

Effects of Foam Rolling Versus Static Stretching on Recovery of Quadriceps and Hamstrings Force

Ross Edmunds^{1,2}, Andrew Dettelbach¹, Julia Dito¹, Alex Kirkpatrick¹, Alexandra Parra¹,
Jessica Souder¹, Trenton Stevenson¹, Todd A. Astorino¹

Department of Kinesiology¹, California State University San Marcos
333 South Twin Oaks Valley Road, San Marcos, CA 92078
858-401-3674 ross.edmunds1@gmail.com

Department of Physical Therapy², Stony Brook University
HSC, SHTM, Level 2
Stony Brook, NY 11794-8201

BACKGROUND: Recent findings document efficacy of various myofascial release techniques including static and dynamic stretching, foam rolling, and massage therapy on muscle performance after exercise. Increased range of motion, decreased fatigue, and optimized performance are potential benefits of myofascial release techniques.

AIM: To compare effects of myofascial release techniques via foam roller (FR) application and static stretching (SS) on the recovery of quadriceps and hamstring force production after intense exercise.

METHODS: Fourteen active men (mean age and BMI = 23.3 ± 3.0 yr and 25.0 ± 2.8 kg/m²) initially completed strength testing on an isokinetic dynamometer consisting of five repetitions of maximal unilateral knee extension (KE) and knee flexion (KF) at a contraction velocity equal to 60 degrees * sec⁻¹. Seven days later, subjects performed a 1 h bout of intense lower extremity exercise and were randomly assigned to SS or FR treatment instituted immediately after exercise. Twenty four hours after this bout, muscle strength was reassessed. Subjects repeated the intense exercise protocol 7 d later at the same time of day and the other treatment was performed post-exercise.

RESULTS: Results revealed a main effect of treatment on knee extension torque ($p=0.001$) and a trend for knee flexion torque ($p=0.0052$). Post hoc analysis revealed that knee extension torque was lower in response to SS (190.6 ± 43.7 ft/lb) versus baseline (221.8 ± 31.2 ft/lb) or FR (208.8 ± 28.4 ft/lb). Compared to baseline, 94% of knee extension force was preserved in FR versus only 84% for SS. For knee flexion, 98% of baseline force was preserved after FR compared to 88% for SS.

Conclusion: Application of myofascial release via foam roller after intense exercise may help to preserve muscle force on the day following exercise compared to traditional static stretching.