Reviewer’s report

Title: Musculoskeletal application and validation of speckle-tracking ultrasonography

Version: 1 Date: 20 Feb 2019

Reviewer: John Drazan

Reviewer's report:

I appreciate the time and effort that the authors have taken to address my comments on their original draft.

Feedback revision version 1:

General Notes:

1) There are a number of typos and mis spellings in the document (Line 109 T he, Line 111 non-invaisve, Line 63 Demonstate, Line 91 sarcomer, line 208 speckel, line 277 intensitie etc). In addition, there are many awkwardly worded sentences which detract from the impact of the research. For example, at Line 322 "the responsiveness of treatment effects needs to be established in future prospective longitudinally trials."

2) Muscle strain and deformation are still used interchangeably throughout the draft. For example, on line 109, you say "The objective of this study was therefore to address the clinical and technological research gaps within the field of in vivo muscle contraction advancing speckle technology towards validation as a clinical tool for non-invaisve measures of muscle DEFORMATION. Thus, we aimed to test the hypothesis that the displacement of ultrasonic speckle patterns during isometric muscle contractions in upper extremity skeletal muscles correlates with muscle STRAIN." (I can't do underlines so I capitalized instead). While the science presented has merit, the lack of clarity on what is actually being measured detracts from the impact of the presented research.

Abstract:

Background: It would be nice if you added "during isometric contractions" at the end of the sentence at line 48.

Methods: What hypothesis was tested? This would be good information to know in the abstract.
Results: What does the division sign, line 60 mean. I don't understand line 60-61. Is this instramuscular strain measured from the STU approach?

Background:

Line 88: I am confused by the use of strain and deformation in the background. Muscle strain/deformation is very different than muscle fascicle strain. The entire muscle deforms during contractions, however this is a very different than the deformation/strain of the muscle based on the contraction of muscle fascicles. Based on my understanding of your study, you sought to understand the relationship between change in torque generation and muscle strain as measured by STU. I think that talking about deformation really confuses the reader regarding what you are proposing to study.

Methods:

Thank you for clarifying the loop vs cycle wording.

Line 180: You say that the probe remains in the same place relative to the muscle, however the muscle moves relative to the skin during a contraction. Do you mean to say that the probe stays in the same place relative to the skin or the anatomical landmarks? Are you moving the probe during the contraction to maintain its position above the muscle?

Results: Figure 2 is very blurry on the review PDF.

Discussion:

In line 267 you mention that isometric dynamometry does not provide information about the muscle fiber quality. Up until this point, you have been talking about muscle strain/deformation (See above comments) and its not clear that your proposed approach will address this issue either.

**Are the methods appropriate and well described?**

If not, please specify what is required in your comments to the authors.

Yes

**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.

Yes

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

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Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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