



Waiting To Exhale

It's a skill we're born knowing, and put into practice every day without even thinking about it. But what if there were more to breathing than simply letting the body do what comes naturally?

WORDS BY MICHELLE MEEHAN

Inhale ... exhale. Breathe oxygen in, flush carbon dioxide out. It's an automatic response that kicks in as soon as we're born – and, at its most basic level, it's a pretty simple process. In fact, without even thinking about it, most adults take between 17,000 and 28,000 breaths per day.

But what if there were more to it than just what comes naturally? What if by simply regulating our breathing, we could boost our overall health?

Eastern cultures have long understood the importance of breath control, with practices such as yoga and Pranayama dating back thousands of years. 'Pranayama' comes from the Sanskrit words 'prana', meaning life force, and 'ayama', meaning extension, and it is most commonly translated as 'breath control'. It focuses on learning to regulate the process of breathing in order to produce a self-sustaining,

effortless and rhythmic pattern, which in turn allows the participant to stop thinking about their breathing.

Pranayama is an essential part of yoga practice – and ever since yoga was introduced to the Western world in the late 1800s, breathing techniques have become a real subject of interest among increasing numbers of people. It's even been suggested that they can benefit everything from your physical health to your mental wellbeing.

A 2017 study by the University of Melbourne and Macquarie University in Sydney uncovered information that may one day allow breathing exercises to be used to help prevent high blood pressure. Lead researcher Professor Andrew Allen, from the University of Melbourne's Department of Physiology, says the research expands on the long-understood link between breathing, heart rate and blood pressure.

HIGH-TECH HELP

A 2015 Federal Government report revealed that almost one in seven four to 17-year-olds had suffered from a mental disorder within a 12-month period, with anxiety and depression among the most common issues. Fortunately, there's been a massive growth in the development of wellness apps, with a myriad of breathing training programs ready to download to their smartphone or device.

ReachOut launched the world's first online mental health service nearly 20 years ago, and in 2015 the organisation released its ReachOut Breath app, designed to help users reduce the physical symptoms of stress and anxiety by slowing down their breathing and heart rate.

"Any time that we record blood pressure, or the sympathetic activity [flight or fight response] that regulates blood pressure or heart rate, it's clear and obvious that there's a breathing-related modulation of that," he says.

"You can do it for yourself. You can measure your own heart rate and as you breathe, your heart rate goes up and down. Biathletes regulate their breathing to slow down their heart rate before rifle shooting, and eastern meditative practices such as yoga and pranayama have always emphasised the interaction between the two."

The results of the three-year study, which was published in the scientific journal *Cell Metabolism*, revealed unusual activity between neurons controlling breathing and blood pressure during the development of hypertension (high blood pressure with no known cause). These neurons represent a target for the development of various therapies to stop the onset of high blood pressure – which is a major contributor to heart disease.

"The nerve cells that regulate or generate breathing activity are located close to the nerve cells in the brain that regulate blood pressure. And the two talk to each other – the two groups of neurons interact," Professor Allen says.

"So you can record the activity of the neurons that are controlling blood pressure and you can see the input that comes from the breathing circuits.

"One conclusion that we came to was that altered breathing patterns, altered activity during adolescence could be a way of stopping people from developing hypertension and keeping them off drugs for life, hopefully. But we are still exploring that idea, both from a breathing behaviour side and also a drug intervention side, to see if early treatment might be able to also do the same thing."

Professor Allen says previous studies have shown that decreased breathing rates can actually decrease blood pressure, though only while the breathing remains slow and controlled.

Breathing retraining has also shown promising results as a means of treating respiratory conditions such as asthma – with Russian Professor Konstantin Pavlovich Buteyko first pioneering its use as a therapy for patients in the 1950s and '60s.

Nurse and breath-retraining expert Mary Birch has been teaching the Buteyko Method ever since 1999, helping people who are over-breathing (hyperventilating) learn to normalise their breathing patterns.

"I became interested in the '90s because a family member had asthma, and I wanted to find out more about it," she says. "At the time I was a bit sceptical, coming from a nursing and academic background – but the first clinical trial of the Buteyko Method was published in 1998 and I was very impressed with the results.

"It's not just for asthma, but for other conditions as well. People over-breathe, either breathing too rapidly or too deeply, or a combination of both, and they might not be aware that are over-breathing, but it causes symptoms in people who are susceptible – who have the tendency towards asthma, or in people who get anxiety and panic."

Birch says that over-breathing is a learned response that can develop over time, and it can have a major impact on health and wellbeing. "Breathing deepens as a result of stress due to the fight or flight response. But when we breathe correctly, breathing should be effortless," she says. "When people have long periods of stress, that pattern of breathing can become automatic and they continue to over-breathe even after the stress period has finished. In other words, they develop a habit of over-breathing, and that continues for months, or even years."

HOW SHOULD WE BREATHE?

"We should be gently breathing through the nose, not through the mouth. It should be comfortable, as well as effortless. We should be able to exercise without getting too tight, or feeling short of breath, and it should be inaudible, you shouldn't be able to hear yourself breathe," Birch says.

"We also look at posture, because posture has a big impact on breathing. If our posture isn't good it means we're not engaging the diaphragm properly."

Many pundits advocate breathing deeply to stimulate the parasympathetic nervous system, which helps to slow the heart rate and put the body in a 'rest' state, in effect creating a sense of calm.

But Birch believes this technique can actually have the opposite effect, especially for someone who is already in a heightened state of stress. "A lot of people have this idea that if they breathe deeply it will help to reduce their stress levels, when actually, the reverse happens. If someone is already deep breathing or over-breathing, and they breathe even more heavily, then it's going to make it worse," she says.

RMIT University lecturer Simon Borg-Olivier is an expert in breath work, with science degrees in human

biology and physiotherapy and a masters in molecular biology. He co-founded Yoga Synergy in Sydney and has been teaching yoga around the world for more than 33 years.

He says that "the most common issue is that people think they have to breathe [in a certain way] ... and that slow deep breathing is breathing into the chest for three or four seconds".

He adds that, "Generally most people's intent to slow deep breathe actually causes them to do stressful chest breathing, which inhibits the diaphragm and causes stress on the internal organs, and reduces blood flow to the brain. The best thing to do is to just retrain yourself in how to breathe naturally. Natural breathing is inhaling long into your abdomen and lower back, and then exhaling passively – not over-breathing."

"Natural breathing is inhaling long and then exhaling passively."

SIMON BORG-OLIVIER

Borg-Olivier says learning more about the way our bodies work, and incorporating gentle exercises into your routine, are crucial elements in improving your breathing. "We need to really train people on basic cellular physiology. Carbon dioxide is not our enemy. We need to build up carbon dioxide inside ourselves to actually allow oxygen to enter our cells; the more you breathe the less carbon dioxide you have, and it causes all sorts of problems," he says.

"On top of that we've got to make the blood circulate, so exercise is very important. Breathing naturally while you exercise is the key, and the exercise must not be stressful exercise. It must be sustainable, meditative exercise.

"The best way to learn to breathe better is to relax and move your spine, move your shoulders, move your hips – that will help, for most people, much better than any breathing exercise."

Of course, breathing exercises do play a role in both Simon's yoga classes and university lecture content, as well as in the work of clinical psychologist Catherine Madigan – who specialises in the treatment of social anxiety.

She incorporates a range of relaxation techniques into her Overcoming Shyness and Social

Anxiety cognitive therapy programme, and says that slow, or controlled, breathing is a very useful technique to help relieve feelings of anxiety and the associated tendency towards hyperventilation.

RELIEVING ANXIETY


"Many anxiety sufferers breathe too fast and too shallow," Madigan says. "When confronted with a feared scenario they breathe rapidly, which leads to increased shortness of breath and further hyperventilation. Common symptoms are light-headedness, a lump in the throat, dizziness, fatigue, poor concentration, a choking sensation and difficulty swallowing.

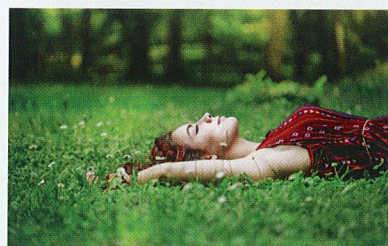
"I may get someone with anxiety to do slow breathing in order to show them that the symptoms they may be misinterpreting as signs of physical illness, are in fact anxiety symptoms."

Anxiety is the most common mental health condition in Australia. According to BeyondBlue, on average, one in four people – one in five men and one in three women – will at some stage in their life experience anxiety.

Madigan says learning to control your breathing is a helpful skill that people can use to relax when they're confronted by difficult situations.

"Slow breathing may be helpful before a job interview, and if you have a fear of flying, you may do some slow breathing while waiting to board the plane," she says. "I suggest people with insomnia do slow breathing before bed, as it is a relaxation technique.

"I also suggest people do slow breathing for stress management. For example, if you have exam anxiety, do some slow breathing while waiting to enter the examination room. Slow breathing can help to relieve anxiety and prevent someone from having a panic attack if they do it as soon as they notice themselves over-breathing or becoming anxious." 



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SIMPLE BREATHING EXERCISE

Clinical psychologist Catherine Madigan believes most people can benefit from learning how to control their breathing. Once mastered, you can apply this skill in common stressful situations such as public speaking, unfamiliar social/work situations, or when going into an interview or an exam. If you are not used to slow breathing it is easiest to practise lying flat on your back, knees bent, feet flat on the floor and eight inches apart. Place one hand on your chest and one hand on your abdomen.

1 Hold your breath and count to 10. Then breathe out and think 'relax' to yourself.

2 Then inhale slowly through your nose for three seconds. The hand on your abdomen should rise while the hand on your chest should stay relatively still.

3 Then exhale through your mouth for three seconds, making a 'whooshing' noise as you breathe out. Think 'relax' as you exhale. The hand on your abdomen should fall as you exhale.

4 After a minute of breathing in and out in a six-second cycle, hold your breath again for 10 seconds

6 Keep repeating this process for five minutes.

Once you have the hang of this technique lying down, try it sitting up in a chair, then try doing it standing up.