Reviewer’s report

Title: Cross-sectional area of the paraspinal muscles and its association with muscle strength among fighter pilots: A 5-year follow-up

Version: 1 Date: 07 Aug 2018

Reviewer: Reviewer 2

Reviewer's report:

PEER REVIEWER COMMENTS: To view the full report from the academic peer reviewer, please see the attached file.

REVIEWER COMMENTS FROM REPORT: This study aims to investigate muscle CSA and composition of the psoas and paraspinal muscles among Finnish Air Force fighter pilots. The paper is interesting and could - if better motivated - be relevant and important in aviation medicine area. However, it presently lack information on why data in CSA is important and why not simply strength testing is enough. Further, reliability in their methods is discussed but nothing about its validity! Information on hypothesis (or not) is absent.

REQUESTED REVISIONS:

The authors need to discuss why data in CSA is important and why not simply strength testing is enough (the rationale)

They need to discuss validity in their methods

Their sample is young; they need to discuss why increased CSA, due to flight exposure, could not be the issue in any such young sample

They found that CSA did not differ in healthy vs. LBP, but suggest this should be further studied. Why not discuss that muscle strength may not be important, particularly since this was found?

Some specifics comments for revision:

- Conclusion-abstract: New findings appear around the LBP in the conclusion..

- There is a clear description on statistical analyses - very good
- Avoid +/- symbol for standard deviation (SD) since SD is not an interval (this is a common error in journal-text). Put SD-values in brackets.

- Why do they use SD in presenting their results, use 95% CIs

- Results, third para: Do not say it is "..smaller CSA .." when it is not statistically significant.

ADDITIONAL REQUESTS/SUGGESTIONS:

See comments above

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

No

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

**Declaration of competing interests**
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?
2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

This reviewer has been recruited by a partner organization, Research Square. Reviewers with declared or apparent competing interests are not utilized for these reviews. This reviewer has agreed to publication of their comments online under a Creative Commons Attribution License attributed to Research Square and was paid a small honorarium for completing the review within a specified timeframe. Honoraria for reviews such as this are paid regardless of the reviewer recommendation.

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal

Do you want to get recognition for reviewing this manuscript? Add a record of this review to Publons to track and showcase your reviewing expertise across the world’s journals. Signing up is quick, easy and free!

No