Reviewer's report

Title: Pain relief is associated with decreasing postural sway in patients with non-specific low back pain

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Reviewer: Peter Vaes

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Major Compulsory Revisions
Clarity of abstract and paper

Abstract
1. Several denominations are insufficiently made clear to the reader
For example: centre of pressure excursions
2. “…linear relationship between pain intensity and postural sway exists.”
Do you mean … increased postural sway?
3. “matching”, only for ‘age’? Add for which other criteria the matching was carried out.
4. the sentence: “The cut-off age for both controls and symptomatic individuals was 50 years as after that age related impairments to postural stability could not be excluded [22-24].” is unclear.
5. Specify “three manual interventions” in the abstract, this is unclear, state (in the abstract) at least that chiropractic techniques have been used
6. define “A clinically significant decrease in pain score…”
7. Although three references have been given, a “change in pain intensity” must be corrected to “clinically relevant change” which is set at 38 on a maximum of 100 (in a VAS pain score). This should at least be discussed.
8. “equally unaltered” is incorrect
9. in the conclusion of the abstract the term “mean sway velocity.” is suddenly used, this is unclear. There is confusion about terminology because of the use of numerous synonyms for the force platform measurements: (1) center of pressure excursions, (2) postural sway, (3) Center of pressure parameters, (4) postural sway measures, (5) center of pressure excursions, (6) mean sway velocity
10. there is insufficient data to support the strong conclusion: “Pain interference appears responsible for the altered sway in pain sufferers.”

Paper
11. references have to be added following the phrase: “Analgesic effects have
been described for a variety of manual therapeutic interventions such as spinal manipulative therapy (SMT), mobilization or soft tissue techniques.". A description of effects is a very weak argument nit supported by evidence.

12. the argument that: “activation of mechanoreceptors…” could be responsible is very superficial and insufficient. It is not argumented how motor activity would be able to decrease pain and lower muscle spasm as suggested in stating: “…activate inhibitory interneurons to affect alpha motoneuron pools of the paraspinal musculature [17], breaking the pain-spasm-pain cycle.

13. no information is given concerning the ‘number needed to treat’, nor about the number of participants necessary to reach sufficient power to acceptably

14. inclusion criteria are insufficiently specific: “…serious(?) spinal deformities or previous injuries(of what nature?)

15. the description of the intervention is vague and insufficiently detailed

16. outcome measures are not described in detail: for example: authors describe they measured “postural sway velocity” at one instant and in another “center of pressure excursions” is used.

17. where the “three static bipedal standing tasks” identical? Then authors should specify that an identical task was repeated three times…

Results

18. 25% of participating patients dropped out. This was described as ‘loss to follow’ up which seems incorrect. No follow up was described in the research protocol.

Discussion

19. It should be discussed or added to the conclusion that better performance during balance test can be due to a learning effect and not only to decrease pain scores.

20. When relating pain to postural sway it is imperative that the impact of this health problem on ‘motor control’ is discussed. No information is found in this paper related to the impact of low back complaints with or without ‘a history of low back pain’ and motor control deficiency. This should be considered a weakness of this study.

Level of interest: An article of limited interest

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

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

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