Reviewer’s report

Title: Diagnostic value of the lumbar extension-loading test in patients with lumbar spinal stenosis: a cross-sectional study

Version: 2 Date: 10 March 2014

Reviewer: Sean Hughes

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This is an interesting paper which compares two methods of loading the spine in patients with neurogenic intermittent claudication, due to spinal or nerve root stenosis. The tests are performed in order to determine more accurately the correct level causing the patients symptoms and signs and therefore could more precisely predict the amount of decompression needed in these patients.

Using both lumbar extension loading and gait loading tests in 116 patients, the authors measured the symptoms and signs after these tests had been performed and noted quite marked changes.

They concluded that the lumbar extension loading test which was a simple standing test was as good as the gait loading test which required more space and that both tests are capable of accurately determining the involved spinal level.

The main problem with this paper is that we have no idea if this later statement is correct as the tests have not been correlated with either medical or surgical outcomes of these patients with spinal stenosis. What can be concluded is that patients who undergo either forms of loading do have altered symptoms and signs after both these tests.

Specific points;

1. Could the authors clarify exactly what the mean by spinal stenosis?
2. Could the authors please explain how the clinical signs including reflexes were elicited after the tests? The text states that neurological findings were assessed while in the standing posture, how actually is that done with the patient standing?
3. The gait loading test was performed before the lumbar extension test for a reason. But throughout the results and discussion the lumbar extension test is discussed first and consistency is needed
4. Could the authors explain the significance of a reduced reflex? What may considered normal by one assessor could be reduced by another. Surely it is better in clinical practise to have either increased i.e. brisk; normal or absent reflexes.
5. Were the muscles powers graded?
6. How subjective is the finding of hypalgesia and what exactly does that mean?
7. How were the symptoms graded?
8. Who actually undertook the measurements and was it the same observer?

9. Although MRI’s were performed how did they correlate with the patient’s symptoms?

10. Perhaps the correct title of this paper is the use of these two spinal loading tests in assessing patients prior to treatment for spinal stenosis.

In the end the findings show that after both these tests the patient’s signs and symptoms appear to increase, suggesting that more levels need decompression than would be expected on the basis of the patient’s original symptoms. The statement that lumbar extension loading test may help in understanding the pathology of lumbar spinal stenosis is not explained.

However if some of the points could be addressed I think this is a useful paper which suggests that lumbar extension loading could be helpful in evaluating patients who are undergoing treatment for spinal stenosis.

But as it stands it certainly does not show that the tests can be recommended to diagnose the truly responsible level in patients with lumbar spinal stenosis. Until this test is combined either with therapeutic or surgical treatment for spinal stenosis we will not be any the wiser.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**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.