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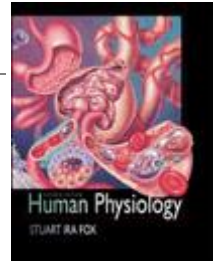
Chapter 14

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Human Physiology, 7/e  
 Stuart I Fox, Pierce College

## Cardiac Output, Blood Flow, and Blood Pressure




## Results Reporter

Out of 47 questions, you answered 24 correctly, for a final grade of 51%.

24 correct (51%)   
 23 incorrect (49%)   
 0 unanswered (0%)

Please answer all questions

### Your Results:

The correct answer for each question is indicated by a .

- 1 INCORRECT** All sympathetic nerve fibers to the heart lead to the sinoatrial (SA) node. (p. 410)

(A) True  
 (B) False

**Feedback: Incorrect: Some sympathetic fibers innervating the heart innervate the ventricles and regulate contractility. (p. 413)**
- 2 CORRECT** Cardiac control centers in the medulla oblongata receive input from baroreceptors located in some of the arteries. (p. 411)

(A) True  
 (B) False

**Feedback: Correct: The medulla oblongata integrates the information from the baroreceptors to regulate cardiac output. (p. 411)**
- 3 INCORRECT** Stroke volume is directly proportional to peripheral resistance. (p. 411)

(A) True  
 (B) False

**Feedback: Incorrect: As peripheral resistance is increased stroke volume is decreased. (p. 411)**
- 4 INCORRECT** The heart's contractility is adjusted so that normally each ventricle expels all the blood contained in it, leaving none behind in the chamber. (p. 411)

(A) True  
 (B) False

**Feedback: Incorrect: At rest, only 60% of the blood is ejected from the heart and contractility is not increased to increase the ejection fraction. (p. 411)**
- 5 CORRECT** The parasympathetic nervous system has no significant effect on the contraction strength of the ventricles. (p. 412)

(A) True  
 (B) False

- 6 CORRECT** **Feedback: Correct: Parasympathetic nerves do not innervate the ventricles and regulate contractility. (p. 412)**  
 If the ventricles did not fill with blood at all, but the electrical conduction system stimulated them to contract anyway, the contraction would be very weak. (p. 412)  
 (A) True  
 (B) False
- 7 CORRECT** **Feedback: Correct: The decreased end-diastolic volume would cause the force of contraction to decrease. (p. 412)**  
 In spite of the fact that the systemic vessels cover substantially more total length than the pulmonary vessels, the same amount of blood must flow through both of these systems in a given time. (p. 413)  
 (A) True  
 (B) False
- 8 CORRECT** **Feedback: Correct: The changes in end-diastolic volume in the ventricles allow for stroke volume to be equalized between the right and left ventricle. (p. 413)**  
 Something with a positive inotropic effect on the heart increases the contractility of the muscle fibers. (p. 413)  
 (A) True  
 (B) False
- 9 INCORRECT** **Feedback: Correct: Inotropic agents affect contractility and a positive agent would increase contractility. (p. 413)**  
 Since arteries are more muscular than veins, they are said to have a greater compliance. (p. 413)  
 (A) True  
 (B) False
- 10 INCORRECT** **Feedback: Incorrect: The increased muscle in the arteries allows the arteries to stretch and accept the blood from the ventricles and act as resistance vessels.**  
 Since the veins contain most of the body's blood at any one time, they have a higher blood pressure than any other type of vessel. (p. 413)  
 (A) True  
 (B) False
- 11 INCORRECT** **Feedback: Incorrect: Veins have the lowest blood pressure of any type of vessel due partially to the decrease in blood pressure as the blood flows through the circulatory system. (p. 413)**  
 About 80% of the body's extracellular fluid is in the cells. (p. 414)  
 (A) True  
 (B) False
- 12 INCORRECT** **Feedback: Incorrect: The extracellular fluid is the fluid outside of the cells and comprises about 33% of the body's water. (p. 414)**  
 The net filtration pressure of the capillaries is mathematically equal to the hydrostatic pressure that tends to promote filtration minus the osmotic pressure that tends to promote absorption. (p. 414)  
 (A) True  
 (B) False
- Feedback: Incorrect: The net filtration pressure is the difference between the hydrostatic pressure in the capillaries and the hydrostatic pressure in the tissue fluid. (p. 414)**

- 13 CORRECT** The oncotic pressure of the blood tends to promote uptake of water from the tissue fluid into the blood plasma. (p. 415)  
 (A) True  
 (B) False  
**Feedback: Correct: The oncotic pressure of the blood is the difference between the colloid osmotic pressure in the blood and the colloid osmotic pressure in the tissue fluid and this difference favors flow of fluid from the tissue fluid to the blood. (p. 415)**
- 14 CORRECT** If the Starling forces formula,  $(P_c + p_i) - (P_i + p_p)$ , yields a negative number, it means the net Starling forces promotes absorption of fluid into a capillary. (p. 415)  
 (A) True  
 (B) False  
**Feedback: Correct: A negative pressure would oppose filtration and favor absorption. (p. 415)**
- 15 INCORRECT** All fluid that is filtered at the arteriolar end of a capillary and percolates through the tissues must be reabsorbed at the venular end in order to maintain plasma fluid balance. (p. 416)  
 (A) True  
 (B) False  
**Feedback: Incorrect: Approximately 15% or more of the capillary filtrate is taken up by the lymphatic system for return to the circulatory system. (p. 416)**
- 16 CORRECT** Liver disease tends to reduce the blood pressure and lead to edema. (p. 417)  
 (A) True  
 (B) False  
**Feedback: Correct: Liver disease decreases plasma protein concentrations which decreases the oncotic pressure and therefore return of fluid at the venular end of the capillary leading to edema. (p. 417)**
- 17 INCORRECT** All of the fluid filtered by the capillaries of the kidneys is ultimately excreted as urine. (p. 417)  
 (A) True  
 (B) False  
**Feedback: Incorrect: The kidney will reabsorb up too 99% of the fluid that is filtered. (p. 417)**
- 18 CORRECT** Less urine is excreted when the ADH level is high. (p. 417)  
 (A) True  
 (B) False  
**Feedback: Correct: ADH stimulates water retention by the kidneys which would decrease urine volume. (p. 417)**
- 19 CORRECT** Increased osmolality of the blood leads to increased secretion of ADH. (p. 417)  
 (A) True  
 (B) False  
**Feedback: Correct: As the blood becomes more concentrated the osmoreceptors in the brain stimulate the release of ADH from the posterior pituitary gland. (p. 417)**
- 20 CORRECT** Both ADH and aldosterone promote retention of water when one is dehydrated, but aldosterone does not lower the blood osmolality. (p. 418)  
 (A) True  
 (B) False

- Feedback: Correct: Osmolality is not decreased by aldosterone because this hormone stimulates reabsorption of both salt and water. (p. 418)**
- 21 INCORRECT** Angiotensinogen is secreted by the kidneys and then converted in the lungs to the vasoconstrictor named angiotensin II. (p. 419)  
 (A) True  
 (B) False
- Feedback: Incorrect: Renin is secreted by the kidneys and converts angiotensinogen to angiotensin I. (p. 419)**
- 22 CORRECT** Parasympathetic fibers innervating blood vessels are always cholinergic and stimulate vasodilation. (p. 423)  
 (A) True  
 (B) False
- Feedback: Correct: While there are not many blood vessels that receive parasympathetic innervations, the parasympathetic fibers will always release acetylcholine which will then stimulate vasodilation. (p. 423)**
- 23 INCORRECT** All blood vessels receive both sympathetic and parasympathetic nerve fibers so their diameters can be regulated by a balanced "push-pull" homeostatic control mechanism. (p. 423)  
 (A) True  
 (B) False
- Feedback: Incorrect: Only the gastrointestinal tract, salivary glands, and external genitalia receive dual innervation by the sympathetic and parasympathetic nerve fibers. (p. 423)**
- 24 CORRECT** The sympathetic nervous system is much more important than the parasympathetic system in regulating arterial blood flow. (p. 423)  
 (A) True  
 (B) False
- Feedback: Correct: The sympathetic nerves provide the majority of blood vessel innervation and therefore have the greatest effect on blood flow. (p. 423)**
- 25 CORRECT** A drop in arterial blood pressure causes cerebral arteries to dilate. (p. 429)  
 (A) True  
 (B) False
- Feedback: Correct: A decrease in arterial blood pressure induces an automatic dilation of the cerebral arteries to maintain a relatively constant flow rate to the brain. (p. 429)**
- 26 INCORRECT** Blood flow through the coronary arteries is greatest during ventricular systole and drops during diastole. (p. 425)  
 (A) True  
 (B) False
- Feedback: Incorrect: The coronary arteries are compressed during ventricular systole which decreases blood flow at this time and during diastole the coronary arteries are open leading to an increased blood flow. (p. 425)**
- 27 INCORRECT** Coronary blood flow is reduced during systole so the myocardium must temporarily rely on anaerobic respiration. (p. 425)  
 (A) True  
 (B) False
- Feedback: Incorrect: The myocardial cells have high concentrations of myoglobin which will store oxygen for use during systole. (p. 425)**

- 28 CORRECT** Sustained muscle contractions will cause faster onset of fatigue than a series of short contractions because the blood flow through a skeletal muscle is diminished or shut off during strong contractions. (p. 426)  
✔  **A) True**  
 **B) False**  
**Feedback: Correct: Sustained contraction causes the muscle to constrict the arterioles and decrease the flow of blood, leading to a decrease in nutrient and oxygen delivery and a more rapid onset of fatigue. (p. 426)**
- 29 INCORRECT** During heavy exercise, blood circulation to the skin increases to dissipate the excess heat the body generates. (p. 427)  
 **A) True**  
✔  **B) False**  
**Feedback: Incorrect: Blood flow to the skin actually decreases during exercise and other mechanisms are used to dissipate body heat. (p. 427)**
- 30 INCORRECT** During heavy exercise, the heart beats faster and has less time to fill between beats, so the end-diastolic volume is reduced. (p. 428)  
 **A) True**  
✔  **B) False**  
**Feedback: Incorrect: End-diastolic volume is not decreased because of the increased activity of the skeletal muscle pump and respiration. (p. 428)**
- 31 CORRECT** Cerebral blood flow remains fairly constant at about 750 ml/min, in spite of changes in brain activity, blood pressure, and blood flow to other organs. (p. 429)  
✔  **A) True**  
 **B) False**  
**Feedback: Correct: Blood flow to the brain remains relatively constant because of both myogenic and metabolic regulation of the cerebral blood vessels. (p. 429)**
- 32 CORRECT** Cerebral arteries constrict when blood pressure rises to about 200 mmHg. (p. 429)  
✔  **A) True**  
 **B) False**  
**Feedback: Correct: Sympathetic nerves are unable to effectively decrease blood flow until mean arterial pressure exceeds 200 mmHg. (p. 429)**
- 33 INCORRECT** The skin is vital to thermoregulation of the body and therefore cannot tolerate a reduced flow of blood for very long. (p. 429)  
 **A) True**  
✔  **B) False**  
**Feedback: Incorrect: The skin is able to tolerate reduced blood flow for extended periods of time because the metabolic rate of the skin decreases in the cold. (p. 429)**
- 34 INCORRECT** Heart rate is controlled by vasomotor control centers in the medulla oblongata. (p. 432)  
 **A) True**  
✔  **B) False**  
**Feedback: Heart rate is regulated by the cardiac control center in the medulla oblongata. (p. 432)**
- 35 CORRECT** The baroreceptor reflex responds to changes in blood pressure to increase or decrease heart rate and total peripheral resistance. (p. 432)  
✔  **A) True**

B) False

**Feedback: Correct: The baroreceptor reflex responds to both increased and decreased blood pressure and is slightly more responsive to decreases in pressure and in response the heart rate and total peripheral resistance are altered to return mean arterial pressure to normal. (p. 432)**

**36 CORRECT**

Orthostatic hypotension is due to a defect of the baroreceptor reflex. (p. 433)

A) True

B) False

**Feedback: Correct: Orthostatic hypotension results from a decreased sensitivity of the baroreceptor reflex. (p. 433)**

**37 INCORRECT**

The sounds of Korotkoff are created by the closing of atrioventricular and semilunar valves.(p. 435)

A) True

B) False

**Feedback: Incorrect: The closing of the heart valves produces the heart sounds. (p. 382)**

**38 CORRECT**

Laminar blood flow cannot be heard with the stethoscope on the brachial artery. (p. 435)

A) True

B) False

**Feedback: Correct: Laminar blood flow is smooth and produces no sound in the brachial artery. (p. 434)**

**39 INCORRECT**

In the auscultatory method of taking blood pressure, no sound is heard above the systolic pressure because the laminar flow of blood is silent. (p. 435)

A) True

B) False

**Feedback: Incorrect: Sounds are not heard above the systolic pressure because there is no flow of blood through the blood vessel. (p. 435)**

**40 INCORRECT**

Pulse pressure is obtained by multiplying blood pressure by pulse rate. (p. 434)

A) True

B) False

**Feedback: Incorrect: Pulse pressure is the difference between systolic and diastolic pressures. (p. 435)**

**41 INCORRECT**

If a person had an arterial blood pressure of 102/62, the mean arterial pressure would be 82 mmHg. (p. 437)

A) True

B) False

**Feedback: Incorrect: Mean arterial pressure is not calculated as the average of systolic and diastolic pressures. (p. 437)**

**42 CORRECT**

Essential hypertension is high blood pressure of unknown cause. (p. 438)

A) True

B) False

**Feedback: Correct: Essential hypertension affects most people with hypertension and has no known cause. (p. 438)**

**43 INCORRECT**

Hypertension should inhibit the production of renin, so it follows that most hypertensive patients have lower than normal plasma renin levels. (p. 438)

A) True

B) False

- 44 CORRECT** **Feedback: Incorrect: Hypertension should indeed decrease renin but most patients with hypertension have either high or normal renin levels. (p. 438)**  
By the time a patient shows any symptoms of hypertension, there usually has already been considerable damage to the circulatory system. (p. 438)  
✔  **A) True**  
 **B) False**
- 45 CORRECT** **Feedback: Correct: Most patients are asymptomatic until hypertension causes damage to the blood vessels. (p. 438)**  
Hypertension can be treated with diuretic drugs. (p. 439)  
✔  **A) True**  
 **B) False**
- 46 INCORRECT** **Feedback: Correct: Diuretics will increase urine production leading to a decrease in blood volume and therefore blood pressure. (p. 439)**  
Hypovolemic shock results from an infection. (p. 440)  
 **A) True**  
✔  **B) False**
- 47 CORRECT** **Feedback: Incorrect: Hypovolemic shock is produced when there is a decrease in blood volume that decreased blood pressure. (p. 440)**  
Hypovolemic shock tends to cause a patient to have a rapid pulse and cold, clammy skin. (p. 440)  
✔  **A) True**  
 **B) False**
- Feedback: Correct: The baroreceptor reflex tries to compensate for the decreased blood pressure by increasing heart rate and constriction the peripheral blood vessels producing a rapid pulse and cold, clammy skin. (p. 440)**

## Routing Information

Date: Wed Jan 02 05:18:33 EST 2013

My name:

Section ID:

### Email these results to:

Email address:

Format:

Me:

My Instructor:

My TA:

Other:

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