Reviewer’s report

Title: Longitudinal changes in body composition and waist circumference by self-reported levels of physical activity in leisure among adolescents: The Tromsø Study, Fit Futures

Version: 0 Date: 19 Jun 2019

Reviewer: Jerome Rachele

Reviewer's report:

This study aimed to examine whether self-reported physical activity was associated with body composition among a cohort of adolescents. The study was generally well-written, though I have some concerns which I outline below.

- The introduction was generally well-written. However, not enough was written about what other research had been undertaken in this area. Have there been other studies on adolescent physical activity and body composition? If so, what have they found? Any studies among Norwegian adolescents?

- I feel as though an opportunity was missed to capture a broader measure of physical activity that also encompassed travel time physical activity, as well as whether there were differences in whether participants undertook physical activity in school settings (i.e. physical education classes as an elective unit). In this sense, the study's title and aim are somewhat misleading, as the actual exposure measured was leisure-time physical activity.

- The authors mention in the background that the association between physical activity and change in body composition is likely to be affected by sedentary behaviour, nutrition, socioeconomic status and genetics. Analyses are adjusted for screen time and whether students regularly ate breakfast, however, was any attempt made to collect information about student socioeconomic background (e.g. census-derived from participants' place of residence, parent occupation etc), or about the schools themselves (it is not clear whether participants were from one school or not, just that they were in neighbouring municipalities).

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.

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:

Acceptable

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