BREATHE BETTER—SWIM FASTER

Breath control is fundamental to efficient swimming. Like singers, swimmers need to train their breathing for effective performance.

Controlled breathing is the main factor contributing to swimming efficiency. Breathing control involves timing the breath within the rhythm of the stroke and ventilating the lungs for the work to be done. Many talented swimmers, with the ability to become great, fall short in this department.

For instance, in freestyle swimming, mastering the fundamentals of balance, relaxation, arm-timing, streamlining, stroke length and the effective application of power depends on a swimmer’s ability to prolong exhalation so that it blends smoothly into the total action.

Few swimmers realize that swimming performance can be improved by learning breathing techniques that can delay the onset of fatigue and therefore enable swimmers to adjust their breathing for specific paces and events.

Controlled breathing will help a swimmer to take a deep breath quickly and easily, and then follow with the long outward breath that provides enough time within each stroke cycle, or series of cycles, to keep the action long, loose and rhythmic. To reach the highest level of stroke fluency, even top swimmers need to pay attention to breathing effortlessly.

Diaphragmatic Breathing:
Diaphragmatic breathing, as used by singers or musicians playing wind instruments, is the key to advanced breathing skills. Famous singers such as Pavarotti and Placido Domingo practise breathing control. The singers’ smooth performances are achieved by mastering a long, slow exhalation, and a deep but quick inward breath that is undetected. Their effortless phrasing would be impossible without a well-regulated exhalation aided by exceptional control of the diaphragm. Swimmers could take a page from their book!

The Role of Diaphragmatic Breathing in Breath Control:
When we inhale, oxygen from the air enters the lungs from where the blood takes it to all the cells of the body. At the cellular level, oxygen acts in combination with glucose (from food) to produce energy. Water and carbon dioxide are by-products of this process, which are returned to the lungs by the venous blood, to be exhaled. Carbon dioxide is never completely eliminated from the system, neither is all the air exhaled; some residual air always remains in the lungs.
The diaphragm is the large muscle stretching across the body at the floor of the chest under the heart and lungs. Because the lungs themselves have no muscles and are passive, they need the help of the diaphragm and intercostal muscles to function. When at rest, the diaphragm is held up in two domes by the abdominal viscera. When the diaphragm contracts, the domes flatten out, the lungs expand downwards and the abdomen is pushed out. Lung capacity is further increased by the intercostal muscles contracting and lifting some of the ribs in an outward and upward direction. The result is that the rib cage expands and suction is created, which draws air into the lungs.

**Exhalation through Nose or Mouth?**

Swimmers have a choice of three different methods:
1. Inhaling through the mouth and exhaling through the nose only. This is a good way to learn prolonged exhalation because of the smaller opening at the nostrils.
2. Inhaling through the mouth and exhaling through nose and mouth simultaneously. For some individual swimmers this is a good method to use when sprinting when a greater volume of air has to be exhaled.
3. Inhaling through the mouth and exhaling through the mouth only. Through pursed lips. Keeping the lips pursed teaches the beginner to regulate the flow of the outward breath, and helps avoid water accidentally entering the mouth.

**Don’t Gasp or Blow!**

The inward breath should be an easy reflex action; if exhalation is adequate, air will flow in on its own! The inward breath is quick, but should not be gasped in.

The outward breath follows as soon as the mouth moves under the surface. Important: never blow the air out forcefully, because doing so causes breathlessness and loss of breathing control resulting in premature fatigue.

Let the outward breath escape gradually by allowing the air to flow out easily until the mouth has almost returned to the surface for the next inhalation. At this point, the swimmer expels the remainder of the air with a small puff that clears the lungs for more air, and moves the water away from the front of the mouth so that air is inhaled without taking in water.

*Note: Should you gulp in water, shape your tongue as if you’re pronouncing the letter K; this should prevent you from gagging. Even the greatest swimmers have been known to take in water accidentally. This is a rare occurrence, but I once saw a top swimmer in an Olympic final unable to finish the race because she inhaled water.*

**Inward-Outward Breath Ratios:**

A “breath ratio” is simply the amount of time a swimmer spends exhaling compared to the amount of time spent inhaling. On land, we tend to breathe in equal timing—in and out, in and out.

But, if this equal breath ratio (1:1) is transferred to freestyle swimming, for example, the body will often ride off balance because the outward breath will be too short to permit time enough for the swimmer to **complete the natural roll of the body**. Neither will the swimmer be able to maintain equal stroke length on each side of the body. Furthermore,
as oxygen demand increases, the swimmer will tire quickly because there has not been enough time to complete the exhalation to allow an adequate inward breath to follow. **Remember the important breathing rule in swimming the ratio of the outward breath to the inward breath should always be at least twice as long (2:1) as the inward breath.**

It is possible to consciously control the breath ratio according to the needs of the individual swimmer. With practice, it will be possible to increase the breath ratio to 3:1 and even longer. The volume and pace of the outward breath will vary according to which style is swum; for example, there will be significant differences between freestyle breathing and breathing while swimming butterfly, breaststroke or backstroke. The breath ratio may change according to the energy demands of the distance to be swum, each individual’s most comfortable stroke length and rhythm, and the frequency of breathing.

**Freestyle** In distances longer than the 100, most freestyle swimmers inhale on every second stroke, while others may breathe bilaterally (once every three strokes). The pattern best suited to the individual should be established in practice, as well as in competition.

Most short distance freestylers do not breathe regularly; they might breathe three or four times on the first fifty metres of a 100-metres race (50 metres pool) and more regularly on the final 50 metres, such as once every four strokes or once every six strokes. Short distance swimmers need to experiment with different patterns of irregular breathing to find the individual’s ideal rhythm pattern.

Underwater observation of short distance swimmers reveals a variety of breathing rhythms. A few will breathe on every stroke cycle while others may breathe less regularly. Inexperienced swimmers often fix the abdominal and back muscles when swimming the crawl stroke, thus interfering with the function of the diaphragm. On the other hand, expert swimmers, who have mastered controlled breathing and relaxation of the abdominal muscles, seldom have difficulty in breathing under the exertion of swimming at full speed.

**Backstroke** swimmers usually inhale through the mouth during the recovery of one arm, and exhale through the mouth during the recovery of the opposite arm. However, all swimmers, irrespective of whether or not backstroke is their main stroke, should practise doing backstroke while inhaling through the mouth during the recovery of one arm, and exhaling through the nose during the recovery of the other arm. This practice helps the swimmer to learn good breath control, and how to flow the air out when exhaling instead of blowing it out.

**Butterfly** swimmers start to flow air out in a slow exhalation from the moment the stroke starts. Exhalation gradually increases in intensity throughout the arm-stroke and finishes with a puff of air a moment before the mouth clears the surface. The inward breath is taken (through the mouth) in the final stage of the arm-push. Swimmers may breathe once to every arm cycle or once every two strokes. In breathing once to every two strokes, the breath is held throughout the first arm-cycle. Exhalation and inhalation take
place during the second arm-cycle. The ideal breathing rhythm is a matter of individual preference and depends on the length of the racing distance. Swimmers need to breathe more frequently the longer the distance covered. Butterfly swimmers in the sprint and shorter events, 50 and 100, tend to breathe every second stroke, but some do breathe once to every arm cycle. Swimmers who use irregular breathing patterns risk premature fatigue by incurring too early an oxygen debt.

**Breaststroke** As the stroke starts, the swimmer begins to exhale through the mouth. The swimmer's head gradually lifts as the elbow-bend increases and the shoulders rise. Throughout the arm stroke the swimmer gradually increases the volume of the exhalation. As the shoulders reach their highest point, exhalation is completed with a puff that clears water away from the mouth. The swimmer inhales and the face returns to the water as the arms thrust forward to full extension.

**Prolonging the Outward Breath in Freestyle:**
The ability to prolong the outward breath is the key to **efficient swimming**. By prolonging each exhalation and allowing the air to flow out easily, the **swimmer will have more time within each stroke cycle to streamline and balance the body while maintaining stroke length and rhythm. The result will be the "ghost-like" glide, so often the hallmark of great swimmers.**

**Drills to Practice:**
Practise face-down glides with slow exhalation; push off from the wall in prone position with arms and legs extended. Allow the body to continue its glide. Concentrate on allowing air to flow out gently until exhalation is completed.

Now start to swim freestyle very slowly. Turn your face to the side and take a breath. As your face returns to the centre position, continue exhaling by flowing air out gently. When your outward breath is nearly finished, turn your face back to the side with mouth open, lips curled outward, and air will flow in naturally. Return your face to the centre position as you continue into the next outward breath. Keep swimming slowly and allow the air to escape by flowing it out softly and gently without stopping.

Select a distance over which you wish to practise in a non-stop swim. Swim as far as you can, concentrating on allowing the air to flow out gently in a prolonged exhalation. Ideally, if you are fit enough to do so, swim a slow 1500 in this manner. Try to make each outward breath at least twice as long as the inward breath. With practice, you'll be surprised and impressed at how relaxed and facile your stroke will become.

As you become more proficient, the next step should be to try timing your outward breath with each phase of your stroke. Your outward breath should finish just as the breathing-side arm completes its stroke. The in-breath will occur as a reflex action; in fact you will not be aware of having inhaled. As you return your face to the centre position, your breathing-side arm will have recovered from the water and will be about to slide forward into the entry.
As the arm enters and slides forward, thus absorbing the body’s momentum, your outward breath will have started to flow out gently and steadily. The outward breath will continue flowing non-stop throughout the ensuing stroke cycle, allowing you time to complete your body roll to the opposite side and recover and enter the arm on that side. As the entry arm is once again almost fully extended, your face will have returned to the breathing side. Just before the mouth clears the surface, you should expel the remainder of the air with a puff that not only clears the lungs for more air, but moves the water away from the front of the mouth so that air can be inhaled without risk of inhaling water.

**Effect on Relaxation and Stroke Mechanics:**
Once a swimmer can breathe as easily in the water as on land, it soon becomes possible to cover long distances effortlessly and at speed. This is because relaxation within the stroke is improved by the ability to inter-time and control breathing rhythm within the changing phases of the stroke. Once this expertise has been achieved, the swimmer will be surprised to find how easy it is to swim at speed while maintaining a high level of relaxation. *The aim is to develop maximum stroke application with maximum relaxation!!!!!!!*

In freestyle, for example, combining the inward breath with the push-back of the arm on the breathing side automatically causes it to coincide with the entry slide of the opposite arm. While tension on the pectoral muscles acting between the pulling arm and the ribs tends to draw that side of the chest upward, the ensuing motion of the recovery arm helps to free and raise the ribs away from the expanding lung on the opposite side. These advantageous mechanical conditions make this a particularly appropriate time for inhalation.

It is interesting to note that Michael Phelps, concentrates on setting up his breathing rhythm early in a race. He says that *finding his rhythm makes him feel relaxed, and “when I feel relaxed, I know I’m going to have a fast swim.”*