What is the Cardiovascular System?

Worksheet

The cardiovascular system circulates blood using the heart as a pump, arteries carrying blood away from the heart, veins returning it, and capillaries exchanging gases and nutrients with tissues; its output is measured as cardiac output (CO = HR SV).

Questions

1. A person has HR = 80 bpm and SV = 65 mL. What is their cardiac output?

A) 5.2 L/min
B) 0.8 L/min
C) 1.2 L/min
D) 65 L/min

2. Which vessel carries deoxygenated blood away from the heart?

A) Aorta
B) Pulmonary artery
C) Pulmonary vein
D) Vena cava

3. Which chamber pumps blood into the systemic circuit?

A) Right atrium
B) Right ventricle
C) Left atrium
D) Left ventricle

4. If heart rate increases but stroke volume stays constant, cardiac output will

A) Decrease
B) Stay the same
C) Increase
D) Become zero

5. A resting adult has a heart rate of 70 bpm and a stroke volume of 70 mL. Find cardiac output.

6. During exercise, heart rate rises to 150 bpm and stroke volume to 100 mL. What is the new cardiac output?

7. A patient's cardiac output is 5.4 L/min at a heart rate of 90 bpm. Find the stroke volume.

8. Define: What is cardiac output?

9. Define: What are the two circuits of the cardiovascular system?

10. Define: What is stroke volume?

Answer Key

1. A) 5.2 L/min - CO = 80 65 = 5200 mL/min = 5.2 L/min.

2. B) Pulmonary artery - The pulmonary artery is the exception - it's an artery carrying deoxygenated blood to the lungs.

3. D) Left ventricle - The left ventricle pumps oxygenated blood through the aorta to the body.

4. C) Increase - CO = HR SV, so increasing HR with constant SV increases CO.

5. CO = HR SV CO = 70 70 = 4900 mL/min CO = 4900/1000 = 4.9 L/min

6. CO = HR SV CO = 150 100 = 15000 mL/min CO = 15000/1000 = 15 L/min

7. CO = HR SV SV = CO/HR SV = 5400 mL / 90 = 60 mL/beat

8. The volume of blood the heart pumps per minute: CO = HR SV, typically ~5 L/min at rest.

9. The pulmonary circuit (heartlungs) and the systemic circuit (heartbody).

10. The amount of blood ejected by the left ventricle in one beat, typically 60-100 mL.