

GET THE OXYGEN ADVANTAGE!

The way you breathe during your daily life determines how well you breathe during physical exercise. By **Tracey Baumann** and **Emma Levy**

Breathing efficiently is a key skill and common focus in swimming training, but is generally overlooked in our land-based lives. As swimmers, you may question why we need to look at our functional (daily) breathing on land, as it is an automatic, involuntary process like the heart beating, blood pressure regulation, and digestion. However, many athletes (including some elite athletes), will have some level of dysfunctional breathing which they are unaware of, but which will be impacting their sports performance. The way you breathe during your daily life determines how well you breathe during physical exercise.

WHAT IS DYSFUNCTIONAL BREATHING?

If you think of how you breathe when you are anxious or stressed, some of the signs are quite similar: hard and fast breathing, using the upper chest more than the diaphragm, hearing your breathing at rest, mouth breathing instead of nose breathing during the day and sleep, frequent sighing and/or yawning and nasal congestion. These breathing patterns can be the result of lifestyle habits, lack of awareness, as well as environmental factors and genetics.

The most common type of dysfunctional breathing is when people breathe too much or have irregular breathing. If we are breathing too much air in and out, we are getting rid of too much carbon dioxide on the exhalation. You may think this is a good thing as carbon dioxide is a waste gas that we need to expel. This is true, but we also need to retain a certain level of carbon dioxide in our blood as it is the catalyst for the release of oxygen from our blood to our tissues. If less oxygen is delivered to our muscles, they cannot work as effectively during physical exercise.

How many of you believe or have been told that "taking a deep or big breath" when feeling breathless during physical exercise will increase the amount of oxygen delivery to your

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muscles? It actually does the opposite! Breathing more than our body needs lowers our carbon dioxide levels and actually reduces oxygen delivery to the tissues, leaving us gasping during exercise and often with cramping limbs.

HOW SHOULD WE BREATHE ON LAND?

During rest and light physical activity, our breathing should be light, slow, and driven from the diaphragm. We are designed to breathe through our nose as land mammals. The mouth is for eating, drinking and talking and serves no purpose in breathing. The nose, on the other hand, acts as a filter and purifies incoming air which contains bacteria, viruses and other particles. It also warms the air before it reaches the lungs, which is particularly important for people with asthma. Cold air breathed in through the mouth can cause constriction of the airways. There is also an important gas called Nitric Oxide (NO) that is produced in the nasal cavity and is transported to the lungs with nasal breathing. This gas has antibacterial, antiviral and anti-fungal properties and assists in more efficient gas exchange in the lungs. Nasal breathing also activates the diaphragm whereas mouth breathing tends to activate the upper chest. The nose also creates about 50% more resistance to breathing, resulting in 10-20% more oxygen uptake.

During exercise on land, such as running or cycling, we should be able to maintain nasal breathing 100% of the time up to a moderate pace. When training hard, we will need to switch to mouth breathing some of the time, but recover with nasal breathing.

HOW SHOULD I BREATHE DURING SWIMMING?

Swimming presents a number of challenges for humans on a physical and psychological level. As we are land mammals, we are not designed to be in water, let alone to breathe in it and we tend to activate our Sympathetic Nervous System and go into 'fight/flight' or 'survival' mode. To swim efficiently, we first have to learn to transform our body, which has many moving parts, into a single connected unit (from shoulders to feet) that moves through the water with minimal drag. To swim any distance and with minimal effort, we also have to learn to breathe efficiently to maximise gaseous exchange in the lungs, as well as to maintain this streamlined frame..

It is impossible to breathe in through the nose when swimming, so we have to inhale through the mouth. This is where we need to ensure that we keep our breathing light, , but take it deep into the lower lungs by engaging the diaphragm correctly. This ensures efficient gas exchange in the lungs and creates intra-abdominal pressure to support the spine. Correct diaphragmatic breathing through the mouth has to be learnt and practised on land first, as typically a mouth breath only takes air into the thoracic cavity (only filling the upper half of the lungs). Once diaphragmatic breathing becomes more automatic on land, it will be easier to achieve when swimming.

However, we still want a slow continuous exhale out through the nose whenever the face is submerged, for a number of reasons. It avoids blowing off too much carbon dioxide, so we maximise oxygen delivery to the muscles. You also conserve about 42% more heat and moisture when exhaling through the nose compared to the mouth. Nasal and diaphragmatic breathing triggers the Parasympathetic branch of our nervous system which puts us into 'calm' mode. For open water swimmers who have additional environmental challenges to deal with, including cold water, changeable weather conditions and often long distances to swim, all these factors are vital.

SwimMastery coaches are running a webinar series for swimmers to learn to optimise their breathing. Find out more at swimmastery.online

HOW CAN YOU ASSESS AND IMPROVE YOUR OWN BREATHING FOR SWIMMING?

The good news is that you can easily re-train your breathing! The Oxygen Advantage, developed by Patrick McKeown, provides a programme of simple breathing exercises to help athletes to improve their health and sports performance.

The Oxygen Advantage teaches you to breathe lighter to reduce breathing volume, to breathe deeper to use the diaphragm correctly and to breathe slower with cadence breathing to balance the autonomic nervous system. It also includes breath holds to simulate high altitude training to increase endurance, reduce fatigue from lactic acid build-up, improve breathing economy and VO2max.

If you have been wanting to add that edge to your performance, to reduce breathlessness when you swim, or simply breath more easily, learning how our bodies were designed to breathe and bringing this functional breathing into your swim technique could be the answer.



DYSFUNCTIONAL BREATHING

- ✖ Louder breathing
- ✖ Heavy faster breathing
- ✖ Chest driven
- ✖ Mouth open

FUNCTIONAL BREATHING

- ✔ Nose breathing
- ✔ Invisible
- ✔ Slower
- ✔ Diaphragmatic