Reviewer’s report

Title: Development of a measurement approach to assess time children participate in outdoor active play, organized sport, active travel, and curriculum-based physical activity

Version: 0 Date: 31 Dec 2017

Reviewer: Gregor Starc

Reviewer’s report:

Firstly, I apologise for a short delay in my review, but the second half of December is packed with reports and deadlines + holidays.

My general observation is that the paper is well written and thoroughly describes the measurement approach but could be improved, especially in the aspect of clearness and its applicative potential.

In the aspect of clearness it would be very helpful for readers to have a graphical scheme of data collection in samples 1 and 2. All the information is now included in the text but the approach is a complex one and as I was reading the paper I had to help myself by drawing the scheme to follow the development of the approach and its outcomes.

In the aspect of its applicability I would expect very clear statement on the applicability of the approach in practice. It is clear that the data processing included great efforts, a lot of manual labour and great care had to be taken to process the data for each individual case in the same manner.

In regard to applicability, I would advise the authors clearly to acknowledge the limitations of the describer approach:

Different devices give different estimations of physical activity time, intensity and duration, which means that the presented algorithms are not universally applicable. This gives room for improvement in the future when the technology becomes more reliable (we are currently still far from being able to reliably assess habitual physical activity patterns for prolonged periods, not only 7 days).

The described approach entirely ignores one of the biggest problems of objective assessment of physical activity in children, which is the intervention effect. Children start behaving differently when they are aware that they are being monitored. This can seriously distort any observation or algorithm of PA assessment. The only solution to this problem would be a comfortable technology (probably wrist-worn) that could be worn for very long periods of time without maintenance (very long battery time and memory capacity), in order for children to forget they are being monitored and start behaving normally.
the described algorithms are useful for smaller-scale studies but impractical for large-scale studies with thousands of children (the used devices are too expensive, the data processing too labour demanding, the involvement of parents is necessary…).

some types of activities sometimes overlap, for example, when we were monitoring a group of 100 children for several years we observed that the highest energy expenditure of many children was reached during their commuting from school to home because children were playing along the way. In lines 78 to 80 it is clear that the developed algorithm could not process this kind of situation.

Specific comments:

a) In lines 58 to 61, there is a statement that there are no valid methods for measuring outdoor play. In my opinion, this is an overstatement and should be revised. I know at least three studies that utilised some kind of objective methods:


In addition, there are other valid methods for objectifying outdoor play. Traditionally, researchers used observational approaches in which they videotaped children's outdoor play and then "extracted" various attributes of outdoor play from it, including intensity and duration of physical activity.

b) Lines 204-206 - why did you decide not to use the vigorous intensity along with the described three movement intensity.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes
Are the conclusions drawn adequately supported by the data shown?
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Yes

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