Reviewer's report

Title: Body composition among Sri Lankan infants by 18O dilution method and the validity of anthropometric equations to predict body fat against 18O dilution

Version: 2 Date: 28 January 2015

Reviewer: Jean-Philippe Godin

Reviewer's report:

The manuscript entitled “Body composition among Sri Lankan infants by 18O dilution and the validity of anthropometric equations to predict body fat against 18O dilution” by Bandara et al. deserves publishing after correction of the comments (major and minors).

Overall, this article is well written and well documented. The authors described comparison of methods to measure body composition in infants in Sri Lanka. However, there are comments that need to be absolutely addressed before its publication.

The major compulsory revision is about Table 4, and its description in the “results” and “discussion” sections. The reviewer would strongly suggest working on the reporting of the statistical analyses supporting the results, discussions. It means better describe the bias (systematic bias, yes or no, is it significantly different from 0) and to clarify the interpretation (see next comments).

Minor essential revisions:

Page 2: Line 40; Please could you replace “accuracy” by “interchangeability of methods or agreements” or rewrite the sentence using “interchangeable methods”. The accuracy should be reserved for method validation when know isotopic materials are measured and compared to their reference isotopic values.

Page 4: Would it possible for the authors to add more information about the protocol regarding the fluids intake of the infants during the equilibration period of the isotope (from the injection to the first urine collection), did the authors have recorded the volume of fluid intake and if yes, how did they take into account this volume? Or did they weight the infants during this period? Is there any precaution due to the climate that may affect the administration, fluids losses (as sweet), that would need to be taking into account?

Page 5: For infants, there is a significant variability in peer-reviewed papers about the timing for collecting post-doses urine sample (from 3h to few days). Could the authors add a comment about their choice?

Page 5: Line 107; could the author add the name of the reference materials used and at which levels they studied the accuracy and reproducibility?

Page 6, line 125: the hydration factor of lean tissue is effectively well
documented in infants based on the papers mentioned by the authors. Did the authors assess the “hydration status” of the infants using clinical observations? Or are they some specific recommendations for future studies in infants?

Page 7, line 42: Replace “annexure” by “annexe”

Page 7: The reviewer would recommend adding a sentence mentioning that the first check was to assess that there is no systematic bias. This was performed by checking the plot of differences and visually checked that they were well distributed around zero. If this is not the case, there is a bias (a systematic or not) and this was assessed by studying the regression (with the slope and intercept).

Lines 150-152: Could the authors add/complete their sentences by mentioning the “not significant from 1” for the slope. In addition, the authors did not mention the analysis of the intercept? Could you please justify or explain?

Page 8, statistical analysis:

Lines 148, 151, please could you remove “accuracy” and replace it by “interchangeable methods” as mentioned previously.

Lines 167-168: The differences reported are so huge and un-physiological, that one hypothesis is that the equations reported in the papers cited were wrong! Could the authors check again in other papers that the equations were correct? If there are well reported, could the authors add a warning?

I would propose to remove from Table 4, the results with unphysiological values but keep them in the text as you did (with their results).

Lines 175-179: The authors wrote “For equations with no relationship between...”. The reviewer would strongly suggest clarifying this sentence by mentioning the type of bias (i.e. no bias, or a systematic proportional bias).

Line 186: In Table 5 and Annexe, the equation and results for boys using the Durnin & Wormsley are not reported. Is it because this equation was only developed for girls? (as far as the reviewer noticed, the reviewer did not find this info in the manuscript, could you please add a sentence about it?

Lines 192: The reviewer strongly advised to describe the rest of the results reported in Table 4 by adding a paragraph on other comparisons by mentioning their bias.

Lines 250-252: The reviewer would strongly advise the authors to clarify the sentence. Is it a systematic bias, if yes, could the authors add if the bias is significantly or not different from 0. The authors only discussed Bandana et al. equation and what about Goran et al; and Durnin & Wormsely results and the others. Then between Bandana, Durnin and Goran, which one would they advise to use? If the authors cannot conclude, could they add some further recommendation for further studies based on their experiences?

Page 10; about the TBW of boys and girls. The reviewer likes the comparison
with Fomons and Butte et al. Could the authors add a sentence about these comparisons. It seems that the delta (TBW between boys and girls are a bit higher in this paper as compared to other published data). Could the authors add a comment (or hypothesis) explaining this offset?

Page 11, line 242: when the authors described “mean and SD”, could the authors removed one “%”

Lines 258 and 269: Replace “Third world countries” by “Developing countries”

In Table 2; could you please add more results about 18O isotopic enrichment calculated for the equilibration period and the isotopic enrichments measured at 5hrs and at 3 days.

In Table 3; there are two similar typing errors in page 23: “Prepubertral”
In this table, could you please explain and report how did you calculate the BD (body density) used in Durnin & Rahaman and in Brook equations?

In Table 4, the reviewer would strongly advise to:
- Add CI (confidence interval) at 95% of the bias after the “Bias”;
- Add CI (confidence interval) at 95% of the slope after the “slope”,
- Remove the SD of the bias
- Rename “constant” by “intercept” and add the CI as well to see rapidly if the CI includes O or not.
- Remove P because we don’t know to which variable P is referring to.
- The LL and UL limits (at 20 and 45%) are not reported or discussed in the manuscript, so it is worthwhile to keep them in Table 4. What are you conclusions for these values?

Typing error in “Deurenberg”; “Deurenberge” between Table 4 and Table in Annexe

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

The reviewer is employed by Nestlé and declares no financial competing interests in relation to this paper.