



Stretching has been used in all sports, particularly static stretching³. Static stretching is when a muscle is held at end range of motion (ROM) for a period of time in order to increase ROM and flexibility¹. The traditional thought regarding the benefit of static stretching is that it may improve range of motion (ROM), decrease delayed onset of muscle soreness (DOMS), reduce the risks of injury and enhance muscle performance. Despite these long held thoughts, recent evidence remains equivocal in the benefit of static stretching. Witvrouw et al. conveyed that static stretching programs can significantly influence the viscosity of the tendon and make it significantly more compliant, which may in turn prevent injury in sports with high demands of stretch-shortening cycle⁸. Weijer et al. showed that after static stretching can significantly maintain increased hamstring length for 24 hours with one bout of 30 seconds hold for 3 repetitions⁷. Harvey et al. in their system review showed that static stretching over the course of a day increase joint ROM by 8 degrees⁴. However, static stretching has been shown to be detrimental to the muscular power aspect of an athletic performance.

Recent research has shown a decrease in muscle performance related to explosive motions such as sprinting and vertical jump after static stretching. They conveyed that static stretching decreases muscular stiffness by decreasing muscle-length tension due to elongation of the muscle fibers and decrease muscle activation^{2, 5, 8}. Most of all, static stretching has shown to compromise force production (power) and force output^{2, 5, 8}. Winchester et al conveyed in their study that there was a 3% decrease in sprint performance at 40 m when the subjects participated in the static stretching protocol⁹. Brady et al reported that static stretching decreased the benefits from general warm-up when performed immediately before a vertical jump test². Also, it has been reported that static stretching decreases vertical jump performance after a rest period. The study reported significant difference between jump 1 and jump 2 of the 11 subjects. 63.63% of the subjects performed a decrease vertical jump after static stretching⁶.

As a result, dynamic warm-ups have become the movement of choice to prepare the body for a workout or a sport. Dynamic warm-up involves an active continuous, rhythmic motion to increase body temperature, elongate muscles, increase heart rate, blood flow to the muscles, and enhance motor unit excitability. It includes skipping, hopping, jumping and rotational motions. The rationale behind the switch from static stretching to dynamic warm-up explains that dynamic warm-up does

not decrease muscular force production, muscular stiffness, or depressing muscular activation before an activity. The research has shown that the dynamic warm-ups have solidified its place as the warm-up of choice for optimal sport and workout results.

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