Reviewer's report

Title: Pedobarographic and kinematic analysis in the functional evaluation of two post-operative forefoot offloading shoes

Version: 2
Date: 27 May 2015
Reviewer: Anita Raspovic

Reviewer's report:

This is an interesting and relevant piece of work that warrants publication however there are several recommendations that I believe should be addressed first.

Major Compulsory Revisions

1. Biomechanical studies commonly involve much data which can be difficult for the reader to 1. orientate to and 2. appreciate the practical implications of. I recommend that the authors consider re-formatting the results section so the data is presented in a systematic way. This might be, for example, according to intervention type or by mechanical variable or some other consistent convention. Sub-headings may assist. This would then set the discussion up to follow in a way that provides more order to presenting the wide range of variables, findings and practical implications.

2. Biomechanical studies of this nature also often involve multiple inferential tests, which run the risk of an elevated type-1 error rate. I note that some of the post hoc testing utilised a Bonferroni adjustment however it is still not clear to me how such a large number of tests could conceivably be adjusted for without significantly compromising the power of the study (which already has a low sample size of 10). Potentially the use of 95% confidence intervals instead of inferential testing may be an approach worth considering alongside the addition of effect sizes (as some of the significant differences appear quite small and potentially not clinically important). As statistics is not my area of expertise I suggest that full review by a statistician is conducted. Please note however that I believe the correct non-parametric equivalent for a one-way ANOVA with repeated measures is a Freidmans test, not a Kruskal-Wallis test which is for independent groups. Also consider reporting key information showing that test assumptions are met.

Minor Essential Revisions

3. Consider whether the data tables can be streamlined to show key information, important statistical data and perhaps omit tables where there were no (or minimal) statistically significant findings. This can just be reported in-text. For example, Tables 1a and 2a showing data for the contralateral side.

4. Please break the background, discussion and other sections of the paper up
into paragraphs – this may just be a formatting issue with my version of the paper.

5. Please explain the rationale for the sample size, was a power analysis conducted?

6. I am not sure on the JFAR convention however the name of the specific ethics committee that gave approval, and the respective approval number, may need to be included.

7. Please note whether the order of measuring each intervention was randomised.

8. Consider adding details, or references, for the reliability and validity of the measurements used.

9. Please include reference to the marker set and model used for kinematic data.

10. The results section does not include data (but refers to tables). I suggest that key data and statistics are reported directly in the results sections.

11. Note in the study limitations, that the findings of this research can not be directly generalised to older, frail or unwell populations as the sample who participated were young healthy females.

12. The quality of the figures require improving, clearer labelling etc. This may just be an issue with the formatting in the version I have received.

Discretionary Revisions

13. Line 55 – do the terms comfort and functionality capture the intent of the study or is it more risk of negative effects versus functionality?

14. Line 75 – should that say associated ‘with’ not ‘to’?

15. Line 88 – ‘designs’ not ‘design’

16. Line 96 – it is not clear what appropriate and inappropriate use refers to

17. Line 112 – should be due ‘to’ the particular shape, not due the particular shape

18. Line 119 – significantly increases hip adduction, not increase of hip adduction

19. Lines 123 & 124 are awkwardly worded – consider re-phrasing

Level of interest: An article of importance in its field

Quality of written English: Acceptable

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