Summary

- A fracture is a break or a crack in a bone.
- A fracture occurs when force exerted against a bone is stronger than the bone can structurally withstand.
- The most common sites for bone fractures are the wrist, ankle and hip.
- Treatment includes immobilising the bone with a plaster cast, or surgically inserting metal rods or plates to hold the bone pieces together.
- Some complicated fractures may need surgery and surgical traction.
- In most cases, your cast will be removed after a few weeks, but you must treat your limb with care for at least the next month or so.

A broken bone or bone fracture occurs when a force exerted against a bone is stronger than the bone can bear. This disturbs the structure and strength of the bone, and leads to pain, loss of function and sometimes bleeding and injury around the site.

Our skeleton is made up of bones. Bones are a type of connective tissue, reinforced with calcium and bone cells. Bones have a softer centre, called marrow, where blood cells are made. The main functions of our skeleton are supporting our body, enabling movement and protecting our internal organs.

There are different types of bone fractures. Some are more severe than others, depending on the strength and direction of the force, the particular bone involved, and the person’s age and general health. Common bone fractures include the wrist, ankle and hip. Hip fractures occur most often in older people.

Broken bones take around four to eight weeks to heal, depending on the age and health of the person and the type of break.

Causes of bone fractures

Causes of bone fractures can include:

- Traumatic incidents such as sporting injuries, vehicle accidents and falls
- Conditions such as osteoporosis and some types of cancer that cause bones to fracture more easily, meaning even minor trauma and falls can become serious.

Symptoms of bone fractures

Fractures are different from other injuries to the skeleton such as dislocations, although in some cases it can be hard to tell them apart. Sometimes, a person may have more than one type of injury. If in doubt, treat the injury as if it is a fracture.

The symptoms of a fracture depend on the particular bone and the severity of the injury, but may include:

- Pain
- Swelling
- Bruising
- Deformity
- Inability to use the limb.

Types of bone fracture

Different types of fracture include:

- Closed (simple) fracture – the broken bone has not pierced the skin
- Open (compound) fracture – the broken bone juts out through the skin, or a wound leads to the fracture site. Infection and external bleeding are more likely
- Greenstick fracture – a small, slender crack in the bone. This can occur in children, because their bones are more flexible than an adult’s bones
- Hairline fracture – the most common form is a stress fracture, often occurring in the foot or lower leg as a result of repeated stress from activities such as jogging or running
- Complicated fracture – structures surrounding the fracture are injured. There may be damage to the veins, arteries or nerves, and there may also be injury to the lining of the bone (the periosteum)
- Comminuted fracture – the bone is shattered into small pieces. This type of complicated fracture tends to heal more slowly
- Avulsion fracture – muscles are anchored to bone with tendons, a type of connective tissue. Powerful muscle contractions can wrench the tendon free and pull out pieces of bone. This type of fracture is more common in the knee and shoulder joints
After surgery, your doctor will check that you have full feeling in the area. For example, if you have a broken arm in plaster, they may ask you to wiggle your fingers.

Not all fractures are of a person’s arm or leg. Trauma to the head, chest, spine or pelvis can fracture bones such as the skull and ribs. These fractures are further complicated by the underlying body structure that the bone normally protects. Some of these fractures can be very difficult to manage using first-aid principles only as they may represent life-threatening injuries. Always seek emergency assistance if you suspect this type of fracture.

### Complications of bone fractures

Other problems caused by bone fracture can include:

- Blood loss – bones have a rich blood supply. A bad break can make you lose a large amount of blood
- Injuries to organs, tissues or surrounding structures – for example the brain can be damaged by a skull fracture. Chest organs can be injured if a rib breaks
- Stunted growth of the bone – if a child’s long bone breaks close to the joint where the growth plates are found.

### First aid for bone fractures

Good first-aid care of fractures is always important. Moving the broken bones can increase pain and bleeding and can damage tissues around the injury. This can lead to complications in the repair and healing of the injury later on.

First aid for fractures is all about immobilising (limiting movement of) the injured area. Splints can be used for this. Control any external bleeding. Complicated breaks where a limb is very deformed may need to be realigned before splinting – only paramedics or medical staff should do this.

Fractures of the head or body such as skull, ribs and pelvis are all serious and should be managed by paramedics.

If you suspect a bone fracture, you should:

- Keep the person still – do not move them unless there is an immediate danger, especially if you suspect fracture of the skull, spine, ribs, pelvis or upper leg
- Attend to any bleeding wounds first. Stop the bleeding by pressing firmly on the site with a clean dressing. If a bone is protruding, apply pressure around the edges of the wound
- If bleeding is controlled, keep the wound covered with a clean dressing
- Never try to straighten broken bones
- For a limb fracture, provide support and comfort such as a pillow under the lower leg or forearm. However, do not cause further pain or unnecessary movement of the broken bone
- Apply a splint to support the limb. Splints do not have to be professionally manufactured. Items like wooden boards and folded magazines can work for some fractures. You should immobilise the limb above and below the fracture
- Use a sling to support an arm or collarbone fracture
- Raise the fractured area if possible and apply a cold pack to reduce swelling and pain
- Stop the person from eating or drinking anything until they are seen by a doctor, in case they will need surgery
- In an emergency, call triple zero (000) for an ambulance.

### Diagnosis and treatment of bone fractures

Doctors can diagnose bone fractures with x-rays. They may also use CT scans (computed tomography) and MRI scans (magnetic resonance imaging).

Broken bones heal by themselves – the aim of medical treatment is to make sure the pieces of bone are lined up correctly. The bone needs to recover fully in strength, movement and sensitivity. Some complicated fractures may need surgery or surgical traction (or both).

Depending on where the fracture is and how severe, treatment may include:

- Splints – to stop movement of the broken limb
- Braces – to support the bone
- Plaster cast – to provide support and immobilise the bone
- Traction – a less common option
- Surgically inserted metal rods or plates – to hold the bone pieces together
- Pain relief.

### Operation procedure for bone fractures

A cast made from plaster of Paris is one of the most common ways of immobilising a limb. This cast is made from a preparation of gypsum that sets hard when water is added. Depending on the location and severity of the fracture, the operation procedures can include:

- Closed or simple fractures – the two ends of the broken bone are lined up and held in place. The limb is thoroughly bandaged, then the wet plaster is applied. Sometimes, once the plaster is dry, the cast is split into two and the two halves are re-bandaged on the outside. This allows for any swelling that may occur
- Open or compound fractures – these are thoroughly cleaned in the operating room to remove debris before being set, because a broken bone exposed to the open air may become infected
- Long bones – long bones such as the bone of the thigh (femur) are difficult to keep aligned. In adults these are often treated by internal nailing. A child may need traction for a couple of days before setting the bone in a cast. Once the two ends of bone start to show signs of healing, the leg and hip joint are immobilised in plaster of Paris. In other cases, pins are inserted above and below the fracture and secured to an external frame or ‘fixator’. This is done under a general anaesthetic.

### Immediately after an operation on a bone fracture

After surgery, your doctor will check that you have full feeling in the area. For example, if you have a broken arm in plaster, they may ask you to wiggle your fingers.
They will also check your limb for tingling, pallor (pale colour) or coolness. These tests check whether the splint is affecting your limb’s nerve and blood supply. The injured part is kept as still as possible in the first few days.

Nurses will offer you pain-relieving medication. They will determine the difference between the pain of your fracture and any pain that could be caused by the splint, traction, plaster cast, poor alignment of the limb or swelling of the limb.

The healing process for bone fractures

Blood clots that form on the broken ends of bone are the start of the healing process. Over about five weeks, the body joins the two bone portions together with a combination of fibrous cells and cartilage.

This temporary bone (callus) is not as strong as real bone. It can break easily until it is slowly replaced with real bone. For this reason the doctor may remove your cast or splint after a few weeks, but you still need to treat the bone with care for at least one more month.

Other treatments for bone fractures

Some bones, such as the collarbone or bones of the toes, are immobilised with a sling or splint (instead of plastered) and rested for about two months.

Complications of bone fractures

Possible complications of a bone fracture may include:

- Poor alignment of the limb
- Infection
- Wrongly fitted plaster cast (for example, too tight or too loose).

Self-care after a bone fracture

Follow your doctor’s advice, but general suggestions include:

- Until the cast has set properly, avoid direct heat such as hot water bottles.
- Rest the limb as much as possible.
- Use the techniques shown to you by nurses to walk or manage day-to-day activities. For example, you risk further injury if you use crutches incorrectly.
- Avoid any lifting or driving until the fracture has healed.
- If the skin under the cast is itchy, don’t poke anything between the cast and your limb (such as a coat hanger or pencil). Instead, use a hairdryer to blow cool air into the cast.
- Don’t get your cast wet, as wet plaster becomes soft and does not provide the necessary support. Wet plaster can also irritate your skin. When showering, wrap the cast in a plastic bag and tape it directly to your skin, to keep the area watertight.
- See your doctor immediately if you have swelling, blue or loss of movement of the fingers or toes, pins and needles, numbness or increased pain.

Long-term outlook after a bone fracture

In most cases, your cast will be removed after a few weeks but you must treat the limb with care for at least the next month or so. Leg fractures will take several months to heal. The weaker, temporary bone (callus) is still being replaced by real bone and can be easily injured.

Your doctor may take more x-rays to check on the bone’s healing progress.

Unlike skin, broken bones heal without forming scar tissue. But immobilised muscles tend to weaken and wither. You may need rehabilitation, including strengthening exercises, for a short time.

Where to get help

- Your doctor
- Hospital emergency department
- In an emergency, always call triple zero (000)

Things to remember

- A fracture is a break or a crack in a bone.
- A fracture occurs when force exerted against a bone is stronger than the bone can structurally withstand.
- The most common sites for bone fractures are the wrist, ankle and hip.
- Treatment includes immobilising the bone with a plaster cast, or surgically inserting metal rods or plates to hold the bone pieces together.
- Some complicated fractures may need surgery and surgical traction.
- In most cases, your cast will be removed after a few weeks, but you must treat your limb with care for at least the next month or so.

References


Send us your feedback

- Rate this website

betterhealth.vic.gov.au
1/4 How would you rate this website?

- Excellent
- Good
- Average
- Fair
- Poor

Next Submit Now Cancel

Send us your feedback

- Rate this website
- Your comments
- Questions
- Your details

Please note that we cannot answer personal medical queries. If you are looking for health or medical advice we recommend that you:

- talk to your doctor or pharmacist
- dial triple zero (000) in an emergency
- ring NURSE-ON-CALL Tel. 1300 60 60 24.

2/4 Your Comments

Tell us who you are

Select an option

Enter your comments below (optional)

Next Submit Now Cancel

Send us your feedback

- Rate this website
- Your comments
- Questions
- Your details

3/4 Questions

What are you here to do? Looking for information on

Did you find what you were looking for?

- Yes
- No

Next Submit Now Cancel

Send us your feedback

- Rate this website
- Your comments
- Questions
- Your details

4/4 Your details

Postcode

Email Address

Submit Now Cancel

Send us your feedback

Thank you. Your feedback has been successfully sent.

More information

betterhealth.vic.gov.au
Bones muscles and joints

The following content is displayed as Tabs. Once you have activated a link navigate to the end of the list to view its associated content. The activated link is defined as Active Tab

- Bone muscle and joint basics
- Healthy bones muscles and joints
- Bone and bone marrow conditions
- Osteoporosis
- Muscle conditions
- Joint conditions
- Hand and foot conditions
- Back neck and spine conditions

Bone muscle and joint basics

- Bone marrow
  Bone marrow is the spongy tissue in the hollow centres of a person's long bones and is the blood cell 'factory'.

- Bones
  The adult skeleton is made up of 206 bones, which provide the structure for our bodies.

- Choosing the right shoe
  The right footwear can help keep your feet healthy, make your physical activity easier and help keep your body safe from injury.

- Growth hormone
  Some athletes and bodybuilders wrongly believe that taking synthetic growth hormone will help build up their muscles.

- Joints
  A joint is the part of the body where two or more bones meet to allow movement.

- Locomotor system
  The skeleton and skeletal muscles work together to allow movement.

- Muscles
  There are about 600 muscles in the human body.

Healthy bones muscles and joints

- 10 tips for getting enough vitamin D
  A balanced UV approach is required to ensure some sun exposure for vitamin D while minimising the risk of skin cancer.

- 10 tips for safe stretching
  Make stretching part of your life ... 10 tips for safe stretching.

- 10 tips on how to eat more calcium
  Reduce your intake of coffee, alcohol and soft drinks ... 10 tips on how to eat more calcium.

- Ageing - muscles bones and joints
  Exercise can prevent age-related changes to muscles, bones and joints and can reverse these changes too.

- Bone density testing
  Most procedures that measure bone density are quick and pain-free.

- Calcium
  If you don't have enough calcium in your diet, your bones will eventually become weak and brittle.

- Choosing the right shoe
  The right footwear can help keep your feet healthy, make your physical activity easier and help keep your body safe from injury.

- Posture
  Bad habits such as slouching and inactivity cause muscle fatigue and tension that ultimately lead to poor posture.

- Vitamin D

betterhealth.vic.gov.au
A balanced approach to sunlight exposure will help you get enough vitamin D while protecting against skin cancer.

- Vitamin D - maintaining levels in winter (video)
  Vitamin D is important for healthy bones, muscles and the nervous system.

Bone and bone marrow conditions

- Acromegaly
  Acromegaly is caused by an excess of growth hormone in adults, which causes the overgrowth of bones in the face, hands, feet and internal organs.

- Amyloidosis
  A person with amyloidosis produces aggregates of insoluble protein that cannot be eliminated from the body.

- Bone cancer
  Bone cancer is a rare form of cancer that is treated with chemotherapy, radiotherapy or hormone therapy.

- Bone fractures
  Common sites for bone fractures include the wrist, ankle and hip.

- Fibrous dysplasia
  Fibrous dysplasia causes abnormal growth or swelling of bone, but it is not a form of cancer.

- Leukaemia
  Most children and many adults with acute leukaemia can expect to be cured, while chronic leukaemia can be successfully managed.

- McCune-Albright syndrome
  The severity of symptoms or how a child with McCune-Albright syndrome will be affected throughout life is difficult to predict.

- Multiple myeloma
  Multiple myeloma is cancer of plasma cells in the bone marrow.

- Osteomyelitis
  Osteomyelitis means an infection of bone which can either be recent or longstanding.

- Paget's disease of bone
  Paget's disease of bone is a chronic condition that causes abnormal enlargement and weakening of bone.

- Rib injuries
  Rib injuries may include bruises, torn cartilage and bone fractures.

- Rickets
  Rickets is a preventable childhood bone disease caused by a lack of vitamin D.

- Scoliosis
  Scoliosis is an abnormal sideways curve of the spine.

- Shin splints
  'Shin splints' refers to pain felt anywhere along the shinbone from knee to ankle.

- Treacher Collins syndrome
  Treacher Collins syndrome is a genetic disorder that affects growth and development of the head, causing facial defects and hearing loss.

Osteoporosis

- Menopause and osteoporosis
  Regular weight-bearing exercise and maintaining a diet rich in calcium from childhood will help reduce bone loss at menopause.

- Osteoporosis
  A healthy, calcium-rich diet and regular physical activity throughout life can help prevent osteoporosis.

- Osteoporosis and exercise
  Exercise can reduce the risk of fractures resulting from osteoporosis by both slowing the rate of bone loss, and reducing the person's risk of falling by building muscle strength and improving balance.
- Osteoporosis in children
  Osteoporosis in children is rare and usually caused by an underlying medical condition...

- Osteoporosis in men
  Up to 30 per cent of all fractures that occur in people with osteoporosis and osteopenia, occur in men...

**Muscle conditions**

- Bell's palsy
  The majority of people with Bell's palsy, around 90 per cent, will recover completely with time...

- Helping a child with a disability
  If you have a child with a disability you can help improve their communication and movement by encouraging them to take part in daily activities...

- Multiple sclerosis (MS)
  Multiple sclerosis is not contagious, but it is progressive and unpredictable...

- Muscle cramp
  A muscle cramp is an uncontrollable and painful spasm of a muscle...

- Muscular dystrophy
  People affected by muscular dystrophy have different degrees of independence, mobility and carer needs...

- Myasthenia gravis
  Myasthenia gravis is an autoimmune disease that causes muscle weakness...

- Polymyositis
  Polymyositis is hard to diagnose and may be mistaken for muscular dystrophy...

- Spinal muscular atrophy (SMA)
  A child with spinal muscular atrophy type 1 rarely lives beyond three years of age...

- Sprains and strains
  It is important to get the correct treatment for a sprain or strain as soon as possible after the injury to help you recover quickly...

**Joint conditions**

- Ankle sprain
  Ankle sprain is a common sports injury caused by overstretchesing and tearing the supporting ligaments...

- Ankylosing spondylitis
  Ankylosing spondylitis (AS) is a type of inflammatory arthritis that targets the joints of the spine...

- Arthritis explained
  People can manage their arthritis using medication, physiotherapy, exercise and self management techniques...

- Baker's cyst
  Baker's cysts of the knee don't always require active treatment and sometimes will only require observation by the treating doctor...

- Bursitis
  Bursitis is often caused by overuse and the inflammation will continue unless the particular activity or movement is stopped...

- Carpal tunnel syndrome
  Carpal tunnel syndrome can be caused by repetitive hand movements, pregnancy and arthritis...

- Developmental dysplasia of the hip (DDH)
  Around 95 per cent of babies born with developmental dysplasia of the hip can be successfully treated...

- Elbow pain
  Elbow pain and can result from overuse in a range of sports or occupations...

- Hip disorders
The hip joint is complicated to allow a wide range of motion while still supporting the weight of the body.

- **Knee injuries**
  Mild knee injuries may heal by themselves, but all injuries should be checked and diagnosed by a doctor or physiotherapist.

- **Osgood-Schlatter syndrome**
  Osgood-Schlatter syndrome is a painful knee condition that affects adolescents.

- **Perthes' disease**
  Most children with Perthes' disease eventually recover, but it can take anywhere from two to five years.

- **Reactive arthritis**
  Reactive arthritis is a form of arthritis that occurs as a result of some bacterial infections.

**Hand and foot conditions**

- **Achilles tendonitis**
  People who run regularly seem to be susceptible to Achilles tendonitis.

- **Children's feet and shoes**
  A child learning to walk receives important sensory information from the soles of their feet, and shoes can make walking more difficult.

- **Choosing the right shoe**
  The right footwear can help keep your feet healthy, make your physical activity easier and help keep your body safe from injury.

- **Cysts - ganglion cysts**
  A ganglion cyst is the most common lump on the hand, and tends to target women between the ages of 20 and 40 years of age.

- **Diabetes - foot care**
  Good foot care and regular check-ups can help people with diabetes avoid foot problems.

- **Dupuytren's contracture**
  Dupuytren's contracture gradually causes clawing of the fingers as they are pulled towards the palm.

- **Feet - problems and treatments**
  Correctly fitted shoes help you avoid foot and leg pain or injury.

- **Foot care - podiatrists**
  Podiatrists can advise about how to choose the right shoes for your feet.

- **Foot odour - causes and cures**
  Even the most fastidiously clean people can suffer from foot odour.

- **Foot orthoses**
  People who have chronic foot or leg problems that interfere with their health may be prescribed orthoses by their podiatrist.

- **Footwear for healthy feet**
  Wearing shoes that fit properly and support your feet is vital to avoid sore feet and to prevent or alleviate many common foot problems.

- **Left-handedness**
  If your child is naturally left-handed, don’t try to force them to use their right hand.

- **Raynaud's phenomenon**
  Raynaud's phenomenon can be a sign of a more serious underlying condition, so see your doctor if you experience it.

- **Sever's disease**
  Sever's disease is a common cause of heel pain, particularly in the young and physically active.

**Back neck and spine conditions**

- **Back pain**
  Back pain is common. Some people will develop back pain that is persistent (lasts more than three months). There are many things that you can do to live well.

**betterhealth.vic.gov.au**
with back pain...

- **Back pain - disc problems**
  Most disc problems resolve without specific treatment...

- **Back pain in children**
  Children with back pain may grow into adults with chronic bad backs, so it is important to encourage sensible back care...

- **Living with persistent pain**
  Pain is our built-in alarm system. It makes us aware that something might be going wrong in our body. However, there are many things you can do to deal effectively with persistent pain...

- **Neck pain**
  Treatments like physiotherapy, osteopathy or remedial massage can generally help neck and shoulder pain...

- **Scoliosis**
  Scoliosis is an abnormal sideways curve of the spine...

- **Shoulder pain**
  Shoulder pain is common in our community. The good news is that with appropriate treatment pain will improve so you can get back to doing the things you enjoy...

- **Tendonitis**
  Most cases of tendonitis recover completely, but severe untreated tendonitis can lead to rupture of the tendon...

- **Treating persistent pain**
  Pain is our built-in alarm system. It makes us aware that something might be going wrong in our body. However, there are many things you can do to deal effectively with persistent pain...

- **When do I need to see my doctor about persistent pain?**
  Living with persistent pain isn’t easy. Your doctor can help you balance your pain, your treatment and hurdles you encounter in life...

**Related Information**

- **Ankle sprains**
  Ankle sprain is a common sports injuries caused by overstretching and tearing the supporting ligaments...

- **Paget's disease of bone**
  Paget's disease of bone is a chronic condition that causes abnormal enlargement and weakening of bone...

- **Fibrous dysplasia**
  Fibrous dysplasia causes abnormal growth or swelling of bone, but it is not a form of cancer...

- **Rib injuries**
  Rib injuries may include bruises, torn cartilage and bone fractures...

- **Rickets**
  Rickets is a preventable childhood bone disease caused by a lack of vitamin D...

**Home**

- **Related information on other websites**
  - [The Children’s Hospital at Westmead – Kids health: fractures – bone healing](#)
  - [The Royal Children’s Hospital Melbourne – Kids health info: fractures](#)

**Content Partner**

This page has been produced in consultation with and approved by: Ambulance Victoria

---

betterhealth.vic.gov.au
Find a doctor

Need to find a doctor in your local area? Take a look at the general practitioners entry in our health service profiles.

see general practitioner

Recent Activity

92 people have watched a video today
3 people have finished quiz today.

- **Health topics**
  - Conditions and treatments
  - Healthy living
  - Services and support

- **Explore**
  - Recipes
  - Healthy pantry
  - Videos
  - Consumer medicine information
  - Multilingual health information - Health Translations Directory

- **About**
  - About us
  - Accessibility
  - Content partners
  - Privacy
  - Terms of use
  - Contact us

- **Connect with us**
  - Facebook
  - Twitter
  - YouTube

Page last reviewed: 30 Sep 2014


Privacy Statement


Copyright Notice


Disclaimer Notice

This web site is managed and authorised by the Department of Health & Human Services, State Government of Victoria, Australia

© Copyright State of Victoria 2018.