Unit 3 Area of Study 2 Physiological Responses to Physical Activity

Worksheet 4.2
Acute Cardiovascular Responses to Exercise

Date Issued:  
Due Date:  
Date Submitted: __________________________
Student Signature: __________________________
Teacher Signature: __________________________
Mark: _______/54 ________% Grade: __________

Q1: Define the terms: (2)
   i. Mechanism
   ii. Acute Response

Q2. List the structures that make up the Cardiovascular System: (3)

Q 3a. What gas is delivered to the working muscles during exercise? (1)

Q 3b. What gas is removed from the working muscles during exercise? (1)

Q4. Draw a simple graph representing the amount of O2 being delivered to the working muscles in relation to exercise intensity during exercise. (1) Please label both axes.

Q5a. What is the relationship between heart rate and exercise intensity? (1)

Q5b. Write the formula to estimate a person’s MHR? Calculate your own MHR and the MHR of a 46 year old. What occurs to the MHR as we age? (2)

5c. There are 2 different “mechanisms” that control heart rate. Explain (4)

Q6a. Define the term “Stroke Volume” and the factors that effect stroke volume. (4)

Q6b. What happens to Stroke Volume during exercise? At what stage of VO2 max does SV reach it’s capacity? (2)

6c. What are the mechanisms responsible for increases in SV? (4)

6d. Explain the Frank Starling Mechanism. (2)

Q7a. Answer the following (4)
   i. Write down the letter that represents Cardiac Output:
   ii. What is the unit of measurement for Cardiac Output:
iii. How is Cardiac Output calculated:

iv. How does Q continue to increase after 60% of VO2 Max if SV no longer contributes to its increase?

Q8a. Define the following terms: (2)

Systolic Pressure:

Diastolic Pressure

8b. What is the Systolic BP response to exercise? Explain (2)

8c. What are the causes of Systolic BP changes during exercise? (3)

8d. What is the Diastolic BP response to exercise? Explain. (2)

9a. Define the term “redistribution of blood flow” during exercise. (2)

9b. Define the following terms and explain where the occurrence of these acute physiological changes occurs to increase blood flow to the working muscles and the reason for the redistribution of blood: (4)

Vasodilation

Vasoconstriction:

9c. Vasodilation increases the gaseous exchange between capillaries and muscles. How? (2)

10a. Define “Arteriovenous Oxygen Difference (a-VO2 diff)” (2)

10b. During exercise a-VO2 diff increases considerably. Close to 100% of O2 can be extracted from the blood at the muscle site during exercise Explain (3)