

## Publication

A cluster randomised school-based lifestyle intervention programme for the prevention of childhood obesity and related early cardiovascular disease (JuvenTUM 3)

### JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

**ID** 4376354

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**Year** 2011

**Title** A cluster randomised school-based lifestyle intervention programme for the prevention of childhood obesity and related early cardiovascular disease (JuvenTUM 3)

**Journal** BMC Public Health

**Volume** 11

**Pages / Article-Number** 258

Childhood obesity is not only associated with adult obesity but also with increased risk of adult onset of type 2 diabetes and subsequent coronary heart disease. The potential effects of school-based health intervention programmes on cardiovascular risk and surrogate markers are unclear, as only few studies have attempted to investigate a complete risk profile including a detailed laboratory analysis or micro- and macrovascular function. In this study a comprehensive school-based randomized intervention programme will be investigated in 10-14-year old children addressing the influence of lifestyle intervention on inactivity, cardiometabolic risk factors and early signs of vascular disease.; 15 secondary schools in Southern Germany are randomly assigned to intervention or control schools. Children in the fifth grade (10-11 years) will be observed over four years. The study combines a school-based with a home-based approach, aiming at children, teachers and parents. The main components are weekly lifestyle-lessons for children, taught by regular classroom teachers to increase physical activity in- and outside of school, to improve eating patterns at school and at home, to reduce media consumption and to amplify well-being. In 4-6 annual meetings, teachers receive information about health-related topics with worksheets for children and supporting equipment, accounting for school-specific needs and strategies. Parents' trainings are provided on a regular basis. All examinations are performed at the beginning and at the end of every school year. Anthropometry includes measurements of BMI, waist and upper arm circumferences, skinfold thickness as well as peripheral blood pressure. Blood sampling includes lipid parameters, insulin, glucose, hsCRP, adiponectin, and IL-6 as well as testosterone and estrogen to determine maturation status. Vascular function is non-invasively assessed by measuring arterial stiffness in large arteries using a sphygmograph and by analysing arteriolar and venular diameters in the retinal microcirculation using a non-mydratric vessel analyser. A questionnaire is filled out to determine daily physical activity, motivational factors, dietary habits, quality of life (KINDL-R) and socio-economic data. Physical fitness is assessed by a six-item test battery.; Our study aims to provide a feasible long-term intervention strategy to re-establish childhood health and to prevent obesity-related cardiovascular dysfunction in children.; NCT00988754.

**Publisher** BioMed Central

**ISSN/ISBN** 1471-2458

**URL** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3094248/>

**edoc-URL** <https://edoc.unibas.ch/62119/>

**Full Text on edoc** No;

**Digital Object Identifier DOI** 10.1186/1471-2458-11-258

**PubMed ID** <http://www.ncbi.nlm.nih.gov/pubmed/21513530>

**ISI-Number** WOS:000290520500001

**Document type (ISI)** Article