Reviewer's report

**Title:** Clinical Correlates Between Foot Posture Index and Dynamic Rearfoot Motion

**Version:** 1  **Date:** 30 October 2009

**Reviewer:** Anthony Redmond

**Reviewer's report:**

This is an interesting, simple and well conducted study. There are a few areas in which modifications would be desirable or in which limitations should be discussed and I have listed these below.

**MAJOR COMPULSORY**

1. Page 6, final para. Were the data assessed for suitability for linear regression? LR is susceptible to effects of lack of homogeneity of the variances and normality in the distribution. Also, as noted again in my minor essential comments the FPI data is ordinal. To perform LRs you really should use the logit transformed values in the paper


These transform the ordinal data to a scale potentially suitable for entry in a regression model.

I would suggest that you evaluate the data for suitability to LR, calculating the LR model if all is OK, otherwise you should probably restrict your findings to the simple agreement data.

**MINOR ESSENTIAL**

1. Abstract, methods. Line 4. Specify the method used to derive the correlations
2. Abstract, results. Line 2 (and throughout. Please use the convention FPI= +5 to +9 to avoid confusion over minus signs etc.
3. Abstract, results. Line 4. For consistency please report the FPI range used to define the normal foot type group.
4. Page 4, line 3. Some papers have also used EMT. Amend to read “…via video gait analysis and electromagnetic motion tracking.”
5. Page 5, (Procedure) para2, line 5 (and throughout). replace “capture area” with “capture volume” as it is a 3D space.
6. Page 5 final line. “Five acceptable walking and were…” did not make any sense grammatically. Please revise.
7. Page 6. Please detail the statistical test used to identify the linear correlations. This is relevant as FPI scores are technically ordinal data and the choice of
Person/Spearman is relevant. Pearson’s r is fairly robust to ordinal data so you may be able to justify it if that is what you used – but you must do so.

8. Page 7, para 1. There is potential to confuse the reader over the group allocation as written. Suggest amend to read:

“Correlations between FPI score and maximum rearfoot angle were performed on data subsets representing the pronated foot group (FPI= +5 to +9) and a normal group (FPI= 0 to +4). The relationship between FPI score and maximum rearfoot angle was stronger in the pronated group (r=0.79) than in the normal group (r=0.73)(Figure 3).

9. Page 7, line 2. typo “ however were less strong…”


11. Page 7 lines 7 to 14. Reword for clarity. Suggest:

“One previous study evaluated ankle joint complex motion and FPI scores in a manipulated positions. Our method of measuring maximum rearfoot eversion in unmodified gait and in a larger sample may explain the increased strength of relationship found in our study. Furthermore, in our study FPI scores were correlated with maximum rearfoot eversion whenever this occurred in stance phase allowing for the inter-relationship between mid foot and forefoot to be included. This may have delayed or prolonged rearfoot eversion…”

12. Page 8, para 2, line 1 and 2. Suggest amend to read “Modern three dimensional…” and “…from our subjects…”

13. Page 8, para 2, line 7 Suggest amend to read “…midfoot function may be reduced where movement occurs across…”

14. Page 8, para 3. I found this paragraph confusing. You could rewrite but the paper may be better if this para were deleted entirely.

15. Page 8, para 4, line 3. amend to read “score -5 to 0 on…”

16. Page 8, para 4, line 4&5. amend to read…directional, it may suggest that the predictive capacity of the FPI could be expected to extend…”

17. Page 8, para 5. This is long run-on sentence. Please punctuate. Also please specify precisely where it is identified as a combination of frontal and transverse plane position.

18. Page 8 para 5. Is ‘planal’ a real word? Should this be ‘planar’? Ditto final line of conclusions.

19. Conclusions line 2. typos ‘ the findings’ and ‘suggest that’

20. Conclusions line 5. This should be ‘in studies’

21. Conclusions, para 2, line 2. amend to ‘suggests that…”

22. Conclusions, para 2, line 3. amend to ‘…motion, and this potential warrants further investigation.’
23. Figures. Please amend the Y axis labels for consistency throughout.

DISCRETIONARY

1. Page 3. Background, line 5. Suggest adding parentheses to differentiate the rearfoot angle clarifying clause from the list of other measures so the line reads “… calcaneal angle (frequently referred to as rearfoot angled), medial arch....”

2. Page 6, para2, line 7. suggest amend to read “… discrete variable (maximum eversion) to be entered in to the statistical analysis”.

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:

Yes. I have an indirect interest in that I designed and published the instrument on which the report is based.