Reviewer’s report

Title: Simulated Increased Soft Tissue Thickness Artefactually Decreases Trabecular Bone Score: A Phantom Study

Version: 0 Date: 03 Dec 2015

Reviewer: Daniel Martinez-Laguna

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Review of BMSD-D-15-00346

This is an interesting paper but I have some comments and questions for the authors:

1. Abstract: consider revising the Conclusion to also mention the effect of soft tissue thickness in BMD.

2. Background: In some paragraphs the authors confuse fractures with the 'fracture risk'. I.e.: "Since BMD is not a perfect indicator of fracture,..."

3. Background: The sentence "The higher the variation, the higher the TBS" should be corrected.

4. Background: I would like the authors explain why, if TBS in negatively associated with BMI, soft tissue underestimates TBS.

5. Methods: The authors may explain why the array mode of the Hologic system is not considered and why GE-Lunar iDXA is considered if there isn't a control phantom for iDXA.

6. Results: When the mean differences in BMD and TBS of the phantom (soft tissue 0 cm) are analyzed I would like that the authors shown a comparison between Hfa and Hhd models only.

7. Discussion: I agree that the authors provide an explanation why soft tissue is negatively associated with BMD in the Hfa and Hhd models but no in iDXA but in TBS soft tissue is negatively associated in three models.

8. Discussion: In Limitations the authors explain that soft tissue could not be directly translated into the amount of weight or BMI gain. Perhaps the authors should correct the sentence "First, for a given bone quality, subjects with higher BMI are likely to have lower TBS. Secondly, TBS could appear to be decreased in subjects who gain weight during a course of follow-up"

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.
No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No

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I am able to assess the statistics

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