Reviewer’s report

Title: A novel integrative procedure for identifying and integrating three-dimensions of objectively measured free-living sedentary behaviour

Version: 2 Date: 13 Sep 2017

Reviewer: Tasuku Terada

Reviewer’s report:

The reviewer would like to thank the authors for their responses. Please see below for further comments.

Comments

In response to comment 15, the authors argued that correlation analysis was important as devices were measuring different sedentary behavior, and did not agree with the use of Bland-Altman plots instead. I argue that they were all quantifying sedentary time. Additionally, some measures depended on data collected by the same device (e.g., SWA-sedentary time and SWA + AP sedentary time). It is no surprise these measures are significantly correlated. Bland-Altman plots allow visualization of the degree of systematic bias between the measures, as well as the range of variability. The reviewer feels that such analysis provides more meaningful information to readers than correlation. It is unclear why the plots were only added for the SWA-AP comparison.

The authors also stated in response to comment 15 that "A part of rationale underlying this study was to evaluate whether sedentary behavior should be identified by a single criterion or by different criteria". This cannot be addressed with their study design, which lacked a criterion measure for sedentary time. In my opinion, the authors should focus on reporting the systematic bias and limits of agreement between different measures. Such information can become useful in future studies.

In response to comment 17, the authors stated that "the three different measures of SB will enable us to investigate which components of SB (posture, activity intensity or both) are related to health endpoints" and continues to argue that different measures will have different relationships with health outcomes. This is questionable considering that there is much overlap between posture and activity intensity.

Specific comments:

Abstract:
Line 44. What is the number in parenthesis following r? Is this sample size? If so, why is it different from the sample size shown in table 1?

Add 0 before decimals.

Line 56. Word "phenomenon" should be removed.

Introduction:

Line 85. Add references between "time" and "however"

Line 111. EE needs to be spelled out.

Methods:

Line 173. What is almost perfect correlation? Please provide values for the almost perfect correlation and excellent agreement reported in previous studies.

Lines 177-180. This is redundant. Please either remove it or make it more succinct.

Line 187. The activity monitors were initialized and downloaded?

Lines 234-236. Was p <0.01 used for all analyses or just in the correlation analyses? Was this necessary? To reduce the likelihood of false positive is not sufficient to set p<0.01. To the reviewer, it seems to have been used to avoid explanation on one measure that showed a significant SED difference between weekday and weekend day (p=0.04). Please provide more clear rationale for setting p<0.01.

Results:

Line 295. What does it mean by "the plot does not indicate the presence of systematic bias"? The plot shows a systematic difference of close to 100 min/day. ANOVA also indicated sig difference.

Figures: Please show in the figures where significant differences are.

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.

No

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Unable to assess

**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

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Please indicate the quality of language in the manuscript:

Not suitable for publication unless extensively edited

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