

The Hamstring Epidemic Pre-Game Preparation and Injury Prevention

Over the past several decades, the general public has been inundated with information from sports medicine practitioners regarding the prevention of hamstring injuries. One of the focal points of these injury prevention programs has been the use of **static stretches** as the primary deterrent for hamstring strains, or “pulls” (static stretches are defined as stretching a muscle to lengthened position and holding for a set time; for example bending over and trying to touch your toes and holding for 20 seconds). *Unfortunately, the use of static stretches as an injury preventative measure has not been justified by clinical scientific research, which casts some doubt on its usefulness and effectiveness.*



The goal of this article is to: discuss the appropriate use of static stretches; and discuss the role of the pre-event warm-up in preventing injuries. Future articles will outline specific aspects of the pre match preparation that should be performed.

The initial emphasis on static stretching and flexibility originated many years ago with gymnasts, figure skaters, and track and field athletes. In these sports, especially gymnastics and figure skating, tremendous amounts of flexibility are required for successful performance in the respective sports. In the sport of soccer, the same amount of flexibility is not needed to succeed, and in all actuality, would probably be detrimental for the soccer athlete. However, it often seems as if we are determined to turn our players into contortionists in an attempt to prevent injury. Every sport has a minimum threshold of flexibility that is needed to allow proper execution of the sport-specific skills; soccer is no exception. *Attempts at achieving flexibility greater than this threshold will not result in reduced injury risk.*

In some circles, “stretching” became synonymous with “warm-up,” when in fact it should be at the maximum a small part of the pre-event preparation. It is not uncommon to see soccer players going through a 15-20 minute session of pure static stretching prior to a match.

Unfortunately, excessive amounts of stretching before a competition may actually increase the risk of injury. The reason for this is that when a muscle is stretched, the nervous system is working at a very high rate to regulate the degree and intensity of the stretch, which can cause what is termed *neural fatigue*. When a muscle becomes fatigued, it is more susceptible to injury.





If you need further evidence of this theory, consider these questions: What muscle in soccer, track and field, etc. is the most commonly pulled muscle in the body? However, what muscle almost universally is stretched the most by soccer players and track athletes? The answer to both of these questions is the hamstring, without question. More evidence can be found by reading the injury reports from Europe; invariably at least 2-3 players a week are suffering from a hamstring injury, and it is doubtful that any of them are “tight.” As a matter of fact, all Liverpool fans are keenly aware of this when Michael Owen played there; Michael missed the better part of 2 years due to chronic hamstring problems. Is it likely that a significant component of his rehab entailed hamstring stretching? *Absolutely.* Is it likely he had tight hamstrings which resulted in his injuries? *Probably not.*

*Therefore, it would be appropriate to question the longstanding tradition of excessively stretching the hamstring muscles prior to playing.

So the question now is “Do we need to have our soccer athletes stretch at all?” The answer is a conditional “**yes,**” depending on the situation:

(1) Players with tight hamstrings:

Any player that has flexibility deficits should be placed on a formal stretching program; these players are more prone to injury. This program should be performed on a daily basis, preferably twice a day. Each stretch should be performed 5-10 times, for 20 seconds each. ***It is extremely important that each stretch is performed pain free.*** Stretching should not be uncomfortable; if it is, the body will fight against the stretch, defeating the purpose.

(2) Pre-event / match:

The most important aspect of the pre-match preparation should be on *active warm-up and sport-specific movements*. These types of activities result in an increase in muscle temperature and metabolism, which increases muscular elasticity and thus increases dynamic flexibility. Various running patterns (forward, backward, side shuffles, grapevines, shuttles) and active soccer specific movement patterns (kicking motion, lunges, hip rotations) should be heavily emphasized. After a significant active warm-up, very light stretching may be performed for approximately 5-7 minutes. This is then followed by more active movements, light 3v2 drills, shooting / long passes, wall passes, etc.

(3) Post match cool down:

This is *probably the most appropriate time to perform static stretches*. The inherent nature of the sport results in the tendency for the body to “tighten up” after playing, due to the significant number of eccentric contractions that are performed during the match. The cool down period should entail light activity, with a final static stretching session.

In summary, typical stretching programs are static in nature, while the sport of soccer is a highly dynamic activity. Thus, **the optimal warm-up program is one that stresses dynamic, active movements that prepare the body for the positions that a player will have to attain during the course of a match.** Not only will this reduce the risk of injury, but it will also optimize performance on the field.

