Comparative Study of the Acute Effects of Two ways of Myofascial Release on Biceps Femoris and Semitendinosus Muscles after a Romanian Dead Lift Exercise

Keywords: Myofascial therapy; Physical exercise; Tesiomyography; Biceps femoris

Abbreviations: BF: Biceps Femoris; ST: Semitendinosus; RG: Roller Foam Group; CHG: Crossed Hands Technique Group; CG: Control Group; TMG: Tensiomyography

Introduction

As therapists we are used to have clinical evidence of health improvement after myofascial release therapy. Nevertheless, the scientific evidence of the application of the myofascial release therapy is scarce [1-6]. Since is complicated to objectify the effects of the therapy and there are different ways to apply it. Nowadays, there are also a numerous ways with different tools to self-release the myofascia after physical exercise that have not been proven enough to be effective. Therefore, in order to know more about the effectiveness of this applications and using our experience with the Tesiomyography to evaluate the mechanical characteristics of the muscles through a transversal electrical stimulus and all that is known about the physiological characteristics of the fascia.

The purpose of this study was to compare the acute effects of the use of the Roller Foam and Crossed Hands Technique (Myofascial Therapy) on the mechanical characteristics of biceps femoris (BF) and semitendinosus (ST) muscles of the dominant leg son after a Romanian dead lift exercise. Thirty-four (n=34) students (age: 24.52±3.12 years old) students of Physical Education of the University of Las Palmas de Gran Canaria were evaluated. They were divided into three groups: Roller Foam Group (RG, n=10); Crossed Hands Technique Group (CHG, n=15) and Control Group (CG, n=9). The Tensiomyography (TMG) is used to evaluate the mechanical characteristics of the biceps femoris and semi-tendinosus muscles. Specifically, the Radial Displacement of the muscles' bellies (Dm) and Contraction Time (Tc) were measured. The measures were taken: in basal conditions; after a 5 min of continuous run (8 km/h) warming up; after a romanian dead lift with growing load of the 1RM: (50%/15 reps, 60%/10reps, 70%/8reps, 80%/6reps, 90%/3reps), with 2min rest between each load set; five and ten minutes after the exercise. The myofascial release applications were just after the first five minutes of rest (Figure 1).

Case Report

Volume 1 Issue 6 - 2017

Suárez Rodríguez Vidina[1] and Rodríguez Ruiz David[2]*

[1]*Doctoral School, University of Las Palmas de Gran Canaria, Spain*

[2]*Departament of Physical Education, University of Las Palmas de Gran Canaria, Spain*

***Corresponding author:** Rodríguez Ruiz David, Departament of Physical Education, University of Las Palmas de Gran Canaria, Spain, Tel: 34928458881, Fax: 34928458867; Email: david.rodriguezruiz@ulpgc.es

Received: March 11, 2017 | **Published:** December 28, 2017

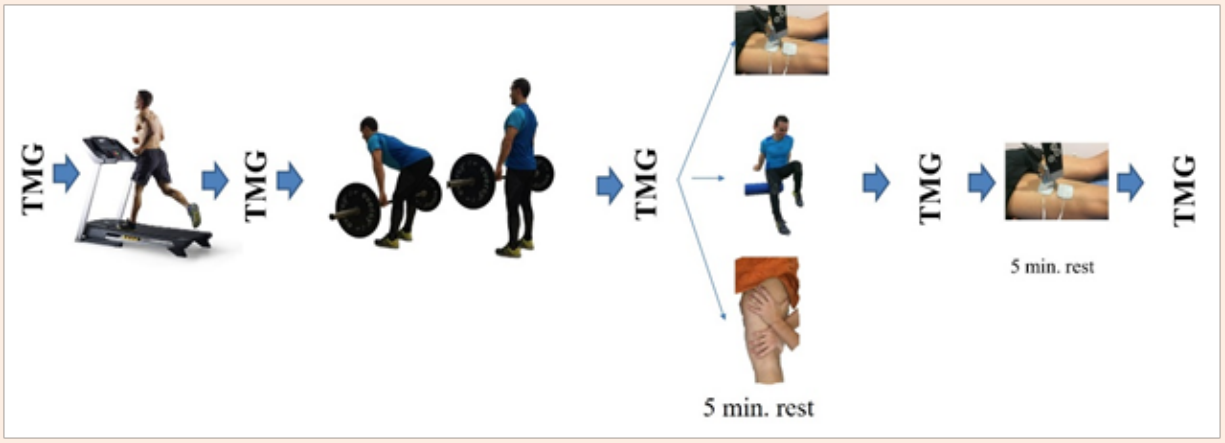

Figure 1: Protocol process.

Statistically significant differences ($p \leq 0.05$) were found for Dm in the ST of the CHG. Those differences were kept during the whole rest time. This recovery also was registered in the CG for the first 5 min rest ($p \leq 0.05$), but not in the last 5 min rest. And RG did not experienced any significant difference. On the other hand, none of the groups got significant changes in BF. However, for TC only the GM could come back to the basal values during the recovering process for both muscles, both after 5 min and after 10 min (Figure 2).

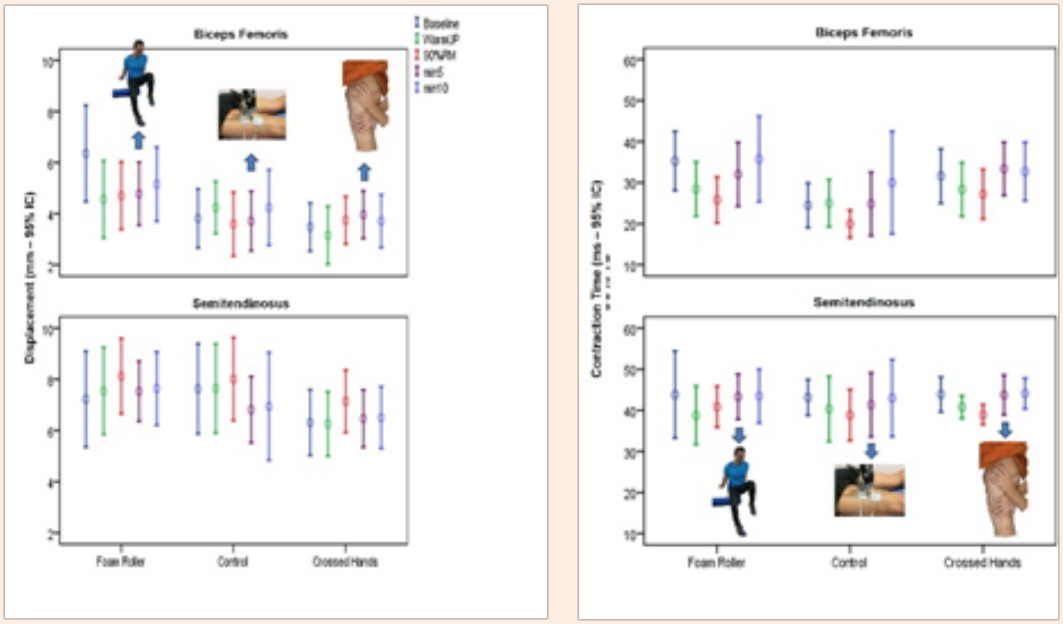

Figure 2: Mean on the mechanical parameters (maximum muscle belly radial displacement-Dm and contraction time-Tc) of the muscles (BF and ST) along all the protocol for differents groups.

Discussion

The results got in the CHG agree well with Haas et al. [7,8] and Crawford et al. [10] in their work on rabbit's musculature after an eccentric exercise, causing greater reduction in neutrophil and macrophage infiltration of the exercised muscle, increasing recovery of mechanical properties and showed histological evidence. On the other hand, individual differences and self-application of the Roller Foam may have influenced the results, as Beardsley & Skarabot [1] and Cheatham et al. [2] suggest in their respective revisions. With these results, we can conclude that in our study the muscular recovery is better after the application of the crossed hands technique.

Acknowledgement

None.

Conflict of Interest

Author declares that there is no conflict of interest.

References

1. Beardsley C, Skarabot J (2015) Effects of self-myofascial release: A systematic review. J Bodyw Mov Ther 19(4): 747-758.
2. Cheatham SW, Kolber MJ, Cain M, Lee M (2015) The effects of self-myofascial release using a foam roll or roller massager on joint range of motion, muscle recovery, and performance: a systematic review. Int J Sports Phys Ther 10(6): 827-838.
3. Couture G, Karlik D, Glass SC, Hatzel BM (2015) The Effect of Foam Rolling Duration on Hamstring Range of Motion. Open Orthop J 9: 450-455.
4. Bruyne DM, Dewhurst MM, Fischer KM, Wojtanowski MS, Dural C (2016) Self-Mobilization Using a Foam Roller Versus a Roller-Massager: Which is More Effective for Increasing Hamstrings Flexibility? J Sport Rehabil 26(1): 94-100.
5. Healey KC, Hatfield DL, Blanpied P, Dorfman LR, Riebe D (2014) The effects of myofascial release with foam rolling on performance. J Strength Cond Res 28(1): 61-68.
6. Schroeder AN, Best TM (2015) Is self myofascial release an effective pre exercise and recovery strategy? A literatura review. Curr Sports Med Rep 14(3): 200-208.
7. Haas C, Butterfield TA, Abshire S, Zhao Y, Zhang X, et al. (2013) Massage timing affects post exercise muscle recovery and inflammation in a rabbit model. Med Sci Sports Exerc 45(6): 1105-1112.
8. Haas C, Butterfield TA, Zhao Y, Zhang X, Jarjoura D, et al. (2013) Dose-dependency of massage-like compressive loading on recovery of active muscle properties following eccentric exercise: rabbit study with clinical relevance. Br J Sports Med 47(2): 83-88.
9. Crawford SK, Haas C, Butterfield TA, Wang Q, Zhang X, et al. (2014) Effects of immediate vs. Delayed massage-like loading on skeletal muscle viscoelastic properties following eccentric exercise. Clin Biomech 29(6): 671-678.