Research #1: Basics of Respiration

Breathing is the process your body uses to take in oxygen. The air that you breathe in contains only about 20 percent oxygen, and only about 20 percent of the oxygen in this air that you breathe into your lungs is actually used by your body. Eighty percent of the oxygen in the air you breathe in is expelled when you exhale. The relatively small amount of oxygen actually being processed by your body is the reason you must continue to breathe steadily at all times. When your body processes the oxygen you inhale, it creates carbon dioxide as a byproduct. Carbon dioxide is expelled when you exhale and is then used by plants and trees. Eliminating this carbon dioxide is just as important a function of breathing as is taking in oxygen, particularly during periods of intense exercise, since it allows your body to function more efficiently.

Research #2: Lung Volume

The lungs are encased in the chest, a rigid structure that cannot expand beyond certain limits. The tidal volume refers to the amount of air that an individual normally inhales with each breath. At rest, the tidal volume is about 600 milliliters in males and 500 milliliters in females. The largest potential tidal volume is called the vital capacity. This is strictly defined as the amount of air an individual can exhale after making a maximal inhalation. The normal vital capacity is 4,800 milliliters in males and 3,200 milliliters in females. However, even after maximal exhalation, some air must remain in the lung to keep it inflated. This is known as the residual volume, and is about 1,000 to 1,200 milliliters.

Research #3: Changes in Breathing

During activities such as exercise, a variety of changes occur in the body. Cells in the heart and in the active muscles break down increased amounts of glucose to yield energy. These complex reactions produce carbon dioxide as a waste product. The increased levels of carbon dioxide stimulate parts of the brain to increase the rate of breathing. This increased rate of breathing serves to eliminate the waste carbon dioxide. This also has the effect of keeping the blood fully oxygenated -- an essential process that keeps cellular respiration in active tissues from stopping.

Many factors can contribute to poor lung function, including smoking habits, surgical history, asthma, allergies, chronic obstructive pulmonary disease, and obesity. Additionally, the connection between posture and lung performance has been proved to be significant. Studies have confirmed that various postures affect pulmonary function. For example, the prone position (lying flat and face down) in healthy subjects has been shown to cause compression of the ribs, which limits the volume of air into the lungs and the ability to expel air out of the lungs.