Reviewer's report

Title: Lower limb EMG and ground reaction forces comparison between barefoot and shod gait in Diabetic Neuropathic subjects

Version: 1 Date: 7 September 2009

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This study investigated lower limb EMG and ground reaction forces between barefoot and shoe gait in participants with diabetic neuropathy and in healthy controls. The authors investigated whether there were interactions between the participants groups and shod/unshod gait and the effect of lower limb EMG and ground reaction forces.

1. Is the question posed by the authors new and well defined?
   Yes

2. Are the methods appropriate and well described, and are sufficient details provided to replicate the work?
   Partially – refer to comments

3. Are the data sound and well controlled?
   Partially – refer to comments

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
   Partially – refer to comments. Confidence intervals and effect size statistics are not reported.

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

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

7. Is the writing acceptable?

There are many grammatical errors in the manuscript. Additionally, there are several instances of poor language and sentence construction. A major revision is required to improve the expression / language / comprehension of this paper to publishable standards.

Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)

Background section:
- Page 4 – 3rd paragraph. It is not clear why this section of the Introduction is so focused on ‘regular shoes / patients with ‘knee ligament reconstruction’/ ankle joint range of motion’. It seems unrelated to research that has focused on the interaction between diabetes / neuropathy / footwear / biomechanics. This section needs to be linked between with rationale for conducting this study.
- Page 4 – 4th paragraph. ‘…there is an unknown inability’. What does this mean?
- Page 4 – 4th paragraph. ‘This inability can be related to a high injury frequency in shod locomotion condition’. This explanation could be worded better and seems back-to-front. Should the explanation be: ‘the high injury frequency associated with shod locomotion may be related to a lack of malleability caused by wearing shoes’?

Methods section:
- What was the rationale for using the participants ‘own shoes’ for the experiment? Why not use one style of shoe for all participants? This may be a large confounding factor in this experiment.
- Page 5 – 1st paragraph (first line). All of (what changes?) have been studied during barefoot gait?
- Page 7. The approach taken to normalise the EMG amplitude data is not clear. This is an important issue since this study compared EMG amplitude characteristics from two supposedly different groups of participants.

Results section:
- Page 8 - first paragraph. Why have the Turkey post hoc results been reported for VL peak amplitude when there were no global effects detected in the MANOVA? This contradicts the statistical approach described in the last paragraph of the methods section (page 7).
- Page 8 – 3rd paragraph – line 4. Is this meant to read ‘condition effect’ and not ‘group effect’, because the comparison after this sentence is not comparing groups it is comparing conditions?

Other general comments:
- There are no confidence intervals or effect size calculations presented for any of the data.
- Why have the authors not included the EMG amplitude data?
- There are several limitations to this investigation that are not discussed. The reader would at least expect some discussion around limitations related to the use of ‘habitual’ footwear.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct).

Title: It may be viewed as insensitive to label the participants ‘Diabetic Neuropathic Subjects’. Rather, the subjects are really ‘participants’ with diabetic neuropathy. I think a better title would be:
“A comparison of lower limb EMG and ground reaction forces between barefoot and shod gait in participants with diabetic neuropathy and healthy controls”

Abstract Section:
- Background. What are ‘habitual shoes’? Could the authors use a different description for the type of shoes?
- Methods:
  • Capitalise G for ‘Ground’.
  • ‘21 volunteer adults non-diabetics’ (doesn’t make sense – perhaps remove the ‘s’)
- Results:
  • Capitalise T for ‘The’
- Conclusion:
  • The effect of the ‘disease’ ….by not adapting’. This is poorly worded and requires careful revision.

Background section:
- Page 3 – second paragraph. This whole paragraph is a single sentence.
- Page 3 – 3rd paragraph. ‘…and probably may alter’. Please revise this wording.
- Page 4 – 2nd paragraph. ‘There are a small number of studies…’. References for these studies are missing?

Results section:
- Page 8 – 3rd paragraph – line 4. Is this meant to read ‘condition effect’ and not ‘group effect’, because the comparison after this sentence is not comparing groups it is comparing conditions?

Discussion section:
- Line 12 of second paragraph. ‘The shoe effect did not played’.
- Next sentence – ‘…played a major role not adapting it…’ – poor expression.
- Last line of discussion. ‘…considered controversial…’. Why is this controversial?

Table 1. Some of the legend symbols in the table have additional adjacent characters that are not defined in the caption (i.e. . , &).

Figure 1. The dotted vertical line showing the time of peak amplitude for CGbare curve is not aligned on the peak of the CGbare curve.

Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)
- Throughout the manuscript, please consider revising the phrase ‘diabetic subjects’ to ‘participants with diabetic neuropathy’.

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

**Quality of written English:** Needs some language corrections before being published

**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