Reviewer’s report

Title: Comparison and validation of accelerometer wear time and non-wear time algorithms for assessing physical activity levels in children and adolescents

Version: 0 Date: 18 Aug 2018

Reviewer: Eivind Aadland

Reviewer’s report:

The present study aimed to assess agreement between different non-wear time algorithms applied to accelerometry and a diary (reference) in a small, convenient sample of children. Although the study builds on a sound piece of research, the paper does not exploit the potential of the data, and the study lacks reference to several essential papers in the field, which would allow for conducting better analyses and provide a much more nuanced discussion of the findings. In the current form, the paper provides very limited new insight. Some main points and concerns are given below:

1) Several previous studies have aimed at determining and/or compared different non-wear criteria for accelerometry, but is lacking in the present paper:


2) The analyses should be improved in several ways:

a. Use of Bland-Altman plots, showing both the bias (on a group level) and the random variation (on an individual level) would allow for a much better reporting and visualization of the findings than the plots given herein, which shows concordane. Please provide.

b. Aadland et al suggests reporting of number of non-wear periods per day (as done by Chinapaw et al, Toftager et al, and Aadland et al) provide a simple diagnostic tool for considering whether a choosen non-wear time criterion seems sensible. Please provide this information for both accelerometer data and the diary, which can be directly compared to these previous studies.

c. The present study is superior to Aadland et al regarding one point: specific time points for wear and non-wear were provided in the diary. This means that the dataset allows for determining the exact agreement for each period as wear and non-wear from the diary and the accelerometer files, not only a comparison of total wear time. This would provide a very good basis for evaluating the performance of the non-wear time criteria, given that you argue the diary is trustworthy, and would provide new knowledge in the field.

3) The present study recommends 30 min of consecutive zeroes as the best non-wear time criterion in children and youth, although previous studies have recommended 20 and 60 minutes. This is a critical issues that need to be thoroughly elaborated on, with reference to the findings and recommendations given in the abovementioned studies.

4) Please provide the diary as a supplemental file

5) Use of a diary is mentioned as the main strength of the study, but it can easily also be argued it is the study's most important limitation. Please state more clearly/elaborate on how/why you believe the self-report is trustworthy.

6) The term "PA patterns" is used in the study, but I do not see how the findings relate to patterns. I recommend "PA levels" are a better term.

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

No

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?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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