



## Clinical Specialties in Orthotics and Prosthetics

# Fracture orthoses for healing and mobility

### What is a fracture?

- A fracture is a break or a crack in a bone.
- A fracture occurs when a force exerted against a bone is stronger than the bone can bear.
- There are different types of fractures – fractures that pierce the skin, horizontal, vertical or spiral fractures, multiple fragment fractures, stress fractures or compression fractures. Some are more severe than others, depending on the strength and direction of the force, the particular bone involved, the person's age and general health.
- Common bone fractures include the wrist, ankle, foot and hip.
- Hip fractures occur most often in older people.

### How do fractures heal?

Broken bones heal by themselves if managed correctly. The aim of treatment is to make sure the fractured bone ends are aligned and immobilised for a period of time, allowing the bone to recover fully in strength, movement and sensitivity.

Blood clots that form on the broken ends of bone are the start of the healing process. Over about six weeks, the two bone ends hold together with a combination of fibrous cells and cartilage. This temporary bone (called a callus) is not as strong as real bone. It can break easily until it is slowly replaced with real bone.

### How are fractures treated?

Broken bones can take anywhere from 4 to 12 weeks to heal. Healing times vary depending on the age and health of the person, the type of fracture and the bone involved. The appropriate treatment option depends on these factors. Treatments include:

- Immobilisation in a cast (plaster, synthetic or fiberglass)
- Stabilisation in a fracture orthosis
- Traction to align a bone or bones using a gentle, steady pulling action
- External fixation – metal pins or screws are placed into the bone above and below the fracture site, and are stabilised using a metal frame outside the limb.

- Internal fixation – special screws, metal plates or rods are used to secure bone fragments together. This often requires stabilisation in a backslab/half cast for a period of time after surgery.

### What is a fracture orthosis?

A fracture orthosis (also called a fracture brace) is a supportive device fitted to the body to protect and support a fractured bone. The goal of a fracture orthosis is to stabilise the fracture and allow early mobilisation, which helps the healing process. A fracture orthosis can either be applied two weeks after injury, replacing a cast, or can be used immediately after the fracture has occurred.

### When are fracture orthoses used?

A fracture orthosis stabilises but does not completely immobilise, therefore they are appropriate for some but not all fractures. Fracture orthoses are only used in fractures with minimal displacement, shortening or angulation. For open fractures (that have pierced the skin) or grossly displaced fractures, orthoses are generally not appropriate straight after injury. They may be used a few weeks after injury once surgery or full casting has occurred.

Fracture orthoses are most often used in fractures of the humerus (upper arm bone), distal radius/ulna (wrist bones), metacarpals (hand bones), fibula/tibia (lower leg and ankle bones) and metatarsals (foot bones).





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### How do fracture orthoses help the healing process?

A key feature of a fracture orthosis is firm compression of the surrounding muscle and soft tissues, which stabilises the fractured bones. The orthosis is adjustable allowing it to be applied firmly as swelling subsides, as well as removable for showering if appropriate.

A fracture orthosis is usually slimline and allows for better movement of joints that don't require immobilisation (for example, allowing the fingers and thumb to move freely when treating a wrist fracture). This allows early introduction of functional activity to the entire limb. Active contraction of the muscles around the fracture allows controlled micro-movement to take place and blood flow and mineral deposition to increase at the fracture site. These factors appear to stimulate osteogenesis (the laying down of new bone cells to heal the fracture), providing a desirable environment to encourage healing.

### Other benefits of a fracture orthosis

A fracture orthosis is different to a cast in many ways. A fracture orthosis is usually constructed from lightweight plastic and elastic straps and is removable which allows the limb to be cleaned and dressings to be changed. The orthosis can be adjusted to ensure correct fit even after swelling subsides.

### Other types of orthoses used to treat fractures

Other types of orthoses are used to treat a wide range of other fractures. Examples include spinal orthoses (refer to fact sheet on 'Orthoses to immobilise and heal acute spinal injuries'); finger, wrist and hand orthoses; and ankle-foot orthoses.

### Who provides orthoses?

Orthoses are provided by orthotists. Orthotists are the only specialist tertiary qualified allied health practitioners in Australia who prescribe the full range of orthoses. Orthotists are trained at either a Bachelor or Master's level and may work autonomously or within the multidisciplinary team.

If you need to use the services of an orthotist, they will:

- Perform a thorough clinical assessment
- Discuss the most suitable orthotic options to meet your goals and requirements and support you in decision making
- Complete the digitisation/measurement/casting process and oversee the manufacturing or procurement of the orthosis
- Provide clinical services associated with fitting, education of use, regular reviews for functional effectiveness and adjustment for fit, as well as liaising with other relevant members of the healthcare team

### How do I access orthotic treatment?

If you require the services of an orthotist you may be referred by your specialist clinic, physiotherapist, GP or other health professional to one of our members or you may contact them directly yourself.

The Australian Orthotic Prosthetic Association (AOPA) is the peak body regulating orthotists/prosthetists in Australia. Membership is conditional upon tertiary training at University level and meeting minimum professional competencies. Members are required to abide by professional standards including a code of ethics and continuing professional development.

**Certified Orthotist/Prosthetists (c-OP AOPA)** can be located using the 'Find a practitioner' search function on the AOPA website ([www.aopa.org.au](http://www.aopa.org.au)). Orthotists working in both the public and private settings are listed.



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*Disclaimer – This fact sheet does not replace clinical advice. If you require orthotic services AOPA recommends speaking to your practitioner. This fact sheet was developed based on interpretation of current evidence as of May 2018. References available on request.*