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Eccentric Hypertrophy

A bigger pumping chamber with more muscle, usually from years of handling too much blood volume.

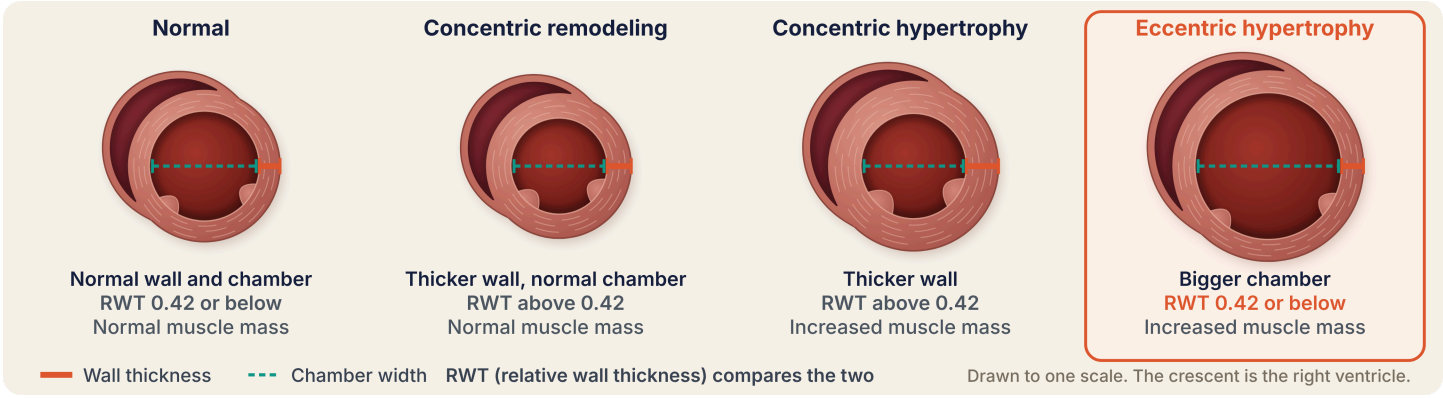
0.42
or below is the relative wall thickness in eccentric hypertrophy

2.58×
the death rate of a normal heart over 15 years, in a 2022 study

<130
usual top-number blood pressure goal when high blood pressure drives it

WHAT IT MEANS

A bigger chamber with more muscle



In eccentric hypertrophy the left ventricle, the main pumping chamber, has more total muscle and a bigger chamber, and its wall is normal or thin for that size. **Relative wall thickness**, which compares the wall with the chamber's width, is at or below 0.42. Concentric hypertrophy is the heart responding to pressure, and eccentric hypertrophy is the heart responding to volume.

WHAT CAUSES IT

Too much volume, or weakened muscle

Leaky valves
Long-standing mitral regurgitation is the textbook cause, as blood leaks back each beat. Aortic regurgitation does too, often in a mixed pattern.

High-output states
Severe anemia, an overactive thyroid or an arteriovenous fistula (a direct artery-to-vein link) can also cause it.

Weakened muscle
Dilated cardiomyopathy and heart failure with a low ejection fraction. A heart thickened by high blood pressure can also wear down into this pattern.

Muscle cells add contracting units end to end, so the chamber grows. Over time the bigger chamber strains its own walls, which drives more enlargement and eventually scarring, weaker pumping and heart failure.

Act on it

It reflects real stress on the heart, and it's actionable. Treat the cause, and in many cases at least part of the enlargement reverses, with more recovery the earlier treatment starts.

WHAT IT PREDICTS AND HOW IT'S TREATED ARE ON THE BACK

WHAT IT PREDICTS AND WHAT HELPS

Treat the cause early

DEATHS FROM ANY CAUSE OVER 15 YEARS, BY HEART SHAPE (MESA STUDY)



In the Multi-Ethnic Study of Atherosclerosis, published in 2022, eccentric hypertrophy carried the highest risk of death of any abnormal shape, 2.58 times that of a normal heart, against 1.84 times for concentric hypertrophy. In the Framingham Heart Study it carried the greatest risk of new heart failure, especially the type with a reduced ejection fraction (the share of blood pumped out with each beat).

TREATMENT

depends on the cause

A leaky valve	The central question is when to repair or replace it. The goal is to act before the chamber stretches past the point of recovery, so its size and the ejection fraction are watched closely. MitraClip and other catheter-based repairs have expanded the options for people who aren't ideal surgical candidates.
High blood pressure	Aggressive control can reverse the remodeling. ACE inhibitors, ARBs and mineralocorticoid receptor antagonists have specific evidence for reducing heart muscle mass. The usual target is a top number below 130, adjusted for age and other conditions.
Heart failure with a low ejection fraction	Four groups of medicine, an ARNI or ACE inhibitor or ARB, a beta-blocker, a mineralocorticoid receptor antagonist and an SGLT2 inhibitor, consistently reverse remodeling and improve survival. Starting them early and building to target doses does more than anything else.
Also helps	Weight loss, sleep apnea treatment, diabetes control and regular aerobic exercise all help. In obesity-related remodeling, sustained weight loss can measurably shrink the chamber.

SYMPTOMS AND FOLLOW-UP

early on, usually no symptoms

Report these	Shortness of breath with exertion, fatigue or palpitations, and later any sign of heart failure such as leg swelling or trouble breathing lying flat. New or worsening symptoms need prompt cardiology evaluation.
Call 911	For fainting, chest pain, or sudden, severe shortness of breath.
Repeat echo	Often every 6 to 12 months for a leaky valve that isn't causing symptoms, and yearly for blood-pressure-related remodeling while treatment is adjusted. In heart failure, symptoms and changes set the timing.
Endurance athletes	Distance runners and cyclists can develop a form that is usually harmless and regresses when training eases. History, imaging and sometimes a cardiac MRI tell it apart from disease.

QUESTIONS FOR YOUR VISIT

What is driving it in my case? Is there a valve problem to follow or treat? What is my ejection fraction, and has it changed? Am I on the best treatment for the cause? When should my echo be repeated?

READ THE FULL ARTICLE

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eccentric-hypertrophy

For education only, and not a substitute for advice from your own physician. Sources include the 2015 American Society of Echocardiography chamber guideline, the Multi-Ethnic Study of Atherosclerosis (2022), the Framingham Heart Study (2014) and reviews by Gaasch and Zile (2011) and the Cochrane Collaboration (2021).

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