

The Science of the Anatomy of Breathing

This is a one page summary of the respiratory system. No author is cited, I assume Alicia Rambo Wozniak wrote it. It is short, concise and worth the time to read.

Breath:

- Air goes in through mouth, nose
- Passes through the larynx and trachea (two separate tubes)
- Enters chest cavity and is split into more and smaller tubes called bronchi
- Bronchi have 600 million small, spongy sacs attached called alveoli
- Oxygen passes into the alveoli, then is diffused through the capillaries into the arterial blood
- Carbon dioxide is released into the alveoli
- Carbon dioxide is expelled and takes the reverse path back out

Alveoli takes in and expels both oxygen and carbon dioxide. The oxygen comes from the bronchi and is released into the blood. The carbon dioxide comes from the blood and goes back through the bronchi, larynx and trachea, then out the mouth or nose.

Diaphragm

- Sheet of muscles along the bottom to the chest cavity
- Diaphragm relaxes - pumps carbon dioxide out of the lungs
- diaphragm contracts - it pulls oxygen into the lungs

Breathing problems

- Shallow breathing – only a portion of the lungs are used, body is under-oxygenated
- Deep breathing – slows down the heart, reduces stress

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The primary function of the respiratory system is to supply the blood with oxygen in order for the blood to deliver oxygen to all parts of the body. The respiratory system does this through breathing. When we breathe, we inhale oxygen and exhale carbon dioxide. This exchange of gases is the respiratory system's means of getting oxygen to the blood.

Respiration is achieved through the mouth, nose, trachea, lungs, and diaphragm. Oxygen enters the respiratory system through the mouth and the nose. The oxygen then passes through the larynx (where speech sounds are produced) and the trachea which is a tube that enters the chest cavity. In the chest cavity, the trachea splits into two smaller tubes called the bronchi. Each bronchus then divides again forming the bronchial tubes. The bronchial tubes lead directly into the lungs where they divide into many smaller tubes which connect to tiny sacs called alveoli. The average adult's lungs contain about 600 million of these spongy, air-filled sacs that are surrounded by capillaries. The inhaled oxygen passes into the alveoli and then diffuses through the capillaries into the arterial blood. Meanwhile, the waste-rich blood from the veins releases its carbon dioxide into the alveoli. The carbon dioxide follows the same path out of the lungs when you exhale.

The diaphragm's job is to help pump the carbon dioxide out of the lungs and pull the oxygen into the lungs. The diaphragm is a sheet of muscles that lies across the bottom of the chest cavity. As the diaphragm contracts and relaxes, breathing takes place. When the diaphragm contracts, oxygen is pulled into the lungs. When the diaphragm relaxes, carbon dioxide is pumped out of the lungs.

In shallow breathing, only a portion of the lungs is used, and, therefore, the body suffers from under-oxygenation.

Alternatively deep breathing can arouse the Vagus Nerve which stretches from the brain stem down to the abdomen, and which evokes the parasympathetic systems to slow down the heart beat, reduce stress, and re-functioning body systems.