Reviewer’s report

Title: Neighborhood-based PA and its environmental correlates. A GIS- and GPS based cross-sectional study in the Netherlands

Version: 0 Date: 15 May 2017

Reviewer: Jasper Schipperijn

Reviewer's report:

Despite the very low response rate (only 305 out of 14889, about 2%), this is a manuscript that builds on a potentially interesting dataset. However, there are a number of shortcomings that need to be addressed.

The main outcome is a binary measure of living up to 150 minutes of weekly MVPA. However, 86% of the sample is meeting recommendations, which seems very high. Either the sample is not representative (which is not discussed at all), or the measure is not very useful when based on objective data. The 150 minute/week recommendation was developed based on survey data whereas this study uses objective data (i.e. the 150 minute criteria might not be very meaningful).

The authors also argue that using 'meeting the guidelines' as outcome is the main novelty of this paper, but I don't think that is true. E.g. the IPEN adult study has used this measure on a large international sample, see e.g. https://www.ncbi.nlm.nih.gov/pubmed/24781892 or https://www.ncbi.nlm.nih.gov/pubmed/27045735.

All in all, the main outcome measure needs to be carefully reconsidered as it is a) is not particular novel, and b) might not be very meaningful.

The use of GPS data is not very advanced, which is surprising given the other work from the same group of authors. It seems that it only has been used to determine 'time spent in the neighbourhood'. The argument that time spent in the neighbourhood is important to take into account is a good point, but it seems that the GPS data could have been used much better. E.g. to determine where activity actually took place. I.e. how much of the weekly MVPA took place inside and outside the neighbourhood? With the current analyses, MVPA could theoretically still happen entirely outside the neighbourhood.

Many methodological issues need to be explained better.
- 488 min (8 hours) as a valid day is a bit low. Was this only based on acc data? What was the epoch length for the accelerometer?

- Where GPS + acc data combined?

- There is very little information about the GPS data processing. Was anything done? If so what? GPS error? GPS non-wear? What was the epoch length for the GPS?

- What was the wear instruction for the GPS? On the same belt at the acc? Was the GPS on during the night?

- GIS variables need some more description. E.g. small green space. Was this only a size criteria (i.e. all spaces >0.1 ha but no more than 1ha)? Or also a type? How where the different landuses defined?

Discussion

- Why would more blue space be related to PA? Sailing our canoeing are unlikely to register well on acc., if the acc was worn. Also cycling along the edge won't register well on acc.'

- Limitations of the sample are not discussed

- Generalizability is not discussed

- Difference between Rotterdam and Maastricht is not discussed
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.

No

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