

## **Revision letter**

Dear Editor,

Regarding our revised article entitled,  
'Return to Sport following Toe Phalanx Fractures: a Systematic Review'

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The author contributions are as follows:

- GR conceived the methodology for the manuscript, performed the literature search and analysis for the study and wrote the manuscript.
- AS performed the literature search and analysis for the study, and reviewed and edited the manuscript.
- TH advised on the study, and reviewed and edited the manuscript.
- TK advised on the study, and reviewed and edited the manuscript.

The manuscript, including related data and figures has not been previously published and is not under consideration elsewhere.

There are no conflicts of interest to declare.

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The reviewers' comments have been addressed below and within the manuscript. The points requiring revision have been marked in green, with reply comments marked in red. 'Article Highlights' have also been added to the manuscript.

#### Reviewer 1

- Thirteen studies were included: one retrospective cohort study and twelve case series. Seven studies reported on acute fractures. Six studies reported stress fractures. For the acute fractures (n=156), 63 were treated with primary conservative management (PCM), 6 with primary surgical management (PSM) (all displaced intra-articular (physeal) fractures of the great toe base of the proximal phalanx), 1 with secondary surgical management (SSM) and 87 did not specify treatment modality. For the stress fractures (n=26), 23 were treated with PCM, 3 with PSM, and 6 with SSM. For acute fractures, RRS with PCM ranged from 0 to 100%, and RTS with PCM ranged from 1.2 to 24 weeks. For acute fractures, RRS with PSM were all 100%, and RTS with PSM ranged from 12 to 24 weeks. One case of an undisplaced intra-articular (physeal) fracture treated conservatively required conversion to SSM on refracture with a return to sport. For stress fractures, RRS with PCM ranged from 0 to 100%, and RTS with PCM ranged from 5 to 10 weeks. For stress fractures, RRS with PSM were all 100%, and RTS with surgical management ranged from 10 to 16 weeks. Six cases of conservatively-managed stress fractures required conversion to SSM. Two of these cases were associated with a prolonged delay to diagnosis (1 year, 2 years) and four cases with an underlying deformity (hallux valgus (n=3), claw toe (n=1)). All six cases returned to the sport after SSM. CONCLUSION: The majority of sport-related toe phalanx fractures (acute and stress) are managed conservatively with overall satisfactory RRS and RTS. For acute fractures, surgical management is indicated for displaced, intra-articular (physeal) fractures, which offers satisfactory RRS and RTS. For stress fractures, surgical management is indicated for cases with delayed diagnosis and established non-union at presentation, or with significant underlying deformity: both can expect satisfactory RRS and RTS.
  - In General: it's a good paper and the subject of the manuscript is applicable and useful.
  - Title: the title properly explains the purpose and objective of the article
  - 
  - Abstract: abstract contains an appropriate summary for the article, the language used in the abstract is easy to read and understand, and there are no suggestions for improvement.
  - 
  - Introduction: authors do provide adequate background on the topic and reason for this article and describe what the authors hoped to achieve.
  - 
  - Results: the results are presented clearly, the authors provide accurate research results, and there is sufficient evidence for each result.
  - 
  - Conclusion: in general: Good and the research provides sample data for the authors to make their conclusion.
  - 
  - Grammar: There are a lot of grammatical errors. This must be taken care of and addressed. . (Check The Paper Comments).
- These grammatical errors have been addressed throughout the manuscript.
- Finally, this was an attractive article. In its current state, it adds much new insightful information to the field. Therefore, I accept that paper to be published in your journal.

## Reviewer 2

- Thanks for giving me the opportunity to review this interesting manuscript that aimed to systemically review all studies recording return to sport following toe phalanx fractures (both acute fractures and stress fractures), and to collate information on return rates to sport (RRS) and mean return times (RTS) to sport.
- 
- Methods.
- Please change PubMed to PubMed

This has been changed

- Table 1 records the inclusion and exclusion criteria(12). Please remove the reference number The QUOROM Process for the review is illustrated in Figure 1(12). Please remove the reference number

These have been removed.

- The definitions used for RRS and RTS, for both conservative and surgical management, were those previously described by Robertson et al. Please explain the definitions and add a reference.

These definitions have been explained, with a reference added, as below:

'Return Rate to Sport (RRS) was defined as the percentage of athletes who successfully returned to sport with the designated treatment modality. Where conversion to a further treatment was required, with RRS not possible from the initial treatment method, this was recorded as a non-return to sport for the method in question. For conservative treatment, return time to sport (RTS) was defined as the time from the commencement of conservative treatment to return to sport. For surgical treatment, RTS was defined as the time from the commencement of the relevant surgical treatment to return to sport(13).'

- and as previously used by Robertson et al(14): Please remove this sentence

This has been removed.

- The included studies are observational or non-randomized studies. In addition to modified Coleman Methodology Score, Please assess the risk of bias using the Methodological index for non-randomized studies (MINORS) score using the intra-class correlation co-efficient statistic:

The MINORS Scores have been calculated. The scores have been included in Tables 2 and 3, and in the results section. The intra-class correlation co-efficient statistic has been included in the Methods section.

' For the MINORS scores, this was 0.92 (95% confidence interval (CI) 0.89-0.94).'

'The mean MINORS score for all the studies was 10.3 (range 8-18)(8, 15-26)(Tables 2 and 3). For the studies reporting on acute fractures, the mean MINORS score was 12.1 (range 9–18)(15-21)(Table 2). For the studies reporting on stress fractures, the mean MINORS score was 8.2 (range 8–9)(8, 22-26)(Table 3).'

- Please mention the software used to calculate the ICC in the statistics section.

This has been added, as follows:

'The intra-class correlation co-efficient statistic was used to assess the inter-observer reliability of the Modified Coleman Scores and the Methodological Index for Non-Randomized Studies Scores using IBM SPSS Statistics, Version 27.0 (Armonk, NY).'

- Please add more subheadings in the methods section such as data extraction, outcome measures, etc

More subheadings have been added to the methods section, including 'Data Extraction, Outcome Measures, Study Definitions'

- Results. Toe Phalanx Fractures: Do not capitalize first letters

This has been changed

- Of the 26 stress fractures recorded, follow-up data was available for all 26 (100%): please remove "Of the 26 stress fractures recorded" as it is repeated and re-write the sentence

This has been re-written, as follows:

'Follow-up data were available for all 26 (100%) of the stress fractures.'

- 3.5 Study Design: please move to the beginning of the results and change to "Quality of the included studies."

This has been moved and changed.

- 3.9 Return Times to Sports: This is the main outcome of the study. However, the authors did not mention any paragraphs with details. They just mentioned " Look table 4 and figure 3". which is not appropriate. Please rewrite all this part in details and write some paragraphs after each subtitle and at the end of the paragraph you can say, :look table 4 and figure.

All this part has been re-written, to include details of the results, as follows:

### 3.8 Return Rates to Sports

#### Acute Fractures

#### Conservative Management

Four studies recorded RRS following conservative management of acute fractures(15, 17, 19, 21). The RRS ranged from 0 to 100%(15, 17, 19, 21) (Table 4 and Figure 2a).

The return rates to pre-injury level sports for the conservatively-managed acute fractures ranged from 0% to 100%(15, 19, 21) (Table 4).

#### Surgical Management

Three studies recorded RRS following PSM of acute fractures(19-21), and one study recorded RRS following SSM of acute fractures(21). The recorded RRS were 100% for PSM (19-21), and 100% for SSM (21) (Table 4 and Figure 2a).

The return rates to pre-injury level sports for the surgically-managed acute fractures were all 100% (19-21) (Table 4).

#### Stress Fractures

##### Conservative Management

Six studies recorded RRS following conservative management of stress fractures(8, 22-26). The RRS ranged from 0 to 100%(8, 22-26) (Table 5 and Figure 2b).

The return rates to pre-injury level sports for the conservatively-managed stress fractures ranged from 0% to 100%(8, 23-26) (Table 5).

##### Surgical Management

Two studies recorded RRS following PSM of stress fractures(22, 25), and three studies recorded RRS following SSM of stress fractures(8, 24, 26). The recorded RRS was 100% for PSM(22, 25), and 100% for SSM(8, 24, 26) (Table 5 and Figure 2b).

The return rates to pre-injury level sports for the surgically-managed stress fractures were 100% (25) (Table 5).

### 3.9 Return Times to Sports

## Acute Fractures

### Conservative Management

Three studies recorded RTS following conservative management of acute fractures(15, 17, 19). The RTS ranged from 8.5 days to 6 months(15, 17, 19) (Table 4 and Figure 3a).

### Surgical Management

Three studies recorded RTS following PSM of acute fractures(19-21), and one study recorded RTS following SSM of acute fractures(21). The RTS ranged 3 to 6 months for PSM(19-21), and was 14 weeks for SSM(21) (Table 4 and Figure 3a).

## Stress Fractures

### Conservative Management

Four studies recorded RTS following conservative management of stress fractures(22, 23, 25, 26). The RTS ranged from 5 weeks to 3 months (22, 23, 25, 26)(Table 5 and Figure 3b).

### Surgical Management

One study recorded RTS for PSM of stress fractures(25), and one study recorded RTS for SSM of stress fractures(26). The recorded RTS for PSM was 10 weeks(25), and for SSM was 4 months(26) (Table 5 and Figure 3b).

- Tables. Tables says Coleman Score, do you mean modified Coleman Score?  
Yes – this has been changed in both Tables 2 and 3.
- Overall, the paper is very well conducted and can be published after these modifications,

Kind Regards,

Yours Sincerely,

Greg A J Robertson

Greg Robertson