Author’s response to reviews

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

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Author’s response to reviews: see over
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Dear Editor:

Thank you for the insightful and prompt reviews. I believe the changes made in response to these reviews have significantly improved the manuscript. Please find below the reviewers comments followed by the Authors’ response.

Comments from Dr. Dickey:

The first sentence of the results should be changed to read “no significant difference” to acknowledge that there are differences between the groups, but that they are not of sufficient magnitude to be statistically significant.

We have changed the first sentence in the results to read “no significant difference” as recommended.

Comments from Dr. McGregor:

This paper is greatly improved and much clearer. However, one frustration is although many of the concerns have been responded to in the covering letter, they have not been incorporated into the text. I feel in places this must be done to enhance the paper.

Specific examples:

Methods: you need to say here how you recruited them, that none were off work, etc. You also need to note to the reader that this is a sub-protocol of a larger study thus the discrepancies in study population sizes.

Again great that you assess ODI but refer to it and provide the data.

In your response to the localising MRI scan you say one patients was excluded is this one out of the 65 you describe or an additional patient.

In determining which image to use you do this very clearly in your response but have left the paper as is, others may well ask the same question.

All questions and issues were incorporated in this version of the manuscript.

The Subjects category now reads (new text is in bold):

A total of 65 individuals between the ages of 18 and 42 participated in this study. The asymptomatic group was comprised of 20 healthy individuals, with no history of low back pain lasting more than 3 days or pain reported within the previous year (Table 1). The symptomatic subjects were recruited from a very busy University based general practice. Forty-five patients with non-specific central low back pain that worsened with extension, constituted the symptomatic group (Table 1). Based on the appearance of the fifth lumbar vertebrae, suggesting developmental variance one subject was excluded from further participation. An additional symptomatic subject was recruited to meet the expected subject population in this study. This analysis is a sub-protocol of a larger study thus the discrepancies in the size of the two study populations. On the day of testing, these subjects had perceived pain with standing spinal extension averaging 4.3 ± 1.9 on the Visual Analog Scale and their Oswestry Disability Scores range between minimal and moderate. The reported average duration of symptoms of the current episode of low back pain was 28 days. None of them were off work. Patients for whom the current episode of back pain lasted longer than 12 weeks were not included in this study.
The first paragraph of Data Analysis now reads:

Prior to analysis, all images were transferred from the MRI system console to a Macintosh G3 computer (Apple Computer, Cupertino, CA). For purposes of this study, only the images at rest and at the end-range of segmental motion were analyzed. All data sets were again screened for quality of images and for pathology. Consequently, all images were deemed appropriate for further analysis. During screening, we noticed motion artifacts in the images where motion was expected. This helped in choosing the images for analysis. As the beginning of motion was readily observable, we chose the resting image for analysis at lest 5 images before motion was observed. The end of motion image was also chosen based clarity of the images, suggesting no motion. To assure ourselves that this assumption was correct, we have randomly selected 5 studies and have digitized three consecutive images deemed to be at the end of the range. This experiment assured us that our prior choice of the final image was correct.

The following (in bold) was added on page 8, paragraph 3.
If an error was observed, imaging was repeated (this has occurred in three instances).

Kind Regards,

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