Reviewer's report

Title: Influence of pain location and hand dominance on neck and scapular kinematics and EMG activities: an exploratory study

Version: 2 Date: 17 May 2011

Reviewer: Kimberly Szucs

Reviewer's report:

Major Compulsory Revisions

1. Background: In general, the background would benefit from more evidence to support the purpose of the study. The importance and need for this study is not completely clear.

2. Background Paragraph 2 (Lines 11-20): Please expand this paragraph as it will provide additional support for the purpose of this study. In the studies referenced, why did the researchers suggest that there were normal variations between side (dominant and non-dominant)? In this current study, do you expect these differences to be exaggerated (or decreased) in persons with neck-shoulder pain and why?

3. Please include the study hypotheses in the Background section. The hypotheses are referenced in the Discussion section but not included here.

4. Discussion: I would appreciate further discussion on the results. Specifically, what possible explanations do the authors suggest for differences in scapular kinematics between sides in persons with pain? Since there were no differences in scapular kinematics between pain location, do they attribute these changes to normal variations between sides (similar to those reported by Crosbie et al.)?

Discretionary Revisions

1. Methods, Line 15, pg 5: How was it determined that subjects had muscle-related or posture-related pain?

2. Methods: Are there any additional subject factors that can be provided? Soreness in the upper trapezius has been well documented in desk workers. What were the employment areas of the subjects in this current study?

3. Methods: Since the digitizing protocol recommendations of the ISB are referenced, I don’t believe it is necessary to include Table 1.

4. Methods: Line 18, pg 8: Which model of ICC was calculated for intra-rater between session repeatability?

5. Methods: Lines 2-3, pg 9: The wording regarding post-hoc t tests is unclear. Were these run for significant interaction effects?

6. Results: In Figure 1B, it appears that there are differences between pain location groups in the amount of scapular posterior tilt in the dominant extremity. It is likely that the low statistical power resulted in these differences not being
statistically significant. However, maybe some descriptive information would be appropriate, for example a table with the total motion of the scapula in each pain location group. Based on the graph, it appears that the group with pain on the dominant side only posteriorly tilts about .5°, compared to 8° in the non-dominant group and 4° in the both sides group.

7. Discussion, Lines 18-21, pg 12: How/why should handedness be considered when evaluating movement performance in persons with neck/shoulder pain? Do the authors have any suggestions on how the changes in scapular kinematics between sides contribute to the development of neck/shoulder pain? If they could provide these suggestions and possible explanations, the reasons why to evaluate side to side differences in this population would be clearer.

Minor Essential Revisions
1. Abstract, Line 12: spelling error, 'sternocleidomastoid'
3. Line 2, pg 5: spelling error, ‘associates’

**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:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests