

Quadriceps Muscle Strain.

What is a quadriceps strain?

A 'quadriceps strain' or a 'pulled quadriceps muscle' is an over-stretching or tear in one of the quadriceps muscles. The quadriceps muscle is actually made up of four main muscles – the rectus femoris, vastus lateralis, vastus medialis and vastus intermedius. These muscles are located at the front of the thigh (See Figure 1). The rectus femoris, one of the quadriceps muscles, passes over 2 joints, the



Figure 1: Quadriceps Anatomy.

hip and the knee, and is therefore more vulnerable to strain. Strains of this, and other parts of the quadriceps, usually occur during sprinting, jumping or kicking, often as a result from an overload of the muscles, or trying to move the muscles too fast (as when kicking forcefully playing football). Like all muscle strains they may be graded into mild (grade 1) moderate (grade 2) or severe, complete tears (grade 3).

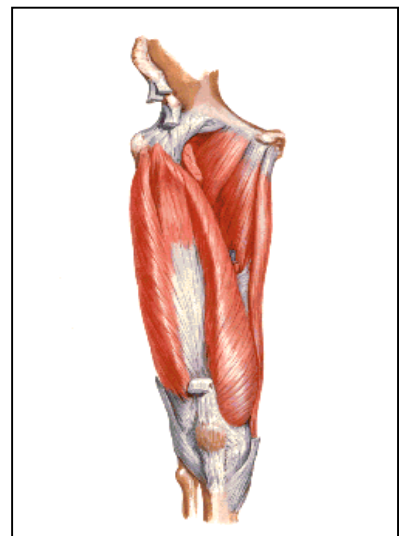


Figure 1: Vastus Intermedius

Strains are common in all sports, especially in football where sprinting and sudden change in direction is involved. A strain is generally a stretching or tearing of muscles or tendons. The difference between a strain and a sprain - is that a sprain is an injury to a ligament, while a strain is an injury to a tendon or muscle.

The symptoms of a quadriceps strain injury can range from a complete rupture of the muscle, to small micro tears or a 'stretching' that the player will probably not notice at the time.

What are the Symptoms of a quadriceps strain?

The symptoms of a quadriceps injury can be graded 1, 2 or 3 depending on severity. A grade 1 injury could consist of a 'stretch' of the muscle or a small micro tear in the muscle. A grade 2 injury could be a partial tear in the muscle and a grade 3 injury is usually a severe, complete rupture of the muscle (See Figure 2). The player feels a grade 2 or grade 3 injury as a sudden pain the front of the thigh during an activity requiring explosive muscle contraction (for example sprinting or kicking in football). There is local pain and tenderness and, if the strain or tear is severe, swelling and bruising.



Grade 1: What are the symptoms?

The player may have tightness and pain in the front of their thigh during a game and will still be able to walk properly. They will usually notice the injury after cooling down or the following day. The player probably won't have much swelling, but will have trouble or some mild pain sprinting, kicking a football ball and changing direction quickly. Often the player will be able to finish the game.

Grade 2: What are the symptoms?

During training or a game the player may notice a 'sharp pull' or 'cramp' in the front of their thigh. The player will probably be unable to walk properly and will not be able to sprint or kick a football ball effectively. Sometimes the player might be unable to fully bend the knee and, extending the knee against resistance causes pain.

Grade 3: What are the symptoms?

The player will often feel a severe pain in the front of their thigh while kicking or sprinting – it is very painful and will almost always stop the player from playing. The player will be unable to walk properly without a limp or crutches. A static contraction of the muscle will be painful and might produce a bulge in the muscle. The player will be in severe pain and will notice swelling. The player will not be able to fully bend the knee and, extending the knee against resistance will be weak and cause pain. However, complete tears of the quadriceps muscles are uncommon. A muscle fibre defect is usually felt when the muscle is contracted (this is a bump or lump in the front of the thigh). In the long-term, these injuries heal well with physiotherapy.

What can the player do?



Figure 3:
Heat
retainer.

Initially the player can use the RICE method of treatment, (Rest, Ice, Compression and Elevation) as well as some gentle stretching exercises (See Figure 2). The player can also use a heat retainer to provide some initial support (See Figure 3).



Figure 2:
Quadriceps
Stretch.

The player then should see then a sports injury professional (a physiotherapist or sports doctor) - who can advise on the correct rehabilitation and guide the player back to training and playing football.

What can a sports injury professional do?



A sports physiotherapist will use a number of different techniques to help facilitate the player's return to training and playing. Some of these include; compression and cold/ heat therapy, electrotherapy, acupuncture, the use of sports massage techniques (See Figure 4), and stretching and strengthening exercises. An eccentric strengthening program may be prescribed. This is a specific type of strengthening aimed at preventing re-injury. The physiotherapist will prescribe a rehabilitation program and monitor it with the player. Most

importantly a physiotherapist will advise the player about a return to training and football. By seeing a sports physiotherapist the player will also provide the muscle with the best possible recovery – which will prevent further injuries from occurring.



Figure 4: Sports Massage.

