ERIC MICHAEL *is a former editor-in-chief of both* Scuba Diving *and* Sport Diver *magazines, a veteran ScubaLab test-team diver, and author of Dive Hacks since 2015.*

BREATHE EASY

Take some tips from freedivers to make your tank last longer

BY ERIC MICHAEL

As a human, breathing is the most natural thing you'll ever do. But as a diver, you might be doing it wrong.

Every dive we make is limited by the gas supply strapped to our backs. We try — sometimes in vain — to make it last as long as possible, but swift currents, frigid temperatures and other challenges can compel us to guzzle air more quickly than we'd like. While these things are typically out of our control, divers can learn to maximize their breathing to make consumption more efficient and stretch that precious psi as far as it can go. It's a process that our breath-holding cousins, the freedivers, have known for a long time and they're happy to share.

"It wasn't that long ago that scuba training started with basic freediving or skin-diving training, and there was a good reason for that," says Freediving Instructors International founder Martin Stepanek, a 13-time world-record holder. "Freediving techniques build more-proficient breathing habits and a stronger ability to listen to our bodies, which can result in decreased gas consumption and more-enjoyable scuba dives."

"Learning to freedive teaches you to focus more on your breathing than you would normally," says scuba and freediving instructor Liz Parkinson, underwater film and production manager at Stuart Cove's Dive Bahamas. "Because of our training, freedivers tend to breathe a lot more efficiently on scuba and generally make a tank last longer."

"One of the main things freedivers develop through training is the ability to temper their response to the body saying that there's carbon dioxide building up in your lungs and you need to breathe," says Byron Kay, a freediving instructor and owner of Kona Honu Divers on the Big Island of Hawaii.

"Actually, you likely still have oxygen left, so what's important is to recognize that it's just a sensation and it will go away. Freediving breathing techniques help stall that feeling and also increase the amount of oxygen in your bloodstream," Kay says.

Consider these experts' advice for making the most of your gas supply through better breathing.

UNDERSTAND YOUR MAMMAL MACHINE

Through man's evolutionary journey, we developed a few tricks to survive submersion. And if we learn to leverage our limitations, we can give ourselves an advantage.

"The human body definitely goes through changes while in the water," Parkinson says. "And the deeper you go, the more pressure there is, so the greater the changes."

"The most intriguing reaction our bodies have to submersion is the mammalian diving reflex, which is a set

of physiological responses that affects our bodily functions in an attempt to prevent drowning," Stepanek says. "These responses are then fortified when we submerge to greater depths."

"There are receptors in your body, mostly in your face, that essentially tell your body to do things when you're underwater, such as slow down your heart rate and move blood from your extremities to the core of your body to preserve oxygen in the brain and vital organs," Kay says. "Freediving courses teach us how to utilize those responses so we can work with them to achieve better results, instead of fighting our reflexes and panicking."

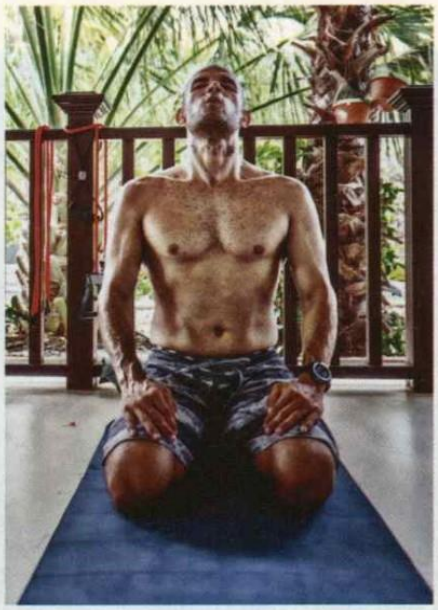
BREATHE IN A NEW WAY

The goal is to breathe as much oxygen into our blood as possible. And there's a simple tweak to your process that can make a big difference in your results.

"The technique that can deliver the biggest improvement in gas consumption in the shortest amount of time is diaphragmatic breathing," Stepanek says. "Using the diaphragm to draw air into the most efficient part of our lungs means we don't need to inhale such a large volume of air to transfer the same amount of oxygen. This type of breathing also helps to slow the heart rate, which helps with relaxation."

Boiled down, the technique involves using the diaphragm — that dome-shaped sheet of muscle separating the heart and lungs from the abdomen — to draw air into and force air out of the lungs, rather than using chest muscles.

"Most of the gas exchange happens in the lower third of your lungs, so you really want to suck the air down toward the bottom of your lungs, and using your diaphragm is the key," Kay says. "When you breathe with your diaphragm, you'll see your stomach expanding, which looks funny but is very effective.



"The technique that can deliver the biggest improvement in gas consumption in the shortest amount of time is diaphragmatic breathing."

"When you learn to control the muscle, you can breathe less frequently because you're getting more-efficient gas exchange."

"Purging your body of as much waste gas, or 'dead air,' as you can is crucial to the process," Parkinson says.

WORK IT OUT

Training your body to breathe more efficiently requires building new muscle memory — and that can be achieved only through practice.

Performance-minded freedivers train their bodies to maximize breathing efficiency with a variety of exercises that can also bring big benefits to scuba divers as well.

"One of the main breathing exercises that I recommend to scuba divers is also one of the fundamental exercises for learning how to efficiently use the diaphragm and get it in better shape," Stepanek says.

"Segmented breathing is an exercise where the diver creates airflow resistance with the tongue and then breathes against this resistance either by diaphragm, intercostal or accessory muscles," he says.

Common to some types of yoga, segmented breathing also divides the process of inhaling and exhaling into small, equal segments, rather than breathing in a continuous motion.

Maintaining a high level of fitness will also improve a diver's breathing performance and contribute to greater efficiency underwater.

"It is always important to be in the best physical shape you can, and having a healthy diet and consistent workout routine all help in your body's ability to perform," Parkinson says.

"The fitter you are, the better your breathing will be. Cardiovascular activities such as running, cycling and swimming strengthen the heart, and also make you a more efficient breather," she explains.

"And stretching while holding your breath will help train your lungs to hold more air, thus making your breathing stronger."

HOW TO BREATHE WITH YOUR DIAPHRAGM

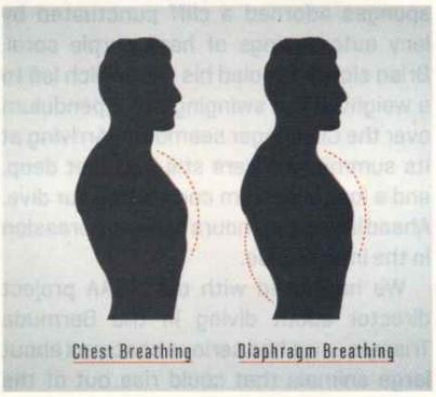
Diaphragmatic breathing is an efficient way to transfer oxygen from your lungs to your blood. Follow these simple steps to maximize your efforts.

1. Lying on your back with your knees bent, put one hand on your chest and one hand on your belly below your rib cage so you can feel your diaphragm engage when you inhale and exhale.

2. Draw in a slow breath through your nose, concentrating your effort through the diaphragm. You'll feel your stomach push against your hand, while your chest remains mostly motionless.

3. To exhale, tense your stomach muscles and draw them toward your spine to push air from your lungs. Your chest should move as little as possible.

Practice the technique lying down until you become proficient enough to move to a seated position and, eventually, standing — then swimming.



LORENZO MITTIGA (2); ILLUSTRATION: KYRYLOFF/SHUTTERSTOCK.COM