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The Effects of Foam Rolling on Hamstring Flexibility, Muscle Soreness and Power

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Foam rolling is a therapeutic technique shown to increase blood flow and range of motion when used as a warm-up and to decrease delayed onset muscle soreness (DOMS). The research is still inconclusive as some studies claim beneficial effects while others do not. **PURPOSE:** To examine the effects of pre and post-exercise foam roll on flexibility, muscle soreness, power and torque. **METHODS:** Fourteen subjects (8 male and 6 female) participated in three testing sessions. On Day 1, subjects were familiarized with the protocol and performed single leg sit and reach test. On day 2 (7 days later), baseline extensor and flexor muscle power and torque were measured using isokinetic dynamometer. Subjects then foam rolled, performed the sit and reach test, followed by straight leg deadlifts, and then foam rolled again. Subjects returned 48 hours later (Day 3), rated their muscle soreness on a visual scale, and performed the same sit and reach and isokinetic dynamometer tests to measure flexibility, power, and torque, respectively. Two-way ANOVA with repeated measures was used to compare differences of dependent variables in foam rolled vs. control leg at different time points. **RESULTS:** Comparing day 1 to day 2, flexibility increased for the foam rolled leg (33.5 ± 9.9 vs. 36.3 ± 10.3 cm, $p=0.01$) as well as the control leg (33.2 ± 9.5 vs. 35.5 ± 9.8 cm, $p=0.01$). A decrease in flexor (Day 2: 56.5 ± 16.5 vs. Day 3: 51.7 ± 21.3 W, $p>0.05$) and extensor muscle power (Day 2: 107.7 ± 58.2 vs. Day 3: 100.7 ± 58.5 W, $p>0.05$) were observed 48 hours after completing deadlift exercise, although the differences were not statistically significant. Interestingly, the foam rolled leg revealed a greater decline in muscle power than the control leg for both extensors and flexors, even though the difference was not significant. No significant differences were found in extensor or flexor torque for either leg. Although, the foam roll leg revealed a soreness level 6.45% lower than the control leg, the difference was not statistically significant (4.5 ± 1.2 vs. 4.8 ± 2.4 , $p>0.05$). **CONCLUSION:** Foam rolling as a warm-up or post-recovery technique did not appear to have a positive influence on improving flexibility, muscle soreness, power, or torque. Due to the inconclusive results, further research on the effects of foam roll on flexibility and muscle soreness is warranted.