Reviewer's report

Title: Grip strength ratio correlates well with DASH score in different hand conditions

Version: 2  Date: 5 March 2014

Reviewer: Saravanan Murugan

Reviewer's report:

The objective of this study was to correlate DASH questionnaire with hand grip strength and ratio. The authors have come up with a novel tool, the grip strength ratio, which the authors claim, can be used as a valuable tool for patients speaking different languages. To correlate an objective tool with a subjective questionnaire will add to the standard of evaluation in practice. The inclusion of healthy volunteers, a homogenous group of patients with fractures and a heterogeneous group with various hand conditions in this study have maximized the radius of clinical application of the tool.

However, the credibility of the manuscript is questionable in major areas of methodology, as the procedures used in this study are neither clearly mentioned nor explained. Secondly, statistical test used to analyze the data seems inappropriate considering the variables chosen by the authors and the design.

The major weakness of this manuscript lies in its methodology, which is not described appropriately. Specific comments related to the manuscript are as follows:

Major Compulsory revisions

1. Page 5: Patient and methods: Since the authors claim to have included homogenous group of patients with distal radial fractures undergoing rehabilitation (page 9-line 12), the stage of rehabilitation the patients are, can affect the measure of grip strength.

2. How were the confounding factors that might affect the outcome variable in fracture group and especially in the hand conditions group managed? For example, the available range of motion of the hand, presence or absence of pain, may vary in different hand conditions mentioned by the authors, which affects grip strength.

3. Starting position of the participants during grip strength evaluation affects the outcome of the measurement. Unlike other personal factors like age or gender, position of the participants will have an impact on the grip strength and grip strength ratio. Apart from starting positions, positions of various segments of the upper limb also affects grip strength. Which starting position was used by authors in this study to evaluate grip strength? What was the position of shoulder, elbow, forearm and wrist in relation to the starting position?

4. Page 6: line 5, “Grip strength ratio correlated significantly with DASH score as
well as DASH subsections in all groups” – Provide analysis in the form of table or graph supporting the statement related to subsections
5. Provide a plot analysis which might be appropriate to interpret than the table which seems incomplete.

Minor essential revisions
1. Since it is well known that gender differences affect grip strength, authors might specify gender of participants in this study.
2. While determining grip strength three times bilaterally (page 5: line 10), which score was used for data analysis? Is it the mean of three scores or the maximum score obtained?
3. Specify the rationale behind using MANOVA.
4. Statement for inclusion under homogenous group of patients with distal radius fracture (Page 5, line 6 and page 9, line 13) contradict each other. Page 5 specifies after plaster removal while page 9 specifies with a plaster.
5. Text-reference and Reference-text correlation missing (references 5, 9, 15 does not correlate to text)

Discretionary revisions
1. When statistical significance is set at p<0.01 by the authors (Page 5: line 16), it is not clear why statistical significance for correlation at p<0.05 is flagged and highlighted.
2. Page 8: line 7, “practice (1)” does not fit the referencing pattern.
4. Add “et al” for Citations with more than one author.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests