

In preparation for this test, please review the following concepts:

1) Anatomy of the heart

- ability to draw/label a diagram?
- knowing the difference between all 4 valves
- "Lub - Dub"

2) Flow of blood in the heart and the two types of circulation in the body

- be prepared to describe where the blood goes next.
- include elements "excitation of the heart"
 - SA Node, Internodal pathways, etc

3) Be familiar with the types of blood vessels

- anatomy of capillaries
- differences between veins and arteries
 - anatomy of a vein and how it differs from an artery
 - valves, skeletal pump, etc.

4) Blood and its composition

- Plasma (what is it composed of?, role of plasma proteins)
- 3 Formed elements and their functions
 - RBC's - be prepared to tell me exactly how O_2 is transported in the blood
 - How do WBC's attack foreign microorganisms? (three types seen in class)
 - The role of platelets and fibrin (fibrinogen)

5) Target Heart Rate

- What is target heart rate and how do you calculate it?
 - 2 ways to predict it
 - I could give you a scenario and ask you to predict a % THR

6) Cardiovascular dynamics

- How does the cardiovascular system respond to exercise?
- Be familiar with :
 - Cardiac output (what is it, and how do we increase it?)
 - Heart Rate
 - Stroke Volume
 - LVEDV & LVESV

7) Anatomy of the Respiratory System

- Function of the respiratory system
- 2 main zones of the respiratory system and their **functions**
 - list the structure involved in each
- What is the main stimulus that initiates breathing?
- Movement of gas in the body (3 factors)
- Henry's Law and partial pressure

8) Respiratory Dynamics

- Mechanisms of inhalation and exhalation
- Internal vs. External respiration
- What is pulmonary ventilation

9) Lung Volume (Spirometer)

- Tidal Volume
- Inspiratory Reserve Volume
- Expiratory Reserve Volume
- Inspiratory Capacity
- Vital Capacity
- Residual Volume
- Functional Residual Capacity
- Total Lung Capacity

10) O₂ and CO₂ transportation in the blood

- How is O₂ transported?
 - plasma
 - Hemoglobin
- oxy-hemoglobin dissociation curve
- How is CO₂ transported?
 - Plasma
 - carboxy-emoglobin
 - Bicarbonate buffer system

11) VO₂ and VO₂ Max

- What is VO₂ and VO₂ Max?
- How is it calculated?
- What are the limiting factors
 - Respiratory limitations
 - Skeletal muscle efficiency
 - Cardiovascular limitations