Author’s response to reviews

Title: A randomised feasibility study to investigate the impact of education and the addition of prompts on the sedentary behaviour of office workers.

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<td>1. Background: Only 1 reference is provided for the statement 'High levels of sedentary behaviour (SB) have been associated with contributing to the risk of developing a number of long-term health conditions including cancer; cardiovascular disease; diabetes; obesity; musculoskeletal problems; muscle degeneration; osteoporosis; and depression' and the reference that is provided only looked at the association between sitting time and mortality.</td>
<td>Thank you for highlighting, this has now been amended to include 5 references in addition to the reference for all cause mortality (Line 64)</td>
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<td>2. Line 62 - the authors state that the risk between sedentary behaviour and chronic disease 'is independent to the amount of physical activity....'. Given that evidence has now emerged showing that very high levels of physical activity can attenuate and eliminate the risk I would suggest being more cautious with this statement</td>
<td>Good point. This has been changed as suggested to ‘may be independent’ (Line 64)</td>
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3. Reference 15 and 16 appear to be the same. Reference 16 is an updated review of the main Cochrane review: 15, but it is appreciated that only one needs to be referenced and this has been amended accordingly.

4. The authors talk about a 'control' group and 'intervention' group but it seems like both groups received an intervention with the only difference being that the 'intervention' group also received hourly prompts. It seems like this study is testing two types of intervention and whether one intervention may be better than the other rather than a true control vs intervention design. A control group is usually standard practice or no intervention at all. What the 'control' group received (i.e., education) in this study was not standard practice therefore I would suggest re-wording throughout to make this clearer. In line with this comment I feel that the title may need changing to reflect this e.g., 'A randomised feasibility study to investigate the impact of education and the addition of prompts on the sedentary behaviour of office workers.' The authors accept this point and have changed control and intervention group to education and prompt group – defining that the education group received only education and the prompt group received both education and prompts (Lines 34-35). The title has also been changed as suggested.

5. Line 109 - it states that the clusters were determined by geographical location in the office - does this mean that they were all in the same office? A clearer explanation of this would be helpful to judge contamination risk. Yes, participants worked in a large open plan office. This has been made clearer in the manuscript in a newly added ‘randomisation’ section. (From line 176)

6. Line 141 - the inclusion criteria states that office workers were included if they primarily sedentary computer based activities - it would be useful to state exactly what this means e.g., was it more... As this eligibility criteria was based on self-report, we did not stipulate an amount, but asked if they usually spent a lot of their working time at their desk. The fact this is self report...
than 50% of their work hours?

7. Line 140-142 - were there any criteria around number of days that the participants had to work e.g., a minimum of 3 days/week?

There was no minimum number of hours set, as working full time didn’t preclude participants not being in the office/available/ wearing the monitor for the minimum wear-time (see next response). ‘Full and part-time employees’ has been added under the recruitment section to illustrate that there was a mix (Line 161)

8. Line 190-191 - Do you have a justification for having a minimum of 1 workday given that this was a workplace intervention?

This was to maximise the amount of data that could be used in the analysis due to small sample and variation with compliance in wearing the monitor. A sentence has been added at the end of this paragraph outlining this justification. This paragraph has been moved to the ‘data analysis’ section (Lines 266-268)

9. Results: Line 219 - it would be helpful to know how many people were approached for the study/how many it was advertised to? This should also be included in figure 1.

Thank you for highlighting this. 150 people were approached, this figure has been added to the recruitment section (line 163) and also figure 1

10. Figure 1 is based on an individually randomised trial - please make it clear that this was cluster and had 2 clusters of which 1 was 'control' and 1 'intervention'

Thank you for highlighting this. Figure 1 has been adapted to include both an allocation and randomisation step. The authors hope this makes the use of cluster randomisation clearer (please note tracked changes not used in revised figure)

11. It would also be useful to know how many people were in the offices in total to know what % took part in the study (this links to some of the focus groups comments about people feeling uncomfortable about standing i.e., if not everyone was involved

This is a good point, thank you. 14% of those approached by email were recruited. This has been added to the results section (Line 277)
12. When you examined differences in behaviour between time points did you adjust for anything? E.g., baseline values, change in work hours etc

As there were no significant differences between sitting at work baseline variables they were not adjusted for in the analysis. A sentence has been added to clarify this.(Line 433)

13. Line 341 - It's stated that 'Comparison between the control and intervention groups for all key outcome measures showed a tendency for the intervention group to perform better in terms of a lower proportion of time spent sitting during work hours, less time spent sitting in prolonged (>20 minute and >30 minute) events, and more frequent events of shorter duration during working hours across all 3 time periods. Independent t-tests found these differences between groups to be not significant [p>0.05] at any time point (Table 2).' Which is correct but it is misleading because if you look at the comparison between change in these behaviours between the groups it appears that the 'control' group actually did better than the 'intervention' group e.g., change in total sitting work hours for the 'control' group at the intervention measurement period was ~6.5% reduction and the 'intervention' group was ~2.4% reduction. I understand that you were saying that the intervention group had more favourable values at all time points but it's the change that is important so I would suggest rewording this.

A good point and the subsequent paragraph has been expanded to highlight these differences: “There were small reductions from baseline to intervention in total sitting, sitting event duration, and both measures of prolonged sitting during work hours in both groups, with the EG making greater reductions than the PG (% work hours sitting: EG=−6.5%, PG=2.4%; mean sitting event: EG=−4mins, PG=−0.9mins; time in events >20mins: EG=−12.8%, PG=−6%; time in events >30mins: EG=−12%, PG=−4.2%). These reductions were not maintained at follow-up (Table 2).” Lines 439-441

14. Table 2 - Given that the activPAL measures standing and stepping it would be helpful for the readers to have these

The authors appreciate that levels of activity may help contextualise sedentary behaviour. However, as
outputs - at least at baseline 

this was not an outcome measure it was felt that such information should be presented separately from the data in table 2. Baseline step counts – all days and work hours - are now presented in table 1 and within the paragraph describing demographics (Lines 292-294). It was felt that baseline standing did not fit as a demographic so this has not been included.

15. Discussion: Line 366 - did you have any feedback forms from the education session? This is referring to the feedback given by the focus group participants, which has now been added to the text to clarify this (Line 457)

16. Line 368-370 - it's stated that the prompts were found to be a low cost, feasible method but this sentence would benefit from more interpretation from the study results i.e., yes they were low cost etc but probably need more variation (as some commented on the fact that they knew what was coming and they didn't read them) and it appears from the behaviour change results that they didn't have additional impact on top of the education (i.e., control group appear to make a larger change)

Yes, this is a good point and a sentence has been inserted into this paragraph to highlight the fact that, though feasible, prompts may not be effective a reducing SB. (Lines 464-464)

17. Line 436 - It's unclear how the authors came to the conclusion that 27 participants per group are needed to detect significant differences

This refers to the sample size calculation mentioned in ‘outcome measures of sedentary behaviour section’ it has been made clearer in this section (line 534) and previously mentioned in line 435 that the calculation was made using data from the feasibility study.
18. Line 439 - I'm not sure I understand what the authors are getting at regarding cluster randomisation, as cluster randomisation would be extremely important for a workplace intervention compared to individual randomisation. What is important for this type of intervention would be to recruit as many in the cluster as possible, particularly if individuals are self-conscious with standing more at work and regularly breaking up sitting

   This was intended to convey that cluster randomisation may have unintentionally led to measuring differences in behaviour caused by the behaviour of who people were surrounded by, rather than any intervention effect and that individual randomisation, whilst problematic in other ways may minimise this. This section of the limitations has been re-written to hopefully articulate this more clearly. (Lines 535-537)

Reviewer 2

19. There is room to enhance the justification for the focus on prompts and education, and the use of SCT. Further, the coherence of the paper could be enhanced by aligning the aims, methods, results, discussion and conclusion more clearly. Consideration of using the objectives as a structure may be useful. For example, it isn't immediately clear how the acceptability of the intervention has been evaluated and reported. Perhaps dividing the focus group data into acceptability and determinants of behaviour may work better?

   Changes have been made to the background section in accordance with the reviewers suggestions in points 22-25 below in order to expand justification for use of prompts, education and SCT (Lines 114-125). Thank you for suggesting that the structure of sections be changed in order to be more consistent in terms of order and terminology. This has been done throughout the methods, results and discussion. In doing so the focus group results have also been separated into acceptability and determinants of behaviour/SCT constructs

20. Line 66 - would 'spend' work better than 'spent'?  

   Thank you for the suggestion, this has been amended (Line 69)

21. Line 74 - could be useful to acknowledge this reference is a Cochrane review and more fully discuss the findings

   This sentence has been expanded to include that a Cochrane review was conducted and its overall conclusion
Lines 76-77

22. Line 83 - given the focus of the intervention, it would be valuable to give a clear definition of a prompt (perhaps from BCT taxonomy)

   Thank you for the suggestion, the BCT definition has been added (Line 103)

23. Lines 83 onwards - are the p values needed - not typically reported in an introduction

   Noted. The p values have been removed from the introduction

24. Line 90 Room to further discuss 'However, little is understood regarding the behavioural mechanisms employed by participants during the intervention' - what is meant here and could it be expanded to help 'set up' the current study? Perhaps this could be an opportunity to introduce SCT as a potential framework for understanding SB?

   The authors accept the reviewers suggestions that this should be expanded upon. This sentence has been deleted and further explanation given in the paragraph added below which has also been expanded to introduce the use of SCT as suggested in reviewer comment 19 above.

25. Line 92 - it would be useful to 'lead into' this next paragraph more so. It isn't clear why education has suddenly been introduced. Some consideration of why education could be an important intervention component may be useful?

   Yes, good point. This paragraph has been expanded upon and moved to earlier in the background section where it is felt it fits better with regard to the preceding paragraph (Lines 79-84)

26. Clear aim

   Thank you

27. Detailed study design - is all this information needed at this point? Reads more like a procedure section and leads to some repetition later (e.g., detail on activPAL data collection)? Could the method be reorganised?

   The author acknowledges that this section, intended as an overall outline, has resulted in some repetition within the methods. This section has therefore been reduced to a brief statement regarding the study design and details incorporated in other sections of the methodology now re-arranged in consideration of points 19 and 31.

28. Line 123- Why are the aims of the study presented again (and in more detail) -

   This was done to follow the CONSORT method of reporting in
would these not fit better at the end of the introduction?

The authors agree that the justification for message framing is better placed in the introduction and it has been moved (Lines 111-113). An example of a prompt has been added to the ‘prompt intervention’ section of the methods, thank you for the suggestion (line 187-188).

Line 157 - Example prompts would be good. Good to see justification for message framing but this could fit better in the introduction when discussing the potential of prompts?

Line 180 - could be useful to align the purpose of the focus groups more closely with the aims of the study in order to explicitly highlight how this aspect of the study is addressing the aims.

Thank you for highlighting this. The focus groups are described in the outcome measures section of the methods and have been changed to align better with the aims (Lines 208-214)

It would be helpful to organise the structure of the method so that it has consistent ordering - e.g., the ordering of the description of the measures (i.e., activPAL then focus groups) is then mirrored in the discussion of the analysis. Also if the ordering can mirror the aims - that would also help enhance coherence and make it easier for the reader to follow.

Thank you for highlighting the inconsistency. The method has been restructured to align more closely with both the study aims and the CONSORT guidelines for reporting. Information on focus groups now directly follows the primary outcomes listed in the methods which preceeds measurement of the secondary outcomes measured by ActivPAL, this ordering has been carried forward into the results and discussion.
32. Line 198 - I may have missed it, but it isn't clear to me where the data on the acceptability of the prompt intervention and education session were collected. Was it the focus groups? Also - unclear what 'reported descriptively and narratively' means. Perhaps there is room here (and in results and discussion) to more explicitly detail this.

Thank you for highlighting this. This information was taken from the focus groups. With rearrangements of the methods, focus groups now follow the list of primary outcomes which should make the connection between the two clearer.

33. Results

Could the aims be used to help structure the results / subheadings? - e.g., Eligibility, recruitment and retention as first subheading?

Thank you for highlighting this. The structure and headings have been changed to remain consistent through the methods, results and discussion.

34. Interesting and useful detail reported on participants

Thank you

35. Line 241 - Similar to previous point - it could be useful to re-orientate the reader to the purpose of the focus groups (i.e., align with aim/objective)

Thank you for highlighting this. The structure and headings have been changed to remain consistent through the methods, results and discussion.

36. Line 241 onwards - the focus group findings are interesting and the quotes are helpful in illustrating the key points.

Thank you

37. Line 260 - may be better to use the term Outcome Expectations to reflect SCT

Thank you for the suggestion. This has been changed throughout the manuscript.

38. Line 261 and 274 - aim to avoid 1 sentence paragraphs - perhaps introducing SCT in the introduction could help as these concepts would already have been introduced

Thank you for highlighting. These have been incorporated in the subsequent paragraphs.

39. Line 274 - a more accurate definition of self-efficacy is "the belief in one's capabilities to organize and execute the courses of action required to manage
prospective situations." (Bandura, 1995, p. 2)

40. Line 309- there is room to be a little more convincing as to how the discussion/quotes relate to observational learning.  
Thank you for highlighting. Some text has been added to clarify how discussions were felt to relate observational learning (Lines 415-417)

41. Line 345 - the method suggested inferential statistics were not conducted but t-tests were? Could be useful to include effect size calculations as well rather than just statistical significance?  
Thank you for the suggestion. Effects sizes have been added to table 2, and reported in the results (Line 432). Additionally, we have expanded our statistical section to include the fact that inferential statistics were performed (Lines 269-272).

42. Table 2- clearly presented  
Thank you

43. As indicated above - consistency of terminology/subheadings through the aims, methods, results and discussion would help enhance the coherence of the paper. In the discussion the subheading of 'Understanding the barriers….' is introduced but not really referred to previously  
Thank you for highlighting this. The subheadings and order of sections in all sections has now been changed in order to be consistent and add coherence to the paper

44. Some really interesting discussion around focus group findings - but could be useful to align discussion with results (in terms of ordering and terminology). E.G., in the discussion expectations are discussed first (unlike results)/ self-regulation/observational learning aren't referred to  
Thank you. The subheadings for the discussion have been aligned to previous sections and where possible the order in which the SCT are discussed remains consistent, although in order to facilitate flow and order of the intervention self efficacy and self-regulation are mentioned together. Some text has been added to highlight that all 5 themes are covered in the discussion (Lines 470-).
Line 452 - it isn't clear where the results are presented to support the conclusion 'both of these components was evaluated favourably…'

Thank you for highlighting. The fact this is derived from focus group discussions which was omitted in error from the results. This has been added to the results and clarified in the conclusions (Lines 301-, 457)