**Exam 3 Part A. Your Name:**

**Please TYPE your answers in an MS Word Document. When complete send your exam answers as an ATTACHMENT to an Email to Dr. Kravitz. Exam 3 Part a is due Friday October 16 by 12midnight. No late papers accepted. Also, academic honesty is totally active here. Please do your OWN work! Use AS MUCH SPACE as you wish in your answers!**

*This EXAM is open note. Please use the WEB LINK to guide your answers.*

**VO2Max Questions:**

1. Define VO2Max (3 pts)

2. What are the four criteria for the attainment of VO2 max? (4 pts)

3. A person (man or woman) is 25yrs old. What is her/his Estimated Maximal Heart Rate? (3 pts)

4. What is the name of the technique we use to explain RPE to a client. (3 pts)

5. How long should a VO2max test last? (3 pts)

6. What may happen to a client if a VO2max goes longer than 12minutes? (3 pts)

7. What is VO2max so important to a person’s health? What does the research show? (3 pts)

8. RER is a ratio: What is in the numerator? What is in the denominator? (3 pts)

9. Define what a VO2 Peak is? (3 pts)

10. A person (man or woman) is 30 years old? What is her/his Estimated Maximal Heart Rate? (3 pts)

**Metabolic Adaptations to Aerobic Exercise:**

1. How much increase in capillaries is observed with cardiovascular training? (3 pts)

2. How does the increase in capillaries help improve cardiovascular endurance? (3 pts)

3. How much hypertrophy is observed in Type 1 fiber diameter size? (3 pts)

4. Myoglobin content increases significantly from aerobic training. How much? (3 pts)

5. Myoglobin transports oxygen from Where to Where in cells? (3 pts)

6. Mitochondria density is a factor of an increase in number and size of mitochondria. How much increase in NUMBER is observed with mitochondria? (3 pts)

7. Mitochondria density is a factor of an increase in number and size of mitochondria. How much increase in SIZE is observed with mitochondria? (3 pts)

8. If there is an increase in mitochondria number and size, what major factor is improved? (3 pts)

9. Enzymes in the mitochondria increase remarkably. What percent increase is observed in mitochondria enzymes? (3 pts)

10. In untrained individuals, VO2 max improves how much? (What is the range?) (3 pts)

11. All of the factors that improve from aerobic training have a positive effect on fatty acid oxidation. What % increase is observed in fatty acid oxidation from aerobic training? (3 pts)

**Metabolic Adaptations to Anaerobic Exercise:**

1. When it comes to improvement of PCR-ATP efficiency and enzyme efficiency, what observation are we stating in PEP326L? (3 pts)

2. In your own words explain what buffering is. (3 pts)

3. From anaerobic exercise, how much improvement can be observed with buffering? (3 pts)

4. What three enzymes increase in their proportion in muscle cells from anaerobic training? (3 pts)

5. How much improvement in the three enzymes has been observed (what is the range). (3 pts)

6. Which do you deplete first from an acute bout (such as a sprint) of exercise? CrP or ATP? (3 pts)

7. In regards to your answer in #6 above, please explain why one of these variable does NOT deplete near as much as the other variable? (3 pts)

**Special Topic: Skeletal Muscle Fatigue (please use out WEB page to guide your answers)**

1. What is neuromuscular fatigue (please explain)? (4 pts)

2. Explain the two types of neuromuscular fatigue? (4 pts)

3. Explain the mechanism of neuromuscular fatigue at the neuromuscular junction? (4 pts)

4. Within muscle, explain how H+ (hydrogen ions) interfere with calcium ions, and thus contribute to fatigue? (4 pts)

5. Within muscle, explain how acidosis contributes to fatigue? (4 pts)

**End of Exam**