

The Impact of Three Different Forms of Warm Up on Performance

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ABSTRACT

When it comes to high intensity training or competition, warmup routines should be chosen with performance as a primary concern. Different forms of warm up can potentially inhibit or improve performance aspects. The purpose of this study was to compare the acute effects of static stretching, dynamic stretching, and self-myofascial release via foam rolling (SMR) on knee and hip range of motion, peak power, rate of force development, and jump height. Twelve subjects (n=12) both male (n=6) and female (n=6) who were recreationally or competitively active at least 3 times a week for at least 6 months prior to testing were used. The subjects must have also had no major lower body orthopedic surgery in their lifetime either. Height, weight, age, and gender were all measured on the first day and a control test was done. Each subject sat for 10 minutes and then a goniometer was used to measure passive knee and hip range of motion. Afterwards a force plate platform squat jump was done, followed by a force plate platform isometric mid-thigh pull. Each subject was then placed in their next warmup protocol via a Latin squares format. The testing consisted of 10 minute protocols of dynamic warmup, static warmup, and SMR where the hips, hamstrings, quads, and gastrocnemius were all worked. All subjects performed each warmup on a day that was no sooner than 24 hours prior to their last test. Compared to the control hip range of motion increased significantly in the static (+3.2% P=.009), dynamic (+2.8% P=.018), and SMR (+4.1% P=.001) but there was no significant difference between the groups. Likewise, knee range of motion increased significantly in the static (+4.3% P=.001), dynamic (+3.0% P=.012), and SMR (+4.4% P<.001) but there was no significant difference between the groups. Jump height and peak power were positively affected by dynamic (+3.1% P=0.011) and SMR (+2.2% P=.049), and static showed no change when compared to a control. There was no significant difference between the dynamic and the SMR protocols. The isometric mid-thigh pull showed no positive or negative correlations for rate of force development when compared between all groups. The current study suggests that all three forms of warmup equally improves passive hip and knee range of motion. This study also suggests that power performance could benefit from 10 minute dynamic and SMR protocols, while static warmups may not negatively affect them. However, 10 minute protocols of static warmup, dynamic warmup, and SMR may not positively or negatively affect rate of force development.