TEST

Joint x-ray

A joint x-ray uses low-dose radiation to show bones, alignment, and signs of joint damage.

WHAT IT MEASURES
Bone shape, alignment, joint space, and visible damage

SAMPLE
None

FASTING NEEDED?
No

HOW LONG IT TAKES
About 10 to 20 minutes

RESULTS IN
Same day to several days; varies by imaging service

USED FOR
Diagnosis and monitoring

MAIN LIMITATION
Soft tissues and early disease may not show clearly

Overview

A joint x-ray is an imaging test that uses a small amount of ionising radiation to create pictures of a joint. Common examples include x-rays of the knee, hip, shoulder, ankle, wrist, or fingers.

X-rays show bone more clearly than muscles, tendons, ligaments, and cartilage. They can show fractures, changes in bone shape, joint alignment, and features linked with arthritis. Cartilage does not appear directly, but the space between bones can provide an indirect clue about cartilage loss.

A joint is usually photographed from two or more angles. Some joints may also be examined while you stand or place weight through them.

Why the test is ordered

A joint x-ray may help investigate pain, swelling, stiffness, reduced movement, or an injury. It can also help explain a visible change in the shape or alignment of a joint.

The test may be ordered to look for:

Not every painful joint needs an x-ray. For example, osteoarthritis can sometimes be assessed from your symptoms and an examination without imaging. An x-ray may be more useful when the diagnosis is uncertain, symptoms are unusual, an injury has occurred, or the result could change your care.

- A broken, displaced, or poorly aligned bone
- Joint dislocation or partial dislocation
- Bone spurs and other changes associated with osteoarthritis
- Bone damage caused by infection, inflammation, or another condition
- Changes around a joint replacement or other surgical hardware
- Healing after a fracture, operation, or treatment

Who should have the test

You may be offered a joint x-ray if you have had a significant injury, cannot use the joint normally, or have persistent symptoms that need further assessment. It may also be used to monitor a known bone or joint problem or to check the position of an implant.

Children can have x-rays when medically needed. The imaging team adjusts the examination to the child's size and limits the area exposed.

X-rays are not generally used as routine screening tests for healthy joints without symptoms. Whether one is useful depends on your symptoms, examination, previous imaging, and what your healthcare professional needs to find out.

Tell the imaging team if you are pregnant or might be pregnant, particularly if the hip or pelvis will be imaged. Pregnancy does not automatically prevent an x-ray. The team can assess the need for the test and minimise exposure.

How to prepare

You can usually eat and drink normally, including coffee. Joint x-rays do not require fasting.

Wear loose clothing that is easy to move or remove. You may need to take off jewellery, watches, belts, or clothing with metal fasteners near the joint. A gown may be provided.

Tell the radiographer-the healthcare professional who takes the images-if:

Continue your usual medicines unless you have been given separate instructions for another test or procedure.

- You may be pregnant
- Moving or standing is difficult
- You have severe pain
- You use a walking aid
- You have had surgery or have metalwork in the area
- You have previous images from another healthcare service

What happens during the test

The radiographer confirms your identity and the joint being examined. They position the joint between the x-ray machine and a digital detector.

You may sit, stand, or lie down. The position depends on the joint and the question being investigated. For a knee, ankle, foot, hip, or spine examination, weight-bearing pictures may be requested because standing can reveal alignment or joint-space changes that are less noticeable while lying down.

You will be asked to keep still for a few seconds. The radiographer may reposition the joint to obtain different views. Tell them if a position is too painful; they may be able to modify it.

Taking an x-ray does not cause any sensation. You may hear the machine operate, but the x-ray exposure itself usually lasts less than a second. The radiographer steps behind a protective screen during each exposure.

The whole appointment commonly takes about 10 to 20 minutes. It may take longer if several joints or specialised views are needed.

Understanding your results

A radiologist, a doctor trained to interpret medical images, usually reviews the x-rays and writes a report. The report is sent to the healthcare professional who requested the test.

The report may describe:

There is no universal "normal range" for a joint x-ray. Expected appearances differ with age, sex, skeletal maturity, previous injuries, surgery, pregnancy-related changes, medicines that affect bone, and the clinical context. Reporting practices also differ between imaging services.

An abnormal-looking x-ray does not always explain how much pain or disability someone has. Some people have substantial x-ray changes with few symptoms, while others have significant

symptoms despite minor or normal x-ray findings.

- Whether the bones are intact and correctly aligned
- The width of the visible space between bones
- Bone spurs, cyst-like changes, or increased bone density
- Swelling or calcium deposits around the joint
- The position of screws, plates, or a joint replacement
- Whether comparison with older images shows a change

What affects the results

Joint x-rays do not usually produce a single number. However, several factors can make an image incomplete or misleading even when the equipment is working correctly.

Positioning matters. Rotation of the limb can make alignment or joint-space width appear different. Movement can blur fine detail.

Standing and non-standing images may not look the same. Weight-bearing can narrow a joint space or reveal instability that is not visible while lying down. Comparisons are most useful when images are taken in similar positions.

Other influences include:

Recent exercise, food, coffee, and the time of day usually do not meaningfully affect a standard joint x-ray.

- A cast, splint, jewellery, or metal fastener covering part of the joint
- Overlapping bones or body tissues hiding a small abnormality
- Very early disease that has not yet changed the bone
- A subtle fracture that is not visible immediately after an injury
- Previous surgery, old injury, or normal anatomical variation
- Lack of earlier images for comparison

Accuracy and limitations

X-rays are good at showing many fractures, dislocations, changes in bone shape, and the position of joint replacements. They are quick and widely available.

However, a normal x-ray does not rule out every joint problem. Small or non-displaced fractures can be missed, especially soon after an injury. Stress fractures may not appear until healing changes develop.

X-rays also provide limited detail about cartilage, ligaments, tendons, muscles, nerves, and the joint lining. This means the test may appear normal even when one of these tissues is injured.

Because an x-ray turns a three-dimensional joint into a two-dimensional image, structures can overlap. Taking several views reduces this problem but does not remove it completely.

A different test may be more useful in some situations:

No imaging result should be interpreted by itself. Your symptoms, examination, and the reason for testing affect what the findings mean.

- CT provides more detailed pictures of complex bone injuries
- MRI shows bone marrow, cartilage, ligaments, tendons, and other soft tissues
- Ultrasound can assess some tendons, fluid collections, and moving structures

Risks and complications

A joint x-ray uses a low dose of ionising radiation. The exposure is limited to the area needed, and the expected benefit should outweigh the small radiation risk.

The test is painless, but positioning an injured or stiff joint may briefly increase discomfort. Tell the radiographer if you cannot safely hold a requested position.

If you are pregnant or might be pregnant, inform the imaging team before the examination. They can decide whether the x-ray should proceed, be modified, or be replaced by another test.

What happens next

If the x-ray shows a problem needing prompt treatment, the requesting healthcare team may contact you quickly. Otherwise, results are commonly discussed at a routine appointment, by telephone, or through an electronic health record.

Your next step may involve pain management, physiotherapy, activity changes, a splint or cast, specialist assessment, or further imaging. A normal result may still lead to follow-up if symptoms continue.

Seek urgent medical assessment after an injury if pain or swelling is rapidly worsening, you

cannot use the limb, or the joint is hot and swollen with fever or feeling unwell.

Call emergency services for major trauma, heavy bleeding, bone visible through a wound, or a limb that becomes cold, pale, blue, or suddenly numb. These symptoms should not wait for a routine x-ray appointment or results review.

Common questions

Can I drink coffee before a joint x-ray?

Yes. Coffee, food, and other drinks do not affect a standard joint x-ray unless you have separate instructions for another procedure.

Does the time of day matter?

Usually not. Some weight-bearing symptoms may change through the day, but standard joint x-rays can generally be taken at any scheduled time.

Can I exercise beforehand?

Usually, although exercise may temporarily increase pain or swelling. Avoid activity that feels unsafe, particularly after an injury.

Do I need to remove my clothes?

Only clothing or metal objects that cover the area being examined may need to be removed. You may be given a gown.

Can I have an x-ray while pregnant?

Sometimes. Tell the imaging team before the test. They will consider the body area, urgency, and whether another imaging method would answer the question.

Why might I need another scan after a normal x-ray?

Some fractures and many cartilage, ligament, tendon, or muscle problems do not show clearly on x-rays. CT, MRI, ultrasound, or a repeat x-ray may provide more information.

Sources

- Radiological Society of North America and American College of Radiology. Bone X-ray \(Radiography\)
- US Food and Drug Administration. Medical X-ray Imaging
- National Health Service. X-ray

- National Institute for Health and Care Excellence. Osteoarthritis in over 16s: diagnosis and management, NG226
- American College of Radiology. ACR Appropriateness Criteria: Acute Trauma to the Knee
- International Atomic Energy Agency. Radiation Protection of Patients: Radiography