

Does Physical Activity Promote Motor Performance and Reduce Weight in Overweight and Healthy-Weight Preschool Children?

The Impact of a 20-Month Physical Activity Intervention in Child Care Centres

Heinz Krombholz

Overweight or obesity in children is considered a severe challenge and excessive weight is associated with increased health risks and psychosocial constraints (Haslam, & James, 2005). Overweight children are less physically active and have less well developed motor skills. Interventions on overweight try to reduce food intake and / or to promote physical activity. However, there is a noticeable lack of empirical work that examines the effects of physical activity programs on overweight, especially in the preschool years **The study tested the hypothesis that a child-centered physical activity intervention in child care centers over 20 months would promote motor performance and reduce weight in preschool children.**

Method

Subjects were children attending child care centers in Munich. To ensure comparability of intervention and control groups, child care centers were matched for size (number of children and area) and socioeconomic status of the area. All parents agreed to their children participating in the study. The **intervention group** ($N = 211$) received at least one session of physical education of 45 min. per week and sessions of physical activities (at least 20 min.) on the other days. Teachers were informed about the benefits of physical activities for preschoolers and were trained to hold physical education sessions.

Control children ($N = 217$) experienced the regular curriculum, which consisted of one session of physical activities of 45 min. per week.

Children were tested **three times**, at the beginning of the intervention (mean age 55 months) and again after 11 and 20 months.

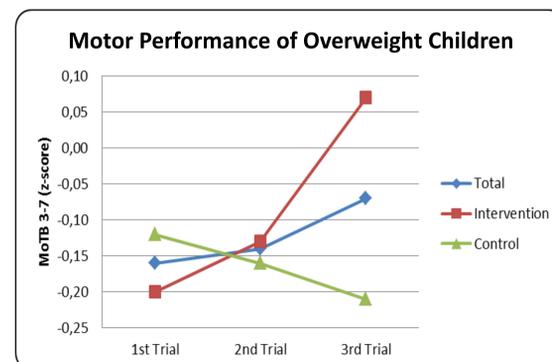
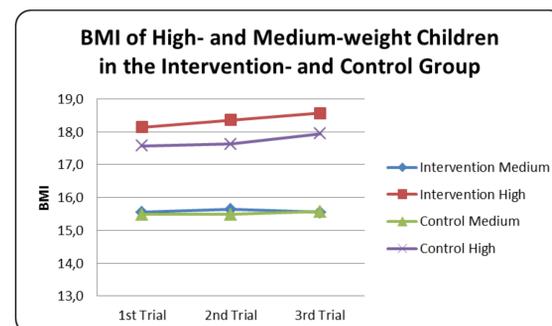
At **each trial**, aspects of **physical growth** (height, weight, BMI, skinfold-thickness) and **motor performance** (**Motor Test Battery MoTB 3-7**, Krombholz, 2011) were measured.

The **MoTB 3-7** consists of tasks that assess three dimensions:

- **motor coordination** (5 items: Forward balancing, Hopping on the right and left foot, Backward balancing and Lateral jump),
- **physical fitness** (3 items: Standing broad jump, Shuttle run, Hanging task) and
- **dexterity** (both hands).

Results

- The top 20 percent of children according to BMI-scores at the beginning of the study ("overweight") were inferior in motor performance compared to healthy-weight children.
- At the end of the study children in the intervention group surpassed children in the control group in motor performance (body coordination, physical fitness, and dexterity).
- **Overweight children in the intervention group gained better motor scores than overweight children in the control group**, but the intervention had no effect on body weight, BMI or skinfold thickness.



Discussion

The results of the study show that the motor development of pre-school children can be promoted by offering them more opportunities for physical activities in child care centers. Children in the intervention group surpassed control children in motor performance at the end of the study. In contrast, increased physical activity had no effect on indices of body weight (BMI and skinfold-thickness), which is hardly surprising, since the number of overweight children was low and there were no efforts to influence food intake of children. However, to enhance motor skills is an important educational aim and may have other benefits: increasing confidence and abilities may encourage overweight children to engage in physical activities and may have direct effects on weight in the long run.

Preventing childhood obesity: what works?

Overweight or obesity are important public health issues, especially in children from lower socioeconomic and immigrant backgrounds. It is necessary to prevent childhood overweight and to reduce weight in affected children. Early childhood centres need to provide children with sufficient indoor and outdoor space and equipment to stimulate gross motor activities, and teachers play an important role in fostering active play. To be effective, **not only the educational sector, but all sectors of society should be mobilized and the negative effect of commercial food products on children's diet must be reduced** (WHO, 2006).

References

- Haslam, D. W. & James, W. P. (2005) Obesity. *Lancet*, 366, 1197-1209.
- Krombholz, H. (2011) *Testbatterie zur Erfassung motorischer Leistungen im Vorschulalter MoTB 3-7. Beschreibung, Gütekriterien, Normwerte und ausgewählte Ergebnisse*. URL: <http://psydok.sulb.uni-saarland.de/volltexte/2011/2711/>
- World Health Organization WHO (2006) *WHO European Ministerial Conference on counteracting obesity*. URL: <http://www.euro.who.int/en/what-we-do/health-topics/noncommunicable-diseases/obesity/publications/pre-2009/european-charter-on-counteracting-obesity> (Sept. 2012)