Reviewer’s report

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

Version: 2
Date: 17 June 2015

Reviewer: Jaap van Netten

Reviewer’s report:

The manuscript “pedobarographic and kinematic analysis in the functional evaluation of two post-operative forefoot offloading shoes” by Caravaggi and colleagues is a simple but elegant paper, describing in depth analyses of walking with two types of FOS in comparison with a control shoe. As the authors rightly point out, FOS are widely used, despite our lack of understanding with regard to kinetics and kinematics. As such, this study can be a useful addition to the literature.

I would like to address various points for revision, to improve the quality of the manuscript.

Major Compulsory Revisions

Methodological:

- I understand the choice of healthy volunteers in this type of study, but I have my doubts about the selection of ten young female participants only. Why were men not included? Why were only young people included? What is the rationale for including ten patients? The current participant selection is a major limitation with regard to generalizability of the findings. Authors acknowledge this a bit, using it to explain a lack of findings in lines 326-7. To me, this actually shows the current results should be questioned with regard to the translation to patients; I don’t know if the same results will be found in patients who actually use FOS. The study would greatly improve when healthy participants more similar to people using FOS are included as well (i.e. older people with some comorbidities), or (even better) when participants are included who have been using a FOS in the past. Such a group of participants would need to be added before the results warrant publication.

- From the method section, it is not clear to me what a measurement consisted of. Authors describe that three steps from each subject in each shoe configuration were analysed for pedobarographic measurements.
  - Why only three?
  - The number of steps analysed for kinetic and kinematic measurements is not described
  - The number of steps to calculate walking speed is not described
Results:
- In the method section, both FOS are described as “two post-operative FOS” (line 141). In the results, only the full outsole FOS is described as FOS, whereas the other FOS is called “half-shoe” (Figure 1). This is confusing. The naming of the two devices should be critically looked at, and renamed consistently throughout the manuscript. Either both should be called FOS, or none.

- The results are rather lengthy, and continually describe differences: lower or higher, in rear-, mid- or forefoot, in three devices. As a reader, at some point I’m left guessing what the results mean. The figures and tables tell a great deal about the story, please rewrite the text of the results to guide the reader through the most important parts of the results. If the current version would be published, I’m afraid many readers will stop halfway through the results (with all other literature available as well) and the message of the paper will be lost.

Minor Essential Revisions:
- The English can be improved
- No conflict of interest is stated, and no company is acknowledged. Were the three shoes provided by the company free of charge? If so, this should be stated.
- In the abstract as well as the introduction, it is stated that comfort is an issue. However, comfort is not measured anywhere. Either remove this from abstract and introduction, or assess perceived comfort when more participants will be included.

Level of interest: An article whose findings are important to those with closely related research interests

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