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Sinus Arrhythmia

A normal rise and fall in your heart rate with each breath. The word sounds alarming, but this one is healthy.

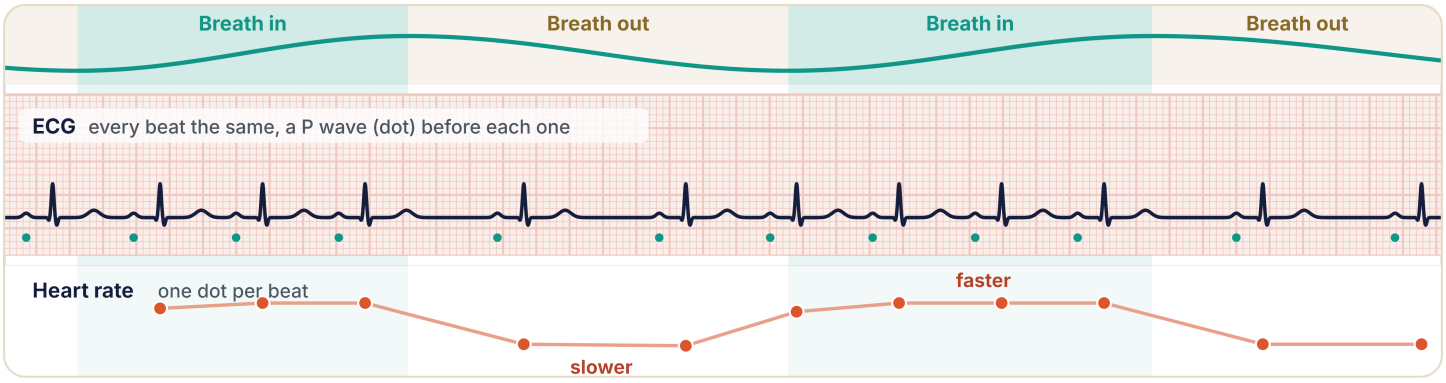
3 groups
children, young adults and trained athletes show it most clearly

None
no treatment and no further testing needed when you feel well

Every beat
still starts in the heart's normal pacemaker and looks normal

WHAT THE ECG SHOWS

Faster on the breath in, slower on the breath out



A drawing for teaching, not a real tracing

Your heartbeat starts in the **sinus node**, the heart's natural pacemaker. In sinus arrhythmia every beat still starts there and looks normal. Only the gap between beats changes. The **vagus nerve** acts like a brake on your heart. When you breathe in, the brake eases off and your heart rate rises. When you breathe out, the brake comes back on and the rate falls. It is automatic, and you usually cannot feel it.

WHO TENDS TO HAVE IT

Most obvious in young and fit hearts

Children
The textbook setting for a completely normal finding, exactly what we expect to see.

Young adults
Very common in young, fit people, and often a sign of a healthy, responsive heart.

Trained athletes
Endurance training strengthens the vagal brake, which makes the swing with each breath more obvious.

The swing softens with age and shrinks when you breathe faster, so it can look different from one recording to the next.

A heart doing its job

With this one, the word is scarier than the finding. A heart that quickens when you breathe in and slows when you breathe out is, more often than not, simply a heart doing its job well.

IF IT SHOWS UP ON YOUR REPORT

When to let it go, and when to look closer

IF YOU FEEL WELL

no rush and no danger

You can let it go	No medication, no follow-up testing, no restrictions. If it is the only thing flagged and you feel well, treat it as a normal result.
Mention it at your next visit	If you want the reassurance face to face, your cardiologist can confirm it in the context of your full history.
On a smartwatch	Many wearables and home ECG devices flag this beat-to-beat variation. If you feel well, it is almost always the harmless, breathing-linked kind. Save the recording and review it with your cardiologist if you want confirmation.

BRING IT UP SOONER IF IT COMES WITH

Fainting	Fainting means call 911, even with this finding on an old ECG. Near-fainting is always worth explaining rather than brushing off.
Lightheadedness	Dizziness or a foggy feeling tied to a slow pulse.
A slow pulse	A rate that runs slow and leaves you feeling unwell. A low rate in a fit person is usually fine.

IF YOU HAVE SYMPTOMS

the tests look at the symptoms

Rhythm tests	The goal is to make sure a slow rate or fainting has no separate cause hiding underneath. A standard ECG, a Holter or event monitor, and sometimes an exercise test to see how your rate behaves when active.
Other tests	An echocardiogram if there is any question about the heart's structure. An implantable loop recorder can catch what shorter recordings miss when symptoms are frequent and unexplained.

HOW IT DIFFERS FROM RHYTHMS PEOPLE WORRY ABOUT

Sinus arrhythmia	Every beat starts in the normal pacemaker and looks normal. Only the spacing changes, breathing along with you.
Atrial fibrillation	The upper chambers fire chaotically, and the beats become truly irregular, disorganized and often fast. That is a rhythm we treat.
Premature beats and SVT	Premature beats come from a different spot in the heart and feel like skipped beats. SVT is a sudden racing rhythm that switches on and off.

A QUIET SIGN OF RESILIENCE

In people recovering from a heart attack, those who still show a clear, breathing-linked rhythm tend to do better over time than those whose rhythm has gone flat. It is a good general signal of cardiac health. It is also an imperfect measure, so there is no need to track it like a lab value.

READ THE FULL ARTICLE

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sinus-arrhythmia

For education only, and not a substitute for advice from your own physician. Sources include Yasuma and Hayano (Chest 2004), Sinnecker et al. (JACC 2016), Kollai and Mizsei (Journal of Physiology 1990), Bernardi et al. (Journal of Applied Physiology 1989) and ACC/AHA/HRS data standards (2006).

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