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HHP 378.01: Exercise Physiology Laboratory

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The University of Montana
Department of Health and Human Performance
Dr. Brent Ruby

HHP 378 Exercise Physiology Laboratory
Fall 2001

Course Description :

This course will introduce you to some of the fundamental laboratory techniques used in the exercise sciences. All of the labs performed in this class will require a write-up to introduce you to the representation of scientific data. Although a computer is not required, it is recommended for data handling and graphic data representation in your lab write-ups.

Rationale :

This course is designed to mirror the HHP 377 lecture course. For this reason, some of the laboratory techniques referred to in class will be used in the lab. The content of each lab will be represented in the lecture material of HHP 377 from week to week. The goal of this course is to use practical laboratory experiences to indirectly reinforce some of the fundamental concepts in exercise physiology.

Course Objectives :

To acquire laboratory skills,

1. in the prediction and measurement of aerobic capacity
2. in measures of muscular strength and endurance
3. relating to pulmonary function
4. in the area of blood pressure and ECG monitoring
5. for the measurement of body composition
6. in the area of data handling and representation

Instructional Format :

One 110 min. lecture each week consisting of lecturer instruction of academic material, and laboratory experiences. ***Lab abstracts are to prepared by computer, double spaced, printed on a quality printer and turned in on time. Late abstracts regardless of the reason lose 1 point each day they are turned in late (If you are unable to turn in you lab during the time your lab section meets, you lose 1 point).*** **READ EACH WEEK'S LAB BEFORE CLASS!**

Grading:

Letter grades are calculated from the total points earned as follows...

Lab Abstract	11 x 20 points each	=	220 points
Final Written Exam		=	45 points
Participation		=	15 points
Total		=	280 points
A	90 - 100 %		(252-280 points)
B	80 - 90 %		(224-251 points)
C	70 - 80 %		(196-223 points)

Text :

Because each University has a unique lab and in some cases, limited equipment, there is not an appropriate text available for this course. The content of this lab manual has been structured based on the available equipment in our lab.

COURSE OUTLINE

Dates	Lab #	Topic
September		
Week of 3		No lab this week
Week of 10		Introduction, HR, BP, HT, WT
Week of 17	1	Cardiorespiratory I - Walk test to predict VO ₂ max
Week of 24	2	Metabolic rates (resting/exercise)
October		
Week of 1	3	Submaximal laboratory test for VO ₂ max
Week of 8	4	Test for peak VO ₂ (cycle)
Week of 15	4, cont	Test for peak VO ₂ (treadmill)
Week of 22	5	Pulmonary function measurement
Week of 29	6	EKG's (resting/exercise), BP monitoring
November		
Week of 5	7	Muscular Fatigue and Ischemia
Week of 12	8	Muscular power (Wingate/Margaria)
Week of 19	9	Blood lactate during exercise
Week of 26	10	Body composition (field measures)
December		
Week of 3	11	Body composition (hydrostatic weighing)
Week of 10		Lab Exam

Note: Each lab abstract will be prepared in groups of 2 persons - the lab grade will be assigned to each person in the group. It will be your responsibility to divide the work equally and work together.

Lab Exam: The final exam will be a short, comprehensive exam worth 45 points and will cover all aspects of the course. The exam will involve mostly objective questions, some calculations and short answers.

LAB WRITE-UPS

LAB ABSTRACTS ARE TO BE DONE IN GROUPS OF 2 STUDENTS and are due the following week at the beginning of lab.

All abstracts are to be computer written and printed double spaced and on a quality printer. Abstracts should be no longer than one typed page (double spaced) including any tables.

Abstracts should contain the following subheadings:

- Title:** Appropriate description of the current lab (come up with a appropriate title - 15 words max).
- Introduction:** This portion of the write-up is to describe the purpose of the investigation and the type of subjects being used.
- Methods:** Describe the way the data was collected, the general protocol, the instrumentation used and the general descriptive information of the subjects (i.e. college aged males (n=15) and college aged females (n=17) were used in the present investigation). Be brief!!
- Results:** Report the values obtained on the main variables of interest (i.e. means, statistical results). Use tables when possible.
- Discussion:** Discuss potential reasons for the obtained values/ results.
- Conclusion:** Statement of closing remarks, provide direction for further research based on your results.

SUGGESTIONS FOR WRITING A GOOD ABSTRACT:

1. An abstract should be informative.
2. An abstract should be self-explanatory without reference to other material, discussion, graphs or information that you might hand in with the abstract.
3. The abstract is a summary. It thus should include a short introduction, a purpose statement, summary of results, and a short discussion or conclusion.
4. Whenever possible use tables to summarize data.
5. The abstract should be no longer than one double spaced page in 10-12 point font with 1-inch margins. A good rule is 200 words!
6. Abstracts (science) should be written in the past tense.
7. Writing style should be active vs. passive.
8. Each sentence should have a purpose and be reviewed for English grammar.

9. A LARGE PART OF THE GRADE FOR EACH ABSTRACT WILL BE THE USE OF THE ENGLISH LANGUAGE. Scientists who cannot write concisely do not survive!
10. ABSTRACTS are one of the most difficult of writing assignments as they require clarity of thought, the ability to summarize what has been done and to pick out what was important. A good abstract excites (or at least tweaks the interest of) the reader to want to read the rest of the report!
11. The time that you spend on the abstracts will be reflected in your grades!!!

Grading of lab reports will adhere to the following breakdown

Title:	1 point	
Introduction:	2 points	
Methods:	3 points	
Results:	5 points	
Discussion:	2 point	
Conclusion:	2 points	
Quality of Writing:	5 points	Total = 20 points for each abstract