

# HAMSTRING STRAINS IN SOCCER

## HOW IT HAPPENS

How the injury happens may be different depending on when you hurt your hamstring. An acute strain can occur in training or a match with sudden acceleration, sprinting, sharp change in direction or hard breaking and sliding into a tackle (overstretching the hamstring muscle). The hamstring muscle works over the hip and knee, and as such is a two-joint muscle. It contracts to extend the hip, straightening the leg or pulling it back behind you; and it flexes or bends the knee. The hamstring is therefore constantly working throughout all stages of walking or running and jumping allowing little time for rest or recovery. It is susceptible to fatigue, which makes it vulnerable to injury. A common consequence of this is straining the hamstring in the latter half of a game as it starts to tire, especially if you are not well conditioned! A previous

hamstring strain is the biggest risk factor for a future hamstring injury.

A chronic overuse hamstring muscle strain can develop over time through training with a feeling of stiffness in the muscle and a deep ache at the back of the thigh or into the buttock. This is often a hamstring tendinopathy. This will be due to a cumulative effect of training, increasing load and intensity but also associated with a number of underlying factors, such as muscle imbalance including eccentric strength, pelvic and core muscle weakness, hard or wet training surface, poor flexibility, lower back pathology, poor warm-up and improper running mechanics, fitness/fatigue. In these tendinopathy cases research has shown there are degenerative changes in the tendon rather than an inflammatory response as previously thought. Tendons have a poor blood supply and are therefore slow and stubborn to heal.

## WHAT'S GOING ON INSIDE?

There are four muscles that make up the hamstring: semimembranosus and semitendinosus (medially – 'inner half' of the back of your thigh) and biceps femoris – short and long heads (laterally – 'outer half' of the back of your thigh). Injury could be to any one or more of them, with a tear or cumulative strain to the muscle fibres. A hamstring strain can range from mild to very severe involving a complete tear of the hamstring muscle. See table 1 on the next page for details of the injuries and the symptoms.

## WHAT CAN I DO?

As mentioned earlier a history of previous hamstring injury is the biggest risk factor for a future hamstring injury. If you have not had a hamstring injury previously and wish to prevent one (which is the best plan yet!) being proactive and consulting a physical therapy specialist to assess any underlying muscle weakness, or biomechanical issues would be hugely beneficial in the long run. Ensuring your hamstring is working cohesively with your glutes, lower back and buttock/pelvic muscles will ensure they are not overloaded or taking extra strain. Improving their condition and fitness will also help ward off fatigue and injury risk. A thorough warm-up has been proven to reduce hamstring injury risk, so ensure you participate in a warm-up, even if you have arrived late or are rushing to get started, take the time to adequately prepare your muscles for activity. If you have been sitting through periods of the match, warm up on the sideline again before running onto the field.

Otherwise, being a disciplined, compliant patient would be key to optimal recovery. It is essential to follow hands-on treatment with a full rehabilitation programme. It may be hard to stay motivated once the pain disappears, but in order to prevent a recurrence and return to full function it is essential you work through a progressive exercise routine with your physical therapy specialist.

## HOW PHYSICAL THERAPY CAN HELP

As seen in the table on the next page, physical therapy is an integral part of treating a hamstring injury, both acute and overuse injuries. The sooner you start treatment following an injury the better the outcome. The early stages of treatment are not only aimed at reducing pain and swelling, but are also crucial to minimise scar tissue formation and ensure good muscle fibre alignment – which in the long term will ensure a stronger muscle, more resistant to injury.

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TABLE 1: DIFFERENT CAUSES, SYMPTOMS AND MANAGEMENT OF HAMSTRING PAIN

## HAMSTRING STRAIN

An acute injury that usually occurs during dynamic running: sprinting, jumping, fast stop/starts

The strain is graded:

- Grade 1 – minor tear of a few muscle fibres
- Grade 2 – tearing of a larger number of fibres but muscle still intact
- Grade 3 – complete rupture of the muscle

### Symptoms:

- Sudden onset of pain while running
- Sharp, stabbing, possibly even a snap or pop sound
- Bruising on back of the thigh
- Swelling
- Can have associated back and buttock pain
- In grade 2 or 3 injuries may have difficulty walking

### Management:

*Acute phase:*

- R.I.C.E – rest, ice, compression, elevation and refer yourself to a physical therapy specialist after 48–72 hours
- Physical therapy to promote tissue healing and ensure minimal scar tissue formation
- Massage and manual therapy to release tight surrounding structures and address any underlying back or hip issues
- Exercise therapy – slow and progressive over stages depending on the severity of the initial tear

### Rehabilitation:

- Strengthen pelvis and core including the gluteal (buttock) muscles as they work together with the hamstrings
- Manage any muscle imbalances in weakness or flexibility through exercise correction
- Neural mobilisation stretches
- Progression to full leg strengthening exercises, squats, deadlifts and finally eccentric strengthening of the hamstring

### Training:

- Complete rest may be advised depending on severity of injury; otherwise, reduce intensity and training volume
- Avoid speed and hill work
- Find a comfortable pace and distance that causes no pain and stick to that during training
- Train on softer surfaces if possible and avoid wet slippery fields
- Cross train with cycling, water running, swimming, elliptical trainer
- Address underlying contributing factors, such as biomechanics (do you need orthotics for your arches?) or a difference in leg-length

## HAMSTRING TENDINOPATHY

- An overuse/overloading of the muscle tendon attachment at the origin of the hamstring on the ischial tuberosity deep in your buttocks
- History of increased load, more hill running, increased speed work, unaccustomed deep lunges, yoga and deadlifts
- The tendon has poor blood flow which makes healing and recovery slow

### Symptoms:

- Buttock pain
- Point specific pain on or just below the ischial tuberosity (sit bone)
- Chronic stiffness
- Aggravated by periods of sitting and driving deep lunges, hamstring stretches and running at high speeds and uphill
- Stiffness or soreness first thing in the morning followed by a 'warming up period' where the pain disappears
- Following exercise pain may be delayed by 24 to 48 hours

### Management:

*Early stages:*

- Ice regularly through the day
- Stop stretching your hamstring as this compresses/squashes the tendon
- Sit as little as possible, use a soft roll under your buttock to relieve pressure on tendon
- Physical therapy to mobilise tight structures and promote tissue healing using massage, acupuncture and other modalities
- Isometric exercises 2–3 times per week especially if still painful

### Rehabilitation:

- Load modification; manage muscle imbalances in weakness and flexibility through exercises
- Strengthen the core, pelvis and gluteal (buttock) muscles
- Neural mobilisation stretches
- Eccentric strengthening in latter stages of rehabilitation

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