Reviewer’s report

Title: Reference values for the 6-minute walk test in healthy children and adolescents in Central Europe.

Version: 1 Date: 25 April 2013

Reviewer: Merel Jansen

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General Comments
This study is important, because it provides reference values for an often used primary outcome measure in disabled children and adolescents: the 6-minute walk test (6MWT). Previous studies also provided reference values for healthy children and adolescents, but the current study adds information about the effect of the max heart rate at the end of the test. Furthermore it clearly describes the influence of anthropometrics on the distance walked. We suggest some minor revisions (section Minor Revisions).

Minor Essential Revisions

1) Is the question posed by the authors well defined?
Yes the question and aims of the study are well defined. I would recommend to add the hypothesis. Furthermore, I would suggest to use the words “heart rate before and after the 6MWT” instead of “heart rate before and after the test” (Line 86-87).

2) Are the methods appropriate and well described?
In general, the methods are well described. I would recommend to add the following information to the methods:
   a) The power calculation (Line 133)
   b) The stepwise multiple regression analysis: forward or backward? Which variable is added in which step?
   
In addition:
   c) I would suggest to change the words “baseline data” to “characteristics of the participants”. Baseline might suggest a longitudinal study.
   d) Line 137: onset of puberty
   e) Why did you use non-parametric Mann-Whitney-U-tests to compare characteristics of the different age groups? Did you consider a parametric test?
   f) Why did you decide to give no verbal feedback during the first 5 minutes of the test? Did you notice any problems in the attention span of the children?
g) The questionnaire, height and weight could perhaps be placed before the 6MWT in the text?

3) Are the data sound?
The study included 496 children. I do not feel adequately qualified to assess the statistics, but I would suggest:
   a) Part General: describe some data in the main text: what is the mean distance walked, and what is the heart rate at the end of the 6MWT? Please add the number of fall incidents.
   b) Part 6 minute walk distance, body dimensions and vital signs: you might change this sub part into “Differences in characteristics between boys and girls”. Please describe what differences indicate (e.g. line 163).
   c) Part correlations and equations:
      - Part Overall: You may change this into “Total group” instead of overall.
      - General: You may add the correlations. Perhaps you could add the explained variance?
      - Table 3: I do not completely understand the p-values shown in the table. Perhaps you can add the different steps of the regression analysis as a separate line for the readability?

4) Does the manuscript adhere to the relevant standards for reporting and data deposition?
   In my opinion, it does.

5) Are the discussion and conclusions well balanced and adequately supported by the data?
   a) The first paragraph of the discussion could be rephrased; it reads like a part of the results instead of the discussion. For example the sentence starting at line 242 and the reference to figure 5a and 5b. In addition, the words “we can therefore provide” could be “We provided”.
   b) The authors found that the distance walked was mainly predicted by age, and this relationship was not confounded by height and weight. How was the relationship between the distance walked and height (without age)?
   c) The heart rate increased 40% from start to the end of the test. Other authors found an increase of 50-60% (Geiger 2007). How could you explain this difference?
   d) Can you explain why the physical activity level is related to the 6MWT in adolescent girls and not in boys?

6) Are limitations of the work clearly stated?
The only limitation described is that the PAS does potentially not reflect physical activity in daily life. Other limitations, or choices (e.g. the decision to give no verbal feedback, except the last minute) could be described.
7) Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?
Yes they do.

8) Do the title and abstract accurately convey what has been found?
   a) The title is clear, but perhaps Central Europe could be Switzerland?
   b) I am not sure whether the word impact (line 43) is correct in the abstract. Perhaps the words association, or relation, should be used?
   c) I would suggest to describe that the 6MWT is the main outcome, and the other outcomes are the questionnaire etc. (thus add the 6MWT). (Methods)
   d) I would suggest to describe the analysis used to calculate the equations (Methods).
   e) Line 54 describes that height and weight do add information, however in Line 272 you describe that age alone performed similarly well.
   f) Perhaps you can describe the clinical implications of the results in the conclusion part of the abstract.

9) Is the writing acceptable?
I am not a native speaker. In my opinion, the text is readable. However, there are some errors (e.g. Line 80: age ranges, Line 204 significant 2x). In addition, e.g. lines 64-66 are somewhat difficult to read (define 6MWD the first time you use it, line 65). Perhaps some assistance from an (native) editor could be practical.

Discretionary Revisions

1) Should you use the word “Swiss” instead of “A central European country” throughout the manuscript (including the title)?

**Level of interest:** An article whose findings are important to those with closely related research interests

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

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

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