Human anatomy: respiratory system

Science, Anatomy

The respiratory system helps to provide the body with the necessary gas exchanges needed for living cells. This exchange helps with other major body systems and functions within the body such as the circulatory system and the process of cellular metabolism. The respiratory system consists of several different pressures that share a close correlation that can be described is several different laws. There is a direct relationship between intrapulmonary pressure, atmospheric pressure, and air flow during normal inspiration and expiration according to Boyle's law, and the condition asthma is related to this topic.

As stated in Anatomy & Physiology: An Integrative Approach by McKinley, O'Loughlin, and Bidle, there is an inverse relationship between volume and gas pressure according to Boyle's law. In other words, when the pressure of gas increases, the volume of the container will decreases and vice versa only when the temperature is constant. Air is also moving from the higher pressure region to the lower pressure region down the gradient until the pressures become equal. Airflow is the amount of air that moves in and out of the lungs with each breath, atmospheric pressure is the gas pressures in the air exerted on theenvironment, and intrapulmonary pressure is the pressure within the alveoli of the lungs. These concepts can be applied when describing the process of inspiration and expiration. In between breaths, atmospheric pressure equals intrapulmonary pressure.

During inspiration, volume of the thoracic cavity increases in size which causes the intrapulmonary pressure decreases and is now below atmospheric pressure, thus causing air to flow into the lungs since air moves from high pressure to low pressure down the gradient. With expiration, the

thoracic cavity volume decreases making intrapulmonary pressure to rise above atmospheric pressure. This in turn causes air to flow out of the lungs following the pressure gradient. At the end of both processes, the atmospheric and intrapulmonary pressures will equal the same once again, causing now airflow. This is how atmospheric, intrapulmonary, and airflow are related during inspiration and expirations accordin to Boyle's law (McKinley, O'Loughlin, and Bidle, 2013).

According to a Mayo Clinic staff, asthma is the condition in which your airways narrow and swell and produce extra mucus. This can make breathing difficult and trigger coughing, wheezing and shortness of breath (Asthma). Asthma is related to this topic because the amount of airflow in and out of the lungs is affected. Since there is an increase in airway resistance to air flow, during expiration, a person with asthma is not able to exhale most of the air out due to the increase intrapulmonary pressure because so much air is being trapped in.

The respiratory system helps with the other major bodily functions in order for the body to maintain a stable, internal environment. The processes of inspiration and expiration consist of intrapulmonary pressure, atmospheric pressure, and airflow which according to Boyle's law have an inverse relationship. Many conditions are associated with the respiratory system; however asthma is closely linked to the topic of Boyle's law due to the small diameter size of the tubes. Alveoli are hollow cavities in the bronchioles where the oxygen/CO2 exchange happens.

All these parts combine to make up the respiratory system. The respiratory system affects you in different. If your body cannot breathe, your cells will not get the oxygen they need. This will mean that your cells will begin to die quickly. Breathing is involuntary. It helps us stay alive. If we had to think about breathing, we would never sleep. If it's running well, you will not get tired as easily. If it's not functioning properly,
the amount of oxygen in the blood will fall and the poisonous gases will not be exhaled properly.

People with problems, such as asthma, get out of breath and tired quickly because there isn't enough oxygen available to help them do the less-essential tasks. More of it is saved for essentials, like the brain. There are ways to prevent malfunctions of the respiratory system. First of all, you should never smoke! Smokingcan cause lung cancer, which is very dangerous. Also, you should exercise. When you exercise, your body needs more oxygen, so the respiratory system must make adjustments to help meet the demands of the body. Pollutioncauses unhealthy lungs, so you should avoid some areas, especially in the summer. However, air pollutionisn't just an outdoor problem. There are a number of indoor sources, such as fireplaces and wood-burning stoves, mold, pet dander, construction materials, and even air fresheners and some candles.

All in all, we need the respiratory system to breathe. You will die if you don't breathe. The system helps get rid of carbon dioxide and help fill our cells with fresh new oxygen. All of that happens in less than 2 seconds. Breathe in and out. See? It only takes a few seconds for all of that

complicated process to happen. All of the systems in our body work together to create a healthy body. In our opinion, the respiratory system is very important just like all the others because they all work together like a team.

Works Cited

1. " Asthma." Definition. Web. 10 Mar. 2015. .

   McKinley, Michael P., Valerie Dean. O'Loughlin, and Theresa Stouter. Bidle. " Chapter 23."

2. Anatomy & Physiology: An Integrative Approach. New York, NY: McGraw-Hill, 2013. N. page. Print.