

## **Reviewer's report**

**Title:** Reliability of measuring Abductor hallucis muscle parameters using two different diagnostic ultrasound machines

**Version:** 1 **Date:** 5 August 2009

**Reviewer:** andrew mcmillan

### **Reviewer's report:**

#### Major Compulsory Revisions

Introduction

Paragraph 2

Sentence 3

Comment 1. The introduction of this technology is not a strong rationale to investigate "the reliability of measuring muscle parameters such as thickness and cross-sectional area". Why is it important to measure these parameters? How are they useful in research / clinical practice?

Methods

Experimental Procedure

Paragraph 1, sentences 1, 2 and 3: "The AbdH muscle of both the left and right foot, for each of the thirty subjects were imaged, for digital investigation, and three separate measures of each foot were recorded. This experimental procedure was undertaken with the same subject on both the Philips HD11 and Chison 8300 for between machine reliability. This entire process was then repeated at least three days post (mean = 8.7days) to obtain between day test results."

Paragraph 2, sentence 10: "An image of the AbdH muscle was captured using both machines and stored on the hard drive for later analysis".

Comment 2. The description of the overall study protocol needs improvement. Please correct / confirm the following interpretation of the study protocol, and adjust the current protocol description to improve clarity:

It seems from reading the sentences above that: at the initial visit, one image was recorded of the left AbdH muscle, and one image was recorded of the right AbdH muscle by the Philips unit for each subject. Likewise, at the initial visit, one image was recorded of the left AbdH muscle, and one image was recorded of the right AbdH muscle by the Chison unit for each subject. This would result in two recorded images of the left AbdH muscle (one image recording from each unit), and two recorded images of the right AbdH for each subject. Therefore, at the initial visit, a total of four image recordings were taken for each subject. From each image recording, three measurements were taken for dorso-plantar

thickness, three measurements were taken for medio-lateral width, and three measurements were taken for cross-sectional area. These measurements occurred at a later time, after the image recording had been saved.

The process was repeated for the follow-up visit.

Experimental Procedure

Paragraph 2

Sentences 5&6

Comment 3. The position of the reference line is not adequately described. Which landmarks?

Sentence 11

Comment 4. Please provide further details regarding the blinding process during measurements. How was this achieved?

Paragraph 3

Sentence 3

Comment 5. If medio-lateral width is being measured, describing the borders as 'superficial' and 'deep' is quite confusing. Were measurements taken as the distance between the medial and lateral borders of the muscle? Was this measurement taken at the widest point?

Sentence 4

Comment 6. Please provide further details regarding the "digital manual tracing" technique, or refer to a published paper where this is described.

Data analysis

Comment 7. Please provide further details for the following statistical comparisons: within-session reliability, between-session reliability – single measures, between-session reliability – average measures.

Discussion

Paragraph 1

Sentence 2

Comment 8. The measurement protocol of this study involved the use of a supportive platform to standardize lower limb position, and a reference line to standardize transducer position. As supportive platforms and reference lines are not used during ultrasonography in routine clinical practice, I disagree that "...the current SRD reflect the potential to detect changes that exceed measurement error for clinical application."

Consider changing 'clinical' to 'research'?

Paragraph 3

Sentence 1

Comment 9. As mentioned previously, supportive platforms and reference lines are not used during ultrasonography in routine clinical practice. The external validity of this study is therefore limited to research settings where supportive platforms and reference lines are likely to be used.

Paragraph 5

Sentence 2

Comment 10. As already mentioned, the findings of this study cannot be generalized to the routine clinical practice environment.

Minor Essential Revisions

Introduction

Paragraph 1

Sentences 1 and 2

Comment 11. The structure, grammar and punctuation of these sentences require improvement.

Paragraph 2

Sentence 1

Comment 12. Consider adding the word 'improved' prior to the word 'availability'.

Comment 13. Change 'intraosseus dorsalis muscle' to 'interosseus dorsalis muscle'

Sentence 2

Comment 14. The structure of this sentence requires improvement.

Sentence 5

Comment 15. Please change the abbreviation 'AbdH' to 'abductor hallucis', unless defined when first used.

Sentence 8

Comment 16. The use of grammar in this sentence needs improvement.

Methods

Comment 17. Please change heading from 'Method' to 'Methods'.

Subjects

Comment 18. Please provide descriptions of the source population (where were subjects recruited from?).

Sentence 4

Comment 19. Please amend 'Universities Ethics Committee'.

Equipment

Sentence 1

Comment 20. The words 'Ultrasound' and 'System' do not require capitalization.

Experimental Procedure

Paragraph 2

Sentence 7

Comment 21. Please change 'was applied onto the AbdH muscle belly'.

Paragraph 3

Sentence 2

Comment 22. Please clarify that the dorso-plantar thickness measurement was taken at the point of maximal thickness.

Results

Within Session Reliability

Sentence 2

Comment 23. Consider changing the word 'extremely'.

Between session Reliability – Single measures

Comment 24. Please correct heading capitalization

Sentence 2

Comment 25. The word 'reliability' should be inserted into this sentence.

Between Session Reliability – Average measures

Paragraph 2

Sentences 1, 2 and 3

Comment 26. These sentences are difficult to read / understand.

Discussion

Paragraph 1

Sentence 1

Comment 27. The structure and grammar of this sentence requires much improvement.

Conclusion

Comment 28. Please remove the 's' from the heading

Sentence 1

"regardless of the type of US machine"

Comment 29. This study only tested reliability using two US units.

## Discretionary Revisions

### Introduction

#### Paragraph 2

#### Sentence 4

Comment 30. Consider adding the word 'ultrasound' after the word 'musculoskeletal'.

#### Sentence 5

Comment 31. Consider removing 'undertaken by the authors'.

### Methods

#### Subjects

#### Sentence 1

Comment 32. Please provide the mean participant BMI either instead of, or in addition to, reporting weight and height.

#### Equipment

#### Sentence 1

Comment 33. The two ultrasound units could also be classified by their intended clinical applications as specified by the manufacturers. For example: 'According to the manufacturer, the Philips HD11 is recommended for use in public and private hospitals, satellite clinics or specialized practices'.

#### Sentence 2

Comment 34. Consider changing the word 'superficial'.

### Discussion

#### Paragraph 4

Comment 35. Are 'resting value' and 'trail to trail variability' commonly understood terms?

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Needs some language corrections before being published

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

### **Declaration of competing interests:**

I declare that I have no competing interests