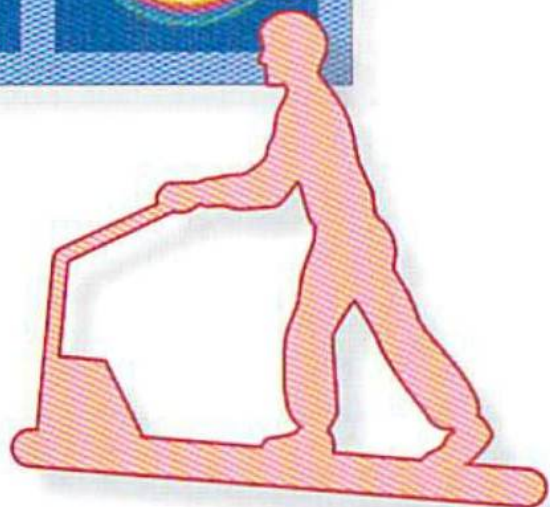
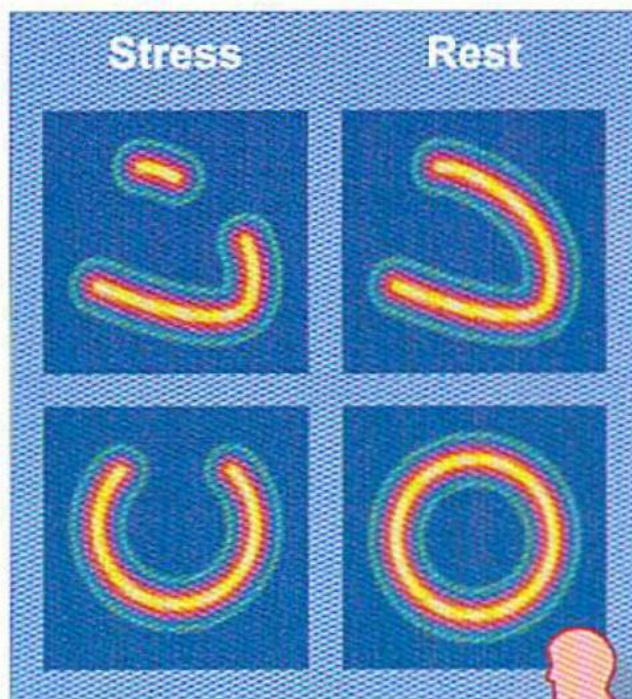


Exercise Cardiac Perfusion Imaging



A Patient's Guide

What Is Cardiac Perfusion Imaging?

Cardiac perfusion imaging is a medical test that uses a radioactive substance, known as a **tracer**, to study the flow of blood to the heart muscle. It produces images of the heart muscle during periods of exercise (or **stress**) and rest.

(Other terms often used to describe cardiac perfusion imaging include: myocardial perfusion scan, cardiac nuclear imaging, and radionuclide stress test. Based on the specific tracer that's used, it may also be called Thallium, Cardiolite, or Myoview scan.)

What Does It Show?

Cardiac perfusion imaging helps doctors diagnose coronary heart disease, which is caused by narrowed or blocked **coronary arteries** (the vessels that supply blood to the heart muscle).

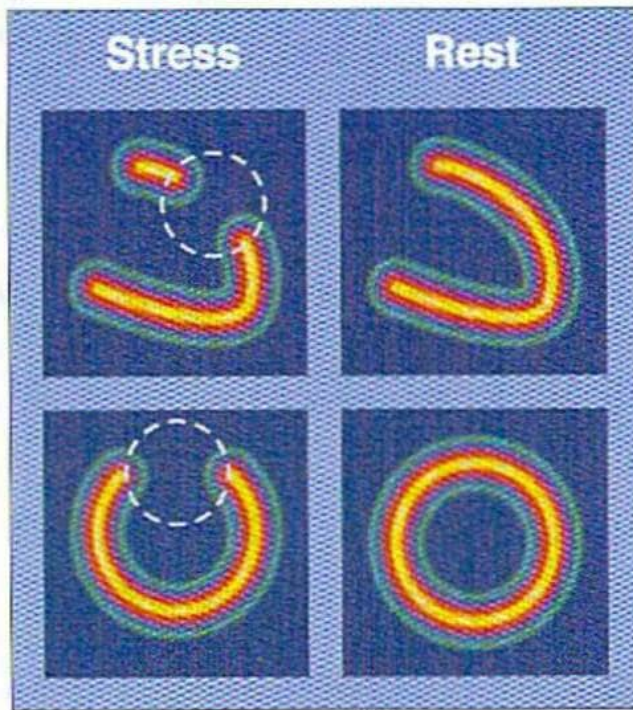
During a cardiac perfusion test, a small amount of tracer is injected into a vein in your arm, once while you exercise, and once at rest.

The tracer travels in the bloodstream and is picked up by the heart muscle. Areas of the heart muscle that have a good supply of blood pick up the tracer right away. Areas that do not have a good supply pick up the tracer very slowly or not at all.

The tracer gives off a small amount of radiation that is detected with a **scanning camera**. A computer processes the information and produces images that show how radioactivity is distributed in the heart.

If an area of the heart receives less blood than the rest of the heart, because of a narrowed or blocked artery, it will pick up less radioactivity and will show up as a lighter area. This is called a “defect.”

One set of images is taken after you exercise, another set is taken while you are at rest. The images allow doctors to compare how much blood flows to the heart muscle during stress and at rest.



Cardiac Perfusion Scan

The images show the heart from two different “angles” during stress and at rest.

The stress images show a “defect,” which disappears at rest. This suggests a narrowing in the artery which supplies blood to that area of the heart muscle.

By comparing the stress and rest images, doctors can identify areas of the heart muscle that have reduced blood flow, as well as areas that are scarred from a previous heart attack.

Why Is the Test Done?

Most often, cardiac perfusion imaging is done to diagnose coronary heart disease. Your doctor may order this test if you have chest pain, shortness of breath, or any other symptoms that could be related to your heart.

The test may also be done to determine how severe coronary disease is, to estimate the risk of a future heart attack, and to assess the results of a coronary procedure, such as angioplasty or bypass surgery.

Preparing for the Test

- **Generally, you will be instructed not to eat or drink for at least 4 hours before the test.** If you have diabetes and take medication for it, ask your doctor for special instructions.
- **If you take heart medications,** check with your doctor when you schedule the test. He or she may ask you to stop certain medications a day or two before the test.
- **Wear comfortable clothing and shoes** that are suitable for exercise. Women usually wear a loose-fitting blouse or hospital gown.
- **The procedure will be explained to you and you will be asked to sign a consent form.** Feel free to ask any questions you may have.

What Happens During the Test?

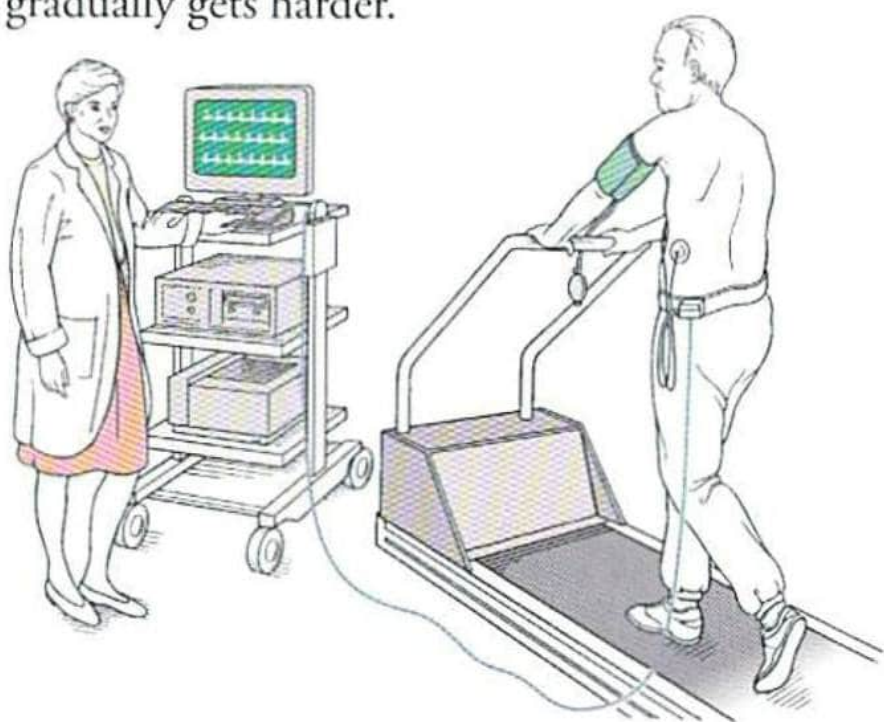
Cardiac perfusion imaging is usually performed in a hospital radiology or nuclear medicine department, a doctor's office, or at an outpatient clinic.

Usually, two sets of images are taken. One set is taken after exercise, and another set after a period of rest. Depending on the department's routine, either the exercise or the rest part may be done first.

■ *Exercise Portion*

Several electrodes (small sticky patches) will be placed on your chest to monitor your heartbeat during the test. An **intravenous (IV) line** will be inserted into a vein in your arm, so that the tracer can be injected.

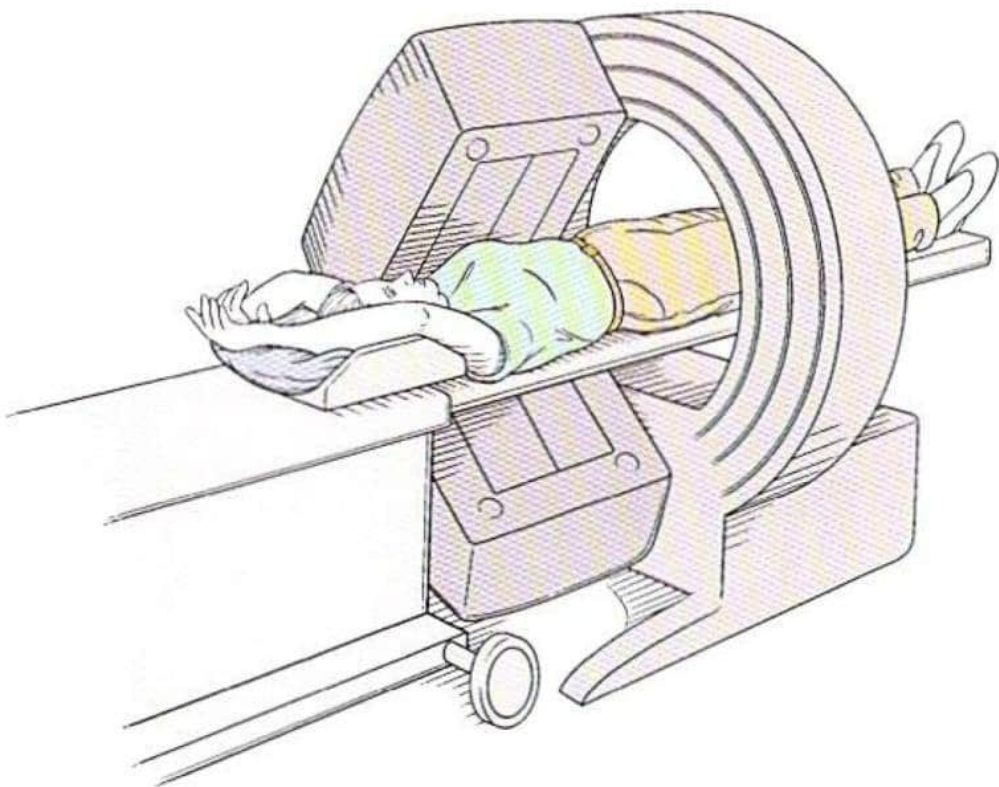
Next, you walk on a treadmill or pedal a stationary bicycle. The treadmill moves slowly at first, then the speed and incline are gradually increased. If you use a stationary bicycle, it feels easy to pedal at first, then it gradually gets harder.



Be sure to report any symptoms, such as chest pain or discomfort, dizziness, or severe shortness of breath. Try to exercise for as long as you can, because the more you exercise, the more accurate the test will be.

When you reach a point where you feel you cannot exercise for much longer, let the doctor or nurse know. The technologist will inject the tracer into the intravenous line. You will then be asked to exercise for another minute or so, to circulate the tracer.

Next, you lie flat on a special table under a large scanning camera. During **imaging**, the camera moves slowly over the front of your chest, taking pictures of your heart from different angles. You must remain still while the pictures are being taken. The imaging part of the test takes about 15 to 30 minutes.





■ *Rest Portion*

A tracer will be injected one other time, and another set of pictures will be taken while you are at rest. These images are then compared to the images taken during the exercise (stress) part of the test.

How Long Does It Take?

Perfusion imaging can take from 2 to 5 hours. You may be allowed to leave the test area between the two parts of the test. In some cases, you may be asked to return the next day for more imaging.

Is the Test Safe?

The radiation exposure during perfusion imaging is small, and the doses used are safe. However, if you are pregnant, suspect you may be, or are a nursing mother, be sure to let your doctor know.

The exercise test is also safe. A small amount of risk does exist, however, because the heart is stressed. Possible *rare* complications include abnormal heart rhythms and a heart attack. Trained personnel are there to handle any emergency.

Your Test Results

Your doctor will discuss the results of the test with you during a future office visit. The results help the doctor accurately diagnose your condition and develop a treatment plan that is best for you.

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