

# MIND / BODY

## INS AND OUTS OF BREATHING

### Coordinating movement, breath manages stress on biochemical level, expert says

**BY DONNA OLMSTEAD** For the Journal

Breathing is an innate process — like circulation or digestion — that’s easy to take for granted unless something goes wrong. It’s so automatic that humans breathe even when they’re unconscious.

But most athletes and trainers know — and stressed-out individuals are learning — that taking control of the breath improves physical performance in ways from increasing stamina to improving sleep.

“Breath is fundamental to life. We can’t survive five minutes without it,” says Dr. Brian Shelley, a physician who heads education for the University of New Mexico Health Sciences Center’s integrative medicine section. “We can do it consciously or unconsciously. It is our interface with the world.”

Aline Alexander, co-owner of Momentum Studio on Menaul Boulevard NE, says she incorporates breathing exercises to help all of her clients, from those training to run a marathon to those who want to improve their backhand. According to [breathing.com](http://breathing.com), even professional football teams hire breathing coaches to improve players’ performances.

“Any good movement style — dancing, swimming, yoga and the martial arts — practices some kind of breath control,” Alexander says.

In general, resistance training calls for exhalation on the exertion part of the exercise.

Pilates encourages breathing in through the nose and out through the mouth, coordinated with exercise movements, Alexander says.

A long inhalation through the nose and exhale through the mouth is intended to lengthen the spine and flush the body of toxins. “Joseph (Pilates, creator of the exercise system) said the breath was like an internal shower,” Alexander says.

She says Pilates favored exhaling through the mouth, instead of the nose, as is taught in yoga, because he believed it was more effective in emptying the lungs.

#### **Take a breath**

Breathing techniques, both stimulating and relaxing, are even more important for people with physical limitations, says Alexander, who has taught movement for more than 20 years.

A stimulating breath “brings a vibrational quality to the breath. With rhythm and tempo we are stimulating the diaphragm and abdominals and building the strength we need in our lungs to be able to go for a run.”

Alexander says toning breath is more crucial for people who can’t participate in vigorous activity

because without the physical exertion that requires the body to breathe more deeply, people tend to breath shallowly in the upper lungs.

Deeper breathing fosters more oxygen uptake in the blood, improving circulation, digestion and metabolism, and energizing the lymph system and most other bodily process, she says.

According to wikipedia.org, special centers in the brainstem automatically regulate the rate and depth of breathing to supply the body's needs at any particular time. When carbon dioxide levels increase, the blood's pH level drops and causes the brain to signal nerve impulses to the diaphragm and intercostal muscles to increase the rate of breathing. Breathing starts the process of delivering oxygen to the body. Inhalation brings gases that are exchanged in the lungs' alveoli and capillaries. Once in the blood the heart pumps and circulates the flow of those dissolved gases. While exercising, the level of carbon dioxide in the blood increases as a result of cellular respiration because the muscles are working to metabolize fuel, so the brain signals the body to increase respiration. A healthy blood pH level is about 7.3, or slightly alkaline.

Bryan Alexander, co-owner of Momentum who holds a doctorate in biomedical sciences from UNM, says the reason the breath work of mind-body exercises is so important is because it interprets the body's fight-orflight response that gets agitated quite often in today's daily routines.

"My fascination lies with its relationship to the autonomic nervous system and its ability to mediate the struggle between the highly inflammatory fight and flight state and the more relaxed rest and digest state," Alexander says. "This relationship is why the mindbody disciplines like yoga, Pilates and Gyrotonic have such great health benefits, far beyond just increased flexibility and brute strength. In a nutshell, this equates to stress management on a biochemical level, whether people know it or not."

He explains that when the body perceives a lifethreatening event — whether from a mountain lion or an aggressive driver — it shuts down most processes and dumps adrenalin and other stress hormones into the bloodstream. That may be great for running or fighting, but not so great for getting through the next board of directors meeting or driving home from work.

Beyond that, the shallow breathing many people routinely do can bring on panic and more of the body's stress response, he says. Most clients arrive a little distressed and frazzled, he says, but five minutes of breathing exercises change their dispositions. "Five minutes of breath or meditation at the end of the day can change your body's physiology," he says.

## **In sync**

Intentional breathing coupled with stretching the muscles is what the ancient discipline of yoga has been teaching for centuries.

"By far the most important thing about good breathing is the prana, or subtle energy of the vital breath. Control of the prana leads to control of the mind. Breathing exercises are called pranayamas, which means to control the prana," writes Swami Vishnu-devananda in his book, "The Complete Illustrated Book of Yoga."

A full yogic breath is best learned lying on the back and breathing out and in slowly, the book explains. The abdomen should expand outward as you inhale and contract as you exhale through the nose.

There are other pranayama breathing techniques but yoga teacher Anil Poovadan, who studied with yoga master Iyengar in India and teaches at his studio, Atmabodh, in Bernalillo and at Wellspring Yoga on San Mateo NE, says, "I don't teach pranayama because most people don't do basic breath right."

Of the eight limbs of yoga, pranayama, or breathing practice, is the fourth limb of advancement, after the physical postures.

Part of the problem is that many people aren't present in their bodies because they have experienced childhood trauma, Poovadan says. "Many people have no idea what their breath is doing because they are trying to do yoga mentally. To understand how breath works we must stop and be in our bodies."

“Breath is like a laser,” he explains. “I see a lot of people doing harm to themselves because they are hammering themselves with their breath.” He plans to conduct a basic yoga breathing class sometime after the beginning of the year.

Shelley says not enough research has been done about pranayama or Pilates-style breath or about any one particular breathing technique to weigh which is best.

“What is tricky is when we try to get too specific,” he says. “We haven’t studied them side-by-side enough to know if a particular technique has more health benefits than another.”

Shelley teaches an eightweek course, Mindfulness-Based Stress Reduction. “What we teach is not to get too hung up on the technique. We take a permissive view. Be attentive to the breath,” he says.

Breath is an important aspect of the practice of mindfulness, which studies have shown to be at least as helpful as cognitive behavior therapy for mood disorders. In mindfulness practice, students focus on the breath while observing thoughts and emotions without engaging emotionally.

“Breath is the quickest door to mindfulness that we know of,” Shelley says. “Breathing is in the moment. Breath is an anchor,” he says, explaining that it’s hard to be thinking about the past or worrying about the future when an individual turns attention to the in and out of breathing.



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