Reviewer's report

Title: A cross-sectional and 6-year follow-up study of associations between leisure time physical activity and vertebral fracture in adults

Version: 0 Date: 14 Feb 2018

Reviewer: Gustavo Almeida

Reviewer's report:

Dear authors,

The manuscript reports on an important topic identifying the associations between leisure time physical activity and vertebral fracture in adults. However, it is somehow difficult to follow the message you are trying to convey. This reviewer suggests that you seek assistance from a professional scientific writer to help out with the flow of the text and clarify some paragraphs. Furthermore, the discussion section needs more work. The discussion would benefit tremendously if you elaborate on reasons that may have led to your findings. For example, what are your thoughts in regards to the lowest prevalence of fractures being present in men's sedentary group? Don't you think that this finding is counterintuitive? Do sedentary men have less fractures because they do not move around and, therefore, are not exposed to possible injuries?

Please see my point-by-point comments below:

ABSTRACT
PG 2, line 27: should read: prospective follow-up data (2001 to 2007)
PG 2, line 30 and 34: please spell out DXA and BMD

INTRODUCTION
PG 3, line 54: It is not clear what increase the risk of future fractures? "This" what?
PG 4, line 68: the burden? You mean, economic burden? Please clarify.

METHODS
PG 9, lines 182-183: please describe/clarify what phantom measurements are.

RESULTS
PG 12, line 240-243: were the results on highest and lowest statistically significant? please state.
PG 12, line 242: the statement "similar prevalence in all physical activity groups in women" is not true. According to Table 2, prevalence was only similar for sedentary and highly active. Please revise.
PG 12, Table 2: How about performing a test statistic to compare subgroups (i.e., sed, mod active and highly active)?
PG 13, line 254: "two years younger than moderately and highly active subjects" - was this statistically significant? Please state.
PG 13, Table 3: How about performing a test statistic to compare subgroups (i.e., sed, mod active and highly active)?
PG 14, line 262: Results on Fig 1 need a better description: were those changes statistically significant? If yes, it needs to be stated.
Did women change more than men? What happened to 6.3% of the women and 8.1% of the men that were left out of the changes in physical activity? The sum of the percentages does not add up to 100%... why?

DISCUSSION

PG 17, line 304: the statement "even fewer longitudinal studies" should be revised. It appears to me that there is a good amount of longitudinal studies, which surpasses the number of cross-sectional studies cited in the discussion...
PG 18, line 310-312: How about discussing the results on women in the "moderately/ high intensity" group being less likely to have a vertebral fracture as compared with women in the "low intensity group". Isn't that important to highlight? Clinically relevant?
PG 18, line 321-326: So these are conflicting findings - with the study in Chinese stating that a more active occupation is associated to less fractures, while the study in Asian showing that a labor intense occupation, such as farmer, is associated with more fractures. I believe that is the main message that you have to put in perspective here and discuss about it.
PG 19, line 328: larger than what? Than the previous studies or your study?
PG 19, line 330: what were the results that support the present study?
PG 19, line 341: This is a very important topic for discussion. How would you elaborate on how these confounders played a role in the analysis clinically speaking?
PG 19, line 346-347: This info goes along with the Asian study in farmers. And why is that? What are your thoughts on why heavy physical activity would increase the risk for fractures?
PG 20, lines 364: A discussion on this surprising finding should be expanded. Why do the authors think that there was no association between physical activity and fractures in older subjects?

PG 20-21, line 372-373: how many years would be ideal? I believe that 6 years of follow-up from your study was fair enough.
PG 21, line 385: why would those confounders be important? How would they have changed the results of your study?
Are the methods appropriate and well described?  
If not, please specify what is required in your comments to the authors.  
Yes

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

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.

I declare that I have no competing interests

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!

Yes