Author's response to reviews

Title: Physical activity, cardiorespiratory fitness, and metabolic syndrome in adolescents: a cross-sectional study.

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Version: 4 Date: 5 August 2011

Author's response to reviews: see over
Reviewer's report

Title: Physical activity, cardiorespiratory fitness, and metabolic syndrome in adolescents: a cross-sectional study.

Version: 2 Date: 29 June 2011

Reviewer: Carla Moreira

Reviewer's report:

1. Abstract, Results
The authors state “inactive adolescents (males, 9%; females, 7.2%)”. In the Figure 1 the values presented are different. Please, clarify.

There was a typing error. The correct values are: males, 11.4%; females, 7.2%

2. In both Figures 1 and 2 the p-value should be presented.

The p-values were included in the figures.

3. This study includes adolescents between 10-17 years. Thus, it is important to examine the pubertal stage when studying differences in metabolic parameters among adolescent populations, particularly those at high risk of developing MetS. During adolescence various metabolic and physiologic changes occur in parameters such as lipid levels. I would suggest to the authors to adjust the logistic regression also to pubertal stage.

This is an important point raised by the reviewer. However, when maturational stage (assessed by the Tanner method) was included in the logistic regression, it did not influence the evaluated parameters in this study. Thus, we decided not to include them in the final analysis.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests.
Title: Physical activity, cardiorespiratory fitness, and metabolic syndrome in adolescents: a cross-sectional study.

Version: 3  Date: 30 July 2011

Reviewer: Xiaolin Yang

Reviewer's report:

Dear colleagues,

You have revised your manuscript about physical activity, fitness and metabolic syndrome among the Brazilian adolescents. The paper has improved but still there is a question that may need a more thorough examination.

In abstract, the authors have concluded that the prevalence of metabolic syndrome is high among adolescents who are inactive and those with low cardiorespiratory fitness. However, the association between physical activity and metabolic syndrome are not significant in the result. The inconsistent result may be own to the dichotomous definition of metabolic syndrome. The continuous metabolic syndrome is also important because the power to detect an association between both physical activity and metabolic syndrome may be statistically more sensitive and less prone to error than dichotomous methods in children and adolescents, particularly in relatively small samples. I recommend the authors make just one more analysis using the continous variables for both physical activity/fitness and metabolic syndrome and check whether the difference between two definitions of metabolic syndrome. This is also due to the fact that there is a liner significant relationship between the variables in Figures 1 and 2.

We thank the reviewer for this relevant comment. As suggested, we ran the statistical analysis using a continuous score for metabolic syndrome. However, the association between continuous metabolic syndrome and physical activity were very similar to that found when using the dichotomous definition. Therefore, we decided to keep the same results presented previously, given that the word limit and other restrictions prevent us to insert more content to our manuscript. We do, however, make an acknowledgement about the similar associations found in our study when using either the continuous or dichotomous definitions (Pg 12, 3rd paragraph). As these similarities are not always the case, we make suggestions for future studies to use both dichotomous and continous metabolic syndrome in their analyses (last paragraph of discussion). We will similarly do the same in future analyses when data collection is completed.

There is a minor correction in Table 2. 95% confidence interval is not complete in high blood pressure for both sexes, hypertriglyceridemia for males. Table 3 shall add the number of subjects in each category.

The confidence intervals for high blood pressure and hypertriglyceridemia are now correctly presented in the table 2.
The information about the number of subjects in each category was added to the table 3.

Level of interest: An article of limited interest
Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests.
1. Background:

- The recently added paragraph seems too vague and takes long to talk about the adult definition which is unnecessary in this study. Moreover, the authors shouldn’t add the details of criteria used in each definition which makes the introduction overflowing.

- The background needs to be restructured to be more concise.

The background was restructured and the details about the criteria used were removed from the text.

2. Method:

- The method needs to be explored further about the analysis: put more details of how to do the logistic regression, which variables are used…

The sentence was rewritten and more information about the logistic regression was included in the text.

- Physical activity thresholds: please clarify on which reference and criteria these thresholds are based.

These criteria were based on the *Global Recommendations on Physical Activity for Health*. Geneva, WORLD HEALTH ORGANIZATION, 2010, p.1-60.

“1. Children and youth aged 5–17 should accumulate at least 60 minutes of moderate- to vigorous intensity physical activity daily.”

“2. Amounts of physical activity greater than 60 minutes provide additional health benefits.”

- Measurements of blood pressure: “the difference of >2 mmHg in the two measurements”, please clarify why this difference was used.

Some researchers adopt the range of 2-5 mmHg between the two measures, while others just the average of the two measurements. We adopted 2 mmHg in our methods to try and obtain more accurate data. It is noteworthy that a third measure was only necessary for five individuals in our study.

- MetS definition used was the ATPIII “in order to compare with studies”. But the references indicated in the methods were not any of Brazilian ones, and in the discussion, the Brazilian studies mentioned didn’t use this definition. Please clarify and make this point comprehensive. I am not yet persuaded of the reason why the authors used the ATPIII definition.
The term “in order to compare with studies” was removed from the text.

We have a group of researchers who are collecting data about the prevalence of metabolic syndrome and associated factors in other regions of the state of Parana. When we started developing the project in 2005, we decided to adopt the MetS definition described by Cook et al. (2003). It was a common decision between the researchers involved in the project. When data collection is completed, we may produce a new manuscript using different diagnostic criteria to calculate the prevalence of MetS in our sample.

Reference

3. Results
- “Data not shown” must be added for all results mentioned in the text but not in the table or figure
The term “data not shown” was included in the text.

- The authors need to be very careful as using term “relationship” in the study, the term “association” suggested.
We agree with the reviewer. As suggested, the word “relationship” was changed for “association” in the text.

- The text describing table 1 is not consistent with the content of table 1. For example: “p<0.005 for all” can’t be the same as p<0.0001 in the table 1. Please make them consistent.
The text was corrected to p<0.0001.

4. Discussion
- The authors need to work out further about the difference between the prevalence revealed by this study and other prevalence of MetS mentioned. Paragraph “Rodrigues et al….. Janssen criteria” needs to be restructured to interpret the difference mentioned.
The paragraph was rewritten and the difference between the criteria was further explained.

- Term needs to be used consistently through all the manuscript: sex or gender, MetS (I found Mets in the methods)
The text was revised and the terms were corrected to MetS and gender.

- The paragraph “while the level… cardiovascular risk” has no linking idea with the next paragraph, please correct.

  We thank the reviewer for pointing this out. The paragraph was edited in order to be in line with the following one.

- Please provide reference for the quote “the 3-day physical activity record is considered a valid instrument…”

  The information was added to the text.

- Do you have limitations while not studying other factors like socioeconomic status, BMI status?

  The lack of information on socio-economic status was added as a limitation of our study. Regarding the BMI, the abdominal obesity measured by waist circumference was strongly correlated with obesity classified by BMI. Given that waist circumference is a better indicator of visceral fat, we decided to use it rather than BMI.

5. Conclusions

- The newly added sentence has no link with the previous one and I can’t understand why the term “cost-effectiveness” was added here which give confusion than ever.

  The sentence was completely revised.

6. Tables and figures

- Table 1: the title needs to be improved; the footnote for “ns” is missing.

  The footnote for “ns” was included and the title of table 1 was replaced.

- Table 2: it is the component or the individual risk factor, this point needs to be clarified and terms need to be used consistently in the text.

  The term individual risk factor was used.

- The upper range of 95%CI is missing

  The table configuration was corrected and the data are presents.

- The p-value which is non-significant needs to be presented the same as in table 1
The “ns” was included in the table 2.

- Table 3: Please present the OR non-adjusted as well
  The non-adjusted values were included in the table 3.
- Please put the “95%CI” not “confidence interval” only
  Replaced in the table.

- Figure 1, 2: Please do not use abbreviations in the title
  The abbreviations were replaced by the original terms.

7. Quality of written English

- English editing is still needed. Needs some language corrections before being Published
  As suggested by the reviewer, the manuscript was completely reviewed for English grammar by International Science Editing.

- Please do not use “one-sentence” paragraph
  This was corrected in the manuscript.

- Please add linking ideas
  We completely reviewed the manuscript for text cohesion. Paragraphs and sentences missing “linking ideas” were rewritten or restructured.

Level of interest: An article of limited interest

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:
I declare that I have no competing interests