This syllabus is subject to change. Please check back frequently for updates.
Last updated 01/28/19

BIOS E-66
Sports Physiology
Tuesdays 11am-1pm EST
1 Story Street, RM 306

Instructor
Maria Miara, PhD
mmiara@brandeis.edu
office hours:

- In person, 1-2pm Tuesdays at 1 Story Street, please confirm ahead of time
- Via Zoom by appointment, please schedule via miara.youcanbook.me

Teaching Assistant
Matthew Keany
matthew_keany@dfci.harvard.edu
weekly section (via zoom): Date and time TBD

Course Summary

With the Michelle Obama's "Let's Move" initiative and the NFL's "Play 60" program, there is increasing awareness in this country of the importance of physical activity for overall health. In this course we dive deeper into the physiology and anatomy behind exercise science looking specifically at how the musculoskeletal, cardiovascular, respiratory, and nervous systems respond to physical activity. Additionally we consider how the body reacts differently depending on activity type, environmental condition, and participant age.

Learning Objectives

Students who successfully complete this course will be able to:

- Explain how different systems of the body respond to the acute stress of a single bout of physical activity
- Explain how different systems of the body adapt to the chronic stress of repeated bouts of physical activity
- Explain how environmental conditions, such as temperature and altitude, influence physiology during physical activity.
- Explain how age, sex, and disease influence physiology during physical activity
- Explain the health benefits of physical activity
- Apply the knowledge about sports physiology to understand the effectiveness of particular training techniques, nutritional regimes, and ergogenic aids to sport performance.
- Explain the complex relationship between genotypic and environmental influences on athletic performance.

Prerequisites

Topics will be discussed with the assumption that you have some knowledge of introductory biology and human physiology. It is strongly recommended that you complete BIOS E-1a and BIOS E-1b or similar introductory biology courses prior to taking this class. Further, it is recommended that you complete BIOS E-65C or BIOS E-65D or a similar Anatomy and Physiology course prior to taking this course. Students who do not have these prerequisites are encouraged to discuss their academic background with Dr. Miara prior to registering.

HELIX & online learning

Research tells us that students learn best when actively engaged in the learning process. While I realize lectures are offered at a time and place that may prevent many of you from attending in person, I hope you will join me virtually whenever possible. In order to facilitate this Harvard Extension has provided an option for you to attend class online in real time through a web conference platform called Zoom, which will allow you to see, hear, and speak into the classroom.

If you think you might attend class in this way, I encourage you to attend a Zoom training given by our web conference team so that you'll be prepared for day 1. You can find training times and information about equipment you'll need on the web conference training website (https://canvas.harvard.edu/courses/12626).

Graduate Students

This course is offered with a graduate student option. Graduate students will be expected to complete all same tests and assignments as undergraduate students. They will also be expected to write a 10 page term paper and give a short presentation outlining their term paper topic to the class. There are many different ways the presentation could be given and recorded depending on the schedule and location of each graduate student. The details of this will be determined on a case by case basis.

Required Texts

- *Physiology of Sport and Exercise Sixth Edition*. W. Larry Kenney, Jack H. Wilmore, and David L. Costill. Human Kinetics 2015. ISBN: 978-1-4504-7767-3
- *The Sports Gene*. David Epstein. Penguin Random House 1995. ISBN: 978-1617230127

These are available at the Harvard COOP https://tinyurl.com/300-W19-BIOS-E-66

Academic Honesty

You are responsible for understanding Harvard Extension School policies on academic integrity (www.extension.harvard.edu/resources-policies/student-conduct/academic-integrity) and how to use sources responsibly. Not knowing the rules, misunderstanding the rules, running out of time, submitting "the wrong draft", or being overwhelmed with multiple demands are not acceptable excuses. There are no excuses for failure to uphold academic integrity. To support your learning about academic citation rules, please visit the Harvard Extension School Tips to Avoid Plagiarism (www.extension.harvard.edu/resources-policies/resources/tips-avoid-plagiarism), where you'll find links to the Harvard Guide to Using Sources and two, free, online

15-minute tutorials to test your knowledge of academic citation policy. The tutorials are anonymous open-learning tools.

Disabilities

The Extension School is committed to providing an accessible academic community. The Disability Services Office offers a variety of accommodations and services to students with documented disabilities. Please visit www.extension.harvard.edu/resources-policies/resources/disability-services-accessibility for more information.

If you are a student with a disability that has been documented by the disabilities office and if you wish to request a reasonable accommodation for this class, please see me immediately. Please keep in mind that reasonable accommodations are not provided retroactively.

Course Policies

1. Students should attend or view all lectures.
2. Students are expected to be aware of all announcements made in class and all material on the course website.
3. Weekly Responses are due at 11:59pm EST on Sundays according to the schedule below. These are **not** accepted late.
4. Assignments are due at 11:59pm EST on the dates indicated below. Late assignments will lose 10% for each day past the due date.
5. Students should regularly check the course website for handouts, course information and any changes to the syllabus.

Evaluation

Undergraduate Students:
30% - Assignments
10% - Weekly Responses (submitted using online form, due each Sunday 11:59pm EST starting Feb 3 and ending April 28)
30% - Take home Test 1
30% - Take home Test 2

Graduate Students:
20% - Assignments
10% - Weekly Responses (submitted using online form, due each Sunday 11:59pm EST starting Feb 3 and ending April 28)
20% - Take home Test 1
20% - Take home Test 2
15% - Term Paper, see term paper handout on course website
15% - Presentation

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Lecture Date	Lecture Topic	Reading (from Kenney *et al.)*	Assignments Due (All Students)	Assignments Due (Grad Students Only)
January 29	Introduction & Muscle	Introduction & Ch 1		
February 5	Muscles	Ch 1 and 2	Weekly Response*	
February 12	Metabolism and Neurons	Ch 2 and 3	Weekly Response* Assignment 1 Due	
February 19 NOTE: will be prerecorded the previous week, Date/ time TBA	Endocrine	Ch 4 and 5	Weekly Response*	Term Paper Topic and sources
February 26	Cardiorespiratory I	Ch 6, 7, and 8	Weekly Response*	
March 5	Cardiorespiratory II	Ch 6, 7, and 8	Weekly Response* Assignment 2 Due	
March 12	Take Home Test 1			
March 19	NO CLASS - SPRING BREAK			
March 26	Training I	Ch 9, 10 and 11	Weekly Response*	
April 2	Training II	Ch 9, 10 and 11	Weekly Response*	
April 9	Training III	Ch 14, 15, and 16	Weekly Response* Assignment 3 Due	
April 16	Training IV and Age in Sport	Ch 17 and 18	Weekly Response*	
April 23	Age and Sex Differences	Ch 19	Weekly Response*	
April 30	Hot, Cold and Altitude, Presentations	Ch 12 and 13	Weekly Response*	
May 7	Graduate Student Presentations		Assignment 4 Due**	Presentation
May 14	Take Home Test 2		Assignment 5 Due***	Term Paper Due

* Weekly Responses due Sunday 11:59pm each week starting Feb 3 and ending April 28

** Assignment 4 is a semester long project in which each student must record and interpret changes in their own physiology as a result of chronic bouts of physical activity

***Assignment 5 relates specifically to the reading of “The Sports Gene” and may be submitted at any point throughout the semester.