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**Physical activity promotion in health care settings**



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**Programme and Abstracts**

#### 104 Healthy Children in Sound Communities in the Netherlands

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In The Netherlands health professionals, PE teachers, and PA trainers and parents have a key role in developing strategies to combat problems related to a sedentary lifestyle of children and youth. The Dutch-German project "Healthy Children in Sound Communities" implements best practices in health promotion and is a multi-component approach at elementary schools. Six Dutch municipalities with a total of 19 elementary schools participated in this intervention project including children six years of age and older. These practices are evaluated and investigated by 1. measuring the motoric improvements by the use of validated tests. 2. aggregating the test results (in the future by the use of an i-pad), 3. giving feedback to parents by showing them a chart of their child with the motoric results on one side, and a BMI chart on the other side. 4. giving lectures for parents organised in school about authoritative parenting (considered to be the most optimal parenting style), sleep duration, appropriate food and portion size and healthy childrearing. 5. involving teachers, mayors, officials of the municipality; their function as a role model is an important element of a multi-component approach.

Three evaluation modules for the pupils consider their BMI and basic motor development (1), their different lifestyle factors for physical activity, nutrition behavior and modern media consumption including assessment of quality of life

(2), assessment of their self-concept and social climate as a member of the PE class and PA groups (3).

On 5 tests the children significantly improved their test results compared to the norm group. On "standing broad jump" the children did not improve and on the "6 minute run" their results decreased. In one third of the children with overweight the BMI was reduced to normal weight and in one third of the children with obesity, the weight decreased to the category "overweight". Primary and targeted prevention by a school-wide intervention with individually tailored courses for children seem effective to further progress physical fitness. Sleep, nutrition and parenting advice are also addressed to achieve a sound development of the BMI and overall health. This evidence based approach could be implemented anywhere around the world.

1. Cole, T.J., Lobstein, T. (2012). Extended international (IOTF) body mass index cut-offs for thinness, overweight and obesity. *Pediatr Obes* 7(4):284-94. Doi: 10.1111/j.2047-6310.2012.00064.x

2. Naul, R., Schmelt, D., Dreiskaemper, D., Hoffmann, D., & L'Hoir, M. (2012). 'Healthy children in sound communities' (HCSC/gkgk) - a Dutch-German community-based network project to counteract obesity and physical inactivity. *Family Practice*, 29, i110-i116.

3. Schönbeck, Y., Talma, H., van Dommelen, P., Bakker, B., Buitendijk, S. E., HiraSing, R. A., & Buuren, S. (2011). Increase in prevalence of overweight in Dutch children and adolescents: A comparison of nationwide growth studies in 1980, 1997 and 2009. *PLoS ONE*, 6(11), e27608. doi:10.1371/journal.pone.0027608.

#### 105 Healthy children in sound communities – the influence of a multi-component intervention on German overweight and obese children

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**Introduction:** The aim of this intervention study is to implement a strategy to prevent and promote a healthy lifestyle in order to counteract current developments which show an increase of motor deficits and obesity in elementary school children. A weekly schedule including curricular and non-curricular physical and health education lessons is established to target an age-appropriate BMI as well as the integration of daily physical activities (Naul et. al, 2012).

**Method:** In the first and second cohort 535 (male=53.3%) elementary school children from the

German-Dutch-border are tested longitudinally for four years performing a motor ability test once a year (results are differentiated by age and sex). The BMI is measured and reorganized in eight BMI-percentiles (Kromeyer-Hauschild et al., 2001). Additionally, questionnaires focusing on sedentary screen time, physical activity time load, physical self-concept, class-climate and life quality are applied.

**Results:** The presented results focus on a sub-sample of 85 (15.9%) overweight and obese children (BMI-percentile-groups 7 and 8,  $P > 90\%$ ). 36.5% of the sub-sample have lowered their BMI-percentile at the end of the intervention. 25.9% changed to BMI-percentile 6 of normal weight. The sub-sample significantly improves in coordination items and push-ups during the tested period ( $p \leq .001$ ;  $\eta^2 \geq .129$ ). The performances of all motor tests are significantly lower ( $p \leq .013$ ) for the sub-sample group but there is no significant difference in the developmental process from t1 to t4 - the overweight children develop and improve their motor abilities in parallel to their normal weight counterparts. The questionnaires reveal that mothers' and fathers' BMI as well as the fathers' education has a significant influence on the children's BMI ( $p \leq .017$ ). Sedentary screen time significantly decreases and physical activity time increases, both not influenced by different BMI-percentil groups. The physical self-concept of obese and overweight children is significantly lower ( $p \leq .027$ ) but still at a high level.

**Discussion:** The results disclose the possibility to enhance motor performance in obese and overweight children and counteract obesity with a community-based multi-component approach. The project 'healthy children in sound communities' seems to work not only for children with good motor abilities and normal weight but also for children with overweight problems and related deficits in their motor development.

Kromeyer-Hauschild, K., Wabitsch, M., Kunze, D. et al. (2001). Perzentile für den Body-mass-Index für das Kinder- und Jugendalter unter Heranziehung verschiedener deutscher Stichproben. *Monatsschrift Kinderheilkunde* 149(8), pp. 808-817.  
Naul, R., Schmeltz, D., Dreiskämper, D., Hoffmann, D & L'Hoir, M. (2012). Healthy children in sound communities (HCSC/gkgk) – a Dutch-German community-based network project to counteract obesity and physical inactivity. *Family Practice*, 29(1), pp. 110-116.

## 106 'Healthy Children in Sound Communities' – a longitudinal intervention and control study about BMI and physical fitness development of primary school children in the Dutch municipality of Cuijk

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**Introduction:** Recently published reviews (van der Horst et al., 2012; Niederer et al., 2012; Wang et al., 2013) on reduction of overweight and physical inactivity of younger children show the importance of integral approaches including schools, communities, sport clubs, and parents. The intervention project healthy children in sound communities (hcsc; Naul et al., 2012) has the aim, that by an integrated model of communities, schools, sport-clubs and scientific support motor ability and life quality of primary school children can be sustainably improved. Intervention time is four years, in which motor ability and BMI as well as psychological and social factors are analyzed.

**Methods:** In this paper results of intervention group in HCSC-community Cuijk (NL) are compared with the results of a control group of children from the same city. Results of t1 (at the beginning of the intervention) and t3 (after two years) for motor abilities (Situps, Pushups, Standing Broad Jump, Jumping Sideways, Balancing Backwards, 6min Run and 20m Run) and for BMI are analyzed. The sample of the groups included 80 children ( $M_{age t1} = 6.89$ ,  $SD = 0.49$ ,  $M_{BMI t1} = 15.70$ ,  $SD = 2.21$ ) of the intervention and another 45 children of the control group ( $M_{age t1} = 7.58$ ,  $SD = 0.39$ ,  $M_{BMI t1} = 15.35$ ,  $SD = 2.40$ ). Children of the control group attended intervention and non-intervention schools of the HCSC-project.

**Results:** Results show significant higher increase for Situps ( $F(1,123) = 4.27$ ,  $p = .04$ ,  $n^2 = .03$ ), Push Ups ( $F(1,123) = 39.37$ ,  $p < .001$ ,  $n^2 = .24$ ), Jumping Sideways ( $F(1, 123) = 20.75$ ,  $p < .001$ ,  $n^2 = .14$ ) and 20m Run ( $F(1,123) = 6.0$ ,  $p = .02$ ,  $n^2 = .05$ ) for the intervention group. There is a tendency that BMI increases slower in intervention group than in control group ( $F(1,122) = 2.41$ ,  $p = .12$ ).

**Discussion:** The results underline the impact of structured community-based intervention programs to support an active and healthy lifestyle of young children. Especially the fact that children in the intervention program develop better than children from control group show that community-based programs in primary schools can be a successful opportunity to counteract obesity and physical inactivity.

Naul, R., Schmelt, D., Dreiskämper, D., Hoffmann, D. & L'Hoir, M. (2012). Healthy children in sound communities (HCSC/ gkgk) – a Dutch-German community-based network project to counteract obesity and physical inactivity. *Family Practice*, 29 (1), pp. 110-116.

Niederer, I., Kriemler, S., Zahner, L., Bürgi, F., Vincent, E., Marques-Vidal, P., & Puder, J. J. (2012). BMI Group-Related Differences in Physical Fitness and Physical Activity in Preschool-Age Children: A Cross-Sectional Analysis. *Research Quarterly for Exercise & Sport*, 83(1), 12-19.

Van Der Horst, K., Chin A. Paw, M. J., Twisk, J. W. R., & Van Mechelen, W. (2007). A Brief Review on Cor-relates of Physical Activity and Sedentariness in Youth. *Medicine & Science in Sports & Exercise*, 39(8), 1241-1250.

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### 107 Healthy Children in Sound Communities (HCSC CN-DE): a German and Chinese Obesity Intervention Programme for Primary School Children

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**Introduction:** Recently published reviews on effectiveness of childhood obesity prevention programmes document the importance of multi-components concepts (PA, nutrition, media) and the necessity of cross-sectoral approaches with relevant stakeholders (schools, community offices of education and public health, sport clubs, parents). The intervention project HCSC with 60-90 minutes of daily PA follows this paradigm. In this paper the physical results of Chinese and German primary school children after one year of intervention are compared.

**Methods:** German and Chinese primary school children take part annually in BMI and motor test measuring with additional surveys on quality of life, media consumption, physical activity, physical self-concept and class-climate. Presented results show motor and BMI development of the German cohort (n = 813, Mean<sub>Aget1</sub> = 6.95, SD = 0.51) and the Chinese cohort 1 (n = 309, Mean<sub>Aget1</sub> = 7.61, SD = 0.31).

**Results:** At the start (t 1) Chinese children do have better values for sit-ups (Mean Chinese = 20.52, SD = 5.74, Mean German = 13.43, SD = 5.56), standing broad jump (Mean Chinese = 130.36 cm, SD = 15.70, Mean German = 100.44 cm, SD = 18.82) and sit & reach test (Mean Chinese = 12.54 cm, SD = 4.31, Mean German = 3.47 cm, SD = 4.99). Baseline-Results of 6min-run and 20m run are comparably good. After one year of intervention (t

2) the Chinese and German cohorts show a significantly higher level of performance in motor items. The DE-cohort increases significantly better in the 6min-run and the 20m run than the CN-cohort, the CN-cohort progresses better in sit & reach than the German children. The mean for the BMI reference value was reduced significantly for the Chinese cohort (from 4.83 down to 4.70) after one year of intervention of daily PA.

**Discussion:** The results support the impact of structured community-based intervention programs of the HCSC multi-component concept also in China. A specific focus must be laid on culture-specific physical activity patterns (e.g. sit & reach and 6min run) to improve children's motor abilities.

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Kromeyer-Hauschild, K., Wabitsch, M., Kunze, D. et al. (2001). Perzentile für den Body-mass-Index für das Kinder- und Jugendalter unter Heranziehung verschiedener deutscher Stichproben. *Monatsschrift Kinderheilkunde* 149(8), pp. 808-817.

Naul, R., Schmelt, D., Dreiskämper, D., Hoffmann, D & L'Hoir, M. (2012). Healthy children in sound communities (HCSC/gkgk) – a Dutch-German community-based network project to counteract obesity and physical inactivity. *Family Practice*, 29(1), pp. 110-116.

Wang, Y., Wu, Y., Wilson, R.F., Bleich, S., Cheskin, L., Weston, C., Showell, N., Fawole, O. Lau, B., Segal, J. (2013). Childhood Obesity Prevention Programs: Comparative Effectiveness Review and Meta-Analysis. *Comparative Effectiveness Review*, 115.

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