Assignment 10: Blood Vessels: Chapter 19

Due: 11:59pm on Monday, April 8, 2013

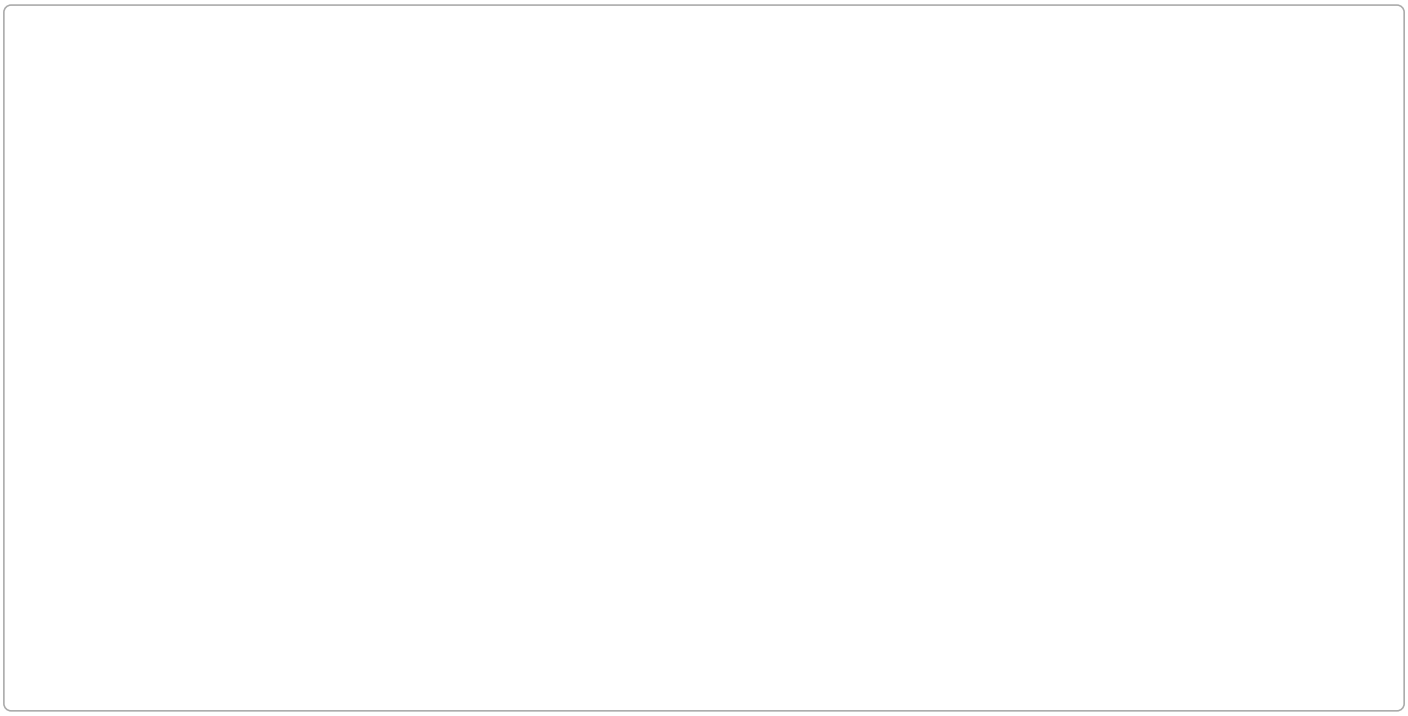
Note: To understand how points are awarded, read your instructor's Grading Policy.

Art-labeling Activity: Figure 19.1b (1 of 2)

Part A

Drag the appropriate labels to their respective targets.

ANSWER:



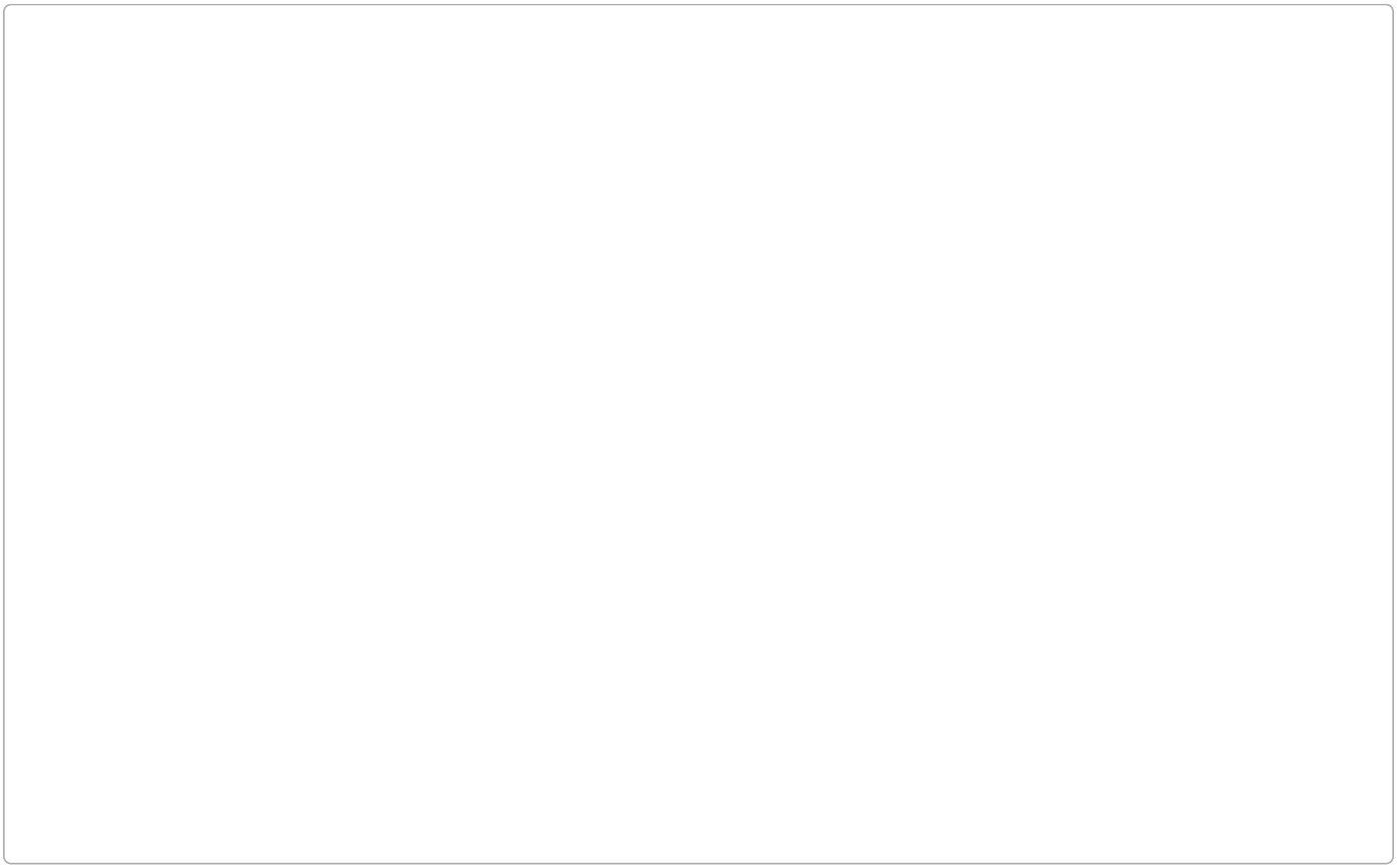
Correct

Art-labeling Activity: Figure 19.1b (2 of 2)

Part A

Drag the appropriate labels to their respective targets.

ANSWER:



Correct

Art-labeling Activity: Figure 19.2 (1 of 2)

Part A

Drag the appropriate labels to their respective targets.

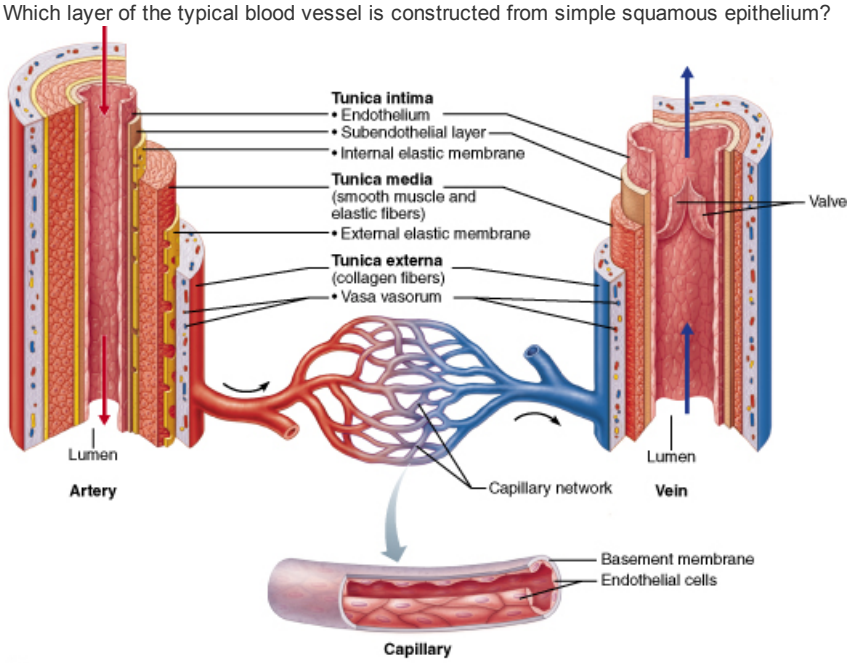
ANSWER:

Correct

Art Question Chapter 19 Question 1

Part A

Which layer of the typical blood vessel is constructed from simple squamous epithelium?



(b)

ANSWER:

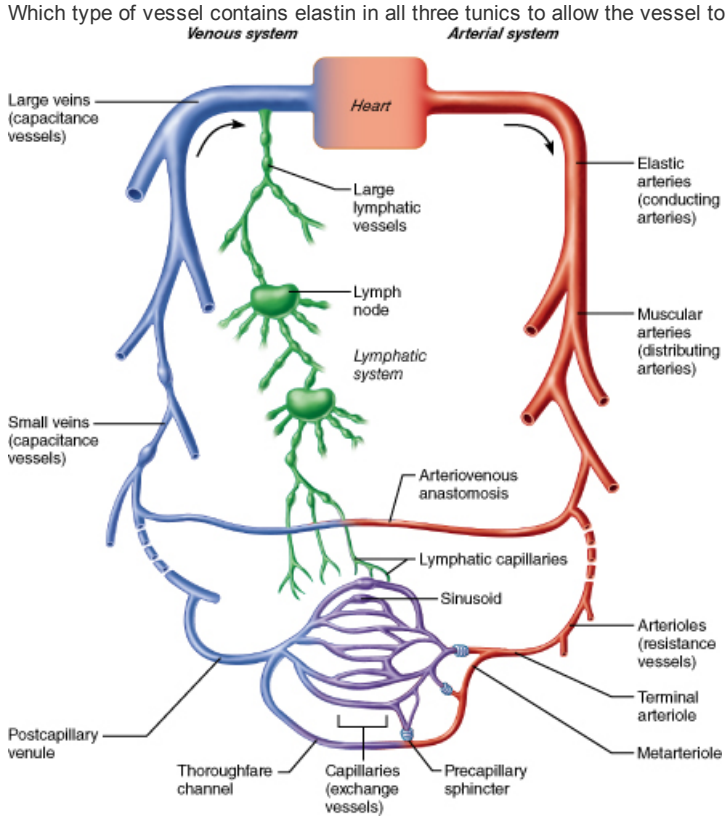
- tunica externa
- tunica media
- tunica intima
- vasa vasorum

Correct

Art Question Chapter 19 Question 4

Part A

Which type of vessel contains elastin in all three tunics to allow the vessel to expand and recoil as the heart ejects blood?



ANSWER:

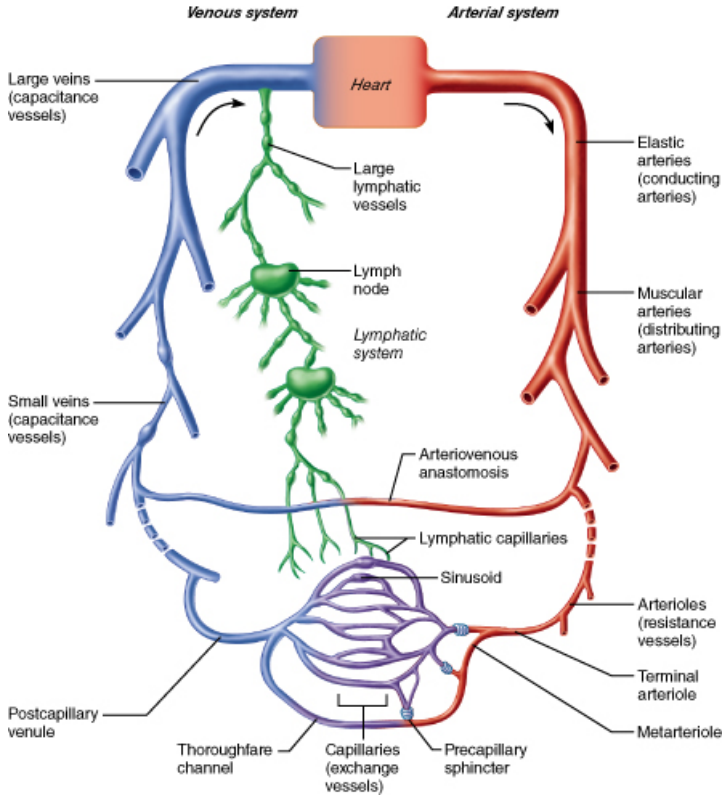
- muscular artery
- arteriole
- distributing artery
- elastic artery

Correct

Art Question Chapter 19 Question 5

Part A

What type of vessel has relatively more smooth muscle and less elastic tissue?



ANSWER:

- capillary
- muscular artery
- arteriole
- elastic artery

Correct

Chapter 19 Multiple Choice Question 20

Part A

Which tunic of an artery is most responsible for maintaining blood pressure and continuous blood circulation?

ANSWER:

- tunica adventitia
- tunica externa
- tunica intima
- tunica media

Correct

Art-labeling Activity: Figure 19.3

Part A

Drag the appropriate labels to their respective targets.

ANSWER:

Correct

Art-labeling Activity: Figure 19.4

Part A

Drag the appropriate labels to their respective targets.

ANSWER:

Correct

Chapter 19 Chapter Test Question 2

Part A

Gas and nutrient exchanges between the blood and tissues take place at the _____.

ANSWER:

- arteries
- arterioles
- veins
- capillaries

Correct

Capillaries are the sites for nutrient and gas exchanges between the blood and the interstitial fluid around tissues.

Chapter 19 Reading Quiz Question 3

Part A

Which capillaries are the most common in the body?

ANSWER:

- continuous capillaries
- anastomoses
- fenestrated capillaries
- sinusoids

Correct

Continuous capillaries are the most common type of capillaries in the body.

Chapter 19 Multiple Choice Question 32

Part A

Which of the following is *not* true regarding fenestrated capillaries?

ANSWER:

- Fenestrated capillaries form the blood-brain barrier.
- Fenestrated capillaries in the small intestine receive nutrients from digested food.
- Fenestrated capillaries are essential for filtration of blood plasma in the kidney.
- Fenestrated capillaries in endocrine organs allow hormones rapid entry into the blood.

Correct

Chapter 19 Chapter Test Question 4

Part A

Which of the following is true about veins?

ANSWER:

- Veins carry blood away from the heart, while arteries carry blood to the heart.
- Veins are more muscular than arteries.
- Veins have a smaller diameter lumen than arteries.
- Veins have valves; arteries do not.

Correct

Veins have valves; arteries do not. Veins have valves to prevent the backflow of blood.

Chapter 19 Homeostatic Imbalance Question 1

Part A

Varicose veins seen in the superficial veins of the legs are unsightly and often treated by surgically removing them. However, even without these veins being present, the return of all blood toward the heart from the legs is not diminished primarily because _____.

ANSWER:

- the precapillary sphincters will contract to prevent blood from flowing toward areas where veins have been removed
- blood can still return via the deep veins
- in the absence of the venous valves (that have been removed), the blood will backflow into the capillary beds and then flow into other venules
- All of the listed responses are correct.

Correct

The leg has a complex and highly branched venous system. The superficial and deep veins anastamose with each other at many points along their length.

Chapter 19 True/False Question 15

Part A

Arteries supplying the same territory are often merged with one another, forming arterial anastomoses.

ANSWER:

- True
- False

Correct

Chapter 19 Chapter Test Question 16

Part A

Vasodilation will result in increased blood flow to a given tissue.

ANSWER:

- True
- False

Correct

Chapter 19 Reading Quiz Question 4

Part A

Which of the following is NOT an important source of resistance to blood flow?

ANSWER:

- vessel diameter
- vessel length
- blood viscosity
- total blood volume

Correct

Total blood volume is not an important source of resistance to blood flow. However, blood volume does have a direct effect on blood pressure.

Chapter 19 Multiple Choice Question 24

Part A

Which of the following is the most significant source of blood flow resistance?

ANSWER:

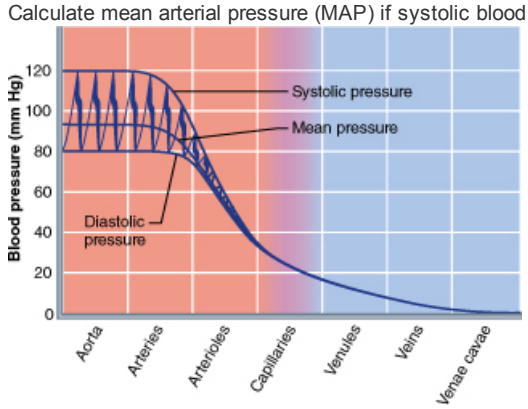
- total blood vessel length
- blood vessel diameter
- blood vessels type
- blood viscosity

Correct

Art Question Chapter 19 Question 7

Part A

Calculate mean arterial pressure (MAP) if systolic blood pressure is 120 mm Hg and diastolic blood pressure is 70 mm Hg.



ANSWER:

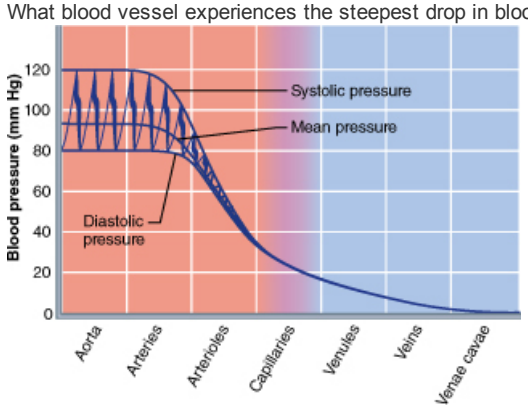
- 93 mm Hg
- 80 mm Hg
- 87 mm Hg
- 95 mm Hg

Correct

Art Question Chapter 19 Question 8

Part A

What blood vessel experiences the steepest drop in blood pressure?



ANSWER:

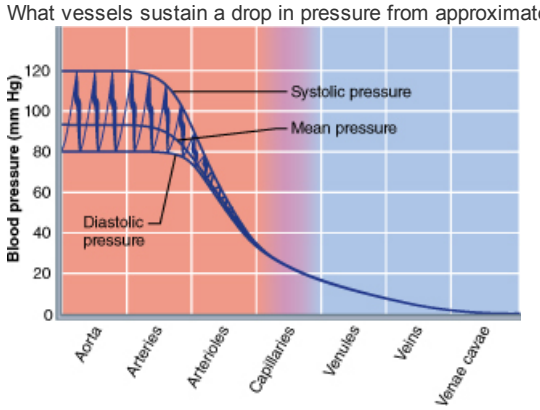
- venules
- capillaries
- arterioles
- arteries

Correct

Art Question Chapter 19 Question 9

Part A

What vessels sustain a drop in pressure from approximately 35 mm Hg to around 17 mm Hg?



ANSWER:

- arterioles
- veins
- capillaries
- elastic arteries

Correct

Chapter 19 Chapter Test Question 18

Part A

A sustained blood pressure of 140/90 or greater indicates hypertension in the patient.

ANSWER:

- True
- False

Correct

Chapter 19 Reading Quiz Question 5

Part A

Why is it important that blood pressure drop to lower levels as it reaches the capillary beds?

ANSWER:

- Because capillaries actually need a higher blood pressure for filtration activities.
- Because capillaries are fragile and extremely permeable.
- Because capillaries actually are high-pressure vessels.
- Because capillaries depend on the lower pressure to prevent fluid exchange between the capillaries and the tissue fluid.

Correct

Low capillary pressures are desirable because capillaries are fragile and high pressures would rupture them. Most capillaries are extremely permeable and thus even the low pressure forces solute-containing fluids out of the bloodstream into the interstitial space.

Chapter 19 Multiple Choice Question 34

Part A

Factors that aid venous return include all *except* _____.

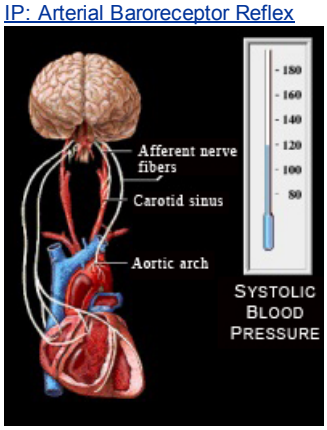
ANSWER:

- pressure changes in the thorax
- venous valves
- activity of skeletal muscles
- urinary output

Correct

IP: Arterial Baroreceptor Reflex

Click on the link or the image below to explore Arterial Baroreceptor Reflex in Interactive Physiology (IP), then answer the questions to the right.
IP: Arterial Baroreceptor Reflex



Part A

Where are the sensors for the arterial baroreceptor reflex located?

Hint 1.

The arterial baroreceptor reflex is a typical negative feedback system with sensors, a control center, and effectors.

ANSWER:

- carotid sinus and aortic arch
- cardiovascular centers in the medulla oblongata
- The sympathetic and parasympathetic nervous systems

Correct

Yes, the sensors are the arterial baroreceptors themselves, located at the carotid sinus and aortic arch. They detect changes in blood pressure by the degree of stretch on the blood vessel.

Part B

If blood pressure is increased at the arterial baroreceptors, what would happen with the activity level of the parasympathetic nervous system (PNS) and sympathetic nervous system (SNS)?

Hint 1.

Think about how each system would affect blood pressure.

ANSWER:

- increased PNS activity and decreased SNS activity
- increased PNS and SNS activity
- decreased PNS activity and increased SNS activity

Correct

Yes, the PNS activity would increase and the SNS activity would decrease in an attempt to lower blood pressure.

Part C

Which of the following would cause vasodilation of arterioles?

Hint 1.

Vasodilation would result in a decrease in blood pressure.

ANSWER:

- increased activity of the sympathetic nervous system
- decreased activity of the parasympathetic nervous system
- increased activity of the parasympathetic nervous system
- decreased activity of the sympathetic nervous system

Correct

Yes, a decrease in the activity of the sympathetic nervous system would result in decreased activity of vasomotor fibers, resulting in vasodilation.

Part D

Stimulation of the adrenal medulla would result in which of the following?

Hint 1.

The adrenal medulla is part of which system in the autonomic nervous system?

ANSWER:

- vasodilation of arteries
- an increase in heart rate and contractility
- a decrease in blood pressure
- a decrease in cardiac output

Correct

Yes, epinephrine and norepinephrine are released from the adrenal medulla and act as part of the sympathetic nervous system, increasing heart rate and contractility. Epinephrine and norepinephrine have other effects that would also increase blood pressure.

Part E

A decrease in blood pressure at the arterial baroreceptors would result in which of the following?

Hint 1.

Think about how the sympathetic and parasympathetic nervous systems would alter blood pressure.

ANSWER:

- a decrease in heart rate
- vasodilation of arterioles
- a decrease in cardiac output
- an increase in heart contractility

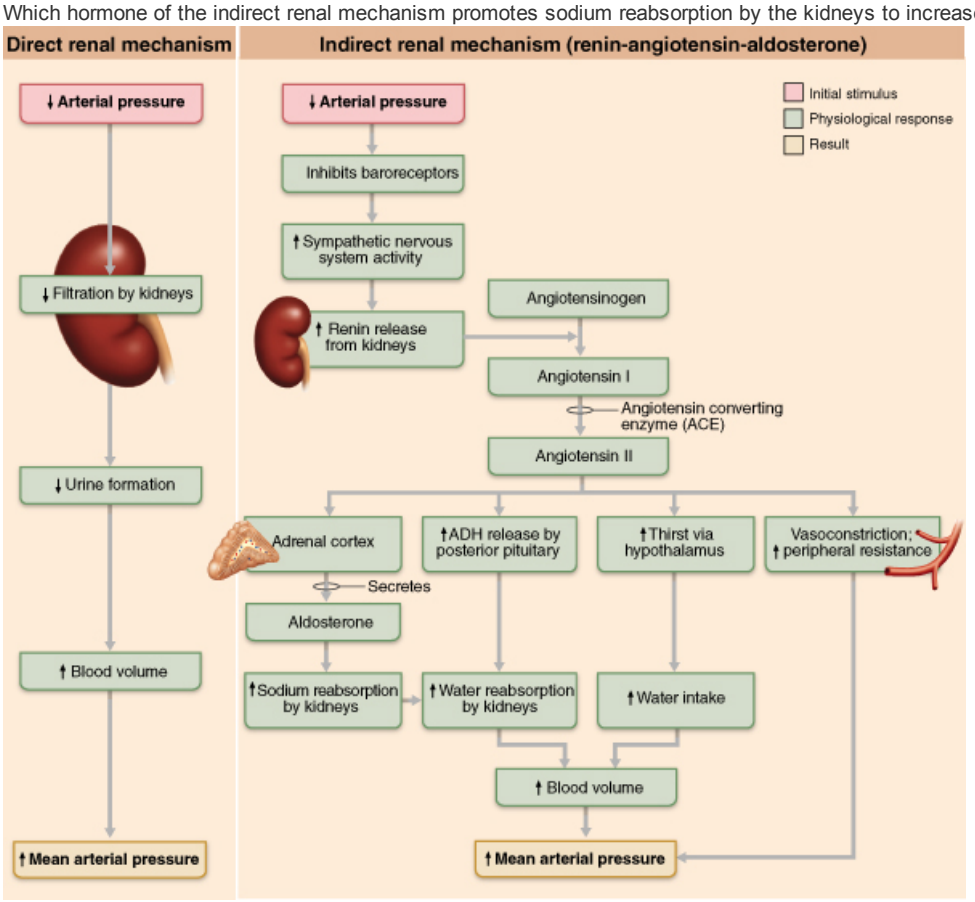
Correct

Yes, sympathetic nervous system activity would be increased because of the low blood pressure. Sympathetic fibers go to the ventricles of the heart and increase their contractility. An increase in contractility would increase stroke volume which would lead to an increase in cardiac output and blood pressure.

Art Question Chapter 19 Question 10

Part A

Which hormone of the indirect renal mechanism promotes sodium reabsorption by the kidneys to increase mean arterial pressure?



ANSWER:

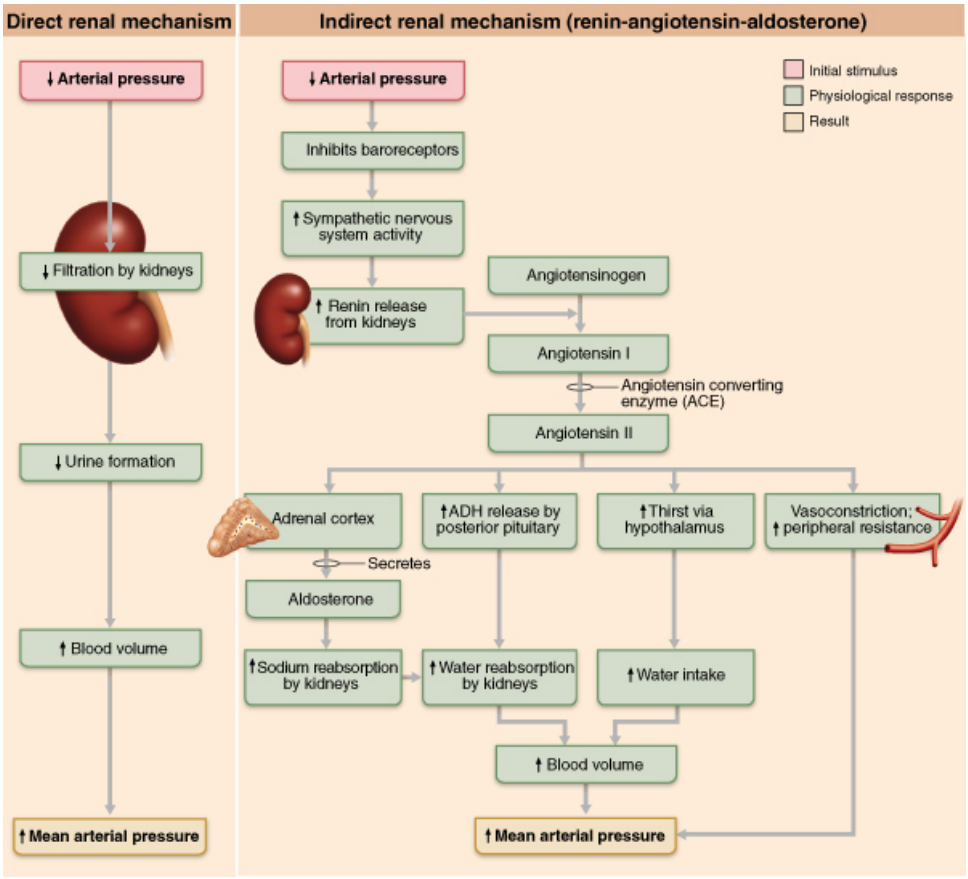
- atrial natriuretic peptide hormone (ANP)
- aldosterone
- thirst
- antidiuretic hormone (ADH)

Correct

Art Question Chapter 19 Question 11

Part A

Which of the following is NOT one of the four ways in which angiotensin II works to increase arterial blood pressure and extracellular fluid volume?



ANSWER:

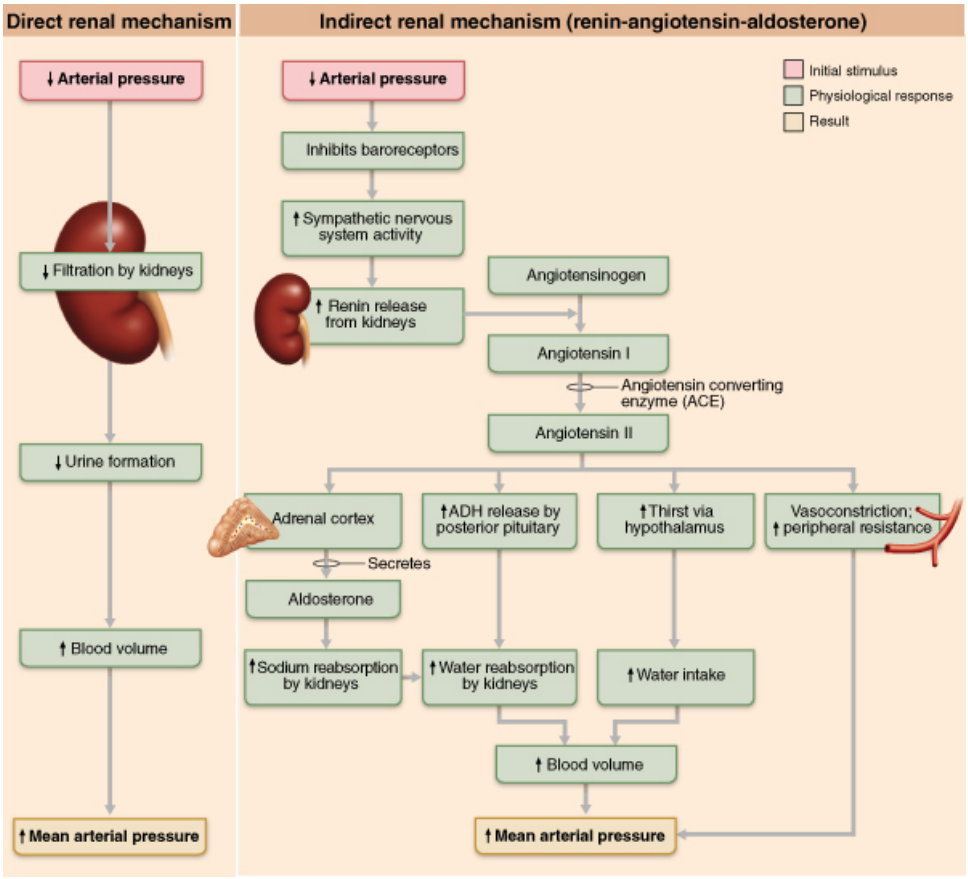
- Angiotensin II prompts the release of antidiuretic hormone (ADH).
- Angiotensin II triggers the sensation of thirst.
- Angiotensin II stimulates the secretion of aldosterone.
- Angiotensin II promotes vasodilation that decreases peripheral resistance.

Correct

Art Question Chapter 19 Question 12

Part A

Which of the following would be interrupted in the indirect renal mechanism if angiotensin converting enzyme (ACE) is blocked from performing its job?



ANSWER:

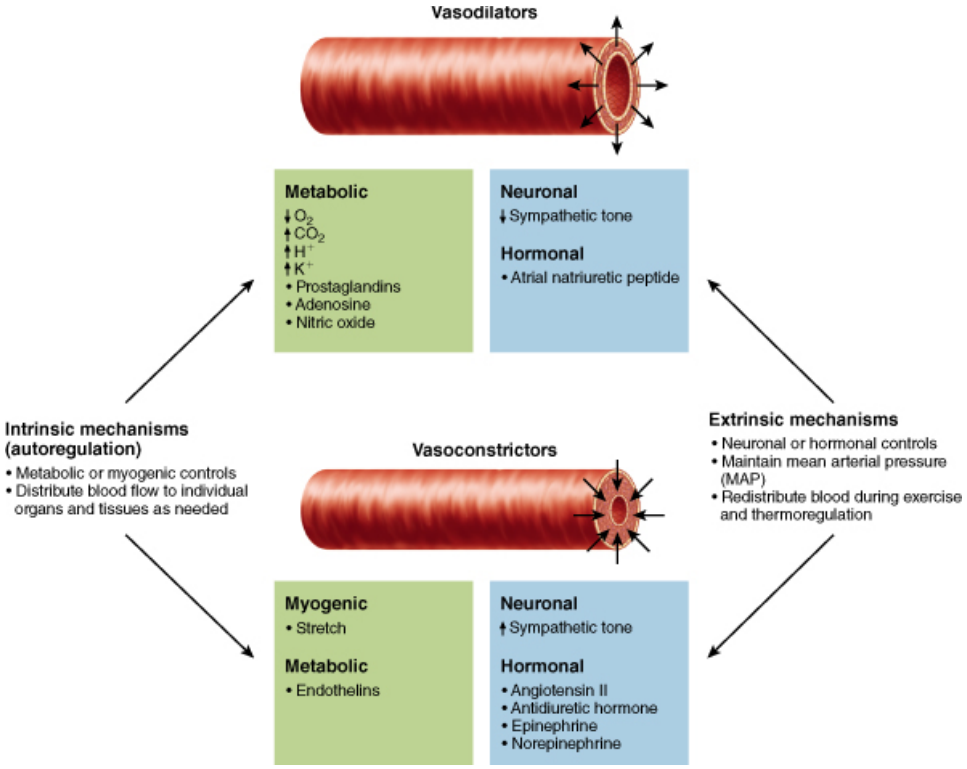
- conversion of angiotensin I into angiotensin II
- release of renin from the kidneys
- sympathetic nervous system activity
- conversion of angiotensin I from angiotensinogen

Correct

Art Question Chapter 19 Question 13

Part A

Which of the following is a metabolic factor that influences blood flow?



ANSWER:

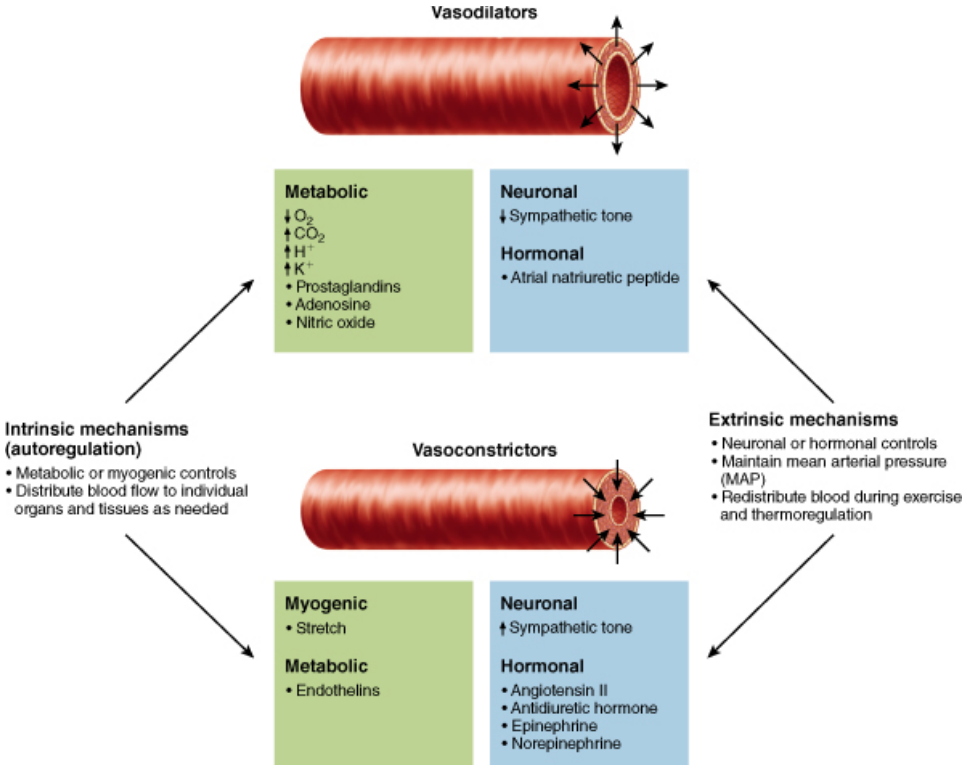
- reduced stretch of vascular smooth muscle
- decreased sympathetic tone
- low oxygen levels
- release of epinephrine from the adrenal medulla

Correct

Art Question Chapter 19 Question 14

Part A

Which of the following promotes vasodilation?



ANSWER:

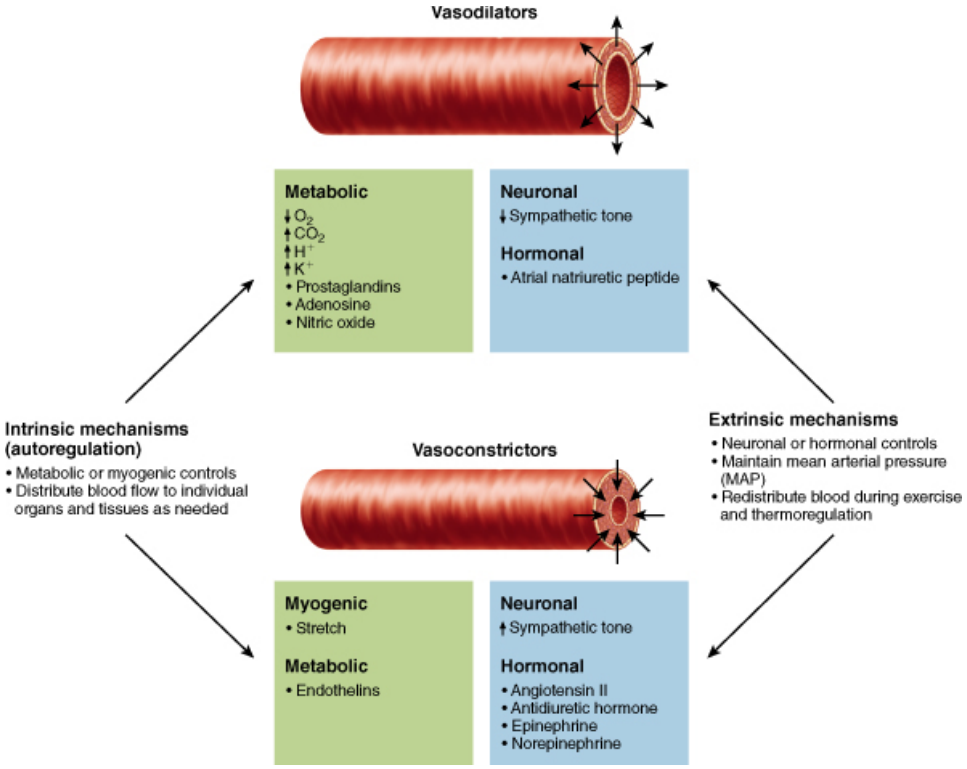
- antidiuretic hormone (ADH)
- norepinephrine
- angiotensin II
- nitrous oxide

Correct

Art Question Chapter 19 Question 15

Part A

Which of the following intrinsic mechanisms (autoregulation) for controlling arteriolar smooth muscle diameter promotes vasoconstriction?



ANSWER:

- prostaglandins
- histamine
- nitrous oxide
- endothelins

Correct

Chapter 19 Chapter Test Question 8

Part A

Which of the following is involved in long-term blood pressure regulation?

ANSWER:

- baroreceptors
- higher brain center
- chemoreceptor reflexes
- renal mechanisms

Correct

Long-term control of blood pressure is achieved through direct and indirect renal (kidney) control mechanisms.

Chapter 19 Chapter Test Question 10

Part A

Which of the following would experience a decreased blood flow during exercise?

ANSWER:

- skeletal muscles
- brain
- skin
- kidneys

Correct

The kidneys and the GI tract (i.e. the stomach and intestines) would have a decreased blood flow during exercise.

Chapter 19 Clinical Application Question 4

Part A

What would be the effect of a high salt diet on blood pressure? What is the physiological basis for your answer?

ANSWER:

- Increased blood pressure. This is due to increased sodium in the blood, triggering sodium receptors in the vasomotor center to increase sympathetic stimulation of blood vessels.
- Decreased blood pressure. This is due to increased sodium in the blood, increasing the total extracellular fluid volume.
- Increased blood pressure. This is due to increased sodium in the blood, increasing the total extracellular fluid volume.
- Decreased blood pressure. This is due to increased sodium in the blood, triggering sodium receptors in the vasomotor center to decrease sympathetic stimulation of blood vessels.

Correct

Chapter 19 Clinical Application Question 6

Part A

How would an attack by a mugger effect blood pressure? What is the physiological basis for your answer?

ANSWER:

- Blood pressure would decrease due to parasympathetic nervous system stimulation.
- Blood pressure would increase due to parasympathetic nervous system stimulation.
- Blood pressure would increase due to sympathetic nervous system stimulation.
- Blood pressure would decrease due to sympathetic nervous system stimulation.
- Blood pressure would increase due to vagal nerve stimulation.

Correct

Chapter 19 Clinical Application Question 9

Part A

Mr. Wilson is a 45-year-old stockbroker with essential hypertension. He is African American, obese, and he smokes 2-3 packs of cigarettes daily. What risk factors for hypertension are typified by Mr. Wilson? What complications are likely if corrective steps are not taken?

ANSWER:

- The risk factors are obesity, race, a high-stress job, and smoking. Complications could include atherosclerosis, heart failure, renal failure, and stroke.
- The risk factors are obesity, race, and a high-stress job. Complications could include atherosclerosis, heart failure, and stroke.
- The risk factors are obesity and race. Complications could include atherosclerosis and heart failure.
- The risk factors are obesity, race, and smoking. Complications could include atherosclerosis, heart failure, and stroke.
- The risk factors are race, a high-stress job, and smoking. Complications could include heart failure, renal failure, and stroke.

Correct

Chapter 19 Clinical Application Question 10

Part A

A pregnant patient comes into a clinic and asks about a small dark bulge that is becoming more apparent on her leg. What is it and what caused it?

ANSWER:

- Hemorrhoids. The growing fetus puts downward pressure on the veins of the groin and restricts the return of blood to the heart, causing the valves in the peripheral veins to begin to fail.
- A varicose vein. The growing fetus puts downward pressure on the vessels of the groin and restricts the return of blood to the heart, causing the valves in the peripheral veins to begin to fail.
- An aneurysm, caused by a weakening of the vein due to chronic hypertension or arteriosclerosis.
- Phlebitis, which is typically caused by a bacterial infection or physical trauma.

Correct

Chapter 19 Multiple Choice Question 28

Part A

Which of the following do *not* influence arterial pulse rate?

ANSWER:

- postural changes
- the vessel selected to palpate
- emotions
- activity

Correct

Chapter 19 Multiple Choice Question 51

Part A

The baroreceptors in the carotid sinus and aortic arch are sensitive to which of the following?

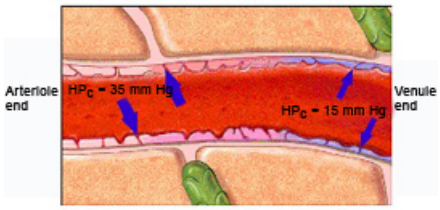
ANSWER:

- changes in arterial pressure
- an increase in oxygen levels
- a decrease in oxygen levels
- a decrease in carbon dioxide

Correct

IP: Capillary Pressures and Capillary Exchange

Click on the link or the image below to explore Capillary Pressures and Capillary Exchange in Interactive Physiology (IP), then answer the questions to the right.
IP: Capillary Pressures and Capillary Exchange



Part A

In the capillaries, hydrostatic pressure (HP) is exerted by _____.

Hint 1.

This pressure is also known as filtration pressure.

ANSWER:

- proteins in the blood
- blood pressure

Correct

Yes, blood pressure is the driving force for filtration.

Part B

The net hydrostatic pressure (HP) is the hydrostatic pressure in the _____ minus hydrostatic pressure in the _____.

Hint 1.

Net hydrostatic pressure forces fluid out of the capillary.

ANSWER:

- capillary; interstitial fluid
- interstitial fluid; capillary

Correct

Yes, the capillary hydrostatic pressure (HP_C; caused by blood pressure) is much higher than the interstitial hydrostatic pressure (HP_I). The interstitial fluid is forced out of the capillaries.

Part C

Which of the following would reflect the typical net hydrostatic pressure (HP) at the arterial end of the capillary?

Hint 1.

Is there more filtration at the arterial end or venous end of the capillary?

ANSWER:

- 12 mm Hg
- 1 mm Hg
- 34 mm Hg

Correct

Yes, HP_C (35 mm Hg) – HP_I (1 mm Hg) = 34 mm Hg, which is the net hydrostatic pressure at the arterial end. The hydrostatic pressure of the blood is much higher at the arterial end of the capillary, thus favoring filtration.

Part D

The colloid osmotic pressure in the capillary is caused by _____.

Hint 1.

Think “osmosis.”

ANSWER:

- proteins in the blood
- blood pressure

Correct

Yes, the non-diffusible proteins in the plasma exert the colloid osmotic pressure, which pulls fluid into the capillary.

Part E

Which net pressure draws fluid into the capillary?

Hint 1.

Remember which way colloid osmotic pressure and hydrostatic pressure move fluid.

ANSWER:

- net osmotic pressure
- net hydrostatic pressure

Correct

Yes, the proteins exert colloid osmotic pressure, which draws fluid into the capillary.

Part F

Reabsorption of fluid into the capillary takes place at the arterial end or venous end of the capillary?

Hint 1.

Remember where blood pressure is the lowest in the capillary.

ANSWER:

- arterial
- venous

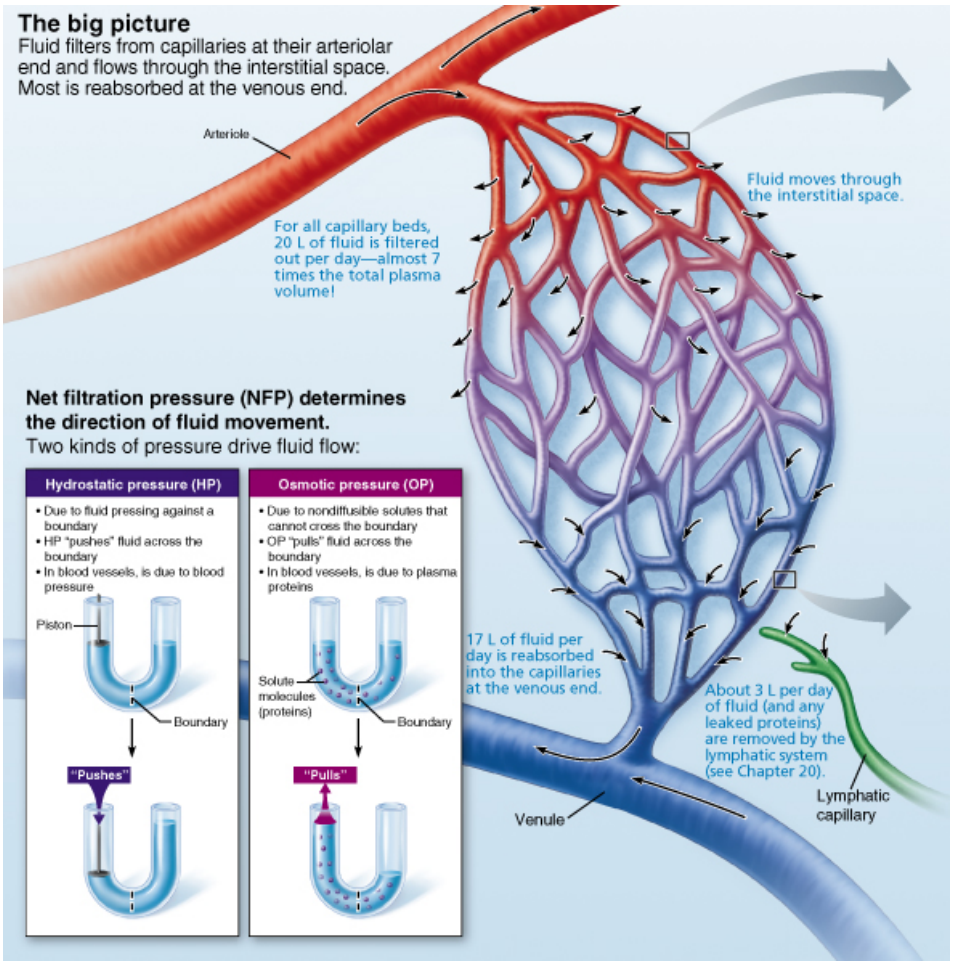
Correct

Yes, because the hydrostatic pressure of blood (which favors filtration out of the capillary) is lowest in the venous end of the capillary.

Art Question Chapter 19 Question 16

Part A

What pressure is responsible for reabsorption and for *pulling* fluids into the venous end of capillaries?



ANSWER:

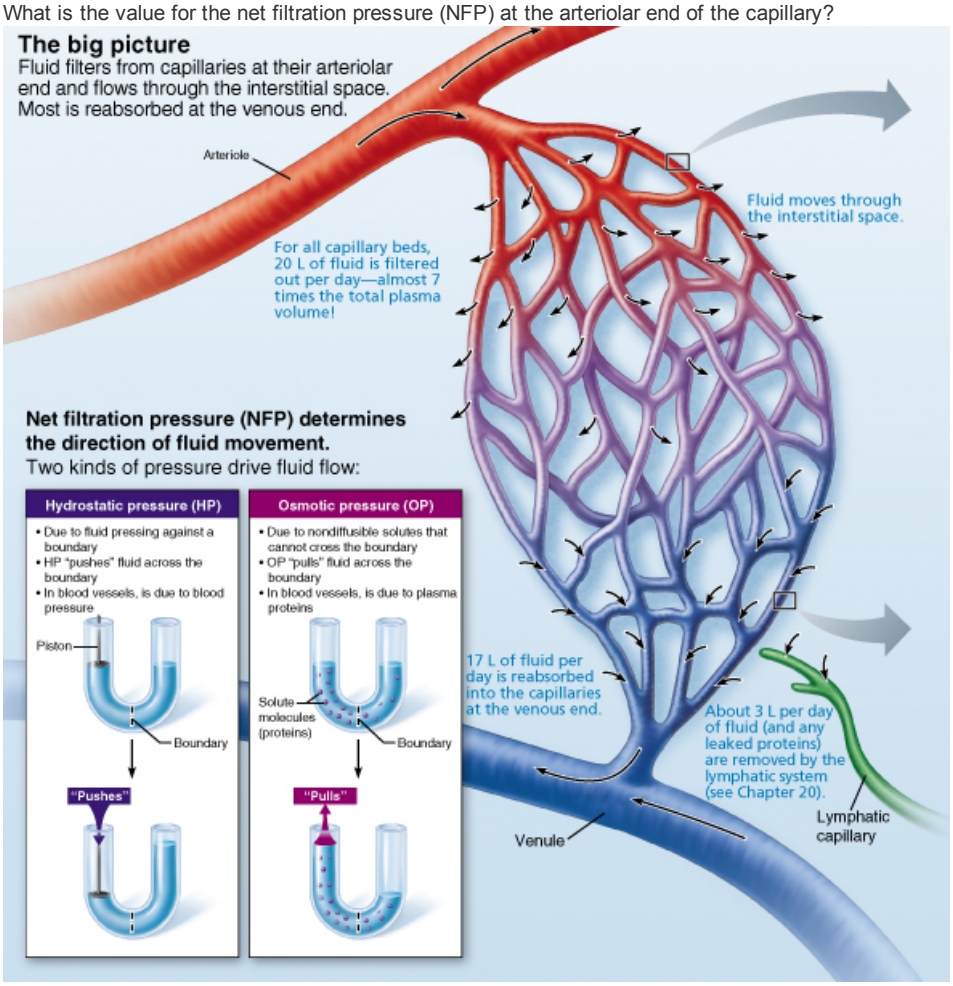
- osmotic pressure in capillary (OP_c)
- hydrostatic pressure in capillary (HP_c)
- hydrostatic pressure in interstitial fluid (HP_{if})
- osmotic pressure in interstitial fluid (OP_{if})

Correct

Art Question Chapter 19 Question 17

Part A

What is the value for the net filtration pressure (NFP) at the arteriolar end of the capillary?



ANSWER:

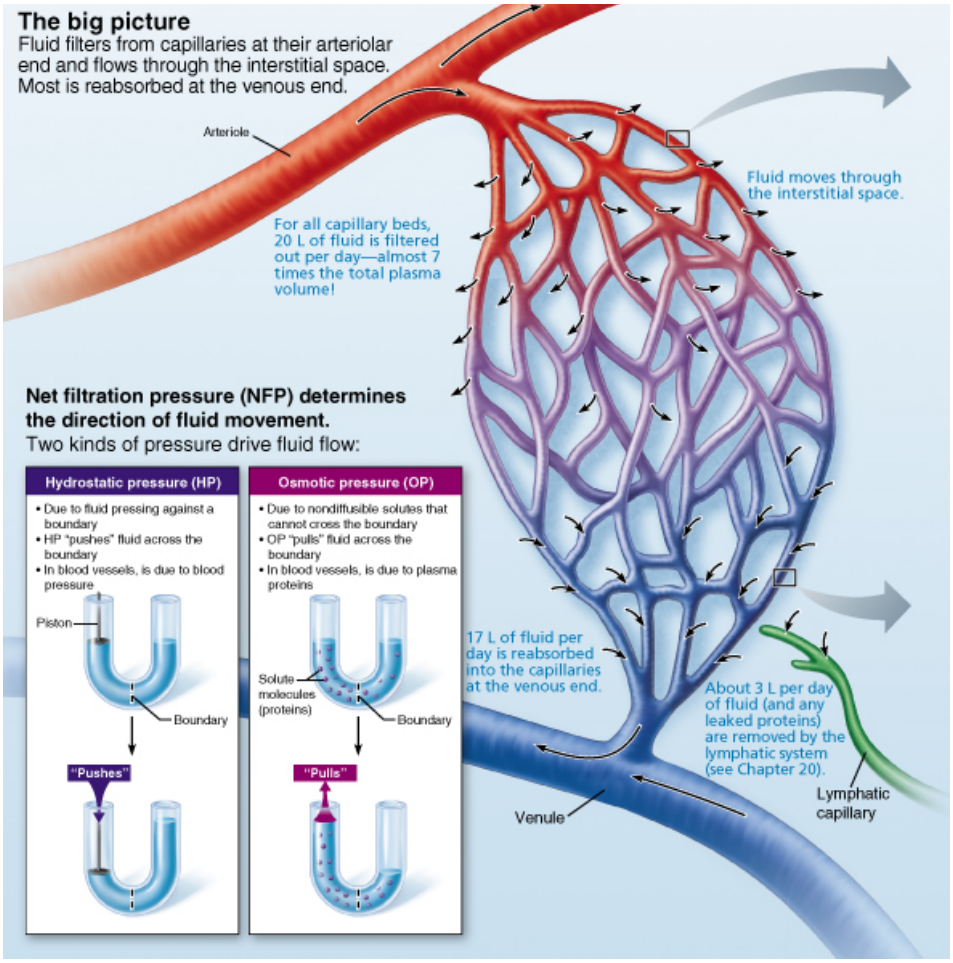
- 35 mm Hg
- 1 mm Hg
- 26 mm Hg
- 10 mm Hg

Correct

Art Question Chapter 19 Question 18

Part A

Assume a person is experiencing a hemorrhage and the HP_C has dropped to 23 mm Hg at the arteriole end of the capillary. Calculate net filtration pressure (NFP) at the arteriole end of the capillary.



ANSWER:

- -2 mm Hg
- 10 mm Hg
- 2 mm Hg
- -8 mm Hg

Correct

Chapter 19 Chapter Test Question 12

Part A

Which of the following would be a result of anaphylaxis (a systemic allergic reaction)?

ANSWER:

- increased blood pressure
- hypovolemic shock
- vascular shock
- cardiogenic shock

Correct

Vascular shock occurs when blood volume is normal but vasomotor tone is suddenly lost and vessels consequently exhibit extreme vasodilation. The massive vasodilation event leads to a drastic and dangerous drop in blood pressure. Vascular shock can be triggered by anaphylaxis, septic shock, and by certain bacterial toxins.

Chapter 19 Multiple Choice Question 11

Part A

Which of the following is likely during vigorous exercise?

ANSWER:

- Capillaries of the active muscles will be engorged with blood.
- Blood flow to the kidneys increases.
- The skin will be cold and clammy.
- Blood will be diverted to the digestive organs.

Correct

Chapter 19 Multiple Choice Question 19

Part A

Which of the following is a type of circulatory shock?

ANSWER:

- hypovolemic, caused by increased blood volume
- cardiogenic, which results from any defect in blood vessels
- vascular, due to extreme vasodilation as a result of loss of vasomotor tone
- circulatory, where blood volume is normal and constant

Correct

Chapter 19 Multiple Choice Question 38

Part A

The velocity of blood flow is _____.

ANSWER:

- slower in the veins than in the capillaries because veins have a large diameter
- slower in the arteries than in capillaries because arteries possess a relatively large diameter
- slowest in the capillaries because the total cross-sectional area is the greatest
- in direct proportion to the total cross-sectional area of the blood vessels

Correct

Chapter 19 Multiple Choice Question 47

Part A

If blood pressure is almost normal in a person who has lost blood, does that mean the tissues are receiving adequate blood flow?

ANSWER:

- no
- yes
- not necessarily

Correct

Chapter 19 True/False Question 1

Part A

The adjustment of blood flow to each tissue in proportion to its requirements at any point in time is termed autoregulation.

ANSWER:

- True
- False

Correct

Chapter 19 True/False Question 12

Part A

Every minute, about 1.5 ml of fluid leaks out of the capillaries.

ANSWER:

- True
- False

Correct

Art-labeling Activity: Figure 19.19b

Part A

Drag the appropriate labels to their respective targets.

ANSWER:

Correct

Chapter 19 Reading Quiz Question 1

Part A

Which vessels carry blood away from the heart?

ANSWER:

- venules
- arteries
- veins
- capillaries

Correct

Arteries carry blood away from the heart.

Art-labeling Activity: Figure 19.21b (1 of 4)

Part A

Drag the appropriate labels to their respective targets.

ANSWER:

Correct

Art-labeling Activity: Figure 19.21b (2 of 4)

Part A

Drag the appropriate labels to their respective targets.

ANSWER:

Correct

Art-labeling Activity: Figure 19.21b (3 of 4)

Part A

Drag the appropriate labels to their respective targets.

ANSWER:

Correct

Art-labeling Activity: Figure 19.21b (4 of 4)

Part A

Drag the appropriate labels to their respective targets.

ANSWER:

Correct

Score Summary:

Your score on this assignment is 98.6%.
You received 55.24 out of a possible total of 56 points.