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An Acute Bout of Self-Myofascial Release Does Not Affect Drop Jump Performance despite an Increase in Ankle Range of Motion

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Abstract: This study examined the acute effects of self-myofascial release plus dynamic warm up versus dynamic warm up alone on ankle range of motion and drop jump performance. Twenty-five recreationally active participants (male: 16, female: 9) were randomly assigned into a foam rolling (FR) or a dynamic warm up group (CON) (age: 22.8 ± 3.9 years, body mass 75.9 ± 13.2 kg, stretch stature: 174.1 ± 10.1 cm). In a randomised crossover design, each participant completed two experimental sessions that were separated by seven days. Ankle range of movement was assessed while using a weight-bearing lunge test and drop jump performance was recorded via bilateral force plates. Following a 5 min cycle, the foam rolling group undertook self-myofascial release to the lower limb and thoracic/lumbar regions, followed by a dynamic warm up. The control group undertook the same initial warm up plus the dynamic exercises. The level of significance was set at $p \leq 0.05$. There was a significant increase ($p < 0.001$) in ankle range of motion immediately after the warm up for both groups (pre CON: 37.5 ± 5.31, post CON: 39.8 ± 5.76; pre FR 38.7 ± 7, post FR: 40.3 ± 7.3 deg). No significant difference was found between the conditions ($p > 0.05$). There were no significant differences for any indices of jump performance ($p > 0.05$). Based on these results, foam rolling plus dynamic exercises does not appear to impair or enhance drop jump performance, despite the increases in ankle range of movement.

Keywords: foam rolling; vertical jump; myofascial therapy; massage therapy; stiffness

1. Introduction

Increased use of foam rolling and roller massage to assist recovery and to treat post-exercise muscle soreness has been reported amongst a wide range of participants [1]. Furthermore, and noteworthy, is the notion that use of such modalities has advanced beyond the publication of scientific literature [1]. Despite this, foam rolling, a concept of self-myofascial release (SMR), is common amongst therapists and fitness professionals to encourage or promote soft tissue healing [2]. The use of this modality has also been linked to a wide range of outcomes, including the correction of muscular imbalances, reducing muscle soreness, relieving joint stress, improving the efficiency of the neuromuscular system, and increasing range of motion [3]. Halperin et al. reported significant increases in the ankle range of movement following an acute bout (90 s) of self-massage, while using a roller, at both one-and 10-min post intervention with no between group differences (static stretching condition) [4]. However, there was a significant increase in maximal voluntary isometric force at the 10-min point for the roller massage condition only. Su et al., who compared 6 min of foam rolling, static stretching,