An acute bout of self-myofascial release increases range of motion without a subsequent decrease in neuromuscular performance

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Objective: To determine the effect of self myofascial release via foam roller application on skeletal muscle performance. Background: The use of foam rollers in athletic, rehabilitative and normal populations has substantially increased in recent years because it is thought that foam rolling improves muscular function, performance and joint range of motion (ROM). However, there is no empirical evidence demonstrating this. Methods: Eleven healthy male (height 178.9 ± 3.5 cm, weight 86.3 ± 7.4 kg, age 22.3 ± 3.8) subjects who were recreational resistance trainers and moderate to very physically active participated. Subjects quadriceps maximum voluntary contraction force, activation, twitch force, tetanic force, electromyography (EMG), knee joint ROM and perceived pain were measured prior to, one minute, and 10 minutes following two conditions; 1) two, one minute trials of self myofascial release of the quadriceps via a high density foam roller and 2) no self myofascial release (Control). A two-way ANOVA (condition x time) with repeated measures was performed on all dependent variables recorded in the pre- and post-condition tests. Results: There were no significant differences between conditions for any of the neuromuscular dependent variables. However, following foam rolling, subjects ROM significantly (p < 0.001) increased by more than 10% at 2 and 10 minutes. Subjects who reported high perceived pain values were able to generate greater force, but not ROM. Furthermore, there was a significant (p < 0.01) negative correlation between subjects force and ROM prior to foam rolling, which no longer existed following foam rolling. Conclusion: An acute bout of self myofascial release of the quadriceps is an effective treatment to enhance knee joint range of motion without a concomitant deficit in muscle performance. These findings have substantial implications for the usage of self myofascial release in rehabilitative and athletic settings.