

4. Sabour S. Reliability Assurance of EML4-ALK rearrangement detection in non-small cell lung cancer: a methodological and statistical issue. *J Thorac Oncol.* 2016;11(7):e92-e93.
5. Sabour S, Ghassemi F. Submaximal step tests to estimate maximal oxygen uptake in healthy adults: methodological issues about validity and reliability. *Sports Med.* 2016;46(9):1381-1382.
6. Sabour S, Farzaneh F, Peymani P. Evaluation of the sensitivity and reliability of primary rainbow trout hepatocyte vitellogenin expression as a screening assay for estrogen mimics: methodological issues. *Aquat Toxicol.* 2015;164:175-176.
7. Sabour S. Reliability of the ASA physical status scale in clinical practice: methodological issues. *Br J Anaesth.* 2015;114(1):162-163.

RESPONSE TO LETTER TO EDITOR: "INTER-RATER RELIABILITY IN THE CLINICAL EVALUATION OF MYOFASCIAL TRIGGER POINTS IN THREE ANKLE MUSCLES"



To the Editor:

The main aim of our study¹ was to investigate the inter-rater reliability to diagnose the presence of myofascial trigger points (MTrPs) and to analyze each criterion proposed by Bron et al² in 3 lower limb muscles (tibialis anterior, peroneus brevis, and extensor digitorum longus). These were selected owing to their referred pain pattern to the ankle.

To illustrate the complexity of this methodological procedure,³ physical therapists with clinical experience in myofascial pain management functioned as raters who randomly and bilaterally evaluated the ankles of 40 participants. The absence or presence of MTrPs, nodules in taut bands, patterns of referred pain, local twitch response, and jump sign were assessed. Before beginning the study, both raters and observers followed the training protocol proposed by Bron et al.² This training protocol was a program with 8 hours for practicing their skills, the palpation technique, participant positioning, and localization of MTrPs.^{2,3} We based our study in the research model of Bron et al² to analyze different diagnosis criteria for lower limb muscles in patients with ankle pain. The pairwise percentage of agreement (PA) and pairwise Cohen κ values were calculated for the reliability analysis. The PA is the ratio of the number of concordances, both positives and negatives, to the total ratings.^{4,5}

Our results showed the pairwise inter-rater agreement and κ -value concordance for the presence or absence of trigger points (55%-85%; $\kappa = 0.12$ -0.60), palpable nodules in taut bands (63%-90%; $\kappa = 0.24$ -0.60), referred pain (63%-85%; $\kappa = 0.20$ -0.54), and jump sign (62%-89%; $\kappa = 0.15$ -0.72) in the 3 studied muscles. The local twitch response could only be evaluated in the tibialis anterior

(43%-70%; $\kappa = 0.05$ -0.21) because it was not possible to measure in the other muscles.¹

Regarding statistical analysis, we support our methodological development according to Landis and Koch,⁶ who established different ranges of κ values: poor (0.00), slight (0.001/0.20), fair (0.21/0.40), moderate (0.41/0.60), good (0.61/0.80), and very good (0.81/1.00) reliability.¹ In our study, we considered a PA value $\geq 70\%$ to be indicative of acceptable inter-rater reliability, given that a PA value $\geq 70\%$ leads to a $\kappa \geq 0.40$ as proposed by Bron et al.² Therefore, PA values were prioritized over κ values, as in other studies, because the κ statistic is probably inappropriate for studies with an irregular distribution of positive and negative findings.¹ This was the main reason to protect the acquired data with a high-priority pairwise PA over κ value as we reported in the manuscript.

Our conclusions determined that inter-rater agreement was acceptable and seemed to be muscle dependent, especially regarding the muscle depth. Such a conclusion was supported by both statistics, PA and κ value, to enforce these conclusions, not only based on the obtained κ value.¹ The palpation area of the peroneus brevis muscle is located under the peroneus longus tendon, which may be considered deeper than the tibialis anterior and extensor digitorum longus.³ Considering these limitations, further studies are necessary to improve the inter-rater reliability knowledge of myofascial pain.

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REFERENCES

- 1 Sanz DR, Lobo CC, López DL, Morales CR, Marín CS, Corbalán IS. Interrater reliability in the clinical evaluation of myofascial trigger points in three ankle muscles. *J Manipulative Physiol Ther.* 2016;39(9):623-634.
- 2 Bron C, Franssen J, Wensing M, Oostendorp RAB. Interrater reliability of palpation of myofascial trigger points in three shoulder muscles. *J Man Manipulative Ther.* 2007;15(4):203-215.
- 3 Simons D, Travell J, Simons L. *Myofascial Pain and Dysfunction. The Trigger Point Manual.* Baltimore, MD: Williams & Wilkins; 1999.
- 4 Haas M. Statistical methodology for reliability studies. *J Manipulative Physiol Ther.* 1991;14(2):119-132.
- 5 Sim J, Wright CC. The kappa statistic in reliability studies: use, interpretation, and sample size requirements. *Phys Ther.* 2005; 85(3):257-268.
- 6 Landis JR, Koch GG. The measurement of observer agreement for categorical data. *Biometrics.* 1977;33(1):159-174.

RESPONSE TO “SPINAL MANIPULATIVE THERAPY AND SPORTS PERFORMANCE ENHANCEMENT: A SYSTEMATIC REVIEW”



To the Editor:

I read with interest the recent paper entitled “Spinal Manipulative Therapy and Sports Performance Enhancement: A Systematic Review.”¹ This study investigated a relevant topic given the competitiveness and physical demand in sporting environments. This systematic review has an important role in identifying main methodological difficulties and directing future research for methodological designs with higher quality.

I have a concern about the methodology in this paper. The results of some studies included in the review suggest that spinal manipulative therapy (SMT) can improve outcomes related to sports performance, but some of these findings are based on within-group differences. In Table 3, it is shown that the handgrip strength of judokas evaluated in the clinical trial developed by Botelho et al² increased up to 16.81% after cervical spine manipulation.

I published a systematic review³ on high-velocity low-amplitude manipulation and athletic performance that analyzed the difference of means and confidence interval (CI) of Botelho et al.² My results showed no differences in handgrip strength values between manipulation and sham groups (the highest difference of means was 2.073 kgf in favor of thrust group [95% CI: -13.58 to 9.68]).

Another point I would like to make is about the inclusion criteria in the systematic review.¹ I feel that there was a lack of specificity in determining the comparison criteria based on the patient, intervention, comparison, outcome strategy that allowed the inclusion of the Costa et al study⁴ comparing the

association of SMT and stretching with only stretching. In this case, the group submitted to SMT and stretching presented an improvement in the outcome related to athletic performance (full-swing); however, this clinical trial does not allow one to identify the isolated effect of SMT.

The authors concluded that 4 of the 7 included studies showed that SMT improved sports performance tests. Among the 4 studies cited are the studies of Botelho et al² and Costa et al,⁴ making me think that the aforementioned limitations may have partially influenced the final conclusion of this review. I agree with the authors in stating in the conclusion that “SMT enhances sports performance is not supported by current evidence” and that “it needs to be better and more deeply investigated.”¹ However, considering the above limitations, I feel it is too subtle to say that “spinal manipulative therapy may be a promising approach for performance enhancement”¹ because the evidence indicates that there is not enough scientific support to use or not to use SMT to improve sports performance.

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REFERENCES

- 1 Botelho MB, Alvarenga BAP, Molina N, Ribas M, Baptista AF. Spinal manipulative therapy and sports performance enhancement: a systematic review. *J Manipulative Physiol Ther.* 2017;40(7):535-543.
- 2 Botelho MB, Andrade BB. Effect of cervical spine manipulative therapy on judo athletes' grip strength. *J Manipulative Physiol Ther.* 2012;35(1):38-44.
- 3 Cerqueira MS, Sales RM, Pinto CTP, Moreno BGD, de Moura Filho AG. High-velocity low-amplitude manipulation (thrust) and athletic performance: a systematic review. *Fisioter Mov.* 2017;30(2):413-422.
- 4 Costa SMV, Chibana YET, Giavarotti L, et al. Effect of spinal manipulative therapy with stretching compared with stretching alone on full-swing performance of golf players: a randomized pilot trial. *J Chiropr Med.* 2009;8(4):165-170.

RESPONSE TO LETTER TO EDITOR: “SPINAL MANIPULATIVE THERAPY AND SPORTS PERFORMANCE ENHANCEMENT: A SYSTEMATIC REVIEW”



To the Editor:

We are pleased to know about your interest in our paper.¹ We have carefully analyzed your concerns in an attempt to assist in our best capabilities.