

Stress Fractures

What is a stress fracture?

A stress fracture is a type of overuse injury that occurs from repetitive force through the bone. With continuous exercise small forces through the bone may eventually lead to tiny breaks, known as micro-fractures. The bone is unable to heal itself while it is continuously stressed by sporting activity. Most stress fractures occur in bones of the lower leg and foot. They are hairline cracks through the bone and around 5-10% will not show up on X-ray until a later stage of the condition.

Who gets it?

Stress fractures most commonly occur in the lower limb of long distance runners and military personnel, as there is ongoing repetitive force through the long bones in the legs (tibia, fibula, neck of femur), bones of the foot (metatarsals and tarsals) and the pelvis. However, they are occasionally seen in bones of the upper arm, elbow and collar bone in sports that high forces through the arms e.g. tennis, swimming and gymnastics. Stress fractures tend to appear after a change in exercise habits, for example a sudden increase in the volume and intensity of training, after a rest period, or if an athlete changes the ground surface they are training on.

There are certain factors that make women more susceptible to developing stress fractures and these include poor dietary intake of calcium/Vitamin D rich foods, low percentage body fat and absence of menstrual periods. These issues can all be related and may lead to weaker bones that are unable to tolerate high loads with exercise. They are therefore more vulnerable to developing stress fractures.

[Click here for the Female Triad info sheet](#)

Signs and symptoms:

Classically a stress fracture will cause pain in an area that can be pin pointed. The pain often builds up gradually over a period of time, in a 'crescendo' type pattern and usually worsens when carrying out exercise. Once it becomes more severe it can also start to cause pain during normal daily activities too. The pain may be identified by pressing over the area of skin above the fracture. Palpating the area with vibrating tuning fork may also identify a stress fracture. The pain usually improves with rest. Often the fracture will not be seen on an X-ray initially, unless it is severe. In this case a thin black line (representing air) will be seen through the white bone. If your doctor's examination and X-ray do not confirm the diagnosis, a CT or MRI scan may be useful. This will show signs of bony swelling (oedema) and inflammation of the lining of the bone, which indicates there is likely to be a fracture.

Treatment:

The mainstay of treatment for a stress fracture is relative rest, and the time length can vary depending on the bone affected. In lower limb stress fractures, a special boot called an *Aircast* boot may be used to relieve some of the force from walking. You

will be advised not to carry out the sport that causes pain. If the injury is in the leg or foot, non-impact sports such as swimming may still be acceptable as this puts minimal weight through the leg and should not hinder healing of the fracture.

Additional treatments that, in some cases, may be used in combination with the above include low frequency ultrasound, Hyperbaric Oxygen or occasionally using medication known as Bisphosphonates, which can be taken orally or injected.

Progress should be checked regularly by your doctors to ensure the fracture is healing well. The pain should start to reduce when you press over the sore area and when walking. Once you are pain free you may start a gradual return to sport programme increasing the volume and intensity of your activities on a weekly basis.

Painkillers may be needed at the initial stages of treatment as the fracture is starting to heal. Paracetamol can be taken regularly according to the instructions on the box. Non-steroidal painkillers like ibuprofen (Brufen) and diclofenac (Voltarol) should be avoided as they can slow bone healing.

If there is a problem with the bone healing, a referral to an Orthopaedic consultant may be necessary to discuss further surgical options

If stress fractures are occurring due to weak bones, such as with the female triad syndrome, specific management is needed to treat the underlying cause. This may involve working with specialist sports nutritionists and psychologists depending on the severity of the problem. Your Sports medicine doctor will be able to advise about seeing other health care professionals.