Author's response to reviews

Title: Association of objectively measured physical activity with body components in European adolescents. The HELENA cross-sectional study

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Author's response to reviews: see over
Association of objectively measured physical activity with body components in European adolescents. The HELENA cross-sectional study David Jimenez-Pavon, Amaya Fernandez-Vazquez, Ute Alexy, Raquel Pedrero, Magdalena Cuenca-Garcia, Angela Polito, Jérémy Vanhelst, Yannis Manios, Anthony Kafatos, Dénes Molnar, Michael Sjöström and Luis A Moreno

The authors thank the reviewers for the positive comments given to the manuscript. The new suggestion has been taken into consideration, and the manuscript has been modified accordingly. Please, find below answer to the reviewers’ comment. The change in the manuscript has been highlighted in yellow background.

Response to Editorial points

(1) Abstract: In addition to the aim of your study, please also include the context info in the Background section of the Abstract. Please update the abstract in the manuscript file and in the submission system.

Response: the authors appreciate this comment and the abstract has been completed.

(2) Ethics: please provide the names of ethics committees in English.

Response: Thank you. The names in English have been provided.

Response to Reviewer Comments and Changes Made

Reviewer 1 (Lisa Phillips) Comment and Author Response

Discretionary revisions

Abstract:

1. Line 2: could read cross-sectional study in a school setting rather than at school setting

Response: Thank you very much. Done.

2. Line 7: Accelerometry not acelerometry

Response: Thank you very much. Done.

3. Line 7: Could remove ‘Hence’ and start sentence with Indices

Response: Thank you very much. Done.
4. Line 11: ‘Whilst’, may be better than ‘however’

Response: Thank you very much. Done.

5. Line 19: the use of ‘directly’ as a description of the relationships may confuse readers, as it suggests that other relationships may not be direct, but rather partial or mediated, perhaps chance this to ‘positively’ as inverse relationships are still direct, but in a negative manner. This occurs throughout the script

Response: Thank you. The terms “positively, positive, negatively and negative” have been used through the text in order to avoid confusions.

Introduction:

6. Paragraph 2, Line 11: May read better as ‘The relationship between’

Response: Thank you very much. Done.

7. Paragraph 4: This paragraph would benefit from being reworded, as you begin by discussing SES but quickly move on to another focus, and back to SES, while all important information, it could read better. Also, replacing ‘and’ with a comma on line 45 ‘socioeconomic status, the effect of PA’

Response: Thank you very much. Now, this paragraph have been properly ordered and written.

Methods:

8. Paragraph 5, Line 51: ‘multi-centre and cross-sectional’ could be ‘multi-centre, cross-sectional’

Response: Thank you very much. Done.

9. Paragraph 10, last line: change and the level of significance to ‘), level of significance...’

Response: Thank you very much. Done.

10. Paragraph 7, Line 94: ‘which has been shown to be a valid..’ may read better

Response: Thank you very much. Done.
11. Paragraph 7, Line 100: include space between females and =

Response: Thank you very much. Done.

12. Results:

13. Paragraph 10, remove comma between ‘both indices’

Response: Thank you very much. Done.

14. Paragraph 12 line 159: (both p#) should this be (both p<).

Response: Thank you very much. The reviewer is right. It has been corrected.

15. Paragraph 12, Line 168: remove ‘of’ from ‘change of main results’

Response: Thank you very much. Done.

16. Paragraph 12, Line 171: no need to repeat (model II)

Response: Thank you very much. Done.

17. Paragraph 14, line 187: Remove ‘Thereby’ and begin sentence with ‘When’

Response: Thank you very much. Done.

Discussion:

18. Paragraph 16, line 93: remove ‘(using accelerometry)’

Response: Thank you very much. Done.

19. Paragraph 17, line 209: may read well without the ‘on the other hand’ opening.

Response: Thank you very much. Done.

20. Paragraph 17, line 210: reword ‘slightly studied’

Response: Thank you very much. The expression “little studied” has been used instead of the previous one.
21. Paragraph 18, line 224: remove ‘y’ from warranty
Response: Thank you very much. Done.

22. Paragraph 17, line 227: remove ‘the’ prior to body composition
Response: Thank you very much. Done.

23. Paragraph 18, Line 233: Would benefit from rethinking the order in which this sentence is presented. For example, ‘while some kinds of PA, usually considered vigorous, can be more favourable…’
Response: Thanks. The sentence has been changed as suggested.

24. Acknowledgements: Include a space between enthusiasm and the brackets.
Response: Thank you very much. Done.

Minor essential revisions

Abstract:

25. Conclusion: move brackets to start after ‘confounders’ and before ‘including’ so it reads, after adjusting for several cofounders (including indices of fat mass.....
Response: Thanks. Done.

Introduction:

26. Paragraph 1, Line 1: remove ‘the’ from ‘beneficial role of the PA’
Response: Thanks. Done.

27. Paragraph 1, Line 7: might read better as ‘but also by increasing muscle mass, which has...’
Response: Thanks. Done.
28. Paragraph 1, Line 8-10: The last sentence of this paragraph needs to be reworded, something along the lines of ‘Therefore gaining a better understanding... is of interest’ at the minute it does not make sense.

Response: Thank you very much. This sentence has been reworded and now this can be read as:

“Therefore, it would be interesting to better understand the specific associations of PA with the different body’s components such as fat mass and muscle mass”

29. Paragraph 2, Line 24: Do you mean ‘any of the previous studies’ or did you mean to say ‘none of the previous studies’

Response: The authors thank this comment. We used “none” instead of “any”.

30. Paragraph 3, Line 28: change to ‘components, such as...’

Response: Thanks. Done.

31. Paragraph 3, Line 33: the sentence ‘but they did not found any significant...’ needs to be reworded, perhaps to ‘they did not find’ of to ‘they found no significant...’

Response: Thanks. Done.

32. Paragraph 3, Line 35: ‘when weight losses are aimed’ needs to be re-written to something like ‘when the aim was weight loss’

Response: Thanks. Done.

33. Paragraph 4, line 39: ‘On the other hand’ suggests an alternative to something you have written previously, it would be better for the reader if this was altered to ‘additionally’ or something similar, as you are adding a point rather than providing an alternative.

Response: The authors really appreciate this positive suggestion. We have used ‘additionally’.

34. Paragraph 4, line 39: Remove ‘found’

Response: Thanks. Done.
35. Paragraph 4, line 41: Remove ‘of’, so sentence reads ‘despite the existing literature’

Response: Thanks. Done.

36. Paragraph 4, Line 45: Effect or relationship?

Response: Thanks. “Relationship” has been used instead of “effect”.

Methods:

37. Subheading Ethics statement: remove ‘subheading’

Response: Thanks. Done.

38. Paragraph 6, Line 64: it is not clear whether the Edinburgh 2000 was a revision of the Helsinki 1964 or the other way around, this need clarifying or removing.

Response: Thanks. This confused information has been deleted.

39. Paragraph 6, line 78: Did you also obtain child assent?

Response: Thank you very much. The child assent was also obtained. The sentence has been completed.

40. Paragraph 7, Line 81 & 82: Remove ‘type’ from the brackets detailing the measurement equipment and include manufacturer information.

Response: Thanks. Done.

41. Paragraph 7, Line 87: include type of tape within the brackets e.g. (seca 200; Seca, Hamburg, Germany)

Response: Thanks. Done.

42. Paragraph 8, Line 104: Check manufacturer details

Response: Thanks. Corrected.

43. Paragraph 8, line 109: You have chosen a low wear time criteria, did you specific which days the ActiGraph needed to be worn? Or which 8 hours should be included?
Response: Thank you for this comment. This information has been completed in order to clarify the number of days, criteria and so on (See page 9, last paragraph).

44.Paragraph 8; Line 114: 500 – 1,999. You presently have a decimal point instead of a comma

Response: Thanks. Done.

45.Paragraph 8. You have used very high cut-points to determine activity intensities, have these been validated for use in adolescents? Also are these specific for this monitor placement?

Response: the authors appreciate this comment. The Actigraph has been previously validated in laboratory and free-living conditions in young people [1] and; the cut-offs to define the intensity categories are similar to those used in previous studies[2-6]. Moreover, this cut-offs have show to be valid in detecting recommendation of physical activity levels/intensities to avoid low cardiorespiratory fitness and the excess of body fat in European adolescents [5, 6] (See pages 9 and 10, PA section).

46.Paragraph 9 lines 127 – 135; this section would benefit from being re-written, as it is confusing for the reader to determine the how the responses and FAS score is calculated. e.g. change line 129 to , a numerical value was given to each ..., which increased as answers indicated higher affluence.

Response: Thank you for this comment. This sentence has been re-written (See page 10, last paragraph).

47.Paragraph 10: Results presented in tables does not need to be reiterated in the text, but those that have not been presented should be kept.

Response: Thank you for this suggestion. The description in text of the results from table 1 has been now deleted according with the suggestion of this reviewer. However, the information regarding table 2 and 3 have been kept as the authors consider that useful for the interpretation of the results in these tables.

48.Table 2: Note which model was controlled for either in the title or in the notes at the bottom

Response: Thank you for the comment. In the original submission this information was included at the button of table 2, under the following sentence “Analyses were adjusted for model 1 (pubertal status, family affluence scale and country)”. Now, additional information has been added in the title of tables 2 and 3.
49. Table 2 & 3; may be better if all significant values were reported as p < rather than those < 0.05 having the actual p reported.

Response: Thanks. Done.

50. Table 2 & 3; can you align columns by decimal point

Response: Thank you for the suggestion. I regret to say that I do not know how “to align columns by decimal point”. I could justify on the right side, left side and center, but the other option is unknown to me. However, if the editorial process could not do that I will be happy to follow some instructions that you could provide me.

Discussion:

51. Paragraph 15: the use of ‘directly’ as a description of the relationships may confuse readers, as it suggests that other relationships may not be direct, but rather partial or mediated, perhaps chance this to ‘positively’ as inverse relationships are still direct, but in a negative manner.

Response: Thank you for the suggestion. The use of “directly” has been changed by “positively”.

52. Paragraph 16, line 92: Do NHANES specific what they mean by ‘lower PA levels’ is this defined as MVPA o just PA in general, as you go on to say that BMI was neg assoc. with PA in your study. The way this is worded is confusing as you state that your results concur but then use ‘where as’ which would indicate that they show differing results.

Response: Thank you for this comment. The text has been re-worded in order to clarify this point. Now, the sentence can be read as following:

“They found that overweight and obese adolescents spent less time at moderate and vigorous PA intensities than normal weight counterparts in both genders, which is confirmed in our study where the BMI was negatively associated with PA at high intensities in males and females”

53. Paragraph 16, line 200: ‘these authors found positive and negative relationships ...’ which were positive and which were negative? Also, you mention Belanger and that your results partially concur, but you haven’t specified that it is the Belanger study you were discussing previously, it reads as thought you are moving onto discuss a different study.

Response: The authors appreciate this comment. These lines of the paragraph 16 have been re-worded in order to facilitate its understanding. Now, the text can be read as following:
“This study reported by Bélanger et al.[7] showed negative associations of PA with indices of fat mass in females, but positive associations of the same parameters in males. Our results partially concur with those found from Bélanger et al.[7] in females; however....”

54. Paragraph 16, line 203: ‘highlight that any’, do you mean ‘that none’

Response: Thanks. Corrected.

55. Paragraph 16, line 204: include a comma after FFMBIA and remove ‘to’ in the sentence ‘cases could affect to these kind’

Response: Thanks. Done.

56. Paragraph 16, line 205: Remove ‘then’ and start the sentence ‘In addition to’

Response: Thanks. Done.

57. Paragraph 16 – 17, check spacing between paragraphs

Response: Thanks. Done.

58. Paragraph 17, Line 217: remove ‘observed that’

Response: Thanks. Done.

59. Paragraph 17, line 229: May read better as ‘No studies simultaneously address the relationship of PA ...’

Response: Thanks. Done.

60. Paragraph 18, Line 231: Would benefit from rewording, something along the lines of ‘Several complementary mechanisms potentially underlie these independent associations’

Response: the authors appreciate this suggestion. Done.

61. Paragraph 18, line 236: Reference needed for metabolic requirements

Response: Thank you for this suggestion. Now, two relevant references have been cited.
Paragraph 19: Do you consider any of your accelerometer data reduction methods to be limitations?

Response: the authors appreciate this comment, but we consider that the data reduction is under the general procedures for this methodology. Particularly, the data were downloaded onto a computer using the software provided by the manufacturer and were later analyzed by software based on Visual Basic. Then, the choice of the inclusion criteria was based on thorough analyses of accelerometer data performed immediately after data collection. These analyses aimed to identify an optimal balance between the selection of appropriate criteria that lead to reliable PA data and avoid large reductions in the statistical power. Three criteria were examined: (i) number of valid days; (ii) length of a valid day, and (iii) definition of the nonwear time (i.e., 10, 20, 30, and 60 min of 0 values). The results suggested that a fair trade-off between the number of days needed to identify the usual PA level (reliability of at least 0.80), and statistical power can be achieved when using the following inclusion criteria: (i) minimum of 3 days measured, (ii) at least 8 h/day of valid records, and (iii) 20 min of consecutive epochs with 0 counts were deleted (unpublished observations).

Based on this explanation the authors consider that the data reduction method did not constitute a limitation to be highlighted in this section. However, if the reviewer considers that after the justification there is still a need to include that as limitation for any reason we will do that.

Paragraph 20, line 268: Remove the word ‘can’

Response: Thanks. Done.

Paragraph 20, Line 269: should read ‘independent’ rather than ‘independently’

Response: Thanks. Done.

List of abbreviations:

65.MI, should be FMI

Response: Thanks. Done.
Reviewer 2 (Carlo M Ango) Comment and Author Response

Minor Essential Revisions

In general, I found the paper to be relevant to public health. The manuscript is well written and the results are interesting. However, I would suggest a couple of minor changes in order to enhance the paper:

Response: the authors really appreciate this comments.

1. The methods section could be improved if provides information about reproducibility and/or validity of used instruments.

Response: Thank you for the suggestion. Information regarding validity and reproducibility of the several instruments has been now included through the method section ie: Accelerometry validity (see page 9, 2nd paragraph and page 10 first paragraph), anthropometric measurements (see page 8 last paragraph for information of reliability and validity).

2. It will be important to discuss about the external validity of the study (generalizability). Please address this issue in the discussion.

Response: Thank you very much for this suggestion. A paragraph on the generalizability of the study has been added in the discussion (see page 15).

3. Although FFM may be considered as a marker of muscle mass, the way it was measured leads to another limitation of the study because FFM also includes bone and residual mass. Please address this in the limitations paragraph.

Response: Thank you for this comment. This has been addressed in the limitation paragraph.

References:


