Reviewer's report

Title: Bias and imprecision in posture percentiles assessed from limited exposure samples

Version: 2 Date: 3 February 2012

Reviewer: Mieke Koehoorn

Reviewer's report:

Overall Assessment:

Overall, this is a well-written paper for a clearly defined research question in the area of physical demands measurement. It provides evidence on long-standing methodological issues related to posture percentiles that have been in use for many decades. The paper also clearly communicates the evidence with the use of figures for what can be relatively complicated data and/or concepts.

Methodologically, the approach to assessing bias and imprecision is appropriate and well described. The data appear sound given agreement of exposure measures for the study population with previous studies or have face validity given the exposures scores relative to similar or disparate occupational groups. It is not completely surprising that the 10th percentile resulted in an upward bias and the 90th percentile a downward bias given the central limit; but it is helpful to have quantitative findings to illustrate this bias for practitioners and researchers.

Discretionary Revisions/Points of Clarification:

1. I offer the following minor areas for clarification to improve the communication of the important messages for readers. First, as a reader, I struggled with the correlational analysis. It was unclear to this reader (who is not an exposure assessment researcher but an epidemiologist who uses exposure data to assess risk of injury) how the ‘true’ exposure measure was calculated and I was left wanting more of a discussion to help me interpret these results.

2. Second, I appreciate the discussion of the data collection strategies and the alternatives to percentiles. As I understand the discussion, providing I could sample for at least 4 hours, upper and lower percentiles may provide appropriate estimates; but for shorter durations it would be better to use time proportions. I think this is a very important point given the resources required to conduct epidemiological studies of hundreds of workers and I would have welcomed more examples of the data to support the conclusions about the use of the time proportions....

3. Finally, are there any limitations with the use of the inclinometer that might be helpful to understanding the results in terms of measurements at the neutral and peak exposure postures?
Minor Issues
1. There were a few phrases or terms that were not familiar to this reader, as follows:
   In the Background section, the phrase ‘posture percentiles a.m. Jonsson’.
   In the Methods and Discussion sections, the use of the term ‘material’. For example, in the Methods, ‘The total material included 28 hairdressers…’ and in the Discussion, ‘Thus for half of the investigated shifts in the material…’.
2. The mention of the diary in the Methods sections was a bit unclear for the reader. This does not appear to have been data used in the analysis but was a criteria for inclusion in the study…is this correct?
3. The statements in the opening paragraph of the Discussion with regards to limited sample sizes and different samples sizes should be clarified to mean exposure durations (correct?). Samples size can mean different things in different disciplines and initially I interpreted these statements as referring to the 28 hairdressers or the 73 shifts, and not directly related to the key findings. 

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Major Revisions (or Points of Clarification)
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Level of interest: An article of importance in its field

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