

## **Ankle Sprains**

In my last article we identified that the tibia (shin or shank) transfers the majority of our body's weight to the foot, and when we are moving on level ground we can be very fluid with our movements.

However, the transfer of this considerable amount of weight through the ankle can also be problematic, especially if we misstep during ambulation (walking, jogging or running). The most common injury is a sprain or tear of one or more of the ligaments. Most of us have gone over on our ankle and can remember just how painful it can be.

## **Anatomy**

The talus is the bone that articulates (forms a joint) with the weight bearing tibia and the smaller fibula; the tibia and fibula form the medial (inside) and lateral (outside) ankle (malleolus) bones. The talus also articulates with the bones underneath – calcaneus, navicular and cuboid - and each of these also support and transfer our weight to the foot. Each joint surface is covered with a very smooth, tough substance named articular cartilage. The talus, tibia, fibula configuration is considered a synovial hinge joint and allows controlled movement in all ranges.

The top surface of the talus is rounded with grooves in the shape of a pulley (also called a trochlea) and sits inside matching concave grooves on the underside of the tibia forming the medial malleolus. This setup provides substantial stability and controlled movement during weight bearing.

The lateral malleolus however articulates with the talus in a side by side arrangement. So even though it extends farther than the medial ankle, it has much less stability when we are upright.

## **The Sprain**

Sprains can occur in one or more of the following circumstances:

- landing on the outside of the foot when jumping;
- walking in high heels and catching the outside toe of the shoe;
- stepping off the edge of a curb and rolling onto the outside of the foot;
- stepping on a rock or into a hole on uneven ground and rolling onto the outside of the foot.

The anterior talofibular ligament usually suffers the most; it is the most commonly sprained ligament at the ankle and is possibly the most commonly sprained ligament in the body. There are four main ligaments at the lateral ankle and depending on the positioning at the time of injury, any one of them could be injured when we misstep.

Another problem is that once a ligament has been injured - strength is lost, so repeated injury is common; most of us have repeatedly injured the same ankle. The good news is

that the original injury is usually the most painful; subsequent injuries are less painful and often last only a few days.

### **Symptoms and Relief**

Pain usually corresponds with the approximate location of the injury with some possible pain referral into the foot or leg. **RICE** is the most immediate answer for sprains and strains: Rest, Ice, Compress and Elevate - this will relieve pain and reduce inflammation effectively. Once some of the swelling is reduced, you can start moving the ankle through its ranges of motion by forming the alphabet (A to Z) with your foot. Weight bearing can then be approached cautiously.

If significant pain and swelling lasts for longer than a few days, you should consult your physician or health care professional.