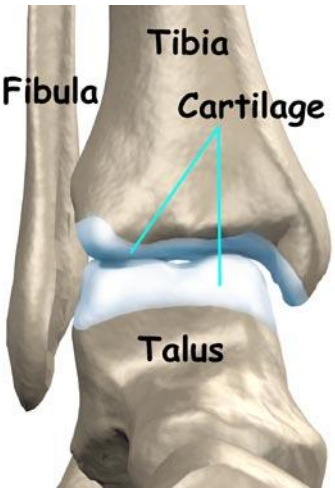
Recurrent Ankle Sprains

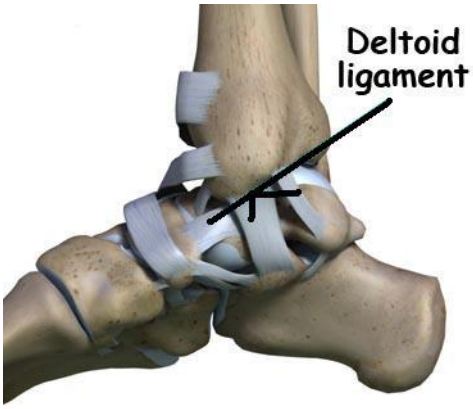
Ankle sprains are exceedingly common within mountaineering and walking. Following feedback this article is specifically aimed at those who *repeatedly sprain their ankle* or regularly *go over on it*.

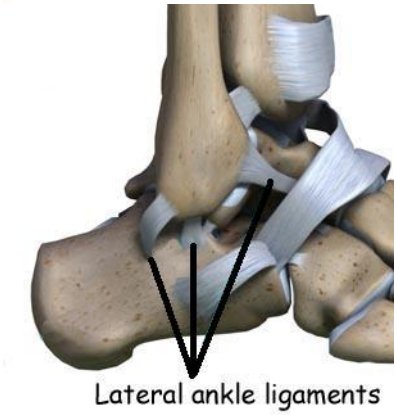
A sprain is a rip, tear or complete rupture of the ligament joining two or more bones. Not to be confused with a strain, which is muscular. When a ligament is torn it will heal but it takes time as they do not, generally, have a rich supply of blood – this is why many people say a sprain is worse than a break.
**Having done both, I can state a bad sprain hurts a lot more and takes a longer time to heal but honestly – I wouldn't want to break my leg again, I wouldn't mind a sprain as much.*

All joints are held together by (in effect) three mechanisms:

- Shape of the structural components (bones, cartilage). The ankle joint is a fairly strong *mortice* formed by your shin bone *(tibia)* and other leg bone *(fibULA)* which articulate with the *talus* bone (fig 1). You can see that the fibula descends lower on the outside of the foot and provides a barrier to the foot everting. The talus hinges up and down (dorsiflex & plantarflex) and inverts and everts to give you movement at the ankle.
- Supporting structures (ligaments, joint capsule). There are many ligaments but the relevant ones attach between the ankle bones to the talus and other foot bones (Fig 2 & 3). If you look at the inside of the foot the *deltoid ligament* is larger and stronger (fig 3) and further resists eversion of the foot. It is important to note here that ligaments, when injured, do not return to their previous form – scar tissue bridges the gap which means the ligament is longer after the injury than before. This reduces the stability of the joint further.
- Feedback from the joint telling the brain what position the ankle is in. Test yourself; in bare feet stand on your right leg (if you're right handed). Easy? Close your eyes. Still easy? Bend your knee. Now swap feet. What do you find? It is common for right handed people to be more stable on their left leg – their *non-dominant* side because if you had to kick a ball or pick up your slippers, for example you would use your right foot. This generally means your left is being used for stability – it is a *learned trait*.

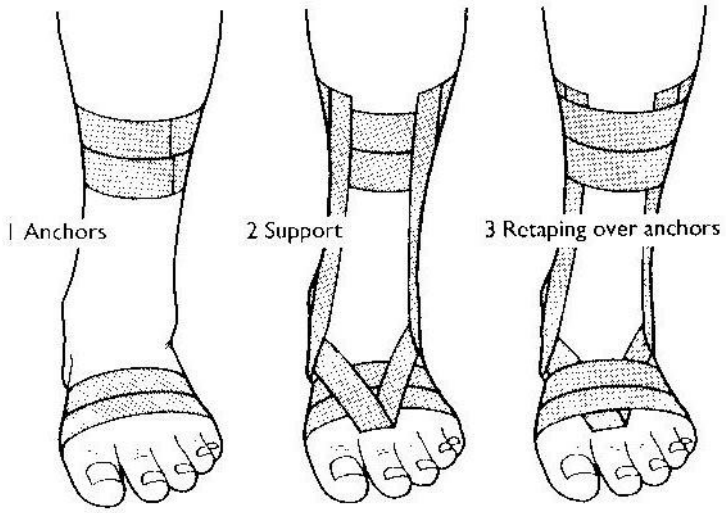






This *active stability* is essential to allow the foot the freedom of movement it needs to work efficiently but to maintain the joint integrity. An injury to the structures that contribute to the *passive stability* of the joint disrupts this active stability further and increases the likelihood of re-occurrence.

We can give the passive stability of our feet a helping hand (as it were) by strapping and taping and in the short term this is a good idea i.e. to get off the hill. Fig 4 & 5 shows an effective way to tape a foot that will provide support and limit further damage which is well researched and proven to be effective. Practice it and put one roll of adhesive, non-stretch bandage in your 1st aid kit and you might save an MRT a lot of bother one day.



I have used this on a very badly sprained ankle in the Venezuelan rainforest – despite having to redo it every 2 hours it got the young person to a pick up point (she was too heavy for the horse).

However, in the long term it is by improving the active stability of our foot that we are going to avoid repetitive spraining. This can be broken into three phases:

1. The *proprioception* phase aims to restore the full level of feeling received from a joint and can begin within a few days of an injury but should continue whenever you go walking. Slowly take your ankle through its full range of movement without any load – waggling your feet if you'd prefer but be specific; plantar and dorsiflex, invert and evert then circular motions. When your ankle is improved walking or running will contribute to improved feedback through your joint – but let's not get ahead of ourselves.

2. The balance phase. Stand in front of a mirror or and test yourself as before. It is important that when you do this your foot is flat on the floor. Progress this exercise by reducing the stability of the surface by standing on your bouldering mat or putting on your climbing shoes. The less 'work' your lower leg has to do shows improved balance *and proprioception.*

3. The strength phase is more complicated than you think. When injured you may notice a definite wasting of some muscles but this can be avoided by early exercising. However a separate neurological mechanism is in place which limits the chance of injury by *switching off* your muscles when they are moved beyond their safe range. This may result in longer term effects which are overcome by moving the muscle through its full range and under load for both phases – shortening and lengthening such as standing with your toes on a step and dropping your heels then standing on tiptoes.

Before entering any exercise routine following injury it is always wise to visit your local physiotherapist but it is important to remember that only you can manage your long term rehabilitation to ensure you move more confidently and securely on steep ground.
Surely an essential requirement of a Mountain Instructor.

Danny John Brown BSc (Hons) MCSP MIA
A physiotherapist and instructor delivering coaching and courses including MLTE SPA, CWA & CWLA.
Web: dannybrownphysio.com
Phone: 07929834693