Reviewer's report

Title: Objectively determined physical activity levels of primary schoolchildren in south-west Germany

Version: 1 Date: 6 May 2013

Reviewer: Sigmund Anderssen

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The purpose of this study was to objectively determine the amount of children’s PA and sedentary time with a multi-sensor device. The authors conclude: "roughly half of primary schoolchildren in first and second grade meet current PA recommendations."

Comments

The authors report the results within a topic that is important in public health. However there is potential for improvement in the manuscript.

Major issues requiring attention:

Page 5 The description of study population is brief, and some more information is needed. The authors write that a subsample from a large study was used. Explain how this subsample consisting of 32 schools were selected. Further, a total of 703 children were included in the study, but due to limited number of devices only 384 children provided physical activity assessments. How were these 384 children selected? How is the distribution between first and second grade children? Are there any differences between the children with PA assessments and those who did not take part in the PA assessments with regard to descriptive variables (weight, BMI, etc.)? If you have any information about season, please give that. Can you give some comments of the generalizability of the results? Please explain why 66 subjects were excluded from the analyses.

Page 6. Physical activity measurements. The authors need to describe the Actiheart, and to describe how the information from the HR and the acceleration were combined. When is HR used? Did you perform any step test etc for individual calibration of the ActiHeart?

Page 7, line 127-131: There is sex differences in time spent sedentary and time spent in MVPA. However, the associations between physical activity/sedentary time and overweight/obesity are not presented separately by sex. This is also the case for the associations between PA and 1st/2nd grade. Explain whether interaction terms have been tested and what these tests show.

Minor issues requiring attention:

1) Abstract line 5: The purpose is quite different in the abstract compared to the purpose given in the introduction.
2) The background is short - which is ok - however the level of precision should be improved.
   a. line 36. "A considerable amount of children however, does not meet these recommendation" What is "children" and what is "considerable"?
   c. Line 45. Please give information about the assessment method.
   d. line 47-48: The authors write that "PA data in younger children, however, is sparse." Specify what age groups you are referring to.
   e. Please give a brief rationale why objective assessment is superior to questionnaires when measuring physical activity.

3) Methods
   a. Line 78 I think it is wise to use Cole et al's reference values instead of German reference values.

4) Results. It is a bit strange that there were only 28% of the girls who met the recommendations when they on average had 103 min per day of MVPA.

5) Discussion
   a) Line 147-149. The authors write: "A previous study examining children's PA across Europe using accelerometer data also showed that nearly all 9-year-old children met MVPA recommendations." This is in contrast to the statement which is written in line 36 in the Background section. Please clarify.
   b) Line 158: The authors speculate that higher MVPA level among 2nd graders might be caused by higher sports club participation in this group. Do you have any questionnaire data to support this statement?

Kind regards
Sigmund Anderssen