Author’s response to reviews

Title: Universal goniometer and electro-goniometer intra-examiner reliability in measuring the knee range of motion during active knee extension test in patients with chronic low back pain with short hamstring muscle

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Version: 2 Date: 27 Nov 2018

Author’s response to reviews:

John Dixon, PhD (Reviewer 2)

-KEY POINTS - study design and precise methods:

- Firstly this is labelled as Inter-rater reliability. Inter-rater reliability is the level of agreement between raters or judges. That does not seem to be what is in this study. I cannot see that there was more than one rater (or if so how many there were). Note the newly added text at the end of the Discussion (page??) shed some light on this; but this needs to be clearer in the Methods and it indicates there is a possible misunderstanding about the meaning of inter-rater reliability.

Re: Done as requested (The specific aims of the study was to assess the intra-examiner reliability of two instruments. To clarify this issue and regarding the objective of the current study, the text was revised/Methods/Page 5 Line 19 , Page 6/Line 15 to 18 ).

-Secondly, in the methods section, it is not quite clear at how many time points the measurements were taken (my original query/point 2). The design and statistical analysis set out in the Methods does not seem replicable to me.

Again the newly added text at the end of the Discussion (page??) shed some light on this - that this was all within one single session. But this needs to be clearer in the Methods.
Re: It is stated that, the repeat measurement of angle of knee was done at the beginning, at the middle and the end of one session. As in previous studies it is indicated that intra-rater reliability should be tested with short time intervals, this provides a more accurate evaluation and reduces uncontrolled variables.

For this issue, the text revised as follow:

The amount of extension was measured using a universal-goniometer and both electro-goniometer. Each test was repeated three times at the one single session. The measurement of knee extension angle was done at the beginning, middle and the end of the session by one experienced physiotherapist (Methods/Page 6/Line 15-18).

- Note that Table 2 seems to suggest to me that this study used 3 measurements in a single session to determine the within-session reliability of both methods. However I am not sure from the written text if this is the case; the written manuscript needs clarifying. Apologies if this sounds pedantic but, as written, it is not clear enough to the reader.

Re: Done as requested/Methods line 15-18.

John Dixon, PhD (Reviewer 2)

ABSTRACT: Linked to the above, the abstract needs revising and should include the time points of the reliability measurements.

Re: Done as requested/ Abstract/Page 2/ line 15-16.

John Dixon, PhD (Reviewer 2)

BACKGROUND: Page 1 last para: clarify why AKE is "better". In this section you should summarise the findings of previous studies that have examined the reliability of hamstring length, and clarify what gap in knowledge you are addressing. This will add a rationale for your study.

Re: Done as requested. Background/page 5/Line 5 to 6
John Dixon, PhD (Reviewer 2)

-METHODS: Sentence 1 (highlighted) - please clarify the detail of the study design and analysis here. As stated above Table 2 seems to suggest to me that this study used 3 measurements in a single session to determine the within-session reliability of both methods. However I am not sure from the written text if this is the case; the written manuscript needs clarifying. The data analysis section needs clarifying also to make clear precisely how the analysis was done.

Re: Done as requested (Method/Page 6:Line 15-18 and Page 7/ line 22-23)

John Dixon, PhD (Reviewer 2):

- DISCUSSION This section needs revising because, as written, I do not believe you have measured Inter-rater reliability. It looks to me that you assessed the within-session reliability of measurements in two methods (but note you only descriptively compared between the two methods). Overall, this section is largely descriptive. Please also discuss why you have markedly different mean (SD) results from the 2 methods used. This is important as it goes to validity and could be a very important finding.

OVERALL - the written scientific English could still be better in places. This can lead to a lack of precision at points.

Re: Done as requested (Discussion/Page 11/ line 1-4 )

-Elise Gane (Reviewer 3)

- Page 3, line 4, Background: Comment 1: Is there a reference for this statement? ("Over 80% of people…")

Re: Done as requested (Page 3, line 4, Background)

-Elise Gane (Reviewer 3)
-Page 5, line 4, Methods: Comment 2: Who was the health professional that determined eligible participants to have tangible hamstring tightness?

Re: Done as requested (Method/Page 6:Line 6-7)

-Elise Gane (Reviewer 3)

-Page 5, line 6, Methods: Comment 3: Please provide an example of orthopaedic and neurological conditions for which patients were excluded from the study. Low back pain is an orthopaedic condition, and commonly presents with neurological symptoms such as pins and needles, and numbness. For example, if the participant had a disc herniation, he/she would be excluded from the study.

Re: Method/Page 6/line 12-13

-Elise Gane (Reviewer 3)

-Page 5, lines 9-10, Methods: Comment 4: Please clarify this statement - what where the participants and assessors blinded to? Specifically, how was the assessor blinded from the angle measured by the goniometer?

Re: The sentence about blinding of assessor and participants was removed from manuscript file./Methods/Page 6.

-Elise Gane (Reviewer 3)

-Page 7, line 10, Results: Comment 5: The authors might consider referencing the use of ICC=0.7 as the cut off for a good score. See Cicchetti D, Bronen R, Spencer S, et al. Rating scales, scales of measurement, issues of reliability: resolving some critical issues for clinicians and researchers. J Nerv Ment Dis. 2006;194:557-564.

Re: Done as requested and to clarify this issue text revised as follow:

ICC scores higher than 0.90, between 0.80-0.79 and lover than 0.70 were considered as excellent, good/ moderate and poor reliability, respectively [18] (methods/ page 8/Line 1-3).
Elise Gane (Reviewer 3)

-Page 7, lines 12-13, Results: Comment 6: Please indicate that SEM is an angle measurement, with the word degrees or the symbol for degrees.
Re: Done as requested

-Elise Gane (Reviewer 3)

-Page 8, lines 6-7, Discussion: Comment 7: This sentence doesn't seem to be attached to a paragraph. The authors are encouraged to re-evaluate the structure of the discussion
Re: Done as requested

-Elise Gane (Reviewer 3)

-Page 8, line 12, Discussion: Comment 8: The authors are encouraged to have their manuscript reviewed for English grammar. For example, "by using goniometer" should be "by using a goniometer".
Re: Done as requested.

-Comment 9: Figure 1 doesn't really add to the study. A textual description of the study paradigm would suffice.
Re: Done as requested (Figure 1 removed from manuscript file.). The manuscript was revised again. If you think more corrections is needed we can do it.