Reviewer's report

Title: Importance and Challenges of Measuring Intrinsic Foot Muscle Strength: Review of the literature

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Reviewer: Michael J Mueller

Reviewer's report:

This review addresses the important issue of measuring intrinsic muscle strength. The intrinsic foot muscles have been understudied, yet seem to have many very important functions in the foot. The topic is highly relevant to this journal and covers important and interesting topics. However, the following substantial concerns are noted:

The review seems to cover too broad a topic, and so, does not cover any of these topics in a comprehensive or authoritative manner (as required of a review by description on website). The stated purpose (page 3) indicates the paper will “provide an overview of anatomy… and evaluate the different methods used to measure intrinsic muscle strength”. However, only 1 paragraph is devoted to a very superficial listing of the 4 layers of muscles followed by a superficial review of the “Evolution of the Intrinsic Foot Muscles” that doesn’t develop either topic adequately or seem to fit with the rest of the paper.

The paper then briefly discusses the role of intrinsic foot muscles in walking, arch support, and several important pathologies. Although these topics are important, they are not part of the review’s purpose statement and are not developed adequately. Any of these topics could be a full review in itself.

It is not until page 9 that the authors get to the main point of the review; measuring intrinsic foot muscle strength. In this reviewer’s opinion, the divisions into “direct” and “indirect” methods to measure strength are not accurate. The “direct” methods are actually quite indirect estimates of intrinsic muscle strength as they rely on many factors (i.e., joint torque through the MTPJ, placement and length of resistance arm, type of force measuring device, joint position, and involvement of the extrinsic muscles) many of which are discussed by the authors. The “indirect” measures are not measures of strength at all but estimates of muscle structure (volume or area), activity, or histochemical properties. The measures may be related to muscle force production (strength) but that remains to be seen. The review hardly mentions these important issues.

In addition to the above major concerns, the review does not show other characteristics of a scholarly review. The authors do not indicate how the literature was reviewed or how papers were selected to include. The paper contains little primary quantitative data to support the broad statements. The paper contains many excellent references, but there is a higher reliance on
abstracts for important points (i.e., refs 43, 49, 58) than would be warranted in a scholarly review.

The Discussion (page 20-22) seems fairly redundant with the rest of the text.

Tables 1 and 2 are a good idea to include quantitative information from the references, but most of the cells have “n/a”.

**Level of interest:** Reject as not of sufficient priority to merit publishing in this journal

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare I have no competing interests