Reviewer's report

Title: Smart wearable body sensors for patient self-assessment and monitoring: a systematic review

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Reviewer: Jeroen H Bergmann

Reviewer's report:

The general review “Smart wearable body sensors for patient self-assessment and monitoring” covers an important and growing research field. The aim of this review is to provide a review to summarise the developments and clinical utility of smart wearable body sensors.

Major Compulsory Revisions

The editorial team provided an update e-mail that noted that there was a major error in the title of the manuscript as it is not a systematic review but a commentary on smart wearable body sensors. This important change allows the content to better fit the criteria’s of the selected article type and it would be good to see these “article type” changes implemented throughout the article.

A good number of relevant scientific articles have been used to comment on the aforementioned topic. However, it is unclear how relevant sources were found. It would be good to describe what the approach was to obtain the relevant literature. This is especially important in a field that uses a range of names to cover the same concept. A more specific definition of Smart wearable body sensors (SWS) will also help readers to understand how this differs from other often used terms such as Body Sensor Networks (BSN).

If preferred a flowchart can be added to explain the search procedure. It would be useful to explain search procedures, as this topic crosses the boundaries of more traditional fields. It will also explain why certain articles might have been left out in the commentary.

The study should also highlight which other literature reviews and commentaries have been conducted within the scope of this research question. For example, the commentary might draw on Bonato’s paper from 2010. Ideally the commentary would point out the limitations (and strengths) of those other reviews and perspectives. It will also be good to subsequently highlight the additional value this commentary will bring.

In general, the articles referenced seem to be assessed with minimum criticism. There is little scrutiny regarding the validity of the devices presented. It would be good to describe the quality of the studies that apply these devices? How did these systems hold up against a gold reference system? What is the bias towards positive results in a field where many of the authors are also the system
developers? Missing information regarding critical assessment might provide a view that less than balanced. It would be good to comment on other major issues, such as the increase of data, analysis and management to often goes hand in hand with applying SWS.

The value of wearable clinical technologies needs to be set by randomised controlled trials. At the moment there is a lack of this kind of studies making it hard to state it has a major impact on the current clinical care. “Valid” applications in the laboratory often does not necessary translate to proper real-world applications, due to interference, motion artifacts, etc. This discrepancy between research and current clinical care will be important and interesting to comment on.

Minor Essential Revisions

Page 10 states that: “... 21.70(36.06) % residual short-term improvement in walking speed and 8.72(9.47) % increase in stride length with visual feedback, and 25.43(28.65) % in walking speed and 13.58 (13.1) % ...” I assume that the percentage and absolute values are given, but this is not very clear. Maybe add the units to clarify.

Page 15. “...reduce this number3-6.” It seems like reference format has been changed for this sentence.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

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

Declaration of competing interests:

I have no competing interests