

SPORTS INJURY FACT SHEET

GASTROCNEMIUS (CALF) STRAIN

What is the gastrocnemius?

The gastrocnemius is a powerful superficial muscle located at the back of the lower leg and is involved in standing, walking, running and jumping.

Often referred to as the calf muscle, it sits behind the tibia (shin bone) and spans both the knee and ankle joints. It extends from the base of the femur (thigh bone), behind the knee, to the calcaneus (heel bone). The gastrocnemius inserts into the Achilles tendon along with other muscles. Its main roles are to plantarflex the foot (point the toes away from the body) and assist in knee flexion (bending the knee).

Risk factors

The gastrocnemius is commonly injured in sports requiring rapid acceleration and sudden stops, such as tennis or squash. These injuries are often caused by sudden eccentric overstretch - when the muscle contracts while being forcefully lengthened. For example, an athlete stepping onto a kerb and suddenly dropping the ankle into dorsiflexion (toes pulled upward).

The most frequent site of injury is at the musculotendinous junction (MTJ) of the gastrocnemius - roughly halfway between the knee and heel.

Calf strains may also be more likely in individuals with tight calf muscles.

Signs and symptoms

- Sudden pain at the back of the leg, especially at the musculotendinous junction
- Difficulty contracting the muscle or standing on tiptoe
- Pain, swelling or bruising in the calf muscle
- Pain during resisted plantarflexion (contracting the muscle against resistance)
- If the soleus muscle is injured, pain may be lower in the leg and felt during contraction with the knee bent

Gastrocnemius strains are graded in three categories according to their severity.

Grade 1 (mild)

Sharp pain (during or after activity), possibly unable to continue activity. Return to play – 10 to 12 days.

Grade 2 (moderate)

Sharp pain during activity in the calf, unable to continue activity. Significant pain when walking, possible swelling. Return to play – 16 to 21 days.

Grade 3 (severe)

Severe, immediate pain in the calf, often at the musculotendinous junction. Unable to continue activity. May present with considerable bruising and swelling. Return to play – approximately 6 months if surgery is required.

Management

Immediate treatment of any soft tissue injury should follow the RICER protocol – Rest, Ice, Compression, Elevation and Referral – for 48–72 hours to reduce bleeding and muscle damage.

- Rest the leg in an elevated position
- Apply ice for 20 minutes every two hours (never directly on the skin)
- Use a properly fitted compression bandage to limit swelling and bleeding

The No HARM protocol should also be followed – No Heat, No Alcohol, No Running or activity, and No Massage – to further minimise swelling and bleeding.

As pain decreases, gentle exercise and stretching can usually begin, in line with the treatment plan recommended by a sports medicine professional.

Rehabilitation should be approached cautiously and under supervision, as recurrence risk is high. Recovery can be a slow process, depending on injury severity.

Ways to help prevent calf strain include:

- Keeping calf muscles strong to absorb sudden physical stress
- Stretching calf muscles before physical activity, e.g. calf raises, and progressively adding weights or resistance
- Learning proper exercise and sporting technique to reduce muscular strain
- Undertaking training before competition to ensure readiness to play
- Following fitness programs to develop strength, balance, coordination and flexibility
- Gradually increasing the intensity and duration of training
- Allowing adequate recovery between training sessions
- Wearing appropriate protective gear, including proper footwear
- Checking the sporting environment for hazards
- Staying hydrated before, during and after play
- Avoiding activities that cause pain. If pain occurs, stop immediately and commence RICER

Always consult a trained professional

The information above is general in nature and is only intended to provide a summary of the subject matter covered. It is not a substitute for medical advice, and you should always consult a trained professional practising in the area of sports medicine in relation to any injury. You use or rely on the information in this fact sheet at your own risk, and no party involved in the production of this resource accepts any responsibility for the information contained within it or your use of that information.

Need a sports medicine practitioner?

Visit SMA's *Find a Sports Doctor* [online directory](#) to connect with a qualified Sports Doctor near you.

Looking for more information?

Sports Medicine Australia (SMA) is the peak national body for sports medicine, sports science and injury prevention education, dedicated to keeping Australians active, healthy and safe.

The SMA website is packed with practical resources, fact sheets and tools to support you, your team and your community to perform at their best while reducing the risk of injury.

You can explore nationally recognised training courses, including Provide First Aid and Provide Cardiopulmonary Resuscitation (CPR), as well as our industry-leading sideline support courses such as Sports Trainer Level 1 and 2, Introduction to Sports Taping, Introduction to Sports Massage and more.

Everything you need is at sma.org.au.

Acknowledgements

Sports Medicine Australia wishes to thank the many sports medicine practitioners who provided expert feedback in the development and ongoing review of our Injury Fact Sheets. [More >>](#)

© Sports Medicine Australia 2025

State Netball and Hockey Centre
10 Brens Drive
PARKVILLE VIC 2052

1300 711 211
info@sma.org.au
sma.org.au