Reviewer's report

Title: Isometric force production parameters during experimental low back pain

Version: 3 Date: 8 October 2004

Reviewer: Jacek Cholewicki

Reviewer's report:

General

This is a very interesting article examining the effects of pain on control of isometric force production. The authors added another valuable piece of information regarding the general problem of observed differences in motor control between patients with low back pain and control subjects. In this particular study, healthy volunteers were subjected to the experimentally elicited pain.

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

1. In the methods and discussion, the authors must better justify electrical stimulation as their choice for the experimental pain protocol. Although they make a statement that the site of the L3 spinous process would prevent any direct muscle stimulation, there can still be such an effect via the current spread over the soft tissue. The stimulus voltage must be relatively high to elicit a painful sensation in the range of 75 to 85% of the maximum possible pain. Therefore, the spread of current is likely. How did the authors verify that there was no direct stimulation of muscles? It seems that the saline injection protocol is free of such confounders.

2. Page 5, first paragraph: Specify the range of voltage that was used to elicit the desired pain level. This information will allow the reader to judge how likely the direct muscle stimulation was.

3. Discussion, last paragraph: There is another explanation of pain-induced changes in motor control that was not touched upon by the authors. Through a series of works, Simo Taimela and his colleagues have suggested impairment in central processing due to pain. I believe this to be a likely possibility that should be explored in the discussion, if not presaged earlier in the introduction.

4. Abstract is missing.

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

5. Page 4, line 2 from bottom: The term “any” should be replaced with “no”

6. Page 6, last line: At about which point was the trunk moment (torque) measured? In general, the authors should be precise in their terminology of force or moment. On page 4, they refer to torque data being filtered, while on page 5, they state that 50 and 75% of maximum isometric force was used. The results on page 6 are again expressed as torque. I suggest the use of the term “moment” (or torque, if the authors prefer), but it must be specified at what point the moment was calculated/measured.

7. Page 7, line 3: the term “et” should be “vs.”
8. Page 8, line 9 and page 9, lines 8 and 9: The usage of the phrase “more important” is awkward. Consider revising it to “greater” or “was increased”.

9. Page 11, line 14: The terms “less precision” and “more variability” are synonymous. I suspect that the authors meant “less accuracy and more variability”.

Discretionary Revisions (which the author can choose to ignore)

10. Page 3, line 3 and 4: I would separate the references between those that used electrical or mechanical stimulation and those that used saline injections and place them immediately after the corresponding statements.

11. Page 9, line 5 from bottom: The sentence starting with “Numerous authors…” should mark the beginning of a new paragraph. This paragraph is also a repetition of the ideas described in the introduction. Consider shortening it.

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 importance in its field

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:

None