Author's response to reviews

Title: Concordance between muscle mass assessed by bioelectrical impedance analysis and by dual energy X-ray absorptiometry: a cross-sectional study

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Author's response to reviews: see over
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Concordance between muscle mass assessed by bioelectrical impedance analysis and by dual energy X-ray absorptiometry: a cross-sectional study

Authors:

Fanny Buckinx (fanny.buckinx@ulg.ac.be)

Version: 2 Date: 01 december 2014

Reviewer's report

Title: Concordance between muscle mass assessed by bioelectrical impedance analysis and by dual energy X-ray absorptiometry: a cross-sectional study

Version: 2 Date: 30 October 2014

Reviewer: Hunkyung Kim

Reviewer's report:

General Comments
This study aimed to evaluate the concordance between BIA and DXA for assessing muscle mass. There are several problems with this study as it lacks focus on the purpose, and the originality or novelty of the study is questionable. The BIA method has been extensively researched and compared with DXA, MRI, and other reliable methods of assessing muscle mass. The data analysis is also quite flawed, and cannot be published in the current state.

Specific Comments

Abstract
1. The conclusion made on Pg 3 line 69 does not seem to match the results. The authors state that the agreement between DXA and BIA was low (ICC=0.37). The conclusion should reflect the results.

Author's response: This result was added to the abstract

Background

2. What is the originality of this study? Many previous studies have investigated the validity and reliability of BIA in reference to DXA, MRI, etc. Why is your particular study necessary, and how would it add to the already extensive literature on this subject?

Author's response: We agree with the reviewer that some impedance methods have been validated against a reference method. However, all these studies suggest that the results obtained with BIA are device-dependent. To the best of our knowledge, the InBody S10, in particular, has never been compared to a reference method. This aspect has been added in the background section.

Methods
3. Please describe in more detail the inclusion and exclusion criteria.

Author's response: Exclusion criteria correspond to the contraindications of the BIA and DXA. No other selection criteria were applied in this study. It has now been added in the manuscript.
4. How were the subjects selected/recruited?

Author’s response: This is an important point. In fact, subjects were volunteers recruited from the community using advertisements in local newspapers and public places. This information has now been specified in the materials and methods section.

5. On Page 7 line 153, was grip strength measured 6 times consecutively? Or were there intervals? Why did the authors measure grip strength 6 times? This may cause fatigue and perhaps make the reliability of the measurement questionable.

Author’s response: Six measurements were taken consecutively but with alternating hands. 3 measurements on each side were made to allow the subject to get used to the movement and to get the maximum strength. We agree that these repeated measures could produce fatigue but according to some authors, continuous measurements (without rest period) are not affected by fatigue, especially with the dominant hand. Anyway, it has been discussed in the appropriate section.

6. Why did the authors analyze all the males and females, as well as all the age groups together? It would make more sense to analyze the males and females separately, and also each age group (within each sex) separately, i.e. analyse those aged 18-34; 35-64, 65+ in males and females separately. Then, show the total analysis of men and women. There needs to be a comparison between each sex and age group before combining the entire sample.

Author’s response: We totally agree with the reviewer that it would add a lot of useful information. Consequently, analyzes have been renewed by gender and age category. They have been added in a new table.

7. Furthermore, why was only appendicular lean mass studied? In order to fully investigate the concordance between BIA and DXA, the investigators should evaluate different body parts individually, such as the legs, arm, trunk, and then appendicular lean mass.

Author’s response: As suggested by the reviewer, analyzes per body segment (legs, arms and trunk) were performed and the fat mass was also added to the analysis.

Results
8. Again, please separate the analysis between men and women, as well as each age group. Also, the analysis of concordance should show plots of arms, legs, and body for the assessment method used.

Author’s response: a table detailing the results by age and gender was added to the manuscript.

9. Why were the patients that were out of the limits (Page 9 line 195-196) included in the study/analysis? More details are necessary in the methods.

Author’s response: All patients included in the study were included in the statistical analyzes. If patients out of the limits were removed, it may artificially increase the validity and the reliability of the InBody S10.

10. Page 9 lines 198-200, this should be a new table.
Author’s response: As suggested, a new table has been added

11. Page 9 lines 201-203, this should also be a new table.

Author’s response: As suggested, a new table has been added

12. The practical application: diagnosis of sarcopenia section seems very off topic. While the discussion of sarcopenia and its diagnosis is an important one, including this is confusing.

Author’s response: We fully agree with the reviewer and this paragraph was deleted from the manuscript.

Discussion

13. The authors state that your study is the first to compare BIA InBody S10 values to DXA, however there are many studies that do this...do the authors mean this particular instrument? Please clarify.

Author’s response: indeed, it is the first validation study for the InBody S10. This is now stated more clearly in the background and discussion sections.

14. The discussion on sarcopenia is confusing as it is not within the aim of the study. The purpose of your study, as I understand it was to compare BIA and DXA in regards to muscle mass, and not to investigate the predictive value of BIA for sarcopenia diagnosis in comparison to DXA. Please stay within the limits of your purpose. BIA for the diagnosis for sarcopenia would be an interesting study for a completely different article.

Author’s response: We agree with the reviewer. Consequently, the practical application of sarcopenia and discussion of sarcopenia were removed.

Level of interest:An article of limited interest
Quality of written English:Not suitable for publication unless extensively edited
Statistical review:Yes, and I have assessed the statistics in my report.
Reviewer's report
Title: Concordance between muscle mass assessed by bioelectrical impedance analysis and by dual energy X-ray absorptiometry: a cross-sectional study
Version: 2 Date: 7 November 2014
Reviewer: Atsushi Harada

Reviewer's report:

1. Line 75: Please change its reference ([1],[2], and [3]) to more representative one, although the description concerning body composition and the reliability of DXA seems to be relevant.

Author’s response: as suggested by the reviewer, references have been added

2. Line 86: Is this true? Recently, many studies have examined about the correlation between the muscle mass measured by DXA and by BIA.

Author’s response: Many studies have compared BIA against reference methods, such as DXA to assess body composition. However difference between BIA and DXA seems to be device-dependent. To my knowledge, this is the first study that examines the validity and the reliability of the InBodyS10. More details were added to the background.

3. Line 90: Please more description for diagnosis of sarcopenia by walking speed, grip strength and muscle mass according to EWGSOP algorithm in Methods.

Author’s response: as suggested by the reviewer, the application to the diagnosis of sarcopenia was removed from the manuscript.

4. This study suggested that the reliability between the particular model of DXA and that of BIA is very high and the comparison of the absolute values by conversion formula become possible. Its significance in diagnosis and treatment of sarcopenia seems to be great. However, in the case of the different models, its reliability will considerably change. Therefore, the authors should add the description about the different models in limitation.

Author’s response: This is a very important point raised by the reviewer. Indeed, the validity and the reliability vary according to the bioimpedance model used. The results should be interpreted with caution and have therefore been discussed in the appropriate section.

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.