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**Better Diaphragm = Better Breathing = Better Riding**

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**These Diaphragm Exercises Not Only Help You Breathe Better, But Ride Stronger Too**

YOU CAN HAVE STRONG GLUTES AND KILLER QUADS. BUT IF YOUR DIAPHRAGM IS WEAK OR UNDERUTILIZED, YOU MAY NEVER REACH YOUR FULL ATHLETIC POTENTIAL.

By Jenessa Connor / Published Oct, 10 2023 /Bicycling.com

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**Introduction**

[Breathing](#) is always critical, whether you're riding long or lounging on the couch. Your body's cells need oxygen to function, and you need to release carbon dioxide, a waste gas, through exhalation. When you ride (or participate in any other type of heart-pumping activity), your body's demand for oxygen increases, as does carbon dioxide production. In turn, you breathe more rapidly.

The question is, though: Are you breathing efficiently? The answer to that depends on whether or not you're fully using your diaphragm, a key breathing muscle. Like any muscle of the body, you need to work your diaphragm so it functions well.

With that said, this guide to the body's most important breathing muscle offers diaphragm exercises to help with that efficiency, including [how to breathe](#) deeply.



Trevor Raab

## All About Diaphragmatic Breathing

One of the best diaphragm exercises is pretty straightforward: diaphragmatic breathing, which means you're focusing on engaging your diaphragm during respiration.

When explaining proper breathing mechanics, [Belisa Vranich](#), Psy.D., clinical psychologist, fitness expert, and author of [Breathing for Warriors](#), starts by differentiating between primary and auxiliary breathing muscles.

Located below the lungs, the diaphragm, a primary breathing muscle, is designed to power your respiration. "The diaphragm is a skirt steak the size of a frisbee that is in the very middle of your body. When it flattens [during inhalation], it actually expands your entire middle," Vranich says.

The external intercostals, which are also considered primary breathing muscles, help expand the chest and make room for the lungs by pushing the ribs open. When you're breathing diaphragmatically (Vranich also refers to it as "horizontal" breathing), your diaphragm and external intercostals engage.

Based on Vranich's experience, most of us are breathing "vertically," not horizontally. "They're breathing using auxiliary muscles," she says, referring to muscles in the chest, [shoulders](#), and neck that are designed to assist the primary respiratory muscles, not replace them. As a result, you get shallower breaths that, if you think about oxygen as a finite resource, are more "costly."

When riding, you want the oxygen you inhale to go to your exercising muscles, like the [glutes](#), [quads](#), [hamstrings](#), and [calves](#). But the muscles used to simply breathe during exercise require oxygen too, explains [Fabio Comana, M.A., M.S.](#), faculty instructor of exercise physiology within the School of Exercise and Nutritional Sciences at San Diego State University.

“If you breathe diaphragmatically, just using the diaphragm and the external intercostals, your cost of breath is minimal,” he says. But if you recruit more of the secondary breathing muscles, as you would with thoracic breathing (or chest breathing), [research](#) shows that the price changes.

“Now, there are a lot more muscles involved. The cost of breathing goes up. That means you have less oxygen available to your [exercising] muscles,” Comana says. “Diaphragmatic breathing is a more efficient way to breathe.”

You can survive on shallow, inefficient breathing, but you may not reach your athletic potential. Your performance could plateau, rides may feel more laborious, and even your [balance](#) may not be up to par.

In fact, in one preliminary [study](#), participants who completed eight weeks of breathing exercises and improved their diaphragmatic breathing also performed better on [balance tests](#) than they did at the beginning of the study. Researchers surmised that breathing exercises strengthened participants’ diaphragms and [deep core musculature](#), and the boost in [strength](#) and bodily awareness contributed to better balance.

## How to Know If You’re Breathing Diaphragmatically

How your [upper body](#) moves as you inhale and exhale is the first indication of whether or not you’re properly engaging your diaphragm. “If you say to someone, ‘take a deep breath,’ and you see the top of their chest and their shoulders move, [their breath is] auxiliary-muscle driven. They’re probably not breathing diaphragmatically,” Vranich says, noting that some people are “hybrids” in that they expand around the middle, *and* their chest and shoulders move.

To feel the difference yourself, Comana suggests putting one hand on your sternum (or breastbone) and one hand on your belly. When you’re breathing diaphragmatically, the hand on your belly, not your chest, will move as your midsection expands.

Vranich also recommends that people grab a tape measure and jot down the circumference of their midsection (just below the rib cage) on an inhale and an exhale. The difference between the two numbers indicates your range of motion. “You’re striving for ten percent of your exhale,” Vranich says. “Say your exhale is 38 inches. You want a little bit less than four inches between your inhale and your exhale.”

Coming up short? Correcting your breathing starts with awareness. Focus on keeping your shoulders still and widening your middle (you're striving for circumferential expansion—not just a “belly breath,” but moving your ribs and to some extent, your back too) as you inhale.

If you feel constricted, consider your [posture](#). Comana explains that hunching over can prevent the rib cage from opening up. “If you can get a nice, normally extended [thoracic spine](#), that’s where you start. That’s going to give you the ability to expand your rib cage [as you inhale],” he says.

If you’re still feeling tight or restricted, stretching the [obliques](#) and intercostals may help, Vranich says. She recommends the following exercise:

1. Start sitting in a cross-legged position.
2. Place left palm on ground and lift right arm overhead, palm facing forward.
3. Bend right elbow and rest right forearm on top of head so that bicep is against ear.
4. Take a deep breath, engaging diaphragm, and lean left, stretching right side of rib cage. Think about expanding the space between the ribs as you breathe in.
5. Exhale and return to neutral position.
6. Repeat 2-3 times per side.

## Diaphragm Exercises and Other Moves to Work Your Breathing Muscles

Both Vranich and Comana stress that engaging the diaphragm is not enough—you have to strengthen it, just like any other muscle, if you want it to work efficiently. “If you’re not working them out separate from your sport, you’re not working them out,” Vranich says.

Below, you’ll find step-by-step instructions for bellows breath and crocodile breath, two exercises that target the diaphragm. During bellows breath, you also work the muscles used during exhalation—the [abdominals](#) and the internal intercostals—by forcefully contracting your midsection as you breathe out. During exhale pulsations and extended exhale, the sole focus is on these exhale muscles, not the diaphragm itself.

### 1. Bellows Breath

Done from a seated position, the bellows breath exercise mimics the kind of hard breathing you do when you’re pushing your limits. As you breathe, your body moves as if you’re in a seated cat-cow stretch. During cow position, pop your belly out on the inhale, and then move into cat position, squeezing your belly inward, on the exhale. “Your breath is loud and hard, but it’s on the lower part of your body. Your chest is not moving,” Vranich says.

1. Start from a seated position.
2. Take a big, hard inhale through mouth, allowing belly to puff out and hips to rock forward.
3. Immediately exhale forcefully, squeezing belly inward, and rock hips back.

4. Continue to forcefully inhale and exhale, mimicking a bellows, for 15 seconds.
5. Do two sets, resting for 15 seconds in between sets.
6. Gradually work your way up to 45-second sets.

## 2. Crocodile Breath

Crocodile breath is one of Comana's go-to exercises for strengthening the breathing muscles. "It's like [resistance training](#) for the diaphragm," he says, except you're using the floor instead of weights.

1. Lie facedown on the floor with arms in a T shape, legs extended, and toes pointed away from you. (You may want to place a rolled-up towel under forehead for comfort.)
2. Breathe in for two seconds through nose, pushing belly into the floor.
3. Exhale through mouth for four seconds, drawing the belly away from the floor.
4. Repeat for 1-3 minutes.

## 3. Extended Exhale

You may want to use a stopwatch for this one, as the idea is to gradually increase the length of your exhale over time. Start with 10 seconds and add 5 additional seconds every day until you can hold a steady exhale for 60 seconds.

1. Start from a seated position.
2. Using diaphragm, take a deep breath.
3. Slowly release breath through mouth in a steady stream for as long as you can (at least 10 seconds).
4. Record time. During next session, try to add 5 seconds.

## 4. Exhale Pulsations

Exhale pulsations are quick, consecutive exhalations. Your inhale is passive, but your belly should pull inward as you breathe out through your mouth. "Each time you blow as if you're blowing out a candle. I want you to squeeze your belly so it goes concave," Vranich says.

The goal is to do as many as you can, increasing over time. Vranich finds that the average person can do about 50, while most athletes can do 120.

1. Start in a seated position.
2. Without moving back, exhale sharply as you draw belly inward.
3. Immediately repeat. Focus only on exhale; inhale is passive.
4. Continue for as many reps as possible.

See you next week.

Until then, make every ride epic.

Darryl