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COLLOQIUM PROCEEDINGS

EXTENDED ABSTRACT

Effect of Foam Rolling on Agility and Flexibility Among University-Level Athletes

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I. Introduction

Foam rolling is widely used in athletic settings to improve performance and recovery, yet its immediate effects on agility and flexibility remain unclear. This study investigates the acute impact of foam rolling on agility and flexibility in university-level athletes, aiming to clarify its practical value and inform training protocols.

II. Methods

Twenty-one university-level athletes (aged 18–25, physically active, injury-free) underwent a 15-minute foam rolling session targeting the gluteus maximus, quadriceps, hamstrings, and calves. Agility was assessed using the T-test with cones and a stopwatch, while flexibility was measured using the sit-and-reach test and a standard box. All tests were conducted pre- and post-intervention under controlled conditions.

III. Results and Discussion

Agility significantly improved from 11.3 to 10.7 seconds post-intervention ($p < 0.001$, *Cohen's d* = 1.89), suggesting foam rolling's strong acute effect on neuromuscular readiness and movement efficiency in athletes.

Flexibility also increased significantly from 33.2 cm to 36.3 cm ($p < 0.001$, *Cohen's d* = 1.84), indicating foam rolling's role in reducing muscle tightness and enhancing range of motion.

Both parameters improved substantially, with agility showing a slightly higher effect. The greater agility gains may stem from enhanced proprioception and motor control, while flexibility gains likely result from decreased fascial resistance and muscle stiffness.

Table I
Summary of Pre-Test and Post-Test Score

Test	Pre-test mean ± SD	Post-test mean ± SD
Sit and Reach (*cm*)	33.2 ± 6.04	36.3 ± 5.79
Agility T-Test (*sec*)	11.3 ± 0.71	10.7 ± 0.71

**Clear improvements were observed after foam rolling intervention in both flexibility and agility.*

Table II
Paired Samples t-Test

Variable	*t*(df)	*p*-value	MD	Cohen's d
Flexibility (cm)	-8.41 (20)	< 0.001	-3.08	-1.84
Agility (sec)	8.65 (20)	< 0.001	0.57	1.89

**Foam rolling led to statistically significant and practically large improvements in both agility and flexibility.*

IV. Conclusions

Foam rolling significantly enhances both agility and flexibility in university-level athletes after a single session. While both benefits are substantial, agility showed a slightly greater improvement, suggesting foam rolling's broader impact on performance-related parameters. These findings support its inclusion in warm-up routines for acute performance enhancement.

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