

Reviewer's report

Title: Can foot anthropometric measurements predict dynamic plantar surface contact area?

Version: 1 **Date:** 22 September 2009

Reviewer: Smita Rao

Reviewer's report:

Major:

This is a well-written and executed study. The one major issue I struggled with was the assumption that contact area defines the mechanism by which pes planus may be a risk factor in the development of overuse injuries.

Subsequently, many of the contentions made in the Introduction are overstated. For example, the sentence "While Michelson et al [3] found that increased plantar surface area was not a risk factor for lower extremity injuries in an athletic population, both Kaufman et al [1] and Levy et al [2] reported that increased plantar surface area associated with a pes planus foot type caused an increased level of lower extremity overuse injuries in military populations." In the current version of the manuscript, these interpretations are at best, inaccurate and at worst, misleading.

I would strongly encourage the authors to include a paragraph, early in the Introduction, explaining why they think plantar contact area, and not a measure of architecture or load distribution, was chosen as the dependent variable of choice in individuals with pes planus. Aside from this issue, the manuscript is well organized and reads well.

Minor:

1. Page 11. Given that MFwid is used to calculate MFRatio, please address the issue of independence of predictors in the regression equations.
2. Page 13. MFwid, HLwid and AHRatio serve as predictors in equations for both, TPCA and PCA-Toes. Why might MFRatio have a unique contribution to PCA-Toes?
3. Along the same lines as #2 above, it would be valuable to include potential mechanisms by which predictors influence plantar contact area. Tying results from the statistical model to a conceptual or theoretical model would be very helpful.

Response in JFAR Format:

1. Is the question posed by the authors new and well defined?
- Yes

2. Are the methods appropriate and well described, and are sufficient details provided to replicate the work?

- Yes

3. Are the data sound and well controlled?

- Yes

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?

- Yes

5. Are the discussion and conclusions well balanced and adequately supported by the data?

-Yes. Minor issues listed above.

6. Do the title and abstract accurately convey what has been found?

- Yes

7. Is the writing acceptable?

- Yes

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:

'I declare that I have no competing interests'