Reviewer’s report

Title: Interrater and intrarater reliability of Photoplethysmography for measuring toe blood pressure and toe-brachial index in people with Diabetes Mellitus

Version: 1 Date: 1 July 2011

Reviewer: Byron Perrin

Reviewer’s report:

Thank you for the opportunity to review this manuscript. I was pleased to read about work being done on the reliability of a now affordable clinical tool that is becoming more popular to assess lower limb arterial blood supply. I think the results, if substantiated by more information (as requested below), could be valuable to the podiatry profession. However, more information (expressed in a clearer manner) is required to make this judgement.

Major Compulsory Revisions:

1. It was frustrating to note (and time consuming to review) that there were many areas of the manuscript did not comply with the simple author’s instructions for this journal. This includes extensive errors with the in-text citation and references at the end. There also did not appear to be an abstract with the pdf. text I received. I do not think a running title is required, and the “abbreviations and keywords” section is confusing.

2. Please review the extensive use for uppercase letters throughout the text. These should be used in only very limited circumstances.

3. Please be more explicit and careful with the terms “peripheral vascular disease”, “peripheral arterial disease” and “lower extremity arterial disease”. It is not clear in the text how these are differentiated.

4. Last sentence of background: This is a long sentence and more explicit information is required around when and why people with diabetes can have calcified vessels. Is it every person with diabetes? The evidence suggests the risk is greater in people with diabetes and peripheral neuropathy or neuropathic ulceration.

5. 2nd sentence, 2nd paragraph: The term “microvascular” is used here- does this relate to the very capillary blood vessels or the main arteries to the toe, or both? Also, more information is required here about why it is important to “understand the severity of microvascular...”.

6. 3rd sentence, 2nd paragraph: Up until now, the weakness to the ABI is around the calcified vessels- here a new issue is raised without sufficient context. Is the issue occlusion in vessels distal to the ankle or is it calcified vessels why the ABI is limited in some populations of people with diabetes?
7. 4th sentence, 2nd paragraph: There is insufficient context provided around the concept of toe pressures and TBI's here. Much more information is required about how they relate to arterial assessment and how it relates to the ABI.

8. 4th sentence, 2nd paragraph: Also, here, why is the research around the TBI “limited”. The authors' cite 8 references at the end of this very sentence and a further 4 later that relate to the TBI. What does the previous literature say? Why is it still inconclusive? More detail is required here.

9. Aim: The aim of the study needs to be much clearer and more specific

10. Table 1 seems sparse on participant characteristics. E.g. why are gender proportions not noted? It is difficult to determine much about the 60 participants to help make decisions about generalisability.

11. Methods, Instrument: Why is the supplier of the doppler stated here? Unless there is a trademark issue, it appears to be inappropriate advertising for the company. The statement in the acknowledgments would be suffice.

12. Methods, Instrument: Far more information is need about the Hadeco SmartDop 30EX. How does it work? Is it manual or automatic? Has any previous research been undertaken using it? Why was it chosen?

13. Methods, 4th paragraph: why is the FHSQ and NAFF used and not reported? How is this data collection relevant? It may perhaps help in understanding the participants a bit better but no further information is given about these tools and the data they provided.

14. Methods/procedures: It reads as though the entire vascular foot assessment was undertaken in 5 minutes while the participants were supposed to be resting quietly in preparation for their arterial examination. Firstly, 5 minutes is unlikely to be enough time and is not as long as the evidence would suggest you need to wait (especially if things are happening to the participant during this time). Secondly, why was a neurological test done? Was there data derived from this? Again, this would help provide an understanding of the patient population. Finally, it is not reasonably to expect the patient will advise the assessors that they have “infection” or “charcot neuroarthropathy”.

15. The Fleiss reference appears incomplete?

16. 2nd sentence discussion: the results of this study are on a population of people with diabetes. It is not accurate to say that they support previous results found in a general population.

17. Discussion, 2nd paragraph. The findings of this study relate only to the reliability of the doppler only. The findings may provide other clinicians with more confidence that the doppler is reliable, but I may not sure that the results of this study will actually help determine the healing potential of a patient.

18. Discussion, 2nd paragraph, 2nd sentence: Why is Bonhom cited in the
sentence, but another three references are also cited at the end? Is there something special about Bonhom’s results?

19. Discussion paragraph 3: the section relating to using PPG at baseline prior to an intervention for lower limb arterial problems really needs more supporting evidence to back up the assertions.

20. Discussion, final sentence: This reads as though the Doppler is recommended because it is easy to use- the reliability (at least) of it should be the basis for a serious recommendation

21. Discussion/Limitations: Why is it possible that using a manual sphygmo will improve the reliability of the measurement of the brachial arterial pressure? Is there any evidence to support this assertion?

22. The discussion as it is structured lacks are clear narrative that leads the reader to a conclusion. It is not explicit what the authors’ suggest are the major implications of their results.

Minor Essential Revision
1. Discussion, 3rd paragraph: More elaboration is needed with clearer terminology about what it means for a measurement tool to be reliable.

Discretionary Revision
1. The reporting of the ICC and CI’s may be simplified. E.g. “ICC... = 0.78, 95%CI 0.65-0.68)

2. I would like to suggest that much of the information in paragraph 3 and 4 could be combined- specifically related to how the use of toe pressure measurement may be used in practice

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:
I declare that I have no competing interests