Author's response to reviews

Title: 'Choosing shoes'; the challenges for clinicians in assessing rheumatoid footwear: a preliminary study

Authors:

Renee N Silvester (kww1832@aut.ac.nz)
Anita E Williams (A.E.Williams1@salford.ac.uk)
Nicola Dalbeth (N.Dalbeth@auckland.ac.nz)
Keith Rome (krome@aut.ac.nz)

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Author's response to reviews: see over
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Keith Rome, Professor Podiatry, PhD
School of Rehabilitation & Occupation Studies,
Health & Rehabilitation Research Centre,
Discipline of Podiatry,
Private Bag 92006,
Auckland, 1142,
New Zealand

Dear Hylton

**MS: 8156778674061299: 'Choosing shoes'; the challenges for clinicians in assessing rheumatoid footwear: a preliminary study**

We would like to thank both reviewers for their time to read the manuscript and the constructive comments. We have underlined additional comments within the second version.

**REVIEWER 1**

1. Could the authors provide some more details on aspects of the footwear assessment to give readers more clarity?

Response: We have added to the manuscript: Menz and Sherrington [13] developed the seven item Footwear Assessment Form as a simple clinical tool to assess footwear characteristics related to postural stability and falls risk factors in older adults [11]. The assessment form allows clinicians to assess footwear style and footwear characteristics.

2. Could a definition of the types of footwear be provided - perhaps in an appendix? I accept that in the discussion the term 'jandals' is explained, but this may be unfamiliar to many readers and needs explaining earlier.

**Response:** We have added an appendix illustrating each type of shoe. The illustration has come from Barton et al (2009). I have spoken to one of the authors (Dr HB Menz), and he reported:

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Therefore, we have included the illustration into the manuscript. We have also added the following:

Sandals are defined as shoes consisting of a sole fastened to the foot by thongs or straps. A mule shoe is a type of shoe that is backless and often closed-toed. The term jandals, used predominantly in New Zealand and the South Pacific (also known as flip-flops in the UK and US and thongs in Australia) are flat, backless, usually rubber sandal consisting of a flat sole held loosely on the foot by a Y-shaped strap that passes between the first and second toes and around either side of the foot.

3. Equally some readers may wish to know how the team differentiated between high heeled shoes and court shoes.

**Response:** We have added an appendix illustrating each type of shoe. The illustration has come from Barton et al (2009). I have spoken to one of the authors (Dr HB Menz), and he reported:

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Therefore, we have included the illustration into the manuscript.

4. Finally, in terms of the 'good' footwear, was fit also considered? For instance, therapeutic footwear can only be considered as 'good' if it fits correctly.

**Response:** We did include 'fit' into the checklist based upon previous evidence for all footwear (references: 11-13).

5. I wonder if a little more detail could be provided here. Some readers may not be familiar with the LFIS & may need a little more guidance in interpreting the findings. Additionally, the FPI demonstrated a moderate to severe flatfoot - but in what proportion of participants?

Response: We included a full description of the LFIS in the methodology section. We have also reported under the sub-heading ‘disease measurement’ previous work by Turner [refs 20] a guide to what is defined as high-to severe level of foot impairment and disability.


We have also amended the sentence relating to the FPI: The Foot Posture Index demonstrated a median [IQR] score of 8 [6,10].

6. Footwear assessment - typographical error 3rd sentence should probably read: 'No subjects' were and not 'No shoes were'

Response: We have amended the sentence to: No subjects were found to be wearing ‘average’ footwear.

7. Would the authors like to consider the point that while comfort was the most important factor for most subjects, the majority were wearing ‘poor’ shoes. This seems counter-intuitive & taken at face value perhaps there is a need to re-consider how footwear is classified: in that if ‘poor’ footwear is the most comfortable, much footwear advice given by health professionals may need re-evaluating

Response: An excellent point. We agree that patients perception of comfort may not be necessarily be a good shoe perceived by a health care practitioner. We have added the following: Although patient’s preference was for a ‘poor’ type of shoe, however, they reported them to be comfortable. This seems counter-intuitive and taken at face value perhaps there is a need to re-consider how footwear is classified: if ‘poor’ footwear is the most comfortable, much footwear advice given by health professionals may need re-evaluated and describing appropriate or good footwear should be incorporated into any short or long term management strategies.

8. In the limitations I would like to see some consideration given to the subjective nature of the Foot Structural Index
Response: We have added the following: The index is a qualitative tool providing an overall observation of forefoot and rearfoot deformities in quick and easy manner. However, the index has not been evaluated for its reliability. Helliwell [23] further reported that the index is limited to monitor subtle changes of foot deformity over time.

REVIEWER 2

‘The study is not without it's limitations.’ is not an appropriate way to address these.

Response: We have deleted the sentence ‘the study is not without limitations’ and replaced with: There are several limitations to this study that warrant discussion.

1. Minor revision: Jandals is a tradename and I had to ‘google’ this to find out what they were. It is explained in the discussion section but explanation in the methods would be appropriate.

Response: We have added an appendix to describe all footwear classification. Jandals are in fact a term described uniquely in New Zealand for open-type footwear.

2. Minor revision: Under ‘Footwear assessment’ in Results section, this sentence needs correcting: No shoes were found to be wearing ‘average’ footwear.

Response: We have amended the sentence to read: No subjects were found to be wearing ‘average’ footwear.

3. Major compulsory revision: Table 2 is labelled ‘The relationship between shoe type (good, poor and average) and foot function and structure. In reality, this table just gives the baseline median and IQR for the forefoot and rearfoot structural indices and the LFIS. This is important information but also the relationship between shoe type and foot function and structure would be valuable, even though it is cross sectional data. Could the authors please include this data and add to the results section or to Table 2.

Response: We have re-labelled table 2 to: Baseline Descriptive Data of Foot Function and Structure Characteristics.

Thank you for the comments relating to the relationships. We intended to report this in the original manuscript. However, we were uncomfortable with undertaking such analysis due to the nature of the research design. However, we have added the following to the manuscript:

(i) Data Analysis

Secondary analysis evaluated the correlation between shoe type and foot function and structure using Pearson Chi-square.

(ii) Results

Secondary analysis demonstrated no significant correlation between footwear type (poor and good) and Leeds Foot Impact Scale, impairment domain (p = 0.243); Leeds Impact Scale, activity domain (p = 0.319); Foot Structural Index, rearfoot deformities (p = 0.592); Hallux valgus (p = 0.660) and Foot Posture Index (p = 0.724). However, a significant correlation was demonstrated between footwear type and the Foot Structural Index, forefoot deformities (p = 0.008).
(iii) Discussion

Secondary analysis demonstrated a significant correlation between footwear type and forefoot deformities using the Foot Structural Index. Tentatively, this suggests a link between presence of forefoot deformities and footwear. Since the majority of RA patients suffer from forefoot deformities, difficulties in finding ‘good’ footwear may exacerbate the already existing problems. The index is a qualitative tool providing an overall observation of forefoot and rearfoot deformities in quick and easy manner. However, the index has not been evaluated for its reliability. Helliwell [23] also reported that the index is limited to monitor subtle changes of foot deformity over time. Furthermore, the current study was cross-sectional. Future studies need to evaluate cause and effect before any definitive conclusions can be made looking at the relationship between footwear, foot type, foot pathologies and associated pain.

4. Major compulsory revision: Cost did not seem to be included in reasons for choice of footwear whereas in reality this is a common reason for poor footwear choice.

Response: We are in agreement that costs are not important and have not been previously reported. We have added the following: An important factor that was not included into the current study was direct or indirect costs. The wearing of poor shoes may have been due to financial constraints of purchasing ‘good’ footwear, i.e. direct costs to the patients. Furthermore, RA is a painful and distressing condition that can affect all ages and have a major impact on economically active adults, who may be forced to give up work either temporarily or permanently due to their condition, i.e. indirect costs. Therefore, clinicians and researchers should be aware of the direct and indirect costs to patients in obtaining ‘good’ footwear.

Regards

Professor Keith Rome

AUT University