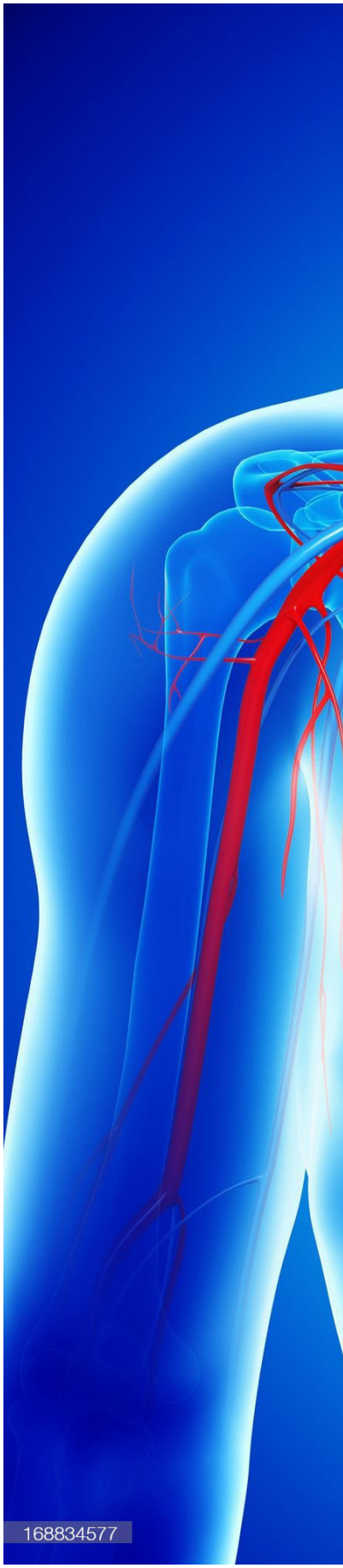
Learning to breathe

For something so basic to health, good breathing doesn't come naturally to most of us. NIKI BEZZANT finds out where we're going wrong.



If social media and the wellness press is to be believed, most of us are walking around performing one of our most fundamental bodily functions incorrectly. "You're probably breathing wrong" go the headlines and YouTube descriptions.

It's enticing clickbait. How could I be breathing wrong? Isn't it involuntary? Is this another thing I need to worry about perfecting? And yet it's believable enough: on any given day you could find a fair chunk of the people around you complaining of fatigue, brain fog, poor digestion or aching muscles – all things that are attributed to breathing incorrectly. It's a thing that sounds, in the words of comedian Stephen Colbert, truthy enough.

Physiotherapist Tania Clifton-Smith is an Auckland-based breathing educator and the author of *How to Take a Breath*. She says it's probably an exaggeration to say most of us are breathing incorrectly. But the science does show that an awareness of our breath can have a "profound effect" on many aspects of our health.

"It's not just about the efficiency of lung function, but your nervous system, digestive system, your lymphatic system, voice production – breathing goes beyond just getting air into the lungs."

Breathing has an impact on every system in the body. A growing body of evidence shows optimal breathing benefits everything from blood pressure to diabetes to anxiety. Clifton-Smith says breathing exercises can even be useful for hormonal challenges such as menopause.

Another physiotherapist, Scott Peirce, who's been researching breathing at AUT, reckons more than a few of us are not breathing as well as we could be. "I think there are probably shades of dysfunction," he says.

Peirce got a surprise when he looked for healthy breathers to participate in his research. "I found that with a lot of the people who said, 'I'm normal, I'm keen to be in your study', about a third of them had to be excluded because they weren't what I would consider a normal or optimal style of breather."

"There's an opportunity to get better breathing in the bank before the wheels fall off."

He believes as a population we can be divided into thirds: a third are breathing optimally; a third are breathing poorly – "they have poor breathing mechanics or their muscles are not working well and they don't breathe with their diaphragm, plus they've got a bunch of symptoms that go along with that"; then there's a group in the middle who Peirce calls average breathers. "They aren't breathing that well, but they get by; it's not troubling them, they're not getting symptoms."

For those people, however, Peirce thinks there's benefit in learning to breathe better now. "You could be breathing really badly and not get any symptoms with it. And you're like, 'Well, who cares?'

"I think there's a bit of an opportunity for those people to get some better breathing in the bank before the wheels fall off, which, typically, always seems to [happen] at some point in your life, whether it's through grief or stress or sickness."

Core issue: Breathing poorly can affect not just the lungs but cardiovascular health, the nervous system, lymphatic function and brain health.

Crushing fatigue

Relearning how to breathe after struggling with Covid has helped top netballer Sulu Fitzpatrick both on and off court.

Silver Ferns and Northern Mystics netballer Sulu Fitzpatrick thought she was okay after picking up Covid-19 on the national team's UK tour in early 2022. But in the weeks and months afterwards, she realised the effect the virus was still having on her as an athlete.

"If I was doing everyday things, I was fine. It's the impact it had on me being able to do my job as an athlete that I really noticed. The breathlessness, my heart rate and my ability to recover."

Physiotherapist and academic Scott Peirce describes what Fitzpatrick was going through as "the biggest, nastiest symptom" for most people who struggle post-Covid, a symptom known as post-exertional malaise. "It's not just, 'I'm tired.' It's more, 'I went to exercise and I am crushed' for the next two days to a week. It's crushing fatigue."

Peirce worked with Fitzpatrick to help her get back to normal. In the process, they discovered she had undiagnosed asthma. Both that and the lingering Covid symptoms were helped by relearning how to breathe.

"I honestly had no idea how quickly I breathed and the impact that had on my performance," Fitzpatrick says. "At rest, I was breathing at five times the ideal, so when I was getting into high-intensity sessions, my rate of breathing was already high."

Peirce taught her breathing techniques she could use both during games and at home. She says she's now incorporated these into her normal routine, and the team's adopted them as well.

"Not only does it centre us as a team, but it also gets everyone recovered quicker to be able to perform. I've honestly found it extremely helpful."

Fitzpatrick says though she'd be happy not to have Covid again, in some ways it's been a blessing in disguise.

"I think it's actually helped me to be better in the long run, not just for everyday life but also as an athlete. I wish I had known about [effective] breathing earlier – it's another tool you can add to your kit as an athlete.

"I think it should be a given for all athletes to get that education."

Sulu Fitzpatrick: effective breathing helped her get over Covid and perform as an athlete.

It's alarming to consider that two-thirds of us may not be breathing optimally. Peirce agrees, but says breathing is flexible; we might not breathe the same way all the time.

"People might breathe poorly for a period and then snap out of it and go back to good breathing. Or some people might breathe poorly [without knowing] for a long time, then there's a straw that breaks the camel's back, and all of a sudden that's enough to tip them into feeling poorly."

What is an optimal breather doing? Peirce says good breathers breathe predominantly with their diaphragm and lower ribs. "They're breathing slowly, so they've got a low-ish respiratory rate. They breathe in, they gently breathe out, and then there's a natural little pause. They can tolerate holding their breath or not breathing for a reasonable period of time, let's say 25 to 30 seconds, without feeling really yucky."

"The longer you can nasally breathe, the longer you can last without going over your anaerobic threshold."

He describes optimal breathers as being able to get back to baseline good breathing even if they have episodes of "funny breathing".

"Breathing's so flexible. When we exercise, it's changing. When we're under stress, it's changing. But optimal breathers come back to that basic good pattern."

THE VITAL MUSCLE

Peirce's research focuses on the diaphragm – the powerful and often overlooked dome-shaped muscle that divides the abdomen below the lungs and pumps up and down with every breath. It's our main breathing muscle. He has found that in those with breathing disorders, the diaphragm tends to be thinner and weaker.

"I'd been using ultrasound to understand the way the diaphragm works: how thick it was, how strong it was in my patients. And what I was seeing was that the average patient coming in had a much thinner diaphragm than was reported in normal healthy subjects. So, I got to thinking that maybe there was an element of breathing dysfunction that was about diaphragm strength and thickness.

Diaphragm man: Fraser Beck of Aro Ha Wellness Retreat, Glenorchy, using an advanced yoga technique to control intradiaphragm pressure and "massage" internal organs.

"We know a thick, big muscle equals a strong muscle. A thin, weak muscle equals a not very strong muscle. So, there's a muscular strength element here that you can work on."

Clifton-Smith explains how important the diaphragm is to overall health. "If the diaphragm is strong, it has a huge effect on many things. It pumps the lymphatic system, the cardiovascular system, and – really cool – they've found out in the last five years, the cerebral spinal fluid, which goes around the brain. You breathe in, it goes up, you breathe out, it comes down and it clears toxins out of the brain, day and night."

"It can have quite a profound effect, not just on your musculoskeletal system, but your nervous system, so therefore your emotional wellbeing, as well as the biochemical exchange of oxygen and CO_2", she says.

Both Peirce and Clifton-Smith are fans of strengthening the diaphragm via a range of methods, including the use of a tool known as the Power Breathe – a handheld device the patient breathes into at various levels of resistance. Clifton-Smith calls it "dumbbells for the diaphragm".

Peirce has found it effective for sufferers of long Covid, who can have long-term breathing problems(see "Crushing fatigue", page 18).

IT'S ALL CONNECTIVE

Breathing coach Fraser Beck spends his days teaching breathing techniques to stressed-out high performers at Glenorchy's Aro Ha Wellness Retreat, as well as teaching online breathing courses. He's fascinated with the diaphragm, to the point of embarking on a PhD to look at its role in health – specifically, "fascial rheology in relation to breathing". (The fascia is the thin casing of connective tissue that holds organs and muscles in place; rheology is the study of the flow of matter.)

"We're breathing into every line and layer of connective tissue. It's a really exciting journey researching it."

"The diaphragm is more fascia than it is muscle," says Beck. "And if we know that the diaphragm connects to every other major tendon structure in the body, and we apply those two principles, then we come to the conclusion that we are not just breathing into the lungs, and we are not just breathing into the intra-abdominal cavity ... we're actually breathing into every line and layer of connective tissue, or every layer of fascia pressurising this fluid matrix. "It's a really exciting journey researching it."

MILITARY PRECISION

Those of us who are not unwell but may not be breathing optimally may have developed habits that could mean we're not making the most of our breath.

Genghis Khan is not remembered for his wellbeing practices, but Clifton-Smith reports, the 13th-century military leader trained his armies to nasally breathe while they marched. "The longer you can nasally breathe for, the longer you can last without going over your anaerobic threshold. And you can go more efficiently."

Even when we're not marching to war, breathing through the nose is the ideal. Clifton-Smith explains the nasal passages help to clean, humidify and sterilise the air before it enters the lungs. It also produces nitric oxide – important in killing off viruses and bacteria and increasing vascular flow at a deep level around the body.

Nasal breathing is not only vital for biochemical health, it's also functional. It means the tongue sits behind the palate, helping the face and mouth develop as we

Don't try this at home

Ignore social media: mouth taping should be a last resort for snorers.

It's all over TikTok: people applying small pieces of surgical tape to their lips – literally taping their mouths closed – before going to sleep. The theory is that this will force breathing through the nose, and encourage a deeper, more restful (and less snory) sleep.

The social media mouth tapers claim all manner of benefits, from clearer skin to improved facial contours. But breathing experts say there's no evidence for these claims.

What little research has been done on mouth taping has been in people with mild obstructive sleep apnoea and has shown some improvement in snoring.

Though the benefits of nasal breathing are well established, mouth taping is not something breathing experts here recommend as a first fix for sleep.

Breathing expert Tania Clifton-Smith says she'd always take a step back and ask why someone isn't able to breathe through their nose at night. There can be many reasons, some of which are serious.

"Is it because the nose is occluded or you've got inflamed tissue? It pays to check this out with your health professional."

Physiotherapist Scott Peirce agrees. "Not everyone is just a habitual mouth breather and all they need to do is shut their mouth and then it gets better. There is a group of people who literally have tonsil overgrowth and adenoid growth where they can't actually use their nose. So, if you tape their mouth, you're just traumatising them. They'll basically wake up in a panic, feeling like they're suffocating. And there will be a real reason for that."

Both Peirce and Clifton-Smith will use mouth taping with patients in some circumstances. But, they say, it's a last resort.

"I do use it," says Peirce. "But it's after you've done all the muscle strengthening, after you've built co-ordination and after you've been assessed by an ENT [ear, nose and throat] surgeon. It's the absolute last thing I'd try. Caution is warranted."

Those looking for better breathing at night could try nasal rinsing or a nasal strip to open up the nasal passages before they pick up a roll of tape.

grow and even affecting swallowing power.

Peirce sees patients who are chronic mouth breathers, often a habit that's developed in early childhood. "It's a big problem", he says.

Babies can suffer stuffy and blocked noses from respiratory infections and sinus issues. "That can build this pattern – a kind of vicious circle where they get stuck mouth breathing. They lose the filtration effect that the nose has on airflow and then they pick up more infections, which gets them more stuffed up."

MOUTH BREATHERS

Kids who are chronic mouth breathers can develop changes in mouth shape because the teeth and palate don't grow wide enough, and they can end up needing lots of dental work. It's another vicious circle: "If their nose and palate isn't wide enough, they can't breathe through their nose; if they can't breathe through their nose, they can't widen their palate enough," says Peirce.

"Breathing cadence is so important, so you're not perpetually putting yourself into a state of exhaustion."

"Then you can end up with the adult version, leading into sleep issues, dysfunctional breathing or sleep apnoea."

There are also some people who habitually mouth breathe without structural reasons.

Dealing with chronic mouth breathing – assuming it's not an issue requiring surgery – involves retraining the patient to become comfortable breathing through the nose. Peirce describes a type of nasal rehabilitation. "I'll say, 'I want you to try to do short periods of breathing through your nose. Then I want you to try to work on humming and nasal vocalisation – creating sounds out of your nose. Then I want you to try to chew with your mouth shut.' And we'll do other mouth and nose breathing drills to try to change that habit."

People with sleep apnoea can do quite well by working to improve their facial tone, says Peirce, making the muscles of the mouth and the face stronger. "It keeps your lips together more effectively when you sleep, which helps to keep your nasal airway operating longer."

COMPUTER NECK

How we sit and stand can have a profound effect on how efficiently we breathe. Sitting at a desk all day, moving rarely, hunching and slumping – none of it makes for optimal breathing, and it can lead to other problems. Caving in the chest and thrusting the head forward while sitting – often called computer neck – is a position Clifton-Smith calls "a disaster in the making". A caved-in posture means our centre of gravity is displaced to the upper chest, meaning we stop breathing into the diaphragm. We can also get into tense, rigid and restricted postures that do the same thing.

Many of us have developed the habit of holding our breath while working at computers, something Clifton-Smith terms "screen apnoea".

"When you get too involved working on a screen, you breath-hold. Over time, this can play havoc with your oxygen and carbon dioxide levels; it drops your oxygen in a way that's equivalent to sleep apnoea."

It also causes tension in the muscles, leading to longer-term pain and stiffness.

She offers posture and tension-relieving breathing exercises in her book. And she recommends regularly taking breaks to move and breathe.

"Awareness is the thing. You want to be not too rigid and not too flexed. Stretch, put your arms above your head, take a breather, let the air out, be aware, be conscious of having a couple of really efficient, effective breaths. Every hour – or ideally, every 20 minutes – just stop, move, get everything working. Be aware of a nice loose alignment and then just breathe within that alignment."

HOLDING IT IN

Some of us have trained ourselves to habitually hold our stomachs in, or we wear clothing that physically holds us tight. Both of these can lead to poor breathing, again by restricting the diaphragm.

"Look at women with corsets; the only thing they could do was stand there", Clifton-Smith says. "And then they'd faint because they had no oxygen going to the brain – they literally were quite brain dead.

"We've got to take a lesson from that. Don't wear anything tight around the waist."

She also warns against the "fab ab syndrome" – holding in the stomach to conform to an Instagram-perfect silhouette.

"If you're holding your tummy in, let it go. Even sitting, let it go. Because you need nasal abdominal breathing to have that nice pumping diaphragm."

Breathing educators Tania Clifton-Smith, top, and Scott Peirce: a strong diaphragm can have a huge effect on wellbeing.

Clifton-Smith's motto is, "If in doubt, breathe out."

Beck agrees. He starts his breath training with awareness of the pelvic floor; the muscle at the bottom of the pelvis, where, he says, a lot of us hold too much tension.

"Breathing has a natural reciprocation. The diaphragm and the pelvic floor are working together – as the diaphragm contracts to allow those lungs to fill, the pelvic floor relaxes. As the diaphragm relaxes, the pelvic floor naturally compresses, contracts and holds tone."

GET WITH THE RHYTHM

Whether we're weekend warriors or daily walkers, developing good breathing habits when exercising can help us get the best from our activity. Clifton-Smith says developing effective, efficient breathing patterns whether at rest or moving can have a big impact.

"You can have an elite athlete who's not quite performing to their best because they've got an inefficient pattern for the sport they're doing. But if you just tweak a few things, it can make the difference between really purring and being a little bit clunky."

Working on breathing cadence – matching the breath to the movement – is beneficial.

"Try to get a rhythm", she advises. "We know that elite athletes have a natural breathing-movement cadence. And some of us are quite clunky and we don't.

"I have a lot of people say they get so breathless going upstairs. And we find out that they've held their breath from the bottom to the top of the stairs. Of course they're breathless. So, try breathing four steps in, four out. Try and get into a rhythm of breathing to your movement.

Thrusting the head forward while sitting – often called computer neck – is "a disaster in the making".

"That cadence is so important, so you're not perpetually putting yourself into a state of physiological exhaustion."

YOGA WITH CAUTION

Peirce and Clifton-Smith both love yoga and other practices that involve controlling the breath. But there are some caveats. Peirce says there's no evidence yoga helps with developing diaphragm strength. And Clifton-Smith recommends learning to breathe well and efficiently before diving into yoga.

"Yoga encourages big breathing, and it's an exercise," she says. "If you're a big breather at rest, it's just going to make you feel yucky.

"Get the breathing right first, then go and do yoga; then go and do Pilates, so that you can come back to what your baseline effective, efficient breathing pattern is. Yoga and Pilates are exercise; they're not what you should be doing all the time." ▮

How to Take a Breath, *by Tania Clifton-Smith (Random House, $35)*