Instructor:
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Overview:
This course will provide an examination of the integration between muscle metabolic and cardiovascular, and respiratory systems and their control. An over-riding theme for the course will be the movement of O2 from the atmosphere to the muscle mitochondria. Discussions will focus (to various degrees) on ventilation and O2 exchange across the lung, and the impact of increased respiratory muscle work on peripheral muscle function; cardiovascular adjustments and blood flow and O2 delivery to muscle and its distribution within muscle; blood pressure control; O2 carriage within blood; O2 exchange at the capillary-muscle interface and muscle O2 uptake and utilization; and integration and control of metabolic, cardiovascular and respiratory systems and their impact on exercise performance, exercise tolerance and fatigue.

Format:
The format of the course will be a combination of tutorial/lecture, combined with student presentations and discussions of assigned readings from the textbook and assigned research articles. This course is meant to provide a “graduate experience” and as such, it is important that all students become involved through discussions and questions and answers. Students will be asked to provide comments and feedback on student presentations and participation. Also, weekly student presentations will be a key feature of this course. Topics may be covered in more or less detail as dictated by student background and understanding of topics and involvement in discussion. Topics and articles will be assigned on a weekly basis.

Course Objectives:
Following completion of this course, students will be able to:
1. better understand the basic processes related to the transfer of oxygen from the atmosphere to the muscle mitochondria
2. better understand how specific physiological and metabolic system(s) interact and are controlled during exercise, and how they may impact exercise tolerance and fatigue
3. search for, critically review and synthesize information from published literature
4. organize and communicate research findings via oral presentations and written reports
5. have more confidence in asking and responding to questions in a classroom/seminar/conference setting
6. critically evaluate and provide feedback to peers and colleagues
Course Textbook:

Evaluation (tentative – will be discussed and finalized in class):
- Term Paper (due near end of term): 20%
- Major Presentation (due near end of term): 20%
- Weekly Article Reviews and Discussion: 20%
- Take Home Exam: 20%
- Weekly Student Participation: 20%

(Note - details related to the course evaluation are discussed and may vary from year to year. While the course instructor is responsible for assigning grades, grading for certain components may include additional input from student evaluations)

Information related to presentations and research paper:

Student presentations generally are made on a weekly basis (depending on student enrolment) and are based on assigned readings. The readings generally follow a “theme” and will relate to the topic being discussed. Presentations are “formal” using PowerPoint, usually 15 min in length, and followed by question/answers. Feedback is provided after each presentation.

The “major” research presentation and term paper for Advanced Exercise Physiology: Cardiorespiratory and Metabolic Control and Adaptations should reflect some component of the overall theme of the course – i.e., the transfer of O2 from the atmosphere to the muscle mitochondria and its utilization during exercise - the metabolic consequences of inadequate O2 delivery and/or O2 utilization, and/or related topics covered in class. The term paper, which likely will be an extension of your major class presentation, should reflect the physiological “mechanisms” and “control” aspects of your topic. However, within these broad guidelines, the specific topic chosen can be one that is relevant to your graduate research project and/or a topic in which you would like to gain a better understanding.

As part of the course assignment you will be required to make a 25-30 min presentation based on your topic. The term paper will be handed in approximately 1-2 weeks after the presentation date. Students are expected to contribute to the discussion for each of the presentations, ask questions and to provide feedback on the presentation.

Presentation - 20% of final grade
Term paper - 20% of final grade

The final research paper should be formatted as follows (details subject to change each year):
- length not to exceed 10 pages (not including references, figures, tables, references (all appended at the end of the paper))
- typed, double-spaced; - Arial or Times New Roman font, with 12 pt font size
- margins (top, bottom, sides) should be 2.54 cm