Larsen, & Christensen, 2014).

4.20 Self-efficacy of soccer referees and its links with experience variables

Felix Guillen

University of Las Palmas de Gran Canaria, Spain

Research on self-efficacy in the world of sports refereeing is relatively recent. The purpose of this research was to examine the level of self-efficacy of soccer referees, in terms of age, years of experience and the level reached.

Cross-sectional observational study. Methods: In total, 424 Spanish referees in team sports (16 women, 402 men, Mage = 30.19 years, range 18 and 60 years), working in 3 different sports (soccer, basketball and handball), completed the REFS (Referee Self-Efficacy Scale), and reported various demographic and experience questions.

Data has shown that those who had more years of experience obtained better scores in Decision Making. Moreover, those who had higher levels of participation showed the best results in Game Knowledge (GK), Decision Making (DM) and Pressure (PR).

The findings of this study provide evidence that self-efficacy is extremely important in regard to the performance of referees. Further research using prospective designs and natural experimental methods is encouraged.

4.21 Trajectories of change in burnout, self-compassion and psychological skill: a three-wave longitudinal study with varsity athletes

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Demands faced by student-athletes are numerous and varied, posing a risk of burnout (Gustafsson, DeFreese, & Madigan, 2017). Self-compassion has potential to promote successful management of such demands (Mosewich, Crocker, Kowalski, & DeLongis, 2013), but its relationship with burnout has yet to be thoroughly explored in a sport context. The purpose of this three-wave longitudinal study was to examine trajectories of change in burnout, self-compassion, and psychological skills among varsity level student-athletes to better understand factors that may help to mitigate or avoid burnout. In total, fifty-nine (34 men) student-athletes (Mage = 20.01 years at Time 1, SD = 1.77) completed measures of burnout (Athlete Burnout Questionnaire), self-compassion (Self-Compassion Scale), and psychological skills (Athletic Coping Skills Inventory – 28) at three time points, approximately six months apart. A multiple predictor approach through latent growth curve modelling was used to determine the variance in burnout explained by self-compassion and psychological skills (CFI = .97, TLI = .94, RMSEA = .11, SRMR = .04), with three of four fit indices supporting model fit. Initial status of burnout (i.e., level at Time 1) had significant additional unique variance explained by initial status in psychological skills ($p < .01$). Furthermore, the rate of change in burnout had significant additional unique variance explained by initial status in self-compassion ($p < .05$). Self-compassion and psychological skills appear to be significant predictors of progression and level of burnout, respectively. Proactive investment in developing appropriate skills and resources, including self-compassion and psychological skills, for student-athletes is recommended to combat burnout and negative associated outcomes.

4.22 National federation, municipality and local club collaboration in coordinating talent development in Danish swimming

Ole Winthereik Mathorne

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This poster presentation focuses on a holistic ecological case study investigating collaboration between the Danish swimming federation, municipality X, and a local swimming club in promoting talent development in young swimmers. This case was selected based on the recommendation of the swimming federation as an example of successful collaboration between macro- and micro-level stakeholders. Two major sources of data collection were used. In-depth interviews with one representative of the federation (“talent leader”), one elite sport coordinator in municipality X, and one talent manager from the local swimming club were complemented with document analysis (e.g., websites). The (modified) Environment Success Factor (ESF) model (Henriksen, Stambulova, & Roessler, 2010) was used as a basis for the interview guide emphasizing that successful collaboration is a result of an interplay between preconditions, processes, joint initiatives, dealing with potential tensions, and a shared talent development philosophy. Data analysis led to transformation of the ESF (working) model into an empirical model including: preconditions (e.g., time and power to execute their ideas), processes (e.g., they held 6-8 meetings during last season, communicated regularly and evaluated ongoing progress), initiatives (e.g., arranging a new swimming pool, mutual practice with the local gymnastic club). Shared assumptions of the talent development philosophy were: “Developing a successful environment is a marathon”, “A strong and cohesive training community is the key to elite”, and “We do the best possible within our framework”. No serious tensions were reported, and together they succeeded in increasing the swimming facilities and supporting development of young swimmers.

4.23 Motivational profile Steven Reiss as a tool for in-depth work with the player

Katarzyna Marika Skwarek¹, Adriana Zagórska-Pachucka², Beata Mieńkowska³, Katarzyna Wójcik⁴

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Every sport psychologist in the process of acquiring professional experience wonders which tools are effective in knowing athletes whom he/she works with. Moreover he is required to provide certain information to coaches, especially in motivation or communication. However, the most important thing for athletes is to know themselves, motives or weaknesses so that he/she can manage his/her development not only in the field of sport but also in life.

According to Reiss (2004) nearly everybody is motivated one way or another by each of the 16 primary desires. Individuals differ in how they prioritise them. Often people choose to satisfy their desires through participation in sports and this can depend on which desires are most important to them.

The purpose of this study was to delineate framework of intervention based on Reiss Motivation Profile based on relevant literature. This abstract addresses prospective applied approach that can be emphasised in the sport psychology domain

161 athletes from six different sports were investigated (Football, Beach Volleyball, Canoeing, Modern Pentathlon, Speedway and Swimming). Based on age, athletes filled out RSMP (Reiss School Motivation Profile) or RSM (Reiss Motivation Profile). Each of them had a chance to meet with sport psychologist to discuss their results.

Professionals interested in applied sport psychology can obtain practical information on motivation and way of communication through Reiss Motivation Profile. Concerning knowledge on this aspects while attempting sport psychology consultation will be helpful to guarantee a high quality service and promote the expertise of sport psychologists.

4.24 Integrating significant antecedents to understand commonalities and differences of athlete burnout experience

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Athlete burnout is characterized as a multifaceted phenomenon comprised of emotional and physical exhaustion, a reduced sense of accomplishment, and sport devaluation (Raedeke & Smith, 2001). According to a recent citation network analysis (Gustafsson, Hancock, & Cote, 2014) four traditional models explain athlete burnout: (a) Smith's (1986) Cognitive-Affective Stress Model, (b) Silvas's (1990) Negative Training Stress Model, (c) Coakley's (1992) Social disempowerment Model, and (d) Raedeke's (1997) Commitment Model. Present research aims to identify possible emerging profiles of the main reasons leading athletes to experience signs of burnout. Data were collected from a sample of 44 athletes (Myears=20.48; SD=6.17) who experience signs of burnout (Mburnout=2.97; SD=.59). Cluster analysis was conducted through two phases (hierarchical and K-mean analysis) on variables leading to athlete burnout as captured by the four traditional athlete burnout models. Four profiles emerged through cluster analysis: (i) entrapped athletes (n=11) who reported the highest constrained commitment and high sport specific overtraining, (ii) athletes of undefined burnout causes (n=18) who reported low psychosocial stress, overtraining and constrained commitment, (iii) multifaceted burned out athletes (n=4) reporting the highest sport-specific overtraining and high constrained commitment / psychosocial stress, and (iv) overly stressed athletes (n=11) who reported high psychosocial stress and sport-specific overtraining. Present research is the first one that examines emerging burnout profiles regarding significant antecedents. These results aim to encourage researchers further explore similarities or/and differences among different burned out profiles, regarding, early signs, symptoms and preventing mechanisms.

4.25 Genetic or learning? Relationship between personality indicators and coping in athletes

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Coping is a key process for athletes to overcome demands and adapt to new situations, explained by genetic variations (temperament) as well as previous learning (character). Those situations that exceed coping resources are considered to be threatening deriving from their interpretation if they hinder or facilitate perception of athletes on their performance. Thus, the aim has been to identify the relationship between personality dimensions of Cloninger's psychobiological model and dimensions of coping with stress in a sample of federated team athletes. Participants (N = 229) were federated athletes with age ranging between 18 and 34 years (M = 20.75, SD = 2.80). Administered self-report measures were: Cloninger Personality Questionnaire (TCI-R-67), Coping Strategies Inventory (CSI) and ad hoc socio-demographics. Results showed that temperamental traits, in comparison with those of character, are more related to coping styles. Regarding regression analysis, temperamental personality indicators (reward dependence, harm avoidance and persistence) have been shown to be better predictors of coping strategies than character (self-transcendence). Therefore, this research has allowed to conclude that coping with stress is related to personality characteristics in athletes, especially with those of temperament (biological traits).

4.26 Mental health in amateur football players

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German Sport University, Germany

Athletes are exposed to a wide variety of stressors and adversities that may negatively impact mental well-being and the risk for depression, resulting in drop out or declining performance (Howells & Fletcher, 2015). However, only few studies focus on mental well-being and the risk for depression in amateur football players (Glick & Horsfall, 2009). The aims of this study were (a) to describe mental well-being and the risk for depression in amateur football players, and (b) to analyse whether mental well-being and the risk for depression are related to team membership.

The sample consisted of N = 20 football teams with a total of N = 285 athletes (age M = 23.6 years, SD = 4.4). Mental well-being was assessed using the Well-Being Index (WHO-5; Blom, Bech & Högberg, 2012) and risk for depression was assessed using the Patient-Health-Questionnaire-2 (PHQ-2; Kroenke & Spitzer, 2003).

Results of a multilevel analysis with team membership as level 2 variable showed that approximately 4% of all players were at risk of suffering from impaired mental well-being and risk for depression, with younger athletes being at higher risk. Moreover, the results demonstrated that team membership explained 5% of conspicuous mental well-being cases and 10% of the risk of depression cases.

Younger football players should be taught coping strategies to deal with the stressful demands that they face. In addition, group processes and environmental factors that inhibit mental well-being whilst increasing the risk for depression in football players should be analysed in future studies.

4.27 Does climbing change the mood? Preliminary findings in children and adolescents in mental-health inpatient care

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Introduction: Although therapeutic climbing is already used in clinical settings, only recent studies showed acute and long-term positive changes in mood after therapeutic climbing compared to control groups in psychiatric patients (Kleinstäuber, Reuter, Doll, & Fallgatter, 2017; Luttenberger et al., 2015). However, those results are based on the comparisons to non-exercise groups. Therefore, the aim of the present study was to compare the acute effects of a climbing condition with a different exercise condition (swimming) and a sedentary ergotherapy condition on mood and well-being in patient children and adolescents.

Method: The sample consisted of 26 children and adolescents in mental-health inpatient care (age: 13.6±2.5 years, ♀=37.5%). All participants completed three single 60 minute interventions of climbing, swimming and ergotherapy. Immediately before and after the session the Positive and Negative Affect Scale Children (PANAS-C) was assessed. Feeling Scale (FS) and Felt Arousal Scale (FAS) were additionally measured at 20 and 40 minutes.

Results: Repeated measure ANOVAs revealed neither significant time x condition effects in the PANAS-C in positive ($F(2)=0.847$; $p=.435$) or negative affect ($F(2)=.665$; $p=.520$), nor in the FAS ($F(6)=1.537$; $p=.170$). A significant time x condition effect was seen in the FS ($F(3,83)=2.618$; $p=.042$) showing increased well-being in both exercise conditions compared to the sedentary condition but no difference between the exercise conditions.

Conclusion: Physical activity increased well-being in psychiatric in-patient children and adolescents compared to a sedentary ergotherapy session. No superior effects of climbing on acute mood and well-being when compared to a different physical activity condition were detected.

4.28 Intervention for physical activity and virtual reality to boost the cognition in elderly

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State University of Campinas (Unicamp), Brazil

Measuring the cognitive stimulus and the gain of joint mobility during physical therapies intervention is of great interest for kinesiology experts to evidence and record patient progress and prevention methods. An innovative complementary approach, virtual reality (VR) interfaces, shown accessible and safe use in physical therapies. Here, we evaluated 21 healthy elderly (70-85 years and of both sexes) which practice physical activity (PA) and VR intervention from gestural interaction with the computer system. This study follows the evolution of balance, cognition, and mobility during five months of the project. We considered the Clinical Test of Sensory Interaction and Balance to rate mobility and from the Pictorial Memory and the Alternate Attention Test, to estimate memory and cognition. Complementarily the intervention used the Gesturepuzzle Software (virtual puzzle controlled by gesture interaction), with the frequency of three times weekly. At the end of the 5-month intervention, subjects were re-evaluated using the same instruments initially used. We obtained the preliminary results. The VR and PA group reduced the risk of falls by 50%, improved the memory by 33.3% (mean score) and obtained an improvement in attention in 16.7%. On the other hand, the group that performed only VR reduced the risk of falling by 33.3%, improved memory in 22.2% (higher score) and improved attention in 11.2%. The values found with VR intervention suggest efficiency in prevention and improvement of the quality of life during healthy aging, as well as in rehabilitation process. Approved by Ethics Committee of UNICAMP.

4.29 Are changes in physical activity paralleled by changes in sleep complaints? Latent growth curve analyses over a 6-year period

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Patterns of change in physical activity and sleep complaints are still poorly understood. We therefore examined whether intra-individual changes in physical activity are associated with intra-individual changes in sleep complaints over four measurement time-points across a 6 year-period, adopting a between-person and within-person perspective. Data is based on a longitudinal cohort study carried out in Western Sweden. At baseline, 3187 participants (health care workers) took part in the study (86% women, Mage = 46.9 years). After two years, the response rate was 84% (N = 3136), after four years 60% (N = 2232), and after six years 40% (N = 1498). We used the Saltin's and Grimby's (1968) 4-level physical activity scale (SGPALS) to assess physical activity and three items from the Karolinska Sleep Questionnaire (KSQ) to measure sleep. We employed latent growth curve modelling to examine patterns and correlations of change between physical activity and sleep complaints. Across the 6-year period, changes in physical activity were significantly associated with changes in sleep complaints. Significant associations occurred between baseline levels, correlated (between-person) change, and coupled (within-person change), indicating that increased physical activity over time (either in comparison to others or to one-self) is paralleled by decreased sleep complaints. The fact that changes in physical activity and sleep are associated suggests that it is equally worthwhile to promote more physically active lifestyles in yet physically inactive individuals and to ensure that already physically active individuals maintain their engagement in physical activity over longer periods of time.

4.30 How does motivation for exercise change across the stages of change?

Richard Keegan, Lily Quinlan

University of Canberra, Australia

Changes in motivation, as one persists with exercise, are predicted, but not well-evidenced: especially as integrated regulation is often excluded from validated motivation measures. The present study aimed to assess differences in exercise motivation over four weeks of exercise participation, including the role of integrated regulation in predicting exercise behaviour. Australian adults (N = 148), both active and inactive, were recruited through community samples. Participants completed questionnaires assessing motivation (BREQ-2), behavioural stage-of-change for exercise (SECS), and psychological need satisfaction (PNES) baseline and a four-week follow-up. A significant positive relationship was found between exercise motivation and SoC, where higher autonomous regulation was associated with exercise action and maintenance. No significant differences in motivation were found in participants who progressed exercise participation between Time 1 and Time 2. The addition of integrated regulation contributed to a significant improvement in SECS variance, beyond the five other forms of motivational regulation in existing measures. The final regression model suggested amotivation, identified regulation and integrated regulation as significant predictors of SECS. Perceptions of competence and relatedness support were found to partially mediate the relationship between motivation and exercise behaviour change, while perceived autonomy support had no mediating effect. Findings from this study underscore the need to analyse identified and integrated regulation more closely in exercise contexts. In addition, the results suggest facilitating support for psychological needs may influence exercise motivation and behaviour. Our study allows the characterisation of motivation in those persisting with exercise, with potential implications for supporting sedentary populations to become more active.

4.31 Motivation in German physical education – do boys like being ego orientated?

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Introduction: Physical Education (PE) in school is originally intended to teach pupils the necessary skills to engage in various forms of physical activity outside of the classroom. However, the compulsory character of PE might actually rule out its positive intention, potentially explaining parallel declines in physical activity behaviour in early adolescence in general. In order to tackle declines in PE motivation, it seems reasonable to look more closely at gender-specific motivation-related determinants of PE. The present study intends to investigate differences in intrinsic motivation and in goal orientations between boys and girls.

Methods: A total of 223 students (N = 111 girls; mean age = 15.70, SD = 1.48) from different German secondary schools were asked to complete assessments of intrinsic motivation (enjoyment, perceived competence, perceived choice, pressure; Wilde et al., 2009) and goal orientations (task and ego; Rethorst & Whermann, 1998) in PE. For statistical analysis, a t-test for independent samples was conducted.

Results: Both boys and girls showed moderate scores for perceived competence, perceived enjoyment, perceived choice and task-orientation. Furthermore, boys reported significantly higher ego-orientations compared to girls ($t(216) = -2.808$; $p = .005$). No other gender-specific differences could be detected.

Discussion: Despite its compulsory nature, boys and girls perceived PE as relatively enjoyable, felt competent and perceived to have choices. For future research it could also be interesting to look at relationships between goal orientations and motivation in order to promote intrinsic motivation in PE.

4.32 Correlation between psychological aspects in recreational basketball players: a pilot study in Sesc Jundiaí, SP, Brazil.

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Introduction: Social Service of Commerce (Sesc) offers systematised practice of exercise and sports to commerce, tourism and health workers in their leisure time (SESC, 2018). Basketball is offered as a practice to encourage autonomy, well-being and to improve quality of life. Thus, the aim of this study was to characterise psychological aspects in recreational basketball players.

Methods: We evaluated twenty-two subjects (17 male, 31 years average age). The following psychological aspects were evaluated: Self-Efficacy (SE; Sbicigo, Teixeira, Dias, & Dell'Aglio, 2012), Resilience (RS; Pesce et al., 2005), Mental Disorder (SRQ-20; Santos, Araújo, Pinho, & Silva, 2010), Cognitive Anxiety (CA), Somatic Anxiety (SA), Self-confidence (SC; Coelho, Vasconcelos-Raposo, & Mahl, 2010), Self-esteem (SS; Pesce et al., 2005) and Quality of life (Fleck et al., 2000): General perception (GP); Health perception (HP), Physical Health (PH), Psychosocial Health (PSY), Environment (EN) and Social Relations (SR).

Results: We observed the following levels of psychological aspects: SE=30.73±4.04, RS=137.27±12.42, SQR-20=3.05±2.82, CA=22.27±5.57, SA=14.82±3.65, SC=26.50 ±5.46, SS=33.41±3.74, GP=3.64±0.58, HP=3.32±0.78, PH=3.87±0.38, PSY=3.79±0.39, EN=3.74±0.73 and SR=3.86±0.51. A strong correlation was observed between RS and SC ($\rho=0.848$; $p<.001$), RS and EN ($\rho=.729$; $p<.001$), and PSY and SRQ-20 ($\rho=-0.763$; $p<.001$).

Conclusion: In recreational basketball players, psychological aspects showed adequate scores. Resilience showed to be important for individual (SC) and group (quality of life EN) aspects. Furthermore, higher scores in psychosocial aspects of quality of life are related to lower mental disorder levels. Thus, it is important to highlight a psychological evaluation and intervention to improve the integral development of these players, reinforcing the interdisciplinary approach in sports.

4.33 Sport for pleasure, medals or fitness? Effects of intrinsically and extrinsically motivated sports on subjective well-being

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Based on a theoretical framework informed by Self-Determination Theory, this poster argues that sport activities' impact on subjective well-being (SWB) is moderated by the goals and motivations associated with sport. Precisely, we assume that intrinsic sport motivations like enjoyment, sociality, and relaxation, may enhance SWB, whereas the well-being effect of sport is less pronounced or even negative when sport is functionalised for extrinsic goals, e.g., to control weight or to compete for medals. These assumptions are then tested with a large-scale sample of university students. The results indicate that students who practice sport regularly and habitually have a higher life satisfaction compared to non-athletes. Moreover, the type of motivation matters: Sport motivations that refer to intrinsic goals and states (enjoyment, relaxation, sociality, fitness) come along with a surplus of life satisfaction, whereas motivations aiming at extrinsic goals (competition, weight control, distraction) contribute to a lesser degree to life satisfaction. Hence, playful forms of exercise and sport, conceived as an end in itself, have more potential to enhance SWB compared to competitive and weight-related sports.

4.34 Catastrophic thoughts and perfectionism, athletes vulnerable to injury. Gender differences in triathletes

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When an athlete focuses on their physical and mental tasks towards improvement in the competition, they develop a system about the most perfect way to achieve their success. Such a system, without an adequate information and interpretation, realistic design of the path to reach them, or resources to regulate their desires to achieve such successes, could create imbalances and provoke the appearance of stress-anxiety, fears, intra and interpersonal conflicts, provoking a vulnerable response to possible injuries or illnesses. In this sense, our research question is aimed to point out, what the relevance of perfectionist beliefs is. The aim is an analysis of links between perfectionist patterns and the vulnerability of athletes to injuries (appearance of catastrophic thoughts-cognitive plane and sensitivity to anxiety-emotional plane). A sample of 200 triathletes (N = 100 men; N = 100 women) that participate in competitions to national level were analysed. Although the signs that mark the sporting context are common for men and women, triathlon is a highly resistant sport specialty, in which it is extremely important to take care of countless details for any of the three modalities that compose it (running, cycling and swimming). In this, the main gender differences found indicate that men point higher in more functional perfectionist dimensions (organisation and personal standards) and women in more dysfunctional dimensions (external expectations). Respectively, such beliefs correlate negatively and positively with both catastrophic thoughts and sensitivity to anxiety.

4.35 "...it's a group of blokes having a laugh": participant experiences in a sport-based weight-loss intervention for men

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A significantly greater proportion of men (relative to women) are overweight and obese, yet relatively few weight loss interventions have been developed that sufficiently target men. This lack of male-focused programming may be in part because 'traditional' weight-loss programmes are unappealing for what is considered a 'hard-to-reach' population. One programme that appears to have such appeal for men is the UK-based MAN v FAT Football (MVFF), which is designed for men with a body mass index of, or greater than, 27.5. MVFF centres on men's participation in a community-based weight-loss programme that incentivises weight loss through participation in a football league, and since 2016, MVFF has supported the weight loss efforts of several thousand men. The overall purpose of the study was to understand men's motives for joining, and experiences within, the MVFF programme. We recruited thirty participants (Mage = 41.13, SD = 9.93) and ten coaches (Mage = 31.8, SD = 11.55) from programme locations throughout the United Kingdom. Using semi-structured interviews and thematic analysis, we identified several aspects of the programme that participants and coaches considered important. These included a male environment that was fostered in a programme with likeminded (and similar) men, male banter, camaraderie, accountability to others, and 'friendly' competition. This study provides important insight into programme components that most closely resonated with MVFF participants. Targeting these factors may be important when tailoring interventions for the at-risk societal group of overweight and obese men; a population that often disengages with health promotion activities.

4.36 Psychological profile of women enrolled in martial arts classes at University of Campinas: a preliminary study

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Background: Physical exercise and sports practices are held at the university, including martial arts classes. The purpose of this study was to evaluate the psychological profile of women who enrolled in martial arts classes.

Method: 64 women (25.63 ± 6.54) were recruited in the first martial arts class for women at the Faculty of Physical Education at University of Campinas, Brazil. Participants undertook psychological evaluation: self-esteem (Rosenberg, 1965), resilience (Wagnild & Young, 1993), self-efficacy (Schwarzer & Jerusalem, 1995), depression (Beck, 1961), anxiety (Beck et al., 1985) and quality of life (The WHOQoL Group, 1997).

Results: Motivation to practice martial arts was self-defense (90%), physical conditioning (84%), health (67%), therapeutic (39%), recreation (23%) and social relationship (14%). Scores of psychological evaluations of self-esteem (28.41 ± 5.75), resilience (116.77 ± 18.46), self-efficacy (28.44 ± 4.72), depression (12.77 ± 7.20), anxiety (9.80 ± 6.36) and quality of life (physical 3.60 ± .550; psychological 3.30 ± .658; environment 3.67 ± .529 and social relationship 3.58 ± .717).

Conclusions: The main motivation for the practice of martial arts in women is self-defense. Psychological evaluation showed mild symptoms of depression and anxiety, and average scores of self-esteem, self-efficacy, resilience and quality of life, that could be improved through continuous martial arts practice.

4.37 Female youth refugees' experiences in sport, physical activity, and exercise: a phenomenological study

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Youth represent the largest proportion of the millions who are forcibly displaced each year (The UN Refugee Agency, 2016). Particularly, female youth face unique challenges seldom addressed by their host community. Factors contributing to female youth refugees' healthy resettlement include social capital (Rivera et al., 2016), a sense of belonging (Ellis et al., 2016), and autonomy (Pieloch et al., 2016). Physical activity (PA) may also support proper resettlement; it can be a platform to help youth refugees adapt to their local culture (Olliff, 2008). Thus, the objective of this study was to investigate how female youth refugees' experiences in physical activity, exercise, and/or sport have helped their ability to resettle.

Nine female youth Burmese refugees took part in two semi-structured interviews and a photovoice task. The initial interview investigated their experiences in PA and as a refugee. The photovoice task asked participants to capture up to 20 photos representing highlights and challenges they faced in regards to physical activity. The follow-up interview focused on the participant's analysis of her photos. The interviews were then analysed using hermeneutic phenomenology. Initial findings indicate that while participants generally enjoy both group and individual PA, other priorities such as family obligations and schoolwork take precedence over sport participation or exercise. Furthermore, most girls ceased all PA during the winter, and do not have adequate resources to remain active. The finalised results may inform the participants' school district of potential barriers and interventions that could help this population better adjust to their local culture.

4.38 Received social support in a stressful situation - does the affiliation motive act as a moderator?

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Previous research showed that received social support can buffer the negative effects of stress on well-being, whereas other studies found no or even reversed effect. We suggest the implicit affiliation motive as a moderator and hypothesized that social support has more beneficial effects for high than for low affiliation motivated individuals. In a first part of the experiment, 51 participants from a middle school were randomly assigned to a direct ($n = 17$), indirect, ($n = 18$) or no ($n = 20$) social support group. The affiliation motive was assessed using the Picture Story Exercise. Dependent on the group, informational support was experimentally induced by a confederate when the participants prepare a challenging motoric task (juggling) that is announced to be evaluated by experts (socio-evaluative stressor). We assessed the time participants spend on juggling as a measure of motivation and assessed well-being using questionnaires. Results so far showed that participants with a strong affiliation motive who received direct support are more motivated to perform well in the task than those in the two other groups and those with a weak affiliation motive. No significant effects were found for well-being. So if a social interaction process is perceived as a friendly social act, individuals with a strong affiliation motive benefit stronger than individuals for whom the quality of social relationships are less important (low affiliation-motivated individuals). A second wave of data collection is currently running.

4.39 Validation of a Dutch Measure for Implicit Theories of Ability in Sport (CNAAQ-2)

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Our goal was to validate the Conceptions of the Nature of Athletic Abilities Questionnaire (CNAAQ-2) in a Dutch context. We conducted three studies to examine its psychometric qualities. In study 1 we performed exploratory factor analyses on two samples ($N = 400$, and $N = 341$), which supported a solution of four factors labeled entity-stable, entity-gift, incremental-learning, and incremental-improvement. To further improve the reliability, 25 items were added and in study 2 we merged three samples that were then randomly split in two halves. A principal component analysis on the first half ($N = 255$) led to a selection of 21 items (the CNAAQ-2-NL), that was verified in a confirmatory factor analysis on the second half ($N = 255$). The fit of a four-factor model was acceptable ($\chi^2 = 277.33$, $df = 180$; $RMSEA = 0.047$; $NNFI = 0.937$) as was the fit of a four-plus-two higher-order factor model ($\chi^2 = 298.29$, $df = 187$; $RMSEA = 0.049$; $NNFI = 0.930$). In study 3 ($N = 322$) we administered the CNAAQ-2-NL along with other measures at two points in time, three weeks apart. Test-retest reliability was good, and convergent validity was supported by relations with Dweck's measures of implicit theories of intelligence and of sport abilities. Predictive validity was supported by relations with achievement goals. We conclude that the factor structure of the CNAAQ-2-NL was in line with theory, and that validity was sufficiently supported. However, the role of implicit theories may be different in sport than in the context of intelligence and needs further investigation.

4.40 Examining the link between personality and positive emotions

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Flow is an intrinsically rewarding experience characterised by enjoyment and concentration in performing an activity (Csikszentmihalyi, 1990). Personality is defined as 'psychological qualities that contribute to an individual's enduring and distinctive patterns of feeling, thinking and behaving' (Pervin & Cervone, 2010). Csikszentmihalyi and Jackson (1999) have introduced the concept of autotelic personality as person's tendency to seek challenging situations that fit to his/her skills, and a constellation of personality characteristic that increased the propensity to experience flow in different situations. The purpose of the study was to examine how athletes' personality characteristics are related to the experience of positive emotions. Two hundred and twenty four individual and team sport athletes (55% men) volunteered to participate in the study (Mage=18.03 years, SD=6.03). The athletes completed the NEO Personality Inventory-R (Costa & McCrae, 2008), Mental Toughness Index (Gucciardi, Hanton, Gordon, Mallett, & Temby, 2015), and Dispositional Flow Scale-2 (Jackson & Eklund, 2002) based on how they usually feel. Correlation analysis indicated positive correlations between extraversion and conscientiousness with flow experience and mental toughness, whereas negative correlations revealed among extraversion with flow experience and mental toughness. Regression analysis results showed that personality factors can serve as significant predictors of mental toughness ($R^2 = .41$, $p < .001$) and total flow experience ($R^2 = .39$, $p < .001$) that athletes experience during competition. The results indicate that athletes' personality characteristics can affect the experience of positive emotions during sport participation, providing fruitful information to the athletes, coaches and sport psychology consultants in the formulation of psychological preparation programmes.

4.41 Vulnerability to eating disorders in athletes: a comparison between aesthetic and non-aesthetic sports

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Sports participation can play a protective role against development of psychological disorders (Smolak et al., 2000). However, participation in specific sports such as aesthetic sports seems to expose a greater risk for developing eating disorders (Sundgot-Borgen & Torstveit, 2010). Therefore, the primary aim of the present study was to investigate whether there are any differences between athletes who practice aesthetic sports and non-aesthetic sports in dysfunctional eating behaviours and associated psychological features. Secondly, the study aimed to investigate the potential predictive role of self-esteem in dysfunctional eating behaviours and associated psychological characteristics.

Ninety-four female athletes practicing aesthetic sports (figure skating, synchronised swimming, dance, rhythmic gymnastics, and artistic gymnastics) and ball games (soccer, basketball, and volleyball) were recruited from several sports clubs in Italy. Dysfunctional eating behaviours and related psychological features were assessed with the Eating Disorder Inventory-II (EDI-2; Garner, 1991), and self-esteem with the Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965).

The results showed that athletes practicing aesthetic sports tended to have more bulimic behaviours ($p=0.04$), higher levels of perfectionism ($p<0.001$), and asceticism ($p<0.001$) than athletes practicing ball games. Furthermore, as expected self-esteem significantly predicted drive for thinness ($p=0.001$), body dissatisfaction ($p = 0.001$, ineffectiveness ($p<0.001$), interpersonal distrust ($p<0.001$), asceticism ($p=0.003$), and social insecurity ($p<0.001$) in the aesthetic sports group in accordance with the literature (e.g., Byrne & McLean, 2002). It can be argued that athletes who practice aesthetic sports (especially with low self-esteem) may be more vulnerable to develop eating disorders.

4.42 Applying SDT to motivate PE students: Some recommendations for app design

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Physical education (PE) constitutes a suitable environment for physical activity (PA) promotion among adolescents. Framed on self-determination theory (SDT; Deci & Ryan, 2002), many interventions have focused on fostering an autonomy-supportive climate in PE classes (Van den Berghe et al., 2012). However, SDT interventions have also some challenges that need to be addressed for optimising its quality of implementation (Quested et al., 2017). Smartphone applications (apps) have raised as an effective tool to improve PA levels (Gal et al., 2018), and could help to overcome some of these issues. Therefore, the aim of this study was to generate recommendations for the design of an app to help PE teachers promoting autonomy support and intrinsic motivation in their classes. First, we reviewed previous literature and identified potential barriers when implementing SDT interventions in PE classes. Second, we conducted a focus group with target populations (active and non-active students, PE teachers, experts in PA promotion) to discuss how improving motivation towards PE classes. Third, we instructed 13 PE teachers on SDT postulates and used weekly diaries to evaluate implementation difficulties. Main results show that intervening on PE teachers is an efficient way to implement SDT interventions. Also, social networks and other smartphone utilities are perceived as potentially effective tools for implementing SDT postulates. Finally, PE teachers identified some difficulties when implementing intervention contents into practice, such as how to plan motivational contents and when giving feedback to students. Based on our results, we provide some recommendations for the app design.

4.43 Subject correlations of mental toughness

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Stress resistance is very substantial and interesting for scientists, competitors, coaches, and psychologists. Mental toughness involves: less susceptibility to stress, the ability to cope in a difficult situation, control, and flexibility (Dyer & McGuinness, 1996; Gracz & Sankowski, 2007; Gucciardi, Gordon, & Dimmock, 2008; Kobasa, Maddi, Puccetti, & Zola, 1985; ; Wiebe & Williams, 1992). The aim of the study is to present the results of three scales of the Mental Toughness in Sport Questionnaire (MTSQ; Przybylski, 2018) (negative states prior to performance, relations with the coach and burden of the training regime) in relation to the following questionnaires: EAS Temperament Survey (Buss & Plomin, 1984), Coping Inventory for Stressful Situations CISS (Endler & Parker, 1990) and the Inventory of Perceived Sources of Stress (KPS; Plopa, & Makarowski, 2010), Action Control Scale (ACS-90; Kuhl, 1994). The study was conducted with a sample of $N = 212$ athletes (52 women and 160 men, Mage = 18.4, SD = 2.2). Results revealed that non-resistant people who achieved high scores on all MTSQ scales present high emotionality from the EAS temperament questionnaire (higher result in dissatisfaction, fear and anger); higher external stress, intrapsychic stress and overall score from the KPS stress-related questionnaire; a higher results in the emotion-focused style from the CISS questionnaire and low AOF score (orientation on the state in the situation of failure) from the ACS-90. Detail results and practical implications are discussed

4.44 Intercultural sensitivity change correlates with assignment of teammates training injuries to "external" (non-blaming) causes

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Bennett's (1993) Model of Intercultural Sensitivity (which in this study is used to assess how "self" or "other" focused one is in interactions with others) is used to assess student athletes before and after completion of assignments in a sport psychology course. Changes in scores from pre- to post-test were compared to perceptions of why teammates get injured during training.

Student athletes in a sport psychology course completed the Intercultural Sensitivity self-assessment at the beginning and end of the semester. Changes in scores were compared to athlete responses why a hypothetical teammate got injured during training. As expected, those athletes who showed the most changes (became less self-focused and more "other" focused) from pre-test to post-test were also more likely to attribute responsibility for teammate injuries to "external" causes (e.g., bad luck). Those who showed the least changes (were still mostly self-focused) were more likely to choose "internal" reasons for those teammate injuries (e.g., "he didn't warm up enough"). As such, this could be perceived as less "blaming" of teammates for their injuries when one becomes more "other" focused.

Possible implications of these results include assisting athletes in becoming more accepting as a teammate – especially toward those with vastly different religious, sexual or identity issues. Additionally, progress on Intercultural Sensitivity leads to less "blaming" of teammates for injuries ("it was their fault") which could have profound effects on team cohesion and success.

4.45 The effects of perceptual load and mental fatigue on inattentive blindness in football players

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Inattentive blindness (IB) is the inability to direct the attention toward unexpected events occurring in the visual field of an individual, while he/she is engaged in a primary monitoring task (Simons and Chabris, 1999). In football players the inattentive blindness impairs tactical decisions and reduces the capacity to exploit the affordances present on the field. Perceptual load (PL) refers to the number of items and complexity of perceptual operations that a task involves (Lavie et al, 2009). For example, a football player can experiment more PL when dribbling the ball while scanning for open players, than during the execution of a penalty kick (Furley et al. 2012). Mental fatigue (MF) is a psychological state, characterised by feelings of tiredness and a lack of energy, induced by PL, which impairs technical soccer skills (Smith et al. 2018).

This study aims to verify whether perceptual load and mental fatigue, singularly or together, increase IB in professional football players. The experiment involved a convenient sample of Italian professional football players U21. The participants were engaged in a football-specific attentional task in four independent experimental conditions: high perceptual load and high mental fatigue (PL+ MF+); high perceptual load and low mental fatigue (PL+ MF-); low perceptual load and high mental fatigue (PL- MF+); low perceptual load and low mental fatigue (PL- MF-). We hypothesised that MF+ conditions affect more the IB than PL+. The results of the experiment and some suggestions for practical applications will be discussed during the congress.

4.46 Effect of psychological pressure on pole vaulters perception about the judgement of crossbar height - a pilot study

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The purpose of this pilot study was to investigate the effect of psychological pressure on pole vaulters' perception about the judgment of crossbar height immediately prior to going for the approach run of the pole vault jump. N = 14 male subjects were selected from an athletic jumping group of SAI Center, Bhopal, (age: 17-25 years old). All subjects were randomly assigned into two groups: pressure and non-pressure group. The subjects in the pressure group were penalised by a fine (Rs. 500) for a failed attempt, while for the non-pressure group, there were no penalties. The pressure group was blindfolded prior to setting the crossbar lower than their personal best (-50cm, -30cm, -10cm) by the other experimenters at random. A pressure manipulation was adopted for those who succeed by rewarding them monetarily (Rs. 500), whereas in the non-pressure group, the subjects were asked to judge the height of the crossbar just prior to the attempt. The descriptive statistical technique was used to analyse the data. The significance level was set at alpha = .05. We concluded that perceived pressure (56.73 ± 5.05mm) was significantly higher than the non-pressure trial (49.31 ± 5.36mm), whereas the success rate of the task in percentage (%) did not change significantly from non-pressure (75.00 ± 5.46mm) to the pressure (79.76 ± 6.58mm) conditions. The mean perceived height of the bar under pressure (1.36 ± 1.26mm) was significantly higher than in the non-pressure (.77 ± 1.23) conditions. The pressure manipulation was found to be effective.

4.47 The influence of action-effect priming on bilateral transfer

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Recently, it has been demonstrated that the perceptual feedback following an action can be used as an imperative stimulus to prime future instances of that same action (Land, 2018). The present study sought to extend these findings by examining whether an action's effect (perceptual feedback) can be used to prime and enhance performance within a bilateral transfer paradigm. Bilateral transfer refers to a feature of motor learning in which training on a task using one side of the body (e.g., right hand) can lead to performance improvements on the same task using the other, untrained side of the body (e.g., left hand). During a training phase, 29 participants practiced an underhanded ball toss (n = 360 tosses) to targets at two distances (short & long: 3.4m and 5.8m, respectively). Successful tosses that landed near the target produced an audible tone, with unique tones associated with each target distance (high or low pitch tone). Following the training phase, participants performed a bilateral transfer test in which the tosses were performed with the opposite, untrained hand. The tones from the training phase were used as an imperative stimulus to indicate which target the toss was to be aimed. Results indicated that bilateral tossing performance was significantly more accurate when the toss was preceded by the tone previously associated with the task during the training phase compared to a no-tone control condition. Findings support the hypothesis that perceptual movement effects can prime and enhance performance of an action within a bilateral paradigm.

4.48 An age simulation suit affects motor and cognitive performance in younger adults

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Wearing an age simulation suit (ASS) allows young adults to experience the consequences of physical aging (e.g. reduced strength, flexibility and sensory perception). ASSs are mostly used in the education of medical professions to promote empathy (Tremayne, Burdett, & Utecht, 2011; Qureshi, Jones, Adamson, & Ogundipe, 2017; see Lauenroth, Schulze, Ioannidis, Simm, & Schwesig, 2017, for a study on gate changes). We investigated the effects of an ASS on motor and cognitive performances in younger adults. In the ASS condition, we compared the performances to published norms of older adults on the respective test. Twenty young adults ($M = 22.3$ years, within-subject-design) participated on two consecutive days. All participants performed a functional fitness test (FFT) of six items (leg/arm strength, leg/arm flexibility, endurance & dexterity), two fine motor tests (shirt buttoning, Purdue Pegboard Test), and one cognitive test (Digit Symbol Substitution test of the HAWIE). Participants also worked on two questionnaires measuring perceived physical and emotional state with or without the ASS (model "GERT"; Moll, 2009-2019). We found significant performance reductions of the "ASS" for all motor, cognitive and questionnaire measures. Motor performances with the ASS were equal to older adults aged 60-64 years for the subtests of arm strength/flexibility, endurance and dexterity (Rikli & Jones, 1999). In addition, cognitive performance and self-rated physical and emotional state deteriorated in the ASS condition. The results indicate that wearing an ASS has profound consequences for a variety of performances in healthy young adults.

4.49 Monitoring recovery-stress-states of German ice hockey players in preparation for the 2019 IIHF Ice Hockey U20 World Championship

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Monitoring athletes' recovery-stress-states to optimise performance and to prevent inadequate recovery and its consequences is of great importance in elite sports (Kellmann & Beckmann, 2018). The recovery-stress monitoring aims at analysing athletes' status-quo, detecting recovery-stress imbalances and providing a basis for possible adjustments to ensure achievement of training camps' objectives of raising performance level and reducing high stress levels.

The recovery-stress states of the German national team were monitored during a 10-day training camp in preparation for U20 division-IA ice hockey World Championship. The pre-selective-squad consisted of 21 players who completed the German version of the RESTQ-Sport-76 (Kellmann & Kallus, 2016) on first and last day to ensure an optimal performance level prior to the tournament.

Paired t-tests revealed significant alterations for 10 of 19 subscales. With Fatigue ($t(20)=3.31, p<.01, d=0.72$) and Lack of Energy ($t(20)=2.62, p<.05, d=0.57$) two general stress scales decreased significantly from first to second measurement. There was a significant increase in general recovery scales Social Recovery ($t(20)=-4.13, p<.001, d=0.90$), Physical Recovery ($t(20)=-2.56, p<.05, d=0.56$), General Well-being ($t(20)=-3.23, p<.01, d=0.70$) and Sleep ($t(20)=-2.92, p<.01, d=0.64$). A significant increase in all sport-specific recovery scales became apparent (Being in Shape ($t(20)=-2.71, p<.05, d=0.59$), Personal Accomplishment ($t(20)=-3.33, p<.01, d=0.73$), Self-Efficacy ($t(20)=-2.12, p<.05, d=0.46$) and Self-Regulation ($t(20)=-3.17, p<.01, d=0.69$)).

Results indicate an efficient change in recovery-stress balances suggesting an optimal preparation for the world cup and the coaches' success in uniting the team. Nonetheless, it is important to emphasize that group means do not provide information on individual recovery-stress states, which must always be examined.

4.50 Effect of differences in relevance between video and observer on attention

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The purpose of this research was to clarify the interest on the video and the influence on the processing resources depending on the difference of the degree of relevance between the video and the observer. Experiment participants were set to two groups according to relevance to the video. The group low related to the video was 12 with no experience of karate, and the group highly related to the video was 12 of the experienced karate. The experimental participants presented the karate video five times, of which the first and last showed the auditory oddball task while observing the video and measured the subjective evaluation score of ERP and attention. As a result, the degree of interest in the video was significantly higher in the high related group than in the low related group in both the first and last times, but it decreased significantly from the first to the last in both groups. The amount of attention directed to the image also showed similar results. In addition, the P300 latency to the probe stimulus was significantly shorter in both groups than in the first time. For the above mentioned, it was revealed that the high related group continued to always have high interest in the video rather than the low related group. However, as the interest decreased with time as the videos were repeatedly presented in both groups, it would be important to maintain motivation when observing the videos and clearly show the purpose and task to observe.

4.51 Mental training in children and youth sports

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In recent years, there have been attempts to use mental training in children's sports. In this case, the method of its application is most often simply transferred from an adult sport, without taking into account children's and teenager's psychology, whose psyche has not been fully developed yet. As a result, there is a danger of the formation of psychological attitudes that can cause children's mental discomfort.

In connection with this fact, there was a created programme which was based on the sequential switching on of installations: I want - I can - I do - I have to do. Such a sequence made it possible to remove the internal resistance of the teenagers, which arises when adults are imposed on them (by trainers), to accept the attitude as coming from the youngest athlete. The result of the work was the emergence of the installation of "must" among young athletes. One of the important factors for increasing the effectiveness of this technique is the positive reinforcement to young athletes' performance of sports activities by the coach. Studies conducted with young athletes aged 9–13 years, allowed us to significantly improve internal motivation for training, reduce anxiety before a competition, and increase psychological stability during a competition. The use of mental training in children's sports requires taking into account age-related features. First of all, the transformation of the installation I "want" to install "must" not by external pressure from adults, but by internal acceptance of activity goals.

4.52 Directing attention allocation through self-talk: effects on the quiet eye duration-fixation and performance

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Self-talk has been found to be an effective strategy to promote sport performance (Hatzigeorgiadis et al., 2011). While the link between self-talk and performance is well established, research investigating the underlying mechanisms of self-talk effecting performance is somewhat under investigated (Galanis, 2016). The aim of the current investigation was to explore the self-talk-gaze behaviour-performance linkage at the skill acquisition stage to help further the knowledge of potential attentional underlying mechanisms of Self-talk.

In the current investigation it is hypothesised that a) instructional self-talk aimed at refocusing on relevant targets in the environment will promote more professional gaze strategies among novices, b) thus, the use of self-talk will lead to better performance, c) the use of self-talk will be accompanied by higher levels of self-efficacy, d) the following trends will be apparent under a cognitive load condition, and e) frequency of instructions will effect the continuous use of self-talk at a retention session

To test the following hypotheses, 45 golf novices were recruited to participate in 3 putting sessions; no cognitive load, cognitive load and retention. Participants were randomly assigned into 3 experimental groups: frequent-instructions self-talk, reduced instructions self-talk and control. Gaze behaviour elements were measured using the SMI and TOBII eye trackers and consisted of number of fixations, duration if fixation, pre-quiet eye, online quiet-eye and post-quiet eye. Performance was measured using a motion analysis system, and self-efficacy was measured using a one-item questionnaire.

Results will be elaborated and discussed by the time the poster will be presented

4.53 Effects of a brief stair climbing intervention on executive functions and mood states in healthy young adults

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Introduction: Previous studies using specialised laboratory-based equipment showed that acute exercise can benefit cognition and mood. This study examined the effects of a readily accessible means of exercise in a naturalistic setting (i.e., stair-climbing intervals) on cognition and mood in healthy young adults. Previous findings indicate that the effects of acute exercise on cognition and mood may vary as a function of chronic exercise and sex; thus, both were included as covariates in the analyses.

Methods: Participants were 32 undergraduate students (18-24 years; 21 females). The study was a randomized controlled crossover trial with session order counterbalanced across participants. Participants visited the lab on two occasions, one week apart, and completed one control session (no exercise) and one stair-climbing session (3x1-min stair-climbing intervals). Participants completed computerised tests of inhibitory control and switching, and six visual analogue mood scales (i.e., sad, energetic, tense, happy, tired, and calm) on both occasions.

Results: Repeated measures ANCOVA revealed that males (Hedges' g = 0.45) performed better on the switching task following the stair climbing but females (Hedges' g = 0.03) did not. Participants felt more energetic (Hedges' g = 1.05), less tense (Hedges' g = 0.61) and less tired (Hedges' g = 0.43) following the stair climbing.

Discussion: Three short stair-climbing intervals were sufficient to induce cognitive benefits for the most challenging task (i.e., switching), albeit only for males. The positive effects on mood suggests that acute bouts of exercise can be a practical approach to increase feelings of energy in daily life.

4.54 The effects of intentional smile on mood during acute exercise

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Theories of embodied cognition insist that facial expressions directly influence human emotion. This study was designed to determine if a single bout of moderate exercise with intentional smile would improve mood and rate of perceived exertion (RPE). Subjects were 44 college students (59% female, mean age: 19.7±1.3 years) and were allocated randomly to two groups: a 16-minute-stationary biking with intentional smile group (N = 22) and a conventional 16-minute-stationary biking (N = 22). Subjects in intentional smile group exercised while watching facial emotion feedback on PC display. Outcome measures included 18-item Temporary Mood Scale (6 moods; Tokuda, 2011) and RPE. Process was measured with 7 facial emotions (neutral, happy, sad, angry, surprise, scared, disgusted) during exercise analysed with FaceReader 7.1 (Noldus Inc.). As a results, repeated ANOVA showed vigor score was higher in smiling condition than in normal condition and both depression and fatigue scores were lower in smiling condition than in normal condition. There was no difference in RPE between conditions. Relationship between percentage of smile facial expression during exercise and change in fatigue score was negatively correlated ($r = -0.41$, $p < .01$) and change in vigor score was positively correlated ($r = 0.31$, $p < .05$). Average heart rates during exercise did not differ between conditions (total average 123.0±11.6 beats/min). Periodic intentional smiling during exercise may improve moods. The findings have implications for applied practice to improve psychological effects of acute exercise.

4.55 Polarisation effect of time pressure: the effect of emotion on decision-making performance in basketball

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The purpose of this study is to verify the influence of emotion, especially neutral emotion on decision making in a sports context and the influence of emotion under the circumstances of time pressure. Study 1 explored the decision-making performance and the dynamic inconsistency of decision making of basketball non-professional athletes in different emotional states. The results showed that participants' initial quality and average quality of options in the neutral emotion are significantly better than that they are in negative emotion and positive emotion. Study 2 shorten the interval time and the decision-making time to improve the ecological validity and tried to explore the influence of emotion on decision making in basketball. The results showed that the influence of emotion on professional athletes' decision making is similar to that in Study 1, and the interaction between athletes' level and emotional type in initial options quality and option average quality is significant. In Study 3, the data of Study 2 and Study 1 were compared and it was found that time pressure polarised the emotion on decision-making performance. The decision-making performance under positive emotion in a time-pressure context is worse than that without time pressure, and the decision-making performance under negative mood is better than that in no time pressure context. The interaction between time pressure and emotional type is significant. To sum up, emotion had an influence on decision-making performance in basketball, and time pressure polarised the influence of emotion on decision making.

4.56 Muscle Dysmorphia and its Associated Psychological and Psychopathological Features in Athletes

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Muscle Dysmorphia (MD) is characterised by the preoccupation with the idea that one's body is not sufficiently lean and muscular (Pope et al., 2000). Individuals with MD engage in behaviours aimed at achieving the desired muscular physique such as excessive exercise and rigid diet (Olivardia, 2001).

The present study aimed at assessing the prevalence of MD and related symptoms in three groups (N = 150) of athletes. Furthermore, we investigated MD-related psychological features and possible MD psychological predictors.

Three groups of participants were recruited: bodybuilders (BB group), strength training athletes (ST group), and fitness practitioners (FP group). Participants completed online: a measure investigating MD prevalence; Muscle Dysmorphic Disorder Inventory (MDDI; Hildebrandt et al., 2004); Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965); Multidimensional Perfectionism Scale (MPS; Frost et al., 1990); Depression Anxiety Stress Scale-21 (DASS-21; Lovibond & Lovibond, 1995); Social Phobia Scale (SPS; Mattick & Clarke, 1998); and ORTO-15 (Donini et al., 2005).

6.4% of participants met the criteria for MD. With respect to MD symptoms, the BB group scored higher on the MDDI than the FP group ($p = .02$). With respect to the MPS, the ST group scored significantly higher than the FP group ($p = .002$). Finally, social anxiety emerged as a psychological predictor for both the BB group and the ST group (both $p < .001$).

MD is not a rare condition in the sport context. According with literature (Ebbeck et al., 2009), MD related behaviours could be developed to face social anxiety symptoms (Chandler et al., 2009).

4.57 Difference of autonomic nerve activity at competition level in archery match

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Archery in target competition is a sport that is susceptible to psychological influence directly because of the light exercise load (Takai et al., 2017). When the situation or scene changes, a physiological response appears in real time, and there is a possibility that a difference depending on the competition level may also appears. Looking at the psychophysiology studies of target competitions so far, many studied the relationship between shooting timing and heart rate (e.g., Helin, Sihvonen, & Hänninen, 1987; Keast & Elliott, 1990; Konttinen et al., 2003). In consideration of them, in this research we measured the heart rate at the archery game and examined the difference of the autonomic nervous activity depending on the competition level. The study participants were 20 archery players, and from the results of the performance index, they were divided into good group and poor group and examined. Prior to the start of the match, a heart rate monitor (Polar Team Pro) was attached to the participants of the study, and the electrocardiogram R-R interval was continuously measured by the heart rate monitor until the end of the match. The electrocardiogram R-R interval was frequency analysed by the maximum entropy method (Mem Calc). As a result of the examination, it was revealed that the parasympathetic nervous activity of the good group at the shooting of timing was significantly higher than the poor group. In archery (Watanabe, 1987), which requires less and constant balance, parasympathetic activity may be an important factor determining performances.

4.58 Response inhibition of team handball experts

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Introduction: Inhibition enables flexible and adaptive behavior by suppressing prepotent motor responses. In former studies, it has been shown that athletes acting in dynamic environments exhibit superior motor inhibitory control based on sensory stimuli. So far, existing studies have corroborated this in manual motor response settings only. Therefore, this study addresses the effector specificity of the inhibition benefit in expert athletes compared to physically active controls. We hypothesised that handball players perform better than recreational athletes in both conditions.

Methods: Male adult handball players playing in the second league in Germany (N = 30) and male adult recreational non-handball athletes (N = 30) were tested in a response inhibition paradigm (DV was stop-signal reaction time, SSRT). Repeated-measures ANOVA with factors response-effector (hands, feet) and group was conducted.

Results: Main effects of response-effector ($F(1, 58) = 27.17, p < .001, \eta^2 = .319$) and group ($F(1, 58) = 7.89, p = .007, \eta^2 = .117$).

Feet condition: Post-hoc test (one-tailed) showed no significant SSRT difference between handball experts ($259.5\text{ms} \pm 41.6$) and recreational athletes ($276.74\text{ms} \pm 38.4$), $t(58) = 1.63, p = .10, 95\% \text{ CI } [-0.094, 0.929], d = .42$). **Hands condition:** Significant difference between handball experts ($M = 229.36\text{ms}, SD = 32.83$) and recreational athletes ($M = 261.52 \text{ms}, SD = 39.00$), $t(58) = 3.46, p = .001, 95\% \text{ CI } [0.357, 1.420], d = .89$.

Discussion: Results show a convincing superiority of handball players in response inhibition, predominantly when responding with their hands, with weaker differential effects when responding with their feet.

4.59 Bridging the gap in sport participation of athletes with disabilities through social emotional learning: imperative for Nigerian V

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People with disabilities who participate in sport are also athletes. Many coaches lack the cognitive skills to train persons with disabilities in sports. As a result, there has been wide gap in inclusive sports in Nigeria. Social Emotional Learning is the process through which children and adults alike acquire and effectively apply the knowledge, attitudes and skills necessary to understand and manage emotions, set and achieve positive goals and feel and show empathy for others. A descriptive design was used and participants for the study were 272 Nigerian Varsity coaches of individual and team sports. The mean age of the coaches was 40.32 ± 7.36 . The instrument for data collection was a 48-item questionnaire, known as SEL Utilization Questionnaire. The five competency components examined were: Self-Awareness (0.79), Self-management (0.89), Social Awareness (0.82), Relationship Management (0.73) and Responsible Decision Making (0.92). The overall Cronbach's alpha was 0.927.

ANOVA revealed statistical significant differences in coaches' knowledge of using Social awareness, $F(13, 272) = 1.758 (p < .05)$; Self-management, $F(13, 272) = 4.381 (p < .000)$; Relationship Management, $F(13, 272) = 5.056 (p < .000)$, Self-awareness, $F(13, 272) = 2.363 (p < .005)$ and Relationship decision making, $F(13, 272) = 1.785 (p < .046)$. Based on the findings in this study it was concluded that coaches have no sufficient knowledge to enable students with disabilities participating in sports in Nigerian Universities, such that no specific sport competition is organised for them at Universities.

4.60 Mental training in basketball: conceptualization and new methodological approaches using VR

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Similar to the biopsychosocial model for health (Engel, 1977), a multidimensional conceptualization for training in sport is proposed, consisting of the dimensions physical-, psychological- and social training. In turn, psychological training (PT) is further differentiated from an action theory perspective, which considers the person-task-environment constellation. Consequently, three forms of PT, namely mental training (MT; task-aspect), psychoregulative training (person-aspect) and interpersonal training (environment-aspect) are derived. MT is further divided into sub-vocal-, observational-, and ideomotor training. Using inexpensive and incomplex technology, a 360° full spherical video of a basketball free throw was created, which was used as the basis for a 4-week training program. In this pre-study, one group of participants (N=30) trained thrice weekly by watching the video 20 times using virtual reality (VR) glasses. Another group of participants (N=31) underwent a traditional MT in accordance with the PETTLEP model (Holmes & Collins, 2001). Paired sample t-tests revealed no significant differences in either group between pre-test and post-test, which consisted of 30 basketball free-throws. The results of an undergoing study using the same study design and technology to instead create individualized videos for professional basketball players will be presented, as the limitations of the pre-study were addressed. This technology may be inefficient in a training program for beginners, however, it is hypothesized that professional athletes using a 360° video of their own movements will increase their performance, as it has been shown in studies using traditional MT (Brown & Fletcher, 2017). The advantages of this technology compared to traditional MT are discussed.

4.61 Sport psychological skills training and sport counseling for youth discus players: a single case study

YuJin Park, Jin Hwang

Chonbuk National University, Korea, Republic of (South Korea)

This study covers the case of sports psychological counseling for youth discus players: The research participants were 16-year-old female discus athletes. The study was conducted total 6 sessions from March to August, 2018 and each trial was carried out regularly once in a month. Clients were dissolved with their psychological problems through steps of education, counseling, treatment and evaluation regarding psychological skills: anxiety reduction, goal setting, self-management, and self-confidence. In a word, psychological skills training and counseling has brought many positive changes including automation of the developed routines, concentration, emotional control and lower anxiety. Therefore, we confirm the effectiveness of psychological skills training techniques and counseling in training and competition situations. Furthermore, this intervention paved the way for further development of learning basic skills related to psychological factors by providing discus athletes from the beginning period with planned programme, which is long-term and consistent counselling experience.

4.62 Psychometric properties of the Chinese translated Athlete Burnout Questionnaire among Chinese university student athletes

Yuduo Zou¹, Xiaobo Jiang²

¹SUN YAT-SEN UNIVERSITY, China, People's Republic of; ²Hong Kong Sports Institute

This study translated the Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001) into Chinese and examined its factor structure and internal consistency reliability in a sample of Chinese university athletes. Two hundred and fourteen Chinese university athletes were invited to participate in the study. The factor structure of the ABQ was examined using confirmatory factor analysis (CFA). The internal consistency reliability was evaluated using Cronbach's alpha coefficients, and the criterion validity was assessed using bivariate correlations between ABQ subscales with subjective vitality and worry in sports training. The results of the CFA analysis revealed a marginal model fit of the data and the factor loading of one item (item 1: reduced sense of accomplishment) was lower than 0.30 (0.28). After removing the item, the model fit of the 14-item and three factor measurement model of ABQ was much improved. The Cronbach's alpha coefficients of the three subscales were satisfactory ranging from 0.73 to 0.81. Correlation results suggested that the three subscales of the ABQ significantly correlated with worry and negatively correlated with subjective vitality. The present study provides initial support for the factorial validity and reliability of the Chinese translated ABQ among a sample of Chinese university athletes.

4.63 The impact of video speed on the accuracy of sport performance judgements

Lisa-Marie Schütz, Henning Plessner, Geoffrey Schweizer

University of Heidelberg, Germany

According to Caruso et al. (2016), watching videos in slow-motion causes judgement biases. Results suggest, that judgement of human movement in slow-motion is less accurate than in real-time (see also Spitz et al., 2018). However, to our knowledge this assumption has not been tested using an objective reference value so far.

Perception of time is an important aspect of judging sport performance. For example, accuracy of time estimation plays an important role in late tackling decisions in rugby and in the evaluation of hold elements in gymnastics. The estimation of time allows objective comparisons. Consequently, we expect that time is estimated more correctly when watching real-time videos of athletic movements as compared to slow-motion videos.

In two preregistered studies (aspredicted.org), using a 2x2 mixed design, we tested the influence of video speed (slow-motion vs. real-time) on the accuracy of time estimations of athletic movements. In Study 1, participants (N=102) had to judge the duration of athletic runs that were either presented in slow-motion or in real-time. In Study 2, participants (N=105) had to judge the time differences of two performances (parallel slalom) either in slow-motion or in real-time.

Both studies support our hypothesis, showing that accuracy of time estimation in real-time is higher than in slow-motion. Furthermore, slow-motion time estimations show greater variance, suggesting that participants have more difficulties in adjusting their judgements.

Together, the results highlight that watching slow-motion videos can lead to a distorted perception which may have negative consequences for the accuracy of sport performance judgements.

4.64 To investigate the effect of different combinations of internal mental imagery and physical exercise on learning basketball pass

Vahid Karim azad Marjani, Mousa Alizadeh, Solmaz Bagheri

ISLAMIC AZAD UNIVERSITY, Iran, Islamic Republic of

The present study tried to investigate the effect of different combinations of internal mental imagery and physical exercise on learning basketball pass skill among 12 to 15 year-old male students. The method was quasi-experimental, in which the effect of different conditions of mental imagery, physical exercise and the mix of mental imagery and physical exercise on the level of learning basketball pass skill, as dependent variable, was considered. For this, 60 male junior high school students, after being taught the given skill and giving pre-test of criterion skill, were randomly divided into four groups, including physical exercise, mental imagery, physical exercise-mental imagery, and control. On the basis of presented trainings, experimental groups performed planned exercises for 5 weeks, three sessions per week and 30 minutes every session. Participants in physical exercise group performed criterion skill in physical form. Participants in mental imagery group practiced the given skill only mentally. Participants in the group of mental imagery-physical exercise, first, mentally reviewed pass skill, and then, performed it physically. A post-test similar to pre-test was performed. The main instruments applied in this study were an ability of internal mental imagery questionnaire and tests for basketball pass skill. To analyse data, one-way ANOVA and Tukey post-hoc test were utilised. Findings indicated that all exercising methods of this study for learning basketball pass skills had a significant effect. Moreover, there was no significant difference between the different methods of internal mental imagery, physical exercise and mix of physical exercise-mental imagery in learning pass skill.

4.65 The effects of participation in a six-week exercise programme on senior citizens' well-being and adherence

Takahiro Sato¹, Susumu Iwasaki², Rosa María Cruz Castruita³, Garrett L. Peltonen¹

¹Western New Mexico University, United States of America; ²Fort Lewis College, United States of America; ³Universidad Autónoma de Nuevo León, Mexico

The number of senior citizens in the world is increasing rapidly. Regular exercise is known to promote healthy aging by improving fitness and general well-being (Huang, Gibson, Tran, & Osness, 2005); however, exercise adherence remains low. The purpose of this study was to investigate the effects of participation in a six-week exercise program on senior citizens' fitness levels, multidimensional well-being, and adherence. The short version of the Physical Self-Description Questionnaire (PSDQ-S; Marsh, Martin, & Jackson, 2010) and Senior Fitness Test (SFT; Rikli & Jones, 2001) were administered to 30 participants (20F/10M) ranging in age from 62-79 years (mean 69) as pre and post assessments. Paired t-tests revealed significant improvements in PSDQ-S subscales as well as SFT scores. Correlation analysis found a significant connection between senior citizens' perceived and objective improvements such as Endurance, Global Self-Esteem, and 8-Foot Up-and-Go Test. Additional interviews were conducted with 14 participants who completed the exercise program at least twice. These participants shared factors that contributed to exercise adherence (e.g., instructors' quality, feeling of accomplishment), challenges they faced to continue (e.g., physical conditions), and personal strategies to overcome these challenges (e.g., utilising social support). Pilot interviews were conducted to grasp interaction patterns among an instructor and the participants during exercise class, where results show that the instructor utilised multiple strategies to encourage the participants (e.g., verbal encouragement). Implications will be discussed to share how to facilitate senior citizens' well-being through exercise participation (e.g., structure of exercise class).

4.66 The colour we wear: impact on perceived and actual performance

Catherine M. Capiro^{1,2}, Gilbert W.K. Lam³, Karina K.W. Kam³, Liis Uiga²

¹The Education University of Hong Kong, Hong Kong S.A.R. (China); ²University of Waikato, New Zealand; ³Li Ning Sports Science Research Center, China

The effect of colour on sports performance has generated substantial research interest, and it has been shown that wearing red could enhance performance in competitive environments where opponents are directly engaged (e.g. football, judo). The present study examined the effect of colour on perceived and actual motor performance in a non-competitive context.

N = 36 young adults (18 females, 18 males; M = 20.4 ± 1.32 years old) performed a task consisting of an agility-ladder drill and football shooting towards a goal. Participants performed four task trials in each of the three bib colours (red, blue, black). Perceived (i.e. expected) and actual performance were measured on dimensions of shooting accuracy, power, and task-completion time.

Repeated measures ANOVA of best scores showed significant colour effect on perceived performance ($p = .022$, $n_2 = .108$), particularly on shooting accuracy ($p = .004$, $n_2 = .150$). Participants expected themselves to shoot more accurately when they were wearing a red bib, compared to when wearing blue and black bibs. The effect of colour on actual performance was not significant ($p = .129$, $n_2 = .05$).

Consistent with the literature, the findings suggest that wearing red apparel could enhance users' perceptions of their expected performance. While a trend appeared plausible, the effect of red on actual performance warrants further examination. Considering known mechanisms between self-perception and performance, further research is recommended to explore interactions with respect to the colour of apparel in non-competitive contexts; verified evidence could have implications on the effect of red through mechanisms that do not directly engage competitors (e.g. marathon, golf).

4.67 Characteristics of imagery use of athlete from sports characteristics

Satoshi Aikawa¹, Hideaki Takai²

¹Graduate School of Health and Sport Science, Nippon Sport Science University, Japan; ²Department of Physical Education, Nippon Sport Science University, Japan

It has been revealed that athletes use imagery in many sports scenes and use imagery for various functions (Martin et al., 1999). Understanding the features of imagery use from sports characteristics will bring useful knowledge to development of effective imagery training based on the characteristics of the sports. In this study, sports were classified in detail, was investigated the frequency of the characteristics imagery use. The survey subjects were 609 students of physical education in University A (357 male, 252 female, Mage 19.9±2.7). The study was conducted by the collective survey method, and asked the subjects about the frequency of imagery use in seven sports scenes and each function. One-way ANOVA was carried out. The independent variable was classified into seven sports based on Lebed (2006) and Suzuki et al. (2008), and the dependent variable was imagery use frequency (sports scene/function). The results showed that individual type of sports and baseball use imagery in more sports scenes than interpersonal type of sports and short-distance type of sports. In addition, it was revealed that individual type of sports use skill imagery rather than interpersonal type of sports, goal type of sports, net type of sports, and interpersonal type of sports, and goal type of sports use strategy imagery rather than individual type of sports. In conclusion, the present study has demonstrated that the athletes are effectively using imagery according to the characteristics of the sports.

Featured Symposium 11: Sport psychology development – historical and institutional perspectives

Time: Friday, 19/Jul/2019: 2:00pm - 3:30pm · *Location:* S 10 - Münster
Session Chair: Roland Seiler, University of Bern

Featured Symposium: Sport psychology development – historical and institutional perspectives

Chair(s): **Roland Seiler** (University of Bern, Switzerland)

Despite the fact that FEPSAC is celebrating its 50th anniversary, sport psychology is still a relatively young scientific and applied discipline. However, younger colleagues may not be aware of the difficulties encountered in the founding years and of the efforts that our predecessors had to invest. We want to take the opportunity of this festive moment to look back into the preconditions that lead to the institutionalisation of the international sport psychology organisations, namely, ISSP and FEPSAC. The historical and socioeconomic context that framed this development as well as the different psychological schools and traditions, and the changes in the field of sport are important influencing factors. The presentations in this symposium will shed some light on the different aspects, but finally yet importantly, they will also tell the story of the ideas and visions of the enthusiasts who prepared the ground for sport psychology, as we know it today.

The first presentation will focus on the foundation of ISSP in the era of the cold war and the consequences of this development. The second presentation includes the role of Soviet/Russian sport psychology and its organisation for the sport psychology progression. The third presentation focuses the early projects and initiatives undertaken by FEPSAC's Managing Council with the attempt so establish a European sport psychology.

Presentations of the Symposium

The development of ISSP in the context of the Cold War

Sidonio Serpa

University of Lisbon – Faculty of Human Kinetics, Portugal

After World War II, two political blocks emerged characterized by an enormous mutual mistrust due to the tension between USA and Soviet Union that came from the pre-war period. It influenced all social and scientific activities. Both blocks used the power of sport in political affirmation. USSR made an enormous effort and investment in order to reach a high sports standard and demonstrate the intended superiority of the socialist system towards the capitalist one. The government stimulated research in sport sciences including sport psychology, and superiority against USA was reached in 1956 Olympics. In USA, PE had a low prestige and American scholars during the 60's took this opportunity to develop research aiming at improving sports international performance and proving the importance of PE & sport. Meanwhile, under the influence of USSR, Eastern European countries set up committees of sport psychology (SP) – the socialist version of societies. Internationally, SP recognition started having signs such as the special session in the 1964 Olympic Congress. Sport physicians approached SP, mostly in a clinical perspective. After a thematic session on SP, during the 1963 Barcelona meeting of the Latin Group of Sports Medicine, the Italian Antonelli, the French Bouet and the Spanish Ferrer-Hombravella and Cagigal had the idea of organising an International Congress of SP that would be held in Rome in April 1965. There, the International Society of SP – ISSP was created. The presentation will focus on the antecedents and consequences of these outstanding events to World SP.

Russian/Soviet sport psychology developments as a part of sport psychology history

Natalia Stambulova

Halmstad University, Halmstad, Sweden

Russian sport psychology history covers over a century including the pre-Soviet, the Soviet, and the post-Soviet macro-periods divided by formation of the Soviet Union in 1922, and its disintegration in 1991. In the context of this symposium focusing on the Soviet period is the most relevant. Based on several publications on history and contributions of Russian/Soviet sport psychology (Ryba & Stambulova, 2016; Ryba, Stambulova, & Wrisberg, 2005; 2009; Stambulova, Wrisberg, & Ryba, 2006; Stambulova, 1999; Stambulova, Stambulov, & Johnson, 2012) and my lived historical knowledge from three-decade professional career in the Soviet Union/Russia, I am going to elaborate on (1) specific context for development of Soviet sport psychology (closed and centralised country driven by the communist ideology, politicised elite sport, state support to sport and sport sciences), (2) major organizational developments (national sport psychology forums and organizations, "complex scientific groups" serving national teams, collaboration and leadership within socialist block countries, ensuring representation in FEPSAC and ISSP), and (3) original and culturally infused sport psychology frameworks for research and applied work: volitional preparation in sport (Puni, 1973), psychological preparation for a competition (Puni, 1969), psychological support system for elite athletes (Gorbunov, 1986), and psychological control system (Kiselev, 1989). These frameworks can be seen as "a prologue" to development of several contemporary sport psychology topics (e.g., mental toughness, resilience, and adversity training, competition planning and self-regulation, athletes' assessment/monitoring systems), and Soviet leadership in applied work (in the 1970s-1980s) served as "a wake-up call" for sport psychologists in Western countries.

The early years of FEPSAC – collaboration and confrontation in a divided continent

Roland Seiler

University of Bern, Switzerland

The first 20 years in FEPSAC's history are characterised by the separation of the continent in two distinct political and socio-economical blocks. These blocks were trying to demonstrate their superiority in economical and scientific domains, but the competition included also the field of sport. In contrast, the foundation of the European Federation of Sport Psychology FEPSAC was an example of scientific collaboration that primarily opposed the perceived predominance of the American language and concepts in sport psychology (Apitzsch & Schilling, 2003; Kunath, 2003). The early work of FEPSAC included the development of a shared scientific terminology and definition (Epuran, 1972), attempts to develop a documentation basis of scientific publications and joint European research projects (Apitzsch, 1983). In a continent with more than 30 major languages and many different philosophical and psychological traditions, and in the absence of the electronic communication means we have today, this proved to be a challenging task. Increasingly, the field of sport also developed from a focus on competition to different purposes such as health or exercise. This presentation tries to shed some light on the pioneering work of the sport psychology enthusiasts who established the institutional and content-related basis for sport psychology. However, politics, economics, and culture framed and partly limited the early projects elaborated by the Managing Council of FEPSAC and its different working committees.

Invited Symposium 05: Association of Applied Sport Psychology Symposium: Theory to Practice to Enhance Performance

Time: Friday, 19/Jul/2019: 2:00pm - 3:30pm · *Location:* S 9 - Cologne
Session Chair: Amy Lynne Baltzell, Boston University

Invited: Association of Applied Sport Psychology Symposium: Theory to Practice to Enhance Performance

Chair(s): **Amy Baltzell** (Boston University, United States of America)

The Association of Applied Sport Psychology is a professional organization, based in the United States, with over 2,500 members from 55 countries. AASP is focused on both the development of science and ethical practice in the field of sport psychology. In this symposium, four AASP members will offer a range of theoretical perspectives and ways in which they embody theory to practice in their applied practice including 1) The role of the educational sport psychology consultant regarding theories of professionalism, adult learning (e.g., Knowles, 1980; Mezirow, 2000) and, ultimately, development of coaches (ICCE, 2013), 2) the concept of vulnerability (Brown, 2012) and Acceptance and Commitment Therapy (ACT) applied to high performance coaches (Lundqvist, Ståhl, Kenttä, & Thulin, 2018), 3) the use of growth mindset (Dweck, 2006) and evidence-based mindfulness and acceptance approaches in athlete performance (e.g., Bernier, Thienot, Codron, & Fournier, 2009; Gardner & Moore, 2004, 2006), 4) the use of team-based approaches in sport injury and rehabilitation to improve return-to-sport outcomes (Hess et al., 2019) and 5) an examination of the development and application of a mindfulness (Kabat-Zinn, 2004) self-compassion intervention (Germer & Neff, 2012), Mindful Meditation for Sport (Baltzell & Summers, 2018) for high-level performers. Each symposium member will offer a brief overview of the theoretical perspective from which they work and offer specific examples of how they bring theory to their applied sport psychology practice. Challenges, benefits and limitations of applying theory to practice will be explored.

Presentations of the Symposium

Theories of professionalism, adult learning and coach development: The role of the educational sport psychology consultant

Kristen Dieffenbach

West Virginia University, United States of America

While the focus of sport and exercise psychology has typically been on the athlete, Potrac and Cassidy (2006) call attention to the coach as the 'performing other'. The recognition of sport coaching as a profession (e.g. Duffy et al., 2011; North, 2019) has led to a discussion of the education and professional development of individuals who coach (ICCE, 2013). As a profession of teaching and leadership focused on developing individuals, the foundational and on-going growth of the coach has often been overlooked. However, the development of career expertise (Schempp & McCulluck, 2006) requires individual dedication as well as resources and support designed to enhance knowledge and skill application. Within the professionalism context, theories of adult learning (e.g., Knowles, 1980; Mezirow, 2000) in career development highlight the importance of experience recognition, readiness to learn, and engagement.

Côté and Gilbert (2009) suggest that coaching expertise requires content, inter and intra professional knowledge as well as an understanding of personal values. Additionally, models of long term athletic development (see Bailey et al., 2010) and a holistic coaching model (Kidman, 2010) support the need for right age, right stage context specific knowledge. In the professional education context, kinesiology trained sport and exercise psychology consultants are in a unique position to contribute to the growing coach education and development field utilizing their cross disciplinary knowledge of exercise science, physical education and performance studies. This presentation will explore the role of education based SPC in the creation of integrated content, teaching and individual professional development support.

Exploring vulnerability through the lens of ACT among high performance coaches

Göran Kenttä

The Swedish School of Sport and Health Sciences, Sweden

Mental toughness, hardiness, and grit capture desired characteristics associated with mental strength in high performance sports (Bauman, 2016). This culture is maintained by high performance coaches who typically do not reveal signs of weakness despite high levels of stress and demands. Moreover, coaches have reported a culture in which showing vulnerability and seeking help are regarded as a weakness, while suppressing symptoms burnout and ill-being as well as avoiding help-seeking is the norm (Olusoga & Kenttä, 2017). Nevertheless, a growing body of research shows that coaches and athletes are equally vulnerable to mental disorders as the normal population (Moesch et al., 2018). Consequently, Mindfulness-based interventions have been applied mainly to athletes in order to enhance mental health (Schinke, Stambulova, Si, & Moore, 2017), and more recently also to coaches (Lundqvist, Ståhl, Kenttä, & Thulin, 2018). Hägglund and colleagues (2019) argue that vulnerability should be explored in sports beyond the traditional concept limited to weakness. This notion builds upon Brené Brown's (2012) strength based approach outside of sport. Vulnerability can also be the birthplace of courage, creativity and change according to Brown. Interestingly, an intervention that targeted high performance coaches with the aim to enhance sustainability and mental health uncovered two sides of vulnerability. Narratives that emerged from the coaches reflected the traditional perspective on vulnerability (i.e., reflected by the use of words such as weakness), but also a contrasting perspective reflected by words such as courage and strength (Hägglund, Kenttä, Thelwell & Wagstaff, 2019).

Growth Mindset, Mindfulness and Acceptance in Athlete Performance

Shameema Yousuf

Empower2Perform, United Kingdom & Zimbabwe

To promote development and enhance performance, growth mindset (Dweck, 2006) and mindfulness and acceptance (Gardner & Moore, 2004, 2006) interventions are introduced to youth performance tennis players fearing failure. Prolonged motivation to improve when met with difficulty, requires a growth mindset whereby courage, risk, challenge, and effort must be valued (Dweck, 2006). If performers are free and willing to fail boldly there are increased chances of authentic skill execution (Dweck, 2006). Through a process of learning, which requires systematic reflection that not only marks out successes but is accompanied by feedback and deliberate practice (Ericsson, 2006), enhanced performances may be realised. Players adopting a fixed mindset may conversely “play it safe” to appear flawless (Dweck, 2006), and avoid the accompanying unpleasant thoughts and feelings when under pressure in competition. In order to upskill, improve psychological health and sport performance, mindfulness and acceptance interventions based on evidenced practice (Bernier, Thienot, Codron, & Fournier, 2009; Gardner & Moore, 2004, 2006; Harris, 2006; Kee & Wang, 2008; Wolanin, 2005) are incorporated alongside a growth mindset. Mindfulness and acceptance are introduced to develop present focus with internal and external awareness, while changing one’s relation to thoughts and feelings. By explaining growth mindset with exercises and analogies, combining planning and reflection journals, players embrace an intentional approach to performance improvement. Introducing mindful breathing, body scanning, progressive muscle relaxation, labelling and acceptance of internal cognitions and emotions, specific player cases will highlight how these techniques in tennis contexts were incorporated.

Translating theories of Injury Rehabilitation into Practice: The Need for Team-Based Work in Sport

Courtney W. Hess¹, Stacy L. Gnacinski², Barbara B. Meyer³

¹University of Massachusetts - Boston, United States of America, ²Drake University, United States of America, ³University of Wisconsin-Milwaukee, United States of America

Despite advancements made in sport and injury rehabilitation literature over the past decade, rehabilitation and return-to-sport outcomes remain suboptimal (Rice et al., 2016). Persistently poor outcomes may be attributed in part to the disconnect between the theories which guide sport injury case conceptualization (i.e., biopsychosocial models; Brewer et al., 2002; Wiese-Bjornstal et al., 1998) and the subsequent interventions implemented by various practitioners. Currently, common practice in rehabilitation involves a holistic conceptualization of individual rehabilitation needs (i.e., concurrent involvement of physical, technical, and mental components), followed by atomistic assignment of discipline-specific interventions across professionals surrounding the athlete (i.e., the strength coach does X, the physical therapist does Y, the sport psychologist does Z). This approach differs from recommendations in the broader health care literature, whereby researchers and practitioners alike use team-based approaches to inform patient care (Karol, 2014). The use of team-based approaches facilitates the translation of a holistic and multifaceted theoretical conceptualization of injury to a more integrated practice (Karol, 2014). Therefore, the use of team-based approaches in sport injury and rehabilitation may facilitate the translation of theory to practice, thereby improving rehabilitation outcomes and athlete availability following return-to-sport (Hess et al., 2019). This presentation will juxtapose three team-based approaches in health care with the practical models recently proposed in sport (Hess et al., 2019). The presentation will offer implications for practitioners operating within team-based sport injury and rehabilitation environments.

Self-compassion & Mindfulness: Cultivating Poise, Attention and Adaptability via a Mindfulness Intervention geared toward athletes

Amy Baltzell

Boston University, United States of America

Optimizing performance is the central mission of applied sport psychology. Psychological skills training has been the main strategy used in applied sport psychology, which includes the intent to control thoughts and emotions. Associated suppression of internal experience can lead to increasing the aversive impact of the unwanted internal experience (Wegner, 1994). A mindful acceptance approach is an alternate strategy to help performers, instead, change their relationship to internal experience (Gardner & Moore, 2007) and to help performers manage attention (Birrer, Röthlin & Morgan, 2012). In a recent systematic review, mindful and acceptance based approaches have indicated to be beneficial in the sport context (Noetel, Ciarrochi, Van Zanden & Lonsdale, 2017). Baltzell & Summers (2018) created, offered and studied Mindfulness Meditation Training in Sport (MMTS). The goal of the program is to help with precursors to performance success including helping participants cultivate poise, attention and adaptability via a mindful acceptance approach. Designed for competitive sport MMTS is conceptually based on mindfulness as conceptualized by John Kabat-Zinn (2004), Ellen Langer (1990) and the mindful self-compassion intervention of Germer & Neff (2012). MMTS is a 6-hour mindfulness and self-compassion based intervention, both a brief and heavily focused on creating a clear connection between the meditation cycle and sport performance. Mindfulness mediation practices are emphasized. A consideration of the benefits and challenges of running MMTS, the brief mindful acceptance based intervention, with collegiate and Olympic athletes will be presented.

Panel 03: Ethics in applied sport psychology - international perspectives on the challenges faced across contexts of professional practice

Time: Friday, 19/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 219 - Brussels
Session Chair: Sydney Querfurth-Böhnlein, Westfälische Wilhelms-Universität Münster

Ethics in applied sport psychology - international perspectives on the challenges faced across contexts of professional practice

Sydney Querfurth¹, Michael Zito², Stilian Chroni³, Chris Harwood⁴, Babett Lobinger⁵, Karin Moesch⁶

¹University of Muenster, Germany; ²Morristown Clinical and Sport Psychology, Montclair State University, USA; ³Inland Norway University of Applied Science, Norway; ⁴Loughborough University, United Kingdom; ⁵German Sport University Cologne, Germany; ⁶Swedish Sports Confederation & Halmstad University, Sweden

The goal of ethics is to help practitioners think and act in ways that minimize harm or mistreatment and help the people they work with (APA, 2010). While the American Psychology Association provides ethical guidelines for professional conduct within Psychology, the special realm of sports- and exercise psychology requires its own set of guidelines due to the unique and diverse background of professionals working in this field as well as due to the diverse challenges. (Etzet & Skvarla, 2017). Some of the challenges practitioners face are working with vulnerable populations within a youth sport setting, confidentiality while working with digital communication and social media or working with elite athletes on an international level from diverse cultural backgrounds (e.g. Bird & Harris, 2018; Haberl & Peterson, 2010).

This panel addresses these and other challenges from an international perspective, by including experts from the US, Germany, UK, Norway/Greece and Sweden, representing various organizations such as the AASP, asp, and FEPSAC. The panelists will highlight possible guidelines or solutions to ethical dilemmas, discuss the process of developing ethical practice, discuss challenges of incorporating ethical guidelines into education and training and compare across international boundaries and different professional organizations.

The aim of this panel is to raise awareness of the importance of ethics among practitioners and to facilitate an open discussion among professionals. Participants will leave this panel with a better understanding of ethical issues in their profession, as well as with ideas of how to develop their own ethical practice.

Paper Session 40: Groups and Team Performance

Time: Friday, 19/Jul/2019: 2:00pm - 3:30pm · Location: Senatssaal - Prague

Session Chair: Jürgen Beckmann, Technical University of Munich

2:00pm - 2:15pm

Cooperative and competitive joint action: how shared goals transfer from one task to another

Roman Liepelt, Markus Raab

German Sport University Cologne, Germany

In most of our daily activities and in team sports like beach volleyball, we interact with other individuals and do not act in isolation. However, sport psychology has only recently begun to transfer individual experimental task setups to socialized versions of traditional cognitive paradigms in order to understand the cognitive mechanisms underlying joint action. In this talk, we provide a series of experiments aimed at testing if goals in one task, that are shared by two people, do transfer to another task using a social variant of the standard two-choice Simon task (N = 32). Two participants shared a visual Simon task so that each person performed complementary parts of the task, which transfers the paradigm into a Go/No-go Simon task for each person. Before running this Joint Simon task, we set both participants either in a cooperative or a competitive state by means of a dyadic game, a manipulation aimed at testing possible goal transfer across tasks. We found significant Joint-Simon effects for participants that were in a cooperative state and for participants that were in a competitive state. The Joint Simon effect for participants being in a cooperative state was significantly larger than for participants being in a competitive state. These findings suggest that shared goals can be transferred from one task to another task. We discuss these findings in terms of recent accounts of the Joint Simon effect also laying down possible implications for team sports.

2:15pm - 2:30pm

Efficacy beliefs are related to task cohesion: communication is a partial mediator

Sarah P McLean¹, **Christine Marie Habeeb**², **Pete Coffee**¹, **Robert C. Eklund**³

¹University of Stirling, Stirling, UK; ²East Carolina University, Greenville, NC, USA; ³Florida State University, Tallahassee, FL, USA

Efficacy beliefs and communication are key processes in the development of team cohesion (Carron, Spink, & Prapavessis, 1997; Veskovic, Valdevit, & Ilic, 2008). Moreover, similar communication qualities have been identified as both outcomes of efficacy beliefs and antecedents of cohesion (Jackson, Knapp, & Beauchamp, 2008; Sullivan & Feltz, 2003). Despite theoretical contentions, empirical support for the hypothesis that communication is a mediating mechanism of the efficacy-cohesion relationship remains lacking. The purpose of this study was to (1) examine whether collective efficacy, team-focused other-efficacy, and team-focused relation-inferred self-efficacy (RISE) are predictive of task cohesion, and (2) evaluate the possibility that communication is a mediator of efficacy-cohesion relationships. British university team-sport athletes (n = 250) completed questionnaires assessing the three types of efficacy, communication (i.e. positive conflict, negative conflict, and acceptance communication) and task cohesion. The cross-sectional data obtained were subjected to a multi-group path analysis to test mediation hypotheses while also addressing potential gender-based differences reported in extant communication literature. For both male and female athletes, collective efficacy and team-focused other-efficacy, but not team-focused RISE, were found to be significant direct predictors of task cohesion. Further, positive conflict communication partially mediated the relationship between collective efficacy and task cohesion, while acceptance and positive conflict communication partially mediated the relationship between other-efficacy and task cohesion. Gender differences were observed in only one predictive path with collective efficacy being a significant predictor of negative conflict among females, but not among males. Results suggest athletes' team-focused efficacy beliefs encourage communication factors, affecting task cohesion.

2:30pm - 2:45pm

Developing self-concept through team sport and coaching/mentoring in an immigrant setting

Knud Ryom¹, **Johan Michael Wikman**², **Reinhard Stelter**³

¹Aarhus University, Denmark; ²Halmstad University, Sweden; ³University of Copenhagen, Denmark

The purpose of this study was to investigate the effect of a team sport (football) and coaching intervention on the self-concept of N = 129 male school students (aged 12-16) from a socially deprived area. The study took place in Copenhagen, Denmark, in an area of primarily immigrant families and families of lower socioeconomic status. Over the two-year intervention period, participants participated in weekly football training sessions and a coaching session (on personal development) every second week. In a quasi-experimental mixed methods design, the Self-Description Questionnaire II (SDQ-II) and the Youth Sport Environment Questionnaire (YSEQ) were distributed at baseline as well as at end of the intervention to investigate the effects of the intervention. Interviews with the participants at the end of the intervention were used to investigate participants' experiences of the intervention. Linear regression analyses performed on questionnaire data showed a significant improvement on a) the general self-concept, b) physical skills, and c) social relations. Qualitative interviews showed that participants experienced a) a stronger and more confident self, b) a better physical condition, and c) a stronger and more supportive social environment as the result of their participation. Implications of the results are discussed alongside strategies for working with football/team sport and coaching as a way of addressing behavioural problems in school settings in socioeconomically deprived areas.

2:45pm - 3:00pm

Experimental manipulation of implicit theories and its effect on achievement goals, motivation and performance**Gerald M. Weltevreden, Edwin A.J. van Hooft, Annelies E. M. van Vianen**

University of Amsterdam, The Netherlands

Implicit theories of ability have grown popular in sport psychology, based on the assumption that an incremental view facilitates athletes' development and enhances their motivation and performance. However, experimental studies of their effects in the context of competitive sport are scarce (Vella, Braithwaite, Gardner, & Spray, 2016). Therefore, the purpose of this study was to examine the effects of implicit theories of ability on achievement goals, motivation to practice and performance of advanced athletes. In three experiments (N1 = 49, N2 = 71, N3 = 62) we assigned athletes to an incremental condition, an entity condition or a control condition. Implicit theories were manipulated through the reading of a text. We assessed athletes' achievement goals before and after failure, as well as their motivation to practice and their performance. A questionnaire about entity and incremental beliefs showed that our manipulation was successful in all three experiments, but that the experimental condition hardly affected achievement goals. However, Study 1 did show that athletes in the incremental condition were more motivated to practice than athletes in the entity condition. Studies 2 and 3 showed some effects of implicit theories on performance. Possible explanations for our findings and implications for future studies will be discussed.

Paper Session 41: Perspectives on Emotions in Sport

Time: Friday, 19/Jul/2019: 2:00pm - 3:30pm · Location: S 8 - Copenhagen

Session Chair: Catherine Sabiston, University of Toronto

2:00pm - 2:15pm

Psychological skills, mental toughness, and anxiety in elite female football players

Hafrún Kristjánsdóttir¹, Kamilla Jóhannsdóttir², Miguel Pic³, Jose Saavedra¹

¹Physical Activity, Physical Education, Sport and Health Research Centre, Sports Science Department, School of Science and Engineering, Reykjavik University, Reykjavik, Iceland.; ²Department of Psychology, Reykjavik University, Reykjavik, Iceland.;

³Department of Specific Didactics, University of La Laguna, La Laguna, Spain

The study objectives were to analyse psychological skills (PS), mental toughness (MT), and anxiety in women football players according to their level. N = 142 Icelandic female football players (23.5 ± 3.5 years) participated in the study. They were classified into three groups: the national team, and the first and second divisions. Three questionnaires were used: the Test of Performance Strategies Questionnaire, the Sport Mental Toughness Questionnaire, and the Sport Anxiety Scale-2 questionnaire. A One-Way ANOVA with Bonferroni post-hoc correction was used to examine differences between teams. There were differences between national team players and second division players in ten of the TOPS sub-scales. We only found differences in four sub-scales (goal setting in practice, activation in practice, self-talk in practice, and activation in competition) between A-team players and first division players. This suggests that, once a certain level has been reached, the players make similar use of PS. The national team had the highest score on the anxiety scale but the lowest on the MT scale. These data partially agree with those of a study of Norwegian women football players for whom there were differences in the "confidence" sub-scale on SAS-2, but only between the first and third division players (Danielsen, Rodahl, Giske, & Høigaard 2017). Concerning anxiety, the results are coherent with a previous study conducted with South Korean professional male players in which the reduction of anxiety levels improved performance in their away-games (Kang & Jang, 2018).

2:15pm - 2:30pm

Influencing students' emotions in PE: the role of competence and social belonging

Sascha Leisterer¹, Darko Jekauc²

¹Humboldt-Universität zu Berlin, Universität Leipzig (Germany); ²Karlsruhe Institute of Technology (Germany)

Influencing students' emotional perceptions in PE is crucial in order to support the development of emotional intelligence in school (Hoffmann, Ivcevic, & Brackett, 2018). In order to gain more knowledge on how to influence students' emotions this study investigated the following questions (a) what do students perceive emotionally in PE and (b) how can these emotions be triggered. These questions were addressed via (a) a qualitative interview study with N = 12 students (M = 15.6 ± 1.2 years) and (b) an experimental study in which N = 254 students (M = 14.5 ± 0.58 years) were randomly assigned to specific motor tasks. During these tasks, the students' emotional perceptions were measured using the Self-Assessment Manikin (Bradley & Lang, 1994) and it was analysed how these emotions were triggered. The interview study revealed that competence and social belonging trigger positive and negative emotions such as enjoyment or disappointment. The experimental study provides significant evidence that during motor tasks, which are related to a feeling of a lack of competence, students' affective outcomes develop positively or negatively, as the repeated measures analysis of variances shows, $F(2, 119) = 9.86, p < .01, \eta^2 = .15$. Motor tasks related to social belonging influence affective perceptions positively, $F(1, 135) = 6.74, p = .01, \eta^2 = .05$. The studies show that situations in PE which focus on competence and social belonging, trigger specific emotions. These findings can be related to the Self-Determination Theory (Deci & Ryan, 2015) and addressing basic needs satisfaction could be applied to influence students' emotional perceptions.

2:30pm - 2:45pm

Physical activity behaviour moderates the relationship between negative self-conscious emotions and psychological distress

Amy Nesbitt¹, Catherine M. Sabiston¹, Eva Pila², Peter R. E. Crocker³

¹University of Toronto, Canada; ²University of Western Ontario, Canada; ³University of British Columbia, Canada

Self-conscious emotions are considered important correlates of mental health and well-being. However, little is known about behavioural variables that may attenuate the negative impact of shame and guilt on mental health, as well as enhance the benefits of pride. Thus, the present study aimed to examine whether physical activity (PA) behaviour moderates the relationships between self-conscious emotions and psychological distress. Adult men and women (N = 520; mean age = 35.4 years, SD = 10.1; 42% female) completed an online questionnaire to assess dispositional shame, guilt and pride, PA, and symptoms of general psychological distress. Descriptively, 46.7% of participants were classified as low PA, and psychological distress was associated with shame ($r = .35, p < .001$), guilt ($r = -.09, p < .05$), pride ($r = -.40, p < .001$), and PA ($r = -.01, p > .05$). PA moderated the relationship between shame and psychological distress, such that the strength of the positive association between shame and distress was reduced for those high in PA [Low PA $b = .58 (.08), p < .001$; High PA $b = .34 (.08), p < .001$]. The relationship between guilt and psychological distress was also moderated by PA, whereby guilt was positively related to distress for those low in PA [Low PA $b = .23 (.10), p < .05$] and negatively related to distress for those high in PA [High PA $b = -.42 (.09), p < .001$]. PA did not moderate the relationship between pride and psychological distress. These findings suggest that PA may protect individuals from the negative effects of shame and guilt on psychological distress symptoms.

2:45pm - 3:00pm

Emotional labor and professional engagement in sport psychology professionals

Christopher Wagstaff¹, Ale Quartiroli², Daniel Brown¹

¹University of Portsmouth, United Kingdom; ²UW - La Crosse, United States of America

The complexity and nuances of the world of sports mean that sport psychology professionals (SPPs) work with a unique clientele in a range of non-traditional environments, working conditions, and professional roles, providing a unique and specialized service within the field of psychology. Such working practices give rise to the experience of a variety of discrete emotions in the course of their professional lives. Nevertheless, the experience and expression of such emotions are not always compatible with effective practice, therefore, practitioners must often engage in emotional labour, namely, the management of feelings or their expression to comply with perceived professional role requirements. A substantial body of research has identified emotional labour as a central factor in the emergence of emotional exhaustion. The present study aimed to explore how the SPPs' experience of emotional labour is connected to their emotional and physical exhaustion, potentially impacting their commitment to their profession. A total of over 2200 SPPs from around the world were invited to participate in the study by completing an online survey. A sample of 560 SPPs (47% females) completed the survey, aged 21 and 79 years old ($M = 39.9$; $SD = 12.1$). The professionals in the sample (85%) had professional experience ranging from 1 to 49 years ($M = 11.2$; $SD = 10$). They indicated that they dedicated about half of their time to applied activities (45.2%) and the remaining to teaching (27.8%) and research (26.9%) related activities. The findings of this study help to identify their experience of emotional and physical exhaustion.

3:00pm - 3:15pm

The emotional maps of spontaneous walking: using spatiotemporal correlations to reveal the emotional states of whole body motion

Yvonne N. Delevoe¹, Victor Brossard¹, Daniel Lewkowicz², Stefano Berretti⁴, Mohamed Daoudi³

¹Univ. Lille, CNRS, UMR 9193 - SCALab - Sciences Cognitives et Sciences Affectives, 59000 Lille, France; ²Bertin Technologies, 31300 Toulouse, France; ³Univ. Lille, CNRS, UMR 9189 - CRISTAL, 59000 Lille, France; ⁴University of Florence, Department of Information Engineering, Florence, Italy

Body language is a particularly challenging area of research because of the complexity of biological motion. Indeed, the human body is a tool for intentional actions (e.g. walking to close the door) but also the medium for emotional expression (e.g. running under fear).

Recent 3D kinematic studies have shown that social intention modulates the timing of 3D body kinematics (Lewkowicz et al., 2015; Scorolli et al., 2014). In the present study, while controlling for intention, we aimed to reveal the effects of emotional states on the timing properties of 3D body kinematics when walking at a preferred and natural pace. Validated musical extracts were used to modulate the emotional states of adult participants. Motion capture systems piloted in real-time using Matlab software were used to monitor motor variants of body posture and dynamics during free spontaneous gait.

Results revealed that posture and systematic timing properties were observed as a function of the four basic emotional states of anger, joy, sadness and peacefulness. On the one hand, emotion arousal modulated the speed of spontaneous walking. On the other hand, the valence of the emotional state impacted movement fluency and cross-body coordination as revealed through time series analyses.

After implementing these factors successfully in machine learning algorithms, we demonstrate how the automatic detection using algorithms for emotional facial expressions can be transferred to reveal the emotional states of whole-body movements.

Paper Session 42: Dual Career Environments and Career Transitions

Time: Friday, 19/Jul/2019: 2:00pm - 3:30pm · Location: VSH 19 - Paris

Session Chair: Saša Cecić Erpič, University of Ljubljana

2:00pm - 2:15pm

Understanding athlete experiences of transitions in elite swimming

Libby Mitchell¹, Camilla J. Knight², Stephen D. Mellalieu³

¹School of Sport and Exercise Sciences, Liverpool John Moores University; ²School of Sport and Exercise Sciences, Swansea University; ³Cardiff School of Sport, Cardiff Metropolitan University

Athletes experience numerous transitions throughout their sporting careers, both within and across stages of athletic development. Although some understanding exists regarding the demands athletes encounter when transitioning into elite sports (e.g. the mastery stage), less is known about athletes' experiences of transitions once they are within elite sport. The purpose of this study was to use interpretative phenomenological analysis to understand the experiences of national-level swimmers as they attempted to transition into international competition. n = 6 swimmers (aged 20-25 years), one of their parents, and four coaches were recruited for the study. Over an eight-month period, swimmers completed n = 4 interviews leading up to and following trials for the 2016 Olympic games while their parents and coaches completed two interviews. Following each interview, the audio recordings were transcribed verbatim and interpretative thematic coding analysis was conducted. Results indicated that athletes' transition experiences were characterised by a range of demands, which were categorised into five higher order themes: (a) questioning "am I good enough?"; (b) managing and fulfilling expectations; (c) operating within an environment that is working against them; (d) lacking support and understanding of self and demands; and (e) maintaining balance versus being an international swimmer. Overall the results indicate that transitioning from national to international level swimming is complex, challenging, and experienced differently by swimmers while largely influenced by self-confidence. Addressing the individual factors impacting an athlete's self-confidence appears to be critical for enhancing the chance for swimmers to successfully transition to an international level and enjoy this process.

2:15pm - 2:30pm

Dual career of football players in the Czech Republic

Zora Svobodová, Karel Večeřa, Hana Válková

Masaryk University, Brno, Czech rep., Czech Republic

In the Czech Republic in 2016, there was research focused on the involution stage of football players. The research was based on semi-structured interviews. Interview records were processed by categorising the scales. From interviews with N = 22 former top-level players (Extralig clubs, representation of the Czech Republic). The average duration of their sports career was M = 28 years, the years at the top level ranged from 10 to 12 years.

We found out that dual careers did not care about clubs, offered no training programs or seminars. The main markers for mastering the involution phase were only their family and their partner background. The results showed that players do not usually notice the ending of a sports career and are not ready for this ending stage and everyday life (Alfermann et al., 2004).

For example, the markers of "supporting the social environment" in the categories of career termination consultations revealed that 7 (31%) respondents did not consult the involution with no one, 3 (14%) respondents with a coach/manager and 12 (55%) with family members or partners.

2:30pm - 2:45pm

Sport psychological support of elite athletes at the athletic retirement: an individual case study

Erika Ruchtj, Daniel Birrer, Stephan Horvath, Gareth Morgan

Swiss Federal Institute of Sport Magglingen, Switzerland

Introduction: Although the challenges and risks of athletic retirement have been well studied, little attention has been paid to the practical application. Based on an individual case study, challenges athletes can be confronted with are described. This study tries to explore how retirement can be best accompanied from a sport psychology perspective.

Methods: A systematic individual interview was conducted, which was based on the Athletic Career Termination Questionnaire (ACTQ) (Küttel et al., 2017). The athlete's answers were paraphrased and a content analysis was conducted.

Results: The athlete reported adjustment difficulties until two years after her retirement. As a reason, she cited that she was mainly left on her own and had no support after her career. Other main issues were the loss of identity as an athlete and the decline in self-esteem.

Discussion/Conclusion: The results of this study match the current scientific results. The literature suggests voluntary career end, identity, satisfaction with athletic career, social support, emotional distress, resources and transition planning as predictors of the retirement quality. Based on these findings, interview guidelines should be developed to optimally support elite athletes after their career. The aim is to identify and support athletes who are highly likely to react with adaptation problems to the demands of career retirement.

2:45pm - 3:00pm

Investigation into dual career environment at a Slovene female volleyball club**Saša Cecić Erpič¹, Janja Tekavc²**¹University of Ljubljana, Slovenia; ²University of Maribor, Slovenia

In the past decade, much attention has been given to student-athletes dual careers (DC; a combination of sport and studies), whereas much less is known about the factors which create optimal DC environments. Dual-career development-environment model (DCDE, Henriksen, 2010) helps to explain how environments affect athletic talent development. The DCDE model is structured into three levels (micro, meso, and macro) and three domains (study, sport, and private) taking into account societal institutions, sport and education systems. The aim of the study was to investigate the characteristics of the DC environment at a Slovenian female volleyball club. Data was collected through semi-structured interviews with $n = 10$ elite female volleyball players and $n = 4$ stakeholders (e.g. coach, club director) to discuss their perspective on the DC environment and provided support. In addition, observations of the DC environment (e.g. micro- and macro-level interactions) and documents collected from the club also supported the analysis. The findings of the study identified several characteristics of the investigated DCDE that related mainly to the micro and meso levels (e.g. high-quality coaching, collaboration different DC stakeholders aimed at facilitating the players' DCs). Study findings emphasise the importance of effective interconnections between different levels and domains of the DC environment as well as support taking a holistic approach when studying these environments.

3:00pm - 3:15pm

Predicting happiness in Paralympic swimming medallists**Erin Elizabeth Snapp, Jeffrey John Martin, Mario Joseph Vassallo, Jacklyn Rae Carrico, Ellen Louise Armstrong**

Wayne State University, United States of America

The primary goal of this study was to predict Paralympian swimmer's happiness to winning medals by medal earned (e.g. gold vs bronze), athlete's medal and personal time expectations based on 2015 world rankings. Secondary purposes included investigating the counterfactual thinking hypothesis by comparing athlete's happiness to winning different medals and if individualistic-collectivistic cultural norms about emotional expression would be supported in the Paralympics.

Televised broadcast of the 2016 Rio Paralympics was edited into close-up clips of the medal-winning athletes as they reacted to their race performance. Undergraduate students rated athletes' happiness. A multiple regression analysis significantly predicted happiness ($F(3, 98) = 3.66, p < .015$) accounting for 10% of the variance. Significant beta weights for place ($\beta = -.551$) and finishing higher than their previous years ranking ($\beta = .551$) indicated that higher finishing swimmers were happier than lower finishing swimmers and swimmers who finished better than their previous ranking were happier than swimmers who finished worse. Partial support for the counterfactual hypothesis was found. Male swimmers' happiness for silver and bronze medals were almost identical ($F(2, 96) = 2.83, p < .06$), and lower than gold whereas females rated gold and silver similarly and higher than bronze. Additionally, evidence of country differences in happiness ($F(4, 68) = 6.77, p < .001, \eta^2 = .29$) were consistent along the individualistic-collectivistic continuum with the USA being highest followed by Brazil, Great Britain, Ukraine, and China.

Paper Session 43: Psychology and Performance (Varia)

Time: Friday, 19/Jul/2019: 2:00pm - 3:30pm · Location: VSH 118 - Nottingham

Session Chair: Diane Ste-Marie, University of Ottawa

2:00pm - 2:15pm

Sleep quality and quantity related to mental toughness in sample of elite masters athletes

K. Bradford Cooper^{1,2}, Martin Jones², Mark Wilson²

¹US Corporate Wellness; ²University of Exeter

The purpose of this two-part study was to explore the relationship between sleep and mental toughness variability. Study 1 was an observational study that examined the association between reported sleep quality and quantity (hours) on mental toughness in a single response from N = 181 participants. Correlational analyses demonstrated that both sleep quality (R = .428, p < .001) and quantity (R = .307, p < .001) were strongly associated with mental toughness. Study 2 utilised a longitudinal N-of-1 format with N = 6 elite masters athletes as participants to further examine whether manipulated time in bed influenced reported sleep quality and within-person mental toughness. Participants recorded sleep quality, quantity and mental toughness over the five weekdays on four pre-scheduled weeks: baseline (normal sleeping patterns) during weeks one and three and on counterbalanced 'more time in bed' (9 hours) and 'less time in bed' (5 hours) during weeks two and four. The N-of-1 trial reveals individual variability in the distribution of mental toughness relative to two different durations of time in bed.

2:15pm - 2:30pm

Enhancing self-talk assessment through a multi-informant approach: convergence of self-reported and verbally expressed self-talk

Gert-Jan De Muynck¹, Bart Soenens¹, Jochen Delrue¹, Nikos Comoutos², Maarten Vansteenkiste¹

¹Ghent University, Belgium; ²University of Thessaly, Greece

Although self-talk during competitive sports is common and predictive of athletes' motivation (e.g. De Muynck et al., 2017), affect (e.g. Hardy & Alexander, 2001) and performance (Hatzigeorgiadis, Zourbanos, Galanis, & Theodorakis, 2011), it is difficult to assess self-talk. Rather than relying exclusively on athlete-reported self-talk, the present study adopted a multi-informant approach, thereby examining the convergence between self-reported and coded self-talk. Specifically, competitive tennis players (N = 120; M age = 25.22; SD = 9.82) were asked to verbalize their thoughts while performing tennis exercises. This live-recorded self-talk was rated by external observers into four positive (i.e. instruction, psych-up, anxiety control, and confidence) and three negative (i.e. disengagement, somatic fatigue, and worries) self-talk categories. Prior to exercise engagement, participants had reported on their fear of failure, while reporting on their perceived pressure and self-talk upon completion of the tennis drills. A second-order exploratory factor analysis on the facets of both self-reported and coded self-talk categories indicated that two factors needed to be retained, reflecting positive and negative self-talk. Given the substantial correspondence between the coded and self-reported measure, a latent factor representing a multi-informant assessment of self-talk was created. While fear of failure related as a hypothesized antecedent to both types of self-talk, only negative self-talk also related to perceived pressure as a presumed outcome. Overall, the present study shows that athletes' self-talk can be measured reliably through different methods. Guidelines for the assessment of self-talk and its use in daily athlete counselling are provided.

2:30pm - 2:45pm

The influence of self-talk on challenge and threat states and performance

Adrian Hase¹, Jacob Hood¹, Lee John Moore², Paul Freeman¹

¹University of Essex; ²University of Bath

Objectives: A challenge state has been consistently associated with better performance than a threat state. However, to date, challenge-promoting interventions have rarely been tested. Therefore, this study investigated whether instructional and motivational self-talk promote a challenge state and improve performance.

Design: A three-group, randomised-controlled experimental design was used.

Method: N = 62 participants (52 males, 10 females; M = 24 years, SD = 6) were randomly assigned to one of three self-talk groups: instructional, motivational, or control. Participants performed four dart throwing tasks. Cognitive and cardiovascular measures of challenge and threat states were recorded before the first and final task.

Result: The motivational, but not the instructional group, improved their performance between the baseline and final tasks more than the control group. No effects were found on the cognitive and cardiovascular challenge and threat measures. Evaluating the task as more of a challenge (i.e. coping resources match or exceed task demands) was related to better performance. Cardiovascular reactivity more reflective of a challenge state (i.e. higher cardiac output and/or lower total peripheral resistance reactivity) was more positively related to performance in the motivational than in the control group, and in the control than in the instructional group.

Conclusions: Motivational self-talk improved performance more than control self-talk. Furthermore, motivational self-talk may have intensified, whereas instructional self-talk may have attenuated, the relationship between challenge and threat states and performance. Hence, athletes in a challenge state may benefit from motivational self-talk, whereas those in a threat state may benefit from instructional self-talk.

2:45pm - 3:00pm

An evolution to human performance training: an integrated, multi-disciplinary approach**ChangHyun Ko**

Science Applications International Corporation, United States of America

The post-September 11 military environment brought on unexpected increasing challenges to U.S. military service members. The high operational tempo and increased frequency of missions placed multiple challenges on military service members, but specifically Special Operations Forces (O'Connor et al., 2007). In order to meet the challenges and maintain operational readiness, new approaches to combat casualty care and human performance optimization plans were established. Human performance optimization (HPO) is an integrative approach to increase the capabilities of Special Operations Forces personnel through the application of multiple human performance disciplines (Herzog & Deuster, 2014; Jonas et al., 2010; O'Connor et al., 2007). Human performance programs have long been critical foci for elite athletes and military service members and are built on the foundations of strength and conditioning and physical therapy, though the last decade has seen the addition of such additional disciplines as nutrition, data analytics, and sport psychology. The purpose of an integrated, multi-disciplinary approach is to provide a more holistic approach to training. The next evolution to human performance training requires true integration of all disciplines to deliver a single unified lifestyle training plan. The purpose of this presentation is to offer a look into how this evolutionary approach to a unified human performance training took shape in a military special-operations setting. The presenter will discuss the challenges and successes of the shift to a new model. Attendees will learn how to assess their current programs and adapt as needed.

3:00pm - 3:15pm

Do psychophysiological stress responses impact perceptual-motor performance? Shooting performance of police recruits under stress**Laura Giessing¹, Marie Otilie Frenkel¹, Christoph Zinner², Jan Rummel¹, Arne Nieuwenhuys³, Christian Kasperk⁴, Maik Brune⁴, Florian Azad Engel¹, Henning Plessner¹**¹Heidelberg University, Germany; ²University of Applied Sciences for Police and Administration of Hesse, Wiesbaden, Germany; ³University of Auckland, New Zealand; ⁴University Hospital Heidelberg, Germany

Many contexts require the recall of well-trained motor performance under challenging circumstances, e.g. a soccer player shooting a decisive penalty or a police officer arresting a suspect (Nieuwenhuys, & Oudejans, 2017). When performance pressure is high, feelings of stress may impair cognition and perceptual-motor performance. Stress responses, particularly anxiety and increased cortisol levels, shift attention from goal-directed to stimulus-driven control, causing people to underperform based on their actual skill level (Eysenck, Derakshan, Santos, & Calvo, 2007; Hermans, Henckens, Joëls, & Fernández, 2014). Therefore, it was hypothesized that under stress, police recruits would demonstrate elevated psychophysiological stress responses and impaired shooting performance.

The present study investigated the psychological (anxiety, mental effort), physiological (salivary cortisol, alpha-amylase) and behavioural responses (shooting accuracy) of N = 19 police recruits during simulated shooting scenarios under two conditions: low stress (LS) against a mannequin, and high stress (HS), against a physically threatening opponent occasionally shooting back with coloured soap cartridges.

Recruits reported higher anxiety and mental effort in the HS scenario. Both scenarios elicited comparable increases in salivary alpha-amylase. Cortisol levels were highest after the LS scenario. Overall, shooting accuracy was low and did not significantly decrease in the HS scenario.

While increased anxiety hints at a successful stress manipulation, the physiological responses suggest similar stress levels for both scenarios, diminishing potential behavioural differences between the scenarios. As indicated by increasing mental effort, performance efficiency decreased under stress. For individuals performing under high stress, experiencing psychophysiological stress responses in reality-based training settings might help to stabilise performance

3:15pm - 3:30pm

The protective influence of mindfulness and sensation seeking on stress in high-risk sports**Marie Otilie Frenkel¹, Joana Brokelmann², Robin-Bastian Heck¹, Jan Rummel³, Arne Nieuwenhuys⁴, Christian Kasperk⁵, Petra Dallmann⁶, Martin Stoffel⁷, Henning Plessner¹**¹Institute for Sport and Sport Sciences, Heidelberg University, Germany; ²Psychological Institute, Frankfurt University, Germany; ³Psychological Institute, Heidelberg University, Germany; ⁴Department of Exercise Sciences, University of Auckland, New Zealand; ⁵Department of Internal Medicine I and Clinical Chemistry, Steroid Laboratory, Heidelberg University Hospital, Germany; ⁶Center of Psychosocial Medicine, Heidelberg University Hospital, Germany; ⁷Institute of Medical Psychology, Heidelberg University Hospital, Germany

The negative influence of stress on sports performance (Lautenbach et al., 2014) is especially disastrous for high-risk sports athletes, as they often put their life at risk. Therefore, it is of great importance to identify protective factors in stressful situations in high-risk sport. It is widely known that high-risk sport athletes score high in the personality trait sensation seeking (Frenkel et al., 2017). At the same time, theoretical considerations about dispositional mindfulness suggest that highly mindful athletes cope with stress more effectively (Birrer et al., 2012). The main goal of the present study is to examine the influence of dispositional mindfulness and sensation seeking on the stress response to a sport-specific stressor. N = 88 students completed the Heidelberg Sport-Specific Stress Test (HSST) which induces stress during climbing with a subsequent "jump in the row". Psychophysiological experiences (i.e. anxiety, cortisol) were measured repeatedly. In reaction to the HSST, a significant increase in anxiety, but not in cortisol was found. In a regression analysis, anxiety was significantly predicted by sensation seeking, but not by mindfulness. Neither sensation seeking nor mindfulness significantly predicted cortisol levels after the HSST. The results suggest that high sensation seekers perceive a sport-specific stressor as less stressful. The missing physiological response might be explained by the cross-stressor adaptation hypothesis. The experiment offers further possibilities for research at the interface between sport sciences, psychology and medicine: The findings are relevant for high-risk professions such as police officers, firefighters and military forces (e.g. for selection processes, interventions or their evaluation).

Symposium 35: Characteristics and circumstances of sexual violence in sport from different perspectives

Time: Friday, 19/Jul/2019: 2:00pm - 3:30pm · *Location:* H 2 - Bern

Session Chair: Jeannine Ohlert, German Sport University Cologne

Characteristics and circumstances of sexual violence in sport from different perspectives

Chair(s): **Jeannine Ohlert** (University Hospital Ulm and German Sport University Cologne, Germany)

During the last year, sexual violence in sport has gained more and more public attention, especially because of the assaults in US gymnastics, but also due to incidents in several European countries. Nevertheless, research based knowledge about the characteristics and circumstances of sexual violence in sport is still scarce. Therefore, the aim of the symposium is to give more insight into this relatively new area of research from different perspectives:

The first presentation will give deeper insight into the personality and characteristics of offenders in sport from different qualitative and quantitative studies, in order to better understand pathways to sexual offending in sport. In the second presentation, the focus will still be on the offenders of sexual violence: different groups of offenders (coaches vs. peer athletes) will be compared regarding the characteristics of the sexual violence incidents and the consequences of the experiences in the offended persons. In the third presentation, the center of attention will be shifted to the survivors of sexual violence in sport: based on in-depth interviews with survivors, the socio-cultural structures of sexual violence in sport, including the relevance of gender relations and the selection processes and disciplining regimes in sport will be examined. The last contribution will present a new initiative in the UK, which activists with a lived experience of sexual abuse in sport have undertaken to engage directly with the sport sector with the aim of improving its response to child abuse.

Presentations of the Symposium

Putting the pieces together: profiling perpetrators to help understand (pathways to) sexual offending in sport

Tine Vertommen

Thomas More University of Applied Sciences and University of Antwerp, Antwerp, Belgium

Pandora's box has finally been opened by the recent public disclosures of child sexual abuse in sport of English soccer players and American gymnasts and their extensive media coverage. Since the late 1990s, scientific interest in the issue of sexual violence against child athletes has slowly increased, but to date, remarkably little attention has been paid to describing the perpetrators. During this presentation, I will try and put some of the pieces of this as yet unsolved puzzle together by analysing the available information on both quantitative and qualitative characteristics of perpetrators of sexual offences in sport. I will first discuss the results of a retrospective online survey held among victim-respondents in Flanders and the Netherlands (N = 578) to provide a first insight into perpetrator descriptive characteristics. Secondly, I will analyse the perpetrator characteristics as mentioned in the media reports on court cases of sexual violence in sport. Thirdly, I will present a case study of 15 convicted sex offenders in sport and their pathways to sexual offending. Lastly, I will evaluate survivors' narratives of their relationship with the perpetrator, the perpetrator's behaviour, and the risk and protecting factors in the paths leading to sexual offending. By gathering and combining often contradictory but relevant information, in other words, by finding additional pieces, we will eventually be able to complete the complex and nuanced puzzle of sexual offending in sport and better inform evidence- and experience-based prevention.

Characteristics and consequences of sexual violence experiences in sport differ when comparing peers and coaches as offenders

Jeannine Ohlert¹, Thea Rau², Marc Allroggen²

¹University Hospital Ulm and German Sport University Cologne, Germany, ²University Hospital Ulm, Germany

A recent German survey (Allroggen et al., 2016) has found that sexual violence in German sport is not only exerted by coaches and other responsible persons, but also by other athletes (peers). Still, it is unknown if these instances follow the same pattern as instances exerted by coaches, or if there are differences in the characteristics and/or consequences of these experiences. The aim of the current study was thus to do a comparison of these two groups of perpetrators within a sample of elite athletes. In total, 1529 German elite athletes took part in an online survey on sexual violence in sport; from 322 athletes, details on their sexual violence experiences of various kinds were available. Results show that sexual violence exerted by peers was more often (1) a "hands off" situation, (2) involving more than one person, (3) involving female offenders, and (4) happening in clubs or sport (boarding) schools. Sexual violence by coaches or other responsible persons (i.e., second or specialty coach, physiotherapist, doctor or sport psychologist of the team) did more often (1) happen at an Olympic Training Center, (2) involve transgressions or "hands on" situations, and (3) lead to a sport break or change of the training group. No differences could be found regarding consequences on wellbeing and disclosure. To conclude, it becomes evident that sexual violence experiences from different groups of offenders in sport follow different patterns and thus should be considered separately when it comes to the development of preventive measures and interventions.

Socio-cultural structures of sexual violence in sport from the perspective of survivors

Bettina Rulofs

German Sport University Cologne, Germany

In recent media discourses on sexual violence in sport, sport is often portrayed as a field of particularly favourable opportunities and specific socio-cultural conditions for the emergence of sexual violence. This presentation aims to systematically reconstruct the socio-cultural structures of sexual violence in sport from the perspective of those affected – i.e. from the perspective of victims or as we prefer to call them – survivors.

The study is based on the EU-funded project VOICE, which aims at combatting sexual violence in sport through the voices of those affected and via a participative approach. A research study in seven European countries gathered the in-depth reports of 72 survivors (of which 20 interviews were led in Germany). The qualitative analysis of the interviews provides in-depth insights into the relevance of gender relations and the culture of male hegemony in sport, the culture of trust, family and loyalty in sport as well as selection processes and disciplining regimes in sport.

With the help of the voices of survivors, the presentation attempts to sensitise for the specific socio-cultural structures of sport which might predispose sexual violence in sport and thus need to be considered in prevention work.

Activism by individuals who were sexually victimised as children within sport

Mike Hartill

Edge Hill University, United Kingdom

Over the past fifteen years, my research has focused on the sexual abuse of children within sports contexts. The starting point for this endeavour has been to engage with and listen to the experiences and perspectives of those who have been subject to sexual violence within sport. From very modest beginnings, this engagement has expanded significantly over recent years. During this time, the international sport sector has shifted considerably in its approach to this issue, as increasing numbers of athletes have felt able to speak publically about their victimisation. In the UK, with the support of a national sport agency, I have recently initiated a 'survivor-led' project where activists with a lived experience of sexual abuse in sport have undertaken to engage directly with the sport sector with the aim of improving its response to child abuse. In this paper, I report some preliminary findings from this project and reflect on some of the ethical, methodological, political and personal aspects of this work.

Symposium 36: Perfectionism in sport, dance, and exercise: An overview of available models, analyses, and methods

Time: Friday, 19/Jul/2019: 2:00pm - 3:30pm · Location: H 3 - Madeira
Session Chair: Andrew P. Hill, York St John University

Perfectionism in sport, dance, and exercise: An overview of available models, analyses, and methods

Chair(s): **Andrew P. Hill** (York St John University, United Kingdom)

Although our understanding of perfectionism in sport, dance and exercise has increased considerably over the last 10 years, it can still be a difficult area of research to navigate for those new to the topic. This is partly due to the numerous measures, models and disagreements among researchers regarding perfectionism. So, to make the landscape a little clearer, and the task of contributing to research in this area less daunting, the aim of the symposium is to provide an overview of the different models, analytical approaches, and methods that can be used to study perfectionism in sport, dance and exercise. The symposium will start with an introduction and conceptual overview of perfectionism and its measurement (introduction). The four main approaches to examining perfectionism will then be described. These approaches are an independent effects approach (presentation 1), the tripartite model (presentation 2), the 2 x 2 model of perfectionism (presentation 3), and qualitative methods (presentation 4). Alongside the description of each approach, research findings will be summarized, and their strengths and weaknesses considered. The symposium will close with a discussion of new areas of research that warrant investigation.

Presentations of the Symposium

An independent effects approach to perfectionism: Perfectionism, need satisfaction and thwarting, and willingness to dope

Gareth E. Jowett, Nicholas Stanger, Laurie Patterson
Leeds Beckett University

The main approach to studying perfectionism in sport, dance, and exercise has been through the examination of the separate and independent effects of the two main dimensions of perfectionism: perfectionistic strivings (PS) and perfectionistic concerns (PC). This approach will be discussed and an example will be provided that focuses on new data on the relationship between perfectionism and doping in athletes. Consistent with previous research in this area (e.g. Madigan, Stoeber, & Passfield, 2016), our new data from N = 168 student-athletes (n = 94 female, mean age = 18.84 years, SD = 0.94 years) demonstrates that the two major dimensions of perfectionism have opposing relationships with the willingness to dope (Whitaker, Long, Petróczi, & Backhouse, 2014). In a more novel fashion, it also reveals that these opposing relationships are explained by unique effects on psychological need satisfaction and need thwarting (Rocchi, Pelletier, & Desmarais, 2017). Specifically, while there is a positive indirect relationship between PS and doping willingness via competence satisfaction and thwarting, there is a negative indirect relationship between PS and doping willingness via competence satisfaction. This example illustrates how two parts of the same perfectionism construct may lead to very different outcomes and how the examination of mediating factors is important in explaining these independent effects. The strengths and weaknesses of focusing on the independent effects of dimensions of perfectionism, generally, and for doping willingness, specifically, will be explained.

The tripartite model of perfectionism: A key model or something to be abandoned?

Mick R. Lizzmore¹, John K. Gotwals²
¹University of Alberta, ²lakehead University

Rather than focusing on the effects of dimensions of perfectionism independently, researchers can instead study different combinations of dimensions of perfectionism in sport, dance and exercise. The tripartite model of perfectionism is a person-oriented typology whereby athletes can be sorted into different "types" of perfectionists based on a combination of the two main dimensions of perfectionism: perfectionistic strivings (PS) and perfectionistic concerns (PC) (Parker, 1997). The tripartite model includes three groups, healthy perfectionists (high PS/low PC), unhealthy perfectionists (high PS/high PC), and non-perfectionists (low PS and either high or low PC). In using this model researchers make two key assumptions: (1) perfectionistic strivings are the key characteristic of perfectionism and thus the degree to which an individual strives for perfection determines their classification as a perfectionist (or not), and (2) whether a person is a "healthy" or "unhealthy" perfectionist, is determined by the degree to which they display perfectionistic concerns. The tripartite model has been a useful and parsimonious model in developing our understanding of perfectionism and its influences in sport (Gotwals, 2016). This presentation will provide an overview of this work. However, there are also shortcomings in the model and potential unintended consequences related to its terminology. Whether researchers should either continue utilising the tripartite model with some suggested modifications, abandon it, or incorporate principles of the tripartite model into a revised model of perfectionism will be discussed.

The 2 x 2 model of perfectionism: An overview and review of research in sport, dance and exercise

Sarah H. Mallinson-Howard
York St John University

One of the newest models of perfectionism to emerge is the 2 x 2 model (Gaudreau & Thompson, 2010). Like the tripartite model of perfectionism, the model focuses on combinations of dimensions of perfectionism. However, unlike the tripartite model, it focuses on four subtypes of perfectionism: non-perfectionism (low PS/low PC), pure PS (high PS/low PC), pure PC (high PS/high PC) and mixed perfectionism (high PS/high PC). The least favourable subtype is pure PC and the most favourable subtype is pure PS. The model offers four testable hypotheses that reflect theoretical differences between the subtypes. Hypothesis 1 states that pure PS will either be associated with better (H1a) or worse (H1b) outcomes compared to non-perfectionism. Hypothesis 2 states that non-perfectionism will be associated with better outcomes than pure PC. Hypothesis 3 states that mixed perfectionism will be associated with better outcomes than pure PC. Finally, hypothesis 4 states that pure PS will be associated with better outcomes than mixed perfectionism. Initial research has been promising to find that the subtypes explain differences in the experiences of participants in sports and dance (Hill & Madigan, 2017). However, there is some evidence that hypothesis 3 is problematic and that support for the model may depend on other factors (e.g. context and type of outcome variable). This presentation will provide an overview of the 2 x 2 model and a review of the research. It will also consider the strengths and weaknesses of the model relative to other available models.

Qualitative research: The promise and challenges of qualitative research on perfectionism in sport, dance and exercise

Sanna Nordin-Bates

Swedish School of Sport and Health Sciences

Perfectionism research in sport, dance and exercise has been steadily increasing over the past three decades. However, studies have almost exclusively relied on a quantitative paradigm and questionnaire-based methods. It has therefore been interesting to note the recent and relatively sudden emergence of qualitative and interview studies in this area (e.g. Nordin-Bates, in press; Nordin-Bates & Abrahamsen, 2016; Sellars, Evans, & Thomas, 2016). It can be argued that these qualitative studies have provided important contributions to the literature in several ways. First and foremost, they represent an alternative paradigm for the study of perfectionism which places personal, lived experience at its centre. As such, they give rich insights into what has previously been represented largely via group averages and statistical inferences. Second, they offer important illustrations of – and challenges to – existing perfectionism models and the methods used to test them. In an area fraught with alternative and competing models, different theoretical approaches and contradictory findings, this is an especially important strength. This presentation will offer an overview of existing qualitative studies on perfectionism in sport and dance, including their methods and findings, and the promise and challenges that lay ahead for future work adopting this approach.

Symposium 37: Psychological mechanisms underlying morality in sport

Time: Friday, 19/Jul/2019: 2:00pm - 3:30pm · *Location:* H 4 - Chalkidiki

Session Chair: Philip Hurst, Canterbury Christ Church University

Session Chair: Bahri Gürpınar, Akdeniz University

Psychological mechanisms underlying morality in sport

Chair(s): **Philip Hurst** (Canterbury Christ Church University, United Kingdom, Canterbury, UK), **Bahri Gürpınar** (Akdeniz University, Antalya, Turkey)

Discussant(s): **Philip Hurst** (Canterbury Christ Church University, Canterbury, UK)

Sport is believed to promote prosocial values, such as fair play and sportsmanship (Shields & Bredemeier, 1995). However, sport can also promote anti-social behaviours, such as cheating and gamesmanship (Kavussanu, 2019). Experiences of anti-social behaviours can have negative consequences for participation in sport and limit opportunities to effectively use sport as a vehicle to develop an athlete's morality. Therefore, understanding the factors that lead athletes to engage in prosocial and anti-social behaviours is important in our efforts to create a psychologically healthy sports environment. In this symposium, we discuss the results of five cross-sectional studies from data collected in France, Italy, Turkey and the United Kingdom, which have relevance to the development of morality in sport. The first paper discusses the relationship between basic psychological needs and pro-social and anti-social behaviours of athletes. The second paper investigates how sports coaches can create motivational climates that engage and disengage pro-social and anti-social behaviours. The third paper presents data relating to collective moral disengagement within team sports and its influence toward promoting anti-social behaviours. The fourth paper examines the role of fear of failure in promoting anti-social behaviours, such as doping. The final paper discusses the implications achievement goals, basic psychological needs and passion have on the development of antisocial behaviours. The symposium will conclude with an evaluation of all five studies and their implications for understanding how psychological mechanisms underlying moral development are manifested in sport.

Presentations of the Symposium

Satisfaction of the basic psychological needs as a predictor of pro-social and anti-social behaviours in athletes

İhsan Sarı¹, Bahri Gürpınar², Neslişah Yaren Köleli¹

¹Sakarya University, Adapazarı, Turkey, ²Akdeniz University, Antalya, Turkey

Self-Determination Theory (Deci & Ryan, 2000; Ryan & Deci, 2000) emphasises that satisfaction of the three basic psychological needs (i.e. autonomy, competence and relatedness), is essential for humans to thrive, and maladjustments occur in contexts where these needs get thwarted (Vansteenkiste & Ryan, 2013). Therefore, this research aimed to determine if satisfaction of the basic psychological needs is associated with pro-social and anti-social behaviours of athletes. N = 190 team and individual athletes (Mean age = 18.65, SD = 2.85; Mean experience = 6.85, SD = 3.36 years; 60% male) voluntarily participated in this research and completed measures of basic psychological needs and pro-social and anti-social behaviours. Data was analysed using structural equation modelling in AMOS 20.0. Results indicated that satisfaction of athletes' basic psychological needs was associated with pro-social behaviour toward teammates and pro-social behaviour towards opponents. Anti-social behaviour towards teammates and opponents were not related to basic psychological needs. These results highlight the role of basic psychological needs and how they contribute towards pro-social behaviours of athletes.

Coach-created empowering and disempowering motivational climate and moral behaviour: Mediating role of moral disengagement

Bahri Gürpınar¹, İhsan Sarı², Hatice Yıldırım¹

¹Akdeniz University, Antalya, Turkey, ²Sakarya University, Adapazarı, Turkey

This research is based on Duda's (2013) hierarchical and multidimensional conceptualization of motivational climate. This model integrates motivational climate dimensions from Achievement Goal Theory and Self-Determination Theory and proposes empowering and disempowering motivational climates. In line with this model, this research aimed to investigate the relationship between the coach-created motivational climate and pro-social/anti-social behaviours, and to determine whether moral disengagement mediated any association. N = 423 (Mean age = 16.99, SD = 0.99; Mean experience = 5.61, SD = 2.71; 62% male) team and individual sport athletes completed self-report questionnaires of empowering and disempowering motivational climate, pro-social/anti-social behaviors and moral disengagement. Structural equation modelling revealed that moral disengagement partially mediated the relationship between coach-created motivational climate and pro-social/anti-social behaviours. Empowering motivational climate had a direct positive effect on pro-social behaviour towards opponents and teammates. Disempowering motivational climate had a direct and indirect positive (via moral disengagement) effect on anti-social behaviour towards opponents and teammates. These findings suggest that coach-created empowering motivational climates can enhance pro-social behaviours, whereas coach-created disempowering motivational climates can foster anti-social behaviours in athletes, which is partly mediated by moral disengagement. The findings of this research emphasise the role of coach-created motivational climates on moral functioning in sport and provide useful information to sports coaches and sport psychologists aiming to foster psychologically healthy sports environments for athletes.

Collective moral disengagement: A study with adolescent team sport athletes

Francesca Danioni¹, Rosa Rosnati¹, Daniela Barni²

¹Catholic University, Milan, Italy, ²LUMSA University, Rome, Italy

Moral disengagement (Bandura, 1990) refers to a set of cognitive mechanisms (e.g. diffusion of responsibility) used to justify immoral behaviours (e.g. cheating). While moral disengagement in sports is usually studied at the individual level (IMD), collective moral disengagement (CMD), which refers to the shared beliefs in justifying negative actions amongst a team, has received little attention. Given that sport is a major agent of socialization during adolescence (Prunelli, 2011), young athletes acquire not only physical competences but life skills and values through sports participation. A greater understanding of CMD can help contribute to the understanding of moral mechanisms in sport, which can help shape interventions used to prevent anti-social behaviours. In this study, we aimed to examine the CMD of Italian adolescent team-sport athletes and its relationship to moral sports climate and anti-social behaviour. Italian adolescent team-sport athletes (N = 172, mean age = 15.4, SD = 1.7 years) completed measures of CMD (adapted from Gini, Pozzoli, & Bussey, 2014) and perceptions of their prominent motivational climate within their team (Bortoli & Robazza, 2004). Results of multiple regression analysis indicated the importance of motivational and moral sports climate toward anti-social behaviours. Moral sports climate positively predicted adolescents' ego goal orientation in sport and anti-social behaviour. Results highlight the need for researchers to consider collective morality to better understand factors related to young athletes' participation in sport and how this can shape their moral behaviour.

Fear of failure predicts doping likelihood in competitive athletes

Philip Hurst

Canterbury Christ Church University, Canterbury, UK

Fear of failure is the motive to avoid failure in achievement contexts (Conroy et al., 2002). It has been proposed that athletes who are motivated to avoid failure are more likely to report anti-social behaviours (i.e. aggression and cheating; Sagar et al., 2011). Such behaviours can have negative consequences on achievement, mental health and morality (Kavussanu 2019). The latter has been suggested as a key variable that influences an athlete's decision to use performance-enhancing substances (i.e. doping; Backhouse et al., 2016). However, no study has investigated the relationship between fear of failure and an athlete's decision to dope. The aim of this study was to investigate the relationship between fear of failure and doping likelihood. Competitive athletes (N = 201, mean age = 20.4, SD = 3.8 years, 73% male) completed measures of fear of failure and doping-likelihood. Fear of failure was significantly related to doping-likelihood ($r = .287, p < .001$). These findings provide novel evidence to suggest that athletes who are motivated to avoid failure are more likely to dope. Organisations aiming to prevent doping should aim to challenge athletes' fear-of-failure motivations and teach them strategies to deal effectively with their fears of failure. Further research is needed to investigate the relationship between fear of failure and other anti-social behaviours (e.g. aggression and cheating) to provide a better understanding of factors influencing morality in sport.

The relationship between goal orientation, basic psychological needs and passion for sport

Lieke Schiphof-Godart, Michiel Krijger-Hombergen

The Hague University, Hague, the Netherlands

According to Self-Determination Theory (SDT; Deci & Ryan, 1985), Achievement Goal theory (AGT; Elliot & McGregor, 2001) and the dualistic model of passion (Vallerand et al, 2003), athletes may be more inclined to develop an obsessive passion for their sport when the basic psychological needs (feelings of relatedness, competence and autonomy) are thwarted, or when the exercise environment accentuates performance goals over mastery goals. This, in turn, may develop anti-social behaviours (e.g. cheating). In order to examine the relationship between a supportive motivational climate and the development of an obsessive passion for sports, N = 179 French teenagers (mean age = 14.20 years, SD = 7.64), participating in advanced sports summer camps (SEJ), participated in this study. They answered questions concerning passion for their sport, achievement goals, exercise dependence and basic psychological needs. Partial correlations demonstrated a positive correlation between obsessive passion and performance-approach and mastery-avoidance goals as well as exercise dependence ($r = .25, .21$ and $.48, p < .05$, respectively). Harmonious passion, on the other hand, was positively correlated with mastery-approach goals, feelings of relatedness and autonomy ($r = .40, .49$ and $.37, p < .05$, respectively) and, but to a lesser extent than obsessive passion, exercise dependence ($r = 0.18, p < .05$). A perceived motivational climate accentuating mastery goals and the satisfaction of basic psychological needs may thus be related to positive forms of passion, while performance goals and an unsupportive motivational climate are strongly related to obsessive exercise behaviour and exercise dependence.

Symposium 38: Intervention studies in applied sport psychology

Time: Friday, 19/Jul/2019: 2:00pm - 3:30pm · Location: VSH 06 - Bad Blankenburg

Session Chair: Nadja Walter, Leipzig University, Faculty of Sport Science

Intervention studies in applied sport psychology

Chair(s): **Nadja Walter** (Leipzig University, Faculty of Sport Science, Germany)

The relevance of elite athletes' performance, their dual career and the associated challenges and demands is reflected in many scientific publications (Brown & Fletcher, 2017). In detail, experimental studies in the field of applied sport psychology focus on the influence of psychological and physiological variables to increase performance and promote athletes' mental health. The symposium aims to foster a discussion on the challenges and boundaries of researching the impact of sport psychological interventions in the applied setting. Therefore, on the one hand, empirical results of theoretically based intervention studies to increase performance and promote mental health will be presented. On the other hand, authors will summarise their work from a practical point of view by critically but constructively discussing the content and implementation of interventions. The symposium thereby aims to provide a deeper view into the work of sport psychologists in the applied research field. In particular, the talks will focus on reflexive and systematic self-talk training to impact for example emotions, motivation, competitive anxiety, self-confidence, and performance (Latinjak, Hatzigeorgiadis, Figal-Gómez, & Hardy; Walter & Alfermann), on the development of a career training program for professional players (Ekengren, Stambulova, & Johnson) and on the benefits of physical exercise in natural settings (i.e. green exercise; MacIntyre).

Presentations of the Symposium

An innovative reflexive self-talk online intervention with female athletes

Alexander Latinjak¹, Antonis Hatzigeorgiadis², Lucia Figal-Gómez³, James Hardy⁴

¹University of Suffolk; EUSES-School of Health and Sport Sciences, ²University of Thessaly, ³University of Suffolk; Universitat Autònoma de Barcelona, ⁴Institute for the Psychology of Elite Performance (IPEP), Bangor University

This study focused on an innovative reflexive self-talk intervention targeting athletes' goal-directed self-talk. This reflexive self-talk intervention (Latinjak, Font-Lladó, Zourbanos, & Hatzigeorgiadis, 2016) is different from traditional strategic self-talk interventions (Hatzigeorgiadis, Zourbanos, Galanis, & Theodorakis, 2011) insofar as latter focuses on the effectiveness of cue-words on cognitive and motivational processes, whereas the intervention described in this study focused on metacognitive knowledge (Brick, MacIntyre, & Campbell, 2016) related to the use of self-talk. Four experienced female elite athletes, aged between 20 and 37 years, were invited to one initial interview, a four-week intervention, and two post-intervention interviews conducted across three months. Two applied sport psychologists applied an online Socratic questioning approach to encourage their athletes to describe challenging scenarios, reflect on their use of self-talk and its effectiveness, and explore alternative self-statements to be employed in forthcoming situations. Data were multi-sourced stemming from the psychologists, athletes, and third parties (e.g., coach). Three athletes completed the intervention, whereas one athlete prematurely withdrew, mainly because the Socratic questioning approach and the online mode of delivery did not fit within her expectancies. From the three athletes who finished the intervention, there was endorsement and constructive criticism of the intervention and its online mode of delivery. The intervention, largely due to the accompanying raised awareness of self-talk use and refined content, seemingly benefited a range of variables including emotions, motivation, and confidence, both inside and outside of the athletes' sports life domain. The psychologists corroborated the athletes' evaluations and made constructive recommendations for applied practitioners.

Developing a career training programme in Swedish elite handball

Johan Ekengren, Natalia Stambulova, Urban Johnson

Halmstad University, Halmstad, Sweden

Psychological interventions with elite athletes should benefit from the developmental and preventive perspectives (Stambulova, 2016), keeping in mind the highly stressful nature of elite sports and potential threats for athletes' mental health (Schinke, Stambulova, Si, & Moore, 2017). The authors of this presentation explored N = 18 Swedish professional handball players' career experiences with foci on major stages and transitions in their athletic and non-athletic developments. The players' information was consolidated into an empirical career model of Swedish handball players, covering several stages and layers in players' development with relevant transitions, pathways, and themes describing content of each stage. This empirical model served as a basis for planning an intervention study with professional handball players aimed at helping them to develop resources and strategies to meet elite career demands and maintain health and well-being. The presentation will focus on the development of a career training program (CTP) for N = 16 professional players (age = 18-35) representing an elite handball club in Sweden. The CTP is structured into eight workshops with their content derived from major demands and stressors of handball players during the mastery stage of their careers. After the CTP kick off, major topics of the workshops include: professional players' values and committed actions, training, performance, lifestyle, and recovery issues, injury prevention, the future and athletic retirement. The content of the workshops guided by a combination of concurrent and proactive approaches will include acceptance and commitment therapy, life-skills development, pre-transition planning, monitoring assessment, and creating a personal development plan.

Effects of self-talk training on junior elite athletes' competitive anxiety, self-efficacy, volitional skills, and performance

Nadia Walter, Dorothee Alfermann

Leipzig University, Faculty of Sport Science, Germany

Self-talk can be used to influence thoughts, feelings, and behaviours to help athletes focus on their performance. Although several studies have proven the positive effects of self-talk, there is still a lack of knowledge on self-talk effects with squad and competitive athletes. Thus, the present study investigates the effects of a self-talk intervention on competitive athletes' psychological states, traits and performance. N = 117 athletes (55 females, 62 males; mean age = 16.0 years) were randomly assigned to either two experimental groups or a control group (n = 30). The experimental groups received a self-talk intervention either for one week (n = 36) or for eight weeks (n = 38), whereas the control group did not receive self-talk training. Dependent variables (competitive anxiety, volitional skills, self-efficacy and coaches' performance ratings) were assessed three times before and after the intervention. The athletes' current performance was evaluated by the athletes' respective coaches. It was expected that (1) athletes with a self-talk intervention would show reduced competitive anxiety and increased self-efficacy and performance compared to the control group, and (2) long-term training compared to short-term training would lead to better results. Multivariate two-way analyses and separate univariate analyses of variance revealed group-independent significant main effects of time and significant interaction effects of Time x Group on somatic state anxiety, state self-confidence, self-optimization, self-efficacy and coaches' performance ratings. Thus, self-talk training reduces competitive anxiety and increases self-efficacy and performance in junior elite athletes.

Nature-based interventions for athlete well-being: A mixed methods approach

Tadhg E. MacIntyre

Health Research Institute, University of Limeric

Accumulating evidence has emerged to suggest that elite athletes may be at high risk of psychological disorders (e.g. Rice et al., 2016). Evidence-based approaches have been developed to support athletes in transition (Wylleman & Reints, 2010) or, more broadly, to develop mental-health literacy (Breslin et al., 2017). One aspect of well-being that has been somewhat overlooked in the literature, is the role of recovery (Kellmann et al., 2018). Recovery refers to the process of psychological unwinding that counteracts the stress process. Nature-based interventions, including green exercise (physical exercise in natural settings) have been reported to reduce stress, increase well-being and recovery (Barton et al., 2016). This study sought to gain insights into the lived experiences of athletes' nature contact and green exercise, its benefits for well-being and psychological recovery. N = 20 participants volunteered to participate (mean age = 38.3 years; SD = 10.7) in an online survey and subsequent semi-structured interview. Scores on standardised instruments suggested high levels of well-being (e.g. WHO-5 scores), nature connectedness and pro-environmental attitudes. Interpretative phenomenological analysis revealed the following themes: (a) early childhood experiences, b) challenge of the outdoors, c) emotional response to nature, d) nature for coping, e) restorative spaces, and f) environmental concern. The qualitative findings suggested commonalities in their mindset and connectivity with nature. This exploratory study provides a stepping stone for future enquiry on the cognitive-affective-social-behavioral linkage of the benefits of green exercise for well-being and psychological recovery. Nature-based interventions may offer a low-cost non-invasive low-stigma preventative approach.

Symposium 39: How culture and context inform practice in sport psychology: A cultural lens on talent and career development in sport

Time: Friday, 19/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 17 - Westphalia
Session Chair: Louise Kamuk Storm, University of Southern Denmark

How culture and context inform practice in sport psychology: A cultural lens on talent and career development in sport

Chair(s): Louise Kamuk Storm (University of Southern Denmark)

Sport psychology and talent development are social practices embedded in cultures and contexts. The term context-driven sport and exercise psychology practice (CDP) was recently introduced in sport psychology literature (Schinke & Stambulova, 2017), which is building on cultural sport psychology. This trend looks beyond the athlete in both research and applied practice, which contrasts with universal models for talent development and culture-blind curriculum-based sport psychology interventions. The contextual and cultural understanding of career pathways, talent-development environments and athletes holds the potential to enrich our understanding of how culture shapes and influences athletes, which has direct implications for stakeholders such as coaches or practitioners.

CDP requires an understanding of a given site, beyond its people, which will be illustrated through five case examples. The first paper presents a cultural analysis of a Danish talent academy, while the second focuses on developmental pathways and is an investigation of athletic talent-development environments in American underserved communities, focusing on how athletes were able to successfully navigate those difficult childhood experiences. The third paper looks at organisational cultures in the United Kingdom, and how a change of culture process might be underpinned by ambiguity and ongoing power relations between subcultures. The fourth paper offers a unique insight into athletic talent development in Iceland and how the government's investment in elite sport has benefited Icelandic people outside of sport. The final paper presents a case of applied practice in a Danish context and illustrates how organisational awareness and sensitivity is key in CDP.

Presentations of the Symposium

Understanding a Danish talent academy, beyond its people: A cultural lens

Louise Kamuk Storm, Carsten Hvid Larsen, Kristoffer Henriksen
University of Southern Denmark

Context-driven sport psychology practice is based on a thorough analysis and understanding of the athletes and stakeholders' cultural contexts with a particular focus on the local cultures (Stambulova & Schinke, 2017). The paper explores the organisational culture of a particular Danish talent academy (as perceived by their cultural leaders and the researcher). The analysis is drawing upon 6 months of weekly participation in the environment. The data acquisition is based on participatory action research design. The cultural analysis (Schein, 2010) was integrated as a part of creating an optimal environment for talent development. This paper presents the results and the process. The academy is centred around a strong community of leaders and coaches, however, tensions occurred. The basic assumptions of the environment were: "Talent is curiosity, openness and 'displaying courage like a man'", "good relationships as pre-conditions for learning and development", and "we have a responsibility to develop our environment and adapt to the local culture. Our existence depends on local acknowledgement". We discuss how the CDP included three mutual influential processes: self-reflexivity, contextual awareness and the process of becoming and being a cultural insider.

Empowering youth athletes against the odds: Successful talent-development environments in underserved communities

Rob Book¹, Kristoffer Henriksen¹, Natalia Stambulova²
¹University of Southern Denmark, ²Halmstad University

The research on the career pathways of professional athletes is well established in sport psychology, yet this field is lacking insight into the lives of athletes whose formative years were spent primarily in an American underserved community (Stambulova & Wyllemann, 2014). Using the Holistic Ecological Approach as a framework, this PhD project's aim is to begin to understand how professional athletes were able to circumvent the environmental hardships and still reach the professional level of their chosen sport (Henriksen, 2010; Henriksen & Stambulova, 2017). This study involved in-depth, biographical interviews with N = 10 professional athletes who overcame significant adversity. Through the analysis of the data, many commonalities emerged. Key transitional and existential relationships, an understanding that sport was a way out of hardship and an ability to shift and persist through adversity, were key themes identified in the data. However, considering multi- and equifinality, no two lives are exactly the same and life stories can converge and diverge at many different junctions. Thus, this presentation will contain a brief summary of two athletes who overcame many of the same obstacles, reached a similar level in their sport, yet it is clear that their environment shaped them in drastically different ways.

"Quite aggressive assaults on us to start off with": Culture change in a national performance pathway in the United Kingdom

Niels Feddersen¹, Robert Morris¹, Louise Kamuk Storm², Martin Littlewood¹, David Richardson¹

¹Liverpool John Moores University, ²University of Southern Denmark

Most research in organisational culture in sports has considered culture through an integration lens by employing retrospective or cross-sectional study designs. This challenges inquiry to examine the ambiguity of organisational culture (Maitland, Hills, & Rhind, 2015). This study aimed to illuminate how a change of culture process unfolds in a performance pathway in the UK.

We combined Action Research and Grounded Theory in a 16-months longitudinal study with one governing body (NGB) of an Olympic sport (Dick, 2007). The primary data collection was ethnographic observations supplemented by ten focus groups, two with athletes (n = 15), four with coaches (n = 10), two with athletes' parents (n = 13), and two with NGB talent-development personnel (n = 4). We analysed the data using a grounded theory approach (Corbin & Strauss, 2015).

Results showed that changing political will influenced structural conditions imposing changes to ring-fenced funding. The community within the sport perceived these changes as a threat to normative practices (e.g. coaching) and disengaged from the NGB. We operationalised change through (a) decentralised development hubs, (b) youth national team-camps, and (c) selection policies. The core concept of the change process was ongoing interdependent power relations. Counter subcultures contested the change through manipulation, deception, and isolation. The change was supported by amplifying subcultures through empowerment, building trust, and collaboration.

This study provides insights into how change of culture process occurs in real-time and the newfound understanding of the influence of structural conditions could help sports organisations to know how and why subcultures contest strategic change initiatives.

Why does Iceland invest in youth sport for all?

Dadi Rafnsson

Reykjavik University

Why does Iceland invest so heavily in youth sports for all? In recent years, Iceland has regularly qualified for major tournaments in male and female football, basketball, handball as well as other sports punching far above its weight in the process. During the last World Cup in Russia, Iceland captured the attention by competing with the world's best football teams despite having a population smaller than many cities. Icelandic taxpayers invest handsomely in youth sports and activities, providing their local sports clubs with facilities and their children with vouchers for sports participation. In turn, all sports clubs must allow everyone to train with them, regardless of ability. This ensures that in a small country with a population of fewer than 350,000 people, they are less likely to lose out on talent that can propel them to compete with larger, more populated countries. However, this commitment to sport at the elite level has proved beneficial in many aspects of the Icelandic society and the investment has been credited with contributing to drastically lower alcohol and tobacco consumption amongst teenagers in Iceland. In this presentation, I will discuss the results of my PhD project which help to answer questions such as: When did Iceland decide to invest in youth sports for all? What were the main cultural drivers for this to happen? Does it have partisan political support?

That did not go as planned! Reflections on service delivery in Danish professional football

Carsten Hvid Larsen

University of Southern Denmark

Studies within organisational psychology in sport and the experience of practitioners point to the fact that working within an environment means providing services where there are other distracting influences, such as organisational stress, change, pressure, external demands, media intrusion, contract negotiations and the presence of agents (Nesti, 2010). Moreover, researchers highlight the existence of poor employment practices having direct and indirect implications for on-field performance following organisational changes (Wagstaff & Larner, 2015). This presentation highlights that practitioner's need to be aware of how results affect organisational changes (e.g. changing coaches) and how organisational changes affect his or her services in a professional sports organisation. There is a need for practitioners to integrate the notions of self-reflexivity and cultural sensitivity into his or her professional philosophy when entering a professional sports organisation, and having an eye on several "logics" operating in the organisation. In good times, logics co-exist peacefully and it might seem to be a strong and coherent culture, but in "crisis" and adversity, they cannot co-exist and in soccer, the "short-termism" will apparently prevail. Thus, the similar organisational set-up can act differently according to shifting situations and processes within the club. Practitioners entering a professional organisation need to have some political acuity because the contexts are changing. These circumstances imply that the practitioner needs to know that changes will occur when results are poor.

Workshop 19: Introduction to Bayes statistics using GNU R for sport neuroscientists/psychologists

Time: Friday, 19/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 18 - Edinburgh
Session Chair: Sven Hoffmann, German Sport University Cologne

Introduction to Bayes statistics using GNU R for sport neuroscientists/psychologists

Sven Hoffmann

German Sport University Cologne, Germany

Aim of this workshop is to introduce participants into the basics of Bayesian inference using GNU R. The participants will learn the core concepts of Bayes with respect to standard inference in the context of e.g. group comparisons and factorial designs. Further, they will learn how to use GNU R for this purpose. Participants will be introduced how to use R for scripting analyses and making meaningful, i.e. interpretable plots. To do so we will use example data from the field of sport psychology and cognitive neuroscience. The participants should take their laptops (Mac/Windows) and an USB sticks (at least 4GB) with them and should have basic knowledge in scripting (desirable R). All other information (WIFI access for downloading and installing necessary packages) and material (an installation copy of R Studio, PowerPoint slides and scripts) will be provided on-site. The group size is restricted to 20 participants.

Workshop 20: Working with adolescent athletes: the importance of active involvement and fun based on ACT examples

Time: Friday, 19/Jul/2019: 2:00pm - 3:30pm · *Location:* VSH 116 - Varna

Session Chair: Kristel Kiens, Tallinn University

Session Chair: Snežana Stoljarova, Tallinn University/ESTIPP OÜ private consultancy

Working with adolescent athletes: the importance of active involvement and fun based on ACT examples

Kristel Kiens, Snežana Stoljarova

Tallinn University, Estonia

Adolescence, is a period of many changes on physiological, cognitive and social levels (Murberg & Bru, 2004), which brings challenges and extra pressure young athletes need to cope with (Debois, Ledon, & Wylleman, 2015). Therefore, supporting youth athletes in developing a holistic mental skill set, is required for optimal development (Larsen, Alfermann, Henriksen, & Christensen, 2013). Working with adolescents can be a challenging situation for sport psychology practitioners, due to specific issues and characteristics that need to be considered with this age group. Currently there is a lack of discussion in sport psychology literature on the cognitive developmental processes in learning psychological skills (McCarthy, Jones, Harwood, & Olivier, 2010). Therefore, more insight is needed into practical implications when working with youth athletes

This workshop is aimed at discussing and demonstrating some of the core principles of applied work with adolescents, based on the example of psychological flexibility skill set of acceptance and commitment therapy (Hayes, et al., 1999). Participants will be introduced to the triflex structure of psychological flexibility skills: Open up, Be Present, and Do What Matters (Harris, R., 2009, p. 13), and presented with relevant metaphors used in psychoeducation phase. Further, they will be involved in practical and interactive exercises and games, which we use when working with adolescent athletes. Following the session, workshop participants will receive a PDF toolkit with all the covered metaphors and exercises, and list of relevant literature and materials for further investigation of the topic.

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