

What is ejection fraction?

Ejection fraction is the measure of how much blood your heart pumps—or "ejects"—out of the filled pumping chambers (ventricles) with each heartbeat. Each heartbeat, the heart muscle contracts and pumps blood out of the ventricles, then relaxes and fills with blood again. Ejection fraction is the amount of blood pumped out divided by the total amount of blood in a filled ventricle. It is measured on the left ventricle (left ventricular ejection fraction, or LVEF) because the left ventricle is the heart's main pumping chamber, pushing oxygen-rich blood to the entire body. Ejection fraction is used to diagnose and monitor heart failure by determining how well your heart is working.

What is a normal ejection fraction?

A normal heart usually pumps out about one-half to two-thirds of the blood in its left pumping chamber (ventricle) with each heartbeat (it never pumps out 100%). A normal ejection fraction is 50% or higher, meaning half or more of the total blood in the left ventricle is pumped out during each heartbeat (some doctors use 55% as the cutoff).¹ If the ejection fraction falls below 50%, it means your heart is not pumping blood as well as it should; the lower the ejection fraction number is, the weaker your heart. A lower ejection fraction means your heart muscle has been damaged, leaving it unable to contract normally and pump out enough blood to meet the body's needs ([systolic heart failure](#)).

Can I have a normal ejection fraction and still have heart failure?

Yes, you can have a normal ejection fraction and still have heart failure. Ejection fraction is a measure of the pumping ability of your heart, and helps determine if you have blood-pumping problems consistent with systolic heart failure. However, ejection fraction does not reveal anything about the heart's ability to fill with enough blood; even if the heart pumps normally, blood filling problems can cause a type of heart failure called [diastolic heart failure](#) . In patients with diastolic heart failure, the heart is stiff and can't relax to expand and fill with blood properly. However, the heart may still be able to contract normally, pumping out less total blood than normal but still more than half the blood in the ventricle (an ejection fraction of 50% or more). For this reason, diastolic heart failure is also known as "heart failure with preserved ejection fraction".

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for an illustration of the difference between systolic and heart failure, including how pumping and filling problems and how affects the amount of blood that the heart ejects.

Women tend to have a higher average ejection fraction than men, which may explain why women who develop heart failure are more likely than men to have diastolic heart failure.² The reason for women's higher natural ejection fraction is not known for sure.

How is ejection fraction measured?

Echocardiography is the most common way to measure ejection fraction.^{3,4} Your doctor will order a two-dimensional

[echocardiogram](#)

with Doppler to check the size of your main pumping chamber and to determine the percentage of blood pumped out each beat. Although ejection fraction applies to both ventricles, it is almost always measured on the left ventricle because the left ventricle pumps blood throughout your body.

Although an echocardiogram is the standard way to measure ejection fraction, it can also be measured using [MRI](#) or a [nuclear ventriculogram](#).³

References

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3. Hunt SA. ACC/AHA 2005 Guideline Update for the Diagnosis and Management of Chronic Heart Failure in the Adult: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Update the 2001 Guidelines for the Evaluation and Management of Heart Failure). *J Am Coll Cardiol*. September 20, 2005 2005;46(6):e1-82.
4. Heart Failure Society of America. HFSA 2006 Comprehensive Heart Failure Practice Guideline. *J Card Fail*. Feb 2006;12(1):e1-2.

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