Reviewer’s report

Title: Physical exercise and body-mass index in young adults a national survey of Norwegian university students

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Reviewer: Lars Bo Andersen

Reviewer's report:

This study uses questionnaire data from three data collections among Norwegian university students. There is a reasonable sample size, but attendance rates are low. This should probably be expected since web-based questionnaires usually have low participation rates.

It is not clear to me what recommendations are used to evaluate how many who fulfill the recommendations.

Haskel et al, Circulation 2007 wrote: adults aged 18 to 65 yr need moderate-intensity aerobic (endurance) physical activity for a minimum of 30 min on five days each week or vigorous-intensity aerobic physical activity for a minimum of 20 min on three days each week. [I (A)] Combinations of moderate- and vigorous-intensity activity can be performed to meet this recommendation. In their definition it can be 150 min MVPA or it can be replace with a lower duration of higher intensity. WHO has a slightly different definition, and when authors calculate how many fulfilled recommendations of both amount, intensity and frequency, they should write exactly what it means.

Authors conclude that the percentage of students fulfilling guidelines are much lower than in a recent lancet paper including 168 countries. However, there is no judgement of the comparability between assessment methods used in the present study and the WHO study, and I cannot see if the same criteria for fulfilling guidelines have been used. The authors argue that it is unlikely methodological differences could explain the differences, but I disagree. It is very likely. The percentage of students in the present study exercising more than twice a week is actually high, and does not indicate an inactive population.

Specific comments:

Abstract
Authors write that the association between exercise and BMI is strong, but they do not provide a r-value. My knowledge about this type of data tells me that the association probably is very weak.

P6: authors also claim that the association between questionnaire assessed PA and measured max oxygen uptake is strong. I guarantee this is not the case. I have not looked up the reference, but usually we don't find more than 4% explained variance between these measures. They should report how strong the association was in the validation study.

Authors also analyze trends in BMI from self-reported height and weight. They only report BMI and not weight and height. However, I would like to see if body height has changed. The change in BMI is small and because weight increase with the third power of height and BMI only include the second
power of height, BMI would increase proportionally to a change in height if body dimensions were the same.

P11: authors claim that physical activity decrease over the decade of observation, but this is not supported by data. PA increases from 2010-2014 and decreases from 2014-2018 to the level of 2010. If anything, I would say from Figure 2 that the percentage exercising twice a week increases from 2010-2018. Therefore, it seems unlikely that the increase in BMI can be explained by a change in PA. The statement is followed by a long discussion of how PA should be integrated into university life. I don't mind this is discussed, but it should not be based on a change, which is not existing.

The authors claim to assess intensity, but this is not true. They assess perceived intensity, which is different. Low fit subjects will feel exhausted by an intensity that a fit person felt comfortable.

Figure 3: I would like to see a figure of those exceeding BMI 30. Well trained subjects can easily have a BMI above 25 because of muscle mass, but a BMI above 30 is rarely caused by muscle mass, so this cutpoint would be better to evaluate a trend in health.

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?
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No

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I am able to assess the statistics

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