Author’s response to reviews

Title: Reliability and methodology of quantitative assessment of harvested and unharvested patellar tendons of ACL injured athletes using ultrasound tissue characterization

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Version: 3 Date: 29 May 2019

Author’s response to reviews:

Author’s questions/ comments to editor:

1. Formatting suggest that citation is placed immediately after the full stop sign. However, papers in BMC journal shows citation before the full stop sign. As per now, we’ve decided to keep the format suggested in the journal’s webpage.

2. Another issue has been the titles and legends for figures and tables. The format proposed suggest only 15 words title, with legends and footnotes included separately. However, reviewers have requested more explicit titles.

3. We felt the title could be improved, so we modified it to: “Reliability and methodology of quantitative assessment of harvested and unharvested patellar tendons of ACL injured athletes using ultrasound tissue characterization”.

4. In the methods section of the abstract, we have moved to the beginning of methods the sentence “Intra and inter-rater reliability of both UTC data collection and analysis were assessed. For that, ten harvested …” to be clearer.

5. In the last paragraph of the Background section, we have removed the sentence “To perform a longitudinal study to explore the evolution of harvested patellar tendons and its associations with clinical outcomes throughout the rehabilitation program presupposes attesting if the UTC method is a reliable tool to assess the quality of these tendons.” It was confusing and unnecessary at this stage.
6. We have modified in the background section the last sentences starting in page 3 line 70, to provide better justification for our study.

7. We have modified the text slightly in the Methods section to provide better description of the participants and patellar tendons included in the study.

Replies to Editor’s comments

Editor: was this decided by consensus? individual assessor? Page 4 line 91

Comment: Examiners decided together on what was considered a good scan. It is the description of satisfactory quality scan. However, each examiner decided about the quality of their own acquired scans.

Action: We moved part of this sentence with some modification to the UTC section, now in line 128 of page 6. Just after the description of a satisfactory scan.

Editor: “was” & “helped” in page 5, lines 104 and 105

Comment: previously reviewers brought up many questions about the paragraph in line 102-106, page 5. Authors decided to remove it to simplify the text.

Action: We removed the paragraph: “To reduce the number of scans and the time spent per tendon, examiners used skin markers to delineate, by palpation, the apex of the patella, edges of the patellar tendon and tibial tuberosity. This step was not compulsory; however, it helped the examiner to place the tracking device aligned with the patellar tendon regardless of anatomic variations, as exemplified in Fig. 1 by the “X” mark in the tibial tuberosity area visible through the stand-off pad.”

Editor: In page 6 line 123, you highlighted the 1cm

Comment: You are correct. It was supposed to be mm.

Action: we changed to mm
Editor: Lines 127-129, page 6. This sentence needs a bit more work to make it clear what you trying to express.

line 133-135, page 6. This sentence is ambiguous, can you please clarify and ensure the tense is correct.

Lines 135-136, page 6. ? this is an awkward sentence. Can you refine it? is it the software? or is it the display?

Line 137, page 6. what marks? what is it?

line 144, page 6. please be consistent with how you express this (compare with how you have expressed 2nd area of interest

line 153, page 7. into

Comment: noted

Action: We have significantly modified this whole section of the manuscript. Now presented in the new file in pages 6-8 lines 137-189.

Editor: line 156, page 7. This sentence is unclear - Tendon or collagen bundles? You have too many concepts in it.

Not a sentence.

The grammar in this section requires significant work.

Comment: noted.

Action: This whole part of the manuscript was revised and modified.

Editor: line 179, page 8. do you mean twice by each examiner? or twice total?

Comment: It was scanned one time per examiner. Each examiner analyzed their own scan.

Action: we modified the text now presented in page 8, line 195.

Editor: line 182, page 8. time frame, and same question as above.
Comment: Here, it didn’t matter the time frame. The scans were acquired and saved. The analysis could be performed anytime.

Action: the sentence was modified, now presented in page 9, line 200.

Editor: line 187, page 8. This section could be more clearly expressed

Comment: noted.

Action: We modified the text to clarify which variables were not normally distributed. However, at this stage the normality test did not affect the remaining statistical analysis performed because there were no comparisons between groups.

Editor: line 214, page 9. Reporting on your reliability should be first, as the other results mean nothing without the reliability data.

Comment: noted

Action: we moved the MDC results to the intra-reliability section. Also we have added some results within the text rather than just mentioning the tables.

Editor: line 241, page 11. Can you please put this data in, or refer to the appropriate table?

Comment: noted

Action: (Table 7) was included in the text and some of the results.

Editor: line 249-250, page 11. You haven’t demonstrated this (as you haven’t reported any symptoms). Please amend to make it clear that this is a future possibility.

Comment: authors decided to remove this part of the text from this part and include at the very end of the discussion.

Action: removed and inserted as: " Based on these results, future longitudinal studies could be implemented to explore possible associations of the characteristics of the patellar tendon with clinical symptoms at different time points following ACL surgery.”
Comment: we have added results from previous studies.

Action: To include and compare our results with previous studies we modified considerably the discussion section of the manuscript.

Comment: In general, our results agree with the previous literature.

Action: we modified the whole discussion section, we compared with previous studies including a new paper that just came out about reliability of the patellar tendon with tendinopathy.

Comment: we modified the structure of the discussion and added on a new paper as explained above.

Action: we modified the text along with the previous comment.

Comment: It’s not mixed up. It was talking only about the intra-rater reliability for volume and thickness. The inter-rater reliability for these variables was out.

Action: we modified the text and included a summary of the results of all analysis performed.

Comment: within our knowledge no other study has used the volume variable in the same way we have used. All the previous papers using UTC that we have been able to read have been very vague regarding the applied methodology to scan, how to mark the contours and how to explore the excel file that is generated after running the UTC software. Thus, within our knowledge, this issue has not been highlighted before.

Action: we tried to re-write our own explanations for the results of the variable volume.
Editor: line 283, page 12. volume or thickness?
Comment: Only volume, because for the thickness, despite the low ICC values presented, we observed extremely high agreement between examiners.
Action: We have justified the reason for the low ICC value displayed for the variable thickness.

Editor: line 473, page 21. and what do they show?
Comment: It is just an example of the UTC screen after scanning showing the different views of a harvested patellar tendon.
Action: we have modified the titles of the figures and tables. We still tried to keep the main title within 15 words as requested in the format of the journal. Also, we put together the title of the figure and the legend.

Editor: line 474. Page 21. describe what you are seeing. e.g. in Fig 4a the space between the two parts of the tendon is where the harvested graft has been taken from.
Comment: we struggled to describe everything in 15 words. The idea was to show an example of contour marked around a harvested and an unharvested patellar tendon.
Action: we put the legend together with a slightly modified title.

Editor: line 475, page 21. legends need more details
Comment: noted
Action: we included legend in the abbreviations section and in the tables’ notes.

Editor: page 26. you need to explain the abbreviations. Please do this for every table.
Comment: we thought we had included every abbreviation in the legends and abbreviation section. Apologies. Are we still missing any?
Action: we added in the legends the preop meaning, and the “n = number of tendons assessed”

Editor: does n = number of tendons?
Comment: yes.

Action: we added in the legends that $n =$ number of tendons assessed