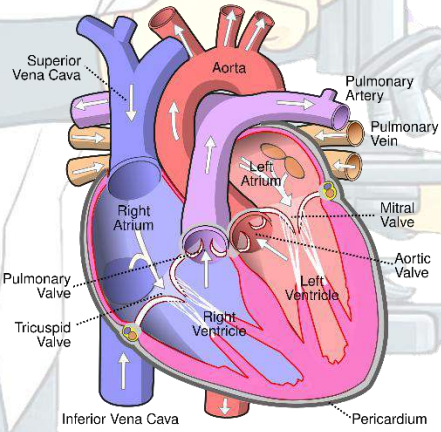
Aim: Study of Cardiovascular system and organs with the help of charts, models, and specimens.

Objective: This detailed study aims to provide an in-depth understanding of the cardiovascular system and associated organs, encompassing anatomy, physiology, and pathology.

Introduction: The cardiovascular system, comprising the heart and blood vessels, plays a pivotal role in maintaining homeostasis by ensuring blood circulation throughout the body. This comprehensive study will delve into the intricate details of the cardiovascular system, exploring its anatomy, functions, and potential disorders.

Anatomy of the Cardiovascular System:

The Heart: The heart is a muscular organ in the chest cavity, usually slightly to the left of the midline. It functions as the central component of the cardiovascular system and is responsible for pumping blood throughout the body. The heart plays a vital role in circulatory function, ensuring the delivery of oxygen, nutrients, and hormones to various tissues and organs while removing waste products. The organ consists of four chambers - two atria and two ventricles - which work together to maintain blood circulation and support overall physiological processes.



Blood Vessels: Blood vessels form a crucial network in the circulatory system, facilitating the transport of oxygen, nutrients, hormones, and waste products. Arteries, with thick elastic walls, carry oxygenated blood away from the heart. Veins, characterized by thinner walls and valves, return deoxygenated blood to the heart. Capillaries, small vessels connecting arteries and veins, enable substance exchange with surrounding tissues. This intricate vascular system supports continuous blood circulation, sustaining metabolic functions and ensuring homeostasis.

Physiology of the Cardiovascular System: The cardiovascular system's physiology involves studying how the heart, blood vessels, and blood collaborate for circulatory functions. Key components include:

1. Heart Function:

Acts as a muscular pump for blood circulation.

The cardiac cycle includes systole and diastole.

Chambers (atria and ventricles) coordinate blood reception and pumping.

2. Blood Vessel Dynamics:

Capillaries facilitate nutrient exchange.

3. Blood Composition:

Arteries carry oxygenated blood away; veins return deoxygenated blood.

Blood pressure regulation involves arterial elasticity, volume, and cardiac output.

Blood comprises plasma, red and white blood cells and platelets.

Plasma transports nutrients, hormones, and waste.

Blood cells aid oxygen transport and immune responses.

4. Cardiac Output:

Represents blood volume pumped per minute.

Determined by heart rate and stroke volume.

5. Blood Pressure Regulation:

The force exerted by blood against arterial walls.

Regulated by the nervous system, hormones, and the renin-angiotensin-aldosterone system.

6. Blood Circulation:

Systemic circulation delivers oxygen to tissues; pulmonary circulation oxygenates lung blood.

Coronary circulation supplies blood to the heart muscle.

7. Control Mechanisms:

Regulated by neural, hormonal, and local mechanisms.

Baroreceptors sense pressure changes for homeostasis.