Author’s response to reviews

Title: Validity and reliability of a self-report instrument to assess social support and physical environmental correlates of physical activity in adolescents

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Author’s response to reviews: see over
Dear Dr. Sanchez,

Please find enclosed the revised version of the manuscript of the following Research Article:

**Validity and reliability of a self-report instrument to assess social support and physical environmental correlates of physical activity in adolescents**

Anne K Reimers, Darko Jekauc, Filip Mess, Nadine Mewes & Alexander Woll

We would like to thank you and the reviewers for your excellent comments. We believe that the quality of our manuscript has improved by implementing the suggestions and comments received. Please find our response to the reviewers’ and your comments below. Comments by the reviewers and you are shown in regular font, and our responses are shown below each comment in italic and the location where the corresponding changes can be found in the text.

Reviewer 1:

1. It is an article of validation of instruments that presents overall quality and appropriate details of the methodological steps, with theoretical consistency. Despite using the classical theory of validation of instruments, it brings important contributions to the area.  
   *Thank you.*  

2. The main concepts of the study and a literature review are presented in a suitable way in the Introduction. Objectives of the study are appropriate and clear.  
   *Thank you.*  

3. The methods are presented in detail, but I suggest a better organization of the validation steps and the assessment of the scale, to enable the reader a better understanding of all the procedures performed by step.  
   *Thank you for this suggestion. We have reorganized the methods section, and in the revised manuscript the methods for study I and study II are described separately to enable a better understanding of the procedures (pp.6-12; see also reply to comment 2 by the editor).*  

4. Limitations were presented properly. I suggest clarifying that it is a study with some evidence of validity of the instrument, but that other indicators or robust techniques with a larger sample and great external validity are needed.  
   *We have added a paragraph to the limitations section describing that a comparison of the validation of the instrument with a ‘gold standard’ is not possible because of the lack of such a ‘gold standard’, and...*
the need for comparing the new measures with objective or proxy-report measures (pp.18-19). In addition, we have included a statement in the conclusions section that further studies on larger study samples and using criterion validation techniques are needed to improve evidence on the measurement properties of this instrument (p. 19)

5. Discussion and Conclusions show that the authors achieved properly the objectives proposed in the study.
   Thank you.

6. Finally, I suggest to change the title to “Evidences of Validity and reliability of a self-report instrument to assess social support and physical environmental correlates of physical activity in adolescents”, due to the characteristics and limitations mentioned by the authors, and considering what I pointed about the limitations of the methods and the need of using other criteria of validity.
   Following the reviewer’s recommendation, we have revised the conclusion section emphasizing that there is some evidence for validity and reliability of the instrument and that further studies on larger study samples and using criterion validation techniques are needed to improve evidence for the measurement properties of this instrument (p. 19). However, after reviewing other publications on studies of validity and reliability of instruments (e.g. Durant et al., 2009; Dwyer et al., 2011; Forman et al., 2008; Sirard et al., 2008), we suggest to not change the title as recommended by the reviewer. We believe that despite the limitations of this study, the original title reflects the content of this manuscript well. However, if you or the reviewer strongly feel the need for revising the title, we would accept this change.

Reviewer 2:

1. This is a well written paper providing a reliable instrument to assess the influence of social support and physical environmental component on physical activities in adolescents.
   Thank you.

2. The rationales for developing the self-report instrument for the social support and physical environment were well described. Description of the method was logical. Results and discussion were clearly presented with appropriate conclusion.
   Thank you.

3. Limitation of study I was the convenience sampling in one school where students may share similar physical environment. However, this limitation was well addressed in the limitation section.
   Thank you.

4. Results and discussion: Inconsistent data presentation format, e.g. some data presented as ICC=0.83, r=0.235 (on p.13) while others as p=.004, CFI=.960. Please consider standardizing the format throughout these sections.
   Following the reviewer’s recommendation, we have added the zeros at the pre-decimal point position in all statistical data in the text and in the tables for consistency. In addition, we have rounded all statistical data to two decimal places.

Comments of the Associate Editor:

1. I suggest that the authors make the instrument available as a web link in the article (as a supplementary material).
   We have provided a data file with the final version of the questionnaire as supplementary material.

2. Please, re-write the methods organizing the validation steps and the assessment of the scale.
   As described in our response to reviewer 1, we have reorganized the methods section, and in the revised manuscript the methods for study I and study II are described separately to enable a better understanding of the procedures. The revised manuscript comprises the following sections: design, questionnaire development, study I (description of participants, data collection, measures and statistical
analysis) and study II (description of participants, data collection, measures and statistical analysis) (pp.6-12).

3. More practical information on the discussion would be important (implications, examples, etc).

Thank you for this good comment. We have added a description of an example considering stability of social support items (p. 15), how the reliability of the physical environmental scale could be improved (p. 17), and how the social support scale could be implemented (p. 15).

Additional author’s corrections:
1. The status of the reference no.45 was changed into ‘in press’ (p.23).
2. To account for the reorganized structure of the methods section and the structure of the discussion section, we have reorganized the results section accordingly for a better text flow. In the revised manuscript, the descriptive results are followed by the description of results of the validity and reliability analyses for both scales (pp. 12-14). Correspondingly, we have split the original Table 4 into two tables (Tables 3 and 5). We believe that this modification facilitates a better understanding of the results section and hope that you agree with us. However, if you prefer to reverse this change, we would accept this change.

3. We have changed ‘actual’ MVPA to ‘recent’ MVPA in Tables 3 and 5 to ensure consistent terminology throughout the text and tables. Finally, we have eliminated the note concerning PA from Tables 3 and 5, because this abbreviation was not used in these tables.

We hope we have addressed all your and the reviewers’ concerns and comments to your satisfaction. All authors approved the revised version of the manuscript. We would like to thank you for considering this manuscript for publication in BMC Public Health.

Yours truly,

Anne K Reimers, corresponding author

References

