

Emergency First Responder

Clinical Anatomy & Physiology



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Objectives

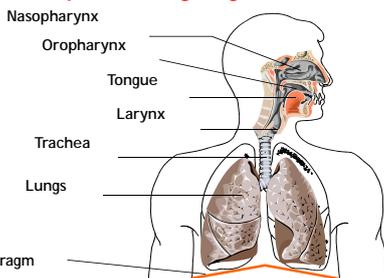
By the end of this session you should be able to:

- Outline the basic structure and function of the cardio-respiratory and musculoskeletal systems



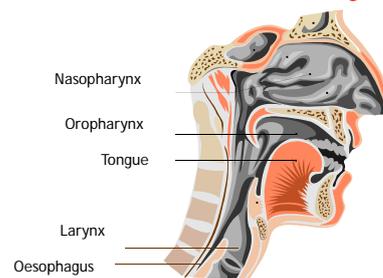
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Respiratory System



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The Airway



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Respiratory System



• Function

- Moves air into and out of the body in order to bring in oxygen and expel carbon dioxide



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Respiratory System

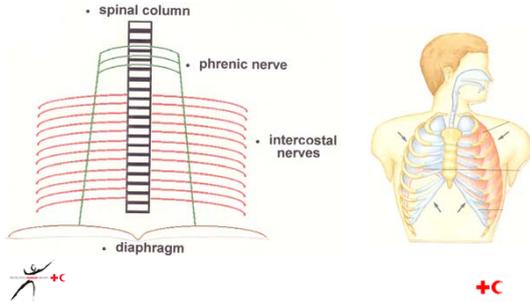
Consists of:

- Mouth
- Nose
- Trachea
- Bronchi
- Two lungs
- Associated muscles



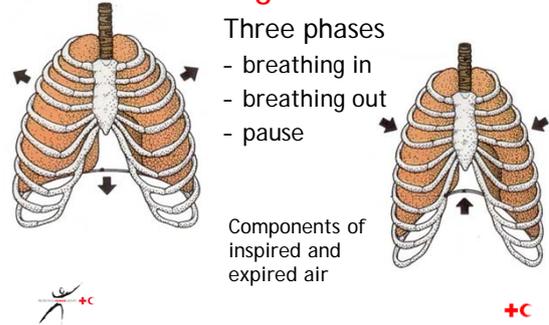
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Nerves Controlling Respiration



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Breathing Mechanism



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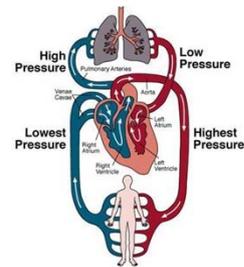
Requirements to Breathe

- Oxygen in the air
- Clear airway
- Normal chest wall
- Normal lungs
- Normal nerve supply
- Good circulation
- Normal transfer of oxygen from the blood to the cell



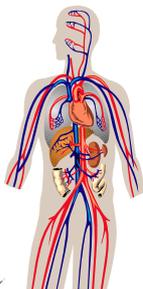
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Cardiovascular System



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Functions of the Circulation



- Transport oxygen to the tissues
- Remove carbon dioxide and other waste products
- Carry
 - Nutrients
 - Hormones
 - Heat

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Blood Vessels

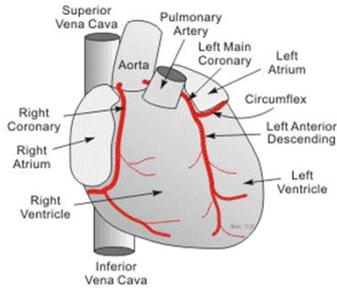
- Arteries:
 - These carry blood from the heart around the body. The blood is oxygen rich in all arteries except the pulmonary artery
- Veins:
 - These carry blood from around the body back to the heart.
 - The blood is deoxygenated in all veins except the pulmonary vein
- Capillaries :
 - A network of fine blood vessels which link arteries and veins within all body tissues. They facilitate the transfer of oxygen into the tissue cells and waste products out of the cells



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Coronary Circulation



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Skeletal system

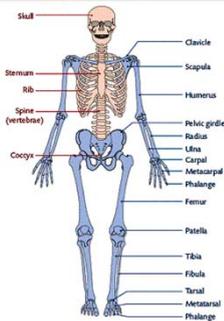
- This is made up of bones, skeletal muscles, tendons and ligaments
- Provides shape
- It provides support and protection for the body's internal organs and permits movement
- Some bones also produce blood cells



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Axial and Appendicular Skeleton



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Joints

- Pivot Joint - Base of Skull
- Saddle Joint - Base of Thumb
- Hinge Joint - Elbow
- Plane Joint - Wrist & Foot
- Ball & Socket - Hip & Shoulder
- Ellipsoidal Joint - Wrist



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Musculoskeletal System

- Muscle:
 - Cardiac - found only in heart
 - Smooth - automatic functions e.g. Digestion
 - Skeletal - support and movement
- Tendons - attach muscle to bone
- Ligaments - attach bone to bone



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Functions of Blood

- Approx 55% of blood is a clear yellow fluid - Plasma
- In this are suspended platelets (to assist in clotting) and white blood cells (to defend against infections). They make up approx. 4% of blood
- The remaining 41% is made up of red blood cells, which contain Haemoglobin, a red pigment that enables the red blood cell to carry oxygen
- Blood carries oxygen and nutrients to the body cells and carbon dioxide and waste products away from the cells
- It also carries hormones, salt, water and other compounds and also assists in the regulation of body temperature



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The Skin

- Is the largest organ of the body
- It covers and protects all body tissue, systems and organs
- It retains moisture and chemicals within the body
- It protects the body from heat and cold and environmental pollutants i.e. bacteria etc
- It regulates body temperature
- It senses heat, cold, touch, pain and pressure on all surfaces of the body



Summary

- Respiratory system
- Cardiovascular system
- Musculoskeletal system
- Blood
- Skin

