



SNS COLLEGE OF NURSING

SARAVANAMPATTI, COIMBATORE-35

DEPARTMENT OF NURSING

COURSE NAME : BSC (NURSING) I YEAR

SUBJECT : ANATOMY AND PHYSIOLOGY

UNIT IV: CARDIOVASCULAR SYSTEM

TOPIC : HEART



INTRODUCTION



- 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.
- The main function of the circulatory system is to provide oxygen, nutrients and hormones to muscles, tissues and organs throughout the body and to remove waste from cells and organs

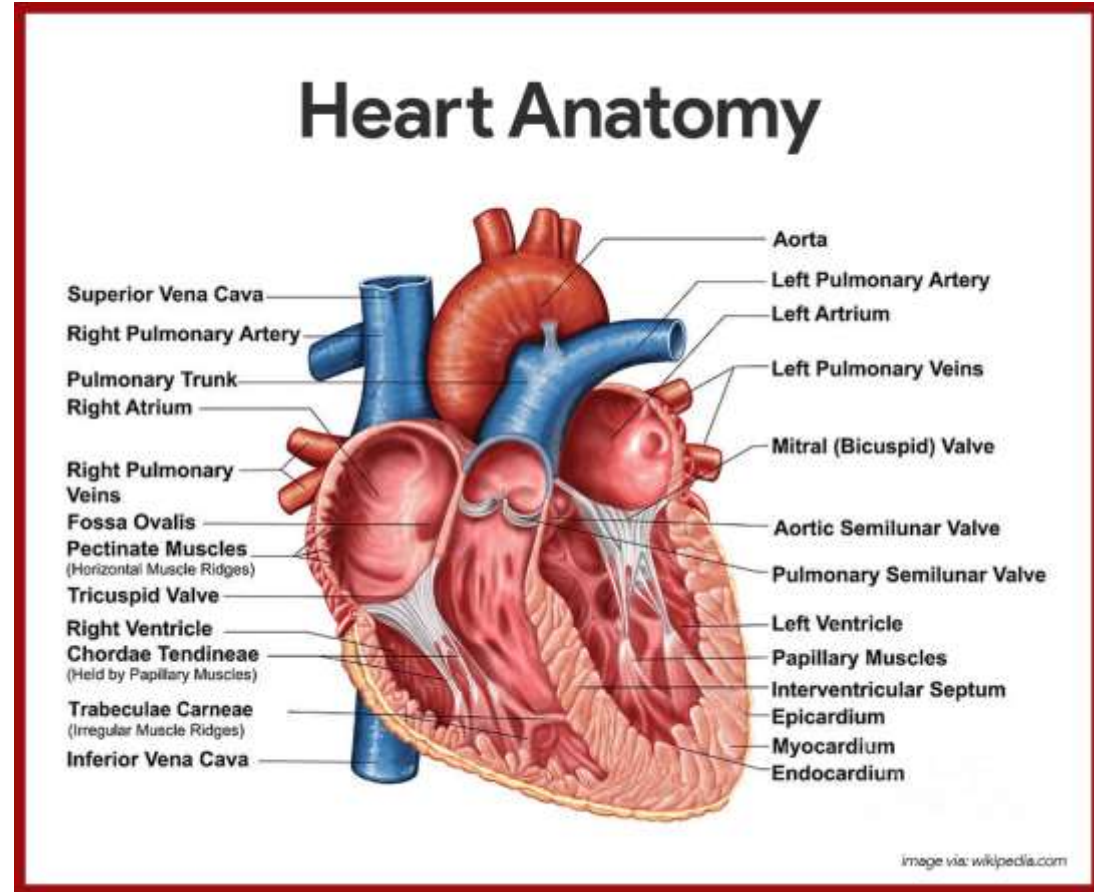


Functions of the Heart



- The functions of the heart are as follows
- Managing blood supply.
- Producing blood pressure. .
- Securing one-way blood flow.
- Transmitting blood.

- Weight. .
- Mediastinum.
- Apex.
- Base.
- Pericardium. -double-walled
- Fibrous pericardium.
- Serous pericardium.





Layers of the Heart



- Epicardium. The epicardium or the visceral and outermost layer is actually a part of the heart wall.
- Myocardium. The myocardium consists of thick bundles of cardiac muscle twisted and whirled into ringlike arrangements and it is the layer that actually contracts.
- Endocardium. The endocardium is the innermost layer of the heart and is a thin, glistening sheet of endothelium that lines the heart chambers.



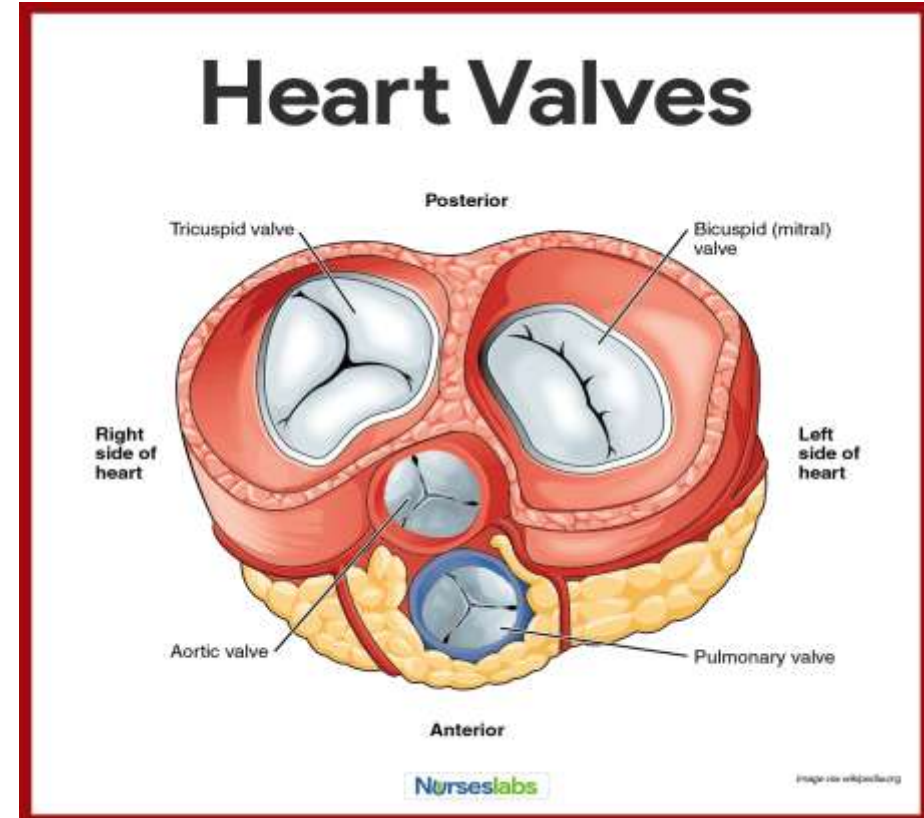
Chambers of the Heart



- The heart has four hollow chambers, or cavities: two atria and two ventricles.
- Receiving chambers. The two superior atria .
- Discharging chambers. The two inferior, thick-walled ventricles are the discharging chambers
- Septum. The septum that divides the heart longitudinally is referred to as either the interventricular septum or the interatrial septum, depending on which chamber it separates.

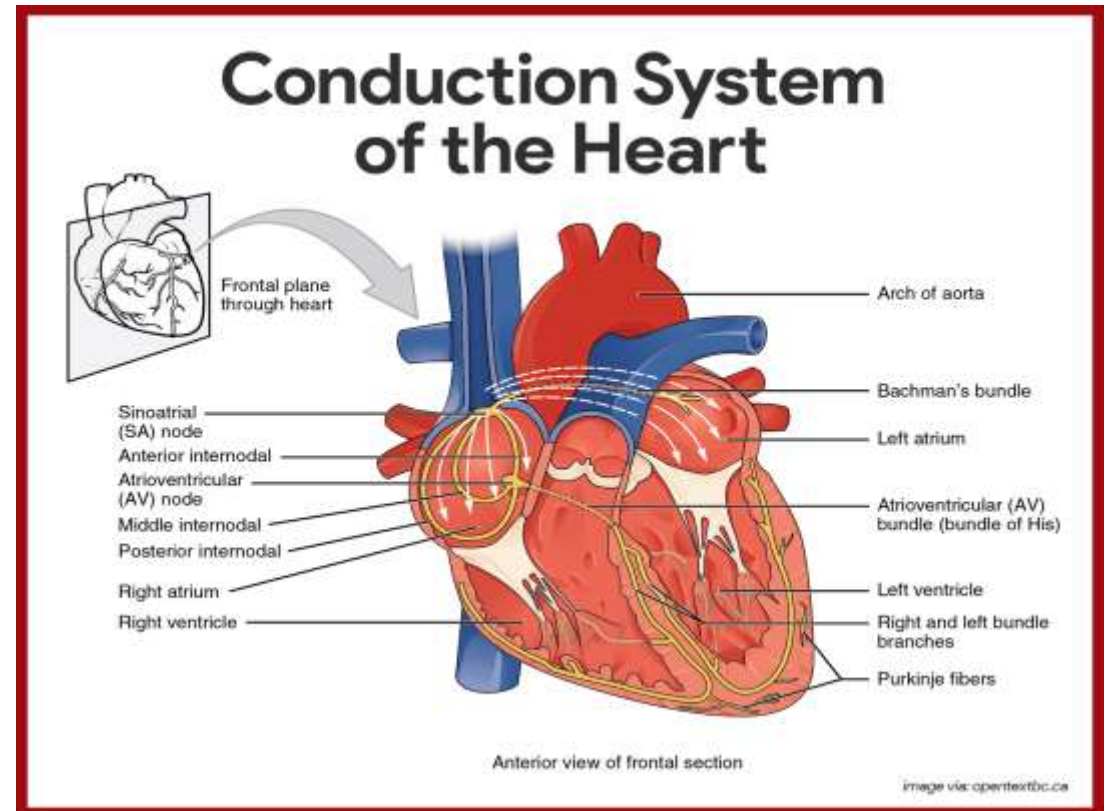
Heart Valves

- Atrioventricular valves.
- Bicuspid valves.
- Tricuspid valve.
- Semilunar valve.



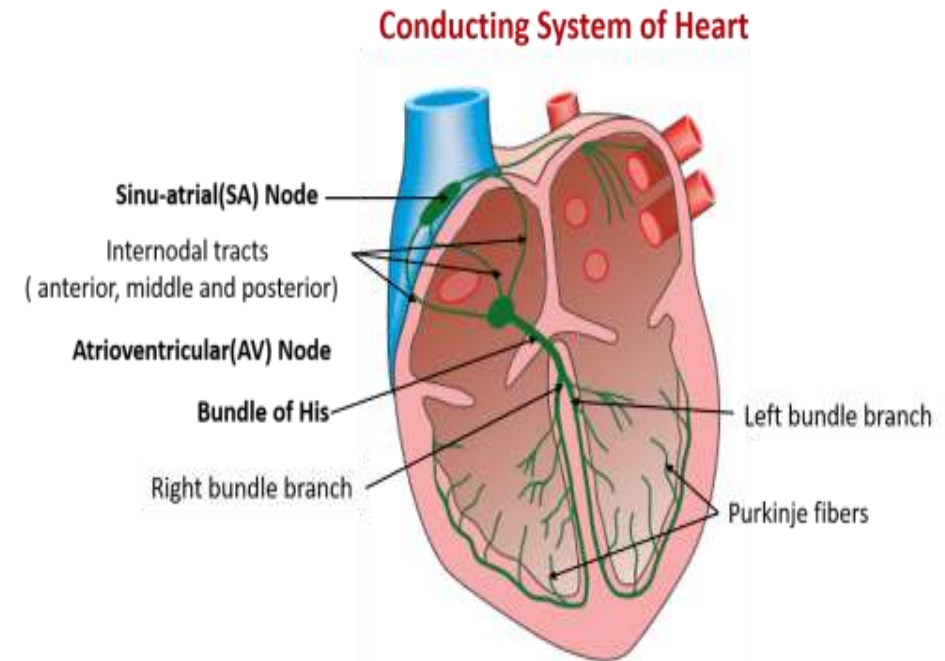
Physiology of the Heart

- Cardiac muscle cells. .
- Rhythms. .
- Intrinsic conduction system.
- Composition.
- Function.
- Sinoatrial (SA) node. Also called the “pacemaker”.
- Atrial contraction.
- Ventricular contraction.
- Ejection.



The Pathway of the Conduction System

- The conduction system occurs systematically through:
- SA node.
- Atrial myocardium.
- Atrioventricular node.
- AV bundle.
- Bundle branches and Purkinje fibers.





Cardiac Cycle



- Systole. Systole means heart contraction.
- Diastole. Diastole means heart relaxation.
- Cardiac cycle. one complete heart beat
- Length - normally about 0.8 second.
- Mid-to-late diastole. .
- Ventricular systole.
- Early diastole.

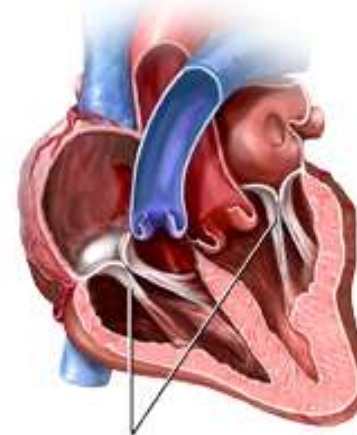
First heart sound.

- The first heart sound, “lub”, is caused by the closing of the AV valves.

Second heart sound.

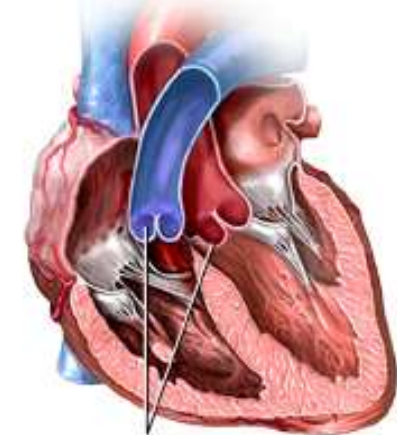
- The second heart sound, “dub”, occurs when the semilunar valves close at the end of systole.

First heart sound, “lub”, occurs when atrioventricular valves close



Atrioventricular valves

Second heart sound, “dub”, occurs when semilunar valves close



Semilunar valves

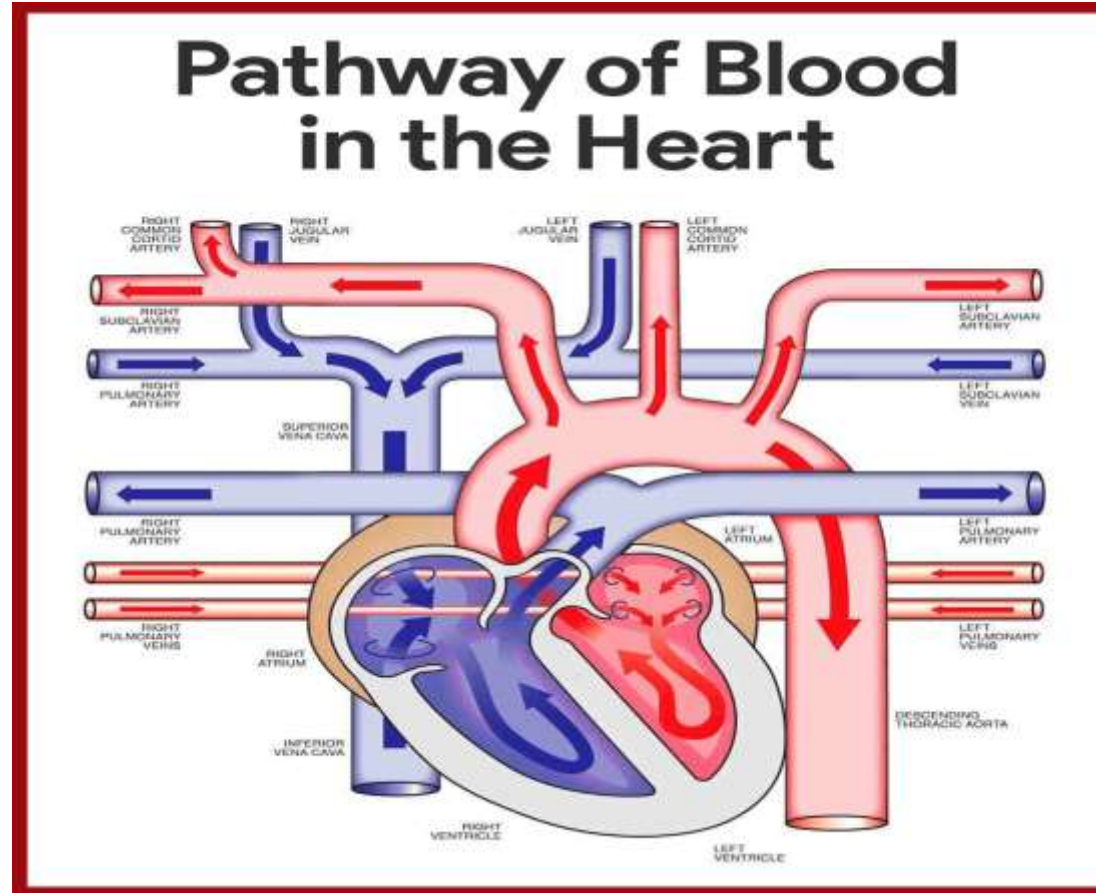


Cardiac Output



- Stroke volume.
- Regulation of stroke volume.
- Factors modifying basic heart rate.
- The most important external influence on heart rate is the activity of the autonomic nervous system, as well as physical factors

Blood Circulation Through the Heart





Blood Circulation Through the Heart



- Entrance to the heart.
- Atrial contraction. .
- Closure of the tricuspid valve. .
- Ventricle contraction.
- Oxygen-rich blood circulates.
- Opening of the mitral valve. .
- Prevention of backflow.
- Blood flow to systemic circulation.

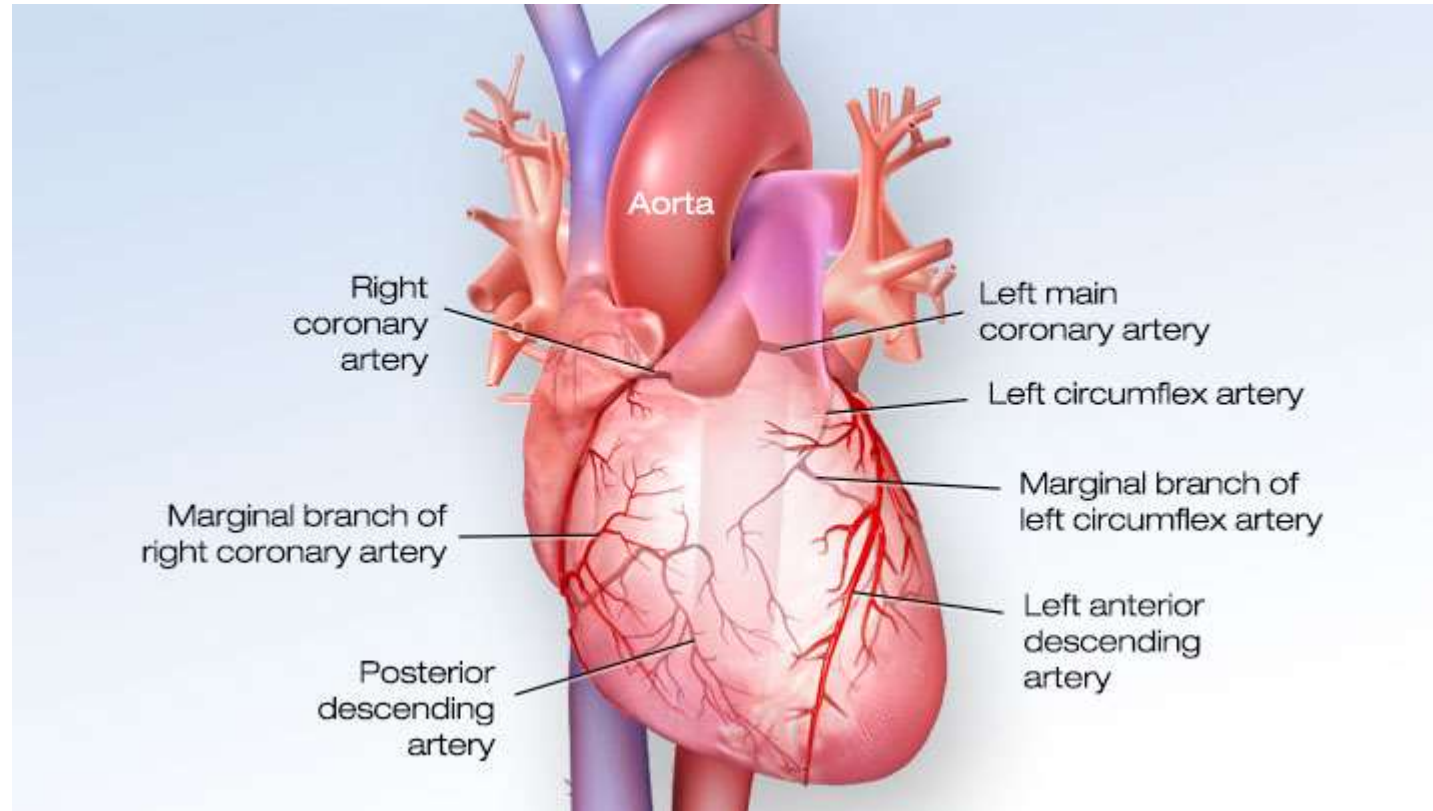


Cardiac Circulation Vessels

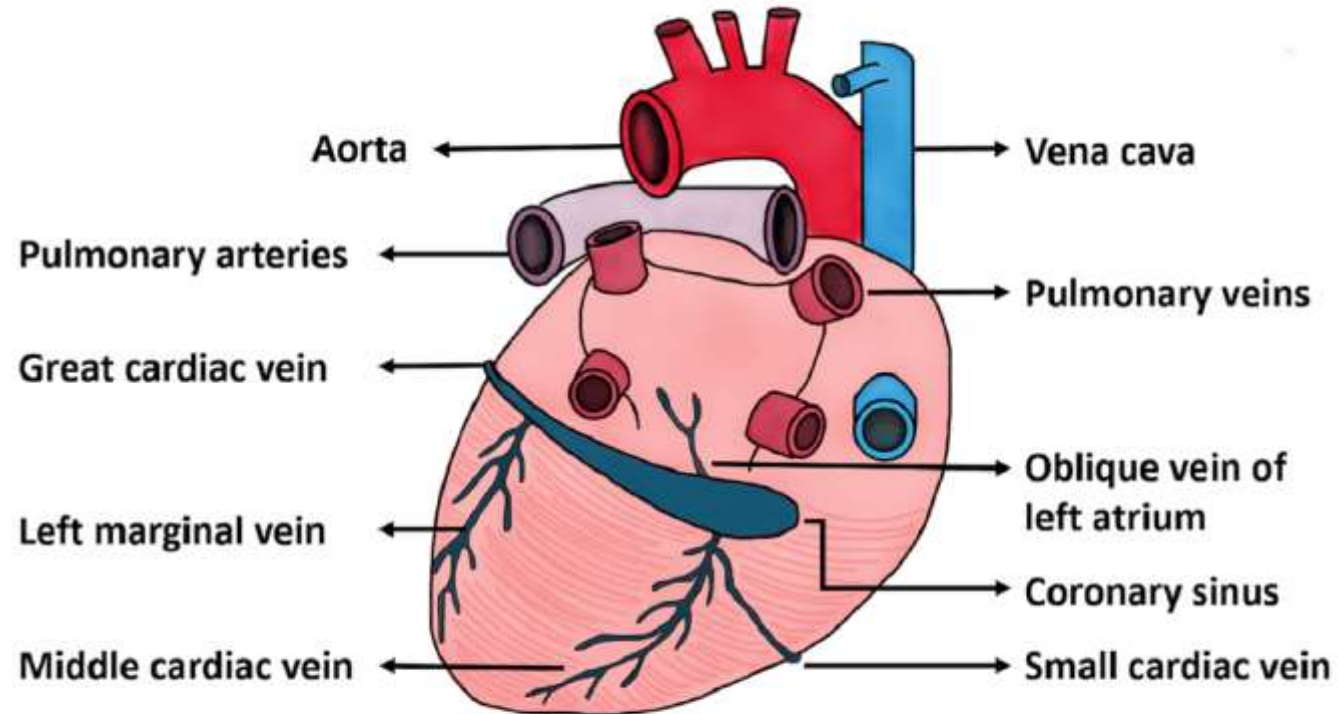


- Coronary arteries. The coronary arteries branch from the base of the aorta and encircle the heart in the coronary sulcus (atrioventricular groove) at the junction of the atria and ventricles, and these arteries are compressed when the ventricles are contracting and fill when the heart is relaxed.
- Cardiac veins. The myocardium is drained by several cardiac veins, which empty into an enlarged vessel on the posterior of the heart called the coronary sinus.

Coronary Artery And its Branches

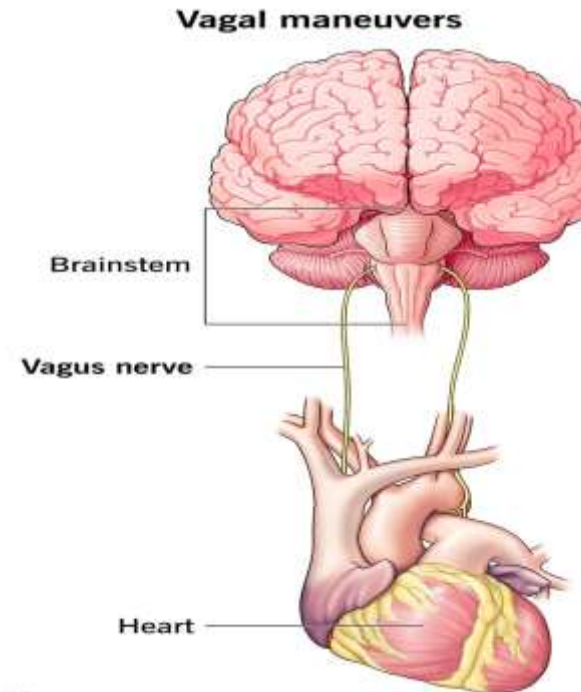


Coronary Sinus And its Branches



CARDIAC NERVE SUPPLY

- Vagus Nerve
- Medulla is the control center





Cardiovascular Vital Signs



- Arterial pulse.
- Normal pulse rate.
- Pressure points. .
- Blood pressure.
- Blood pressure gradient.
- Measuring blood pressure.
- Peripheral resistance.
- Neural factors.
- Renal factors.
- Temperature.
- Chemicals.
- Diet. .

12 Small Changes for
HEART
HEALTH





CONCLUSION



- circulatory system plays a critical role by carrying blood to the lungs for oxygen.
- The heart pumps oxygen-rich blood through arteries to the rest of the body.
- The veins help the body get rid of waste products.
- The heart works in a systematic way in an involuntary manner
- Conditions like high blood pressure, high cholesterol and atherosclerosis can affect the health of circulatory system.



Thank

You