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Isolated gastrocnemius tightness: impact on foot diseases

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ABSTRACT

Introduction: The objective of this study was to evaluate the difference in muscle strength between flexion and ankle extension to test the hypothesis that this predisposes to a dynamic equine and, thus, to evaluate this correlation with pain in the forefoot (metatarsalgias) and hindfoot (plantar fasciitis, tendinopathy of the tendon insertional and non-insertional calcaneus).

Methods: In this prospective cohort study, 50 patients were consecutively diagnosed with forefoot pain (metatarsalgias) or pain in the hindfoot (plantar fasciitis, tendonopathy of the insertional and non-insertional calcaneal tendon), and 50 patients had no foot diseases. The body mass index (BMI) was evaluated, and IGT was evaluated through the Silfverskiöld test. The parameter of gastrocnemius contracture was considered in cases of limitation of ankle extension <10. The intervention was to measure flexion strength and ankle extension with a manual dynamometer, evaluating isometric contraction based on the method suggested by Kahn et al.

Results: One hundred patients participated in the study, with 50 patients in the study group and 50 in the control group. The mean age was 63.42 years, and the mean BMI was 28.53 in the study group and 62.26 and 28.84 in the control group, with no difference in distribution between age groups (p=0.634) and for BMI (p=0.709). The difference was significant between the groups in relation to the Silfverskiöld test (p=0.019), the ankle force variation in dynamometry (p<0.001) and normalized variation (p<0.001). In addition, a significant difference between groups was observed in the dynamometry of plantar flexion (p<0.001).

Conclusion: The hypothesis of causes for sural triceps shortening considered as idiopathic are as follows. The difference in strength between the dorsiflexion musculature and the one that performs the plantar flexion, the delay in neuromuscular activation of the dorsiflexors, or even a combination of these two factors. We demonstrated the possibility of the evaluation of the force through a manual dynamometer that can be used in routine outpatient visits, which proved to be effective and reproducible.

Keywords: Isolated gastrocnemius tightness; Manual dynamometer; Biomechanics.