The Heart Walls

Endocardium

- thin, most inner layer
- made of endothelial tissue

Myocardium

- middle layer of the heart wall
- made of cardiac muscle

Epicardium

- thin, external layer
- made of epithelial tissue

Chambers & Valves of the Heart

Right Atrium

- receives oxygen-poor blood via the inferior and superior vena cava veins (through the systemic venous circulation)
- pumps blood to the right ventricle through the right atrioventricular/tricuspid valve

Right Ventricle

- receives oxygen-poor blood from the right atrium
- pumps blood through the pulmonary/semilunar valve into the pulmonary artery

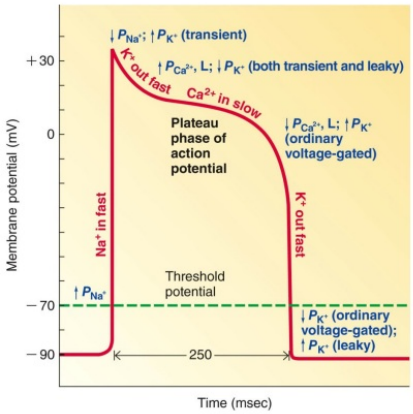
Left Atrium

- receives oxygen-rich blood via the left and right pulmonary veins (from the pulmonary circulation)
- pumps blood through the left atrioventricular/bicuspid/mitral valve into the left ventricle

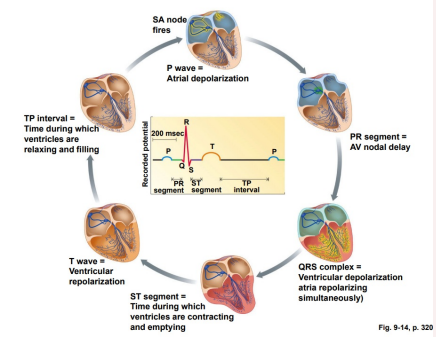
Left Ventricle

- receives oxygen-rich blood from the left atrium
- pumps blood through the aortic/semilunar valve into the aorta

Action Potential in Cardiac Contractile Cells



Phases of the Cardiac Cycle as Seen on an ECG



Mechanical Events of the Cardiac Cycle

End-diastolic Volume

- the volume of blood in the chamber at the end of relaxation/filling/diastole
- aka the maximum amount of blood that the chamber will hold during the cycle

End-systolic Volume

- the volume of blood in the chamber at the end of contraction/emptying/systole
- aka the amount when ejection is finished

Stroke Volume

- the amount of blood pumped out of the chamber with each contraction
- stroke volume = end-diastolic volume - end-systolic volume

Mechanical Events of the Cardiac Cycle (cont)

Isovolumetric Ventricular Contraction

- the chamber during contraction is closed
- no blood enters or leaves
- chamber pressure increases

Isovolumetric Ventricular Relaxation

- the chamber during relaxation is closed
- no blood enters or leaves
- chamber pressure decreases

Components of the Cardiac Conduction Pathway

Sinoatrial Node

- bundle of specialized cardiac pacemaker cells
- in the wall of the right atrium near the opening of the superior vena cava
- autorhythmicity of 70 action potentials per minute

Atrioventricular Node

Components of the Cardiac Conduction Pathway

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