Author's response to reviews

Title: Development and evaluation of the Andhra Pradesh Children and Parent Study Physical Activity Questionnaire (APCAPS-PAQ): a cross-sectional study

Authors:

Mika Matsuzaki (mika.matsuzaki@lshtm.ac.uk)
Ruth Sullivan (ruthms72@hotmail.com)
Ulf Ekelund (ulf.ekelund@nih.no)
KV Radha Krishna (vijrkk@yahoo.com)
Bharati Kulkarni (dr.bharatikulkarni@gmail.com)
Tim Collier (Timothy.Collier@lshtm.ac.uk)
Yoav Ben-Shlomo (Y.Ben-Shlomo@bristol.ac.uk)
Sanjay Kinra (sanjay.kinra@lshtm.ac.uk)
Hannah Kuper (hannah.kuper@lshtm.ac.uk)

Version: 3 Date: 20 October 2015

Author's response to reviews: see over
Response to reviewers

First of all, we would like to thank the editor and reviewers for closely reviewing the paper. We have reviewed all the comments and made appropriate changes as noted below.

Reviewer 1: Daniel Camiletti-Moirón

Discretionary Revisions

ABSTRACT
Page 2, lines 4-5# Authors should clarify the sentence regarding the objective of the study (i.e. The aim of this study was to develop...)
* We have edited the sentence to say The aim of this study was to develop and examine... as suggested.

Page 2, line 14# Authors should be consistent with numbers units, remove/add the comma according to the guidelines of the journal.
* We have removed the comma to make it consistent throughout the manuscript.

Page 2, line 33# Remove from “and potentially in other south Asian context as well.”
* We have removed and potentially in other south Asian context as well as suggested.

Keywords: From a methodological point of view, the authors should know that the keywords should be included in the Health Sciences Descriptors (DECs), if they were not included, the authors should change the keyword/s that they are not included in DECs.
* We have modified keywords to use existing terms.

BACKGROUND
Well stated, to the point.

MATERIALS AND METHODS
Regarding the design of the study a flow chart might be really helpful to understand how the authors reached to final study sample.
* We have included the flow-chart describing the numbers of recruited and enrolled individuals in the study (Additional file 1) as suggested.

Page 5, line 133 # The authors mention throughout the text that the questionnaire was self-reported, however in this line the authors mention “All participants completed an interviewer-administered quantitative physical activity questionnaire (APCAPS-PAQ; S1)” How do you solve the possible effect of bias that the interviewer may produce in the subject interviewed?
* Our questionnaire was administered by interviewers. Even though other PAQs that were interviewer-administered also use the term self-reported instrument, we agree that the term may be confused with self-administered, and therefore in all instances where self-reported was used, the term was removed and replaced. In terms of bias estimation, Bland and Altman method used in the study assessed evidence of systematic bias that may have been introduced in the design and administration of PAQ in comparison to Actiheart (Page 7 Line 280).
RESULTS
Nicely detailed.

CONCLUSION
Fine.
Reviewer 2: Alberto Soriano-Maldonado

Major Compulsory Revisions

DISCUSSION

Line 413: Please specify what the meaning of “fair” is. With regards to stability, what levels of ICC or Kappa were you expecting?

* Fair stability was defined as 0.2 to 0.4 kappa, based on Landis and Koch (1). We expected to see similar variation and levels of correlations for construct validity as PAQs used in LMIC settings such as IPAQ. A validation study for IPAQ showed similar correlations to our PAQ (\(p = 0.09\) to 0.27) (2). We are aware that our test-retest stability was lower than the reliability values reported in a Sub-Saharan PAQ study in Cameroon [Ref 22 in the paper] and we mentioned this and potential reasons in the discussion.

To me, it is more interesting to assess the reliability (e.g. one week separation between measures) than the stability. Also, stability in this context might not be providing much information about the questionnaire itself, but about different physical activities undertaken of the people answering it (even one year later). Therefore, I have some reservations to what extent this information is useful for the study purposes. Please make sure that the reasons why the stability parameters are important in this study are clearly explained in the introduction and discussion sections.

* We agree that reliability is an important measure to examine and our study was limited by design in this aspect. Various factors, including political unrest at the time of the study, made it difficult to recruit the participants back within one week. We chose stability to describe our results rather than reliability but the purpose of this test was to assess reliability. Of note, when we compared the groups who returned within one month and over one month, we saw similar patterns of test-retest results, which is promising, although the sample size for the group who returned within one month was too small for conducting statistical comparison.

In addition, you dedicate an entire paragraph to stability, when this is probably the least important aspect of the study.

* Since our main objective was to assess this new PAQ using three validation tests, we believe that it is reasonable to give thoughts to findings from each test.

It is imperative to me that a much broader discussion needs to be conducted relative to the criterion-related validity in the discussion section. The reasons for the low correlations and the potential ways to improve the questionnaire need to be discussed.

* We added text to describe reasons for low correlations and potential ways to improve the validity of the questionnaire (i.e. “lowering the MET value for walking from 3.0 to 2.0 MET within an Indian population may improve the strength of PAQ validity” Page 12 Line 439).

Line 421 onwards: I do not completely agree with this sentence “Our study showed that test-retest stability of this new questionnaire was fair to very good, with ICC ranging from 0.33 to 0.98 (\(p <0.001\))”. Although it is not completely incorrect, you must bear in mind that most of the ICC values were <0.50, with the exception of TV viewing. That means that most activity levels had a low-to-moderate stability, but TV viewing had an almost perfect stability.

* We agree and edited the paragraph to state that the stability ranged widely among question items (Page 12 Line 415).
CONCLUSIONS

The authors should be careful with their conclusion stating that the questionnaire is a “valid and reliable tool for ranking individuals based on reported physical activity”. Considering the low-to-moderate criterion validity, I would recommend to interpret the results with more caution. Also, the authors have NOT assessed reliability. Therefore, this word needs to be removed from the conclusions.

The authors should reconsider the extent to which the questionnaire might be useful in real settings, especially considering the obtained results, and describe the potential uses of this tool in the future.

* We agree that test results from the tests in this study supported validity and stability to varying degrees. However, we believe that this is still a valid questionnaire to use in this context as our results were comparable to other questionnaires that are widely in use in low and middle income settings.

We agree that we did not test reliability and therefore changed reliable to stable (Page 13 Line 481).

Minor Essential Revisions

General comment on the MATERIALS AND METHODS section: In my opinion, this entire section should be reorganized in three clearly distinct sections: Study design, Measurements, Statistical Analysis. In its current form, the validity and stability information seems to be repeated to some extent in both the measurement and the statistical analysis sections. For each measurement method, you should specify the procedure you undertook to carry out the evaluation, specific sample size or sub-samples used when necessary, etc. The statistical analysis section should describe any data combination and the statistical methods used to analyze the data.

* Thank you for the suggestions. We have edited the manuscript to 1) include 3 main sections (Study design, Measurements, Statistical Analysis), 2) reallocated information from Testing for stability and validity to one of three sections, and 3) removed duplicated information.

Methods: Please state clearly what the inclusion/exclusion criteria for participation in this study were.

* We have described who were invited to participate in each part of the study in the Study design section. We have also included a flowchart (Additional file 1) to clarify this point.

Line 95: I would suggest you entitle this section “Study design” instead of “Hyderabad DXA Study (HDS) design”. Also, please explain (or present a flow chart of participants) how the sample was recruited.

* The section title has been changed to Study design.

Lines 95-127: In general, I find these 3-4 paragraphs difficult to follow. Please re-write in a more summarized manner, highlighting only the most important information that the reader needs to know about the context of the study and where the sample for each study aim comes from.

* We have re-written these paragraphs to make the information clearer and included only relevant information about IMS and APCAPS. We have also included a flowchart (Additional file 1) to clarify the numbers of individuals recruited and enrolled in this study.

Line 105 and 106: Does this mean that the APCAPS is part of the Hyderabad Nutrition Trial? Is the Hyderabad Nutrition Trial also part of the HDS? Please clarify.
The APCAPS researchers identified and followed up the participants of the HNT. These participants became the cohort in the APCAPS. The sentence was corrected to “Briefly, the APCAPS was established through long term follow-up of the participants of the Hyderabad Nutrition Trial, which was conducted in 1987-1990” to clarify this point.

Line 107: What is the meaning of “index children”?

The index children were those who were born in 1987-1990 who were part of the HNT. However, this information is irrelevant to the current study as we did not examine the effects of the trial in the current study, and so this phrase has been removed.

Line 135: Please include “the”: in “the” following main domains...

* the has been inserted as suggested.

Line 172: Please provide information about the Seca model used.

* We have added the Seca model information (Seca 899).

Line 186: Please change “body percentage fat” for “body fat percentage”.

* body percentage fat has been changed to body fat percentage as suggested.

Line 206: A combined “index/measure”? It seems that a word is missing. Please check.

* This is a device that combines heart rate monitoring and motion sensor. Clarified by changing it to a combined heart rate and motion sensor device (Page 6 Line 216).

Line 244-247: Please explain with further detail how was PAEE calculated. It is not clear to the reader and it is difficult to evaluate this section without a more precise explanation. An example might be useful.

* We used the software in Actiheart, which is based on a branched model, with individual calibration from a step-test to establish HR-PA and Activity-PA relationships. We believe that further details of this estimation method is beyond the scope of this paper but we added the manufacturer's manual (2013 version), which includes description of the method of AEE estimation, so that the precise estimation method is available to those who are interested (Page 7 Line 239).

Line 262: Reporting geometric mean is appropriate for positively skewed distributions. If this was the case, please report this information.

* All variables where geometric means were reported had positively skewed distributions. This point was added to this sentence (Page 6 Line 256).

Line 264: “Stability was examined through the intraclass correlation coefficient(ICC)”...

* intraclass correlation was changed to intraclass correlation coefficients as suggested.

Line 264-265: Please discuss the reasons you used Kappa coefficient or “Weighted” Kappa coefficient. Weighted Kappa is recommended when ordered categorical data is available (this is perhaps the case; e.g. sedentary, light, and MVPA). Reference: Cohen, J. (1968). Weighted kappa: Nominal scale agreement provision for scaled disagreement or partial credit. Psychological Bulletin, 70(4), 213–220. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/19673146

* This kappa was weighted kappa coefficient. The term here was edited to say weighted κ coefficient in order to clarify this point.
Comments to the Authors:

Line 264: What information is the result of the ICC providing here? Is it the agreement between two measures separated by up to one year? Why is this information important?

* Yes, ICC here describes the agreement between two measures separated by up to one year. Although this information does not provide reliability due to long follow-up periods for some participants, we feel that it is still important to describe stability as it allows us to examine how consistent measures examined by the APCAPS-PAQ are in the long term.

Line 276: Please remove “extent of”

* This sentence was removed (see below).

Lines 273-277: I cannot see a clear difference between the two first sentences in this paragraph. Perhaps you could clarify.

* We apologize - These were duplicate sentences. The second sentence was removed.

RESULTS

Line 326-327: Please provide numbers. I would suggest avoiding terms “low” or “high” in the results section. You can appraise this in the discussion.

* The sentence “The self-reported physical activity level was low in the HDS population.” was removed.

Line 346-347: Please give numbers for “weak” and for “very strong”.

* We have added κ statistics.

Line 348: Please modify “when participants seen at less than one month from initial test” for “when participants who performed the retest earlier than one month after initial evaluation”... Also, start a new sentence afterwards. “However, the low statistical power...”

* As per suggestion, we have edited the sentence to: The stability of the APCAPS-PAQ followed a broadly similar pattern when participants who performed the retest earlier than one month after initial evaluation. However, the reduced sample size (n=22) resulted in statistical tests lacking power to detect significance (data not shown).

Line 372: “showed”

* We have changed show to showed as suggested.

Line 392: “had 0.89% lower body fat”. Please modify similarly in the next lines (e.g. line 397).

* We have changed both to X% lower (higher) body fat as suggested.

Line 395: associated with.

* We have added with after associated as suggested.
* We have changed increase to higher in both instances as suggested.

Table 6:

Line 596: With regards to this statement: “2 Categories reflect increasing time spent in specific activity intensity with category 1 as baseline (least time).” It is not clear to this reviewer how much increasing time the authors refer to. As tables must be self-explanatory without referring to the text, please clarify this for the reader to understand, for instance, what is the difference (in terms of time spent in MVPA) between MVPA Activity 2 and MVPA Activity 3).

* We added definitions of each activity in the footnote to clarify: Sedentary activity = time spent in activities <1.5 MET; light activity= time spent in activities 1.5-3 METS; MVPA= time spent in activities >3 MET.

REFERENCE
