Author’s response to reviews

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

Authors:

Nils Aars (nils.a.aars@uit.no)
Bjarne Jacobsen (bjarne.koster.jacobsen@uit.no)
Bente Morseth (bente.morseth@uit.no)
Nina Emaus (nina.emaus@uit.no)
Sameline Grimsgaard (sameline.grimsgaard@uit.no)

Version: 1 Date: 03 Sep 2019

Author’s response to reviews:

Authors response to reviewers and editor.

Dear Sir/Madam,

Thank you for the opportunity to submit a revised version of our manuscript (SSMR-D-19-00022), entitled “Longitudinal changes in body composition and waist circumference by self-reported levels of physical activity in leisure among adolescents: The Tromsø Study, Fit Futures».

We thank both reviewers and the editor for their valuable comments and suggestions. Below you will find our point-by-point response, and in the submitted manuscript and tables you can see the tracked changes. We have also included a version of the manuscript without tracking for ease of reading. The analyses now include adjustment for study specialization, which to varying degree has had an impact on the associations reported. In addition to the points raised by the reviewers, we have made some minor improvements to the language and performed a detailed quality control of the statistical analyses. In this process a minute error in coding of the physical activity variable used in Table 2 was discovered, which now has been corrected and without impact on the overall results.
We hope you will find the revised manuscript satisfactory, and look forward to your reply.

In the meantime,

Sincerely yours

Nils Abel Aars

Response to reviewer 1:

• Reviewer writes: « I am uncomfortable to read the sentence of "statistically of borderline significance" when the p-value is above the threshold of significance level (p = 0.05). I would suggest authors to consider to add effect size and confidence interval in the result session to indicate the magnitude of the phenomenon.”

We agree that the phrase “statistically of borderline significance” is imprecise. We have therefore presented the point estimates for the difference in the change in the dependent variables with confidence intervals where relevant.

• Reviewer writes “Page 10, line 8, "the most active girls experienced a statistically significant higher..." Please include the p-value and effect size.”

The requested changes have been carried out. See page 10, lines 17-20.

• Reviewer writes “Page 11, line 4 and line 10, it is inappropriate to use "statistically of borderline significance", please report the confidence interval and effect size.”

After adjustment for study specialization the difference in FMI was significantly different, see page 11, lines 12-16.

Regarding girls, the requested changes have been carried out. See page 11, lines 21-23.

Response to reviewer 2:

• Reviewer writes: “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?”
We agree that the background could benefit from a more substantial presentation of past research. However, to our knowledge, studies on the association between self-reported physical activity and changes in tissue-specific indices of body composition are sparse, as referred to on page 6, lines 6-8, and no studies have been conducted on this association in Norwegian adolescents. Three new references have been included in the introduction (page 6, lines 10-13), and we have noted the lack of studies using Norwegian data on page 6, lines 8-10.

Reviewer writes: “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.”

Regarding transportation to school, we agree that this would be of interest. While questions on transportation were included in the study, there were only 13% of participants walking or cycling to school during winter months (when the majority of students participated), with 87% taking bus or driving a car/moped. Thus, we do not consider these data to substantially inform the research question.

We have sought to clarify that the exposure was physical activity during leisure time where necessary. (see page 3, line 5, and page 6, line 14).

Data on physical activity during school hours were not available. Currently, other members of our research group are seeking to employ objectively measured data on physical activity, stratified according to period of day, to further investigate relationships with commuting and differentiate activity during periods of the day. However, these data are not ready for analyses, and are beyond the scope of the present study.

Data on elective classes of physical activity were not available. However, questions on study specialization was included in the questionnaires, which was either “General”, “Sports” or “Vocational”. We have included this variable in Table 1 and in the “Methods and materials” chapter (See page 8 and lines 20-21). Furthermore, we have now adjusted for this variable in Tables 2-3 and Appendix Table 1. This had some minor effects on the reported associations, which have been changed accordingly and rephrased in the results/discussion where necessary.
Reviewer writes: “The authors mention in the background that the association between physical activity and change in body composition is likely to be affected by sedentary behavior, 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 neighboring municipalities).”

We agree that a measure of socio-economic status could be of interest. Unfortunately, in the present study, more than 25% of participants reported “don’t know” on the question of parental level of education. The represents a statistical problem which is not easily solved without excluding a substantial number of participants from the analyses. We consider that adjustment for study specialization adjusts for some of the variance in socioeconomic status otherwise expressed in parental education. Our data indicate that among those attending general- or sports specialization, some 50% had parents with college education. The corresponding figure for those selecting vocational subjects was 16%.