Reviewer's report

Title: Hallux Valgus and Plantar Pressure Loading: A Population of Men and Women

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Reviewer: Sheree Nix

Reviewer's report:

This original research article describes plantar pressures and forces during gait in a large population-based sample of adults with hallux valgus, with or without other foot deformities, compared to a referent group. This manuscript is well written and follows a logical structure. The methods and results are clearly reported.

Major compulsory revisions:

1. Abstract conclusion - is this concluding statement really justified, since the reported study did not investigate prospective risk of other lower extremity ailments?

2. Background Para 2 - query whether References #7 and #8 are the best citations to support these statements? The paper by Schoenhaus & Cohen (1992) appears to be a theoretical paper, and other more recent studies with original data could support the point being made. It appears that the authors have not considered study quality when citing references in this paragraph, and I would suggest more emphasis be placed on the findings of the systematic review (Reference #6).


4. Background Para 4: the authors state that previous plantar pressure research in HV has been limited by a “lack of generalizability”; it would be helpful to be more specific regarding the limitations of previous research and the "gap" that is being filled by their study. The novelty of this study in considering HV in combination with other foot deformities could be emphasized.

5. Although large, the population-based sample in this study included mostly older adults, and this should be made clear in the introduction and discussion.

6. Study purpose - suggest adding "and other foot deformities" after "...between those with and without HV"

7. Methods Para 2 - could the authors please explain briefly how the physical examination has been “validated”?
8. Methods Para 5 - "biomechanical data" is somewhat vague and could imply that other open- and closed- kinetic chain measures were obtained; suggest using the term "plantar pressure data"

9. Methods Para 8 (statistical analysis) - could the authors provide some justification for why both feet were included for analysis, rather than using right or left only for analysis? See Menz, H. B. (2005). Analysis of paired data in physical therapy research: time to stop double-dipping? J Orthop Sports Phys Ther, 35(8), 477-478.

10. Results Para 2 - suggest less emphasis should be placed on crude model findings for maximum force, as these values were not normalized to body weight (i.e. expressed as %BW), thus the statistical adjustment for body weight is necessary in order to interpret the data (i.e. some of the differences reported could have been due to differences in body weight of participants between groups)

11. The discussion section follows a logical structure and the authors offer clear theoretical explanations for a number of the study findings. Some novel aspects of this study are mentioned in the discussion but could be more clearly emphasised: 1) the use of CPEI and MAI in addition to peak pressures and force, 2) the analysis of medial and lateral rearfoot regions in plantar pressure analysis.

12. Discussion Para 2 - the authors acknowledge a study by Menz et al. (2006) that showed reduced hallux pressures in HV; however, it should also be acknowledged that other previous studies have found increased hallux loading in HV.

13. Discussion Para 4 - two studies are cited that reported reduced loading under the first metatarsal area (References #11-12); however, both of these studies investigated groups of surgical patients. Other previous work has shown elevated pressures under the first metatarsal area, and these conflicting findings should be acknowledged.


14. The authors have clearly discussed some study limitations; however, a further limitation that should be mentioned in the Discussion is regarding the plantar pressure masking of the hallux region in individuals with HV. Was the same mask used for all participants? Lateral deviation of the hallux in HV can mean that standardized masks are not able to accurately identify the hallux position.

Minor essential revisions:

15. Page 5 - third last line - suggest adding the word "the" between "under" and "middle"
16. Suggest to check abbreviations for journal titles in References
17. Reference #19 appears incomplete

**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.

**Declaration of competing interests:**

I declare that I have no competing interests.