Reviewer's report

Title: Inertial sensor real-time feedback enhances the learning of cervical spine manipulation: a prospective study

Version: 1 Date: 2 December 2013

Reviewer: Suzanne Snodgrass

Reviewer's report:

This report presents a new method for measuring the parameters of manipulation. Few authors have used an inertial sensor, so this method is novel. The sample size is small, however, so strong conclusions cannot be made.

- Major Compulsory Revisions

1. Need to mention there is a limitation related to the number of repetitions of manipulation that may change stiffness in the subject being manipulated and thus change the properties of what the clinician applies.
2. Very intensive practice with instruction is used in this study- not likely to be representative of usual teaching practices.
3. Need CIs for all mean differences in results section. Also recommend adding CI error bars to the figures.
4. Differences were small between the before and after training measurements. This is probably because these were measured after the student had done 4 hours of previous training. I would suggest repeating the study and taking the 'before' measurements prior to practice with the instructor.
5. I’d also suggest that greater numbers of subjects are needed to provide conclusions on whether the inertial sensor is useful. If the authors are unable to collect more data, I would suggest this manuscript is only suitable as a technical report primarily describing how the sensor works
6. Paragraph 4 of discussion needs revising- the grammar is such that it does not make sense.
7. Discussion paragraph 5. You haven’t reported reliability data so you cannot state your method is reliable here.

- Minor Essential Revisions

1. Abstract: Need CIs for mean differences.
2. I would avoid the use of the word ‘oscillatory’ in referring to these thrust manipulations, as it often refers to Maitland mobilisations, and may confuse the reader.
3. When you first define CSM you do not need an s on the end- plural – are you continue to use it in singular form.
4. There are lots of spelling and grammar mistakes (primarily verb tense). Recommend the authors complete thorough copy-editing before publication.

5. Need axes and categories more specifically labelled on figures; also, include CI error bars.

- Discretionary Revisions

None.

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

**Quality of written English:** Not suitable for publication unless extensively edited

**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.