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The Hamstring Strain

The Most Common Lower Limb Muscle Strain

A muscle strain is a stretch or tear of muscle fibres. In the leg, muscle strains happen when a muscle is either stretched beyond its limits or forced into extreme contraction.

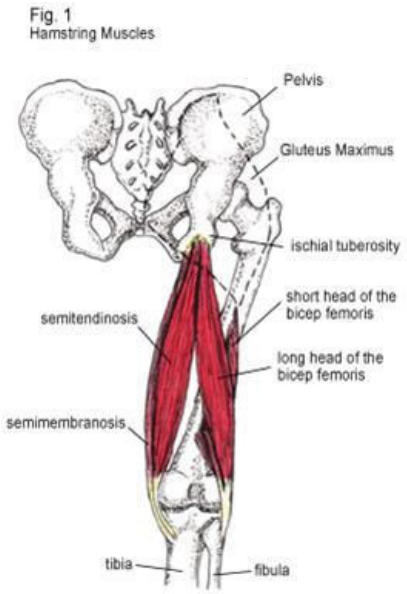

Fig. 1
Hamstring Muscles

The hamstring muscle group is made up of the Semitendinosus, Semimembranosus and Biceps femoris muscles, which are large, powerful muscles that span the back of the thigh, from the lower pelvis to the back of the shin bone. The hamstring is the important muscle that functions to extend the hip and bend the knee.

Mild to severe hamstrings injuries are very common in all sports involving sudden acceleration, especially track and field, soccer, basket ball and hockey. The hamstrings play a vital role in walking, running, jumping, and controlling movements of the trunk.

Symptoms of a Pulled Hamstring

- A sudden sharp onset of pain at the back of the leg during exercise.
- Usually the athlete cannot continue playing.
- May have pain with sitting or while walking uphill or ascending stairs.
- Swelling may accompany more severe injuries.
- Pain on contracting the muscle against resistance. Bending the knee is often painful after a strained hamstring, and can even prevent the patient from walking normally.
- Pain on stretching the muscle (straightening the knee whilst bending forwards).
- Bruising: Small tears within the muscle cause bleeding and subsequent bruising.

What causes Hamstring Injury?

- *Quadriceps (Thigh muscles) versus Hamstrings strength:* An imbalance between the quadriceps muscles (located at the front of the upper leg) and the hamstring muscles. The quadricepses are a very large, strong group of muscles that can become so strong that they overpower the hamstrings.
- *Hamstring strength:* A lack of hamstring strength is strongly linked to hamstring injury.
- *Lumbosacral nerve impingement:* Nerve impingement in L5-S1 can lead to associated hamstring muscle weakness or referred pain.
- *Previous Injury and scar tissue formation:* Prior injuries to the hamstrings or adductor muscles can greatly increase the chance of future injury.
- *Flexibility:* The greater the flexibility of the hamstrings the less prone they are to injury.
- *Ankle inflexibility:* reduced range of ankle movement may overload the hamstrings.
- *Weakness or instability in lower back and core muscle:* Less than ideal strength and mobility in core muscles may predispose athletes to hamstrings strains.
- *Quadriceps tightness.*
- *Rapid growth:* seen during adolescence can cause a natural predisposition to hamstring injuries for this age group.

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- *Poor lower limb biomechanics*
- *Inadequate warm up:* A proper warm-up is protective because it increases range of motion and reduces stiffness
- *Fatigued hamstrings:* Fatigue reduces the energy-absorbing capabilities of muscle, making them more susceptible to injury.
- *Age:* The older the individual the greater at risk to a pulled hamstring.

Physiotherapy management

- Modalities such as electrical stimulation, ice, or ultrasound to help reduce pain and swelling
- Compression bandaging or neoprene support may be indicated in Grade 2&3 strains to support the damaged tissue
- Assessment of lumbar spine to eliminate nerve entrapment as the main cause.
- Thorough biomechanical assessment and gait analysis
- Spinal, pelvis and hip joint mobilisation
- Deep tissue friction massage to reduce the formation of scar tissue.
- Rehabilitation exercises to restore flexibility and strength
- Acupuncture to promote blood flow and healing.
- Possible orthotics prescription to control poor foot mechanics.
- A supportive brace may be necessary.
- Advice on graded return to sport