Reviewer's report

Title: Measurement of three-dimensional morphological characteristics of the calcaneus using CT image post-processing

Version: 4
Date: 28 January 2014

Reviewer: David Gutekunst

Reviewer's report:

OVERVIEW:

The authors have made substantive revisions to their manuscript, including the addition of new statistical tests. I have only a small number of remaining comments:

MINOR ESSENTIAL REVISIONS:

(1) Table 2, LPF line, in the column for Male maximum value: this value (19.5 mm) still seems to be incorrect. Based on the min and max values for the entire cohort, the value should be 34.5 mm.

DISCRETIONARY REVISIONS:

(1) The precision values reported are impressive, and in my opinion they increase the value of the authors' 3D CT techniques. I have two suggestions which the authors may consider:

(1-a) Are there any reported data in the literature for the reliability and precision of calcaneus morphology measured using X-ray? A comparison between your CT technique and the traditional X-ray technique would be interesting. (Moreover, if your technique is more reliable and precise than X-ray, then this is another reason for other clinicians to consider adopting your methods.)

(1-b) For the length measures (LCA, HPF, LPF, LAP, and HAP) and areal measures (APF, AMF) you might consider comparing the measurement precision to the average values, i.e. the percent coefficient of variation (%CV). This could be a brief point in the Discussion to put the precision values in context, or as a formal addition to Table 3.

If you do choose to compute %CV, I do not think that it would be appropriate to report the angular measures as %CV, as the angles are interval data rather than ratio data.

(2) I really do appreciate the thorough and thoughtful responses to the quite detailed questions in my initial review. I found your explanations to be very informative, and I wonder if there is any way to append some of the additional information to this manuscript. In particular, I found Figures 2, 7, and 8 to be very, very helpful, and I wonder if other readers would as well.
Alternatively, I suppose that readers would be able to access these figures through the JFAR website as part of the Pre-publication History section.

**Level of interest:** An article of outstanding merit and interest in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.