Reviewer's report

Title: Neck pain and postural balance among workers with high postural demands - a cross-sectional study

Version: 3 Date: 5 April 2011

Reviewer: Mats Djupsjöbacka

Reviewer's report:

The quality of presentation has been substantially improved.
Since I did not review details of the first submission this will be a full review from scratch. I have the following comments on the manuscript:

Major Compulsory Revisions

Page 3, Background, 2nd paragraph, line 2
Reference 12 (Röijezon et al. 2010) is not a study of postural balance.
Please delete.

Page 4, 1st paragraph, lines 6-9
Reference 17 (Djupsjöbacka 2008) does not contain any information supporting the statement for which it is used as reference.
Please delete.

Page 4, 1st paragraph, lines 9-11
The references given (9, 17 and 19) are not original research studies supporting the statement that externally generated perturbations would more consistently challenge proprioception in postural balance.
Please refer to original research that supports the statement.

Page 9, Statistics
The use of ACNCOVA with LBP as covariate may not be appropriate if the groups differed substantially with respect to LBP. I recently became aware of the problem using ANCOVA to deal with substantial group differences on potential covariates/confounders. In short, it may substantially bias the results. For details see:

If you wish to keep the ANCOVA approach please present data to support that the LBP variable did not differ substantially between groups.
Otherwise you should use another approach for testing if LBP contributed to the group differences.
Page 10, Unilateral stance test, lines 3-7
Did the group with concurrent neck and low back pain differ significantly from the other groups? Please add this information.

Page 11, Discussion 2nd paragraph.
‘The Romberg test with eyes closed uncovered an impaired proprioception...’
Here you implicitly draw the conclusion that there was a significant effect from the factor eyes open/closed on group differences. You cannot draw such a conclusion from the fact that group was significant in the eyes closed and not in the eyes open model. One possibility for addressing this question is to enter eyes open/closed as a within subject factor in a repeated measures ANOVA and assess if the interaction Open/closed eyes * Group is significant.
Please address this issue with appropriate analyses or rephrase the text.

Page 12, 1st paragraph.
‘The difference in rambling represents the central component of postural balance [11].’
Reference 11 is not an original study supporting this statement. Please use original research as references.

Page 15. Conclusions
See my point above regarding effect of eyes open/closed on group differences.

Minor Essential Revisions

Page 5, Participants
I assume that 194 (234-40) subject were included. Please state explicitly how many subject were included.

Page 5, Procedure, lines 1-2
‘Exclusion from the physical tests was determined...’
Does this mean exclusion from the whole study or only from the physical tests? Please clarify.

Page 6
This headings on these pages (Measurements, Procedure, Unilateral stance, ...) are not structured in a coherent way. For example, under the heading ‘Measurements’ only the questionnaire is described while the different measurements of postural control have their own headings. Please adjust so that the headings follow a coherent structure.

Page 6, end of first paragraph
‘If the participant moved his/her arms or feet from the starting position and lost balance, a new trial was commenced.’
So if a participant moved his/her arms or feet from the starting position but did not lose balance no new trial was commenced. Was this really the case? Please clarify.

Page 9, Statistics, line 2
Does ‘COP values’ refer to all outcome variables calculated from the COP data? Please clarify.

Page 10-11, Results
According to the methods section CEA stands for the 95% confidence ellipse area of either the COP, rambling or trembling trajectories. On several occasions in the results you only mention CEA without specifying what it represents. Please harmonize the naming of the outcome variables between the methods and results sections. This also applies to table 2.

Page 17.
Reference 11 is incomplete. It should read:
Roijezon U: Sensorimotor function in chronic neck pain: objective assessments and a novel method for neck coordination exercise. Umeå University medical dissertations, ISSN 0346-6612; 1273; 2009.

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

**Quality of written English:** Acceptable

**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