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Every Breath You Take

The faster you run, the harder it is to catch me. What am I? Your breath!

There aren't many things better than finishing a hard workout, covered in sweat and out of breath. You feel healthy, satisfied and accomplished for completing the hard work.

When exercising, you typically go through the motions of walking and running without thinking much about what you are doing. How many times do you think about every step you take? How often do you think about each breath? I am guessing the answer is: very rarely. Breathing is one of the most important aspects of exercise, yet we seldom think about it. In a recent article we discussed aerobic versus anaerobic exercise. To give you a quick reminder, aerobic exercise uses oxygen to produce energy during exercise and anaerobic exercise is when the oxygen demand during exercise is greater than the oxygen supply to the body. Aerobic exercise is the more efficient form of exercise, so trying to optimize your oxygen intake is important.

You have likely noticed that when you first start an exercise program it is difficult to catch your breath and you might not be able to work out as hard as you'd like. You may also notice being out of breath as you increase the intensity and length of your exercise program. This is because your lungs and heart may not yet be conditioned to your level of exercise. Your oxygen delivery to the body is not yet efficient. The more you exercise and condition your body, the more efficient your lungs, heart, blood vessels and muscles will be at delivering the oxygen you need for optimal performance.

As with any exercise, there is not a one-size-fits-all model for breathing, but there is some guidance to help you determine what works for you. One of the best ways to get the maximal amount of oxygen during exercise is to focus on deep breathing rather than shallow breathing. Deep breathing (otherwise known as belly breathing), pulls in and holds more oxygen in the lungs, using more of the lung surface area to deliver more oxygen to the body. Shallow breathing (or chest breathing) uses less surface area of the lung and does not allow the oxygenated air in the lungs to remain there long enough to exchange the maximum amount of oxygen into the blood stream. Think of your breathing like a sponge. If you put a sponge in water for a short period of time, it will soak up only a little bit of water. But if you squeeze the sponge and hold it under water for a long time, it will soak up a lot more water.

Experts have several suggestions on breathing patterns, although they don't always agree on whether they make exercise more efficient. On light runs, one recommendation calls for taking three steps while breathing in and three steps while breathing out. On moderate runs, two steps while breathing in and two steps while breathing out. And during a sprint or high intensity run, one step while breathing in and one step while breathing out. This is just a recommendation, so you need to find the best breathing pattern for your own workout.

There is also research and discussion on mouth breathing versus nose breathing. Essentially, research shows that both can deliver an optimal amount of oxygen, but the most important factor is to ensure deep breathing by using belly breathing. Once again, the breathing pattern, whether mouth or nose, will depend on the individual athlete.

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Many other factors also can affect breathing and optimal oxygen delivery to the body's tissues. Here are a few:

- **Smoking:** Any inhaled substance from a cigarette or vaping device can influence the alveoli (the portion of the lung where oxygen and carbon dioxide is exchanged) by scarring the tissue and decreasing the amount of oxygen allowed into the body.
- **Lung disease:** Diseases such as asthma and COPD have an anatomical effect on the lungs, but with proper breathing and medications, exercise can be successful. More recently, COVID has been found to affect the lungs by scarring the tissue and thereby decreasing exercise capacity due to the inability to get enough oxygen through the lungs. If you have had COVID and are having difficulty exercising, I recommend you see your physician for a full evaluation, work-up and treatment recommendation.
- **Cardiovascular:** Your lungs bring oxygen into your body, but your heart and blood vessels are what deliver the oxygen that allows your muscles and tissues to function. Heart disease or high blood pressure can affect your exercise performance, so it is important to monitor and treat any cardiovascular disease.
- **Sleep:** Insufficient sleep can also result in decreased exercise capacity. Poor sleep can cause decreased energy and decreased breathing rates (also known as respirator depression), which can lead to poor exercise performance and even injuries.

Breathing is simple and you probably don't give it a lot of thought, but it is one of the most important and vital aspects of your exercise. Every athlete is unique, and you need to find out what works best for you to improve and enhance your workouts. If you are finding that you are having difficulty with your breathing while exercising or with your ability to progress the intensity of your exercise, it is very important to discuss this with your doctor.

If you have any questions or concerns regarding an injury or pain, please reach out to one of our experienced sports medicine physicians at Corewell Health Medical Group Orthopedics at (616)267- 8860. You can also find more information about our orthopedic program and providers on our website.