

NEUROMUSCULAR ASPECTS OF EXERCISE

APK 4115 -- 3 -- SPRING 2020

INSTRUCTOR: **Diba Mani, Ph.D.**
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Preferred Method of Contact: Canvas

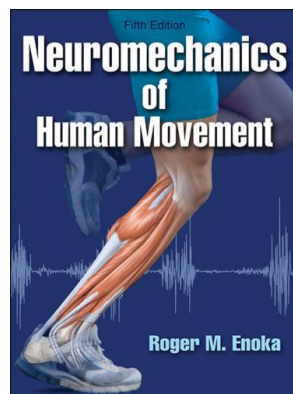
OFFICE HOURS: Posted on Canvas

MEETING TIME/LOCATION: MWF 7:25 AM – 8:15 AM (Period 1) in FLG 210

COURSE DESCRIPTION: Provides an in-depth analysis of muscle structure and function; how muscles produce movement; adaptation of muscle to resistance training, endurance training, and various manipulations used in rehabilitations; adaptation of muscle to disuse; and muscle responses to injury. Class 10724; Section 3200.

PREREQUISITE KNOWLEDGE AND SKILLS: APK 3110c with a minimum grade of C and/or PET 3351c with a minimum grade of C. Some version of Human Anatomy and Physiology.

REQUIRED MATERIALS: Our textbook, which is available for short-term use at the UF Libraries, is: Enoka RM. *Neuromechanics of Human Movement*. 5th edition. Champaign, IL: Human Kinetics, 2015.



TOP HAT

We will be using the Top Hat (www.tophat.com) classroom response system in class. You will be able to submit answers to in-class questions using Apple or Android smartphones and tablets, laptops, or through text message.

You can visit the Top Hat Overview (<https://success.tophat.com/s/article/Student-Top-Hat-Overview-and-Getting-Started-Guide>) within the Top Hat Success Center which outlines how you will register for a Top Hat account, as well as providing a brief overview to get you up and running on the system.

Top Hat may require a paid subscription, and a full breakdown of all subscription options available can be found here: www.tophat.com/pricing.

Should you require assistance with Top Hat at any time, due to the fact that they require specific user information to troubleshoot these issues, please contact their Support Team directly by way of email (support@tophat.com), the in app support button, or by calling 1-888-663-5491.

Lecture notes and articles will be provided throughout the term via Canvas.

COURSE FORMAT: Class meets in-person, three times per week. Students are responsible for checking announcements and course posting on Canvas, which will include updates to the course schedule. The general format of the course is 1-2 days of lecture (sometimes paired with an in-class quiz on one of these lecture days) and one day of presentations.

COURSE LEARNING OBJECTIVES: Upon completion of this course, students will be able to:

1. Knowledge: Discuss, explain, and defend subject matter relevant to neuromuscular physiology.
2. Skills: Discuss, explain, and compare specific skills related to neuromuscular physiology.
3. Professionalism: Present and explain vital, relevant concepts in neuromuscular physiology in a professional manner.

COURSE AND UNIVERSITY POLICIES:

ATTENDANCE POLICY: Students will receive participation points during most lectures and attendance points during most presentations through Top Hat, the classroom response system. Quizzes are offered in-class once every 1-2 weeks, and taken via Lockdown Browser on Canvas via portable electronic device.

You do *not* need to let me know if you are missing class, unless you are requesting an accommodation or make-up (in advance) of a quiz or exam, and have a valid, documented excuse (i.e. illness).

PERSONAL CONDUCT POLICY: Students are expected to exhibit behaviors that reflect highly upon themselves and our University:

- Read and refer to the syllabus.
- Submit assignments by the deadlines. If you miss a deadline, recognize the unfairness to your classmates if you were to be permitted a late submission (i.e. accessible presentation content)
- Show respect for the course instructor and classmates by not holding personal conversations during class time (especially during peer presentations).
- Use professional, courteous standards for any web exchanges (i.e. emails).
- UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions.
- Furthermore, you are obliged to report any condition that facilitates academic misconduct to appropriate personnel.

EXAM MAKE-UP POLICY: Make-up quizzes and exams will be given at the discretion of the instructor. To schedule a make-up quiz or exam, please fill out the make-up exam request form posted in Canvas and e-mail it to your course instructor. Documentation will be required. Unexcused missed quizzes and exams will result in a zero on that item (this includes contacting the instructor after the exam if you are ill). Please make travel arrangements accordingly, as this is not an excusable activity. If you have a serious emergency or life event, please contact the Dean of Students Office (www.dso.ufl.edu) and they will contact your instructor so that you do not have to provide documentation to individual instructors to make-up a quiz or exam. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Please recognize that the final exam for this course this semester may be held on the last day of class (Wednesday, April 22), pending an update from the UF Registrar’s Office (still TBA as of 05 January 2019).

Please recognize that the 2 lowest individual-performing of the 10 SLEs (described below), no matter its format (closed-book or open-book) will be dropped. The two dropped grades (5 point assignments, each) will include any quizzes not taken (and hence earning a zero), for whatever reason (i.e. extracurricular activity, sports, out of town, sleeping in). Thus, please do not ask for an accommodation for inappropriate excuses (i.e. work, volunteering, vacation, sleeping in).

ACCOMMODATING STUDENTS WITH DISABILITIES: Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive; therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

COURSE EVALUATIONS: Students in this class are participating in GatorEvals. This evaluation system is designed to be more informative to instructors so that teaching effectiveness is enhanced and to be more seamlessly linked to the University's Canvas learning management system. Students can complete their evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Thank you for serving as a partner in this effort.

GETTING HELP:

Health and Wellness

- U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575
- Counseling and Wellness Center: <https://counseling.ufl.edu/>, 352-392-1575
- Sexual Assault Recovery Services (SARS) - Student Health Care Center, 392-1161
- University Police Department, 392-1111 (or 9-1-1 for emergencies)
<http://www.police.ufl.edu/>

Academic Resources

- E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>
- Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling. <https://career.ufl.edu/>
- Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.
- Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <http://teachingcenter.ufl.edu/>

- Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <http://writing.ufl.edu/writing-studio/>
- Student Complaints On-Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/> On-Line Students Complaints: <http://distance.ufl.edu/student-complaint-process/>

GRADING:

The following table outlines the point-accruing components of the course.

Evaluation Components	Points Per Component	Approximate % of Total Grade
Supplemental Learning Experiences (x10)	5 pts each & drop two lowest = 40 pts	40/130 = 31%
Presentation	30 pts	30/130 = 23%
Attendance & Participation	20 pts	20/130 = 15%
Final Exam	40 pts	40/130 = 31%

Supplemental Learning Experiences (SLE) – Half of these SLEs are closed-book in the form of in-class, closed-book quizzes, taken via Lockdown Browser on Canvas via portable electronic device provided by each student. The quizzes will comprise 5-10 questions (multiple choice, short answer, matching) pertaining to all lecture, textbook, and possibly peer presentation material since the previous quiz.

The other half of the SLEs are in the form of in-class or take-home, open-book activities, which are designed to allow students to expand and elaborate on topics discussed in lecture in a more hands-on, active method. Each activity must be uploaded to the appropriate

Please recognize that the 2 lowest individual-performing of the 10 SLEs, no matter its format (closed-book or open-book) will be dropped. The two dropped grades (5 point assignments, each) will include any quizzes not taken (and hence earning a zero), for whatever reason (i.e. extracurricular activity, sports, out of town, sleeping in). Thus, please do not ask for an accommodation for inappropriate excuses (i.e. work, volunteering, vacation, sleeping in).

Presentation – The presentation will be based on an original research article or topic assigned to groups of 4 students (a couple groups may have 3 members). In the first week of class, students will sign up for groups and presentation days. Directions on presentation expectations will be given in lecture during the first week of class (i.e. PowerPoint formatting, uploading to Canvas, and duration). Presentation evaluation forms (rubrics) will be finalized in the first week of class by the class; group grades (there

will be no individual grades for presentations; so, please work together as a *team* to help each other succeed) will be based on the rubric developed.

An opportunities to conduct an “internationalization” of the origin of the scientific articles we discuss will be available. The goal of this opportunity to understand the diverse background of scientific data and research scientists; the intent is that this will expand our cultural knowledge and experience with people from around the world in a common language – science. This course fulfills one of the curriculum requirements of the International Scholars Program. Learn more about how you can obtain a graduation medallion and diploma here: <https://internationalcenter.ufl.edu/global-learning/international-scholars-program> Additional details will be given in class and posted in Canvas.

Students will be required to incorporate an international/cultural component of the original research articles presented. In addition to presenting on the content of the original research article, students will be asked to share something pertaining to research, academia, or sport in the location of origin for each original research article. If students are willing and able to interview an author of their assigned research article. A student member of each group will need to upload a transcript of the communication with the author, a list of questions asked, either a transcript or summary of the answers to the questions, and a video* recording (via Skype or Zoom). Students will be asked to share bits or clips of their interview in their presentation to the class. All presentation-related content must be submitted (uploaded) by the end of the day of the presentation. Make sure the content is accessible (i.e. no log-in required to view).

*Audio may be considered, pending circumstance. Open to elaboration, as proposed in advance of the presentation (at least a week prior).

Attendance & Participation – Questions will be given throughout various lectures that will be answered via Top Hat; these will be given for participation points. Also, please support your classmates by attending one another’s presentations. Top Hat may be used to confirm attendance on these days.

Final Exam – The final exam is not cumulative, as content from peer presentations will not be included in the exam. Rather, the emphasis for this exam will be on lecture content and reading segments from the textbook. The final exam may be on the last day of class (Wednesday, April 22). The official date, if not the last day of class during the regular class period, will be announced in advance.

GRADING SCALE: Any discrepancies with points displayed in the gradebook must be brought to the attention of the instructor as soon as possible, or before the last day of class. There is no curve for this course and final grades will not be rounded up. More

detailed information regarding current UF grading policies can be found here: <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>. *Any requests for additional extra credit or special exceptions to these grading policies will be interpreted as an honor code violation (i.e., asking for preferential treatment) and will be handled accordingly.*

Letter Grade	Percent of Total Points Associated with Each Letter Grade	GPA Impact of Each Letter Grade
A+*	97.00-100%	4.0
A	93.00-96.99%	4.0
A-	90.00-92.99%	3.7
B+	87.00-89.99%	3.3
B	83.00-86.99%	3.0
B-	80.00-82.99%	2.7
C+	77.00-79.99%	2.3
C	73.00-76.99%	2.0
C-	70.00-72.99%	1.7
D+	67.00-69.99%	1.3
D	60.00-66.99%	1.0
E (F)	0-59.99%	0

*An A+ appears as an "A" in the final UF grade system.

WEEKLY COURSE SCHEDULE:

The following is the tentative course overview; a more detailed schedule is maintained on Canvas, describing specific required reading *pages* and required articles. Changes to the schedule will be posted on Canvas, at the very least. Specific pages for reading are provided in the reading list provided on Canvas.

Week	Dates	Lecture Topic	Required Reading Chapters
1	Jan 6-10	<i>Class begins Jan 6th</i> Syllabus Presenting Scientific Data Introduction to the Motor System	
2	Jan 13-17	Activation Signals Synaptic Transmission	Chapter 5
3	Jan 20-24	<i>MLK, Jr. Day (no class) Jan 20</i> Synaptic Transmission <i>Supplemental Learning Experience 1: Membrane Potentials (Jan 24)</i>	Chapter 5
4	Jan 27-31	<i>Supplemental Learning Experience 2: Quiz (Jan 27)</i> Muscle Anatomy Muscle Mechanics	Chapter 6

5	Feb 3-7	Presentation 1 (Feb 3) Muscle Mechanics <i>Supplemental Learning Experience 3: Quiz (Feb 7)</i>	Chapter 6
6	Feb 10-14	Presentation 2 (Feb 10) Plasticity Motor Units <i>Supplemental Learning Experience 4: Plasticity (Feb 14)*</i>	Chapter 9
7	Feb 17-21	Presentation 3 (Feb 17) Motor Units Presentation 4 (Feb 21)	Chapter 6
8	Feb 24-28	Presentation 5 (Feb 24) Motor Units <i>Supplemental Learning Experience 5: Quiz (Feb 28)*</i>	Chapter 6
9	Mar 2-6	<i>Spring Break (no class)</i>	
10	Mar 9-13	Presentation 6 (Mar 9) Motor Units <i>Supplemental Learning Experience 6: Quiz</i> Task Control of Force	Chapter 6 Chapter 8
11	Mar 16-20	Presentation 7 (Mar 16) Fatigue <i>Supplemental Learning Experience 7: Fatigue (Mar 20)*</i>	Chapter 8
12	Mar 23-27	Presentation 8 (Mar 23) Fatigue Presentation 9 (Mar 25) <i>Supplemental Learning Experience 8: Quiz (Mar 27)</i>	Chapter 8
13	Mar 30- April 3	Presentation 10 (Mar 30) Reflexes <i>Supplemental Learning Experience 9: Reflexes (Apr 3)*</i>	Chapter 8 Chapter 7
14	April 6-10	Presentation 11 (Apr 6) Reflexes Aging <i>Supplemental Learning Experience 10: Quiz (Apr 10)</i>	Chapter 7 Chapter 9
15	April 13-17	Presentation 12 (Apr 13) Aging	Chapter 9
16	April 20-24	Presentation 13 (Apr 20) Electrical Nerve Stimulation Surveys <i>Last Day of Class: April 22**</i> <i>Reading Days: April 23 and 24</i>	Chapter 9
17	April 27- May 1	Final Exam: TBA (may be on the last day of class**, in class, April 22 – pending UF Registrar’s Office)	

*Special format (announced in class)

SUCCESS AND STUDY TIPS:

Recognizing that people learn in different ways and with no judgement on how you study (i.e. highlighting the textbook, using YouTube, drawing figures), here are some tips for success and studying in this course that have been proven useful for many:

- The required textbook is quite concisely written but should be read carefully and provides detail to material described during lecture. Although the material presented in lecture does not encompass everything described in the reading segments, the textbook explains topics discussed in class in a different way.
- Engage with your peers in not just preparing and giving your presentation, but in answering in-class questions via Top Hat. We are one another's greatest resources for learning material.
- Look up material that inspires you. If we're talking about muscle contractions and you really become curious about diseases pertaining to the cross bridge cycle – take a look up and read about it or watch a video clip! Share!
- Do prepare and practice for your presentation *with your group* well in advance. We do presentations for a variety of reasons – take the opportunity to present to the class seriously; it'll likely come in handy when you're doing a med school interview or job talk in the future.
- Contact your researcher well in advance. Follow the tips given in class and reiterated on Canvas on how to do so respectfully and effectively.
- Check Canvas for announcements! Adjustments to the schedule and edits/clarifications to topics discussed in class will be posted here. Additionally, presentation resources will be described online.
- Prepare for the quizzes (within the SLEs) as the material rolls in. We have quizzes throughout the term in hopes of encouraging you to stay on top of the material and not feel overwhelmed by a ton of classes having exams worth a lot of your final grade at the same time!
- Things happen. That's life. If there are some majorly overwhelming things happening during your semester, send me an email, come by my office; we'll work together to figure out what steps you should take to do in hopes of wrapping up the course well. Come by and chat academia (grad school, anyone?), sports, and traveling the world some time during the term. 😊

