Reviewer’s report

Title: Rotational strength, range of motion, and function in people with unaffected shoulders from various stages of life

Version: 1 Date: 20 November 2008

Reviewer number: 1

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Major Compulsory Revisions

1. Page 4 - The authors present several arguments for how they designed their investigation that they did not support. For example, according to the authors, Otis et al discussed the value of strength assessment. What did Otis et al conclude? Similar questions can be generated regarding the Kuhlman et al citation.

2. Page 7 - Why are there more female than male subjects? Why is the distribution across groups so variable?

3. Page 7 - It is unclear why the tests sessions involved only 2 of 3 possible variables.

4. Page 8 - The reliability of goniometry is not high. There are much better tools available.

5. Page 10 - The data analysis is unclear. Multiple steps are necessary to correct this:
   a. Did the data meet the assumptions for parametric statistics? For example, there is no evidence of visual or statistical testing of normality.
   b. How many levels of each factor were analyzed in each ANOVA? If all categories were included, they should have been a 2 gender by 3 age categories ANOVAs.
   c. The authors were not clear on their rationale for performing correlations. Additionally, Pearson product correlations are appropriate with ratio or interval data. Gender is not either.

6. Page 11 - The ANOVA results should be outlined before the gender comparisons. The first step would be to outline the interaction effects (if any) between gender and age category. If there are none, the authors could discuss main effects of gender without alpha adjustment or by age category after a Bonferronni adjustment to an alpha of .017. If there are interactions, each gender/age category would be evaluated after the appropriate alpha adjustment.

7. Page 11 - How accurate is the LIDO? Can the authors demonstrate that the 1.0 or 2.2 Nm differences they cite between sides are true differences?

8. Page 12 - The intrarater goniometer reliability is between 3 and 5 degrees.
Interrater is between 4 and 6 degrees. Is a 3 degree difference a true difference?

9. Page 13 - The discussion will likely change based on the authors addressing the Major and Minor concerns.

10. Page 24 - The 121 men and 173 women are not distributed equally across the age categories. Was this intentional? What implications do these differences have for the statistical analyses?

Minor Essential Revisions

11. Page 5 - The authors switch their orientation in the first 2 sentences. They begin by discussing absolute strength and end with discussing age and weight controlled strength.

12. Page 5 - How well does the FIT-HaNSA discriminate between persons with and without shoulder disorders?

13. Page 6 - The authors list their purposes. They do not cite their hypotheses.

14. Page 8 - It is unclear why the authors only tested the strength and ROM of the internal and external rotators.

15. Page 10 - What are the psychometrics for the DASH, SST, and WORC?

16. Page 32 - The number of subjects involved in the correlations is unclear.

Discretionary Revisions

17. Although the number of subjects would decrease, the authors may consider choosing 1 functional outcome tool. They could then perform a multiple regression to determine which of the factors they have measured explain a significant amount of the variation in the tool.

**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, and I have assessed the statistics in my report.