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: 1  Date: 17 Dec 2018

Reviewer: Eivind Aadland

Reviewer’s report:

I thank the authors for generally providing good answers and making appropriate revisions to my comments. Still, there are some more issues that need to be considered.

1) In line with my previous comment, the authors have highlighted that they extend the findings by Aadland et al (2018) as the diary allows for determining the exact agreement for each period of wear/non-wear page 14 line 7- (not only total wear). However, these analyses are not reported. Compared to the study by Aadland, conducted in a more than 10 times larger sample, this is the only (possibly) novel finding. The exact agreement must be analyzed using the Kappa statistic for every wear/non-wear period as reported in the diary. Please include.

2) Please use the same scale of all Bland Altman plots to ease comparison between the methods.

3) Page 14 line 19-: It is stated that only one previous study, in adults, have compared the effect of the non-wear algorithm on MVPA and the achievement of the PA recommendations (ref 17). As Aadland et al found no difference in MVPA between algorithms, the number of children that achieved the guideline amount of MVPA is obviously similar. Thus, please revise and include Aadland et al's findings in this paragraph.

4) Please refer to the Supplementary material in the text page 9 line 31-.

5) Agreement and concordance is used more or less interchangeably, and the concordance correlation is used as a measure of agreement, for example in the abstract. Please be aware that these terms, agreement vs reliability measures, (should) have specific meaning. I suggest using these terms in line with the paper by de Vet et al, Journal of Clinical Epidemiology, 59, 2006.

6) The number of non-wear periods, now included in the manuscript, have not been discussed. While this study found a maximum of 3 non-wear periods for the 30 min non-wear algorithm, previous studies have found a maximum number of 5-7 periods for this algorithm (Chinapaw, Toftager, and Aadland), which supports the choice of a longer non-wear criteria. Please discuss. Is the difference a result of a smaller sample (compared to the previous studies having around 1000 participants), thus, restricting the information?

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

No

**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:

Acceptable

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