Reviewer's report

Title: Altered muscle activity pattern in patients with chronic trapezius myalgia? A pilot study using muscle tissue velocity ultrasound (TVI)

Version: 1 Date: 10 May 2008

Reviewer: Albert Crenshaw

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Major Compulsory Revisions:

In this pilot study a new methodological approach, tissue velocity ultrasound, as a tool for investigating chronic muscle pain is introduced. Using the method, a number of interesting variables of muscle mechanics are generated, i.e. velocity and strain and their derivatives. The authors use univariate and multivariate analyses to examine differences between myalgic and healthy trapezius muscle of females before and after a pain provoking activity. Consequently, some differences are found for a few variables for the multivariate analysis using PCA.

As written, there is confusion as to what is the primary emphasis of the paper, i.e. the methodological approach or the experimental differences between groups. My feeling is that it is the methodology that is most interesting and that the findings between groups should be used mostly to validate the use of the methodology in the context intended. In other words, new methodology that looks at local muscle changes could help better understand the mechanism behind chronic muscle pain, especially if combined, for example, with physiological or morphological methods (as the authors stated on page 23). Thus, the authors should be commended on their innovativeness in applying the new methodology. Also I feel that they have provided a detailed (welcomed) description in the text and in figures 1-4 of how the variables are generated. Therefore, the paper should be refocused as a methodological paper.

As for the differences between groups, there are some fundamentals in the experimental design that need to be tended to before these findings can be taken as robust. For example, 1) how much did the person applying the ultrasound (hand-held, I presume) know about the status of the subjects – was she/he blinded? 2) Are there any data about reproducibility of using ultrasound to generate the variables measured? At the least these should be touched on in the Discussion. In a pilot study it should be determined how or if to go forward with the experimental design in regard to the application intended for. Therefore, suggestion should be made to strengthen the validity of the methodology or the findings. While the authors give suggestion to validate the findings (biomechanically and physiologically) in the conclusion paragraph, they should also emphasis the importance of improvements on the experimental design.

Title: In line with my argument about, the title should be rearranged to emphasize
the methodology: e.g. ‘A pilot study using muscle tissue velocity ultrasound (TVI) to assess muscle activity pattern in patients with chronic trapezius myalgia’

Rearrange the Methods section to first bring up the Ultrasound equipment and how the variables were generated.

Rearrange the Discussion section to first bring up the feasibility of the method in chronic pain research.

Minor Essential Revisions:
Methods, pg. 7: Include how the visual analogue rating were done; ‘after each contraction?’
Table 1: Include the units of measure. Comment on why there were fewer than 14 subjects in each group.
Table 2: Why are the significant p-values (0.033) for strain rate diff Mean & RMS for the controls subjects not regarded?.
Re-label the figures according to the legend.
There are some grammatical mistakes. Have a native English speaker proofread the paper.

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**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