

ASSIGNMENT FOR VIVA..Dental sec b 2nd semester

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Q1. (i) Write a note on cardiovascular system?

(ii) what are the symptoms of high and low blood pressure?

(iii) what is the treatment of high and low blood pressure?

Cardiovascular System

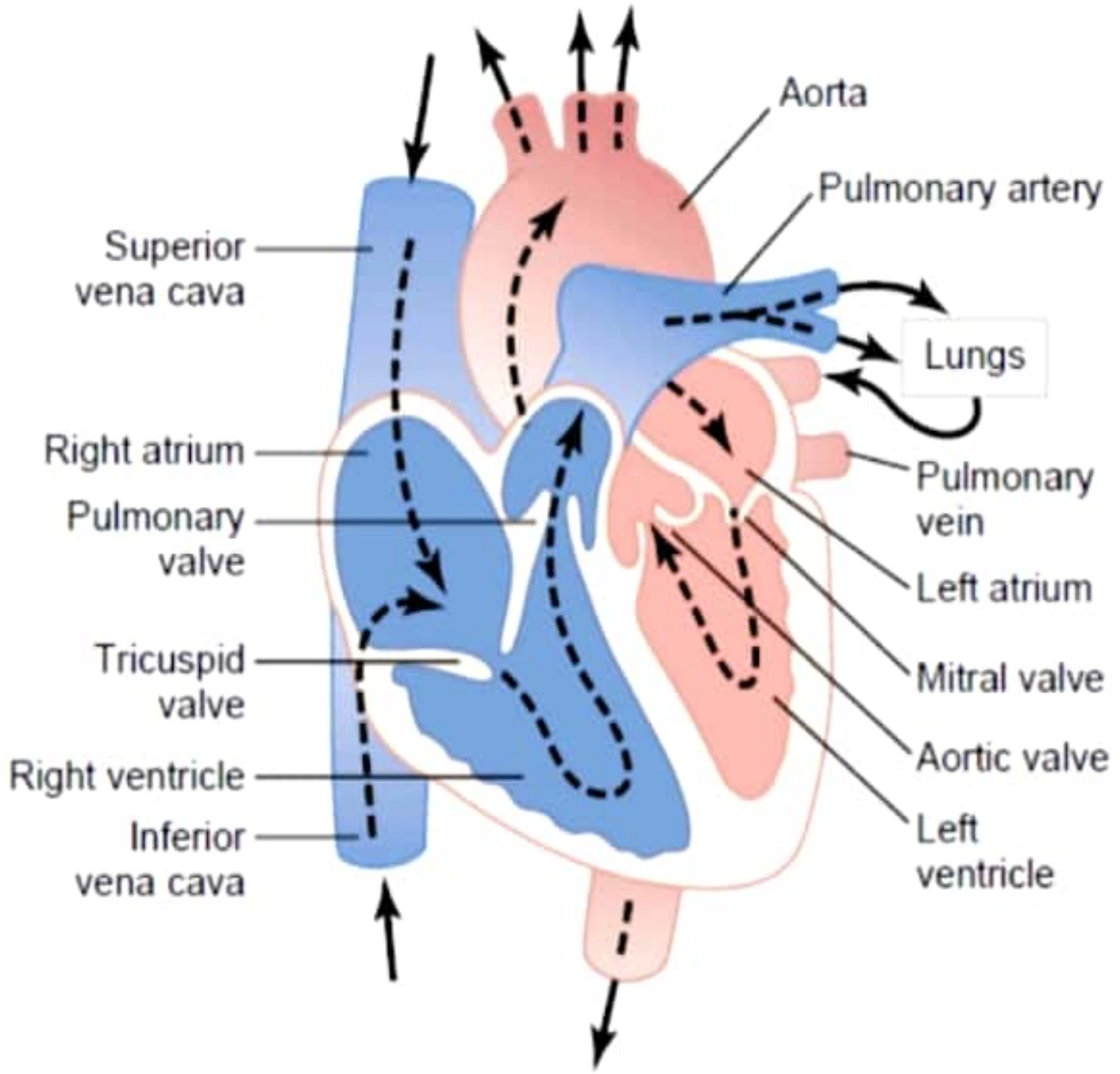
Cardiac Muscle;

Heart as a Pump and Function of the Heart Valves

Physiology of Cardiac Muscle

Cardiac muscle, composed of the contractile cells of the heart, has a striated appearance due to alternating thick and thin filaments composed of myosin and actin. Actin and myosin are contractile protein filaments, with actin making up thin filaments, and myosin contributing to thick filaments.

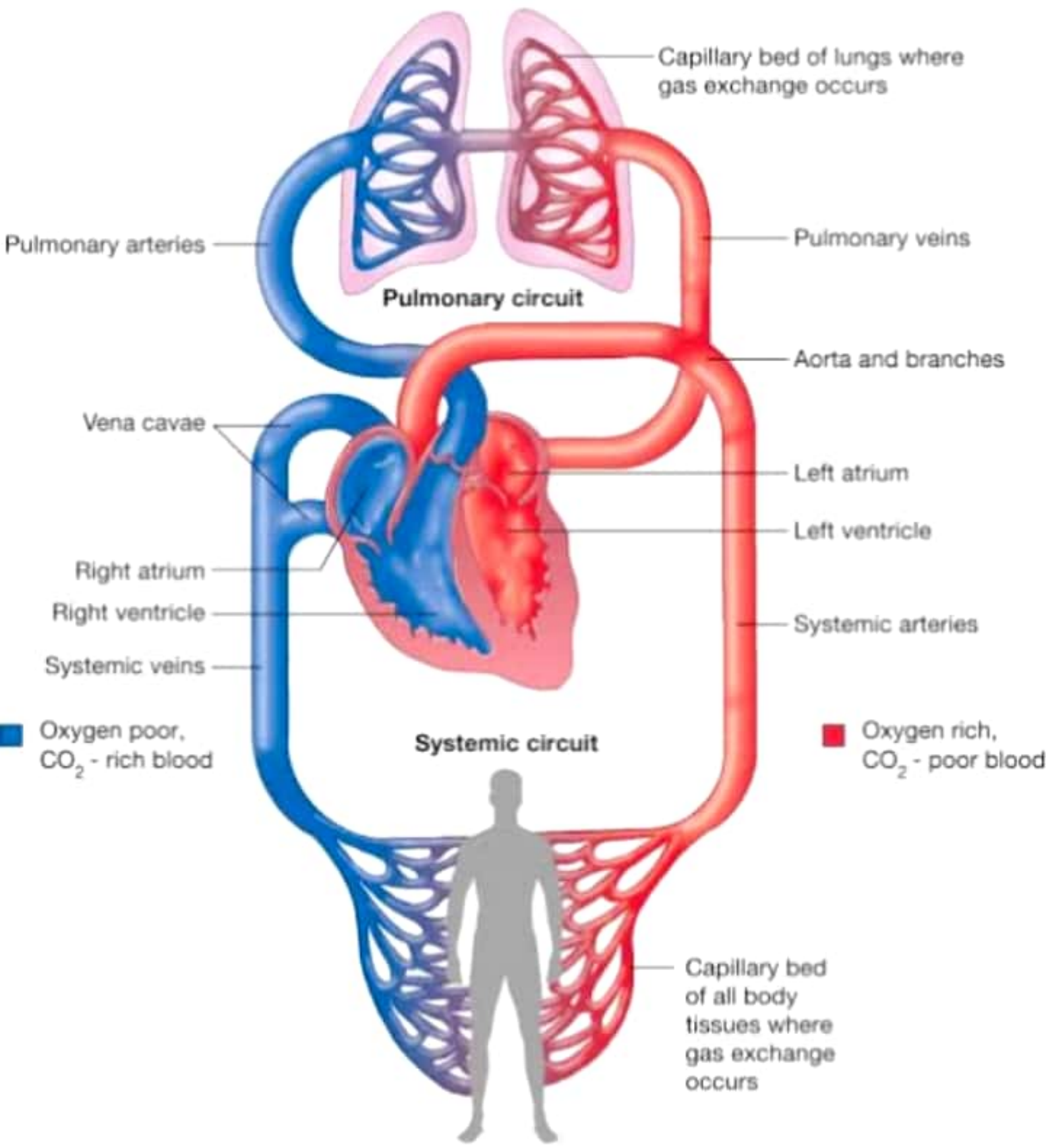
HEAD AND UPPER EXTREMITY



TRUNK AND LOWER EXTREMITY

Pulmonary systemic circulation

Pulmonary circulation moves blood between the heart and the lungs. It transports deoxygenated blood to the lungs to absorb oxygen and release carbon dioxide. The oxygenated blood then flows back to the heart. Systemic circulation moves blood between the heart and the rest of the body.



Physiology of Cardiac Muscle

The heart is composed of three major types of cardiac muscle: atrial muscle, ventricular muscle, and specialized excitatory and conductive muscle fibers.

The atrial and ventricular types of muscle contract in much the same way as skeletal muscle, except that the duration of contraction is much longer.

The specialized excitatory and conductive fibers exhibit either automatic rhythmical electrical discharge in the form of action potentials that controls the rhythmical beating of the heart.

Physiologic Anatomy of Cardiac Muscle

Cardiac muscle is striated muscle that is present only in the heart. Cardiac muscle fibers have a single nucleus

striated in the same manner as in skeletal muscle.

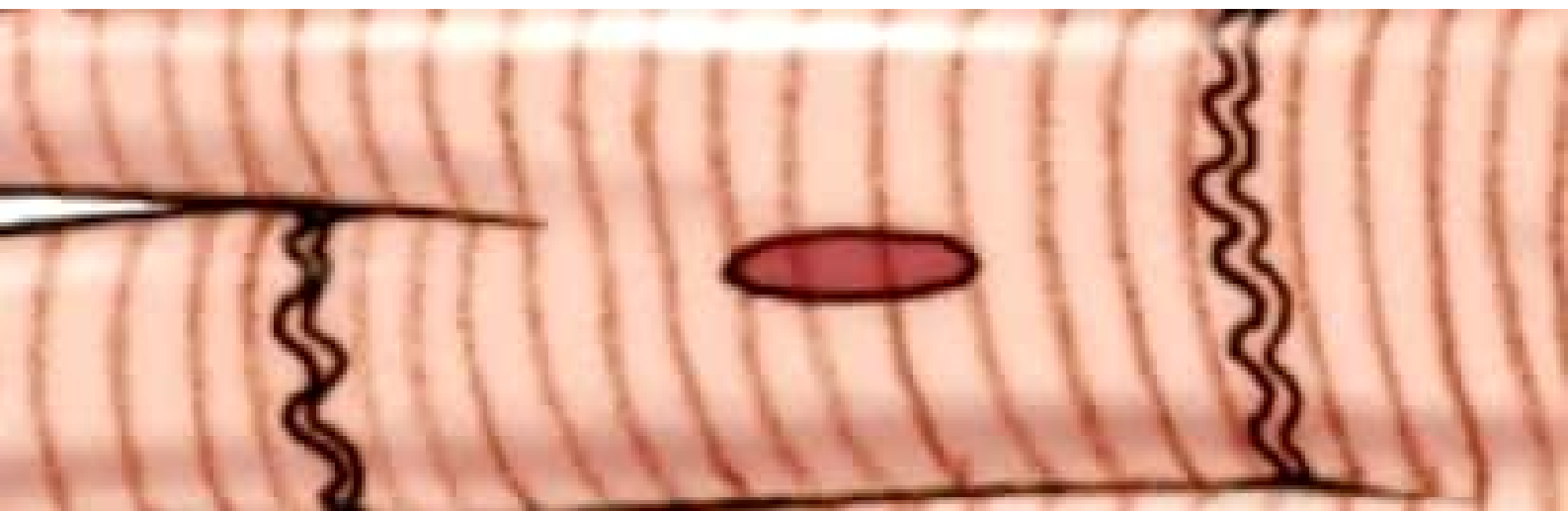
But cardiac muscle is quite different From skeletal muscle:

Cardiac Muscle as a Syncytium

intercalated discs :The dark areas crossing the cardiac muscle fibers.

cardiac cells are so interconnected (gap junctions) (At each intercalated disc) that when one of these cells becomes excited, the action potential spreads to all of them, from cell to cell throughout the latticework interconnections.

Two syncytiums:



(1) The atrial syncytium (2) The ventricular syncytium.

Potentials conducted only by A-V bundle.

So WHY Two syncytiums division ??

To allow the atria to contract a short time ahead of ventricular contraction, which is important for effectiveness of heart pumping.

Action Potentials in Cardiac Muscle

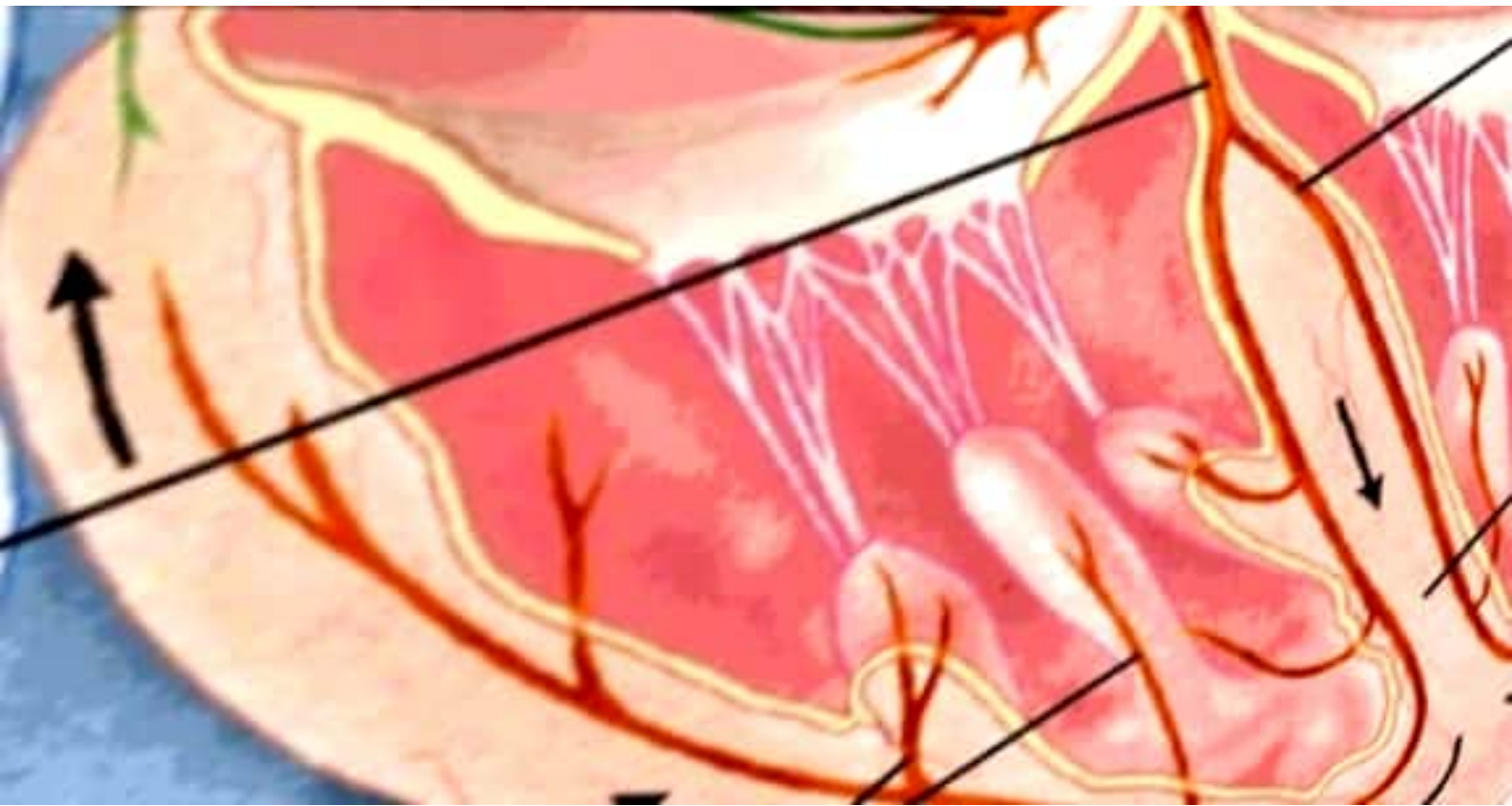
Two types of channels in cardiac muscle:

- (1) fast sodium channels as those in skeletal muscle
- (2) slow calcium channels.

Duration of Contraction

1= Cardiac muscle begins to contract a few milliseconds after the action potential begins and continue to contract until a few milliseconds after the action potential ends. Therefore, the duration of contraction of cardiac muscle is mainly a function of the duration of the action potential.

2= its about 0.2 second in atrial muscle and 0.3 second in ventricular muscle.



The cardiac cycle: the cardiac events that occur from the beginning of one heartbeat to the beginning of the next.

cycle is initiated by spontaneous action potential in the sinus node. >>SA > rapidly through both atria and then through the A-V bundle into the ventricles.

Diastole and Systole

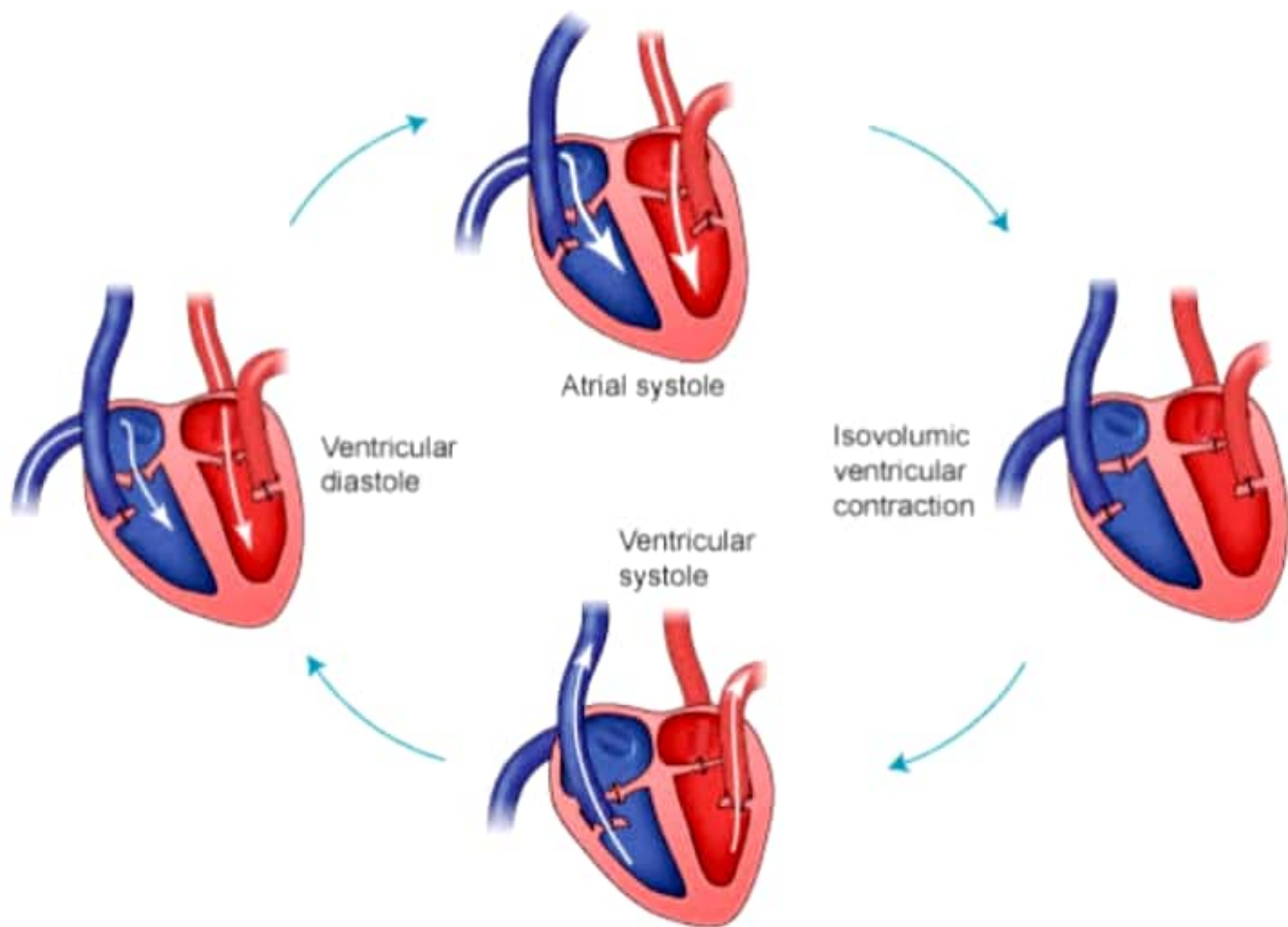
Diastole and systole are two phases of the cardiac cycle. They occur as the heart beats, pumping blood through a system of blood vessels that carry blood to every part of the body. Systole occurs when the heart contracts to pump blood out, and diastole occurs when the heart relaxes after

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Diastole and Systole

Diastole and systole are two phases of the cardiac



contraction.

The total duration of the cardiac cycle (including systole and diastole) is the reciprocal of the heart rate. >> if heart rate is 72 beats/min, the duration of the cardiac cycle is $1/72$ beats/min.

• recording the electrical activity over a period of time.

2= The ECG shows 5 waves >> P, Q, R, S, and T waves:

3= P wave: spread of depolarization through the atria, and this is followed by atrial contraction,P

from the ventricles to the atria during systole.

3=The valves and the surrounding fluids vibrate under the influence of sudden pressure changes, giving off sound that travels in all directions through the chest.

The first heart sound:

1=It's the sound caused by closure of the A-

Segments

QRS C



for a short period.

The third heart sound:

1= Rapid flow of blood from atria into ventricles

2= Its normal in children BUT associated with disease in adults.

Lightheadedness

Unsteadiness

Dimming or blurring of vision

Weakness

Fatigue

Nausea

Cold, clammy skin

Fainting

Pale skin.

Treatment of low blood pressure

Depending on the cause of your symptoms, your doctor may tell you to increase your blood pressure by making these simple changes.

1=Eat a diet higher in salt.

2=Drink lots of nonalcoholic fluids.

3=Limit alcoholic beverages.

4=Drink more fluids during hot weather and while sick with a viral illness, such as a cold or the flu.

5=Have your doctor evaluate your prescription and over-the-counter medications to see if any

13=To avoid problems with low blood pressure
after meals

Eat a healthy diet. ...

Reduce sodium in your diet. ...

Limit the amount of alcohol you drink. ...

Quit smoking. ...