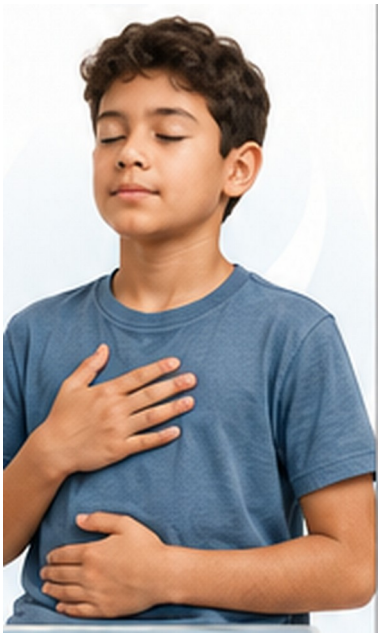
Your Breath & Your Nervous System

How breathing works - and how you can use it to help your body settle

Every breath does two jobs: it keeps your cells supplied with oxygen, and it continuously exchanges information with systems that regulate alertness, heart rhythm, blood pressure, and stress.



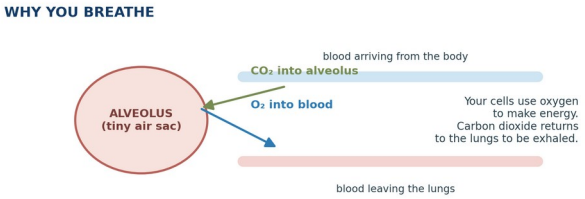
WHY YOUR BODY BREATHES

Oxygen in. Carbon dioxide out.

Air reaches millions of tiny air sacs called alveoli. Oxygen crosses from the alveoli into the blood, while carbon dioxide moves from the blood into the alveoli so you can breathe it out.

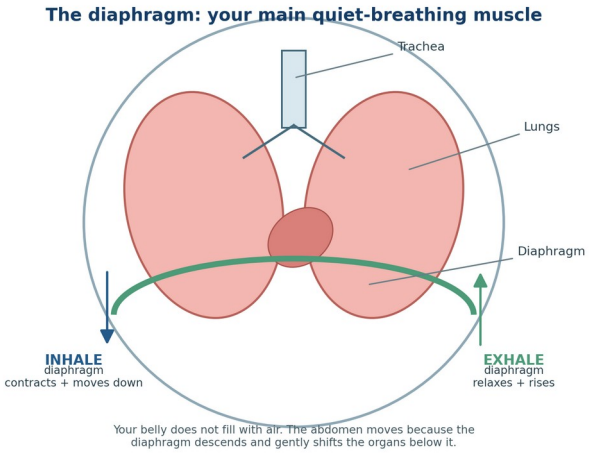
Carbon dioxide matters, too.

CO_2 is produced when cells make energy. Your brain continuously monitors CO_2, oxygen, and blood chemistry to help adjust how fast and how deeply you breathe.



MEET YOUR DIAPHRAGM

The diaphragm is a dome-shaped skeletal muscle under your lungs. It separates your chest from your abdomen and does most of the work during quiet, relaxed breathing.



When you breathe in:

the diaphragm contracts and moves downward, creating more room in the chest so the lungs can expand.

When you breathe out:

the diaphragm relaxes and rises as the lungs and chest wall recoil.

BREATHING KEEPS YOU ALIVE - AND THE WAY YOU BREATHE CAN ALSO CHANGE HOW YOUR BODY FEELS.

Your Body's Alarm + Recovery Systems

Your autonomic nervous system helps regulate many body functions without you having to think about them - including heart rate, blood-vessel tone, digestion, sweating, and part of breathing.

SYMPATHETIC - MOBILIZE

When your brain detects a challenge or threat, this system helps prepare you for action.

- heart rate may increase
- breathing may become faster
- muscles may tighten
- attention may narrow toward what feels important

PARASYMPATHETIC - RECOVER

This system supports restoration, digestion, energy conservation, and recovery when intense action is not needed.

- heart rate can settle
- muscle guarding can ease
- attention can broaden
- the body can shift toward recovery

WHY BREATHING CAN BE A "GATEWAY"

Breathing lives in two worlds.

Your brainstem automatically keeps you breathing - even while you sleep. But you can also deliberately change your breathing for a short time. That makes breathing one of the unusual body functions that is both automatic and voluntary.

A useful metaphor:

Your breath is like a remote control with only a few buttons. It cannot control everything you feel, but it can turn the volume of the body's alarm system up or down.

STRESS / THREAT	**breathing often becomes faster, shallower, or more upper-chest**	**heart + muscles + attention may stay more activated**
SLOWER + COMFORTABLE	**breathing, heart rhythm, and blood-pressure reflexes interact**	**physiological arousal can gradually decrease**

SCIENCE NOTE

Slow, comfortable breathing changes cardiorespiratory timing and can strengthen respiratory sinus arrhythmia and baroreflex-related regulation. In plain language: breathing, heart rhythm, blood pressure, and brainstem regulation are linked.

Breathing does not make problems disappear.

It can help lower the volume on your body's alarm system so you have more room to choose what to do next.

The Skill: Diaphragmatic Breathing

Diaphragmatic breathing means letting the diaphragm do most of the work during quiet, relaxed breathing. The goal is not the biggest breath possible - it is a slow, soft, comfortable breath.

1 READY



Find a comfortable position. One hand on your upper chest; the other on your lower ribs / upper belly.

2 BREATHE IN



Breathe in gently through your nose. Let the lower ribs and belly expand a little.

3 BREATHE OUT



Breathe out slowly and comfortably. Let the belly and lower ribs soften back in.

TRY IT YOURSELF

1. **Get comfortable.** Sit supported in a chair or lie down.
2. **Place your hands.** One on your upper chest; one on your lower ribs / upper belly.
3. **Release extra tension.** Let your shoulders, jaw, and hands soften.
4. **Breathe in gently.** Use your nose if comfortable. Notice the lower hand move outward slightly.
5. **Keep the upper chest relatively quiet.** It can move a little - it does not have to be perfectly still.
6. **Breathe out slowly and comfortably.** Feel the lower ribs and belly soften inward.
7. **Keep it small.** Think slow, quiet, comfortable - not "take the biggest breath possible."

WHICH HAND MOVES MORE?

Take 3 normal breaths and simply notice.

Then try 3 slower, softer breaths.

See whether the lower hand can move a little more while the upper hand stays fairly quiet.

No test. No perfect score.

You are teaching your brain to notice and gently guide a body skill.

THE GOAL IS REGULATION, NOT PERFECT RELAXATION. If your body goes from an 8/10 to a 6/10, the skill helped.

Build the Skill

Breathing patterns are habits. Short, regular practice makes the skill easier to access when your body is stressed, frustrated, excited, or overwhelmed.

PRACTICE PLAN

Start with 1-3 minutes when you are already fairly calm. Once or twice a day is plenty while learning.

- Use normal-sized breaths - do not gulp air.
- Practice seated or lying down at first.
- Later, try it at a desk, before bed, in the car before an appointment, or before a stressful conversation.

WHAT IMPROVEMENT CAN LOOK LIKE

- breathing feels easier or less rushed
- shoulders or jaw soften
- less urge to react immediately
- attention feels a little wider
- you recover faster after stress
- you remember to use the skill sooner

Small changes count.

COMMON MISTAKES

- × Taking unnecessarily huge breaths
- × Forcing the belly outward
- × Lifting or tightening the shoulders
- × Breathing so fast that you feel light-headed
- × Judging yourself when your mind wanders
- × Waiting until you are at a 10/10 before ever practicing

WHEN CAN IT HELP?

- during worry or stress
- before a test, game, meeting, or procedure
- when pain or muscle guarding is increasing
- when you feel restless, overstimulated, or “revved up”
- before sleep
- anytime you want a brief pause before choosing what to do next

SAFETY

Gentle diaphragmatic breathing is safe for most people. Stop and return to normal breathing if you become dizzy, light-headed, significantly short of breath, or develop chest discomfort. If you have a significant heart, lung, or neurological condition, follow your clinician's guidance about breathing exercises.

NEXT: LET'S PRACTICE TOGETHER

Next we will use a short guided diaphragmatic-breathing script designed to work for pre-teens and adults.

EVIDENCE BASE / LEARN MORE

- National Heart, Lung, and Blood Institute (NIH). How the Lungs Work: What Breathing Does for the Body. Updated June 27, 2025.
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