Author's response to reviews

Title: Pressure pain sensitivity maps of the neck-shoulder and the low back regions in men and women

Authors:

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Author's response to reviews: see over
Pressure pain sensitivity maps of the neck-shoulder and the low back regions in males and females
Asbjørn T Binderup, Lars Arendt-Nielsen and Pascal Madeleine
BMC Musculoskeletal Disorders

Thank you for your constructive and useful comments which have improved the overall readability of the manuscript. Find below a list of answers and revisions in relation to your comments.

Reviewer: Ville Leinonen
Reviewer's report:

Major Compulsory Revisions
COMMENT: The results should be presented as mean+-standard deviation (95% confidence intervals) instead of standard error. Also range would be informative in selected variables such as absolute PPT values.

ACTION: Standard error has been replaced with standard deviation in all results. Ranges were also added for both absolute and normalized PPT values as requested. See highlighted changes in the manuscript.

COMMENT: The reason for the difference between absolute and normalized PPTs should be discussed. Now it seems that there are actually no significant differences when the values are normalized. Why is that and what this actually means?

ACTION: We have provided more information about the effect of normalization. Page 10, line 16 has been changed to: “The normalization procedure of the PPT data removed absolute differences in PPT among genders. Normalization was done to average individual maps in order to study the spatial information contained in the PPT maps”.

COMMENT: The methodological limitations of the measurement method should be addressed in the discussion. Also it would be informative to at least discuss and also state if there are any prospective studies where PPTs have been measured. Is there any information on the repeatability of the measures e.g. when the measurements are repeated after certain interval (e.g. two weeks)?

ACTION: We had added a section related to the methodological limitations of the study. Note that we also discussed limitations in the gender section of the Discussion. See highlighted changes.

Discretionary Revisions
COMMENT: Is the thickness of subcutaneous fat measured? Alternatively is there any information whether that have any effect on PPTs or not?

REPLY: No unfortunately, this was not measured. To our knowledge, this has not been studied thoroughly. However, due to physiological differences among men and women, this cannot be completely excluded. This is emphasized in the manuscript.
COMMENT: In healthy subjects the depression and other psychological parameters are supposed to be normal but the effect of mood etc could be shortly discussed. This is of course more important with patients but may have effect also in healthy subjects.

REPLY: This is an interesting comment. We conducted a secondary literature search but did not found concluding results (No effect of mood on on vibrotactile perception thresholds (Sanden et al 2010)). Since, we did not assess mood by e.g. the stress-energy questionnaire and cannot really discuss potential effects, we decided not to include comments on that matter.
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Reviewer: Esa-Pekka Takala

Reviewer’s report:
• DREPLY: Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)
• MEREPLY: Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
• MCREPLY: Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)

COMMENT 1. DR. p. 1: The title could be more precise "Pressure pain sensitivity maps of the neck-shoulder and the low back regions in healthy men and women" (males and females are preferred in animal studies) - Replace males and females with men and women in text, too

ACTION: Changes have been done in the entire manuscript as suggested.

COMMENT 2. MER, p. 2. Abstract (and also in main text)
In the presentation of results, effect size with confidence intervals should be used in state of p-values to help the readers understand the findings. E.g. in Abstract -> Results: (p.2, last line) "... but there were significant difference between subdivisions in the trapezius with lowest values in the upper part (P<0.001)."

ACTION: Changes have been done as suggested. It stands: “but there were significant differences between subdivisions in the trapezius with lowest values in the upper part (Effect size=0.09, P<0.001)".

COMMENT 3. MER, p. 5: Experimental protocol
The anatomic location of central points shall be clarified. Were these locations on the spinal processes or sometimes on the ligaments between the bony processes? If the location was defined by absolute distances only, the later is possible. In discussion (p. 9, 1st paragraph of Discussion) you state "... musculo-tendinous tissue was more sensitive to pressure than the bones", which refers to measurement points on spinal processes. Also you write about "... measurements on the spine part" (p.11, line 4). Please clarify and correct the description on text referring to the cervico-thoracic as well to the lumbar area.
- p. 5, 3 rd paragraph, line 3: "spinal cord" is obviously an anatomic misnomer here (you did not press hard enough to break the bony spinal canal ;)

ACTION: The author has been directed to correct these errors as suggested.
ACTIONS: We have now corrected the used terminology as it was misleading. We pressed the spinal processes. The body regions we were referring to have also been clarified. We changed “spinal cord” to “spinal processes” on page 5, 3rd paragraph, line 3. See highlighted changes in the manuscript.

COMMENT 4. MER, Experimental protocol  
What was the posture of the person during the measurements? Sitting / standing erect or lying prone?

ACTION: This is now specified in the revised version. It stands: “For cervico-thoracic measurements, the subjects were sitting, slightly bending forward with their chest in contact with the backrest of the chair. For lumbar measurements, the subjects were lying on their stomach in a bed.”

COMMENT 5. MER, Results  
Note that “statistical significance” depends on p-value function and is highly dependent on the sample size. Therefore, with each new item - please – start with the measured values and tell the reader first the effect size rather than p-values.
- p. 7, last paragraph. It is not necessary to state the p-values for correlation coefficients that are as high as 0.8.
- Tell the readers the main findings in words rather than state that “there was a difference” without pointing which one of the items was greater / larger / lower etc.
  E.g. p. 8, 1st paragraph:  
  the essential information can be written in fewer words like "Men had generally higher PPT than women (357.1±3.8 vs. 328.9±3.6 kPa; P<0.001). The individually normalized PPT increased from the upper to lower trapezius independently of the gender or the left / right body side (see Table 1 and Figure 3)."
- Rewrite the other results accordingly. E.g. tell that the PPT values were highest on the lumbar spine (use this anatomical expression in state of "center" in text, tables and figures)

ACTIONS: We followed your suggestions. The P-values for the correlation coefficients were removed and effect sizes have been added in the Results section.

COMMENT 6. MER, Results  
The F-values give no extra information to the p-values, if the sample size is known. The reader is interested on the effect size and about the probability to get this result by chance, which is given by confidence intervals or p-values. So the F-values here are visual noise and can be omitted to make the text easier to read.

ACTION: As suggested, F-values were been removed from the results.

COMMENT 7. MER, p.10, 2nd paragraph. "The pressure pain maps of the upper and low back region were non-uniform with no gender differences."
I did not understand. What did you mean by "non-uniform". Please, clarify.
ACTION: We have clarified this point. It stands “The pressure pain maps of the neck-shoulder and low back region delineated spatial changes. On the other hand, no differences between genders were found in the normalized PPT maps.”

COMMENT 8. MER, Conclusion
"... provides the basis for further clinical studies on e.g. chronic low back pain or osteoporosis"
This was a bit obscure. Or may it come clear if you clarify that the measurement points were on back bone and the PPT was generally higher over the bones than over the muscles.
Please, clarify.

REPLY: Our response to COMMENT 3 clarifies this point.