Reviewer's report

Title: Differences in the pectoralis minor length test in subjects with and without symptoms: a study of intra-rater reliability and validity.

Version: 1 Date: 4 May 2007

Reviewer: John Borstad

Reviewer's report:

General
Very nicely written, easy to read manuscript. This will be of interest to clinicians who treat non-traumatic shoulder pathology. It was a pleasure to review the manuscript and I hope my comments will be helpful.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

Two previously published studies regarding pectoralis minor length are not considered by the authors (Borstad and Ludewig, JOSPT 2005;35(5):227-238, and Borstad, Phys Ther 2006;86(4):549-557). The Phys Ther article reported that the measurement suggested by Sahrmann is not a valid measure for pectoralis minor length. This raises a considerable concern: a measure that lacks validity does not warrant an examination of its reliability. The authors state on the bottom of pg 2 the Sahrmann measure is the only reference test to determine if pec minor is short, but the above two manuscripts offer alternatives that are not considered by the authors.

However, based on the number of subjects and the fact that this manuscript is from data that is part of a larger study, my assumption is that your study was underway prior to the publication of at least one and perhaps both of the published studies on pec minor length. So, while there is now evidence to say the Sahrmann measure is not valid for pec minor length, there is also not a perfect clinical alternative, and your report will still contribute to the pursuit of solving the complex problem of relating posture and muscle length to impairment and/or pathology at the shoulder. I do believe however that discussion of the lack of validity of the Sahrmann measure, the potential alternative measures, and a justification for using the measurement must be included in the manuscript.

Page 4 - the 2x2 analysis concerns me because this measurement should not really be considered a diagnostic test - we know that at the shoulder it often takes several positive tests (special tests, not impairment level measures) to have any chance of demonstrating diagnostic accuracy. In light of the lack of validity of the measurement, using it to diagnose is probably not appropriate. The 2x2, by it's set-up, also suggests that only those with a short pec minor will have symptoms, which is highly unlikely. Perhaps wording other than "diagnosis" will help soften my concern - trying to establish a "relationship" between pec minor length and symptoms may be more appropriate.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

On page 3, I think that the first aim, (i), should state in subjects with symptoms, not without symptoms
Page 7, para 2, line 6 - change 'that' to 'than'
Page 7, para 3, line 7 - change 'investigating' to 'investigation'
Page 9, para 3, line 4 - add authors names to this sentence?

Discretionary Revisions (which the author can choose to ignore)

You might consider adding some discussion about how normalizing this measurement to subject height and/or weight would add to its accuracy. If you consider that this measure creates a right triangle consisting of the scapula, the table, and the measurement distance (in the transverse plane of the subject), the scapula is the hypotenuse. If the angle between the scapula and the table is constant between subjects, the larger person should have a longer hypotenuse and therefore a greater measurement distance. Or, one could argue that a heavier subject will sink further into the treatment table and create a shorter measurement distance. Perhaps a correlation analysis among pec minor length, height, weight, (age?) would show you something - you have these numbers so it would be any easy check. I realize Sahrmann does not describe normalizing, but perhaps it makes more sense to do so and you can push the process forward.
Page 10, Conclusion line 7 - change 'almost' to 'over'? Your results were beyond twice (5.2cm) the suggested threshold.

Table 1 - it appears age is significantly different between groups. Does this have any bearing on your results?

Table 5 (and the content it represents in the results section) - Consider removing? I'm not sure this adds much value to this analysis. The means and ICC's between the mean of 3 and the first measurements are similar and reported elsewhere.

In general, the amount of analysis performed and reported seems a little much - consider streamlining to report the most important information.

**What next?**: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

**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 have a concern that my review could be considered to have non-financial competing interests. I have requested that the authors include discussion regarding my own published studies regarding the validity of the measurement they are examining. This suggestion could be considered as an attempt to force my own work to be cited.