Reviewer's report

Title: Quantifying intervertebral disc mechanics: a new definition of the neutral zone

Version: 2 Date: 18 November 2010

Reviewer: Delphine Périé

Reviewer's report:

General comments
All the comments and suggestions were addressed by the authors. My major concern was the statistical method. With clear hypothesis added, the statistical method is now justified, and I agree for the use of intra-class correlations. However, there are some specific issues that follow:

Specific comments
(Method page 7: you use the mechanical test from 8 porcine specimens. Why 8? Did you do a power analysis to define this number? What are the expected differences or correlations?)

The answer to this comment is that the results are significant with the planned number of segments. However, the authors did not report the power of their statistical results (P), only the p-value. How can we know that 8 segments is enough?

(Results, page 8: I do not agree with your “moderately correlated” for R2=0.54 or 0.32. You cannot talk about correlations, even moderate, with this low R2 value. What is the corresponding p-value for this correlation test?)

The authors added some p-value, but not for all their results. They need to add the p-value to all their correlation coefficients presented. To conclude on a moderate correlation between 0.5 and 0.8, we need to know the corresponding p-value.

(Figure legends, page 14: For Figure 2, A large part of the legend should be included in the discussion section for Figure 5 and 6. You should not discuss the results in the legend.)

Even if it’s comments and not results, you can not comment the literature in the figure legend. It should be done in the text.

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'