

Readings**Topic**

Chapters 2, 5 1.

METABOLISM DURING EXERCISE

- a. What is energy?
- b. Energy value in food
- c. Factors affecting energy production
- d. Anaerobic energy sources
 - 1. ATP
 - 2. CP
 - 3. Glycolysis
- e. Aerobic energy sources
 - 1. Carbohydrate
 - 2. Lipid
- f. Significance of various energy sources and foods
- g. Oxygen uptake
 - 1. indirect calorimetry
- h. Lactic acid production
- i. Oxygen debt or EPOC
- j. Metabolic causes of fatigue

Learning Objectives
To be able to:

1. Identify the amount of energy derived from food of different types.
2. To understand those factors which may influence energy release.
3. Explain the basic energy stores, their power and capacity.
4. Identify and explain the anaerobic energy stores.
5. Understand the basic aerobic pathways for both carbohydrate and lipid metabolism.
6. Identify the significance of the energy delivery systems to athletic events of various durations.
7. Understand some effects of exercise nutrition
8. Outline the kinetics of the oxygen uptake curve.
9. Differentiate between steady-state and maximum oxygen consumption.
10. Understand the importance of maximal oxygen consumption (VO_2max) to endurance performance.
11. Understand and be able to calculate VO_2 via indirect calorimetry.
12. Recognize the meaning and use of ATPS, STPD & BTPS.
13. Understand the concept of RER.
14. Understand the reasons for, and the relative production and importance of lactic acid production.
15. Outline the reasons for and functions of the EPOC.

- To be able to:
2. Outline the manner in which blood is circulated to our bodies as well as the function of various subsections of the circulatory system.
 3. Indicate the influence of exercise on blood pressure and the determination of mean arterial pressure.
 4. Discuss the intrinsic and extrinsic regulation of the cardiac cycle.
 5. Discuss those factors controlling blood flow distribution.
 6. Outline the factors affecting cardiac output and the influence of exercise on these factors.
 7. Indicate those factors responsible for increased cardiac performance during exercise.
 8. To understand the relation between cardiac output and oxygen uptake.
 9. To be aware of the influence of training on the heart and the cardiovascular system.
- Chapters 1, 3
4. MUSCLE FUNCTION DURING EXERCISE
 - a. Muscle structure and function
 - b. The mechanism of muscular contractions. Some important contractile properties
 - d. Neuromuscular control of movement
 1. Motor units
 2. Recruitment pattern
 3. Muscle fibre types
 4. Feedback loops
 - e. Muscle soreness & recovery
- Learning Objectives
1. Outline muscle structure and function at the level of both whole muscle and individual sarcomere.
- To be able to:
2. Outline the sequence of contractile events starting with initiation of a neural signal to relaxation of the muscle.
 3. Explain the concept of motor units and their importance to a graded contraction.
 4. Outline the various types of muscle

7. Understand the basic mechanisms of muscle injury and recovery

Chapters 9, 10, 11

TRAINING ADAPTATIONS TO EXERCISE

- a. Physiological responses to training

Learning Objectives 1. Identify the major cardiovascular, respiratory and muscular adaptations that occur with different forms of training.

To be able to:

Course/University Policies

1. **Lateness/Absences:** Assignments are due at the beginning of class on the assigned due date and will not be accepted late, except under medical or other compassionate circumstances. Electronic submission of assignments will not be accepted (unless otherwise specified) under any circumstances. Submitting a late assignment without appropriate documentation will result in a zero (0) grade. Appropriate documentation for assignments worth less than 10% should be submitted to the Undergraduate office. A missed mid-term examination without appropriate documentation will result in a zero (0) grade. The course policy is not to allow make-ups for scheduled midterms, presentations or final exams, nor to assign a grade of Incomplete without acceptable and verifiable medical (or equivalent compassionate) reasons. Acceptable reasons might include hospital stays, serious illness, family emergencies (like serious accidents or illness,

4. **Scholastic offences:** They are taken seriously and students are directed to read the

8. Laptops for the **purpose of typing lecture notes** are permitted in class, but please be respectful to your fellow students and turn the sound off. If I receive complaints from other students regarding noise or other disruptive behaviour (e.g., watching videos on YouTube.com, updating your Facebook status, playing Solitaire), your classroom laptop privileges will be revoked.
9. Audio and/or videotaping of lectures is not permitted unless approval has been sought from the instructor in advance.

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<http://www.uwo.ca/univsec/board/code.pdf>

ENGLISH PROFICIENCY FOR THE ASSIGNMENT OF GRADES

Visit the website <http://www.uwo.ca/univsec/handbook/exam/english.pdf>

SUPPORT SERVICES

There are various support services around campus and these include, but are not limited to:

- 1.