Reviewer's report

Title: Reliability of capturing foot parameters using digital scanning and the neutral suspension casting technique

Version: 2 Date: 18 January 2011

Reviewer: George S Murley

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Title: Reliability of capturing foot parameters using 3D non-contact digitisation and the neutral suspension casting technique

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1. Is the question posed by the authors new and well defined?
Partially – refer to comment #7

2. Are the methods appropriate and well described, and are sufficient details provided to replicate the work?
No – refer to comment #4

3. Are the data sound and well controlled?
Partially – refer to comment #5

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
Partially – refer to comment #5

5. Are the discussion and conclusions well balanced and adequately supported by the data?
Partially – refer to comment #7

6. Do the title and abstract accurately convey what has been found?
Partially – refer to comment #7

7. Is the writing acceptable?
Partially – refer to comment #1

MAJOR COMPULSORY REVISIONS
(which the author must respond to before a decision on publication can be reached)
1. With respect to the author response #3 regarding ‘word limitations’ – my understanding is that Journal of Foot and Ankle Research does not stipulate a word limit except for the abstract (350 words). Therefore, the following issue has not been addressed by the reviewers:

Page 4 – 4th paragraph. The results of previous studies have been listed without any critical appraisal or discussion, and therefore, it is unclear what issues/arguments the authors are raising in this section. In addition, why have the authors included some reliability outcome measures for some studies and not others?

2. With respect to author response #5 regarding the terminology ‘within-method’ techniques – it is still unclear to the reader what this means. Simply paraphrasing the original paper by Laughton et al does not make it any easier to understand. Could the authors please add some brackets and define what is meant by ‘within-method techniques’?

3. With respect to author response #7 regarding generalizability of the study findings – I believe the authors are missing an important point here. The results of a reliability study may only be generalised to the population that reflect the sample of participants included in the actual study. Can the authors indicate whether the reliability of the casting/scanning techniques would be the same if the participants were less than 20 years of age, had heel pain, a history of surgery, neuropathic disease, foot arthritis etc? Perhaps these participants were recruited from another study?

4. With respect to author response #11 regarding the raters, please indicate whether rater training was performed, and if it was, please describe the nature/duration of the training.

5. The authors have not adequately responded to comment #14 [Page 7 – Statistical analysis. Could the authors please clarify in the manuscript whether; (i) the data was screened for normality, and (ii) whether hypothesis testing was undertaken to determine whether systematic bias was statistically significant]. If the authors disagree with the issue raised, then could they please state why they disagree rather than just saying they have consulted a statistician. The issue raised is that there is a lack of detail explaining the procedures undertaken in the handling of data/statistical analysis – I am not simply suggesting that the statistics chosen are incorrect.

6. Page 10 – 3rd Paragraph. It appears that the comment regarding ICCs becoming ‘improperly high with low inter-subject variance’ seems to be a typographical error in the study referenced [10] – when in fact the opposite is true. Higher inter-subject variance increases the reliability coefficient.

Portney and Watkins (2000) suggest “we can demonstrate that as the true variance in a set of scores decreases, the reliability coefficient will also decrease” (page 559). “Variability among subjects’ scores must be large to demonstrate reliability (page 566).”

7. Page 6 – second paragraph. It is only in this one sentence that it is apparent to the reader that the study actually compares the reliability of (i) a direct digital scan of the foot compared to (ii) a digital scan of a plaster impression of the foot. Therefore, the manuscript (particularly the title) is a bit misleading. Can the authors argue that they were comparing the plaster cast technique to digital scans when in fact measurement error is being introduced from the digital scan of the plaster cast impression? The authors should consider revising the title and manuscript to reflect this.

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

**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