

Stretching Exercise and Sports Performance

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Abstract

Stretching is a form of physical exercise in which a specific muscle or muscle group is deliberately flexed or stretched in order to improve the muscle's felt elasticity and achieve comfortable muscle tone. Stretching is improve performance, decrease injury and generally be advantageous to the athlete Stretching performed prior to exercise (acutely) or as a long-term intervention has traditionally been thought to improve the performance of endurance runners. Stretching can reduce running economy and performance for up to an hour by diminishing the musculotendinous stiffness and elastic energy potential. Chronic stretching additionally appears to have advantageous effects. In relation to injury risk, stretching shows little significance for endurance runners to chronic injury.

Introduction

Stretching is a form of flexibility exercise in which a specific muscle or muscle group is deliberately flexed or stretched in order to improve the muscle's felt elasticity and achieve comfortable muscle tone. The result is a feeling of increased muscle control, flexibility, and range of motion. The use of stretching in the training programs of recreational and competitive athletes has been historically commonplace. Increasing flexibility through stretching is one of the basic tenets of physical fitness. It is common for athletes to stretch before and after exercise in an attempt to reduce risk of injury and increase performance, though these practices are not always based on scientific evidence of effectiveness. Athletes are at high risk of overuse injuries such as iliotibial band syndrome, stress fractures and plantar fasciitis, and the literature suggests that stretching can reduce the prevalence of these injuries. It appears stretching may hold significance for certain exercise disciplines.

Types of Stretching

There are commonly three types of stretching, static stretching, dynamic stretching, and proprioceptive neuromuscular facilitation (PNF) stretching. Static stretching involves lengthening a muscle and holding it in a mildly uncomfortable position for a period, usually somewhere between 10 and 30 s. Dynamic stretching uses momentum and active muscular effort to lengthen a muscle, but the end position is not held. PNF stretching typically involves a contraction of the opposing muscle to stretch the target muscle, followed by an isometric contraction of the target muscle.

Stretching and strength and power

Stretching enhanced squat jump, countermovement jump, and drop jump performance, while other studies have demonstrated that static stretching prior to activity has no effect on strength and power. stretching induces a decrease in countermovement jump performance that persists for 5 min but returns to baseline at 15 min (Bradley et al). countermovement jump performance between groups performing static stretching alone, heavy-load exercises alone, and a combination of static stretching and heavy-load exercises prior to activity. Although evidence is conflicting, a preponderance of the evidence suggests that static stretching immediately prior to strength and power activities diminishes performance. However it also appears that if static stretching is performed with adequate time (e.g., 15 min) prior to the event or is combined with a subsequent general warm-up, it has effect on strength and power performance (Gonzalez-Rave et al.). Dynamic stretching has been shown to enhance performance when instituted prior to strength and power activities. dynamic stretching prior to golf improved club head speeds and ball speeds (Moran et al.). dynamic

stretch performed with faster speed may affect performance more positively. Dynamic stretching in conjunction with a general warm-up has been shown to improve countermovement jump performance (Fletcher). Athletes combining dynamic stretching and front squats had higher countermovement jump than that of athletes performing either dynamic stretching alone or static stretching alone, while dynamic stretching alone produced better performances than those produced by static stretching alone (Needham et al.)

Stretching and speed and agility performance

The limited available evidence appears to indicate that speed and agility performance are improved by dynamic stretching prior to activity. However excessive volume may induce fatigue and affect speed and agility performance adversely. Based on the available literature, static stretching prior to speed- and agility-dominant activities appears to be detrimental to performance. Dynamic stretching or a general warm-up after static stretching may reverse this effect. It also appears that static stretching may affect speed and agility performance differently based on the athlete's baseline level of flexibility.

Dynamic stretching during a warm-up for professional soccer players improved both sprint and agility performance (Little and Williams). Athletes combining dynamic stretching and front squats had improved sprint times versus those of athletes performing dynamic stretching alone, and both of these groups sprinted faster than a static stretching group (Needham et al.). The baseline level of flexibility of the athlete may impact the performance effect of stretching in speed and agility tasks. Favero et al. showed that subjects with low baseline flexibility scores had a performance benefit from static stretching, with an improvement in 40-m sprint time, whereas those subjects that had higher baseline flexibility scores were affected adversely by static stretching, with slower sprint times.

Stretching and chronic injury

Sports injuries are usually the first signs of the body telling you that the body was impacted. Athlete complains of numbness and especially tingling, the key to a diagnosis is to obtain a detailed history of the athlete's acquired symptom perception, determine the effect the injury had on the body and its processes, and then establish the prime treatment method. In the process to determine what exactly happened in the body and the standing effects most medical professionals choose a method of technological medical devices to acquire a credible solution to the site of injury. Prevention helps reduce potential sport injuries. It is important to establish participation in warm-ups, stretching, and exercises that focus on main muscle groups commonly used in the sport of interest. Stretching may possess qualities that will help reduce the likeliness of muscle and tendon strain injuries; however, this is unrelated to the subset of injuries most experienced by endurance runners (McHugh & Cosgrave,). Stretching provides assistance in the reduction of chronic overuse injuries and therefore is not a useful injury preventative strategy for endurance athletes.

Negative effects of stretching

There are many techniques for stretching in general, but depending on which muscle group is being stretched, some techniques may be ineffective or detrimental, even to the point of causing tears, hypermobility, instability, or permanent damage to the tendons, ligaments, and muscle fibre. Stretching can be dangerous when performed incorrectly. The physiological nature of stretching and theories about the effect of various techniques are therefore subject to heavy inquiry

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