Reviewer's report

Title: Altered motor control patterns in whiplash and chronic neck pain.

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Reviewer: Tamara Prushansky

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The introduction gives the reader a quick tour review on the already existing data with very wide spectrum of past paper.

The main objective of the current study was to investigate motor control (or motor behavior) deficits (or differences) in WAD compared to the two control groups in relation to conjunct motion, JPE, ROM and ROM variability.

As noted by the authors, the study was part of a more comprehensive study also involving diagnostic imaging of the cervical spine. That explains the large samples with the meticulous design. With appropriate and well described methods.

As to the outcome measures, ROM-variability expressed as the standard deviation (SD) of three repeated trials for each primary neck movement plane is troublesome. since it is not normalized. It is possible that the authors were trying to avoid the bias derived from the extent of the mean, as when using the coefficient of variation (CV). However, non-normalized SD can't solve the problem.

The main obstacle of the current study is the lack of innovating results. The expected decrease in cervical ROM among the WAD patients compared to both control groups, and no significant group differences in JPE.

The only notable result was the reduced conjunct motion found for WAD and chronic neck pain patients compared to asymptomatic subjects. This was most evident during cervical rotation. The authors were right to conclude that this may be due to stiffer or more guarded movement patterns which may be, a response to long-standing pain. This response was irrespective of the pathology history. Having said that, it may also be due to the decrease ROM, characterizing these groups. In addition, it should be remembered that large variations of coupled motions were recorded in different studies in respect to healthy subjects.

The conclusion that altered motor control patterns in the cervical spine were found for both pain groups, should be toned down. In the Title, Abstract and Discussion. It would be right to emphasis on the "both pain groups" irrespective of pain origin.
To conclude, the current study bears negative results and one potentially "food for thought" result with limitations that were not stated.

Level of interest: An article of limited interest

Quality of written English: Acceptable

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'