Author’s response to reviews

Title: Feedback from physical activity monitors to enhance amount of physical activity in adults – a protocol for a systematic review and meta-analysis

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Author’s response to reviews:

Response letter SYSR-D-18-00404

Dear Dr. Bigna,

On behalf of our research group, I would like to thank you and the reviewers for a very fast and focused review process.

Below you will find a point by point reply to all the suggested revisions, which we appreciate very much.

The revised text is presented with the relevant line number.

I hope that the revisions are in line with the reviewer comments. If there is need for further clarification or revisions, please let me know.
Reviewer reports and responses:

Reviewer #1:
This protocol appears to utilise thorough and robust methods. Aside from some grammatical errors, my only query is with the clarity of the aims of the review. Upon reading the protocol, it appears that the intervention really is about 'feedback', seeing as both intervention groups and comparators will be using PAMs. 'Feedback' is not clearly defined however. The title and objectives are a little unclear, as I was expecting that the intervention would be the use of PAMs and the comparator would be some other form of intervention to increase PA. With a few adjustments, this can be made much clearer. I would suggest a clear definition of what you mean by feedback, an adjustment to the title to make it clear whether you are interested in PAMs+feedback or just PAMs vs other interventions.

Response and action
We would like to thank the reviewer for this useful comment. We agree that this matter should be clarified further. We have revised the following sections to meet this comment.

• The title has been revised to:
Feedback from physical activity monitors to enhance amount of physical activity in adults – a protocol for a systematic review and meta-analysis

• We have revised the objective to include feedback versus no feedback. Line 106.
The objective of this systematic review and meta-analysis is to estimate the effect on daily physical activity, moderate to vigorous physical activity and time spend sedentary when using feedback from PAMs in interventions, compared to control interventions where the participants do not receive feedback from PAMs, in participants aged 18-64. Subsequently, the impact of intervention, study- and participants characteristics on the effect of PAM will be investigated.

- We have revised the “types of interventions” to be clearer about the definition of feedback. Line 128.

Studies comparing any PAM-based intervention where the participants received feedback on their physical activity level measured by PAMs will be included. Feedback is defined as any result on physical activity, measured objectively by the PAMs including but not limited to inactivity notifications. The PAMs may be portable or wearable, electronic or mechanical, and driven by accelerometers, pedometers, or global positioning system (GPS).

I have noted some other small errors below:

Title
I’m not sure the title really conveys what the review is about. Having read on, it seems that the combination of PAMs and feedback is the intervention of interest?

- We have revised the title as described above. We hope that the new title is clearer regarding the aim of the paper.

Abstract
"objective of this systematic review and meta-analysis is to estimate the effect of PAM-based interventions [ON?] physical activity behavior in adults"
The objective of this systematic review and meta-analysis is to estimate the effect of PAM-based interventions on physical activity behavior in adults.

Background

"world's"

Globally, inactivity costs 54 billion USD in direct health care cost every year in United States [1]" - this is not global if limited to the US. Also add "the" before US.

Globally, inactivity costs 54 billion USD in direct health care cost every year [1].

"Furthermore strong evidence exists of physically active people will have" - "that" instead of "of"?

"prevalence of physical inactivity with 15% in 2030" - "by" instead of "with"
"motivate to behavioral change" - delete "to"

- Revised line 75.

"devises" - devices

- Revised line 79.

"characteristics is deemed in order to progress towards the World" - 'is deemed necessary'?
You've already defined 'WHO', so use that, rather than writing in full.

- Revised line 103.

An update of the body of evidence regarding PAMs effect on daily physical activity, moderate to vigorous physical activity and time spend sedentary with an investigation of the intervention, study- and participants characteristics is deemed necessary in order to progress towards the WHO’s declared goal to reduce the prevalence of physical inactivity [1], to inform future studies and to inform clinical guidelines.

Why limit to 64 years old? You have already mentioned some benefits that would be appropriate to older adults, e.g. improving activity in outpatients, and reducing risk of falls. Some justification needed here.
We appreciate this comment, but we limit the aim of the study because we already have an ongoing study focused on older adults. (https://systematicreviewsjournal.biomedcentral.com/articles/10.1186/s13643-018-0733-6).

We have used the same age spans as the WHO and this is now described further in the paper. Revised line 378.

When implementing technology interventions to facilitate behavioral change, some differences between younger and older populations are expected. Therefore, we have chosen to use the same age spans as the WHO, and focus this systematic review on adults below 65 years of age as we have an ongoing review focused on older adults [14].

"Subsequently, the impact of intervention, study- and participants characteristics on the effect of PAM will be investigated" - this has not been mentioned, there needs to be some rationale for looking at this.

Revised line 87.

Secondly, with the increasing body of evidence, it might be possible to do further subgroup analyses investigating which study- and participant characteristics that can explain effect size heterogeneity in the literature.

Methods

Pedometers are accelerometers

Yes, indeed, some pedometers are accelerometers, but not all. Pedometers can be electronic (accelerometers) or mechanical. Pedometers only counts the steps taken, while accelerometers can produce different types of data to calculate the number of steps taken, the MVPA, and other types of movement. No revision.
Types of comparator - this seems difficult to achieve if the controls are wearing/using PAMs. For example, looking at how many steps you have done on your fitbit is a form of feedback. Is the intervention of interest therefore 'feedback' (not use of a PAM), and how is this defined? I would have thought the intervention would be controls who are not using PAMs? This needs to be clarified/defined (see main point above).

- We understand the concern about this matter. Many studies will use PAMs in both groups to use for the primary outcome. Some PAMs will allow feedback to be held back or some will have to be sealed. If the control group receives any kind of feedback from the PAMs, the study will be excluded. Revised line 135.

In all control interventions, the participants cannot receive any kind of feedback on their physical activity level from PAMs. The participants of control interventions can wear PAMs, but if so, the PAMs should be sealed and all feedback should be disabled.

'MPVA' acronym should be defined before use.

- Revised line 150.

There are some abbreviations not in your list of abbreviations.

- The list of abbreviations has been revised and updated, line 398.
Reviewer #2:

1) In the paper, designate the corresponding author.

- Revised line 6.

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2) Results subsection should not appear in the Abstract.

- Revised in abstract.

3) Report detailed search strategy of each database in Supplementary Table(s).

- Revised line 185. The search strategies have been moved to the appendix.