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Secrets to Preventing Hamstring Injury

Hamstring strains are one of the most dreaded injuries in sport and mastering how to prevent hamstring injuries has become one of the Holy Grails of sports medicine. There are a couple of reasons why hamstring injuries are dreaded, the first is they are a very frustrating and time-consuming injury to rehabilitate, and the second reason is that once they've occurred, they frequently recur. This makes them a particularly important injury to rehabilitate properly, and generally does require proper physical therapy treatment. The ultimate prize of course would be preventing a hamstring injury in the first place, and this is completely possible to do if you follow a few simple tricks that we've outlined below.

WHAT THE RESEARCH TELLS US

Here's what the data tells us about the risk factors involved in hamstring strains, some of these you can address to reduce your risk of injury, but some you can't because they're unchangeable.

These risk factors include:

Risk Factor	Modifiable?
Increasing Age	X
Ethnicity (Aboriginal and African athletes are more prone to hamstring strains)	X
Previous Hamstring Strain	X
Hamstring Strength	✓
Running Mechanics	?
Muscle Fibre Length/Arrangement	? ✓

Any injury prevention protocol needs to focus on risk factors we can change, and which research has shown to reduce hamstring injury.

This comes down to two key areas:

1. Strengthen your hamstrings
2. Improve flexibility in the tissue and surrounding structures

7 SECRETS TO PREVENTING HAMSTRING STRAINS

1 INCREASE YOUR BACK MOBILITY

The lower back is where the nerves that control the hamstrings come from. A lot of people that develop hamstring strains have co-existing lower back symptoms or problems. This may be as simple as a sensation of tightness in the back with certain activities or may be as significant as a bulging intervertebral disc. Either way, a well-functioning and flexible lower back is vital to allow your hamstrings to work properly. Poor posture and ergonomics at work and even sitting at a desk or driving all day can affect the mobility of your back. Your hamstring muscles work together with your gluteal (buttock) muscles which in turn work

together with your back muscles. Given that these muscles depend on each other for normal function, it makes sense that a healthy lower back is critical for good hamstring performance. If you frequently suffer from back problems see a physical therapist for more specific treatment and exercises, or advice on posture and ergonomics at work.

2 RELEASE YOUR GLUTES

If you have been training hard in a pre-season build up or simply increasing your activity load, tight glutes (gluteal muscles) is often a consequence. Now, this is not a compliment! As intensity and workload increases, the muscles around the hip develop knots (known as trigger points). This can cause referred pain

into the hamstrings, reducing your flexibility, and increasing the risk of straining the muscles, as your glutes and hamstrings are vital working partners. A regular deep tissue massage by a therapist may be beneficial in maintaining 'loose' glutes and releasing trigger points.

4 GET YOUR NERVES GLIDING FREELY

A tight back and glutes can affect the flexibility and mobility of the nervous system. Yes, your nerves move and bend with you. Neural tension (tension in the nerves) can feel like stiffness down the back of your legs, but it can also lead to "misfiring" of the hamstrings, which puts them at risk of injury – a bit like a misfiring cylinder in a car. The solution is firstly to keep your lower back and glutes 'healthy' as mentioned in the tip above, but also to keep your nerve system moving properly, with specific nerve stretches.

4 BUILD STRENGTH

Frequently people who strain their hamstrings have an asymmetry in their strength. This could be:

- from side to side (ie. left or right)
- one or other hamstring may be weak at a certain angle
- or there may be a strength imbalance between the quadriceps (muscles on front of the thigh) and hamstrings on the same leg.

Ideally, you want your muscles to be strong throughout their length, especially when being stretched and anyone playing sport of any kind, should incorporate some sort of hamstring strengthening into a weekly routine. There are exercises that have been proven through clinical trials to reduce the risk of hamstring injury, called the L-protocol (Asklings) and Nordic hamstring strengthening. These are advanced exercises and we'd recommend you get instruction from a trainer or physical therapist before trying them at home alone.

5 GIVE YOURSELF TIME TO RECOVER

Muscles are more likely to strain if they are fatigued. Fatigue can be a normal thing that occurs during a training session or match, but it could also be cumulative fatigue that creeps up on your muscular system over several

weeks as your training increases. To counter cumulative fatigue, you need to utilise simple recovery strategies to give your body the best environment to heal and adapt to exercise. It's important to remember that you still benefit from exercise when you are resting as your body builds on its strength. Simple recovery strategies include, good nutrition; cold water immersion (ice baths) or simply swimming and walking in a cold pool; and sleep. Regular massage can also form an important part of the recovery process and can help combat muscle fatigue while maintaining tissue health.

6 DON'T SKIP THE WARM-UP

When starting a bout of exercise your body needs to make several adjustments. These include:

- increasing your breathing and heart rate
- increasing the energy-releasing reactions in the muscles
- increasing blood flow to the muscles to supply them with more oxygen and to remove waste products.

These adjustments do not occur straight away, but require a few minutes to reach the necessary levels. So, the purpose of a warm-up is to encourage these adjustments to occur gradually, by starting your exercise session at an easy level and increasing the intensity gradually. This is not a static warmup ie. standing still and doing a few stretches, it requires an increase in blood flow. It could include exercises like a brisk walk or jog with some running or agility drills, running side-ways, intermittent sprints or running backwards, as well as some stretches and nerve glides to ready the muscle and the nervous system for the demands you are about to ask of it. Recent studies have shown that a proper warm-up (FIFA 11+ warm up programme for Football) significantly reduced the number of injuries over a season.

7 THE NORDIC HAMSTRING CURL

This is a highly specific exercise targeted at strengthening your hamstring muscle. It is probably one of the most researched

rehabilitation exercise protocols over the past 10 years. Research has shown that using this exercise preventatively can reduce injury rate by as much as 80%. The exercise works the hamstring eccentrically – which means the muscle is working hard (contracting) whilst it is lengthening (stretching). Eccentric training is a key way to strengthen the muscle as it is also one of its weak points when injuries often occur. Refer to our exercise sheet for guidance on how to perform the exercise.

Remember the Nordic Hamstring Curl may be the Holy Grail of hamstring injury and rehabilitation, but the hamstring muscle never works in isolation! Any exercise programme should include holistic strength training to the lower limb, pelvis and back.

THE LAST WORD

If you are currently having trouble with your hamstrings then your local physical therapist can offer treatment and advice. If you suffer a hamstring strain at any point, the first thing to do is to apply the RICE method (rest, ice, compression and elevation) and then contact your physical therapist to get you moving in the right direction as soon as possible.

