

## Comparison between the Roller-Foam and Neuromuscular Facilitation Stretching on Flexibility of Hamstrings Muscles

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**Abstract :** Introduction: The use of stretching techniques in the sports world is frequent and widely used for its many effects. One of the main benefits is the gain in flexibility, range of motion and facilitation of the sporting performance. Recently the use of Roller-Foam (RF) has spread in sports practice both at elite and recreational level for its benefits being similar to those observed in stretching. The objective of the following study is to compare the results of the Roller-Foam with the proprioceptive neuromuscular facilitation stretching (PNF) (one of the stretchings with more evidence) on the hamstring muscles. Study design: The design of the study is a single-blind, randomized controlled trial and the participants are 40 healthy volunteers. Intervention: The subjects are distributed randomly in one of the following groups; stretching (PNF) intervention group: 4 repetitions of PNF stretching (5seconds of contraction, 5 second of relaxation, 20 second stretch), Roller-Foam intervention group: 2 minutes of Roller-Foam was realized on the hamstring muscles. Main outcome measures: hamstring muscles flexibility was assessed at the beginning, during (30'' of intervention) and the end of the session by using the Modified Sit and Reach test (MSR). Results: The baseline results data given in both groups are comparable to each other. The PNF group obtained an increase in flexibility of 3,1 cm at 30 seconds (first series) and of 5,1 cm at 2 minutes (the last of all series). The RF group obtained a 0,6 cm difference at 30 seconds and 2,4 cm after 2 minutes of application of roller foam. The results were statistically significant when comparing intragroups but not intergroups. Conclusions: Despite the fact that the use of roller foam is spreading in the sports and rehabilitation field, the results of the present study suggest that the gain of flexibility on the hamstrings is greater if PNF type stretches are used instead of RF. These results may be due to the fact that the use of roller foam intervened more in the fascial tissue, while the stretches intervene more in the myotendinous unit. Future studies are needed, increasing the sample number and diversifying the types of stretching.

**Keywords :** hamstring muscle, stretching, neuromuscular facilitation stretching, roller foam

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