

Muscle Injuries

For information on all types of injuries visit:
<http://www.cssphysio.com.au/Doctors/forDoctors.html>



Management of Muscle Injuries

Types of Muscle Injury:

There are several ways to classify muscle injury. Generally it will be a strain (tear) or contusion ('cork'). Muscle injuries can also be graded by:

1. Area within the muscle where the injury occurs (see below).
2. Degree or extent of injury. This is generally graded from I to III, with III being a large tear.

Area of muscle injured. There are several different types of muscle injury:

- a. Oedema. After a heavy bout of exercise, a muscle can swell, and this may cause discomfort. Providing there is no underlying injury, this should settle within hours to a few days.
- b. DOMS. Delayed onset muscle soreness is a well-recognized phenomenon in which a muscle becomes stiff and sore 2-3 days after heavy or unaccustomed exercises. There may be associated swelling. DOMS represents minor disruption to the muscle fibres, and will recover within days to a week.
- c. Muscle tissue. A tear within the 'meaty' part of the muscle generally heals quickly, as the blood supply is good. Recovery may be 1-2 weeks in most cases.
- d. 'Myofascial'. The fascia is the lining between and around muscles. Injuries here sometimes appear bad, because they can bleed a lot. However they also tend to heal relatively quickly (1-2 weeks).
- e. Muscle-tendon junction. These injuries can be quite variable in their recovery time. If it is mostly the tendon that is involved, the injury

will heal more slowly. Tendon has a poor blood supply, and even a Grade I injury that involves a deep tendon can take 6-8 weeks to heal.

It may be possible to determine from the clinical examination, with a fair degree of accuracy, which part of the muscle is injured. However an MRI scan combined with the examination greatly improves accuracy. This would be recommended for:

- Recurrent or problematic injuries
- Where there is concern about a large tear.
- When an estimate of recovery time is more critical for the particular athlete.

Risk Factors for Muscle Injury

1. Sprint, rapid change of direction, and kicking sports.
2. Stage of the season. For example, quadriceps and calf tears are more common in the preseason, whereas hamstring and upper limb muscle injuries are more common within season.
3. Age. In the past, increasing age has been a risk factor for muscle injury. Today, due to heavier training loads, the incidence in younger athletes has increased.
4. Past history of injury to the involved muscle or other surrounding muscles.
5. Strength deficits or imbalances.
6. Lack of conditioning - fatigue is a significant risk factor for muscle injury.
7. Flexibility. Inadequate flexibility may be a risk factor, but the evidence is not clear.

Treatment

As with any soft-tissue injury, the RICE principal is applied as soon as possible after the injury, and continued for up to four days – see <http://www.cssphysio.com.au/pdfs/2-RICE-Procedure.pdf>

Treatment after the first few days will depend on the muscle, and type and extent of injury. Usually, gentle pain-free movement is started early, and stretching might be commenced from around day four. 'Static' muscle contractions are also commenced at this time. Anti-inflammatory medications are often prescribed acutely for these injuries. However there is evidence that they delay healing. They should be avoided, at the very least until after the 1st five to seven days.

There are other areas of the body that may contribute to muscle injury, or be affected by it. This may include the spine, pelvic region, and hip. Treatment for these areas can commence immediately, and might include mobilization, stretching, & strengthening. Core exercises can usually be introduced from day 1-2. General fitness cross-training is commenced as soon as possible to prevent deconditioning.

Running and strengthening exercises may be commenced from within as little as a few days to a week or more, depending on the injury. However the healing muscle and scar is weak for the first 10 days, so no forceful stretching, massage or resisted work should be performed during this time.

After the first 1-2 weeks, strengthening will be progressed fairly rapidly, however this will depend on the injury. It may also be necessary to rehabilitate other areas of the body that may be contributing to injury, such as the lumbo-pelvic area. Muscle endurance training is progressed. Later stage strengthening will generally involve a lot of sport-specific 'eccentric' work, as this is the muscle action most likely to lead to re-injury. Training of power is important before return to competition.

Prevention

Prevention is always better than cure, particularly when there has been previous injury. The warm-up is an essential part of prevention and management when returning from injury. It should include exercises for the back, hips and legs. The muscle warm-up should be 'dynamic'. Static stretching should either be avoided altogether, or if performed this should be around 2 hours before the game.

Fatigue is a common factor in many muscle injuries, so proper conditioning is important. Adequate hydration is also essential.

If returning from a previous muscle injury, continue the rehab programme for at least three months after return to sport, and if the injury is recurrent, perform an injury prevention programme 1-2 times weekly throughout the season.

For further information on hamstring injuries see: <http://www.cssphysio.com.au/pdfs/0-Hamstring-Strains.pdf>

For further information on calf tears see:

Gastrocs:

<http://www.cssphysio.com.au/pdfs/Gastrocs.pdf>

Soleus:

<http://www.cssphysio.com.au/pdfs/0-Soleus.pdf>

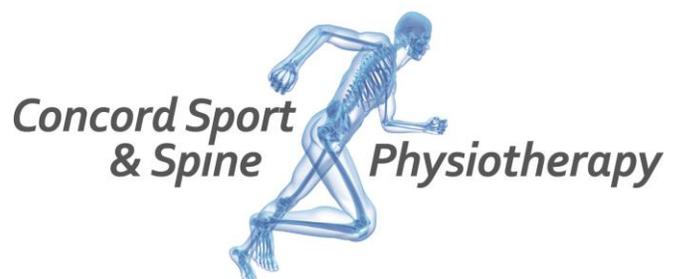
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<http://www.cssphysio.com.au/Doctors/fordoctors.html>

Information for patients is at:

<http://www.cssphysio.com.au/forpatients.html>



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