Reviewer's report

Title: Estimates of adherence and error analysis of physical activity data collected via accelerometry in a large study of free-living adults

Version: 1 Date: 5 November 2007

Reviewer: Ali H Mokdad

Reviewer's report:

General

The manuscript has lots of potential, but it is not focused. I would suggest that the authors focus on the utility of their findings for future researchers. Here are some comments:

1) In general (most cases) a researcher is interested in grouping his study subjects. Hence the ranking of physical activity levels is the crucial whereas the exact amount of activity is not the aim. Hence the authors need to show what are the implications of excluding the hours without the device on the ranking of the physical activity distribution in a study.

2) The subjects are a select group of people who choose to participate. What is the impact on the findings? How could this be applicable in the general population?

3) To focus on "removing the data observed during sleep" is not a major issue. The focus should be on removing the data during the day (not sleep). There is a big difference and the authors could use their self-reported data to provide useful information on that impact.

4) How could somebody wear this for 24 hours? If true these are outliers and need to be excluded (very unlikely in real life). The same should apply for folks who used the device for a very short time.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1) In line 82, what metabolic diseases? Please specify.

2) Line 94, reference 27 is from 1983.

3) Lines 97 to 101. What if I was wearing the device for 20 minute but sitting on
my desk (for the last 30 minutes, my score would be zero as I am doing this review)? The authors could refine their method by a combining the use of the zeros and the self reported data.

4) Lines 108-109. How could you judge your criteria by using your outliers? Need a better justification or strategy.

5) Line 117. What "preliminary analyses"?

Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests