A&P 19 Cardiovascular System Heart Essay

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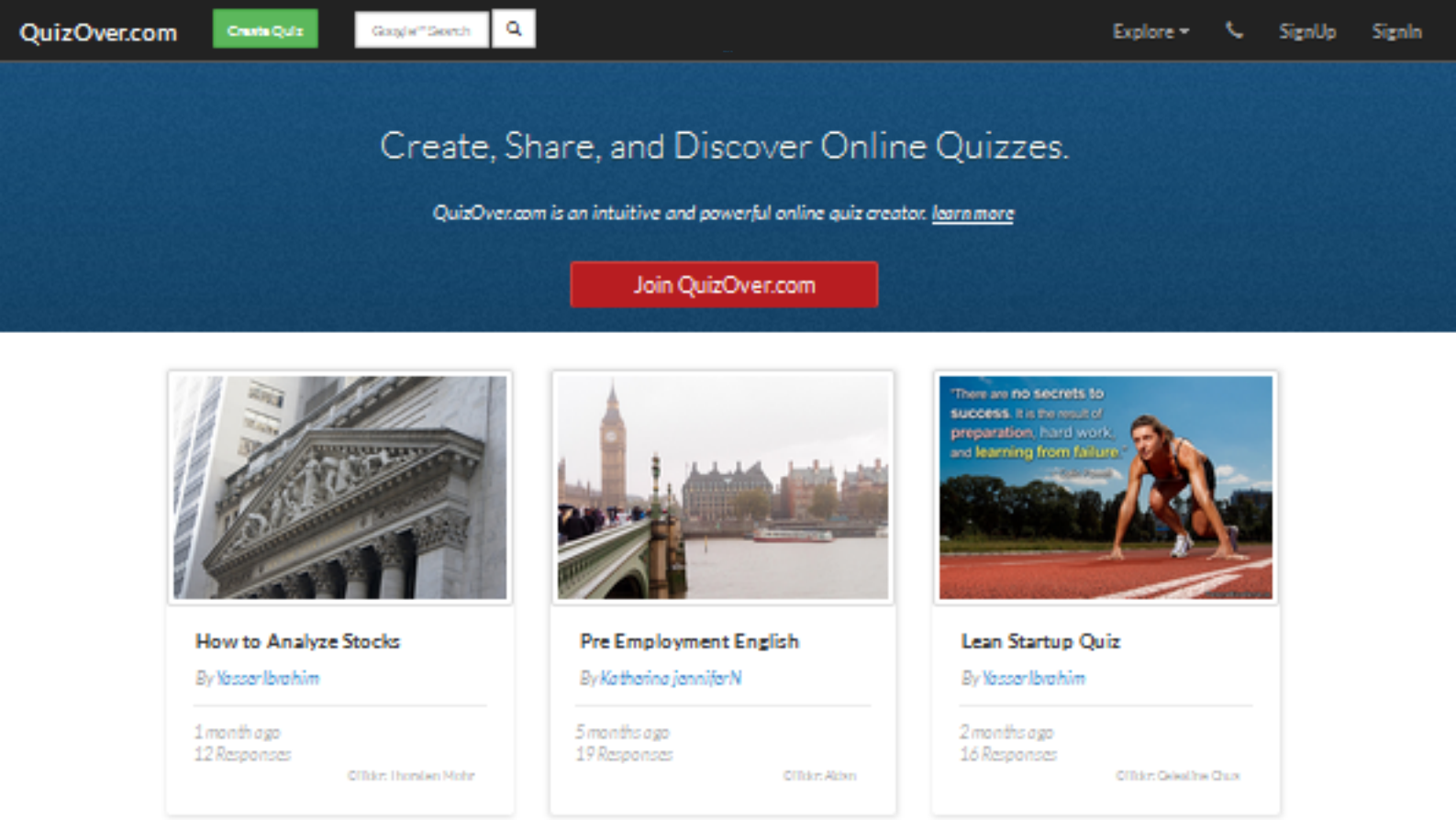
Published 2014



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4. Chapter: A&P 19 Cardiovascular System Heart Essay

1. A&P 19 Cardiovascular System Heart Essay Questions

4.1.1. Visit this site (http://openstaxcollege.org/l/heartvalve) to observ...

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Visit this site (http://openstaxcollege.org/l/heartvalve) to observe an echocardiogram of actual heart valves opening and closing. Although much of the heart has been "removed"

from this gif loop so the chordae tendineae are not visible, why is their presence more critical for the atrioventricular valves (tricuspid and mitral) than the semilunar (aortic and pulmonary) valves?

- The pressure gradient between the atria and the ventricles is much greater than that between the ventricles and the pulmonary
  trunk and aorta. Without the presence of the chordae tendineae and papillary muscles, the valves would be blown back (prolapsed)
  into the atria and blood would regurgitate.

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Question: Visit this site http://openstaxcollege OpenStax College Anatomy Quest

4.1.2. Describe how the valves keep the blood moving in one direction.

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Describe how the valves keep the blood moving in one direction.

- When the ventricles contract and pressure begins to rise in the ventricles, there is an initial tendency for blood to flow back (regurgitate) to the atria.
  However, the papillary muscles also contract, placing tension on the chordae tendineae and holding the atrioventricular valves (tricuspid and mitral) in place to prevent the valves from prolapsing and being forced back into the atria.
  The semilunar valves (pulmonary and aortic) lack chordae tendineae and papillary muscles, but do not face the same pressure gradients as do the atrioventricular valves.
  As the ventricles relax and pressure drops within the ventricles, there is a tendency for the blood to flow backward.
  However, the valves, consisting of reinforced endothelium and connective tissue, fill with blood and seal off the opening preventing the return of blood.

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Question: Describe how the valves keep the blood OpenStax College Anatomy Quest

4.1.3. Why is the pressure in the pulmonary circulation lower than in the ...

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Why is the pressure in the pulmonary circulation lower than in the systemic circulation?

- The pulmonary circuit consists of blood flowing to and from the lungs, whereas the systemic circuit carries blood to and from the entire body.
  The systemic circuit is far more extensive, consisting of far more vessels and offers much greater resistance to the flow of blood, so the heart must generate a higher pressure to overcome this resistance. This can be seen in the thickness of the myocardium in the ventricles.

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Question: Why is the pressure in the pulmonary OpenStax College Anatomy Quest

4.1.4. Why is the plateau phase so critical to cardiac muscle function?

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Why is the plateau phase so critical to cardiac muscle function?

- It prevents additional impulses from spreading through the heart prematurely, thereby allowing the muscle sufficient time to contract and pump blood effectively.

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Question: Why is the plateau phase so critical to OpenStax College Anatomy

4.1.5. How does the delay of the impulse at the atrioventricular node cont...

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How does the delay of the impulse at the atrioventricular node contribute to cardiac function?

- It ensures sufficient time for the atrial muscle to contract and pump blood into the ventricles prior to the impulse being conducted into the lower chambers.

4.1.6. How do gap junctions and intercalated disks aid contraction of the ...

Author: OpenStax College

How do gap junctions and intercalated disks aid contraction of the heart?

- Gap junctions within the intercalated disks allow impulses to spread from one cardiac muscle cell to another, allowing sodium, potassium, and calcium ions to flow between adjacent cells, propagating the action potential, and ensuring coordinated contractions.

Check the answer of this question online at QuizOver.com:
Question: How do gap junctions and intercalated OpenStax College Anatomy Quest

4.1.7. Why do the cardiac muscles cells demonstrate autorhythmicity?

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Why do the cardiac muscles cells demonstrate autorhythmicity?

- Without a true resting potential, there is a slow influx of sodium ions through slow channels that produces a prepotential that gradually reaches threshold.

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Question: Why do the cardiac muscles cells demonstrate OpenStax College Anatomy

4.1.8. Describe one cardiac cycle, beginning with both atria and ventricle...

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Describe one cardiac cycle, beginning with both atria and ventricles relaxed.

- The cardiac cycle comprises a complete relaxation and contraction of both the atria and ventricles, and lasts approximately 0.8 seconds.
  Beginning with all chambers in diastole, blood flows passively from the veins into the atria and past the atrioventricular valves into the ventricles.
  The atria begin to contract following depolarization of the atria and pump blood into the ventricles.
  The ventricles begin to contract, raising pressure within the ventricles.
  When ventricular pressure rises above the pressure in the two major arteries, blood pushes open the two semilunar valves and moves into the pulmonary trunk and aorta in the ventricular ejection phase.
  Following ventricular repolarization, the ventricles begin to relax, and pressure within the ventricles drops.
  When the pressure falls below that of the atria, blood moves from the atria into the ventricles, opening the atrioventricular valves and marking one complete heart cycle.

Check the answer of this question online at QuizOver.com:
Question: Describe one cardiac cycle beginning with OpenStax College Anatomy

4.1.9. Why does increasing EDV increase contractility?

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Why does increasing EDV increase contractility?

- Increasing EDV increases the sarcomeres' lengths within the cardiac muscle cells, allowing more cross bridge formation between the myosin and actin and providing for a more powerful contraction.
  This relationship is described in the Frank-Starling mechanism.

Check the answer of this question online at QuizOver.com:
Question: Why does increasing EDV increase contractility OpenStax College Anatomy

4.1.10. Why is afterload important to cardiac function?

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Why is afterload important to cardiac function?

- Afterload represents the resistance within the arteries to the flow of blood ejected from the ventricles. If uncompensated, if afterload increases, flow will decrease. In order for the heart to maintain adequate flow to overcome increasing afterload, it must pump more forcefully. This is one of the negative consequences of high blood pressure or hypertension.

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Question: Why is afterload important to cardiac OpenStax College Anatomy Quest

4.1.11. Why is it so important for the human heart to develop early and beg...

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Why is it so important for the human heart to develop early and begin functioning within the developing embryo?

- The human embryo is rapidly growing and has great demands for nutrients and oxygen, while producing waste products including carbon dioxide.
  All of these materials must be received from or delivered to the mother for processing.
  Without an efficient early circulatory system, this would be impossible.

Check the answer of this question online at QuizOver.com:
Question: Why is it so important for the human heart OpenStax College Anatomy

4.1.12. Describe how the major pumping chambers, the ventricles, form withi...

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Describe how the major pumping chambers, the ventricles, form within the developing heart.

- After fusion of the two endocardial tubes into the single primitive heart, five regions quickly become visible.
  From the head, these are the truncus arteriosus, bulbus cordis, primitive ventricle, primitive atrium, and sinus venosus.
  Contractions propel the blood from the sinus venosus to the truncus arteriosus.
  About day 23, the heart begins to form an S-shaped structure within the pericardium.
  The bulbus cordis develops into the right ventricle, whereas the primitive ventricle becomes the left ventricle.
  The interventricular septum separating these begins to form about day 28.
  The atrioventricular valves form between weeks five to eight.
  At this point, the heart ventricles resemble the adult structure.

Check the answer of this question online at QuizOver.com:
Question: Describe how the major pumping chambers OpenStax College Anatomy