Reviewer’s report

Title: Gender differences in the prevalence of low back pain associated with sports activities in children and adolescents: A six-year annual survey of a birth cohort in Niigata City, Japan

Version: 0 Date: 03 May 2019

Reviewer: lise hestbaek

Reviewer’s report:

Thank you for an opportunity to review this manuscript. It covers a very important topic and the authors should be commended for a large data collection and their efforts to shed light on the complex interactions between pain, physical activity, sex and age.

However, I have some objections to the present manuscript as listed below.

1. Although the linguistic definition of the term 'birth cohort' is adhered to, I consider the term misleading. In medical research, the term usually refers to cohorts intercepted before or at birth. See f.ex. http://www.birthcohorts.net/

2. The study is described as longitudinal. However, the way data is treated, it is actually presented as six repeated cross-sectional studies

3. The method needs to be explained more thoroughly, maybe including a flowchart. There are a lot figures (which are not really relevant) in the fist paragraph on page 4, but it is not clear how many drop-outs and/or drop-ins there are. How can there be 2607 boys in year 6, where there are only 2131 in year 1? How were the questionnaires distributed? How was verbal consent obtained?

4. The table legends are not complete.

5. There are questionable speculations in the discussion, which don't appear to take all their own results into consideration: 1) They speculate that the stronger association in J3 compared to previous year is driven by the children in the ECSA being elite athletes in J3. However, looking at Figure 1, they spend less time in sports in J3 than in J2 and J1. 2) They attribute the weaker association for girls in J1 as compared to E6 to onset of menstruation etc. However, the proportion in the ECSA-group raises from 48 to 77% between the two years, so obviously the pattern of sport activity changes dramatically with the shift form elementary to junior high school.

Less important points:

1. The result-section of the abstract needs to be re-written. It is difficult to obtain an overview from all those confidence intervals.
2. The background would benefit from a broader focus on the world literature, rather than a detailed description of the authors’ previous work.

3. Some references are outdated.

**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.

Yes

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

Yes

**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.

I am able to assess the statistics

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

Needs some language corrections before being published

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