Reply to letter regarding article by Wang et al: “Internal fixation of distal tibiofibular syndesmotic injuries: a systematic review with meta-analysis”

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Dear Editor,

The letter written by Tian M et al. has demonstrated their interest in our systematic review concerning syndesmotic internal fixation. They have also raised four questions which aim to improve the completeness and accuracy of the results. We are sincerely thankful for their attention paid to our work and would like to reply to the questions one by one.

1. The author mentioned that the retrieval strategy was not complete in our study. Actually, the entire strategy was presented in our initial manuscript and the reviewers recommended that we delete it due to its limited value for the readers. The retrieval was performed using the OVID search engine and was shown in Table 1. Furthermore, we sincerely apologise for uploading a wrong diagram (Fig. 1) in our systematic review [1] which was inconsistent with the description in the first paragraph of the “Results” section. The correct one is presented below in this

reply (Fig. 1). We can also provide details of our search and study selection process.

2. Currently, even in the PRISMA (preferred reporting items for systematic reviews and meta-analyses) guidelines [2], there is no specific standard for the sample size of the included studies in meta-analysis. We excluded the studies with subject number less than 20 since our sample size calculations showed these studies would bring some bias. For the functional score, a study with subjects less than 20 could hardly detect a clinically significant difference less than 30 % ($\alpha=0.05$; $\beta=0.8$; $SD = 24$; the statistical parameters were consistent with Pakarinen et al. [3]). Moreover, the determination of this sample size criterion also took into account the relatively low incidence of syndesmotic injuries [3]. Therefore, such exclusion criteria would be appropriate for the current level of the tibiofibular syndesmotic studies.
3. The methodological quality assessment was also presented in our initially submitted manuscript. It was also suggested by the reviewers that we omit it for the same reason as the retrieval strategy. Among the final included studies, the randomised and quasi-randomised studies were assessed by the 12-item scale which was first introduced by Cochrane Collaboration [4] (available on <http://www.cochrane.org>).

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Table 1 Database search strategy and results

Search terms	Results
1 exp Ankle Injuries/	16,907
2 exp Joint Instability/ or exp Fracture Fixation, internal/	79,442
3 exp “Sprain and strains ”/ or exp Bone screws	1,472,047
4 syndesmo\$.mp. [mp = title, original title, abstract, name of substance word, subject heading word]	2,305
5 tibiofibular.mp. [mp = title, original title, abstract, name of substance word, subject heading word]	2,018
6 diastasis.mp. [mp = title, original title, abstract, name of substance word, subject heading word]	2,096
7 2 or 3	1,514,300
8 1 and 7	12,347
9 4 or 5 or 6	5,496
10 8 and 9	1,045
11 limit 10 to yr=“1990-current”	868

The scores for each item were rated from 0 to 2 and thus, the overall full score was 24. All results are presented in Table 2.

4. Tian et al. correctly pointed out the choice of effect model when conducting the analysis. We only found the analysis of “TFCS” ($I^2=66\%$) in comparison 1 (absorbable implants or metallic screws), “time to full weight bearing” ($I^2=97\%$) and “TFO” ($I^2=82\%$) in comparison 3 (suture-button fixation versus syndesmotic screw) had significant heterogeneity. Only the “time to full weight bearing” in comparison 3 became non-significant between the two groups ($P=0.12$; effect size: $-3.05 [-6.87, 0.77]$) when changing the effect model to random, and this result alteration had little impact on our final conclusion. However, the suggestions proposed by Tian et al. are still

Fig. 1 Flow chart representing study selection **Table 2** Quality assessment results of RCTs and quasi-randomised studies

References	1	2	3	4	5	6	7	8	9	10	11	12	Total
Thordarson et al. [5]	1	1	0	1	0	0	1	2	2	2	1	1	12
Kaukonen et al. [6]	1	1	1	1	0	0	2	2	2	2	2	1	15
Hu et al. [7]	0	0	0	1	0	0	1	1	2	2	2	1	10
Hoiness and Strømsøe [8]	1	1	0	1	0	0	2	2	2	2	2	1	14
Moore et al. [9]	0	1	0	1	0	0	1	1	2	1	1	1	9
Wikerøy et al. [10]	1	1	1	1	0	0	2	2	2	2	2	2	16
Pakarinen et al. [3]	1	1	0	1	0	0	2	2	2	1	1	1	12
Coetzee et al. [11]	1	1	0	1	0	0	1	2	2	2	2	1	13

RCT randomised controlled trial

critical for quality improvement of our results and even for the entire study.

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