THE RESPIRATORY SYSTEM

By inhaling oxygen, our respiratory system enables us to produce energy. If the respiratory system begins to diminish, the energy stored in the body is released at a slower rate.

The lungs are the centre of the respiratory system and the nose, throat and trachea (windpipe) comprise the respiratory tract. Breathing is usually automatic, and is regulated in the medulla oblongata of the brain. The lungs are paired organs which resemble an inverted tree. The bronchi, which are airways to each lung, divide into smaller and smaller airways called bronchioles. At the end of each bronchiole are a cluster of tiny air sacs called alveoli. It is estimated that there are more than 300 million alveoli in the lungs. This is where the vital gas exchange takes place.

RESPIRATORY PROCESS

When we think of respiration we just think it is breathing. Respiration also describes all the processes associated with the release of energy in our body.

The blood carries food and oxygen to the cells so they can produce energy for their needs. The process is- Food + Oxygen = Carbon Dioxide + Water + Energy. The cells need Oxygen to convert carbohydrates and fats into energy.

The metabolism in the cells produces Carbon dioxide as a waste product in humans and animals, but for plant respiration it is a necessity. Plants waste product is oxygen, they release this into the air and so the cycle of mutual benefits between plant and man begins, repeating continuously.

The lungs exchange gas. The right side of the heart pumps blood with a high concentration of carbon dioxide into the lungs. The carbon dioxide is replaced with oxygen. When the haemoglobin has picked up the oxygen, the blood changes from a dark red to a bright red.

FACTORS IN LUNG HEALTH

The oxygen-enriched blood is pumped through the left side of the heart and then circulated throughout the body. The carbon dioxide is then exhaled.

The respiratory system is sensitive to the amount of carbon dioxide in the blood. If the amount of carbon dioxide rises in the blood, the breathing response will increase so that more oxygen is available for energy metabolism.

The majority of people begin life with a pair of bright, healthy pink lungs but as we get older our lungs change to a dull, pink-grey colour with black patches, this is from people smoking and from living in cities. The respiratory tract is especially vulnerable to particles floating in the air. It is estimated that city dwellers ingest 20 trillion particles of foreign matter a day. The respiratory system deals with these particles in several ways. When we cough and sneeze it clears the lungs passageways of foreign matter. The hairs in the nose, called Cilia, trap irritants, contaminants, bacteria, viruses, fungi, vehicle exhaust and other materials. But not all particles are trapped here.

FOREIGN PARTICLE REMOVAL

Fortunately, there are also cells in the respiratory tract specially designed to engulf and rid the body of foreign particles. These particles irritate the tissues, causing them to swell and produce extra mucus. The lining of the respiratory tract feels uncomfortable and sore. Swelling and mucus eventually obstruct the passages. If any further particles are trapped in the tract, bronchitis and asthma may result.

Since oxygen is so vital to the energy needs of the body, it is essential that we maintain healthy lungs by breathing unpolluted air as much as possible and by supplying the body in general with good nutrition.