Reviewer’s report

Title: Segmental lumbar mobility in individuals with low back pain: In vivo assessment during passive and active motion using dynamic MRI.

Version: 2 Date: 5 July 2006

Reviewer: Alison Hazel McGregor

Reviewer’s report:

General

-----------------------------------------------------------------------------------------------------

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

This paper looks at motion patterns in response to a PA mobilisation or press-up extension procedure using intersegmental angle as the principal measure in a group of subjects with sub-acute low back pain and controls. Although interesting the themes and focus of this paper change throughout.

Specific points:-

The paper starts with stating the impact of low back pain to the individual and society although it does not refer specifically to the sub population investigated.

Paragraph 2 goes on to discuss mobility, I just feel this section lack robustness and would benefit from referencing to back up these statements.

You discuss PA mobilisations briefly but don’t let the reader in on what is known about PA mobs scientifically particularly what they achieve and how repeatable this technique is etc and on the clinical side how often it is used. This would help show how important studies are in this area. Also should you define what clinicians mean by the grading hypomobile normal etc.

I think you need to justify why pain will affect spinal mobility.

Paragraph 5 first sentence, I am not sure how you are eliminating gravity. My concern here also with this statement is you are not looking at an active and then passive movement that are the same you are looking at 2 very different movements so not sure how relevant this all is.

I disagree with the statement that segmental motion of the spine during PA has been scarcely investigated this is misleading. It has been investigated a lot by Lee et al, McGregor et al, in vivo plus others albeit in cadavers. The problem is despite these studies we still don’t fully understand what the manoeuvre is achieving.

I am confused as to how you are linking the PU and PA mobilisation and I think this need clarifying to me they are very separate movements/techniques.

Study population/Methods

Can you explain why there were 45 patients and only 20 controls?
What were your power calculations for this study?
Also where and how were patient recruited.
How much disability did the patient group have and was their global motion restricted? Were these people at work or off work as a result of their back pain. Their VAS’s are low so I assume they were not too disabled.

When you performed your localisers scan did you screen for pathology such as disc prolapse or degeneration?

One concern is whether the force applied to each spinous level was the same how did you control for this other than subjective feel?

How often did errors occur in terms of mobilising correct level page 8 paragraph 2.

Not sure how you used a hand held dynamometer to measure the force of the mobilisation. Are these levels of force in accordance with the published literature? It might be worth adding that studies have attempted to
measure force in the scanner, with non-electronic devices but these were unable to record the high magnitudes of force generated by the PA mob (Lee et al)

Finally how did you decide which images were obtained at the end range?

Results/Discussion
One concern is greater range of intersegmental motion appear to be achieve by the PU rather than the PA mob which is supposed to be the passive mobilisation to end of range. Can you explain this?

Much of the discussion focuses on hypermobility at one level, do you think the calculations etc in relation to this should be in results? Also how do this range of motion compare with other studies on intersegmental motion (so all of the videoflourscopy work etc).

You discuss age could you not investigate the correlation of age with motion directly using your data set. Also from the images taken could you make some assessment on the degenerative status of the discs?

I also have concerns that the conclusion of this study hangs on the higher percentage of hypermobility when this is not presented or justified as clearly as it could be.

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

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

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:
I declare that I have no competing interests