Reviewer’s report

Title: Development and validation of self-reported line drawings of the modified Beighton score for the assessment of generalised joint hypermobility

Version: 0 Date: 01 Nov 2017

Reviewer: Tina Junge

Reviewer's report:

Date: 1.11.2017

Reviewer: Dr Tina Junge

Reviewer's report:

The manuscript describes the thorough validation of a series of electronic self-reported line drawings for the assessment of joint hypermobility for use in online patient reported outcome measures. This study provides new insight in self-reported questionnaires for joint hypermobility.

While this is an interesting method study, the manuscript could be strengthened by adding additional details (please see below).

Abstract

1) Please reconsider the title based on my comments below.. Overall, I think this is a method study. Please consider, if this method is a supplement/appendix to Beighton’s original test description and not a development of a new test?

2) The methods section can be shortened.

3) Please highlight that this questionnaire can be suitable for epidemiological studies.

Background

1) The background can be more strict and focused, highlighting the need for the online patient reported outcome measure for GJH, such as 1) describing the extent and the severity in the population (epidemiology) and 2) the association to other self reported outcome measures such as injury, pain and OA (ethiology). Maybe this manuscript could be divided into two
purposes, or, as I would suggest, the association study should be excluded, as n=50 may cause type 2 errors?

2) Line 62 - is this the original definition of GJH? Please refrase ´move beyound normal limits´.

3) It should be stated in the background, that this study is illustrating, by drawings, the original text description by Beighton et al.

4) Line 74 - ´definitions of GJH that have been employed and the lack of control of confounders´ - could you please give some examples? By ´defintions´- do you mean criteria and test procedures?

Methods

1) Line 100 - please describe, who were the participants and the approveal number??

2) Please explain if both the instruction and the line drawings were taking into consideration when judging - or was it only the drawing?

3) Line 154 - please describe why only knee extension with a ROM of -20 degrees or greater was considered a positive test result - as this is contrary to the original description >10 degrees?

4) Which Kappa weighting was chosen and why?

5) Please state, if there any sample size calculations for the association study - or if this is a pilot study?

6) In my opinion, throughout the manuscript it needs to be included explicitly, that these associations are between self reported GJH and self reported pain, injuries and OA.

7) Line 255 - in the association analysis - were there adjusted for any confounders? Were the analysis carried out including only one joint - or did you do Bonferroni corrections?

8) For the readability, it would be nice to list more clearly the outcome measures and statistical methods for the association analysis.

Results

1) Table 1 and 2: Please explain the abbreviations.

2) Line 331: This sentence belongs in the Discussion section?
Discussion

1) Line 347 - this is new information - must be placed in the Methods section.

2) Line 358 - please refer if the text description was taken into account in the judgement - for future studies to reproduce this questionnaire.

3) Line 402 - please discuss the risk of type 2 error due to small sample size. Please also expand the discussion bias to the results of association, when using questionnaires asking ‘ever having experienced pain’ or ‘having previously injured the knee’ - these associations must be assessed in a longitudinal cohort study in my opinion.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

No

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Yes

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

No

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable
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