

# The PhD Program in Exercise and Health Sciences

## Department of Exercise and Health Sciences

### University of Massachusetts Boston

#### A Research-Based Program

Our doctoral program is a firmly research-based, interdisciplinary program. A student's primary area of research will align closely with the research of a specific faculty advisor in the Department.

The faculty's broad expertise ranges from the cellular level (molecular mechanisms) to the society at large (community and population studies), with many collaborative research efforts focused on exercise physiology, behavior science, and physical activity and health promotion in diverse populations across the lifespan.

While a primary faculty advisor guides a student's dissertation research, degree candidates will have the opportunity to explore other areas of interest in the form of directed research and elective courses, preparing them to be well-rounded researchers.

#### Student Preparation

Our program prepares students to be employed by universities, research centers, and state and federal health and research agencies. Graduates will become high-level, independent scientists who are competitive in obtaining federal funding to support their research. They will also be prepared to teach in academic settings and to fulfill service obligations, both in their area of employment and in their discipline's professional organizations.

#### Major Faculty Advisor

Before entering the PhD program, incoming students should work in conjunction with the faculty and program director to identify a major faculty advisor based on research.

The major faculty advisor will also typically serve as the chair of the student's dissertation committee and with whom they will conduct their dissertation research. The major faculty advisor will work with the Doctoral Advisory or Dissertation Committee.

#### Curriculum Requirements

The program requires a minimum of 42 graduate credits for students entering with a master's degree and a minimum of 75 graduate credits for students entering with a bachelor's degree.

#### Core Courses

- EHS 825- Quantitative Research Methods
- NU 770- Biostatistics II: Advanced Statistical Methods in Healthcare Research
- EHS 787- Advanced Topics in EHS
- NU 705- Health Disparities

#### Electives

In addition to the core courses, students must successfully complete a minimum of 6 credits of electives

#### Research Credits

Students are required to complete a minimum of 24 research credits with the option of 1) 24 credits of Dissertation (EHS 899) or 2) 18 -23 credits of Dissertation credits and 1-6 credits of Directed Research (EHS 898) by working with the major faculty advisor on other research projects.

Depending on the student's background and interests, the student will choose one of the following concentrations:

1. Applied Exercise Physiology
2. Physical Activity and Health Promotion

For students entering with the required master's degree, see the below for an example of a course sequence:

#### First Semester (9 credits)

- EHS 825 Quantitative Research Methods (3 cr)
- NURSNG 770 Biostatistics 2: Advanced Statistical Methods in Healthcare Research (3 cr)
- EHS 887 Advanced Topics in Exercise and Health Sciences (3 cr)

#### Second Semester (9 credits)

- NURSNG 705 Health Disparities (3 cr)
- EHS 700-Level Elective (3 cr)
- EHS 700-Level Elective (3 cr)

#### Third Semester (6 credits)

- EHS 898 Dissertation Research (0-2 cr)
- EHS 899 Dissertation (4-6 cr)

#### Fourth Semester (6 credits)

- EHS 898 Directed Research (0-2 cr)
- EHS 899 Dissertation (4-6 cr)

#### Fifth Semester (6 credits)

- EHS 898 Directed Research (0-2 cr)
- EHS 899 Dissertation (6 cr)

#### Sixth Semester (6 credits)

- EHS 898 Directed Research (0-2 cr)
- EHS 899 Dissertation (6 cr)

For students entering with the required bachelor's degree, please see the courses described above and in our MS program fact sheet.

#### Qualifying Examination Committee

The purpose of the Qualifying Examination is to allow students the opportunity to demonstrate their knowledge, creativity, requisite skills, and ability to integrate information and critique the literature in their chosen discipline as well as in appropriate related areas.

Before Qualifying Exam, the student should work with the major faculty advisor to form a Qualifying Exam Committee. The Committee shall consist of at least four faculty members with the student's major

faculty advisor as the chair. A minimum of three

members shall be EHS faculty. An outside member is recommended but not required.

#### Qualifying Examination

Each student must pass a qualifying examination, continue in the program and work on their dissertation proposal.

The timing of the qualifying examination should be designated by the student's major faculty advisor but must be after all course requirements, except for research credits, are completed in good standing.

Content covered in the examination is agreed upon by the qualifying exam committee and the student.

#### Dissertation Committee

After the student passes the qualifying examination and advances to candidacy, the faculty advisor will help the candidate form the dissertation committee. The committee consists of at least four members of whom at least three are EHS Faculty and one external to the EHS Department with expertise in the candidate's research area. The committee, once approved by the Graduate Program Director and the Dean of Graduate Studies, will guide, and advise the student regarding the requirements of the dissertation proposal, details related to the design and completion of what is considered an original research project, and the final dissertation document that presents all components of the completed research project.

#### Dissertation Proposal

Once students are advanced to candidacy, they will develop their dissertation research questions and write a proposal for their intended research project. The proposal will consist of an introduction, rationale and hypothesis, review of the literature, and proposed methods. Precise requirements for the proposal will be developed in consultation with the dissertation committee and will be based on the focus of the intended research. Candidates will write their proposal and orally present ("defend") to their dissertation committee.

#### Dissertation Defense

Each student's original research project culminates in the completion of a dissertation document and oral defense. The dissertation will include an introduction, rationale, and hypothesis, a review of the literature, a description of methods, a presentation of results, and a discussion of the relevance of the study's findings to the field at large. The results of the research will be presented in a manuscript-ready format including two or more separate papers that are ready to be submitted to peer-reviewed journals.



# The PhD Program in Exercise and Health Sciences

## Faculty and Research Expertise

Faculty in the Department of Exercise and Health Sciences are nationally recognized for their cutting-edge work in areas such as Exercise Physiology, Motor Control, Behavioral Science, and Public Health.

**Tracy Baynard**, PhD, Syracuse University: cardiovascular exercise physiology in special populations.

**Rachel Drew**, PhD University of Birmingham: nervous system control of cardiovascular function during exercise in populations with elevated cardiovascular risk.

**Bo Fernhall**, PhD, Arizona State University: Cardiovascular exercise physiology, influence of inflammation and exercise on heart rate, blood pressure and blood flow control in special populations.

**Phil Gona**, PhD Boston University: statistical methods for epidemiology, cardiovascular and infectious diseases epidemiology, time-to-event analysis, meta-analysis, global health.

**Azizah J. Jor'dan**, PhD, University of Minnesota: balance control in aging and age-related disease, neurophysiology during dual-task walking and standing; non-invasive interventions (e.g., brain stimulation, exercise) to improve brain function and/or balance control.

**Melissa Linden**, PhD, University of Missouri-Columbia: understanding how lifestyle, including diet modification and exercise, alter metabolism and mitigate obesity and obesity-related diseases and how exercise and pharmaceuticals interact and affect exercise capacity, type 2 diabetes, and non-alcoholic fatty liver disease.

**Ana Cristina Lindsay**, DrPH, Harvard School of Public Health: child health and nutrition, childhood obesity prevention, community-based research, program evaluation, minority health, global health with a focus on Latin America.

**Laurie Milliken**, PhD, University of Arizona: body composition assessment, obesity prevention, obesity treatment.

**Heidi Stanish**, PhD, Oregon State University: physical activity promotion for individuals with disabilities.

**Richard Viskochil**, PhD, University of Massachusetts Amherst: exercise training, sedentary behavior, and diabetes risk/prevention in cancer patients and survivors.

**Jessica Whiteley**, PhD, Virginia Polytechnic Institute and State University: clinical health psychology, health promotion interventions

**Julie Wright**, PhD, University of Rhode Island: computer-assisted self-care interventions, childhood obesity prevention and treatment.

**Huimin Yan**, PhD, University of Illinois at Urbana Champaign: The interaction of diet and exercise on cardiovascular function in health, disease, and disability throughout the human lifespan.

**Tongjian You**, PhD University of North Carolina Greensboro: metabolic and physical dysfunctions associated with obesity and aging, lifestyle interventions using physical exercise, mind-body exercise and new technology.

**Kai Zou**, PhD, University of Illinois at Urbana-Champaign: Molecular and cellular mechanisms regulating skeletal muscle metabolism with obesity, Type 2 Diabetes and exercise.

## Facilities

Our faculty has access to laboratory facilities that provide support in dedicated laboratory spaces including:

- Exercise and Health Sciences Teaching Lab
- Cardiovascular Exercise Physiology Lab
- Integrative Human Physiology Lab
- Muscle Metabolism and Physiology Lab
- Neurophysiology of Balance in Aging Lab
- Neurovascular Exercise Physiology Lab

**The EHS Teaching Lab** is an approximately 1200 square-foot space that is fully equipped with exercise physiology and fitness assessment equipment that is used for teaching and research projects.

**The Cardiovascular Exercise Physiology Lab** is in an approximately 200 square-foot enclosed room. It includes state-of-the-art equipment that assesses various aspects of cardiovascular function.

**Integrative Human Physiology Lab (IHPL;** ~400 ft<sup>2</sup>) assesses physiological function and integrated control mechanisms in humans, using various stressors, such as exercise or lower body negative pressure, with state-of-the-art equipment.

**Muscle Metabolism and Physiology Lab** is a 800- square-foot lab well-equipped with basic and advanced laboratory equipment necessary to conduct biochemical and molecular analyses of human and animal tissues.

**The Neurophysiology of Balance in Aging Lab** is approximately 400 square-foot enclosed room. The lab includes wireless equipment that can monitor, assess, and/or elicit changes in brain hemodynamics, balance, and gait.

**The Neurovascular Exercise Physiology Lab** is in an approximately 200 square-foot enclosed room and equipped with state-of-the-art equipment to noninvasively measure beat-to-beat kidney blood flow, blood pressure, and heart rate.

## Admission Requirements

Typically, applicants will have a bachelor's or master's degree in exercise science, behavior science, nutrition, or a related field from a nationally accredited college or university or its international equivalent.

The review committee will admit applicants with degrees in other disciplines at their discretion. The Graduate Program Director will review coursework from other graduate programs on a case-by-case basis to determine the transferability of credits up to a maximum of 6 credits.

Preference will be given to all applicants whose transcripts show completion of the following courses with a minimum GPA of 3.0, taken within the past seven years: one year of anatomy and physiology with lab, exercise physiology with lab, chemistry with lab, fitness assessment, and statistics. Students may be required to address deficiencies as a condition of acceptance.

## The Application Process

Applicants are strongly encouraged to apply by the priority deadline of February 1. Applications will be accepted through April 1, and must be submitted through [https://go.umb.edu/portal/gr\\_app](https://go.umb.edu/portal/gr_app).

A completed application includes:

- Completed application form and the required fee.
- Official transcripts for all undergraduate and/or graduate programs attended.
- English Language Proficiency Test Scores (e.g., TOEFL, IELTS), if applicable.
- Three letters of recommendation from persons with whom the applicant has had extensive contact. At least one reference must be from academia (e.g., a professor) and at least one must be from a professional (e.g., a supervisor).
- An personal statement essay of no more than 1,000 words addressing the specific interest and rationale for pursuing a PhD in exercise and health, and career goals after completing the PhD studies. Current major research and interests in the fields of exercise or health sciences (we strongly recommend that applicants contact EHS faculty directly concerning their research interests before applying). Description of career goals, post-PhD.
- Resume

To request application materials or for more information, please visit [https://go.umb.edu/portal/gr\\_app](https://go.umb.edu/portal/gr_app)

## For Questions:

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