Author's response to reviews

Title: The impact of self-reported exposure to whole-body-vibrations on the risk of disability pension among men: a 15 year prospective study

Authors:

Finn Tüchsen (ftu@nrcwe.dk)
Helene Feveile (hfe@nrcwe.dk)
Karl B. Christensen (karl.bang.christensen@gmail.com)
Niklas Krause (nkrause@uclink4.berkeley.edu)

Version: 2 Date: 26 March 2010

Author's response to reviews: see over
Reviewer’s report

Title: The impact of self-reported exposure to whole-body-vibrations on the risk of disability pension among men: a 15 year prospective study

Version: 1 Date: 31 July 2009

Reviewer: Dag Bruusgaard

Reviewer’s report:
You have submitted a relevant, nicely done and clearly written article. I have just one important objection.

1) I do not feel convinced that your controlling for work factors is sufficient. We know there is a dramatic difference in disability pensioning according to level of education. Although this divide is mainly explained by working conditions (work related health problems and health related work problems), the WBV cases is a special group not necessary fully controlled for by your three work environment variables. Other conditions than WBV COULD explain the found differences. This must at least be discussed more carefully and the conclusion must be a bit more modest.

Author response:
Thank you for spending time and expertise to review our paper. We have broadened the discussion of possible confounders.

Have you considered controlling for health problems at inclusion? Could attribution be a problem in self reporting, could persons with health problems at inclusion put the blame on WBV and hence be more eager to report it? I doubt ".. a substantial reduction..." is possible "..through such means..". Disability pensioning is a very complex phenomenon!

Author response:
None of cohort members had been awarded disability pension at baseline so they were so free of the outcome “disease of interest.” Further control of one, two or a whole range of diseases would be over control. We agree that many different factors influence the incidence of disability. It is especially the case among the 90% unexposed. Among the exposed, WBV is, however, a prominent cause of disability. The 11-12 cases that can be attributed among the 30 exposed cases represent approximately 12,000 cases in the Danish population. We have made this distinction explicit in the concluding remarks.

Some minor problems

2) You could shorten the statement of the importance of disability pension, it is well known (Background)

Author response:
We have done so.

3) Should really the exposure to road bumps be regarded as whole body VIBRATION?

Author response: Some professional drivers are exposed to hundreds of such bumps every day with accelerations near one G. Weather drivers report this as vibrations is, however, an open question so we decided to take that paragraph out.
4) you should decide on using either "physical demands and body posture" or "physical job demands and awkward work postures"

Author response:
Thank you – we now use the expression physical job demands and awkward work postures.

Level of interest: An article of importance in its field
Quality of written English: Acceptable
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

Reviewer’s report
Title: The impact of self-reported exposure to whole-body-vibrations on the risk of disability pension among men: a 15 year prospective study
Version: 1 Date: 19 October 2009
Reviewer: Marianne L Magnusson
Reviewer’s report:
> 1. Is the question posed by the authors well defined? Yes
> 2. Are the methods appropriate and well described? Yes
> 3. Are the data sound? Yes
> 4. Does the manuscript adhere to the relevant standards for reporting and data deposition? Yes
> 5. Are the discussion and conclusions well balanced and adequately supported by the data? Questionable
> 6. Are limitations of the work clearly stated? Yes
> 7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished? Yes
> 8. Do the title and abstract accurately convey what has been found? Yes
> 9. Is the writing acceptable? Yes
Reviewer’s report
> --------------
> 1. As all results are presented in tables 1, 2 and 3 there is a need for further explanation of the results. This is important as many of the risk factors are present in most drivers and are confounders to WBV alone. The fact that only 30 of 188 pension cases were attributable to WBV indicates that other factors alone or in combination are stronger predictors of disability pension for occupational drivers. Tis needs to be further discussed.
Author response:
Thank you for spending your time and expertise to review our paper.
##??

> Please number your comments and divide them into
>
> -
> - Minor Essential Revisions
The author can be trusted to make these. For example, missing labels on figures, the wrong use of a term, spelling mistakes.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**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

Marianne Magnusson, DrMed Sc

---

**Reviewer's report**

**Title:** The impact of self-reported exposure to whole-body-vibrations on the risk of disability pension among men: a 15 year prospective study

**Version:** 1  **Date:** 1 December 2009

**Reviewer:** Ryan Lennon

**Reviewer's report:**

1) Page 6. 2nd paragraph

"On 1st October 1995 additional simple random samples..." This implies that subjects surveyed in 1990 are also automatically included in the 1995 survey. If correct, please state so explicitly.

**Author response:** We have clarified the automatic inclusion of persons from previous waves of the survey in the last end of the first paragraph of the “Baseline”-section

2) Page 6. 2nd paragraph

"The size of each sample reflects the proportion of the relevant groups of the total population." Do you mean that pre-specified groups are sampled in a stratified manner? That is, that if the population is 45% men, then 45% of the sample will also be men? If not, please explain what this means. If so, please re-write.

**Author response:** The suggested clarification have been made in the centre of the first paragraph of the “Baseline”-section

3) Page 6. 2nd paragraph

"The three samples constituted the 1995 panel and persons in this panel were contacted irrespectively of participation in the previous wave." I do not understand this sentence. What three samples? It sounds as if everyone had to participate in 1995, yet that does not seem to be true elsewhere. The entire "Baseline" section should be carefully re-written.

**Author response:** The “Baseline”-section is re-written (and hopefully clearer now).

4) Page 6. 3rd para

"In 2000 supplementary samples were drawn and interviews were conducted according to the same principles just described."

The interview process was not described. Are these interviews, or surveys? Phone or face-to-face?
Author response: The “Baseline”-section is re-written and the modes of data collection described in the centre paragraph

5) Page 7. 1st paragraph
Since only men were included in the study, it would be helpful to have a breakdown of how many men participated in one, two, and all 3 surveys.

Author response: The suggested change has been made (see the end of the “Baseline”-section). No interactions were considered (and thus none described).

6) Page 7. 2nd paragraph
What is meant by "incremental adjustment"? Do you mean you used time-dependent covariates? What statistical software was used? How were ordinal variables handled in the model? How was missing data handled? Did you consider interactions between any of the variables?

Author response: You are absolutely right. We described a technical programming issue. The sentence has been erased.

7) Page 7. 3rd paragraph
"Those not participating...but the age variable was updated." Why update the age variable? This is not necessary if it is treated as a linear term in the Cox proportional hazards model. Was a non-linear function of age modeled?

Author response: You are absolutely right. We described a technical programming issue. The sentence has been erased.

8) Page 8. 1st paragraph
"Before 2000 the registration is complete only if the persons concerned still receive disability pension in 2000."
What does "registration is complete" mean? Does it mean you know when the person started receiving disability pension, or that you know at least in 2000 they received disability pension? Either way, this seems like a major problem. Given that the sample begins in 1990, and includes people aged into their fifties, we can presume that a non-trivial portion of the study sample will die or turn 60 before the year 2000 and you are unable to assess the primary endpoint of disability pension in those people.

Author response: A sentence has been added explaining the meaning of “registration is complete”. The shortcomings of the registrations are commented in the “Discussion”-section

9) Page 8. 2nd paragraph
I am confused about this. If registration for these only started in 2000, how would they have been registered prior to 2000? Not at all? How is this issue different from normal disability pension (also not available until 2000)?

Author response: DREAM is the result of a merger (and processing) of several registers. Access to these registers has been given at different years. The two types of disability pension we have used are registered in different registers.
10) Page 10. Results section
The first table should be a descriptive table of at least all the variables that will be used in the models. It would also be useful to have descriptive statistics by survey year (1990, 1995, 2000). I would also want to know if there were any workers who were exposed to WBV in an earlier survey and then were not exposed at a later date.

Author response: A descriptive table (table 1) is now included in the material and methods section. The changes in exposure status are described in the second paragraph of the “Results”-section.

11) Page 10. Table 1
It would be good to have a table of the model for disability pension which includes WBV, age, smoking, BMI, job demands, and work postures. Report HR, 95% CI, and p-values.

Author response: Table 2 (previously table 1) is expanded and now includes estimated hazard ratios for the covariates as well as the confounder. Since no hypotheses concerning the covariates were stated in advance, 95% CI’s are omitted.

12) Page 11. Tables 2 and 3
These tables take up a lot of space yet do not appear to contribute to the Discussion or Conclusion. Are they really necessary?

Author response: Table 3 is now summarized in the comments in response to your next point and the table is deleted. In our experience many readers are happy to have the information in table 2 now table 3. So we would like to keep it if the Editor agrees.

13) Page 11. 1st paragraph
"It seems that the industries where the problem has been known have been successful in reducing WBV at the same time as it has become a problem in other industries." In which industries has it become a problem?

Author response: We have now included the essential information in table 3 in the sentence and deleted the table.

14) Page 11. 2nd paragraph
"For the 15 year period 5.6% of the disability pension retirement cases were attributable to WBV." What do you mean by "attributable"? What data is the 5.6% based on? Need more details here.

Author response: A sentence has been added in the "Statistics"-section

15) Page 11. 2nd paragraph
"The fraction of workers exposed is decreasing so the estimate may go down in the future." This type of conjecture really belongs in the Discussion section.

Author response: The sentence has been moved to the second last paragraph of the discussion.
16) Page 12. 2nd paragraph
"...adjustment for physical job demands did not substantially reduce the effect sizes."
The reader needs more information on the "job demands" variable(s) and which ones, if there are multiple, were included in the adjustment.

Author response: The sentence has been changed.

17) Page 12. 3rd paragraph
The authors do a good job considering the implications of missing those who received disability prior to 2000. However, I don't think the secondary analysis is yet robust enough, since they censored subjects at their 60th birthday. They should limit their analysis to those 50 and under, since they could not be censored prior to 2000. I would recommend reporting this data explicitly, rather than just stating that it was similar.

Author response: Good point. We have restricted the analysis to include only those below the age of 50 at entry. The table below holds the information you request. We would, however, all things considered prefer not to use it in the paper.

<table>
<thead>
<tr>
<th>Whole-body-vibration</th>
<th>Person years at risk</th>
<th>Events</th>
<th>HR* (95% CI)</th>
<th>HR** (95% CI)</th>
<th>HR*** (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5923</td>
<td>30</td>
<td>1.89 (1.28-2.80)</td>
<td>1.71 (1.15-2.54)</td>
<td>1.61 (1.07-2.40)</td>
</tr>
<tr>
<td>No</td>
<td>54145</td>
<td>158</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Total</td>
<td>60068</td>
<td>188</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aged &lt;50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>5158</td>
<td>20</td>
<td>1.77 (1.09-2.86)</td>
<td>1.66 (1.02-2.69)</td>
<td>1.44 (0.88-2.38)</td>
</tr>
<tr>
<td>No</td>
<td>44308</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>49466</td>
<td>120</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

18) Page 12. 4th paragraph
"This study suggests that a substantial reduction of the incidence of disability pensions could be obtainable through such measures." I'm not sure the data as presented strongly support such a statement. Even if 5.6% of pension disability is due to WBV (which is unclear), cutting exposure to WBV in half would only be a 2.8% decrease in disability pensions. How much effort would it take to cut WBV in half?

Author response: The final sentence in the “Discussion”-section (as well as the “Conclusions” and the “Conclusion”-paragraph of the “Abstract”) has been toned down.

Minor Essential

19) Page 10. 3rd para
"WBH" should be "WBV"

Author response: Done

20) Page 11. Table 3
"WHB" should be "WBV"

Author response: Changed
21) Page 12. 3rd para
"Registrations for persons, who are granted..." - delete the comma

Author response: Done
22) Page 12. 3rd para
"WHB" should be "WBV"
Discretionary

Author response: Done
23) Page 4. 1st paragraph
Recommend rewriting or removing the second sentence, which begins "The individual lose esteem..."

Author response: Done
24) Pages 4 and 5
The third paragraph of the "Background" section seems out of place. It would make more sense to move the 4th paragraph to the third, and perhaps combine the current 3rd paragraph with the 5th. Or rewrite the 3rd and 5th somehow after the 4th.

Author response: Done
Most of this paragraph belongs in the Results section. The explanation for why only men were included would make sense in the Methods section.

Author response: The sentence was moved
26) Page 7. 1st para. line 4
Please double check that 8583 participated in the 2000 sample. It is a remarkable coincidence that it is the exact same number as those participating in the 1995 sample.

Author response: It is indeed remarkable and has therefore been checked several times.

27) Table 2.
Would appreciate an "all others" group of those with low percentage of WBV to see what their trend was over time.

Author response: Since the table was removed as suggested by you and the sentence about trend in expose has been removed we suppose that this calculation is now irrelevant.

28) Page 10. last paragraph
"The explanation might be..." - this belongs in the Discussion section and should be explained in more detail. It seems that the proportion of workers in the high risk category went down slightly over time (at least in the observed samples) and that alone could account for the overall trend. The proportion of exposed workers in these groups did not decrease that much over time; it was 41.3% in 1990 and 39.6% in 2000.

Author response: The sentence was moved to the discussion and elaborated.

Level of interest: An article of limited interest
Quality of written English: Acceptable
Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests: I declare that I have no competing interests.