

Research Project

SNF Co-Projekt mit CHUV Lausanne

Third-party funded project

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Background: The potential health benefits of a reduction in overweight or an increase in physical activity and fitness even in the absence of weight changes are of considerable public health importance. Unfortunately, interventions to treat childhood obesity resulted only in small changes in body fat and were marked by a substantial relapse rate. Thus, primary prevention is absolutely essential. However, most school- or family-based prevention programmes have faced many challenges in reducing obesity and/or physical inactivity longterm (1 year). Based on longitudinal and intervention data, changes in the quantity and quality of nutrition (especially intake of fat and sweetened beverages), a decrease in physical activity, an increase in sedentary behaviour and a decrease in sleep duration are thought to be the main environmental causes for the development of obesity in young children after infancy. As kindergarten teachers in Switzerland receive almost no training in nutrition or physical activity and the preschool period might be one of the critical periods for the programming of energy balance regulation, we propose an intervention project with the goal of diminishing obesity, physical inactivity low fitness and their health risks in kindergarten children, while addressing different shortcomings of previous intervention programmes. **Working hypothesis:** We postulate that an enjoyable, but stringent and challenging lifestyle intervention in preschool/kindergarten children promoted by a multidisciplinary expert team during one school-year can reduce body fatness and augment aerobic fitness. **Specific aims:** Primary endpoints of the intervention are a decrease in total and central body fatness and an increase in aerobic fitness in the intervention group compared to the control group after one year. Secondary outcomes are differences in physical activity, in overall fitness, in nutritional behaviour, in media use as well as in quality of life. In a subgroup of children, the effect of this programme in diminishing insulin resistance and other metabolic cardiovascular risk factors will also be tested. **Methods:** We will compare in a randomized trial the effect of this intervention in a total of 40 kindergarten classes in the French (canton Vaud) and in the German (canton St. Gallen) part of Switzerland. The novelty of this programme is that health promoters, trained in physical education, will receive further postgraduate training (e.g. in nutrition, education, psychology) and will then in reward teach several kindergarten teacher hands-on. This trained health promoter will intervene on the level of the kindergarten teacher, the parents, the local community and also on the level of the children following a professional pre-specified curriculum in the kindergarten that focuses primarily on physical activity, healthy nutrition, media use and sleep duration. In each of these 4 parameters, we will focus on variables that have shown in longitudinal or interventional data to be related to obesity or increased cardiovascular risk. Besides the curriculum, this programme package also includes information evenings, workshops and fun homework packages and will be partially adapted from our experience from the Kinder- und Jugendsportstudie focusing on increasing physical activity in elementary schoolchildren in Switzerland. The primary target group are the kindergarten children themselves, but their younger siblings will also be evaluated. Measurements will be performed before and

after the intervention as well as one year thereafter. Thereby, (central) body fatness will be measured by physical examination (waist circumference, sum of 4 skinfolds), aerobic fitness will be measured by the 20 m shuttle run test. We will assess physical activity by accelerometers worn over 1 week each and overall fitness by the “Karlsruher Motoriktest” and the “Motoriktest für vier- bis sechsjährige Kinder” (MOT 4-6 test). Endpoints like changes in nutritional intake, nutritional behaviour, in media use as well as in quality of life and health awareness will be assessed by validated questionnaires or semi-qualitative interviews. In a subgroup of children, fasting blood will be drawn to estimate insulin resistance, blood lipids and markers of low-grade chronic inflammation. **Expected value of the proposed project:** Should our kindergarten intervention prove to be effective in increasing fitness and decreasing body fatness, we would provide a scientific base for a wider implementation of such a project. Our further goal is to explore the link between physiological, clinical, epidemiological as well as psychological aspects of obesity, low fitness and physical inactivity in young children and derive general and culture-specific ideas that help to address them.

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