Reviewer’s report

Title: Reliability of doming and toe flexion testing to quantify foot muscle strength

Version: 0 Date: 13 Jul 2017

Reviewer: Daniel Bonanno

Reviewer's report:

The question posed by the authors is on a topic which I expect will be of interest to readers of JFAR (and to an array of disciplines) and the article is generally well written.

Major Essential Revisions

Throughout the manuscript the authors state that the tests are measuring intrinsic foot strength. I think it is important to discuss in greater detail that toe flexion strength and foot doming may be influenced by intrinsic and extrinsic muscles - this is an important point to articulate clearly to readers. Please explore this issue in the introduction and discussion and exercise caution when referring to tests of 'intrinsic' foot strength if the test may be measuring a composite of intrinsic and extrinsic foot strength. Perhaps it is more accurate to describe the tests as measures of foot doming strength, great toe flexion strength and lesser toe flexion strength. Please address throughout the manuscript.

Minor Essential Revisions

1) Please provide an indication as to why this study should be considered appropriately powered. Is n=21 enough?

2) Abstract, Methods: The term 'strength tests' and 'exercises' are used. I recommend using the most appropriate term consistently.

3) Abstract, Methods: I recommend the authors consider using the word 'between' instead of 'across' to describe the different testing sessions.

4) Abstract: Change '1 - 5 days' to 'one to five days'.

5) Background, paragraph 2: It appears that most of these references found associations between IFM weakness rather than 'contribution' which implies an element of causation. Please revisit this paragraph to ensure that what you are reporting is indeed supported by the references.
6) Background, paragraph 2: Consider referring to Saeki et al. Ankle and toe muscle strength characteristics in runners with a history of medial tibial stress syndrome JFAR 2017 https://jfootankleres.biomedcentral.com/articles/10.1186/s13047-017-0197-2 for a more contemporary reference regarding foot strength and MTSS.

7) Background, paragraph 2, final sentence: Please consider rewriting this sentence as I'm not certain if readers will understand what 'ineffective' intrinsic foot muscles mean? Does this refer to weakness, atrophy, poor activation, etc.?

8) Background, lines 112-117: This sound more like methods than background. Please either change it into an aim/hypothesis or shift the content to the methods (or remove).

9) Methods, participants. Please only state that the participants are healthy once. I suggest you remove 'healthy' from line 122.

10) Methods, participants. Consider changing 'one week and at least 24 hours apart' to 'one to five days'.

11) Methods, participants. Please remove spacing between the +/- so it is consistent throughout the manuscript.

12) I recommend providing an image of the short foot/doming exercise for readers who are unfamiliar with it.

13) Please indicate if the equipment used to measure strength is valid and reliable. Provide references to support.

14) Line 187: Spacing issue prior to 'inter-session'.

15) Table 1: Provide a '0' at the beginning of each 95% CI and change the hyphen with 'to'. For example, change ".899 - .950" to "0.899 to 0.950".

16) Discussion: The testing was performed in a set order. Is this likely to have a sequencing effect on the results? Please discuss.

17) Discussion: It is worth discussing that the potential validity issues relating to the strength tests explored in this manuscript.

18) Discussion: I recommend the authors discuss the reliability of the tests explored in this study compared to alternative foot strength tests.

19) Line 244: Many professions are likely to use 'doming' (not just physical therapists) so please replace 'physical therapists' with a broader term that encompasses these many professions.

20) Line 243: Put 'and' before 'pes planus'.
21) Discussion: I'm not convinced ABDH requires an abbreviation as it is sparingly used in the manuscript.

22) Line 278: Sentence fragmented - please rewrite.

23) Discussion, limitations. I feel more limitations need to be discussed. Do these measures reflect muscle activity during gait, max. strength v muscle endurance, and does it reflect what may be observed when fatigued/exerted, etc.?

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