Reviewer’s report

Title: The subject-dependent, cumulative, and recency association of aerobic fitness with academic performance in Taiwanese junior high school students

Version: 0 Date: 13 Sep 2018

Reviewer: Pei-Lan Shao

Reviewer’s report:

In this study, the authors evaluated the relationship between aerobic fitness and academic performance. The authors found aerobic fitness make positive relationship to academic performance. There are greater effects on math and science subjects than language subjects. The authors also found the relationship are with cumulative effect and recency effect. The sample size are large and the results are significant.

1. The authors collected data of sex, BMI, and degree of urbanization as covariates. However, the authors do not describe the analysis of these factors and if they have any effect on aerobic fitness and/or academic performance. These factor also might be confounders. The authors should delineate this concern especially the effect of degree of urbanization.

2. The authors dichotomized the aerobic fitness as highly-fit (top 25% in that year population) and not highly-fit. The authors also make discussion that relationship between aerobic fitness and academic performance is probably nonlinear. Therefore, the results in this study may not be generalized to the majority of the population. Evaluation of the effect of "general-fit" to academic performance is suggested.

3. In this study, positive association between aerobic fitness and academic performance is recognized. However, there could be confounders and causal relationship has not been established. In the end of conclusion, the authors suggest that increasing physical education in the curriculum to enhance academic performance. The association rather than causation in nature of the relationship should be explained and emphasized here.

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 recommend additional statistical review

**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/](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