

Calf Strain

A muscle strain is a stretch or tear of muscle fibers. In the leg, muscle strains happen when a muscle is either stretched beyond its limits or forced into extreme contraction. The calf muscles consist of the Gastrocnemius which is the big muscle at the back of the lower leg and the Soleus muscle which is a smaller muscle lower down in the leg and under the Gastrocnemius.



Gastrocnemius strain

- The calf muscle typically gets strained when the foot suddenly bends upward, stretching the calf muscle beyond its limits.
- At the time of injury, you may hear or feel a pop inside your calf - the sound of the muscle tearing or shearing away from the Achilles tendon.
- Calf muscle strains are common in athletes. However, they also can happen during a simple stroll- if your foot flexes upward when you step into a hole in the sidewalk or if your heel slips off the edge of a curb.
- Bruises show up in the foot and ankle due to pooling of blood from internal bleeding.

Soleus strain

- Because the soleus doesn't cross the knee joint, a tear in this muscle may not seriously affect your knee function.
- However, a severe soleus strain can cause significant pain, usually at the back of your calf rather than near the knee.

Classification of strain

To help simplify diagnosis and treatment, doctors often classify muscle strains into three different grades, depending on the severity of muscle fiber damage.

- **Grade I** - Only a few muscle fibers are stretched or torn, so the muscle is mildly tender and painful, but muscle strength is normal. Full recovery takes approximately **2 - 3 weeks**.
- **Grade II** - A greater number of muscle fibers are torn, so there is more severe muscle pain and tenderness, together with mild swelling, noticeable loss of strength and sometimes bruising. Full recovery takes approximately **4-8 weeks**.
- **Grade III** - The muscle tears all the way through.
 - Grade III muscle strains are serious injuries that cause complete loss of muscle function, as well as considerable pain, swelling, tenderness and discoloration.
 - A Grade III strain also causes a break in the normal outline of the muscle, often producing an obvious dent or gap under the skin where the torn pieces of muscle have come apart.
 - Full recovery can take **2-4 months** and, in some instances, surgery may be needed.

Shop No. P16, NorthPoint, 100 Miller St. North Sydney. NSW – 2060

T – (02) 99222212 F – (02) 99225577 W: www.physio4all.com.au

E: info@physio4all.com.au

ABN: 77 548 297 578

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Symptoms

- Muscle pain and tenderness, especially after an activity that stretches or violently contracts the muscle. Pain usually increases when you move the muscle, but it is relieved by rest.
- Local muscle swelling, bruising or both.
- Either a decrease in muscle strength or (in a Grade III strain) a complete loss of muscle function.
- Difficulty walking – you may limp in the first few days following injury.
- A pop in the muscle at the time of injury.
- A gap, dent or other defect in the normal outline of the muscle (Grade III strain).

Prevention

- Warm up before you participate in high-risk sports.
- Follow an exercise program aimed at stretching and strengthening your leg muscles.
- Increase the intensity of your training program gradually. Never push yourself too hard, too soon.
- Assess biomechanics e.g foot pronation, muscle imbalances.
- Taking supplements such as magnesium.

Management

Grade I strains: **RICE** principle

- **Rest** the injured muscle (take a temporary break from sports activities).
- **Ice** the injured area to reduce swelling.
- **Compress** the muscle with an elastic bandage.
- **Elevate** the injured leg.

In addition, you can take a **nonsteroidal anti-inflammatory** medication (NSAID), such as ibuprofen or voltarin to ease pain and relieve swelling.

Grade III strain - the torn muscle may need to be repaired surgically by an orthopaedic specialist. This is very rarely seen.

Physiotherapy Management

- Modalities such as electrical stimulation, ice, or ultrasound to help reduce pain and swelling.
- Deep tissue friction massage to reduce the formation of scar tissue.
- Cryotherapy – ice for the first 72 hours
- Use of heel raise to unload the injured muscle, and advice on correct footwear.
- Manual therapy to address reduced mobility in knee and/or ankle joint.
- Possible orthotics prescription to control poor foot mechanics.
- Stretches to regain normal muscle length.
- Functional strengthening to regain muscle bulk, recruitment and assisting in the recovery and prevention of recurrence.
- Advice on graded return to sport.

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Differential Diagnosis

- Nerve entrapment syndrome
- Lumbar-Sacral nerve irritation
- Deep Vein Thrombosis(DVT)
- Chronic Compartment Syndrome
- Achilles Tendonitis
- Tibialis Posterior Dysfunction

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