Anatomy and Physiology

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**Discussion**

**Response 1**

The systolic AP and MAP rise in exercise as the exercise causes more oxygen to be needed to the muscles and because of the increased requirement of the oxygen affecting the heart to inflate quicker and stronger to help the demand to be accomplished MAP increase. MAP increase which resulted in the blood vessels to widen and the blood flow more and more is required. This blood flow is required much faster and quicker to supply more blood to the energetic skeletal muscles.

**Response 2**

The systematic vascular resistance drops in the course of exercise. These values are higher when resting as the blood flow is increased. Systemic vascular resistance (SVR) drops in workout due to vasodilatation. The vasodilation is the widening of the blood vessels. The vasodilation occurs in the active skeletal muscles. The massive decline in vascular resistance in skeletal muscles during dynamic exercise causes complete systematic vascular resistance to reduce. The increase in mean arterial blood pressure increases cardiac output. Increasing cardiac output maintains blood pressure at elevated levels during exercise and this increases in vasomotor tone. The vasomotor tone increases in exercise as the exercise intensity increase the tone increase (Siddiqui, 2011).

**Response 3**

As the MAP causes blood vessels to dilate and resulting in decreasing systematic vascular resistance and more blood flow towards active skeletal muscles. When blood vessels dilate, it causes blood flow to increase which is due to the decrease in vascular resistance and also with increased cardiac output. Vasodilation happens by relaxing smooth muscles. This relaxation causes more blood flow in the arteries. This happened because the vascular resistance decreases. An increase in the diameter of the vessels is caused by the relaxation of the smooth muscles resulting mainly from the relaxation of vessels arteries, arterioles, and large veins. Dilation of vessels such as arteries and arterioles leads to a decrease in vascular resistance and a decrease in blood pressure and decrease heart rate as well. This is helpful in conditions such as heart failure, hypertension, and angina. In medical complications of hypertension and angina, chemical arterial dilators are used. When MAP drops it results in lowering blood flow in the vessels cause them to constrict and ultimately blood pressure decreases (Siddiqui, 2011). Continuous lowering of MAP would result in dangerous and complicated situations such as the kidney would not be able to work properly and protein would be lost in the urine.

**Response 4**

My predictions were accurate. In the first experiment, the MAP increase also CO increases. A high level of MAP indicates that a lot of pressure is there in the arteries. High MAP causes blood pressure more than 100 mmHg. High MAP will lead to blood clotting or heart muscle damage. This is because the heart has to work harder than normal causes damage to heart muscles. At rest, the MAP was 95 and it increases in the second experiment. During exercise, MAP increases because of the blood vessels which dilated (Siddiqui, 2011). High blood pressure causes increase MAP and it would result in a heart attack. Prolonged drops in MAP would result in serious and drastic negative effects on the body. As the intensity of exercise increases the cardiac output also increases which maintains blood pressure during elevated levels of exercise.

**Application**

**Response 1**

These calcium blockers deliberately slower the movement of calcium into the tissues of the heart of blood vessels which ultimately result in lower blood pressure. These calcium channel blocker medicines are used to treat high blood pressure conditions in patients. The body uses these blockers to narrow down blood vessels. This results in high blood pressure. Physicians use calcium blocker medication to lower blood pressure. These blockers block the effects of calcium on blood vessels (Siddiqui, 2011). This makes easier for the blood to flow and vessels dilate and relax. Calcium channel blockers working in 2 to 4 hours after taking the first dose and it would take weeks to have ultimate results. Calcium blockers are anti-hypertensive medicines which help in lowering blood pressure. If someone takes calcium blocker medicine at night, results would be seen in the morning in the form of lowering blood pressure.

**Response 2**

As we know arterial blood vessels carry oxygenated blood towards body parts away from the heart. These vessels carry blood away from the heart with a lot of pressure or force and a strong pump of the heart. This force causes the blood to move in the vessels with pressure. The pressure in the vessels would result in the fast flow of the blood. The aggressive force causes the flow to carry the blood to every part of the body. If this arterial vessel is cut, the pressure causes the blood to flow quicker and stronger than in veins. This flow for a longer period would cause serious consequences and even death (Siddiqui, 2011). The artery cut would result in blood spurt out with pressure ultimately result would be loss of blood. The veins carry blood towards the heart and is deoxygenated blood. This would not result in that serious damage as that or arterial cut. Arterial blood is necessary for the vessels, tissues, and cells as it carries oxygen with it. Loss of oxygenated results would cause serious consequences.

References

Siddiqui, A. (2011). Effects of vasodilation and arterial resistance on cardiac output. *J Clin Exp Cardiolog*, *2*, 170.