

AJPM MANUSCRIPT REVIEW:

EVALUATION OF A WEIGHTBEARING NEUTRAL POSITION CASTING DEVICE

GENERAL COMMENTS

This is a generally well-written paper pertaining to a preliminary analysis of a new weightbearing casting technique. The paper is of sufficient interest and relevance to the readers of *AJPM*. Although the assumptions upon which the paper is based are considerably flawed, I can (begrudgingly) accept that the study is necessary when viewed in the context of current podiatric clinical practice.

However, as the Foot Alignment System (FAS) is a new device, the authors need to take more time explaining how the device is constructed and how it works. The single, poor quality photograph accompanying the manuscript is insufficient. I suggest the authors develop some clear line diagrams of the device and take a series of better quality photographs. Furthermore, as the FAS appears to have been developed by a commercial orthotic laboratory, a statement regarding any potential conflict of interest by the authors needs to accompany the paper. Finally, there are some issues with regard to statistical analyses that need to be addressed before the paper could be considered suitable for publication. I will address these issues in detail in the following section.

SPECIFIC CHANGES / SUGGESTIONS / QUESTIONS

Title

1. Due to the small numbers of subjects evaluated in this study, I suggest the paper is more accurately titled: "*Preliminary evaluation of a weightbearing neutral casting device*".

Abstract

2. Page 2, line 3: no need to capitalise Podiatry.

Introduction

3. Page 3, para 1, line 4: The reference to the Payne and Chuter paper is incomplete. Is this paper 'in press' in *Clinics in Podiatric Medicine and Surgery*? If so, this needs to be added to the reference in the reference list.
4. Page 3, para 2, line 3: suggest 'whether' rather than 'if'.
5. Page 3, para 2, line 16: typographical error: 'difficulty'.
6. Page 4, para 1, line 5: The Aquino and Payne reference is not appropriate here. The Roukis paper is a study, whereas the Aquino and Payne paper is a review. Theoretical comments in a review paper should not be cited to support statements such as this.

7. Page 4, para 2, line 5: suggest the authors think of a better word than 'Just' to commence the sentence. Also suggest replacing 'amongst' with 'between'.
8. Page 4, para 3: as stated earlier, more detail required regarding the construction and function of the device, including better visual aids.

Methods

9. Was any ethical clearance obtained for the study ?
10. Page 5, para 3, line 2: suggest replacing 'used' with 'undertaken'.
11. Page 5, para 4, line 2: no need to capitalise Podiatry.
12. Page 5, para 4, line 3: more detail required of the subject - male or female ? Age ? Symptomatic or asymptomatic ?
13. Page 5, para 4, line 5: suggest deleting 'by us'. Furthermore, it is not sufficient to simply refer to a previous paper when explaining how the measurements were taken, as this is central to the design of the current study. I am sure the readers will want to know how forefoot-to-rearfoot measurements were taken without having to track down the Chuter et al paper.
14. Page 6, para 1: more detail is required regarding the methods used:
 - a. How long was there between the two measurement sessions ?
 - b. How 'experienced' were the clinicians ?
15. Page 6, para 1: I am somewhat unconvinced as to the validity of simply averaging the values obtained by two clinicians and calculating an ICC to determine the reliability of clinicians measuring the forefoot to rearfoot relationship. If clinician 1 reports a forefoot varus of 6°, and clinician 2 reports a forefoot valgus of 5°, the average of these two measurements could reasonably be suggested to represent the 'true' value for further analyses. However, if clinician 1 reports a forefoot varus of 10°, and clinician 2 reports a forefoot valgus of 10°, the average of these two measurements is zero (ie: neutral alignment). Does this figure actually represent the 'true' value ? To make this section of the method more convincing, the authors should include a table with each clinician's obtained measurements side by side.
16. Page 6 para 1: an analysis of variance (ANOVA) is not an appropriate statistical test to use here, as (i) there are only two groups to compare (ie: the first and second cast measurement), and (ii) there are only 6 pairs of variables (ie: one pair for each student). The correct test to use is the non-parametric Wilcoxin signed rank test.
17. Page 6, para 2, line 2: again, how 'experienced ' is 'experienced' ?
18. Page 6, para 2, line 2: more detail required of the subjects - male or female ? Age ? Symptomatic or asymptomatic ?
19. Page 6, para 2, line 12: what sort of callipers were used ? How accurate were they ?

20. Page 7, para 1, line 2: again, more detail required of the subjects - male or female ?
Age ? Symptomatic or asymptomatic ?

Results

21. Page 7, para 2, line 6: as stated previously, the ANOVA is not appropriate.
22. Page 7, para 3: these results would be much better presented as a figure (eg: bar graph).
23. Page 8, para 1, line 5: which measurement do the ICCs pertain to (ie: 25, 50 or 75%) ?
If ICCs were calculated for each measurement, they should all be presented.
24. Page 8, para 2: again, these results would be much better presented as a bar graph.
25. Page 8, para 2, line 10: again, which measurement do the ICCs pertain to (ie: 25, 50 or 75%) ?
If ICCs were calculated for each measurement, they should all be presented.

Discussion

26. Page 9, para 2, line 5: no need to capitalise Podiatry.
27. Page 9, para 2, line 9: spelling mistake: replace 'considerable' with 'considerably'.
28. There is no section describing the limitations of the study. Due to the small numbers of subjects evaluated, this can only justifiably be termed a 'preliminary' evaluation. Presumably the podiatry students involved in the study had relatively 'normal' feet, so the current study does not provide any insight as to the feasibility of the device in more extreme foot types more commonly observed in clinical populations. I would also like to have seen some discussion of practical issues, such as how long it takes to cast a patient in this device compared to traditional methods. For example, if patients are required to stand for a long period of time, the device may not be suitable for children or frail older people.
29. Finally, I would also like to see some discussion of the clinical relevance of this study, ie: the 'bigger picture'. Does it really matter how a cast is taken if the outcomes of various orthotic devices are similar ? Do the differences in cast reliability between the FAS and traditional techniques actually *mean* anything ? Given the results of some recent orthotic therapy trials, there is some question as to whether any sort of casting is necessary at all. Although I appreciate that these issues are larger than the questions this study tries to answer, I feel that it is important to place the results in a wider context, and at least raise these questions in the discussion.