PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form ([see an example](#)) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below. Some articles will have been accepted based in part or entirely on reviews undertaken for other BMJ Group journals. These will be reproduced where possible.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Multicomponent Intervention to Reduce Daily Sedentary Time: A Randomized Controlled Trial
AUTHORS	Carr, Lucas; Karvinen, Kristina; Peavler, Mallory; Smith, Rebecca; Cangelosi, Kayla

VERSION 1 - REVIEW

REVIEWER	Genevieve Healy, PhD Senior Research Fellow The University of Queensland Australia
REVIEW RETURNED	31-May-2013

| THE STUDY | Please note that I have indicated "No" where I considered further clarification was required.

This manuscript reports on the findings from an intervention that used an internet-delivered program, portable pedal machine at work, and a pedometer to reduce daily sedentary time (primary outcome).

My main concern regarding this study is that although the authors base their rationale on the need for sedentary behaviour interventions, all of the intervention elements appear to be targeting increases in physical activity rather than specifically addressing reducing sedentary (i.e. sitting) time. Furthermore, the ability of the step watch to measure their primary outcome of sedentary time is unclear. The authors also do not address the potential influence of the organisation on the intervention findings (e.g. did they obtain manager support for use of the pedal machine / for logging on to the site?).

Specific comments are below.

1. Line 29: clarify that it is excessive time spent in sedentary behavior: not all sedentary behavior.
2. Line 30: be consistent in the terminology: multipronged vs. multicomponent.
3. Line 32: clarify that participants had to be overweight
4. Line 36: include how sedentary time / PA time were measured
5. Lines 41-45: include actual amounts, not just p values.
6. Line 85: suggest "excessive time spent in" rather than "prolonged" to differentiate from looking at prolonged, unbroken bouts of sitting
7. Lines 87-90: reference 8 is cross-sectional – therefore, do not use causal language (reductions). Also suggest adding some of the more recent experimental evidence on the acute cardio-metabolic benefits of regularly interrupting sitting time. e.g. Dunstan et al., Diabetes Care 2012; Duvivier et al., Plos One, 2013.
8. Introduction: need to include a more comprehensive overview of |

the sedentary behaviour intervention literature if this is going to be the primary rationale for the study. There have been several workplace interventions using activity permissive workstations from both the musculoskeletal and physical activity literature. The more recent of these, where sedentary time has been directly and objectively measured (e.g. through activPAL) have seen substantial reductions in workplace sitting time (e.g. Alkahajah et al., AJPM 2012). There have also been interventions conducted in general population addressing reducing sedentary time across the day (e.g. Gardiner et al., AJPM 2011).

9. Introduction: there also need to be a rationale for delivering interventions at the workplace, and some of the considerations for workplace interventions. This includes consideration of the organisational influences on behavior change.

10. line 125: rationale for the 12 week time frame is needed.

11. Line 127: the inclusion criteria refers to inactive adults (i.e. not meeting PA guidelines), rather than sedentary adults (i.e. high daily sedentary time). Was there any screening or measurement of their actual daily sitting time?

12. Line 130: How many potential participants were there? How many physical locations? i.e. please describe the broader sampling pool, and whether any participants were in visible proximity of each other (e.g. this could have impact via peer support for change).

13. Line 139: Move sample size up to here.

14. Line 140: A large number of people were excluded due to ineligibility. Which criteria was not met? Was this information not included in the recruitment flyers?

15. Line 142: remove the additional "the"

16. Line 148: Was a sensitivity analysis on the full sample vs. completers?

17. Lines 148-149: These findings belong in the Results.

18. Intervention group: clarify if there was any interaction with the organisation / the line managers to enable the use of the portable pedal machines / access to the program while at the workplace.

19. Lines 181-187: clarify whether the internet program included any messages specifically targeting reducing sitting time. Also clarify whether both work and outside of work was addressed.

20. Line 198: provide information on the reliability / validity / responsiveness of the step watch for measuring sedentary time.

21. Line 227: clarify how sedentary time was derived from the step watch, and what data reduction and data processing steps were implemented, and how variations in wear time were taken into account.

22. Statistical analysis: was the evaluation of group differences adjusted for baseline? Were covariates considered? Need to include sample size calculations higher, and specify what assumptions were made / what the calculations were based on.

23. Lines 237-240 and Table 1. Testing of baseline differences within intervention trials is controversial, and often recommended to be avoided (e.g. Pocock, S.J., Assmann, S.E., Enos, L.E., Kasten, L.E., 2002. Subgroup analysis, covariate adjustment and baseline comparisons in clinical trial reporting: current practice and problems. Statistics in medicine 21:2917-30. Roberts, C., Torgerson, D.J., 1999. Understanding controlled trials: baseline imbalance in randomised controlled trials. BMJ 319:185.

24. Line 269: Did the same assessor measure the waist circumference at both time points? Was there any testing for assessor differences?

25. Line 311: Change the term "sedentary" to "inactive".

26. Line 333: Again, please remove the use of causal language

| | (reduced) for this cross-sectional study.
27. Line 345: Could another reason for the high compliance be the daily reminders?
28. Lines 363-365: need to report this in the results and suggest doing a sensitivity analyses.
29. References: There is a mix of long form and abbreviations in the referencing.
30. Other: what is the cost associated with the study? (pedal machine, internet access, pedometer) |
|---|---|
| **RESULTS & CONCLUSIONS** | 1. Table 1: you are also looking at % in addition to mean (SD). If you are going to report on the differences between groups, then you should note in the Table which tests that you have undertaken (t-test? Chi-square?)
2. Table 2: please include a column of the intervention effects, adjusted for baseline values, with the relevant statistical tests and covariate adjustment noted in the Table footer.
3. Table 3: please include a column of the intervention effects, adjusted for baseline values, with the relevant statistical tests and covariate adjustment noted in the Table footer. Please also include units of measurement.
4. Table 4: what was the variation in the compliance rate?
5. Line 312: difficult to see the increases in light intensity activity without the intervention effects reported in the tables.
6. Line 314: would argue that this intervention does not specifically reduce sedentary time, rather, it is aimed at increasing physical activity.
7. Line 315: As per the introduction: there have been several recent worksite studies that have specifically targeted reducing sedentary time; as well as numerous studies from the ergonomic literature that have used activity permissive workstations to increase activity. These should be referenced and referred to. |
| **REPORTING & ETHICS** | 1. Line 138: Clarify if written informed consent was obtained. |

| **REVIEWER** | Abigail S. Katz, PhD
Research Associate
HealthPartners Institute for Education and Research
USA |
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| **REVIEW RETURNED** | 06-Jun-2013 |

| **THE STUDY** | Although the authors adequately address study attrition (i.e. differential drop out rate), the manuscript could have benefited from some discussion regarding study recruitment. A large proportion (75%) of potential/interested subjects were excluded from participation due to not meeting the eligibility criteria. Why was this the case? Were recruitment messages not aligned with participation criteria?
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The Motivational Website is said to be depicted in Figure 4 ("Group Descriptions" section, line 176). This figure does not appear in the supplemental documentation. |
|---|---|
| **RESULTS & CONCLUSIONS** | Overall, the results are credible. One finding, however, merits some discussion. Authors found a group x time effect for waist circumference, though none was found for BMI. This discrepancy should be noted in the discussion section given that the two measures are closely related. |
| **GENERAL COMMENTS** | Overall, a solid manuscript representing an important contribution to the limited scholarship in this area. |

	One minor revision recommended:
	The Introduction section asserts that the study lacked "any accompanying behavioral intervention," (line 109) yet the article goes on to describe the key role of the motivational intervention (website) as part of the multi-component intervention.
	For example, the important role of the motivational intervention is included in the Discussion section (lines 348-350). The authors suggest that the motivational intervention enhanced participant compliance with the pedal machine compared to a previous study. Additionally, participants reported that self-monitoring on the website was among the most helpful tools for reducing their study time.
	Behavioral and motivational interventions share many similarities. The introductory claim that the study lacked any behavioral intervention is misleading and should be removed or edited to clarify the key role of the motivational intervention in contributing to both study results and process outcomes.

REVIEWER	Kiran Nanchahal Senior Lecturer London School of Hygiene & Tropical Medicine UK
REVIEW RETURNED	11-Jun-2013

THE STUDY	The authors stated under Design/Statistical Analysis that the sample size was calculated but there is no indication on the number of participants required. A total of 49 participants were randomised - was this an adequate sample size?
RESULTS & CONCLUSIONS	The results are generally well-presented. However, it is unclear what the P value column in Tables 2 and 3 refer to - the difference between groups or within groups? The footnotes in Table 3 seem superfluous. There seems to be a mistake in reporting the results of the helpfulness on the Likert scale- isn't the median score for quite helpful equal to 4.0 rather than 5.0?
	Under Discussion; the authors state that there was an increase in 'light and moderate intensity activity' but only % time moderate was statistically significantly increased (Table 2).

VERSION 1 – AUTHOR RESPONSE

Reviewer: Genevieve Healy, PhD
Senior Research Fellow
The University of Queensland
Australia

This manuscript reports on the findings from an intervention that used an internet-delivered program, portable pedal machine at work, and a pedometer to reduce daily sedentary time (primary outcome).

My main concern regarding this study is that although the authors base their rationale on the need for sedentary behaviour interventions, all of the intervention elements appear to be targeting increases in physical activity rather than specifically addressing reducing sedentary (i.e. sitting) time. Furthermore,

the ability of the step watch to measure their primary outcome of sedentary time is unclear. The authors also do not address the potential influence of the organisation on the intervention findings (e.g. did they obtain manager support for use of the pedal machine / for logging on to the site?).

We thank the reviewer for these thoughtful comments. In response to the comment on whether this is a physical activity or sedentary intervention, we agree that we did not adequately describe the sedentary focus of the intervention. A major component of this intervention was providing sedentary employees access to a portable pedal machine at work with the aim of promoting what we call 'active sitting' rather than moderate to vigorous intensity activity. Because participants were sedentary employees working in professional environments, the rationale for providing them pedal machines at work was to allow them to move their legs at an intensity they could perform for long periods throughout the day without causing them to perspire. Participants randomized to the intervention group were informed of this rationale during their orientation to the device at the beginning of the study. Further, given the accepted definition of sedentary behavior ("any waking behavior characterized by an energy expenditure ≤ 1.5 METs while in a sitting or reclining posture"), the pedaling these participants were engaging in (average of 9.0 mph as measured with the pedal machine software) while sitting at their desk was determined to be of light intensity based on our work in a previous study (Carr and Mahar, 2012).

This intervention website also promoted reduced sedentary time via messages posted on the homepage and delivered via email. Examples of specific messages included: "Weather not cooperating today? Use your pedometer to find a 200 step (roughly 2 minute) walking route in the hallways of your building. Try to take a mini walk 5 times throughout your day for an extra 1000 steps!" and "Did you know standing up burns more calories than sitting? Maybe it's time for a break? " Finally, the name of the study was posted on both study advertisements and at the top of the website homepage which read "Pedal@Work: Reducing time spent sedentary..." We have added language to more clearly describe how this was a sedentary specific intervention in the Methods section on pages 7 and 8.

Regarding our use of the StepWatch, we chose this monitor specifically as it was one of the only objective monitors available at the time that fastened to the ankle making it ideal for measuring both pedaling and walking behaviors. Further, our group recently published a paper demonstrating the StepWatch as acceptable for discriminating between sedentary and light intensity physical activity during both walking and pedaling activity (Carr and Mahar, Journal of Obesity, 2012). While the StepWatch is limited in its ability to accurately determine pedaling intensity, we believe it was the best monitor to use for this particular study. We have added language to this point to the manuscript on page 8.

Regarding the influence of the organization on the intervention findings, we did require employees obtain managerial support prior to participation in the study during the eligibility screening process. We have added a comment about this to page 5.

Specific comments are below.
We have addressed each of these specific comments in the text as well and again thank the reviewer for such a thorough review. We believe these changes have greatly improved the quality of this manuscript.

1. Line 29: clarify that it is excessive time spent in sedentary behavior: not all sedentary behavior. – This has been changed.
2. Line 30: be consistent in the terminology: multipronged vs. multicomponent. - This has been changed.
3. Line 32: clarify that participants had to be overweight - This has been changed.

4. Line 36: include how sedentary time / PA time were measured - This has been changed.

5. Lines 41-45: include actual amounts, not just p values. - This has been changed.

6. Line 85: suggest "excessive time spent in" rather than "prolonged" to differentiate from looking at prolonged, unbroken bouts of sitting - This has been changed.

7. Lines 87-90: reference 8 is cross-sectional – therefore, do not use causal language (reductions). Also suggest adding some of the more recent experimental evidence on the acute cardio-metabolic benefits of regularly interrupting sitting time. e.g. Dunstan et al., Diabetes Care 2012; Duvivier et al., Plos One, 2013. – We have modified this section to include only the more recent acute experimental trials suggested by the reviewer.

8. Introduction: need to include a more comprehensive overview of the sedentary behaviour intervention literature if this is going to be the primary rationale for the study. There have been several workplace interventions using activity permissive workstations from both the musculoskeletal and physical activity literature. The more recent of these, where sedentary time has been directly and objectively measured (e.g. through activPAL) have seen substantial reductions in workplace sitting time (e.g. Alkahajah et al., AJPM 2012). There have also been interventions conducted in general population addressing reducing sedentary time across the day (e.g. Gardiner et al., AJPM 2011). We have modified this section to include more recent trials including Alkahajah et al. 2012 and Healy et al., 2013. We have also more clearly rationalized the present study which promotes 'active sitting' as opposed to 'reduced sitting' which may be more acceptable amongst both employees and employers. We believe this change more clearly illustrates how this study differs from past studies and adds to the literature.

9. Introduction: there also need to be a rationale for delivering interventions at the workplace, and some of the considerations for workplace interventions. This includes consideration of the organisational influences on behavior change. We have added language related to this section addressed in #8.

10. line 125: rationale for the 12 week time frame is needed. We conducted a 12 week trial because most sedentary interventions at the time had been limited by short duration trials. We have added this language here.

11. Line 127: the inclusion criteria refers to inactive adults (i.e. not meeting PA guidelines), rather than sedentary adults (i.e. high daily sedentary time). Was there any screening or measurement of their actual daily sitting time? During screening, we simply asked how many hours do you work per day and how many hours do you sit at work per day. Participants had to report sitting a minimum of 75% of daily work time to be eligible. This is detailed on page 6.

12. Line 130: How many potential participants were there? How many physical locations? i.e. please describe the broader sampling pool, and whether any participants were in visible proximity of each other (e.g. this could have impact via peer support for change). We recruited university employees via email of which there were 5,392 (Added this to page 6). Employees were located in 18 different physical buildings. While some participants were located within the same building, no participants were located within the same physical office space therefore no participants were in visible proximity of each other during the day.

13. Line 139: Move sample size up to here. – Changed.

14. Line 140: A large number of people were excluded due to ineligibility. Which criteria was not met? Was this information not included in the recruitment flyers? – Most of those deemed ineligible did not meet the BMI or sedentary criteria. This detailed information was not listed on the advertisement.

15. Line 142: remove the additional "the" – Changed.

16. Line 148: Was a sensitivity analysis on the full sample vs. completers? We had previously completed a sensitivity analysis for only those in the control group. We have now conducted a sensitivity analysis on the full sample vs. completers and added this language to both the Results and Limitations sections.

17. Lines 148-149: These findings belong in the Results. – Changed.

18. Intervention group: clarify if there was any interaction with the organisation / the line managers to enable the use of the portable pedal machines / access to the program while at the workplace. Aside

from participants requiring permission from their supervisors to participate in the study, no interaction with the supervisors or organization occurred. This language has been added.

19. Lines 181-187: clarify whether the internet program included any messages specifically targeting reducing sitting time. Also clarify whether both work and outside of work was addressed. Messages did specifically target reducing sedentary time (both pedaling and taking breaks from sitting). Messages primarily targeted time spent at work but some messages broadly targeted the negative health implications of sedentary lifestyles which could have impacted time outside of work. This language has been added.

20. Line 198: provide information on the reliability / validity / responsiveness of the step watch for measuring sedentary time. Language added.

21. Line 227: clarify how sedentary time was derived from the step watch, and what data reduction and data processing steps were implemented, and how variations in wear time were taken into account.

The threshold for sedentary (0 steps/min) was based on the recommendation provided by the product manufacturer. The thresholds for light (1–45 steps/min), moderate- (46-75 steps/min) and vigorous (76+ steps/min) intensity physical activities were based on previous work which demonstrated moderate-intensity walking stride rate to range from 90–113 steps/minute depending on height and stride length (Rowe et al., MSSE, 2010). Participants were asked to keep track of the times they put the monitors on in the morning and took them off at night. Individual wear time was extracted based on self-report wear time. Because participants wore the monitors for various lengths, percent daily time spent sedentary was calculated in final analyses.

22. Statistical analysis: was the evaluation of group differences adjusted for baseline? Were covariates considered? Need to include sample size calculations higher, and specify what assumptions were made / what the calculations were based on. Based on the reviewer's suggestions, we have modified our statistical approach to now include baseline values as a covariate in all continuous variable outcomes (ANCOVA). This test no group differences at baseline which was confirmed by one way ANOVA This approach is supported by Van Breukelen, GJP, 2006. We have modified the language in text and the tables to reflect these changes

23. Lines 237-240 and Table 1. Testing of baseline differences within intervention trials is controversial, and often recommended to be avoided (e.g. Pocock, S.J., Assmann, S.E., Enos, L.E., Kasten, L.E., 2002. Subgroup analysis, covariate adjustment and baseline comparisons in clinical trial reporting: current practice and problems. Statistics in medicine 21:2917-30. Roberts, C., Torgerson, D.J., 1999. Understanding controlled trials: baseline imbalance in randomised controlled trials. BMJ 319:185. We appreciate the reviewer bringing this to our attention and have removed language to this effect from the text and Table 1.

24. Line 269: Did the same assessor measure the waist circumference at both time points? Was there any testing for assessor differences? The two staff members were provided specific measurement duties to ensure each measure (e.g., waist circumference) was collected by the same staff member at both baseline and post-intervention. This language has been added.

25. Line 311: Change the term "sedentary" to "inactive". - Changed

26. Line 333: Again, please remove the use of causal language (reduced) for this cross-sectional study. - Changed

27. Line 345: Could another reason for the high compliance be the daily reminders? This is a possibility and we have added this to the text.

28. Lines 363-365: need to report this in the results and suggest doing a sensitivity analyses. We have added this language to the Results section and have completed a sensitivity analysis of all completers vs. those that dropped.

29. References: There is a mix of long form and abbreviations in the referencing. Changed

30. Other: what is the cost associated with the study? (pedal machine, internet access, pedometer) We have added the following language to the Discussion section. These findings are promising considering the relatively low cost of the intervention which cost $180 (pedal machine and software, pedometer, access to website) per participant.

31. Table 1: you are also looking at % in addition to mean (SD). If you are going to report on the differences between groups, then you should note in the Table which tests that you have undertaken (t-test? Chi-square?) Based on the reviewer's recommendation, we have removed language related to between group differences at baseline.

32. Table 2: please include a column of the intervention effects, adjusted for baseline values, with the relevant statistical tests and covariate adjustment noted in the Table footer.

We have adjusted Table 2 per these instructions to include a column of intervention effects adjusted for baseline values with the relevant statistical tests noted in the footer.

33. Table 3: please include a column of the intervention effects, adjusted for baseline values, with the relevant statistical tests and covariate adjustment noted in the Table footer. Please also include units of measurement.

We have adjusted Table 3 per these instructions to include a column of intervention effects adjusted for baseline values with the relevant statistical tests noted in the footer. We have also added the necessary units of measurement.

34. Table 4: what was the variation in the compliance rate? We apologize for this omission and have added this to the table.

35. Line 312: difficult to see the increases in light intensity activity without the intervention effects reported in the tables.

We have modified this table based on the reviewer's previous suggestions.

36. Line 314: would argue that this intervention does not specifically reduce sedentary time, rather, it is aimed at increasing physical activity. (see comment above)

37. Line 315: As per the introduction: there have been several recent worksite studies that have specifically targeted reducing sedentary time; as well as numerous studies from the ergonomic literature that have used activity permissive workstations to increase activity. These should be referenced and referred to. Per the reviewer's previous comments, we have referenced other sedentary interventions including studies by Alkahajah et al. 2012 and Healy et al., 2013.

38. Line 138: Clarify if written informed consent was obtained. Written informed consent was obtained and this is clarified in the text.

Reviewer: Abigail S. Katz, PhD
Research Associate
HealthPartners Institute for Education and Research
USA

Although the authors adequately address study attrition (i.e. differential drop out rate), the manuscript could have benefited from some discussion regarding study recruitment. A large proportion (75%) of potential/interested subjects were excluded from participation due to not meeting the eligibility criteria. Why was this the case? Were recruitment messages not aligned with participation criteria? We thank the reviewer for their time and attention to this review. Per a similar recommendation from another reviewer, we have added language related to this in the Methods section.
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The Motivational Website is said to be depicted in Figure 4 ("Group Descriptions" section, line 176). This figure does not appear in the supplemental documentation. We apologize for this oversight. A screenshot of the homepage has been added to Figure 2.

Overall, the results are credible. One finding, however, merits some discussion. Authors found a group x time effect for waist circumference, though none was found for BMI. This discrepancy should be noted in the discussion section given that the two measures are closely related. This finding is consistent with findings of our past work in which we have found modest improvements in physical activity to result in significant reductions in waist circumference in the absence of changes in other measures of adiposity (Carr et al., Prev Med, 2008). We have added this to the language in the

Discussion section.

Overall, a solid manuscript representing an important contribution to the limited scholarship in this area.

One minor revision recommended:

The Introduction section asserts that the study lacked "any accompanying behavioral intervention," (line 109) yet the article goes on to describe the key role of the motivational intervention (website) as part of the multi-component intervention. For example, the important role of the motivational intervention is included in the Discussion section (lines 348-350). The authors suggest that the motivational intervention enhanced participant compliance with the pedal machine compared to a previous study. Additionally, participants reported that self-monitoring on the website was among the most helpful tools for reducing their study time. Behavioral and motivational interventions share many similarities. The introductory claim that the study lacked any behavioral intervention is misleading and should be removed or edited to clarify the key role of the motivational intervention in contributing to both study results and process outcomes.

There seems to be a bit of confusion. In this section, we were describing the 4 week feasibility study we previously conducted in which pedal machines were provided to participants without any behavioral intervention. We are making a case here that adding an internet delivered behavioral intervention might increase pedaling compliance beyond what we had previously found. We have added the word 'previous' to line 109 to more clearly indicate that we were referring to our previous pilot study and hope this clarifies things for the reader.

Reviewer: Kiran Nanchahal
Senior Lecturer
London School of Hygiene & Tropical Medicine UK

The authors stated under Design/Statistical Analysis that the sample size was calculated but there is no indication on the number of participants required. A total of 49 participants were randomised - was this an adequate sample size?
Thank you for calling this oversight to our attention. We have modified our language to specifically state 40 participants were needed to detect between group differences.

The results are generally well-presented. However, it is unclear what the P value column in Tables 2 and 3 refer to - the difference between groups or within groups? Consistent with Reviewer 1's suggestion, we have dramatically modified Tables 2 and 3 to include columns representing both within group changes compared to baseline and between group changes at post-intervention. We have this change clarifies the findings of the study.

The footnotes in Table 3 seem superfluous.
We have removed the previous footnotes in Table 3 which we agree were not necessary. We have added subsequent footnotes to clarify the changes made to the Table.

There seems to be a mistake in reporting the results of the helpfulness on the Likert scale- isn't the median score for quite helpful equal to 4.0 rather than 5.0?
We thank the reviewer for catching this oversight. We have changed this from 5.0 to 4.0.

Under Discussion; the authors state that there was an increase in 'light and moderate intensity activity' but only % time moderate was statistically significantly increased (Table 2).
We have modified this section by removing 'light intensity'.

REVIEWER	Genevieve Healy Senior Research Fellow The University of Queensland I have no competing interests.
REVIEW RETURNED	02-Aug-2013

| GENERAL COMMENTS | The authors are to be commended for the substantial changes made in response to the reviewer comments. Nevertheless, there are still some issues that still need further consideration, as detailed below.

1. Line 30/31: "multicomponent technology" – I am unclear what this means. Suggest changing to just multicomponent.
2. Line 41/42: Results should be reporting on the intervention effects, not the within group effects, as the primary outcome. Additionally, unless adjusted for wear time, the % change should be reported (see further comment below). If possible, would be good to have 95% confidence intervals.
3. The key message re: significant reductions in sedentary time, and the Discussion (line 332/333) may need to be modified following the suggestion for adjustment for wear time.
4. 12-wk timeframe. In addition to just being longer than "short" duration studies, it would be useful to associate this to the timeframe necessary for habitual behaviour change / changes to biomarkers etc.
5. Line 130: modify this "sedentary" to the term "physically inactive" to match with the definition in brackets of <60 mins of MVPA per week.
6. Wear time of the monitors (key issue). The difference in statistical significance between the absolute and percentage of sedentary time change highlights that there is likely to be variation in wear time. It is recommended that that sedentary time (minutes) needs to account for the wear time variations, either through adjustment, through standardization, or through using the residuals method. Further it is unclear whether the wear time reported in line 229/230 is baseline, follow-up, or the average of both. It is recommended that both baseline and follow-up values for intervention and control groups are reported (this ideally could be within Table 1 or 2).
7. Sample size: need to also indicate whether there was sufficient power to detect changes in minimal differences of interest for the cardiometabolic outcomes (listed in the intro as a primary aim); or, if not, why these outcomes were collected. Correspondingly, reporting on the minimal differences of interest for the cardiometabolic outcomes enables discussion of the confidence intervals around the estimate, and whether changes could be potentially beneficial or adverse. For example, a potentially beneficial within group changes for blood pressure; potentially adverse within group changes for triglycerides.
8. It would be useful to include some work-related characteristics in Table 1, such as work type (admin? Professional?). Given this is a primarily workplace intervention, it is perhaps surprising that changes at the workplace, as well as changes across the day, are not reported.
9. Typically SI units are reported (e.g. kg instead of lbs); however, this may be journal policy. |

Reviewer: Genevieve Healy
Senior Research Fellow
The University of Queensland

I have no competing interests.

The authors are to be commended for the substantial changes made in response to the reviewer comments. Nevertheless, there are still some issues that still need further consideration, as detailed below.

We sincerely thank the reviewer for her thoughtful review. We have addressed the suggested changes and comments and feel these changes further strengthen the quality of this manuscript.

- Line 30/31: "multicomponent technology" – I am unclear what this means. Suggest changing to just multicomponent. - **We have made this change.**

- Line 41/42: Results should be reporting on the intervention effects, not the within group effects, as the primary outcome. Additionally, unless adjusted for wear time, the % change should be reported (see further comment below). If possible, would be good to have 95% confidence intervals. **We have made this change.**

- The key message re: significant reductions in sedentary time, and the Discussion (line 332/333) may need to be modified following the suggestion for adjustment for wear time. **See comments below.**

- 12-wk timeframe. In addition to just being longer than "short" duration studies, it would be useful to associate this to the timeframe necessary for habitual behaviour change / changes to biomarkers etc. – **We have added the following language to the Discussion section** "*Further, the present study was conducted over a longer duration (12 weeks) compared to similar trials [19 31] which is necessary in order to determine whether the intervention instills habitual behavior change and/or whether such behavior change results in changes in cardiometabolic outcomes. While longer trials are necessary to confirm whether sedentary employees will adhere to such an intervention, process evaluation data suggests participants engaged with the intervention and maintained engagement through the 12 weeks.*"

- Line 130: modify this "sedentary" to the term "physically inactive" to match with the definition in brackets of <60 mins of MVPA per week. - **We have made this change.**

- Wear time of the monitors (key issue). The difference in statistical significance between the absolute and percentage of sedentary time change highlights that there is likely to be variation in wear time. It is recommended that that sedentary time (minutes) needs to account for the wear time variations, either through adjustment, through standardization, or through using the residuals method. Further it is unclear whether the wear time reported in line 229/230 is baseline, follow-up, or the average of both. It is recommended that both baseline and follow-up values for intervention and control groups are reported (this ideally could be within Table 1 or 2). – **This is a good point. While not reported, we had previously conducted t-tests to determine whether any between group differences existed for monitor wear time at either time point and found no significant differences at either baseline (829(93) min/day vs. 867(142) min/day; P=0.35) or post-intervention (869.5(94.1) min/day vs. 827.2(71.9) min/day; P=0.15). Further, paired t tests revealed no within group differences (see Table 2).**

  We have since re-run our analyses adjusting for wear time and found that statistical significance remains for our primary outcome of 'Minutes Sedentary' (P=0.01) and approaches significance (P=0.051) for percent sedentary time. We have adjusted the language in the Abstract and Results sections.

  The wear time reported in line 229/230 was for baseline only. We have removed this language in text and now refer readers to Table 2 in the Results section which now includes wear time values for both groups and at both time points.

- Sample size: need to also indicate whether there was sufficient power to detect changes in minimal differences of interest for the cardiometabolic outcomes (listed in the intro as a primary aim); or, if not, why these outcomes were collected. Correspondingly, reporting on the minimal differences of interest for the cardiometabolic outcomes enables discussion of the confidence intervals around the estimate, and whether changes could be potentially beneficial or adverse. For example, a potentially beneficial within group changes for blood pressure; potentially adverse within group changes for triglycerides.

  We apologize for this oversight. As indicated in the Abstract, cardiometabolic outcomes were collected as secondary outcomes. The study was not powered to detect differences in these outcomes. We have clarified this point in the Article Focus, Introduction and Design/Statistical Analysis sections which are all now consistent with our language in the Abstract.

- It would be useful to include some work-related characteristics in Table 1, such as work type (admin? Professional?). Given this is a primarily workplace intervention, it is perhaps surprising that changes at the workplace, as well as changes across the day, are not reported. **We have added this information to Table 1 and agree this adds to the paper.**

- Typically SI units are reported (e.g. kg instead of lbs); however, this may be journal policy. – **We are happy to make this change should the journal editors request it.**