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SPORTS MEDICINE MONTHLY

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Surgical & Non-Surgical Care. Sports Medicine. Physical Therapy.

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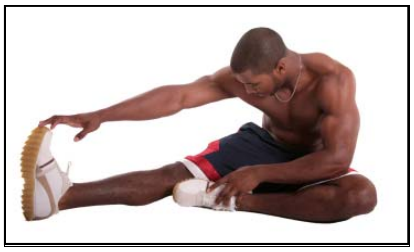
STRETCHING FOR COMPETITION

Stretching for competition is by no means a new concept. It is well known that flexibility is essential to successful athletic performance. However, many overlook the priority and the importance of proper flexibility and stretching before, during, and after competition. The oversight is not usually in the lack of communication on the importance of stretching, but rather a lack of communication to our athletes about what proper stretching really is. While many make it a focus to stress the importance of adequate hydration and fluid replacement in the heat and humidity of the August season, by contrast appropriate stretching and flexibility techniques are often assumed as understood and therefore not frequently nor accurately discussed with our athletes. As a result, stretching programs vary greatly across the field and courts of competition. Likewise, many may not realize that the injuries that are so common in their respective sports are actually directly linked to a lack of appropriate flexibility and could have been prevented. Yes, muscle strains and tendinitis are an obvious result of inadequate flexibility. In addition to these though, many are not aware that limited flexibility also can be directly tied to low back pain, increased stress and strain of bones and joints, and the usage of subconscious compensatory movements that eventually cause wear and tear in other areas of the body.

The importance of adequate flexibility for success in athletic competition is paramount. When correctly implemented, adequate stretching and flexibility programs directly decrease an athlete's risk for a vast quantity of performance-related injuries.

The Original Static Stretch

Static stretching has been around for decades, and rightfully so. Static stretching has been shown by countless quantities of research to increase the overall flexibility of a joint or a group of joints, it is imperative towards preparing muscles and tendons for the lengthening demands of athletic competition, and it also helps to increase blood flow to the area as well. However, given so much focus on the 'alternative forms of warm-up' that have received so much attention over the last 5-10 years, the focus and the priority of the static stretch has waned. Although it is highly important to include an active warm-up or a dynamic flexibility program into your overall pre-event routine, static stretching shouldn't be left out.



So why stick with a static stretching program?

Well, for one, it's a much safer alternative to any form of a dynamic warm-up. As static stretch gradually loads tension on the muscle and tendons involved, it reduces the overall threat that is perceived by the body to the muscle and the tendon. And any time there is a perceived threat, there will always be a pro-active contraction and tightening of the muscle. In other words, a muscle and a tendon that are stretched rapidly, without a proper warm-up, will usually reflexively tighten, thus limiting the overall flexibility of the entire warm-up program and quite possibly resulting in injury as well.

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Dynamic Flexibility

In our Track and Field Season edition of Sports Medicine Monthly back in April of 2014, we touched specifically on dynamic stretching as it pertained to the hamstring muscle group. However, dynamic flexibility is obviously important for many other muscle groups as well, not only the hamstring. Recall that dynamic stretching involves actively moving a limb or a body segment from its neutral position to it end range (i.e. where the muscle is at its greatest length) for a brief second and then moving the limb back to its original position. In other words, whereas a static stretch has been shown to increase the length-tolerance of the muscle and the tendon at rest, dynamic flexibility has been shown to increase the length-tolerance of the muscle and tendon during dynamic activity. As a result, the two work together to improve overall length-tolerance while also helping to reduce the likelihood of injury. And, as dynamic flexibility for the hamstring has already been described in our April 2014 edition, below are a few other stretches for a few other muscle groups as well.

Dynamic Groin

Dynamic Hip Flexor

Dynamic Core

Pictures obtained from the Princeton University Athletic Medicine Dynamic Flexibility Program

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Stretching vs. Plyometrics

Given the similarities of some of the movement patterns that occur in dynamic stretching and certain plyometric exercises, it can be easy to confuse the two. However, the purposes and the outcomes of the two are completely polar opposite. Whereas stretching is specifically designed to increase the flexibility or length-tolerance of the muscle and tendinous unit, plyometrics are specifically designed to increase load on the same unit for the purpose of increasing the unit's ability to contract. In other words, dynamic flexibility teaches a muscle to lengthen during movement while plyometrics teach a muscle to shorten during movement. Other differences include the following:

	Dynamic Stretching	**vs.**	**Plyometric Exercises**
Muscle Lengthening:	Yes		No
Muscle Shortening:	No		Yes
Active Warm-up:	Yes		No
Free-Weights:	No		Sometimes
High-Speed:	No		Yes
Slow/Controlled:	Yes		No

As plyometics impart a tremendous load to the muscle and tendon unit, it is obviously very important to not utilize these types of exercises for a warm-up-type activity in which the tissue is subsequently not ready for such a load. The warm-up of tissue for activity is always to be a gradually progressive process. In preparation for exercise the tissue involved not only requires a substantial increase in blood flow to the area (i.e. warm), but it also requires adequate flexibility to be ready for the requirements of the upcoming event. Therefore, a gradual safe activity (i.e. 5 minute jog) followed by a static and then a dynamic flexibility program is one of the easiest ways to reduce the likelihood of sustaining injury.

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