Reviewer’s report

Title: Cross-sectional associations between personality traits and device-based measures of step count and sedentary behaviour in older age: the Lothian Birth Cohort 1936

Version: 0 Date: 04 Nov 2018

Reviewer: Anne Chu

Reviewer's report:

The primary research objective of this study was to examine the associations of personality traits of a Five Factor Model (FFM) and physical activity (PA) and sedentary behaviour (SB) in an elderly population using accelerometry-based measure. Overall the article is of decent quality and will be of interest to the community interested in caring for the elderly.

However, I have several queries and comments that need clarifications.

The main issue with the article is the assessment of only the step count but not physical activity intensity categories from the activPAL. I understand that this population might have very low-intensity PA due to old age, but the device is able to categorize activity as sedentary, light or MVPA; in which case I feel that the title shall not be stating "physical activity", but rather specifying "step count".

Also, I feel that the rationale of this paper is not strongly stated in the manuscript.

Abstract.

1. Background - "Low levels of PA and high levels of SB...": Please rephrase to better reflect the gap, e.g. It is essentially 'devise-based measures' rather than 'objective'. The field of PA is starting to avoid the word 'objective' for accelerometer assessments. There are many 'subjective' decisions in this, such as cut points. Hence, please amend the word objective to e.g. accelerometry-measured.

2. Methods - Please specify the type of "Regression model" used, was it linear/logistic regression?

Background.

Line 87- (≤ 1.5 metabolic equivalents (METs), missing one ")" in this line.
Lines 96-97 - The authors cited rs and r from the same study, has the study used both pearson and spearman's correlation coefficient analysis methods?

It will be helpful to elaborate and provide additional background on the five-factor model of personality for readers who are unfamiliar with this concept.

Methods.

Line 137 - Sedentary behaviour and physical activity was recorded continuously -&gt; …activity "data were" recorded…

Personality traits.

So how was each dimension of the FFM calculated? i.e. Was it a likert-scale question? Please describe in more detail.

Statistical analysis.

The authors did not justify the adjustment for the following factors in the following modes: Model 1 controlled for age and sex. Model 2 was the same as Model 1, and additionally controlled for BMI, and long-term illness.

Discussion.

What was the main public health importance/contribution of this paper that advanced the field?

Limitations - What about the generalizability of the results?

Line 284 - physical activity (e.g.33, 34) -&gt; ??

Lines 309 - 310: It is awkward to end this section with this single line here, "Our study is in line with previously reported lack of associations between personality and objectively measured sedentary behaviour.20"

**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.

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 recommend additional statistical review

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Please indicate the quality of language in the manuscript:

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