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## Sprains and strains

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### Summary

- A sprain is a type of joint injury that typically involves tearing of the ligaments and capsule.
  - A strain is an injury to muscles or tendons.
  - Immediate treatment includes rest, icepacks, compression (bandaging) and elevation (RICE).
  - Ongoing treatment and supervision of return to work or sport may be performed by your physiotherapist.
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Soft tissue injuries may be sudden (acute) or get worse gradually (chronic). Healing can take from less than seven days for a small muscle strain, up to more than 12 months for a significant ACL sprain. Time taken to heal can depend on the injury, initial and ongoing treatment, and the age and general health of the person.

### Causes of sprains and strains

Soft tissue is made from bundles of fibres. Muscle and tendons contain specialised cells that monitor the degree of contraction and stretch. With general use, muscles and tendons use soft contractions to resist overstretching. However, sudden twists or jolts can apply greater force than the tissue can tolerate, resulting in a tear of the fibres. Bleeding from broken blood vessels causes the swelling.

Injuries to soft tissues such as ligaments and tendons can come on suddenly or may get worse gradually. A sudden injury is related to a specific incident and is often called an acute soft tissue injury. This means it has occurred within the previous 24 to 72 hours. An injury that gets worse over time (for example, over three months) is often referred to as a chronic soft tissue injury. These are commonly caused by overuse or changes in normal tissue stress.

### Sprains

Joints are held together and supported by tough bands of connective tissue called ligaments. The entire joint is enclosed inside a membrane filled with lubricating synovial fluid, which helps to nourish the joint and provide extra cushioning against impact. A sprain is a joint injury that typically involves small tears (micro-trauma) of the ligaments and joint capsule. Common sites for sprains include the thumb, ankle and wrist.

### Strains

Muscles are anchored to joints with connective tissue called tendons. Injury to these tendons or the muscles themselves is called a strain. Common sites for strains include the calf, groin and hamstring.

### Symptoms of sprains and strains

The symptoms of a sprain or strain may include:

- pain
- swelling
- stiffness
- reduced efficiency of function.

### Degrees of severity of a sprain or strain

Acute soft tissue injuries are graded according to their severity and include:

- **grade I** – some fibres are torn and the site is moderately painful and swollen, but function and strength are mostly unaffected
  - **grade II** – many fibres are torn and the site is painful and swollen, with some loss of function and strength
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- **grade III** – the soft tissue is totally torn, with considerable loss of function and strength. Grade III injuries often need surgical repair.

### **First aid for sprains or strains**

Suggestions for immediate treatment of acute sprains or strains include:

- Stop your activity.
- Rest the injured area.
- Use icepacks every two hours, applied for 15 minutes and separated from the skin by wet towelling.
- Compress or bandage the injured site firmly, extending the wrapping from below to above.
- Elevate (raise) the injured area above heart height whenever practical.
- Avoid exercise, heat, alcohol and massage, which can exacerbate swelling.
- If symptoms get worse in the first 24 hours, see your doctor for further medical investigation.

### **Overuse injuries**

An overuse injury can affect anyone from athletes or those who play regular sport, to those who spend hours every day at a computer keyboard.

An overuse injury worsens over time, causing pain during activity and, if ignored, can cause pain even at rest. Contributing factors to overuse injuries include exercising too frequently without sufficient time for recovery, structural abnormalities and poor technique. Understanding the natural progression of the injury and adjusting any contributing factors is necessary in any treatment plan.

A rehabilitation program that addresses progressive 'reloading' of the injured area is essential. Overuse injuries can take time to fix, and require patience and commitment to see improvement.

### **Treatment for sprains and strains**

Most soft tissue injuries take a few weeks to heal, depending on the severity of the sprain or strain, any subsequent injuries or issues such as weakness, stiffness, poor balance or function, and the general health of the person. It is important to get the correct treatment as soon after the injury as possible to help rapid recovery. See your doctor or physiotherapist if you don't have full function of the area, or if the pain and swelling don't subside after a couple of days.

Treatment may include:

- exercises, under the guidance of your doctor or other health professional, to promote healing, strength and flexibility
- manual techniques, such as mobilisation and massage
- electrotherapy
- pain-relieving medication (talk to your doctor or pharmacist before taking any medications, as they can sometimes disrupt the healing of soft tissue injuries)
- gradually introducing activities to back-to-normal levels.

Severe injuries, where the tissue has completely ruptured, may need surgery to put the torn pieces back together. Surgically repaired grade III injuries will require significant treatment to regain strength and function. Whether you have surgery, or immobilisation and physical therapy, as the treatment for a grade III injury, medium to long-term success is similar for either treatment.

Your treating therapist, together with a sports physician, may seek the opinion of an orthopaedic surgeon if you have a significant soft tissue injury (grade III). In some cases, it may be more suitable to immobilise rather than have surgery. This decision should be made by you and your treating team.

### **Where to get help**

- Your doctor
- **Australian Physiotherapy Association** Tel. (03) 9092 0888

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