

Breathing and respiration

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Breathing and Respiration

The respiratory system is an organ system which is used for breathing.

Scientifically formulated, breathing is the process by which oxygen in the air is brought into the lungs and into close contact with the blood, which absorbs it and carries it to all parts of the body. At the same time the blood gives up waste matter (carbon dioxide), which is carried out of the lungs with the air breathed out.

The respiratory system starts with the sinuses, which are hollow spaces in the bones of the head. Small openings connect them to the nasal cavity. The functions they serve are not clearly understood, but include helping to regulate the temperature and humidity of air breathed in, as well as to lighten the bone structure of the head and to give resonance to the voice.

The nasal cavity (nose) is the preferred entrance for outside air into the respiratory system. The hairs that line the inside wall are part of the air-cleansing system. Air also enters through the oral cavity (mouth), especially in people who have a mouth-breathing habit or whose nasal passages may be temporarily obstructed, as by a cold.

The adenoids are overgrown lymph tissue at the top of the throat. When they interfere with breathing, they are generally removed. The lymph system, consisting of nodes (knots of cells) and connecting vessels, carries fluid throughout the body. This system helps resist body infection by filtering out foreign matter, including germs, and producing cells (lymphocytes) to fight them. The tonsils are lymph nodes in the wall of the pharynx that often become infected. They are an unimportant part of the germ-fighting system of the body. When infected, they are generally removed.

The pharynx (throat) collects incoming air from the nose and passes it

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downward to the trachea (windpipe). The epiglottis is a flap of tissue that guards the entrance to the trachea, closing when anything is swallowed that should go into the esophagus and stomach. The larynx (voice box) contains the vocal cords. It is the place where moving air being breathed in and out creates voice sounds. The trachea is the passage leading from the pharynx to the lungs. The trachea divides into the two main bronchi (tubes), one for each lung. These, in turn, subdivide further into bronchioles. The right lung is divided into three lobes, or sections. The left lung is divided into two lobes. The pleura are the two membranes that surround each lobe of the lungs and separate the lungs from the chest wall. The bronchial tubes are lined with cilia (like very small hairs) that have a wave-like motion. This motion carries mucus (sticky phlegm or liquid) upward and out into the throat, where it is either coughed up or swallowed. The mucus catches and holds much of the dust, germs, and other unwanted matter that has invaded the lungs and thus gets rid of it.

The chest cavity is separated from the abdominal cavity by the diaphragm, which is the strong wall of muscle. By moving downward, it creates suction to draw in air and expand the lungs. The smallest subdivisions of the bronchi are called bronchioles, at the end of which are the alveoli. The alveoli are the very small air sacs that are the destination of air breathed in. The capillaries are blood vessels that are imbedded in the walls of the alveoli. Blood passes through the capillaries, brought to them by the pulmonary artery and taken away by the pulmonary vein. While in the capillaries the blood discharges carbon dioxide into the alveoli and takes up oxygen from the air in the alveoli (Hardie 13-187; Parker 21-229).

Summing up, one could say that the primary function of the respiratory

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system is to supply the blood with oxygen in order for the blood to deliver oxygen to all parts of the body. When we breathe, we inhale oxygen and exhale carbon dioxide. Among the most important terms associated with the system are: nasal cavity, oral cavity, pharynx, larynx, trachea, bronchi, bronchioles, lungs, pleura, diaphragm, alveoli.

Works Cited

1. Hardie, Jackie. Breathing and Respiration. Des Plaines, Illinois: Rigby Interactive Library, 1997.
2. Parker, Steve. The Lungs and Respiratory System. Austin, Texas: Raintree Steck-Vaughn, 1997.