



X-Plain *Fractures and Sprains* **Reference Summary**

Introduction

This reference summary will explain the differences between fractures and sprains involving the arms or legs. It will also teach you what to watch for in case a cast is needed.

Anatomy

The arms and legs are very similar in structure. The shoulder joins the arm to the rest of the body, whereas the hip joins the leg to the rest of the body. A single bone, called the humerus, is in the upper arm; and a single bone, called the femur, is in the upper leg.

The lower arm, the forearm, has two bones. The lower leg also has two bones, the tibia and the fibula. The elbow joins the upper arm and forearm, whereas the knee joins the thigh to the lower leg.

The wrist is formed by many small bones. It joins the forearm to the hand. The ankle is formed by many small bones. It joins the lower leg to the foot.

The hand is formed of five bones, called metacarpal bones, which join the wrist to the fingers. The foot is formed of five bones, called metatarsal bones, which join the ankle to the toes.

The fingers are formed by three small bones called phalanges; except for the thumb, which has two phalanges only. The toes are formed by three small bones called phalanges, except for the big toe, which has two phalanges only.

The bones are held together at the joints by very tough ligaments.



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Fractures And Sprains

A fracture occurs when any one of the bones breaks. On the other hand, other injuries can happen to the ligaments which hold the bones together. A sprain occurs when any of the ligaments are either partially or completely torn. The worse the tear is, the worse the sprain.

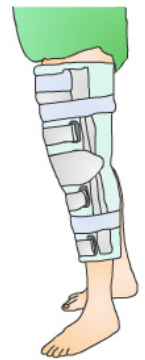
Treatment

Some fractures and sprains are very severe and need surgery to reset them. Others can be repaired without surgery.

To help promote healing, you may need to keep the injured arm or leg in one position and not allow it to move. This is known as immobilization.

To help with this immobilization, the arm or leg is put in a splint or cast. Splints consist of two parts. A rigid plastic-like material helps the arm or leg stay in the required position, and a bandage keeps it in place. These are easy to take off.

Knee immobilizers, wrist gauntlets, and pneumatic braces, which use air like a tire to keep the limb in place, are all variations of splints. Casts are sturdier than splints. They are made of plaster or a synthetic material. Casts should be taken off by your doctor using special instruments.



Immobilization

Expectations And Precautions

To help improve your recovery, you need to rest the injured arm or leg and not use it in any kind of strenuous activity. You need to keep the arm or leg above heart level to decrease the chances of swelling. You can do this by resting the limb somewhat above your body when you are lying or sitting down.

Ice in a plastic bag applied on the injured area may help decrease the pain, swelling, and inflammation. Keep the cast or splint dry by covering it with a plastic bag while taking baths and showers. You can use a hair dryer to dry the cast if it gets wet.



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Do not insert foreign objects between the cast and your skin to try to relieve an itch. This may injure your skin and lead to infections. You may want to use a hair dryer set on cool to relieve the itch.

Ask your doctor whether you are allowed to put any weight on your leg cast. If you are not allowed, you will be given crutches. While using crutches, it is important to rest your weight on the hand supports and not on your armpits. Resting weight on your armpits could lead to damaged nerves, which may create numbness in your hands.

Because patients cannot use their arm or leg when it is immobilized, the muscles become smaller because of the lack of exercise. This is called atrophy. After the cast or splint is taken off and you start physical therapy or exercise, the muscles usually recover. For the same reason, the immobilized joint becomes stiff.

This, again, improves with physical therapy.

Risks And Complications

Casts and splints are very safe. However, there are a few possible risks and complications. You need to know about them to help your doctor detect them early in case they happen.

The cast or splint may be too tight and press on the blood vessels and nerves of the arm or leg. This can result in nerve damage, paralysis, and a permanent decrease in sensation. It is therefore very important to inform your doctor of any numbness or tingling sensation in the arm or leg, and if you feel that your fingers or toes are not moving well. If the circulation is cut off to the arm or leg, it can become very painful and you could lose the limb as a result. If your nails are blue or if they stay pale after you press them, the circulation may be affected and you need to inform your doctor.



Over time, you may feel that the cast is becoming loose and that you are able to move the immobilized joint. This usually happens because the underlying muscles become smaller or because the cast has gotten wet or has otherwise been damaged

In this case, you should inform your doctor in case you need to have the cast replaced.

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Blood clots in the legs can occur. This usually shows up a few days after the injury. It causes the leg to swell and hurt a lot. These blood clots can be dislodged from the legs and go to the lungs, where they will cause shortness of breath, chest pain, and possibly death. Sometimes the shortness of breath can happen without warning. Therefore, it is extremely important to let your doctors know if any of these symptoms occur. Getting out of bed shortly after the injury may help decrease the risks of blood clots in the legs.

Summary

Arms and legs are similar in the way the bones are structured. Ligaments hold the bones together. Fractures can happen when any of the bones break. On the other hand, sprains are tears to the ligaments.

When either a fracture or a sprain happens, you should immobilize the injury with a splint or a cast, depending on the severity of the injury.

Splints and casts are very safe and useful. As you have learned, there are some rare but potentially disastrous complications. Taking good care of your splint and cast and informing your doctor about possible complications will help your arm or leg recover safely.



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