McGill University
Department of Kinesiology and Physical Education

PATHOPHYSIOLOGY II
EDKP 449-001

COURSE OUTLINE, Fall 2017

Instructor: Celena Scheede-Bergdahl, Ph.D.
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Office Hours: Please contact instructor

Class Schedule: Mondays and Wednesdays 2:35-3:55

Locale: Currie 305

Course Description:

This course reviews the pathophysiology of selected clinical disorders involving skeletal muscle dysfunction, with a particular focus on the integrative physiological response to acute and chronic exercise. The scientific basis of how the disease process impacts the ability to exercise is reviewed. In addition, we will address whether exercise training can positively impact the disease process itself and/or whether exercise training can reverse some of the effects of physical inactivity that is associated with chronic conditions. Special emphasis will also be put on novel exercise-based interventions and their scientific rationale.

General Objectives:

- To acknowledge and understand the essential elements of pathophysiology of selected disorders affecting skeletal muscle function in humans
- For each disorder, to acknowledge and understand the impact of the pathological condition on the acute response to dynamic and resistance exercise
- For each disorder, to acknowledge and understand the positive and potentially negative effects of chronic exercise (training) on the disease process
- For each disorder, to apply the knowledge of the exercise response and limitations into the design and implementation of exercise programs for therapeutic purposes

Course Evaluation:

Evaluation Measure:	Percent of mark (out of 100):
Midterm (during class time)	30
Research paper presentation	15
Research paper	15
Class participation	5
Final Exam (during exam period)	35

<u>Research paper & presentation:</u>
Students will be put in teams of 3 to 4 per group, and work collectively to prepare a presentation on the topic of exercise treatment for a disease condition associated with skeletal muscle dysfunction. Through a review of the literature, combined with theoretical knowledge learned throughout this course (and perhaps others), you will propose a unique treatment strategy based on exercise or exercise-related adaptation for one of the neuromuscular conditions covered in class or a condition related to that covered in class. This treatment strategy can NOT be conventional endurance or resistance training, or exactly the same as a strategy covered in one of the class lectures; but it can be a variant of what has been discussed, or it can be an exercise mimetic that affects a cellular signalling pathway involved in exercise adaptation.

Your topic (disease condition and strategy) is due on October 1, 2018; and you will get feedback and/or approval from the course instructor during the following week. You will present your topic on an assigned date between November 21 and December 4 (see schedule below). Class participation is expected during these presentations and will be graded.

Guidelines for Research Paper: 12 point font, 1.5 line spacing, 10-15 pages. Use at least 15 references. In your paper, be sure to discuss the following: the disease process of your selection neuromuscular condition, describe the population for which the strategy will be most relevant; what are the main limitations to exercise in your chosen disease population? What has been previously attempted in terms of exercise training, or if nothing, why? What is the rationale for the exercise strategy chosen and what physiological and/or cellular adaptations will the strategy induce? How will the strategy be done? What if any are the risks involved in the strategy? What are the published studies on this topic and what are the results of using the strategy on the neuromuscular population? If there are no published studies, what would you expect as an outcome of the strategy? Also, be sure to integrate what you have learned from class into your presentation. Can this strategy be applied to another neuromuscular disease covered in this course? Please include a page where the contributions of each team member are clearly listed.

Guidelines for Paper presentation: 20 min presentation using Power Point. Minimum 10 slides; maximum 20 slides. Each team member must be present and participate in the presentation of your paper. There will be a 5-minute question period following the presentation.

Grading for Research paper will include marks for originality, clarity of writing, appropriate review of literature and statement of purpose, use of appropriate references, organization and flow of material, and paper content (clear description of chosen neuromuscular condition, statement of rationale and hypothesis if appropriate; proposed methodology for how strategy will be done, clear presentation of results, discussion of positives and negatives of chosen strategy, and any limitations of chosen strategy, any future direction to propose?).

Grading for Research presentation will include marks for clarity of presentation; clear description of chosen clinical condition, statement of rationale and hypothesis if appropriate; proposed methodology for how strategy will be done, clear presentation of results, discussion of positives and negatives of chosen strategy, and any limitations of chosen strategy, any future direction to propose?

Reference Material:
- Skeletal muscle structure, function and plasticity – the physiological basis of rehabilitation. Richard L. Lieber, 3rd edition. 2010: Lippincott Williams & Wilkins (Chapters 1,2,4,5 and 6)
- Clinical Exercise Physiology (3e) Ehrman, Gordon, Visich, Keteyian. 2013: Human Kinetics
- ACSM Exercise Management for Persons with Chronic Diseases and Disabilities (3e) 2009: Human Kinetics
- Journal articles: TBA

Anticipated Course Schedule: (Note: schedule and content may be subject to change)

Date	Lecture Content
Wednesday, Sept 5	Intro to course
Monday, Sept 10	Inflammation and skeletal muscle
Wednesday, Sept 12	Cancer
Monday, Sept 17	Cancer
Wednesday, Sept 19	Short and long term effects of chemo/radiation therapy
Monday, Sept 24	Cachexia and implications of cancer on muscle mass
Wednesday, Sept 26	Diabetes
Monday, Oct 1	Election Day: NO CLASSES
Wednesday, Oct 3	Diabetes
Monday, Oct 8	THANKSGIVING MONDAY: NO CLASSES
Wednesday, Oct 10	Diabetes-related complications
Monday, Oct 15	PCOS (Charlotte Usselman)
Wednesday, Oct 17	PCOS (Charlotte Usselman)
Monday, Oct 22	MIDTERM 30%
Wednesday, Oct 24	Muscular Dystrophy
Monday, Oct 29	Muscular Dystrophy/ Guillain-Barré
Wednesday, Oct 31	Guillain-Barré
Monday, Nov 5	Guillain-Barré/Amyotrophis Lateral Sclerosis
Wednesday, Nov 7	Amyotrophic Lateral Sclerosis
Monday, Nov 12	Amyotrophic Lateral Sclerosis/Cerebral Palsy
Wednesday, Nov 14	Cerebral Palsy
Monday, Nov 19	Cerebral Palsy/Myasthenia Gravis
Wednesday, Nov 21	Class presentations
Monday, Nov 26	Class presentations
Wednesday, Nov 28	Class presentations
Monday, Dec 3	Class presentations
Tuesday, December 4	Class presentations
Exams begin Friday, December 8	FINAL (specific date TBA) Exam worth 35%

IMPORTANT DATES AT MCGILL:
Fall Term
- Classes begin Tuesday, September 4
- Add/Drop deadline Tuesday, September 18
- Course or University Withdrawal with refund deadline Tuesday, September 25
- Course or University Withdrawal with NO REFUND deadline Tuesday, October 30
- Classes end Tuesday, December 4
- Study day Wednesday, December 5
- Exams begin Thursday, December 6
- Exams end Thursday, December 20 (11 days, including evening exams)

* On Tuesday December 4, the normal Tuesday schedule of course lectures, labs and conferences will be replaced by a Monday schedule.

ACADEMIC STATEMENTS:
In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in **English** or in **French** any written work that is to be graded. This right applies to all written work that is to be graded, from one-word answers to dissertations. Instructor addition: French/English dictionaries will be permitted during exams (however, supplemental notes marked within the dictionary will not be tolerated, *see following statement of **academic integrity***).

McGill University values **academic integrity**. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures
(see: www.mcgill.ca/students/srr/honest/ for more information).

L'université McGill attache une haute importance à l'honnêteté académique. Il incombe par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter: www.mcgill.ca/students/srr/honest/).

Instructors who may adopt the use of text-matching software to verify the originality of students' written course work must register for use of the software with Educational Technologies (support.ist@mcgill.ca) and must inform their students before the drop/add deadline, in writing, of the use of text-matching software in a course.