COURSE SYLLABUS

Course Code and Title: KIN459 Psychobiology of Physical Activity (previously KIN489X)
Class Meeting time(s): Tuesday, Thursday 10:30am to 12:00pm
Instructor Name: Eli Puterman
Contact Information: eli.puterman@ubc.ca or 604.822.2854
Office Hours: by appointment, location: Zoom or 104-2176 Health Sciences Mall
Teaching Assistant: Luke Peddie, luke.peddie@ubc.ca

Class location:
January 4 – January 24, 2022

Join Zoom Meeting
https://ubc.zoom.us/j/66261621472?pwd=ekIwVWEwN25vQWJ6YUp6UlRFcXA5dz09
Meeting ID: 662 6162 1472
Passcode: 991399

January 25 – end of term, 2022 (hopefully!)

Neville Scarfe (SCRF) - 209

ACKNOWLEDGEMENT OF MUSQUEAM FIRST NATION PEOPLE AND LAND
UBC’s Point Grey Campus is located on the traditional, ancestral, occupied, and unceded territory of the xwməθkwəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on in their culture, history, and traditions from one generation to the next on this site.

COURSE DESCRIPTION
This course offers an in-depth exploration of the effects of exercise and physical activity on psychobiological structures and functions, including the brain and the neuroendocrine and autonomic nervous systems. This course also examines our current understanding of the role that physical activity and exercise play in modifying, and perhaps ameliorating, psychiatric disorders and daily psychological wellbeing that are underpinned by neurobiological systems. This course evaluates observational and intervention studies in humans, mostly, to provide a comprehensive examination of the concepts and methods used in the psychology and biology of stress.

RATIONALE
In 2014, 23% of Canadians reported their lives to be quite or extremely stressful (Statistics Canada). 11% were at risk for depression at some point in their lifetime. With the emergence of COVID-19, depression, anxiety, and general stress levels have tripled to quadrupled nationally and internationally.

A wide literature has identified how depressed mood and stress gets ‘under our skin’,
through poor engagement in healthy behaviours and by way of the biological ‘stress response.’ The question then is, what if those who are depressed or experiencing long-term stress become physically active? What psychological, social, and biological response processes are altered following exercise? To better understand and appreciate the full extent to which physical activity and exercise improve health and well-being, it is necessary to have a fundamental understanding of the psychobiological processes that are modified by physical activity. We also review the effects of stress and psychobiological processes on engagement in physical activity and performance during exercise.

AIMS
The aim of the course is for students to be confident in their understanding of the psychiatric and neurobiological effects of exercise and physical activity, and the varied conceptual and research methods utilized to scientifically frame and examine the psychobiological effects of physical activity and exercise.

Educational outcomes
- Understand the effects of physical activity on depression, anxiety, and other mood states, and vice versa.
- Understand the effects of physical activity on psychobiological brain structures and functions
- Understand the stress response system, including psychological and neurobiological processes
- Appreciate the role the biological stress response system plays in disease development and progression
- Be familiar with the scientific methods used in both rodent and human research to discover the effects of physical activity and exercise on the varied psychobiological processes examined
- Understand the biological underpinnings of stress, threat, and challenge and how they may impact engagement in physical activity and exercise
- Develop skills in presenting research ideas and results in written assignments and in front of an audience

It is important for students in kinesiology to have knowledge of the psychobiological effects of physical activity and exercise. Many patients in hospital and clinic settings either come from backgrounds with high adversity or the experience of a disease diagnosis causes high levels of stress. In either circumstance, it is essential to understand how physical activity can directly improve their disease status and what pathways are corrected.

Specific Learning Objectives:
Upon completion of the course, students will be able to
- Describe different methods for designing research trials for behavioural interventions
- Describe features of an exercise program that are needed to consider when planning an intervention trial
- Describe the symptoms of depression, its prevalence, impact on health
• Describe impact of exercise on depression levels in healthy adults and adults with depression
• Gain proficiency in evaluating trials for bias
• Describe different ways to assess mood and affect
• Describe the role of both acute and chronic effects of physical activity and exercise on mood and affect
• Describe strengths and weaknesses of experimental laboratory studies and naturalistic studies
• Describe areas of the brain impacted by physical activity
• Describe some of the neurotransmitters affected by physical activity
• Describe effects on the structure and function of brain regions following intervention trials
• Describe the hypothalamic-pituitary-adrenal axis and sympathetic adrenal medullary pathway and their relationships to health
• Describe the different observational, laboratory, and daily process methods to assess the psychobiological impacts of stress and physical activity
• Describe how stress impacts engaging in a physically active lifestyle
• Describe the differences between threat and challenge and how they differentially impact performance, including exercise performance
• Conduct literature searches in Pubmed, Web of Science, and other online databases
• Consolidate and present concepts and results from the extant literature in written and oral forms
• Design a research study based on the existing literature and write up the design

CLASS FORMAT AND PROCEDURES:
This course is held on Tuesdays and Thursdays at 10:30 – 12:00 pm.
The course is structured as a lecture/seminar. The course will include weekly readings of review articles and meta-analyses, professor-led discussions, and student participation. It is strongly encouraged that all students come to class prepared to discuss the weekly readings.

COURSE REQUIREMENTS
The course is structured as follows:

Each new concept (presented as a module) will be introduced with a series of chapters, peer-reviewed systematic/narrative reviews, or meta-analyses. On these days, students are expected to come to each class prepared to engage in discussion on the readings, however, the Instructor will lead the class with presentations on the topic. On the last day of the Instructor-led lectures on the materials for every module, students are expected to send a Commentary (four in total) and 2-3 comments on the readings and lectures for the section (see assignments below). On the final day for each section, students and Instructor will engage in a didactic exploration to develop a hypothetical new study or discuss the materials presented based on the commentaries submitted. Please see the Evaluation section below to see how in-class participation and comments/questions sent to the professor will be graded.
UNIVERSITY POLICIES

It is your responsibility to become familiar with the University of British Columbia’s Academic Honesty and Plagiarism Policies, as well as the Student Declaration and the consequences of violating these policies.

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious and cultural observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available here (https://senate.ubc.ca/policiesresources-support-student-success).

POLICIES AND EXPECTATIONS

Absences due to Illness: If you are sick, it is important that you stay home. Complete a self-assessment for COVID-19 symptoms here: https://bc.thrive.health/covid19/en. In this course, the schedule can be accommodated so that you can prioritize your health and still succeed. If you are staying at home, and wishing to contribute to the class, then we can arrange for live streaming. Of course, if you are too sick to participate, then please rest-up/recuperate at home, and join us when you are symptom-free (and in the case of a positive COVID-19 case, when you are no longer infectious). It is imperative that you take care of your health!

Class Attendance
You should attend all lectures. You are responsible for all material covered in class and any information given whether in attendance or not. You are also responsible for getting your own notes from class, as well as information pertaining to changes in the course outline, readings, and assignments.

Academic Accommodation for Students with Disabilities
The University's goal is to ensure fair and consistent treatment of all students, including students with a disability, in accordance with their distinct needs and in a manner consistent with academic principles. Students with a disability who wish to have an academic accommodation should contact Access and Diversity without delay. The Instructor should be informed of any accommodations.

Email
Attempting to teach or explain material over e-mail can be difficult and ineffective. If you have questions about course material or concepts, those questions should be addressed in person. Please seek clarification on course material in class, during breaks, after class, or during office hours with the instructor. E-mail should be used for a limited
number of reasons, including: scheduling a time to meet, in cases of emergency that may cause you to miss an exam, or situations otherwise detailed in class. It may take up to 48 hours to respond to your email during the week and I do not check my email on weekends, nor will your teaching assistants. Please keep this in mind around exam time. Please include “KIN 459” in the subject line of emails.

Academic Integrity
All UBC students are expected to behave as honest and responsible members of an academic community. Breach of those expectations or failure to follow the appropriate policies, principles, rules, and guidelines of the University with respect to academic honesty may result in disciplinary action. It is your responsibility to become familiar with the University of British Columbia’s Academic Honesty and Plagiarism Policies, as well as the Student Declaration and the consequences of violating these policies.

Statement on Diversity and Inclusivity
Education is a multidisciplinary field that brings together faculty, students and others from diverse academic and personal backgrounds. UBC’s Faculty of Education is committed to creating a respectful workplace and learning environment that supports inclusion based on the principles of equity, diversity and social justice in order to create an environment that supports its community members’ full participation. The Faculty of Education is committed to providing accessible, usable, and welcoming spaces for faculty, staff, students, and visitors who have disabilities, are members of racialized communities, Indigenous, transgender, two-spirit and gender-diverse people, regardless of their age, sexual orientation, social status, religion, ethno-linguistic, nationality and/or citizenship status.

Faculty of Education courses take place in learning environments that are inclusive of gender identity, gender expression, sex, race, ethnicity, class, sexual orientation, ability, age, etc. Learners and educators expect to be treated respectfully at all times and in all interactions. Non-sexist, non-racist, non-homophobic, non-transphobic and non-heterosexist language is expected in Faculty of Education classes, course content, discussions and assignments.

Please feel welcome to e-mail your instructor your name and pronoun and how you would like these to be used.

READINGS AND RESOURCES
Required readings are presented in the Course Schedule. It is expected that the articles assigned be read prior to each class.

For classes with class slides, class slides will be made available in pdf file-format through the course website on CANVAS. Students are encouraged to bring these slides along with paper and pen to class. Slides will be posted within 24-hours prior to each class (hopefully!). Please keep in mind that these notes provide an overview of what will be covered and do not contain information related to discussions, in-class assignments, or detailed examples, which will be covered in class. The instructor will not make a full set of notes available online.
COURSE EVALUATION

The breakdown of marking for the course is as follows:

1. **FOUR commentaries on course readings:** 50% (each 12.5%)
2. **Self-assessment of participation:** 10%
3. **Viewpoint:** 40%

1. **FOUR commentaries on course readings:** 50% (each 12.5%)
   Students will be required to prepare a 1-2-page Commentary (single-spaced) on the weekly reading(s) for EACH of the 4 modules, submitted TWO days prior to class, at 1pm PST. The commentary should be evidence-based with 5-10 references to support the commentary. Commentaries can include personal thoughts on the work presented, but should integrate content from the readings, other readings students complete on the topic, integration from other readings in the course or from other courses students completed. These are not meant to be summaries of the material. Rather, they are intended to give you an opportunity to develop and express your thoughts about the readings, or some aspect of them, prior to our class discussion, and to integrate your knowledge across disciplines. Each commentary should be followed with 2-3 questions about the materials, as these might be used to initiate discussions during the In-Class Discussions.

   Feedback on each assignment will be provided within two weeks.

   **Submission Deadline Commentary Module 1: January 25, 2022, 4pm**

   **Submission Deadline Commentary Module 2: February 15, 2022, 4pm**

   **Submission Deadline Commentary Module 3: March 22, 2022, 4pm**

   **Submission Deadline Commentary Module 4: April 07, 2022, 4pm**

2. **Self-assessment of participation:** 10%
   At the end of this term, you will be asked to assign yourself a mark for participation in the course. Asking you to assess yourself is a step toward viewing the learning experience as a more collaborative endeavour, in which your own self-evaluation is valued as part of your course mark. You will assign yourself a grade that encompasses the extent to which you participated in class discussions, peer feedback, and discussions. It is important that you submit a short paragraph to justify your grade.

   **Submission Deadline: April 13, 2022, 4pm**
3. **Final Paper, Viewpoint:**  

40%

From the JAMA website: “Viewpoints may address virtually any important topic in medicine, public health, research, discovery, prevention, ethics, health policy, or health law and generally are not linked to a specific article. Viewpoints should be well focused, scholarly, and clearly presented but should not include the findings of new research or data that have not been previously published.” Maximum length: up to 1200 words of text—or 1000 words of text with 1 small table or figure—and no more than 10 references, which should be as current as possible.

In students’ final papers, give thought to the diversity of participants represented in the included research. Students must also confirm with the instructor or TA their topic before they begin this assignment.

Papers should include the following:
- A title page containing the title of the article and student name.
- A word count (from abstract to conclusions, not counting references).
- An abstract (75 to 150 words) clearly labeled as such.
- No more than 10 references. Use JAMA referencing.
- A figure count of 1 maximum (not required).
- A table count of 1 maximum (not required). Tables must include titles.

**Submission Deadline: April 20, 2022, 4pm**

**MISSED ASSIGNMENTS**

If you anticipate that you won’t be able to complete an assessment, please contact me **before you miss the assessment**. Assessments will not be rescheduled for any reason other than self-declared medical circumstances, compassionate grounds, religious observation, or conflicting responsibilities.

Missing an assignment completely will lead to losing the total grade for that assignment. If you do not contact your instructor, you will be given a score of zero on the assessment.

**Grading**

All assignments and assessments will be given a score on 100, and then scaled appropriately to their weight of the final course grade.

The final written assignment is due no later than April 18, 2022, unless negotiated with the instructor. Late Final Assessments will be penalized by a loss of 5 points per day of the grade (based on a 100) of the assignment.

**Policy on Text-Matching Software:**

UBC subscribes to Turnitin, an online system that compares written material with the Web and with other material submitted to its database. The instructor will scan submissions and check for duplication of material in other sources and possible plagiarism.
# THE PSYCHOBIOLOGY OF PHYSICAL ACTIVITY KIN 459 COURSE SCHEDULE

The topics and assigned readings for each class are listed below, although this may be subject to change.

<table>
<thead>
<tr>
<th>Date</th>
<th>Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Syllabus</td>
</tr>
<tr>
<td>01.11.22</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 3</td>
<td>In-Class Activity/Discussion</td>
</tr>
<tr>
<td>01.27.22</td>
<td>Each student required to send in 2-3 questions or comments on the readings from the previous lectures, two days prior to the date.</td>
</tr>
</tbody>
</table>
### MODULE 2:

**Physical Activity and Well-Being**

| Week 4 | 02.01.22 | Ekkekakis (2017). People have feelings! Exercise psychology in paradigmatic transition. *Current Opinion in Psychology, 16*, 84-88.  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 5</td>
<td>02.08.22</td>
<td>Basso and Suzuki (2017). The effects of acute exercise on mood, cognition, neurophysiology, and neurochemical pathways: A review. <em>Brain Plasticity, 2</em>, 127-152.</td>
</tr>
</tbody>
</table>
| Week 6 | 02.15.22 | Brand, Timme, Nosrat (2020). When pandemic hits: Exercise frequency and subjective well-being during COVID-19 pandemic. *Frontiers in Psychology, 1-10 (online only).*  
Do, Wang, Courtney, Dunton (2021). Examining the day level impact of physical activity on affect during the early months of the COVID-19 pandemic: An ecological momentary study. *Psychology of Sport and Exercise, 56*, 1-9 (Online only) |
| Week 6 | 02.17.22 | In-Class Activity/Discussion  
Each student required to send in 2-3 questions or comments on the readings from the previous lectures, two days prior to the date. |

**READING WEEK**  
February 21-25, 2022

### MODULE 3:

**Physical Activity and the Brain**
| Week 8 | Millon & Shors (2019). Taking neurogenesis out of the lab and into the world with *MAP Train My Brain*™. *Behavioural Brain Research, 376*, 112154. |
| Week 10 | In-Class Activity/Discussion Each student required to send in 2-3 questions or comments on the readings from the previous lectures, two days prior to the date. |

**MODULE 4:**

Stress (Threat and Challenge) and Physical Activity Engagement and Performance
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 13</td>
<td>In-Class Activity/Discussion&lt;br&gt;Each student required to send in 2-3 questions or comments on the readings from the previous lectures, two days prior to the date.</td>
</tr>
</tbody>
</table>