

Does Self-Myofascial Release Improve Work, Power, and Torque in Hip

Abduction and Adduction?

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Introduction

Self-myofascial release (SMR) aka 'foam rolling' has become a popular modality pre-exercise to improve acute performance measures and post-exercise as a form of recovery. **The purpose of this study was to determine if SMR had acute improvements for work, power, and torque in hip abduction and adduction.**

Methodology

Twenty-four (24) collegiate female athletes participated in this study (Age 19.2 ± 0.8 years; Height 169.9 ± 9.1 cm; Weight 65.2 ± 11.8 kg). This was a one group pre/post-test design to determine work, power, and torque during hip abduction and adduction on the dominant limb using an isokinetic dynamometer (ISKD) (Biodex Medical System, Shirley, NY, USA) set at 120 degrees/second. Each subject was familiarized with how to perform the test. For the pre- and post-tests, subjects completed 3 maximal repetitions using the dominant lower limb, while in a standing position, resting for 10 seconds, and performing 1 final maximal effort repetition. Subjects then completed 2 minutes of SMR using a Rocktape® RockNRoller (Durham, NC, USA), rolling back and forth across their gluteus medius and gluteus minimus using a 35 BPM cadence via metronome and at a Pain Rating Scale of 7/10. Post-testing was then performed in the exact same manner as pre-testing. Data was analyzed via SPSS version 26.0 (IBM Corp., Armonk, NY, USA) using a one-tailed dependent t-test with significance set at $p \leq 0.01$. Cohen's *d* effect sizes (ES) were calculated to determine the strength of the relationship between pre- and post-test values.

Results

Descriptive statistics for all dependent variables are listed in Table 1. Statistical significance ($p \leq 0.01$) was observed for hip abduction on measures of work, power, and torque. Furthermore, a medium ES was observed for work ($d = 0.50$) and small – medium ES was observed for power ($d = 0.36$) and torque ($d = 0.42$)

Self-myofascial release (SMR) has become a popular form of acute pre- and post-exercise performance enhancement and recovery, respectively. Obtaining **acute improvements in the dominant lower limb** for measures of **work, power & torque** may be feasible using a pre- or intra-competition foam rolling technique for hip abductors for 2-minutes – **benefitting athletes** reliant on frontal plane movement proficiency.

Practical Applications

Athletic contests relying on frontal plane movement proficiency (i.e. speed skating, ice hockey, hurdlers, etc.) could benefit during practice or competition from a brief SMR intervention to improve their ability to produce work, power and torque using lateral movement patterns initiated from the hip.



Table 1: Descriptive Statistics

Hip Abduction					
	N	Mean	Standard Deviation	1-tailed p	Cohen's d
Power – (W)	24	-7.25	14.24	0.010*	0.36
Work – (J)	24	-4.50	6.14	< 0.001*	0.50
Torque – (Nm)	24	-6.33	12.10	0.009*	0.42
Hip Adduction					
	N	Mean	Standard Deviation	1-tailed p	Cohen's d
Power – (W)	24	-5.58	24.97	0.142	0.19
Work – (J)	24	-1.92	6.16	0.071	0.24
Torque – (Nm)	24	-3.67	18.25	0.168	0.17

Abd – abduction; Add – adduction; W – Watts; J – Joules; Nm – Newton meters; * - significance at $p \leq 0.01$

Conclusions

Significantly greater work, power, and torque were produced from pre- to post-test for hip abduction after completing a 2-minute SMR intervention for the gluteus medius and gluteus minimus on the dominant lower limb. Conversely, no significant improvements were observed between pre- and post-test measures of work, power, and torque for hip adduction following 2-minute of SMR on the same musculature.

References

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