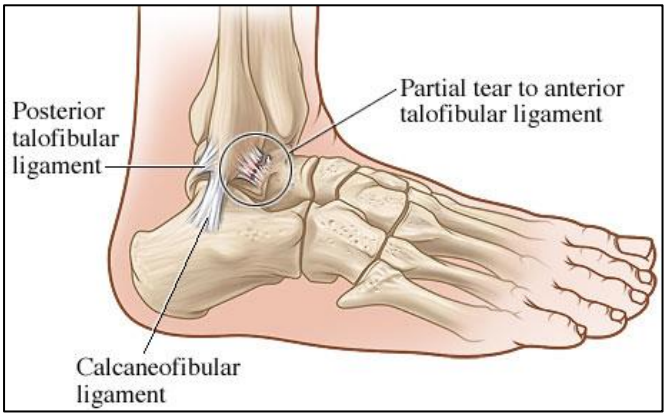
Why good rehabilitation is vital to achieving a successful outcome and recovery after an ankle sprain

By Sam Downer BSc

Ankle sprains are a common musculoskeletal injury that can happen to anyone at any time, but are particularly common in the sporting environment. Ankle sprains are frequently seen in sports involving jumping, high level balancing and when changing direction quickly. They can prove to be immensely painful, and particularly troublesome to recover from if not treated correctly. It is reported that somewhere between 55 and 72% of people who have suffered a low or mid grade ankle sprain will have persistent problems anywhere from 6 weeks to 18 months after an injury, and in severe ankle sprain sufferers as high as 80% **WILL** experience a repeat sprain at some point. This highlights the importance of good management in the early stages as well as completing a good rehab programme.

The most common area affected is the lateral aspect (outside) of the ankle. Lateral ankle sprains occur when your foot is forced into a position of pointing downwards and inwards (inversion) in weight bearing. This can happen when walking across uneven ground losing balance resulting in you "rolling over" on your ankle. More significant injuries tend to occur when playing sport where the injury occurs at a greater intensity i.e. landing awkwardly after jumping to header the ball playing football. The image to the right illustrates a lateral ankle sprain occurring in football.

The ankle joint is an intricate complex of bones, muscles, tendons and ligaments. The picture below shows the ankle from the outside (lateral aspect). It highlights three of the key ligaments that give the lateral aspect of the ankle its stability, with a tear to one of these ligaments. This is the most commonly injured ligament, the Anterior Talo Fibular Ligament (ATFL). As the image suggests, when the foot is placed into a downward and inverted position the two ends of attachment of the ligament are pulled apart and so result in a tear. Depending



on the exact direction of the force placed upon the ankle, will dictate exactly which ligaments are damaged. As well as ligaments the ankle is stabilised by a group of muscles called the peroneal muscles. The muscles start on the outside of the shin and the tendons run over the outside of the ankle and attach to various points in the foot. These muscles help to prevent lateral ankle sprains by contracting and opposing the movements that results in an ankle sprain. They do this by pulling the foot back into a neutral position as the foot rolls inwards before the ligaments are damaged. This is an automatic reaction that is possible through an innate skill known as proprioception.

Proprioception is essentially your body's awareness of where it is in space. So for example, if you close your eyes now you know where your left and right hands are and if you are sitting with your legs crossed or with your feet flat on the ground. This is all achieved through your proprioception. The role of this process in relation to the function of the ankle is seen when your foot starts to "roll over". As the ankle moves into a position of turning inwards a signal is sent from receptors in the tendons and ligaments informing the brain that they are being over stretched and so the tissues are potentially in danger of being damaged. This prompts a response from the brain, sending a signal to the peroneal muscles to generate a contraction to counteract this and prevent damage. When the force is significant enough to prevent this process from successfully counteracting the "rolling" motion of the ankle then damage will occur to the tissues and results in a sprained ankle. The damage can be a simple grade 1 tear to a single ligament, or it can be a full blown Grade III rupture of one or more ligaments with tendon tears as well. Following this type of injury you would expect to experience pain, swelling, difficulty weight bearing and walking on the foot as well as bruising and a reduction in the range of movement at the ankle.

Early Treatment

As soon as you suffer the injury it is important to apply the principles of RICE (Rest Ice Compression Elevation). This helps to modulate the amount of swelling that will occur. It is also important to stay off the foot as much as possible in the early stages to prevent further damage from occurring. Ice can be applied for 15-20 minutes in one go and should be applied multiple times through the day. When you apply the ice, make sure that there is something between your skin and the ice to prevent ice burns.

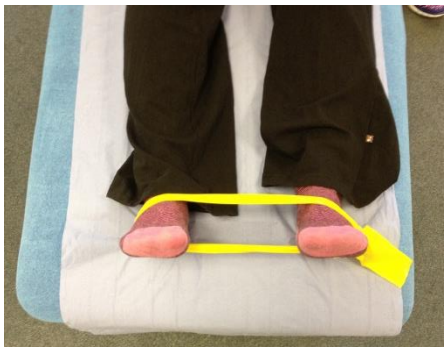
Contact your physiotherapist to have a complete assessment to establish the degree of damage and to commence treatment. In the early stages (first few days to weeks) you will receive lots of hands on therapy to help reduce the swelling and help stimulate the healing process. They will also provide you with a gentle exercise programme. As your pain reduces and the swelling disappears the rehabilitation process can progress.

If you suffer a severe sprain, are unable to weight bear on the ankle at all or have severe swelling it is a good idea to get an x-ray done at your nearest A and E. It is possible to fracture your ankle or for the ligament to pull away a bit of bone. In this instance you may be treated with a cast and will be issued with crutches to avoid any weight bearing on the ankle.

Rehabilitation

When you have reached a suitable level your physiotherapist will help you develop an appropriate rehab programme that is tailored towards your needs. This will help you strengthen the muscles, heal the ligaments, and most importantly regain the proprioceptive process of the ankle. Without it you would be at risk of suffering an ankle sprain on a daily basis.

Listed below are examples of simple exercises you can do at home to help strengthen your ankle and help restore the proprioception of the ankle and are the types of exercises that are likely to be included in the early rehabilitation programme. These exercises can be used as a preventative measure to help stop lateral ankle sprains for the athlete and non-athlete as well as part of rehab programme. If you have suffered an ankle sprain then it is important to go through any exercises with your physiotherapist first to make sure that you are safe and not at risk of reinjuring yourself by doing the exercise.



Firstly, place a piece of low resistance theraband around your ankles and separate your feet so there is some tension on the band. Then simultaneously turn your feet outwards and hold for 5 seconds before relaxing. This engages and strengthens the peroneal muscles.

These two exercises are nice and simple and begin working on muscle strength and developing proprioception. Simply stand on one foot and try to maintain your balance for 30 seconds, sounds easy but give it a try, you'll be surprised how difficult it actually is! You can make this more difficult by standing on one leg and then closing your eyes and holding for 30 seconds. When this is easily achievable you can try the same exercise whilst standing on a pillow. By standing on an uneven surface it makes the exercise harder and therefore helps to develop your proprioception further. These are two examples of simple, but effective, exercises you can do at home with minimal equipment.

Once you have been able to complete these exercises to a high level you can be progressed on to the advanced level balance and strengthening rehab. However, it is best to have your physiotherapist teach and demonstrate these exercises to you and make sure you are safe to do them before you start them by yourself.

In conclusion, ankle sprains are extremely common and if not managed well can be persistent and extremely troublesome. The best advice is to apply the RICE principle straight away and get seen by a physiotherapist in order to fully assess the damage and commence a treatment programme at the earliest opportunity. If you are unsure if you may have broken a bone then it is best to attend your closest A and E to have it x-rayed to rule this possibility out. Rehabilitation is key to preventing recurrences of this injury and a regulated and progressive plan should be adhered to, to gain a successful outcome in your recovery.