Reviewer's report

Title: Optimisation of rocker sole footwear for prevention of first plantar ulcer: comparison of group-optimised and individually-selected footwear designs

Version: 0 Date: 15 Apr 2017

Reviewer: Scott Telfer

Reviewer's report:

This is a study of pressure relieving footwear in participants with diabetes. The authors tested 8 different designs of rocker shoes, varying two design variables for their forefoot pressure offloading performance. The best performing generic design was determined and compared to the best design at an individual level and it was found that in the majority of cases, this generic design produced the largest offloading and brought peak plantar pressures below 200kPa. In general, the manuscript is well written, and the study is methodologically sound with a large sample size. Most of my comments are easily addressable or discretionary to improve the clarity of the manuscript.

Major corrections

In my mind, and in previous studies in this area cited by the authors, personalized therapeutic footwear has a wide range of different features that can be modified to obtain an optimized offloading performance, met pads, cutouts etc. I would prefer the manuscript to make this clearer when describing the personalized footwear that is defined simply by the two rocker variables.

The second important limitation of the study (acknowledged somewhat by the authors) is the subject selection, and the fact that the majority of diabetic patients did not have peripheral neuropathy. Given that this is such a strong risk factor for ulceration, the study population would not be considered a high-risk group. The effects on gait are also well documented so I don't wholly agree with the justification given in the discussion. If the target was to bring peak pressures under 200kPa, how many in the neuropathy group achieved this aim?

Conclusion - I feel that the conclusion in the final sentence is too strong given the limited variables tested footwear and the not at-risk population tested for the reasons described above.
Similarly, in the abstract it should be clarified that the optimization is limited to 2 design variables.

Minor Corrections

Results (and abstract) - Please report exact p-values and 95% CI (or other measure of effect size) in all cases.

Discussion, paragraph 2 - Did you assess this for the participants in this study?

Figures 2 & 3 - What do the error bars represent?

Level of interest
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An article of importance in its field

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