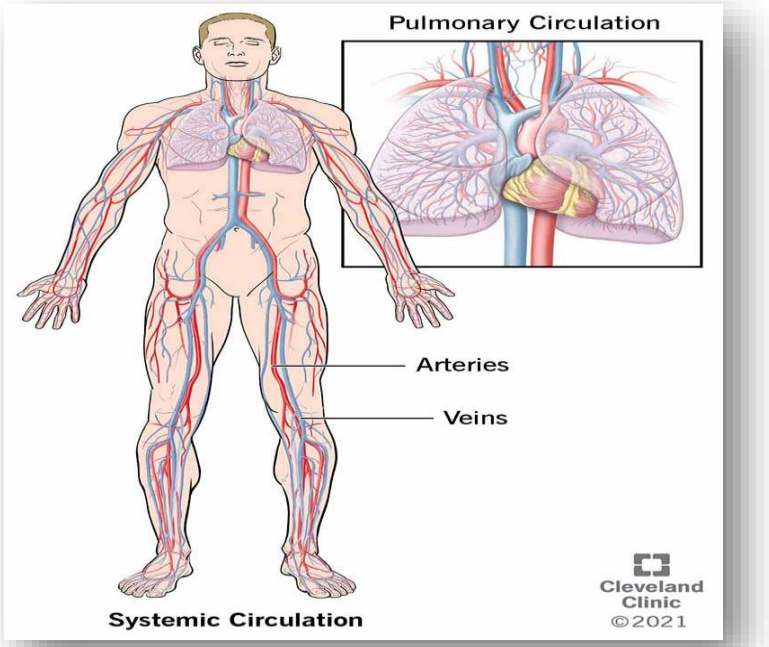
circulating system physiology

The circulatory system (cardiovascular system) pumps blood from the heart to the lungs to get oxygen. The heart then sends oxygenated blood through arteries to the rest of the body. The veins carry oxygen-poor blood back to the heart to start the circulation process over**.**



Function

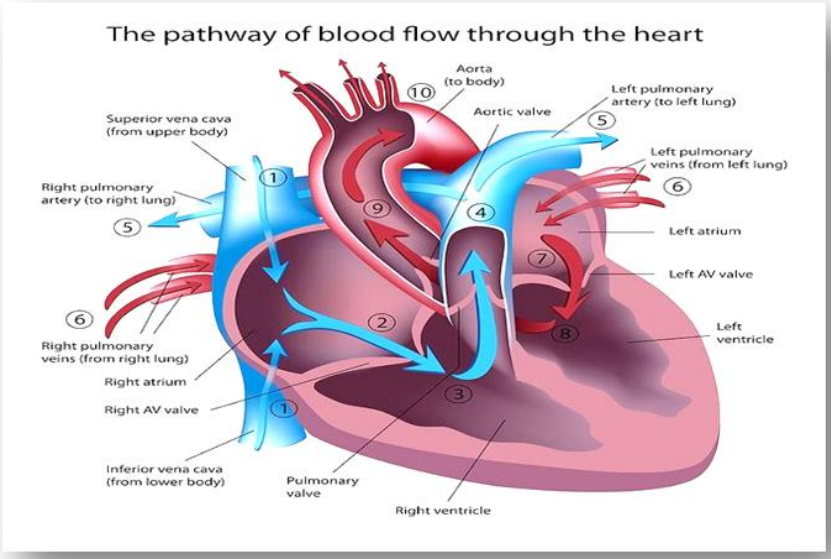
The circulatory system's function is

1- To move blood throughout the body. This blood circulation keeps organs, muscles and tissues healthy and working to keep you alive.

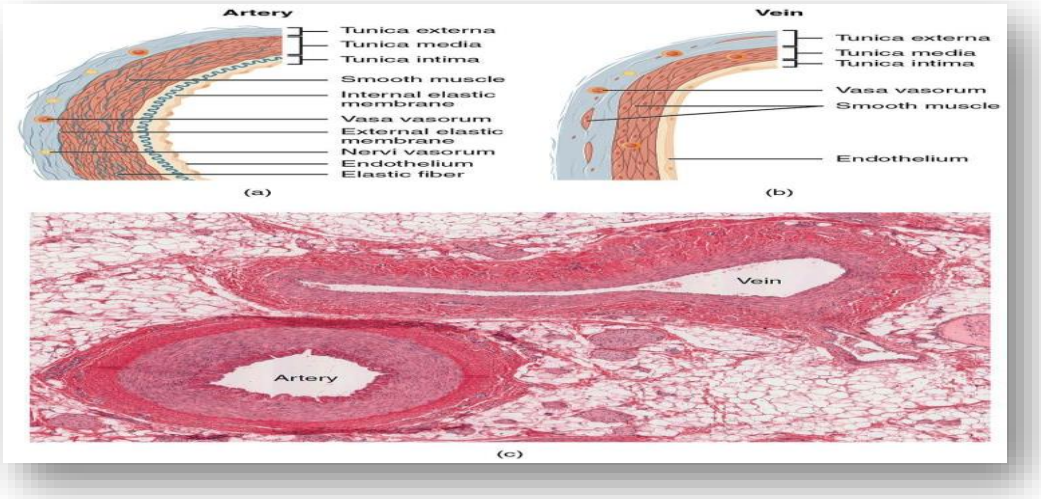
2- also helps removal waste products from body such as (CO2).

parts the circulatory system

1. **Heart,** a muscular organ that pumps blood throughout body.



2. **Blood vessels,** which include arteries, veins and capillaries.



3. **Blood,** Blood is a specialized body fluid. It has four main components: plasma, red blood cells, white blood cells, and platelets. Blood has many different functions, including:

1) transporting oxygen and nutrients to the lungs and tissues
2) forming blood clots to prevent excess blood loss
3) carrying cells and antibodies that fight infection
4) bringing waste products to the kidneys and liver, which filter and clean the blood
5) regulating body temperature

The Components of Blood and Their Importance

1) **Plasma::** The liquid component of blood, a mixture of water, sugar, fat, protein, and salts. The main job of the plasma is to transport blood cells throughout your body along with nutrients, waste products, antibodies, clotting proteins, hormones,
2) **Red Blood Cells** ;; are the most abundant cell. RBC contain a special protein called hemoglobin, which helps carry oxygen from the lungs to the rest of the body and then returns carbon dioxide from the body to the lungs .
3) **White Blood Cells (also called leukocytes)**:: White blood cells protect the body from infection in body (neutrophil, lymphocyte) .
4) **Platelets (also called thrombocytes)**:: small fragments of cells. Platelets help the blood clotting process (or coagulation) by gathering at the site of an injury**.**

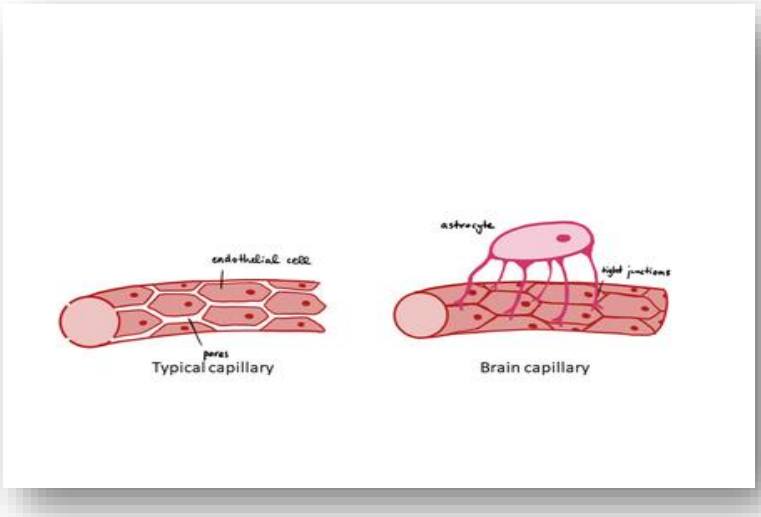
❖ Types of blood vessels

There are three main types of blood vessels:

1- Arteries: Arteries are thin, muscular tubes that carry oxygenated blood away from the heart and to every part of your body. The aorta is the body's largest artery.

2- Veins: These blood vessels return oxygen-depleted blood to the heart. Veins start small (venules) and get larger as they approach your heart.

3- Capillaries: These blood vessels connect very small arteries (arterioles) and veins (venules). Capillaries have thin walls that allow oxygen, carbon dioxide, nutrients and waste products to pass into and out of cells.



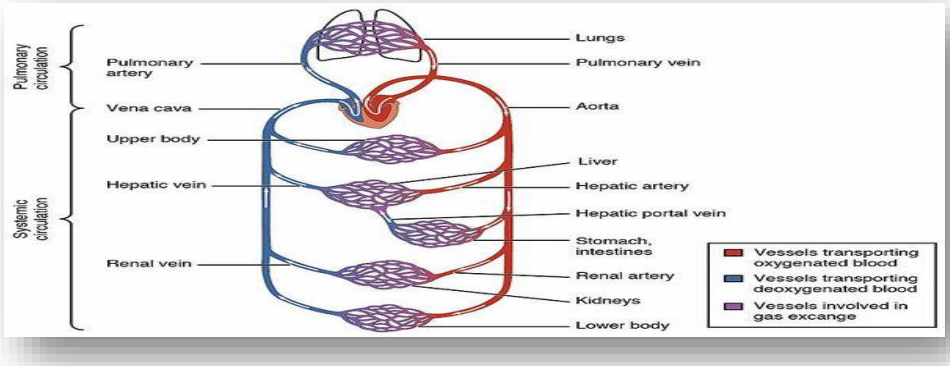
❖ Types of Circulation of Blood

- Systemic Circulation (greater)

Left Ventricle ➜ body ➜ Right Atrium

- Pulmonary Circulation (lesser)

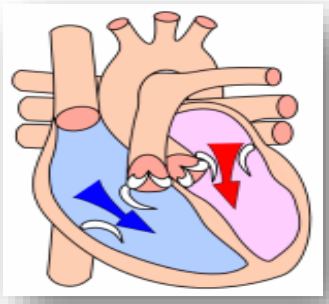
Right Ventricle ➜ lungs ➜ Left Atrium



❖ Cardiac Cycle Phases

The two main phases of the cardiac cycle are

1. **diastole (the relaxation phase)**:: begins with the relaxation of all the heart muscles. During diastole, blood returns to the heart and begins to fill the atria and ventricles. The lack of pressure in the ventricle allows the mitral and tricuspid valves to open, which allow blood from the atria into the left and right ventricles respectively



2. **systole (the contraction phase)** :: begins with the contraction of heart muscles. The increased pressure in the ventricles closes the mitral and tricuspid valves. The pressure pushes open the aortic and pulmonary valves