TEST

Extremity x-ray

An extremity x-ray uses low-dose radiation to image an arm, hand, leg, or foot.

WHAT IT MEASURES
Bone alignment and visible changes in bones and nearby tissues

SAMPLE
None

FASTING NEEDED?
No

HOW LONG IT TAKES
Usually 5 to 15 minutes

RESULTS IN
Often same day; timing varies by imaging service

USED FOR
Diagnosis and monitoring

MAIN LIMITATION
Small or early fractures may not appear

Overview

An extremity x-ray creates pictures of an arm, hand, wrist, elbow, shoulder, leg, knee, ankle, or foot. It uses a small amount of ionizing radiation that passes through the body.

Bone absorbs more x-rays and usually appears white. Air looks dark, while muscles, fat, and other soft tissues appear grey.

The test can show many fractures, dislocations, alignment problems, arthritic changes, infections, abnormal growths, and some foreign objects such as metal or glass. It does not show every injury. Tendons, ligaments, cartilage, nerves, and muscles are usually assessed more clearly with ultrasound or MRI.

Why the test is ordered

An x-ray may be ordered after an injury if you have pain, swelling, tenderness, bruising, difficulty moving a joint, or trouble putting weight on a limb. It can identify a broken bone or a joint that has moved out of position.

It may also be used to:

Clinicians may use decision rules based on your symptoms and examination to determine whether an x-ray is likely to help.

- Check whether a fracture is healing in the expected position
- Confirm the position of a cast, splint, implant, or surgical hardware
- Look for arthritis or another joint condition
- Investigate ongoing bone or joint pain
- Check for bone infection or an abnormal growth
- Locate some foreign objects after a wound

Who should have the test

You may be offered an extremity x-ray when the result could affect your care, such as whether you need a cast, splint, surgery, further imaging, or follow-up.

Children can have extremity x-rays when medically needed. Growth plates can resemble fracture lines, so images are interpreted according to age and radiation exposure is adjusted for the child's size.

Tell the imaging team if you are pregnant or could be pregnant. An extremity x-ray usually exposes the uterus to very little scattered radiation, but staff should confirm that the test is needed and use appropriate precautions.

How to prepare

Most extremity x-rays require no special preparation. You can usually eat, drink, and take your regular medicines as normal.

Wear clothing that allows access to the affected area. You may need to remove jewellery, watches, shoes, belts, or clothing with metal fasteners if they could cover the image. A gown may be provided.

Tell staff if you cannot safely stand, bend, or move the injured limb. Mention previous surgery, implants, or injuries in that area. Bring previous images if they were taken elsewhere and are not available electronically.

What happens during the test

A radiographer will position the affected limb beside an x-ray detector and aim the machine at the area being examined.

Usually, two or more images are taken from different angles because a fracture hidden in one view may appear in another. Some joint examinations include images taken while standing or putting weight on the limb, but only when safe and clinically useful.

You must keep still for a few seconds during each image. The x-ray itself is not painful, but positioning an injured limb can be uncomfortable. Tell the radiographer if a position causes significant pain so it can be adjusted.

The appointment usually takes 5 to 15 minutes. Complex examinations or difficulty positioning the limb may take longer.

Understanding your results

A radiologist usually reviews the x-rays and sends a report to the clinician who requested them. In urgent settings, another appropriately trained clinician may review the images first.

The report may describe:

There is no numerical reference range. Interpretation depends on factors such as age, previous injuries, surgery, and clinical context. Growth plates are normal in children, while age-related joint changes are common in older adults.

"No acute abnormality" generally means no recent problem was visible. It does not always rule out a small fracture or soft-tissue injury.

- A fracture, including its location and whether the pieces have moved
- A dislocation or change in joint alignment
- Swelling or fluid around a joint
- Signs of arthritis, infection, or another bone condition
- The position of surgical hardware or a healing fracture
- No visible bone or joint abnormality

What affects the results

Movement can blur fine bone detail. Pain may make it difficult to obtain the best angles, and

overlapping bones can hide a fracture or alignment problem.

Jewellery, clothing fasteners, casts, splints, or dressings may cover part of the image or reduce detail.

Timing also matters. Stress fractures and some small, non-displaced fractures may not be visible soon after symptoms begin. Healing changes can make them easier to see later.

Weight-bearing images can show alignment differently, particularly in some foot, ankle, and knee conditions. Previous fractures, surgery, arthritis, growth plates, and normal bone variations can also resemble a new abnormality. Comparing older and current images may help.

Meals, coffee, recent exercise, and most medicines do not directly alter an extremity x-ray image.

Accuracy and limitations

Extremity x-rays identify many fractures and dislocations but do not detect every injury. Very small, stress, non-displaced, and some wrist or hip-region fractures may be missed initially. A normal result may not explain persistent, focused pain or difficulty using the limb.

An old injury, growth plate, or normal variation in bone shape can also look concerning without the correct history or comparison images.

CT provides more detailed images of complex fractures and joint surfaces. MRI can detect hidden fractures and injuries involving bone marrow, ligaments, cartilage, muscles, and tendons. Ultrasound can assess some tendons, joint fluid, and soft-tissue foreign objects without radiation.

If symptoms and examination findings strongly suggest an injury despite a normal x-ray, repeat x-rays or another imaging test may be needed.

Risks and complications

An extremity x-ray uses a low radiation dose, limited to the images needed. No radiation remains in your body afterward. The expected benefit of diagnosing an injury is weighed against the small radiation risk.

A standard x-ray does not usually involve injections, contrast dye, or sedation.

Positioning may briefly increase pain. Tell the radiographer so the limb can be supported and movement minimized.

What happens next

The report is sent to the clinician who requested the x-ray. Follow-up may include rest, pain management, a splint or cast, physiotherapy, another appointment, or further imaging. Do not remove a prescribed support or resume demanding activity solely because the first x-ray was normal.

Seek prompt reassessment if pain, swelling, or difficulty using the limb continues or worsens despite a normal result.

Seek emergency care after an injury if the limb is severely deformed, bone is visible through a wound, bleeding will not stop, or the hand or foot becomes cold, pale, blue, numb, or difficult to move. These signs may indicate damage to blood flow or nerves and should not wait for routine follow-up.

Common questions

Can I eat or drink coffee before an extremity x-ray?

Yes. Fasting is not needed. You can usually eat and drink normally, including coffee.

Does the time of day matter?

Usually not. Bones do not meaningfully change appearance during the day.

Can I exercise beforehand?

Exercise does not usually affect the images. If you have a recent injury, avoid activity that worsens pain or could cause further injury.

Do I need to remove my jewellery?

You may need to remove jewellery or metal-containing clothing if it overlaps the area being imaged.

Will I need an injection or contrast dye?

Not for a standard extremity x-ray. Specialized joint procedures using contrast are separate examinations.

Can an x-ray miss a fracture?

Yes. Small, early, stress, or non-displaced fractures may not appear initially. Persistent focused pain may require repeat x-rays, CT, or MRI.

Sources

- American College of Radiology and Radiological Society of North America. Bone X-ray (Radiography)
- US Food and Drug Administration. Medical X-ray Imaging
- National Health Service. X-ray
- American College of Radiology. ACR Appropriateness Criteria: Acute Trauma to the Ankle
- American College of Radiology. ACR Appropriateness Criteria: Acute Hand and Wrist Trauma