Reviewer's report

Title: The Manchester Foot Pain and Disability Index: A Rasch analysis

Version: 1 Date: 17 August 2009

Reviewer: Anne-Maree Keenan

Reviewer's report:

Overview of study:
This study assesses the internal construct validity of the MFPDI, using the Rasch model, which is part of an ongoing programme of work exploring the utility and properties of the MFPDI. The study is a thoughtful and well written piece of work, which managed to convey some of the very dry Rash principles in a relevant and appropriate manner.

Specific Comments:
Background: I think that the authors should explain the rationale of the Cook recommendation of reduction of the one item being based on it not fitting a two-domain approach to the questionnaire. As it is not one in which the original MFPDI was based (ie four domains) this is relevant background, particularly in the context of item selection or deletion.

It is not surprising that the appearance subscale did not fit several of the Rasch parameters, due to the small number of items. This should be included in the discussion and the abstract.

General Criteria
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?
   Yes

3. Are the data sound and well controlled?
   Yes.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
   Yes

5. Are the discussion and conclusions well balanced and adequately supported by the data?
   There are areas of discussion that need to be developed a little further.
6. Do the title and abstract accurately convey what has been found?
The title is a little clumsy and I suggest it should be changed to A Rasch Analysis of the Manchester Foot and Pain Disability Index.

7. Is the writing acceptable?
Yes. The writing is of an excellent standard.

Specific Changes
(i) Abstract Page 2, Line changed from “…suggest that items from the appearance subscale fit the Rasch model, though this may be due to the small number of participants without extreme…. “ to “…suggest that items from the appearance subscale fit the Rasch model, though this may be due to the number of items in the subscale (only two) and the small number of participants without extreme…. “

(ii) Patients and methods. I would include a sentence at the end of the Rasch model paragraph (pg 4, paragraph 2)a sentence outlining that the following (ie the model, unidimensionality etc) are characteristics explored within the Rasch model and how each are evaluated.

(iii) The issue of uni-dimensionality and the t-test is a difficult one to explain. Can I suggest the following amendment:
…..It is essential that any scale is measuring only a single construct [26]. To ensure that the FPDI scales were unidimensional, a principal components analysis of the residuals was performed. The aim of this is to identify patterns of the residuals once the “Rasch factor” has been extracted. This is important in order to identify any subsets of items that may be loading together, and therefore may represent a different construct. The absence of any meaningful pattern in the residuals will be deemed to support the assumption of local independence of the items. In order to explore this, the two most different groups of items (i.e. those items whose fit residuals load negatively and those that load positively onto the first component). These two sets of items produce the most different estimates of person location. Using these two sets of person locations…………….

(iv) Discussion Page 10, para 4: delete the “only” just before moderate – 645 is generally considered a good sample size.

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

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests:

I declare that I have no competing interests