



# 7 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.

### 3 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 (Askling) 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

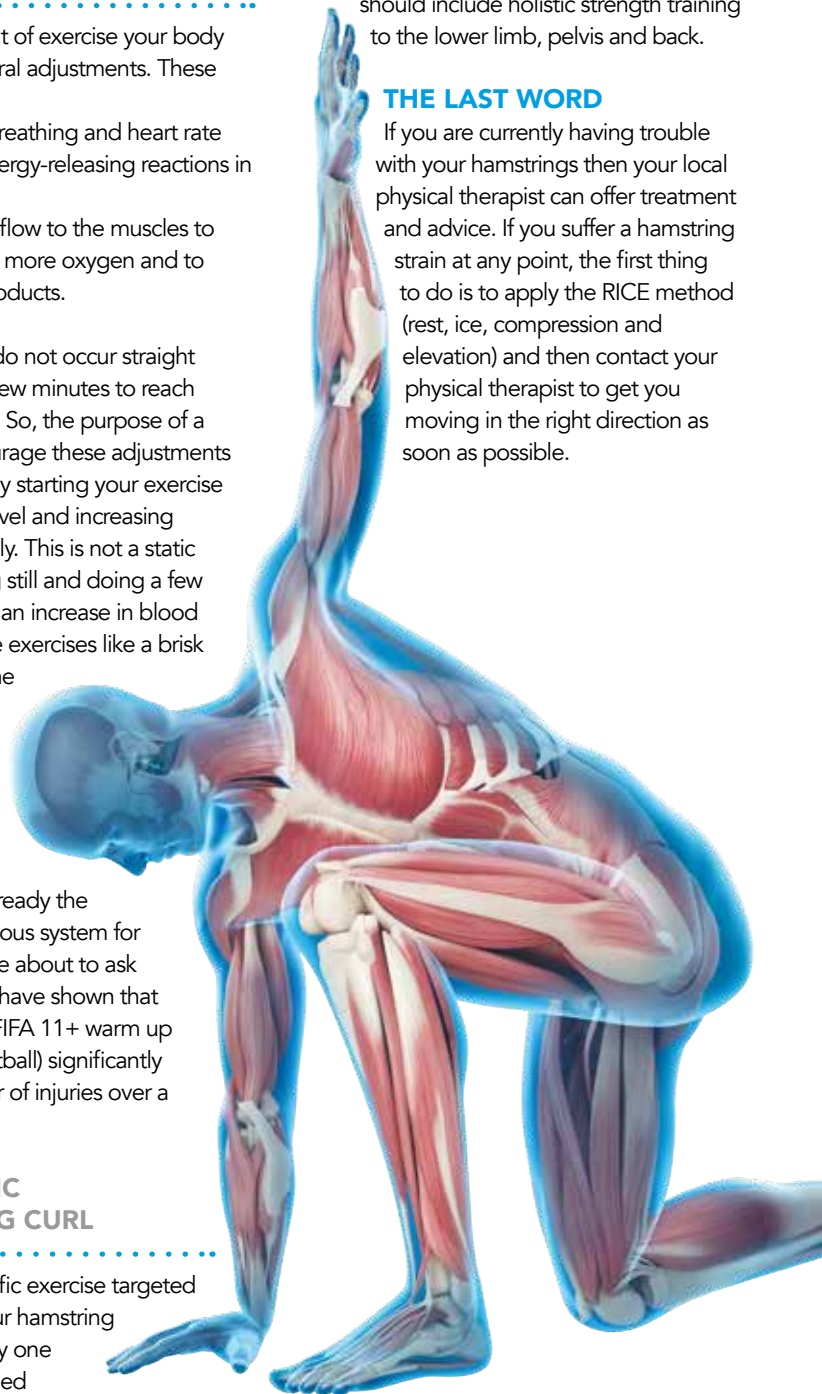
This is a highly specific exercise targeted at strengthening your hamstring muscle. It is probably one of the most researched

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.



# HAMSTRING STRETCHING

The data tells us that one of the best ways to reduce the risk of hamstring injury is to maintain flexibility in the muscles around the lower back, gluteals and upper leg (hamstrings and quadriceps). These exercises are designed to help you achieve this goal.

## SUPINE LUMBAR TWIST STRETCH

Lying flat on your back, cross one leg over the other by twisting your hips and spine. Keep your opposite arm outstretched. You can hold on to your knee to make the stretch stronger if you feel comfortable.

**Repeat 3 times**

**Hold for 20 seconds**



**Video:**

<http://youtu.be/BzYBkAvdCJY>

## DOUBLE LEG BACK STRETCH

Lie flat on your back, and bend your knees towards your chest. Hold this position and feel a gentle stretch in your back. If you get any groin pain while doing this exercise, stop and inform your therapist. Relax, and repeat as necessary.

**Repeat 3 times**

**Hold for 20 seconds**



**Video:**

<http://youtu.be/ZEz80zvUv4>

## LUMBAR AND THORACIC SIDE FLEXION SITTING

Sitting with good upright posture, run your arm down the side of the chair leg by side-bending your spine. Repeat to the other side. This is a good mobility exercise for the upper and lower back while sat down, if you feel your back is starting to get stiff.

**Repeat 3 times**

**Hold for 20 seconds**

**Perform both sides**



**Video:**

<http://youtu.be/Rze6cxfJpOQ>

## GLUTE STRETCH SUPINE 3

Lie on your back, and bend your knee to 90 degrees (i.e. pointing straight up). Place your ankle across your opposite knee and pull your knee towards your chest to feel a stretch in your bottom. You can also use a towel to assist you.

**Repeat 3 times**

**Perform both sides**



**Video:**

<http://youtu.be/zpaExOK4S8M>

## EXTERNAL ROTATION TABLE GLUTE STRETCH

This is an alternate to lying on the floor. Place your foot on a table, with your leg turned inwards. Lean forwards slightly to feel a stretch in your buttock. Hold the stretch.

**Repeat 3 times**

**Hold for 20 seconds**

**Perform both sides**



**Video:**

[http://youtu.be/Nh3gloc\\_x4I](http://youtu.be/Nh3gloc_x4I)

## FOAM ROLLER HAMSTRING STRETCH

Sit down placing a foam roller under your Hamstrings (back of the legs). Your feet should be off the ground, and you can balance using your arms. Roll the roller up and down your Hamstrings to create a stretch. You can cross your legs to emphasise the stretch on one side.



SETS

REPS

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# HAMSTRING CONDITIONING

After ensuring that the muscles and tissues around the low back, gluteals and upper leg are flexible, the most important aspect of preventing hamstring injury is to build hamstring strength and ensure there is no neural tension in the nerves running from your spine, down your leg. These exercises will help achieve this.

## SCIATIC NERVE GLIDE FLOSS 3

Sit with good posture, and straighten your affected leg and bend your ankle towards you, as you extend your neck. Then bring your neck towards your chest as you relax the ankle. This will glide the sciatic nerve.



SETS	REPS
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 **Video:**  
<http://youtu.be/HkXkUjffCYw>

## SHOULDER BRIDGE 3

Start position is shoulder bridge level one, with a neutral pelvis and the spine rolled away from the mat. Inhale to prepare, exhale to lengthen and straighten your leg. Avoid tilting the pelvis. Inhale and fold your leg back to the mat, ready to repeat on the opposite leg. Exhale, as you roll the spine down vertebra by vertebra to finish.

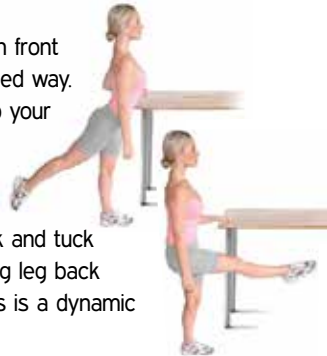


**Repeat 5 times | Perform both sides**

 **Video:**  
<http://youtu.be/R7yrLIC0uJs>

## LEG SWING

Hold on to a table, and swing your leg in front of you and then behind you in a controlled way. It's a great way to dynamically warm up your leg and hip, but also used to gain more mobility to your hip joint. As you swing your leg forward in front of you, pull your foot upwards and slouch your back and tuck chin to chest. (slump) Then as you swing leg back behind you straighten your back up. This is a dynamic nerve stretch.



**Repeat 5 times | Perform both sides**

 **Video:**  
<http://youtu.be/Rze6cxfJpOQ>

## FULL SQUAT SINGLE LEG CUP REACH

Place 5 cups in front of you, and stand in the middle of them. Squat down (on one leg), and reach for one cup then come up, then repeat with the second cup, etc. Be careful to maintain control to the leg, and do not perform the exercise too quickly. Always keep your foot flat on the ground, do not let your heel raise from the floor.



**Repeat 5 times | Perform both sides**

 **Video:**  
<http://youtu.be/FslkTrYqdc>

## ROMANIAN DEAD LIFT

Keep your knees just slightly bent, shoulder width apart, and place a dowel rod or barbell on the blocks. Keep your back straight/flat as you bend your knees more towards the bar. Hold the bar shoulder width apart or slightly narrower, with one palm facing up, one palm down (or both palms facing down). Lift the bar up by straightening the legs and extending the back at the same time. Keep the bar close to your shins during the movement. If you lack flexibility you may need to bend your knees a little. Squeeze the shoulder blades at the top of the movement. Return to the start position.



**Repeat 5 times | Perform both sides**

 **Video:**  
[http://youtu.be/Nh3gioc\\_x4I](http://youtu.be/Nh3gioc_x4I)

## NORDIC HAMSTRING CURL

This exercise is best done with a training partner who anchors your feet. But it can be done at home if you can find something heavy to secure your feet under. Kneel on the ground—it's best if it's padded, anchor your feet and lower your body to the ground as slowly as possible keeping your back straight i.e. rigid. When your hamstrings can no longer support your weight, let yourself fall to the ground, and catch yourself in a push-up position. Your goal is to control the descent for as long as possible. Start with very low repetitions i.e. 2-4 repetitions a day and only build on this if and when you're not too sore.



SETS 1	REPS 2-4
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 **Video:**  
<http://spxj.nl/2IDFKaq>

Video courtesy of Physiotutors 

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