Reviewer's report

Title: Inter-tester reproducibility and inter-method agreement of Beighton tests and criteria for Generalised Joint Hypermobility in primary school children

Version: 2 Date: 30 August 2013

Reviewer: Dariusz Czaprowski

Reviewer's report:

Dear editors
Dear authors

I would like to congratulate very interesting paper regarding validity of Beighton scale. In my opinion the paper may supplement existing knowledge regarding evaluation of generalized joint hypermobility. However, I have some comments and suggestions.

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

2. Are the methods appropriate and well described?
Methods
Study design

Minor Essential Revisions
Phase 3: what does it means `almost 20 children`? please be precise

Participants

Major Compulsory Revisions

I don’t understand an information that for the Phase 2, 38 children were included in Method A and 32 in Method B (overall 70 children). Then we have an information that in Phase 3, 39 children were included. What was the inclusion criterion to include these children for Phase 3. Why 31 children were excluded?

The 3rd Paragraph starts from the sentence: `The inter-method agreement study involved 103…children who had been tested in both Method A and B during inter-tester reproducibility study`. In paragraph 2 the authors gave an information that the inter-tester reproducibility study was carried out in 10 adult cases. I don’t understand that.

Authors write that `not all children participating in the inter-tester reproducibility study took part in the inter-method study`. Why? Please, give the reasons. Additionally the authors have written in the Paragraph 2, that in the inter-tester study there were adults.

Exclusion criteria: the authors focus only on the pain in the involved joints in the day of testing, movement restrictions and mild cerebral palsy. What with the exclusion of children with systemic diseases or e.g. with arthralgia for longer than
3 months in 4 or more joints what could suggest hypermobility syndrome?

I have the problem with the evaluation of the inter-method agreement by different testers. We don’t know if the potential differences are not caused by the different interpretation of the tests by testers. Although in the Phase 1, the testers discussed the Beighton test (probably the original version), they did not analyze the Methods A and B. Therefore, we can not a priori assume that the interpretation of the particular test will be the same in Methods A and B by different testers.

In my opinion better is to conduct the comparison of two methods by one observer on the same group of children. However, the period of time between test should be sufficiently long to avoid the situation when the observer remember the results of the first observation.

The Method section is difficult to understand. I suggest to improve readability of this section.

Minor Essential Revisions

Please to add the gender distribution separately for children aged 7-8 years and 10-12 years.

Lack of information how many girls and boys were included in Method A and B, separately. Due to the fact that the prevalence of GJH is connected with a gender, the analysis regarding gender-agreement between groups A and B is needed.

Tests

Major Compulsory Revisions

You have written that for knee and elbow the hyperextension should exceed 10°. Please explain, how was measured range of motion in knees and elbows? I`m afraid that it was not possible to measure range of knee and elbow motion in the evaluation showed in Appendix 2. I have also problem with validity of the assessment of 5th finger. I see in the Discussion that authors showed the paper of Hansen et al. to justify their choice. In my opinion one reference for that, is not enough. There exist a lot of papers where we see suggestions that the objective measurement of range of motions is needed. Therefore, I suggest to include in the paper the Limitations section and to describe there the questions regarding assessment of knees, elbow and 5th finger.

Data analysis and statistics

I’m not a statistician, however, is seems that the statistical analysis was performed correctly.

3. Are the data sound?
Yes

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

Major Compulsory Revisions

In my opinion the protocol of the study is correct. However, I have some doubts
regarding the methods. The first one is the evaluation of joints range of motion. I don’t know how authors assessed hyperextension (10°) in knees and elbows, dorsiflexion of the fifth finger beyond 90 °, shoulder position 90° in flexion or abduction and 90° of elbow flexion in assessment of fifth finger in Method B. The picture which illustrated evaluation of the fifth finger in the Method B. The authors described this test: ‘...elbow in 90° flexion...’. I don’t think that we see this angle on the picture.

Minor Essential Revisions

The second question is why the testers were physiotherapy students? Why the tests were not physiotherapists? There were students of the bachelor or master program? On which year there were?

5. Are the discussion and conclusions well balanced and adequately supported data?

Major Compulsory Revisions

Conclusions are supported with the results. However, I have previously mentioned doubts about the methods of the assessment of joint range of motion. Therefore, I hope that the authors will be able to improve this section and accordingly it comment in the Discussion section.

Paragraph 12: the authors found the prevalence of GJH in 31% and 35% for Method A and B, respectively. The authors compare these results with other authors with suggestion that they used the same cut-off level and analyzed children at the same age. I disagree with this comparison as the authors of the present study used other method (not Method A and B from this paper) to assess GJH. Furthermore, Mikkelsson et al. [8] used cut-off #6 points, and Juul-Kristensen et al. [16] analyzed only children at 8 years of age.

6. Are limitations of the work clearly stated?

Major Compulsory Revisions

No. In my opinion, the separately section Limitations is needed where the authors will comment lack of objective evaluation of joints range of motion. I’m afraid that it is very difficult for young children to stay in e.g. abduction 90 ° in shoulder when they have to stretch elbows. Of course, I see that in the Discussion section the authors analyzed the subjective and objective evaluation. However I’m afraid that is not sufficient to justify the choice of the methods and it should be described as a limitation. I hope that the authors will be able to explain this methodological problem.

7. Do the authors clearly acknowledge any work upon which they are building, both published and unpublished?

Discretionary Revisions

Yes, but I suggest to include in the Discussion section an information what is the difference between generalized joint hypermobility and hypermobility syndrome. The authors used in the Reference list the position which are focus on the hypermobility syndrome [3 and 20]. Therefore, I suggest to include a comment to distinguish GJH and HS.
8. Do the title and abstract accurately convey what has been found?

Minor Essential Revisions

Abstract
I would like to see one sentence to explain Method A and B to facilitate the reader to understand the difference between studied groups.

Discretionary Revisions
I suggest to change the title to show that the authors assessed two different methods/variants of original Beighton scale.

8. Is the writing acceptable?
I`m not native English, therefore I`m not able to evaluate that.

Other comments

Background

Major Compulsory Revisions
Paragraph 4: sentence 2, the references should be at the end of the sentence [4,11]
sentence 3: need to give reference
sentence 4 and 5: do authors have the evidence for this relationship:….starting position
and outcome score or prevalence of GJH? If yes, the reference is needed.

Minor Essential Revisions

Discretionary Revisions
Please to add the phrase `et al.` where the cited paper has more than two authors.

I hope, that my comments will be useful to improve the scientific quality of your interesting paper.

Yours sincerely
Dariusz Czaprowski, PT, PhD
Department of Physiotherapy
Józef Rusiecki University College, Olsztyn, Poland

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

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

Declaration of competing interests:
I declare that I have no competing interests