

# Physiology of Cardiac Muscle

Which phase of the ventricular muscle action potential is the potassium permeability the highest?

- A) 0
- B) 1
- C) 2
- D) 3
- E) 4

Answer :D

Which of the following is most likely to cause the heart to go into spastic contraction?

- A) Increased body temperature
- B) Increased sympathetic activity
- C) Decreased extracellular fluid potassium ions
- D) Excess extracellular fluid potassium ions
- E) Excess extracellular fluid calcium ions

Answer:E

Which of the following structures will have the slowest rate of conduction of the cardiac action potential?

- A) Atrial muscle
- B) Anterior internodal pathway
- C) A-V bundle fibers
- D) Purkinje fibers
- E) Ventricular muscle

Answer:C

Sympathetic stimulation of the heart does which of the following?

- A) Releases acetylcholine at the sympathetic endings
- B) Decreases sinus nodal discharge rate
- C) Decreases excitability of the heart
- D) Releases norepinephrine at the sympathetic endings
- E) Decreases cardiac contractility

Answer:D



Which condition at the A-V node will cause a decrease in heart rate?

- A) Increased sodium permeability
- B) Decreased acetylcholine levels
- C) Increased norepinephrine levels
- D) Increased potassium permeability
- E) Increased calcium permeability

Answer:D

Which statement best explains how sympathetic stimulation affects the heart?

- A) The permeability of the S-A node to sodium decreases
- B) The permeability of the A-V node to sodium decreases
- C) The permeability of the S-A node to potassium increases
- D) There is an increased rate of upward drift of the resting membrane potential of the S-A node
- E) The permeability of the cardiac muscle to calcium decreases

Answer:D

What is the membrane potential (threshold level) at which the S-A node discharges?

- A) -40 millivolt
- B) -55 millivolt
- C) -65 millivolt
- D) -85 millivolt
- E) -105 millivolt

Answer :A

Which condition at the S-A node will cause heart rate to decrease?

- A) Increased norepinephrine level
- B) Increased sodium permeability
- C) Increased calcium permeability
- D) Increased potassium permeability
- E) Decreased acetylcholine level

Answer:D



In which phase of the ventricular muscle action potential is the sodium permeability the highest?

- A) 0
- B) 1
- C) 2
- D) 3
- E) 4

Answer: A

If the Purkinje fibers, situated distal to the A-V junction, become the pacemaker of the heart, what is the expected heart rate?

- A) 30/min
- B) 50/min
- C) 60/min
- D) 70/min
- E) 80/min

Answer:A

Which condition at the A-V node will cause a decrease in heart rate?

- A) Increased sodium permeability
- B) Decreased acetylcholine level
- C) Increased norepinephrine level
- D) Increased potassium permeability
- E) Increased calcium permeability

Answer :D

Sympathetic stimulation of the heart normally causes which condition?

- A) Acetylcholine release at the sympathetic endings
- B) Decreased heart rate
- C) Decreased rate of conduction of the cardiac impulse
- D) Decreased force of contraction of the atria
- E) Increased force of contraction of the ventricles

Answer:E

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