

Author's response to reviews

Title: Socio-demographic, behavioural and cognitive correlates of work-related sitting time in German men and women

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Version: 3 **Date:** 11 November 2014

Author's response to reviews: see over

Reviewer's report

Title: Socio-demographic, behavioral and cognitive correlates of work-related sitting time from a gender-specific perspective

Version: 2 Date: 7 October 2014

Reviewer: Nyssa Hadgraft

Reviewer's report:

This manuscript seeks to identify the socio-demographic, behavioural and cognitive correlates of work-related sitting time in German adults. While the evidence linking sedentary behaviour to adverse health effects is becoming stronger, there is still a need for greater understanding of the determinants of sedentary behaviour. As the authors note, there is limited published work on the correlates and determinants of work-related sitting in particular, and this manuscript adds to the small body of evidence in this area. There are several areas which the authors should attend to, in order to improve their manuscript.

Major compulsory revisions

1. The authors focus on identifying the gender-specific correlates of workplace sitting time. While this is an interesting research question, there is a need for greater rationale in the background section as to why this stratification was carried out. Could the authors please provide relevant literature to justify the need for examination of potential gender differences in relation to correlates of sedentary behaviour?

** Thank you for this suggestion, which we included in the background section (s. p.6, l. 9-12):*

"... In addition, a gender-specific perspective is warranted based on previous findings that showed distinct gender differences concerning overall sitting time [26] and domain-specific sitting time [32] as well as work-related sitting time [34]...."

2. The inclusion criteria for the study were people who were working or who were enrolled in education. The study specifically aimed to look at work-related sitting time so it is not clear if this definition includes time spent studying or in education-related activities. If not, it would be helpful if the authors could outline how participants who were in education but not working were or weren't incorporated into the analyses. If educational activities were counted as "work" the language throughout the manuscript should be altered to reflect this.

** Thank you very much for this note. After careful consideration of the reviewers comment we decided to alter the inclusion criteria for this study into only working population in respect of the different settings school/university vs. workplace. Consequently we reanalyzed the whole data set and calculated the data for table 1, 2 and 3 new, subsequently altered the result section which followed in a change of the discussion section as well.*

3. It is recommended that the authors seek English language revision.

** We have send the manuscript to American Journal Experts that edited for proper English language, grammar, punctuation, spelling, and overall style by one or more of the highly qualified native English speaking editors. The certificate is enclosed.*

Minor essential revisions

4. Introduction: in the first paragraph of the introduction the authors discuss the suspected biological mechanisms behind the adverse health effects associated with sedentary behaviour. It is advised that this paragraph should be reworded to reflect the level of evidence for these claims i.e. these are the hypothesised mechanisms, but the effects of prolonged sitting on lipoprotein lipase activity has only been studied in animal models to date.

** We acknowledged this reviewers comment and reworded the suspected biological mechanism in this section and included additionally recent references (s. p.5, l.15-20):*

"...One suspected biological mechanism behind the adverse health effects is the following physiological response: through the absence of large muscle group contractions compared e.g., with standing, the lipoprotein lipase is suppressed that is necessary for healthy fat metabolism, and the break-down and use of glucose are reduced, which has been seen in animal models [14]. Both mechanisms could lead to poor metabolic health with a long-term risk of different non-communicable diseases."

5. Measures: The sentence relating to the reliability of the Marshall sitting questionnaire appears to require some revision. The reliability figures stated for weekend days (0.23-0.74) are very variable, and 0.23 is quite low. It is suggested that the language in this paragraph should be revised to indicate which domains had moderate-high reliability, vs which had weak reliability. E.g. "The reliability of the instrument has been shown to be moderate across the work, television and computer domains for weekdays ($r = 0.78-0.84$) however the reliability was weaker for weekend days, except for television and computer use ($r=0.57-074$).

**Thank you for this suggestion and we revised this section (s. p.9, l.8-13):*

"...The reliability of the instrument has been demonstrated to be moderate across the work, television and computer domains for weekdays ($r = 0.78$ to 0.84). However, the reliability was weaker for weekend days, except for television ($r = 0.57$) and computer use ($r = 0.74$). Validity assessed against log data and sedentary accelerometer data was highest for weekday sitting time at work ($r = 0.69$) and using a computer at home ($r = 0.74$) [36]."

6. Measures – physical activity: The sentence regarding calculation of weekly minutes of MVPA is somewhat confusing. Do the authors mean to say that the number of days per week was multiplied by the duration of physical activity on an average day?

** Thank you for this suggestion we revised this point (s. p.9, l. 24 - p. 10, l.2):*

“... Weekly minutes of moderate- and vigorous-intensity PA were calculated separately by multiplying the number of days per week by the duration of PA on an average day according to [38].”

7. Results: Table 1 – in some categories there are different numbers of participants in the columns for time spent sitting and the % of overall sitting time made up of work. Could the authors please clarify why this is the case when the methods section suggests participants were excluded if they had missing data on sitting time?

** We excluded participants if they had missing data on work-related sitting time. However, we did not exclude participants if they had missing values in the other domains of sitting time such as travel, TV, computer or other leisure time. This is the reason why we sometimes had different numbers of participants in the columns for time spent sitting time and the % of overall sitting time. However, after revising Table 1 this problem does not occur any more.*

8. Discussion: The discussion needs some editing to improve the clarity and provide greater emphasis on the main findings and the broader implications. References to previous findings in light of the current findings could be written more concisely, allowing a greater focus on the broader public health implications of the results.

** We revised the discussion in order of the new results as well as in regard of bringing more clarity to the main findings as well as in focusing more on public health implications.*

9. Conclusion: The authors suggest that the main public health message from their paper relates to reducing sitting time and increasing recreation-related physical activity. While reducing sitting time is an important and necessary public health message, the title and background section suggest that the focus of this paper is on the correlates of sedentary behaviour – particularly gender-specific correlates – rather than the measurement of sedentary behaviour. The authors should consider linking the conclusion more closely back to the findings on correlates and the need to consider tailoring messages and interventions to higher risk groups.

** We revised the conclusion and linked it more closely back to the given results of the present study.*

Discretionary Revisions

10. Measures – socio-demographic characteristics: was there a measure of occupation in the survey? The results observed for education/income may be confounded by occupation. E.g. workers in blue collar occupations (likely to have education lower than tertiary level) with higher work-related physical activity are likely to sit less at work than workers in white collar occupations (who may have higher levels of education). If not, it would be helpful if this was discussed in greater detail in the discussion as a potential limitation or explanation for the results observed.

** We agree to the reviewers comment and added this important information in the discussen (s. p.18, l. 12-19):*

"...Nevertheless, we did not assess the type of occupation in the present study, which could potentially have confounded the present results for education and income level considering that not all participants with lower education or income levels necessarily work in blue-collar occupations and vice versa. Consequently, the type of occupation should be addressed in future studies because we can assume that sitting time varies as a function of the kind of work people do (e.g., manual vs. non-manual), and workplace interventions to reduce sitting times should focus on jobs for which sitting is the predominate posture. For other working fields such as manual labour, interventions to reduce sitting time should focus on the domains other than work. ..."

as well as in the limitation section (p.19, l.23-25).

"... Moreover, information on the type of occupation is lacking that would have recognised the character of the work being performed. Both should be considered in future research. ..."

11. Results: It might be helpful to report sitting time in hours rather than minutes to aid comprehension.

** We revised and reported sitting time in hours.*

12. Results: It would make the results simpler and easier to comprehend if the authors reported either the median or the mean, not both.

** We revised the tables and the result section and only report on the median.*

13. Table 1 is quite long. Could this table be simplified by only including work-related sitting time (mins/day) and not the mean % of overall sitting time? Interesting differences in mean % of overall sitting time by socio-demographic characteristics could be referred to in the text. It is also suggested that the authors consider focusing only on socio-demographic characteristics in this table (remove the breakdown by cognitive beliefs) for simplification.

** We revised the table 1 completely and included the reviewers comment not to include the mean % of overall sitting time and only referred to the mean % of overall sitting time in the text. We decided to leave the cognitive beliefs in table 1, so that their distribution is also once shown. Otherwise we would need to include a further table which we feel is not the better solution.*

14. The authors could consider removing table 2 and reporting on the significant correlations in the text instead.

** We followed the reviewers suggestion and only reported on the significant correlations in the text and removed table 2.*

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

Quality of written English: Needs some language corrections before being published

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.

Reviewer's report

Title: Socio-demographic, behavioral and cognitive correlates of work-related sitting time from a gender-specific perspective

Version:2 Date:6 October 2014

Reviewer: Eszter Füzéki

Reviewer's report:

1. Major Compulsory Revisions

The major flaw of the study is the sample selection. The response rate of 13% is, even if not uncommon in surveys, rather low.

** Basically we agree to the reviewers comment. However, as stated in the limitation we acknowledge this problem. Nevertheless, we adjusted for the low response by a weighting procedure to be consistent with German population in terms of age, gender, federal state, residential density and household size. Furthermore the epidemiology and empirical research emphasizes that sufficient structural equivalence (" representativeness ") in principle is methodologically possible even at an extremely low response rate, in case that the sample does not differ with respect to the relevant target values from the population (Gabler et al., 1993; Halpern & Asch 2003). Vice versa a sample with a very high response rate can also be not representative when the group of non-responders differed in some important way from the responders.*

Literature:

Asch DA, Jedrzejewski MK, Christakis NA (1997) Response rates to mail surveys published in medical journals. J Clin Epidemiol 50 (10): 1129-1136.

Halpern SD, Asch DA (2003) Commentary: Improving response rates to mailed surveys: what do we learn from randomized controlled trials? Int J Epidemiol 32: 637-638.

Gabler S, Hoffmeyer-Zlotnik JHP, Cancer D (1993) Weighting in survey practice. Opladen: West German publisher "

More importantly, the authors provide no explanation why both participants pursuing paid work and enrolled in education were included. It would have been necessary either to document that these two groups are similar in their sedentary behaviour or not to include them in one sample.

** Thank you very much for this note. After careful consideration of the reviewers comment we decided to alter the inclusion criteria for this study into only working population in respect of the different settings school/university vs. workplace. Consequently we reanalyzed the whole data set and calculated the data for table 1, 2 and 3 new, subsequently altered the result section which followed in a change of the discussion section as well.*

Also, the meaningfulness of the variable "household net income per month" is limited once participants pursuing paid work and students are included in the same sample without subgroup analysis. The distal aim of the study is to inform public health

professionals and agencies in the planning of interventions to reduce occupational sitting time. The settings school/university vs. workplace are, however, very different in many respects, so that not distinguishing between these two groups of participants is hard to understand.

** We agree to the reviewers comment and altered the inclusion criteria as well as the analyses as explained above.*

The lack of assessment of full vs. part-time working status is a further major problem. With ca. 20% of the overall German population (and 36% of women) working part time jobs (Federal Employment Agency, Germany) this is such a bias, that, without statistical adjustment, makes the further analysis and interpretation of the data practically impossible.

** We understand the reviewers comment and also recognize this as a limitation of the present study as stated in the discussion (p.15 l.14-16):*

"...This may be because the present study does not distinguish between full- and part-time workers and calculates the mean work-related sitting time, which could lead to a bias. In Germany, 27% of the working population works part-time [45]. ..."

as well as in the limitation (p.19, l.21-23):

"... An additional limitation of the study is the missing distinction between part-time and full-time working positions, which would have brought additional useful insights into the specific correlates of working individuals, as well as time spent in the workplace...."

Nevertheless we still see a great advantage of presenting these results to the scientific community because it gives us insights in the prevalence and socio-demographic as well as behavioral correlates of work-related sitting time, which is unique for Germany and can direct future health promotion strategies in reducing work-related sitting time.

2. Minor Essential Revisions

Sitting time was captured using the Marshall questionnaire, which is in English. The authors should provide information on the translation process and state whether the validity of the German version was assessed.

** We included information on the translation process. However the validity of the German version was not assessed.*

3. Discretionary Revisions

The section "Background" provides a somewhat one-sided picture on what is known about the health effects of prolonged sitting and standing. The question whether MVPA and/or overall PA protects, and if yes to what extent from negative health effects is as of now unclear (cf. Chau et al 2013, Mahor et al 2014). Also, the protective effects of standing as opposed to sitting have not been conclusively established (cf. Bailey DP, Locke CD, Miyashita et al 2012).

** We agree to this reviewer comment and added to the background section recent results from Maher et al. 2014 and disclose the not clear association between PA and sitting time (s. p. 5, l. 8-15):*

“...[2, 9]. However, a recent review showed that the risk of premature all-cause death was attenuated but not diminished by physical activity (PA) levels and was in any case responsible for a substantial population-attributable risk fraction [10]. Nevertheless, recent results from cross-sectional analyses suggest very little association between sitting time and cardio-metabolic biomarkers when total PA is adjusted for [11], indicating that the interplay between sitting time and PA is not completely understood and is thus a sedentary behaviour research priority [12]. The physiology of prolonged sitting and its relationship to health outcomes has not yet been elucidated [13]. ...”

and included more references to report the current state of the art.

A little more balanced assessment of current literature would be desirable.

** Especially in the background section we included further references that account better for the current state of evidence concerning sedentary behavior.*

The language of the manuscript would benefit from a thorough editing, especially the discussion.

** We have send the manuscript to American Journal Experts that edited for proper English language, grammar, punctuation, spelling, and overall style by one or more of the highly qualified native English speaking editors. The certificate is enclosed.*

Sentences tend to be very long (e.g. page 15, lines 13-16, page16, lines 16-21.)

** We revised.*

Sentence “Interestingly ...” (page 14, lines 14-19) is also very long and self contradictory.

** We revised.*

Further, colloquialisms such as “youngster” should be avoided.

** We revised.*

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

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests