TEST

Exercise stress test

An exercise stress test checks how your heart responds while you walk or cycle.

WHAT IT MEASURES
Heart rhythm, blood pressure, and symptoms during increasing exercise

SAMPLE
None; treadmill or cycle with heart monitoring

FASTING NEEDED?
Sometimes, avoid food for several hours if instructed

HOW LONG IT TAKES
About 30 to 60 minutes

RESULTS IN
Usually same day; timing differs by testing centre

USED FOR
Diagnosis, monitoring, risk assessment, and exercise planning

MAIN LIMITATION
Limited accuracy for blocked arteries with an abnormal resting ECG

Overview

An exercise stress test shows how your heart works when it has to pump harder. You walk on a treadmill or pedal a stationary bicycle while your heart rhythm, heart rate, blood pressure, and symptoms are monitored.

Electrodes attached to your chest connect to an electrocardiogram, or ECG, which records the heart's electrical activity. Exercise becomes harder in planned stages.

A basic test does not show the heart's arteries directly. It looks for signs that the heart may not be receiving enough blood during exercise. Some tests add an ultrasound, called a stress echocardiogram, or nuclear imaging.

Why the test is ordered

The test may investigate symptoms during physical activity, such as chest discomfort, unusual shortness of breath, dizziness, or a racing or irregular heartbeat.

It may also assess:

Exercise testing is not generally used as a stand-alone screening test for everyone without symptoms. Its usefulness depends on your symptoms, medical history, resting ECG, ability to exercise, and likelihood of heart disease.

- How much exercise you can safely manage
- Whether exercise triggers an abnormal heart rhythm
- How your blood pressure responds to activity
- Your progress after heart treatment
- Your future heart risk when combined with other information

Who should have the test

The test may be suitable if you can walk or cycle enough to reach an effective exercise level and your resting ECG can be interpreted during activity.

A different test may be better if arthritis, lung disease, nerve problems, poor balance, or another condition limits exercise. Medicine can instead make the heart work harder during a stress imaging test.

A paced rhythm, left bundle branch block, or some other resting ECG changes can hide the signs a basic exercise ECG is designed to detect. Stress imaging or a coronary artery scan may then be considered.

A scheduled stress test is not appropriate for severe or rapidly worsening symptoms. New chest pressure at rest, severe breathing difficulty, fainting, or possible heart attack symptoms need urgent or emergency assessment.

How to prepare

Follow your testing centre's instructions because preparation varies by protocol and whether imaging is included.

You may need to avoid food for several hours. Small amounts of water are often allowed, but check with the centre.

Ask how to manage your medicines. Beta blockers and some calcium channel blockers like amlodipine or diltiazem slow the heart rate and may prevent you reaching the intended exercise level. Nitrates and other heart medicines can also affect results. Do not stop prescribed medicine unless the team arranging the test tells you to.

Wear comfortable clothes and walking or running shoes. Do not apply oils, creams, or lotions to your chest because electrodes may not stick. Some chest hair may need clipping.

Tell the team if you are pregnant or could be pregnant, are unwell, or have had a recent change in heart symptoms.

What happens during the test

Before exercise, the team asks about your symptoms and checks your resting heart rate, blood pressure, and ECG. Electrodes are attached to your chest, and a blood pressure cuff remains on your arm.

You begin walking slowly or pedalling. The speed, slope, or resistance increases every few minutes. The team asks how you feel and how hard the exercise seems.

Immediately report chest discomfort, unusual breathlessness, dizziness, leg pain, weakness, or any other new symptom. Do not push through symptoms to complete the test.

The test may stop when you reach a planned workload or heart rate, or because of symptoms, fatigue, concerning ECG changes, an unusual blood pressure response, or an abnormal heart rhythm.

Monitoring continues during recovery until your heart rate and blood pressure move toward resting levels. Preparation and recovery make the appointment longer than the exercise itself.

Understanding your results

The report combines:

A negative or normal result means no clear evidence of reduced blood flow was found at the exercise level reached. It does not prove every coronary artery is normal or remove future heart risk.

A positive or abnormal result may need further assessment, but does not by itself confirm a blocked artery.

An inconclusive result means the test did not provide a dependable answer. This can happen if you could not exercise hard enough, medicine limited your heart rate, or your resting ECG was difficult to interpret.

Interpretation varies with the testing centre, age, sex, pregnancy status, medicines, fitness, and clinical context.

- How long and intensely you exercised
- Your heart rate and blood pressure response
- ECG changes during exercise or recovery
- Abnormal heart rhythms
- Symptoms and when they occurred
- Imaging findings, if applicable

What affects the results

Beta blockers and some calcium channel blockers may limit your heart rate. Nitrates can reduce chest discomfort or ECG changes, while digoxin can cause ECG changes resembling reduced blood flow.

A heavy meal, caffeine, nicotine, alcohol, dehydration, poor sleep, fever, or recent illness may affect heart rate, blood pressure, symptoms, or exercise ability.

Recent hard exercise, muscle or joint pain, lung disease, anaemia, and low fitness may stop the test before the heart reaches an adequate workload.

A paced rhythm, left bundle branch block, thickened heart muscle, or other ECG abnormalities can make results difficult to interpret. Loose electrodes and movement can also create interference.

Pregnancy changes heart rate and circulation. The reason for testing and safest method therefore need individual consideration.

Accuracy and limitations

A basic exercise ECG can identify reduced blood flow during exertion, but it is not perfectly accurate.

It may miss disease if you do not reach an adequate workload, take heart-rate-limiting medicines, or have narrowing that does not reduce blood flow during the test. A normal result does not rule out non-obstructive plaque or problems in the heart's small blood vessels.

It can also suggest blockage when no major blockage exists. Existing ECG changes, medicines, a marked blood pressure response, interference, and other heart conditions can contribute.

Stress echocardiography or nuclear imaging may be clearer when a resting ECG cannot be interpreted. Coronary CT angiography may be better when the main question is whether

coronary plaque or narrowing is present.

The best test depends on your symptoms, exercise ability, previous results, kidney function, pregnancy status, radiation considerations, and local expertise.

Risks and complications

Muscle tiredness, temporary shortness of breath, or light-headedness can occur. Electrodes may cause mild skin irritation.

Abnormal heart rhythms, fainting, severe chest pain, or a heart attack are possible, but serious complications are uncommon with appropriate assessment and monitoring. Trained staff and emergency equipment are available.

After leaving, seek emergency help for chest pressure that does not settle, severe breathing difficulty, fainting, or persistent symptoms that feel serious or new. Mild tiredness that improves with rest can usually be discussed at routine follow-up.

What happens next

You may receive an initial explanation immediately. A complete report can take longer, particularly if ultrasound or nuclear images require review.

If the result is reassuring and you reached an adequate exercise level, routine follow-up may be enough. Your clinician will consider the result alongside your symptoms, medical history, examination, resting ECG, and other tests.

An abnormal or unclear result may lead to stress imaging, coronary CT angiography, heart rhythm monitoring, or specialist assessment. Further testing is not required after every abnormal finding.

Do not wait for a routine appointment if you develop severe or worsening chest pressure, severe shortness of breath, fainting, or other emergency symptoms.

Common questions

Can I drink coffee before an exercise stress test?

Ask the testing centre. Caffeine may be allowed before a basic exercise ECG but is often restricted before certain imaging tests. It can also increase heart rate or blood pressure.

Can I eat before the test?

You may need to avoid food for several hours. Follow your appointment instructions.

Does the time of day matter?

Usually not, but timing may matter if medicine must be taken or withheld at a particular hour.

Can I exercise beforehand?

Avoid strenuous exercise shortly beforehand unless told otherwise. Muscle fatigue may limit the test.

Should I take my usual medicines?

Do not change medicines yourself. Ask about beta blockers like metoprolol or propranolol , calcium channel blockers, nitrates, digoxin, inhalers, and diabetes medicines.

What should I wear?

Wear loose, comfortable clothing and supportive walking or running shoes. Avoid chest lotions or oils.

Sources

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