

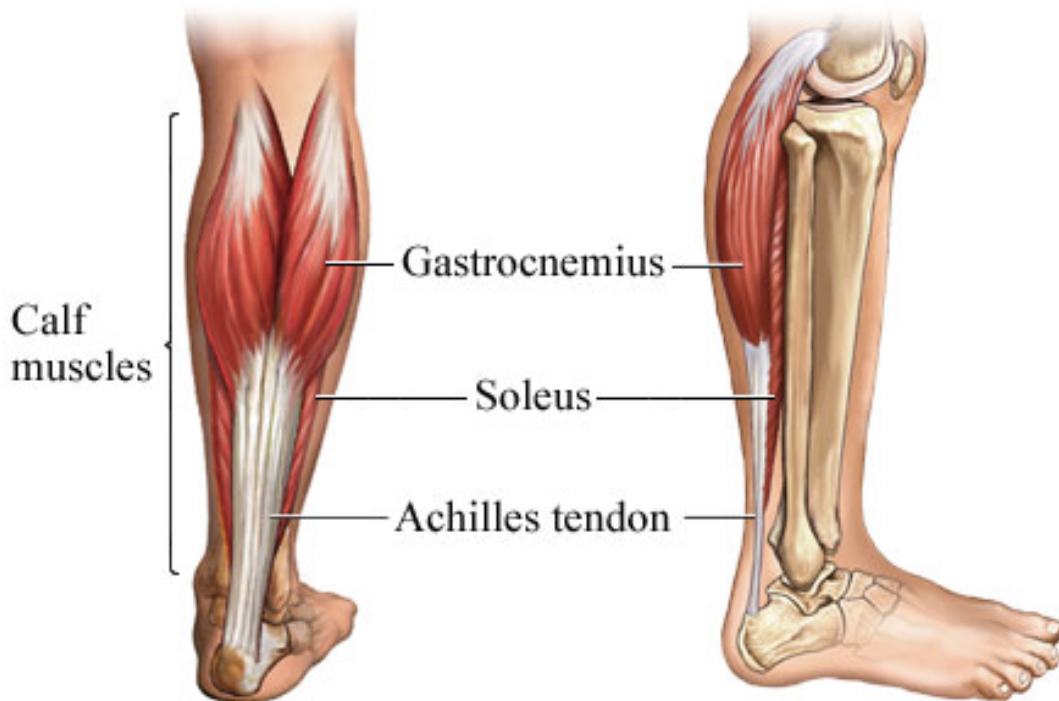
Calf muscle strain injuries

Introduction

Running causes most of the injuries seen in triathletes, with the lower leg accounting for 5-10% of all injuries reported by triathletes (Burns, Keenan, & Redmond, 2003; Tuite, 2010). One of the common injuries sustained are calf muscle strains. An increasing age and a previous calf strain injury can predict the occurrence of a future calf injury (Green & Pizzari, 2017).

Anatomy

The calf muscle refers to the gastrocnemius and soleus muscles. The gastrocnemius is the more superficial muscle, with a lateral (outside) and medial (inside) head. The soleus is a smaller and flat muscle that sits deeper to the gastrocnemius. Both muscles taper and blend into the Achilles tendon that inserts into the heel.



Clinical presentation

Clinically, patients with gastrocnemius strains report of an acute, stabbing or tearing feeling, typically in the medial belly of the gastrocnemius or the junction of the calf and Achilles. Soleus strains commonly present with a history of increasing tightness. Examination reveals tenderness over the site of the muscle strain. Stretching of the calf will reproduce pain as will resisted muscle contraction.

Calf strains are graded according to severity.

Grade 1: Micro tears in the muscles fibres. Sharp pain ± unable to continue activity. Pain with single leg calf raise or hop. Usually return to sport 2-4 weeks

Grade 2: Partial tear. Unable to continue activity. Pain with bilateral calf raise, active plantarflexion. 4-8weeks to return to sport

Grade 3: Complete tear of calf muscle or rupture. Immediate severe pain. Positive Thomason test for calf rupture. Defect palpable. At least 3 months rehabilitation. Surgery may be required.

Treatment

Treatment and the progression will depend on the severity of injury. Your physiotherapist or sports medicine professional will guide you through the phases of treatment described below.

Phase 1: Reduction of pain and swelling, and prevention of further damage

Initial treatment includes RICE (Rest, Ice, Compression, Elevation) to reduce pain and swelling. Crutches to unload the calf may be required if the patient is unable to weight bear. A heel raise may also assist in unloading the calf.

Phase 2: Regain full range of motion

Once the pain and swelling is controlled, massage, neurodynamic mobilisation and gentle muscle stretches are commenced to improve the range of motion.

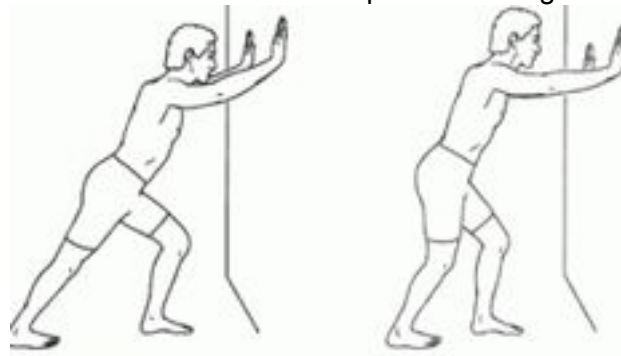


Figure: Calf stretches – gastrocnemius stretch (right); soleus stretch (left). Aim to hold each stretch to the level of a tightness feeling for 20-30 seconds.

Phase 3: Restore concentric and eccentric muscle strength

Strengthening the calf concentrically (when the muscle shortens) and eccentrically (when the muscle lengthens) need to occur. Exercise progressions include concentric double leg calf raise to single leg calf raise with gradual increase in weights to eccentric calf lowering over a step.

Phase 4: Restore speed, power and agility and proprioception

The exercises in phase 3 are slowly progressed to increase speed, power, agility and proprioception.



Phase 5: Return to triathlon training

The final phase is to return to specific triathlon training. Typically, a graded return to sport is recommended, with an initial reduction in training distances and intensity. The ability to hop 40-50 times can be used as a rough guide to be able to return to the early stages of running. However, your physiotherapist or sports medicine professional must guide progressions to prevent recurrence.

Until next month, happy racing!

Alexander Chan is an Australian trained Physiotherapist working at PhysioCentral. He is about to complete his PhD on the management of low back pain and has a special interest in overuse sporting injuries.

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Reference list

- Burns, J., Keenan, A. M., & Redmond, A. C. (2003). Factors associated with triathlon-related overuse injuries. *Journal of Orthopaedic and Sports Physical Therapy*, 33(4), 177-184. doi: 10.2519/jospt.2003.33.4.177
- Green, B., & Pizzari, T. (2017). Calf muscle strain injuries in sport: a systematic review of risk factors for injury. *British Journal of Sports Medicine*, bjsports-2016-097177.
- Tuite, M. J. (2010). Imaging of triathlon injuries. *Radiologic Clinics of North America*, 48(6), 1125-1135. doi: 10.1016/j.rcl.2010.07.008