Reviewer's report

Title: Lower leg muscle strengthening does not redistribute plantar load in diabetic polyneuropathy. A randomized controlled trial.

Version: 1 Date: 22 January 2013

Reviewer: Anita Raspovic

Reviewer's report:

This is an important and well written paper that warrants publication after the revisions below are addressed.

Major Compulsory Revisions

1. Methods: The suitability of determining sample size for a pressure study using data on muscle function is queried, even though an explanation is provided in the methods. Further justification of this approach is suggested. Is the assumption that muscle function is hypothesised to be related to plantar pressure, and thus a sample size adequate to detect a change in the former should be sufficient to detect changes in the later? Or perhaps the authors have another rationale for the approach taken? Please provide more explanation to the readers.

2. Results, discussion, conclusions: The confounding factor of walking velocity changes on plantar pressure output, requires earlier identification, increased reporting and more consistent recognition in the discussion and conclusions of the paper. The mean difference and overall magnitude of change in walking velocity across measurement sessions should be reported (in terms of % change); alongside the overall magnitude of change in forefoot plantar pressure across measurement sessions (again % change would suffice). Currently this data did not appear to be reported but this would give the reader greater insight into the actual size of the changes being discussed.

The first paragraph of the discussion (second sentence) should acknowledge upfront that the increase in forefoot loading found over time may be due, at least in part, to commensurate changes in walking velocity. Similarly, the second last sentence of the abstract and the last statement in the conclusion do not acknowledge this significant confounding issue. Risk of foot ulceration may not progressively rise as stated in the conclusion, if the artefact of walking velocity changes were in fact responsible for the increased forefoot loading reported.

The abstract and conclusion should be better contextualised to reflect this significant study limitation.

Finally, could further statistical analysis or other research addressing this issue better identify what % of increased the forefoot loading might be attributable to walking velocity changes as compared to other events such as worsening impact of DPN?
3. Discussion, paragraph 2: A possible lack of study power is an important limitation to this study regarding the finding of no significance for the intervention trialled, particularly given that just over half of the participants in the intervention group did not complete the study. This point should be made up-front in paragraph 2 of the discussion where possible reasons for the study results are being presented.

Minor Essential Revisions

1. Abstract, methods, sentence 2: Should read ‘were’ not ‘where’

2. Introduction: Clarification is required from the Editors of JFAR, as to the suitability of referencing unpublished work.

3. Methods, 2.2 Settings and Participants: Please provide (somewhere in the paper) an indicative range of values for the CNE used to indicate lack of sensation (DPN), with cut-off scores for various levels of neuropathy severity.

4. Methods, 2.2 Settings and Participants: Was any pilot testing conducted to establish the consistency of pressure data output between the two different E-MED systems used?

5. Methods, 2.4 Outcomes and follow-up: How was standardised imposed gait velocity implemented and measured? What technique was utilised to check that participants did not alter their gait pattern to target the platform? Please state in the paper.

6. Methods section: Formatting requires cross checking to JFAR conventions through this section particularly where p values are reported (paper uses upper case P instead of lower case p) and referrals to tables require additional spaces.

7. Discussion, paragraph 6: There is a typographical error, should read ‘plantar’ not ‘planter’.

Discretionary Revisions

1. Consider adding the following (or similar) as keywords: diabetic peripheral neuropathy and strength.

2. The heading in the Methods section, 2.4 Outcomes and follow-up, could be more descriptive of the content covered under that heading. As a suggestion, this section could be broken into two sections. The first could be called 2.4 Measurement Protocol and the second might then be, 2.5 Outcome Measures.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the
statistics.

Declarations of competing interests:

I declare that I have no competing interests below