Course title: Physical Activity and Mental Health: From Culture to Neuroscience

Semester and Year: Fall 2017
Credits: 3
Location: Copenhagen
Major Disciplines: Psychology, Public Health
Related Discipline(s): Neuroscience
Faculty Member: Dr. Eric Hall

Description of course:

Physical activity - how can it improve mental and psychological health? Perspectives from social, cultural, psychological and neuroscience will be explored. This course will focus on the influence physical activity has on areas such as: stress, anxiety, depression, self-perceptions, cognitive function, sleep and pain. Specifically, US/European comparisons will be made as regards cultural and environmental differences. Scandinavian perspectives, in particular, will be highlighted where appropriate.

Learning objectives of the course:

In this course you will:

- Learn about the concept of mental health and how the rates differ in the United States, Europe and Scandinavia
- Understand the cultural influences on both physical activity and mental health
- Have an understanding of the mental and psychological health benefits that result from physical activity
- Compare and contrast the different social, psychological and neuroscientific explanations for why physical activity may influence mental health
- Be able to read, understand and critique empirical research articles

Required texts:


Other articles will be posted online prior to class for reading.

Approach to Teaching:

Many different methods will be used when teaching this course. Lectures will be given to teach basic information related to topics, but participation will be crucial to the success of the course. Portions of this course will be taught “seminar” style where there will be class discussion and presentation about pertinent empirical research articles. Where appropriate we may do some laboratory type activities to demonstrate some core concepts of the course.

Expectations of the students:

This syllabus is subject to change.
Any successful learning experience requires mutual respect on the part of the student and the instructor. Neither instructor nor student should be subject to others’ behavior that is rude, disruptive, intimidating, or demeaning. The instructor has primary responsibility for and control over classroom behavior and maintenance of academic integrity.

**Instructor responsibilities:**

- Start and end class on time.
- Treat all students with courtesy and respect.
- Be open to constructive input from students in the course.
- Ensure that opportunities to participate are enjoyed equally by all students in the course.

**Student responsibilities:**

- Come to class on time, and refrain from packing up belongings before class ends.
- Classroom participation is a part of your grade in this course. To participate you must attend class having prepared the materials for the day. Questions and comments must be relevant to the topic at hand.
- Turn off all electronic devices that might create a disruption in class.
- Be quiet and give full respectful attention while either instructor or another student is speaking.
- When speaking, use courteous, respectful language and keep comments and questions relevant to the topic at hand.

**Field studies, practicum and/or study tour:**

Possible ideas for field study include: walking/biking tour around Copenhagen to talk about the built environment and how it influences physical activity; guest talks by experts in the community on topics of mental health/physical activity in Denmark/Scandanavia/Europe or field trip to brain injury center to talk about rehabilitation and neuroplasticity.

**Evaluation and Grading:**

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<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Homework and Participation</td>
<td>15%</td>
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<tr>
<td>Research Paper/Proposal</td>
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<td>Midterm Exam</td>
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<tr>
<td>Article/Lecture Presentation</td>
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**Homework and Participation (15% of Grade)**

To best learn the material in the class it is important to be an active participant. In this class you will be asked to read a number of research articles. It will be important for you to understand these articles and be able to participate in class. You will be asked to write article critiques for these articles. In addition to the article critiques we may do laboratory type activities in class and it will be important to participate in these to learn the material.
Guidelines for article critiques:

In an effort to learn about a topic it is important to understand the literature related to the topic and understand how it fits into what is already known. The ultimate goal will be to determine practical implications for the topic. The purpose of this assignment is to demonstrate your understanding of the research article that your classmate will present. Here are the things that should be included in the article critiques:

- **Brief summary of the main points of the article** (e.g., purpose/hypotheses; design, results and conclusions) - mandatory
- **Your analysis**
  - Explain any problems you had with the authors premise, methods or conclusions
  - What is interesting, exciting or important about the article?
  - Why are the results of the study important? Do they have any practical applications?

Refer to this website for help on your critiques:

http://psychology.about.com/od/psychologystudyguides/ht/critiquepaper.htm

10 points – Extensive evidence that you understand and thought critically about material
7 points – Some evidence that you understand and thought critically about material
4 points – Little evidence that you understand and thought critically about material

**Exams (40% of grade)**

There will be two exams in this course. One exam will take place at mid-term and one exam will take place at the end of the semester. These exams will be an opportunity to demonstrate what you have learned throughout the semester. These exams are likely to either be short answer/essay exams taken in class or may be take home exams.

**Research Paper/Proposal (30% of grade)**

One of the main goals that I would like for you to have when you leave this course is to be able to read and critique research articles. For this course I would like for you to come up with a brief research proposal that examines some aspect related to physical activity and mental health.

This proposal should include:

**Brief Introduction (3-5 pages):**
• Background/rationale – what is currently known about this topic; be concise but provide overview of what is known and why psychophysiological approach is appropriate to answer the question
• Purpose statement
• Hypotheses

Methods:
• Participants – how will you recruit; what characteristics will you want or control
• Measures/Instrumentation
• Procedures
• Statistical analysis

Limitations and Future Research:
• What are some of the limitations of the research project you developed?
• What would be the next question that would need to be asked after this study is completed?

Please use APA style for citations and references; include title page, abstract, running head.

Remember, when writing a research proposal you are using the future tense as this is a study you hope to complete.

Article Lecture/Presentation (15% of grade)

The best way to learn information is to teach the information. Having a strong understanding of the material that you teach is crucial and leads to strong teaching. The purpose of this opportunity is for you to develop appropriate teaching skills. Additionally, this is a common way of learning/teaching information in graduate seminar classes. When teaching the article it is important to teach all aspects of the paper. Assume that the audience has no background in the material being taught. Therefore, provide a strong background/introduction/rationale for the study. Why was this study done? What other information is necessary to help understand the article? (This may come from the textbook or other research articles). It will be important to engage the others in the class during your leadership. You may want to consider developing discussion questions or other activities to help everyone have a deeper understanding of the topic.

The first step is to identify a research article to present material. This needs to be turned into and cleared by Dr. Hall a week prior to presentation.

Each teaching session should be 30-45 minutes in length.

15 – teacher was thoroughly prepared and fully effective in leading a dynamic session
10 – teacher was adequately prepared and was acceptably effective in leading dynamic session
5 – teacher was not adequately prepared and was ineffective in leading a dynamic session
Selected Topics in the Courses.

1. **Introduction to core concepts related to physical activity**
   1. What is physical activity and how can it be measured?
   2. What is sedentary behavior and how can it be measured?
   3. Primer on epidemiology

   **Required Readings**
   
   Chapters 1 (Foundations of Exercise Psychology) & 2 (Basic Concepts in Exercise Psychology) of textbook

2. **Introduction to core concepts related to mental health**
   1. What is mental health? How can it be measured?
   2. Happiness Report
   3. Comparison and Contrast: US, Europe and Scandinavia

   **Required Readings**
   


3. **Influence of Built Environment on Physical Activity Patterns**
   1. Comparison and Contrast: US, Europe and Scandinavia
   2. Discussion of social ecological models
   3. Use Copenhagen as exemplar of active transportation

   **Required Readings**
   
   Chapter 15 (Interventions to Change Physical Activity Behavior) of the text


4. **Review of Nervous System and Brain Structures/Behavioral Neuroscience**
   1. Brain structures and functions
2. Neurotransmitters
3. Basic neural physiology

Required Readings

Chapter 3 (Behavioral Neuroscience) of the text

5. Cognitive Function and Exercise – Chronic participation in PA
   1. Research on aging, PA and cognitive function
   2. Brain structure changes with PA
   3. Benefits of an enriched environment

Required Readings

Chapter 8 (Cognition) of the textbook


6. Cognitive Function and Exercise – Acute Studies
   1. Discuss hypofrontality theory
   2. Applications in military, fire fighters, etc.

Required Readings


7. Sport Participation and Concussion/mild TBI
   1. What is a concussion?
   2. Neurometabolic cascade

Required Readings


8. **Sport Participation and Concussion/mild TBI**
   1. Recovery Strategies
   2. Long term implications of concussion – CTE, Alzheimer’s, Parkinson’s

*Required Readings*


   1. The Cross-Stressor Adaptation Hypothesis and Exercise Training
   2. Psychobiological Reactivity, Physical Activity in Cardiovascular Health

*Required Readings*

Chapter 4 (Stress) of the textbook


11. **Differences between stress, affect, anxiety and mood**
   1. Affective Responses to Acute Exercise: Toward a Psychobiological Dose-Response Model
   2. Dual Mode Model of Affect
   3. Energy and Fatigue

*Required Readings*

Chapter 5 (Affect, Mood and Emotion) of the textbook


12. **Physical Activity, Affect, and Electroencephalogram Studies**
   1. Davidson’s theory of affect
   2. Exercise and EEG studies

*Required Readings*
13. Physical activity and anxiety
   1. Definitions and types of anxiety disorders
   2. Effects of exercise
   3. Mechanisms: thermogenic hypothesis

   Required Readings
   
   Chapter 6 (Anxiety) of the textbook


14. Physical activity and depression
   1. Clinical depression and other mood disorders
   2. Effects of exercise
   3. Mechanisms: Monoamine hypothesis

   Required Readings

   Chapter 7 (Depression) of the textbook


15. Physical activity and self-esteem
   1. Theories and models
   2. Exercise studies
   3. Body image and exercise

   Required Readings

   Chapter 12 (Self-Esteem) of the textbook


### 16. Physical activity and sleep

1. Sleep disorders
2. Exercise and sleep
3. Mechanisms for improved sleep

*Required Readings*

Chapter 10 (Sleep) of the textbook


### 17. Physical activity and pain

1. Acute exercise studies
2. Chronic exercise studies
3. Mechanisms: Endorphins/Endocannabinoids

*Required Readings*

Chapter 11 (Pain) of the textbook
