Movement Science

The Movement Science PhD Program offers training to investigate and improve movement in people with chronic diseases such as stroke, diabetes, low back pain, Parkinson disease, hip disorders and obesity. Studies span the full spectrum of investigation levels, from fundamental discovery through clinical application.

Our students become part of the next generation of scientists improving human health through movement. They go on to pursue postdoctoral fellowships, academic faculty positions, and careers in industry.

The Movement Science Program is an interdisciplinary training experience housed within the Program in Physical Therapy. Our students — some with and some without clinical backgrounds — learn to be movement scientists in an energetic, dynamic, and collaborative environment.

The program is unique in being an integral part of one of the world’s largest biomedical research institutions. Students and faculty collaborate with multiple departments within the School of Medicine, as well as with colleagues on the Danforth Campus in Biomedical Engineering, Psychological & Brain Sciences, Biology, and Social Work. The environment at Washington University provides a strong infrastructure for translational and clinical research. We use the expertise of outstanding researchers from diverse fields to create a world-class training experience, and we take mentoring seriously.

Accepted students receive full tuition remission, a stipend, and health insurance. The Movement Science Program is supported by National Institutes of Health training grant T32HD007434.

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Faculty

Chair
Gammon M. Earhart  
Professor  
PhD, Washington University  
Neural control of locomotion in people with Parkinson's disease

Professors
B. Ruth Clark  
PhD, Saint Louis University  
Promotion of nutrition and exercise in urban residents

Marcie Harris-Hayes  
DPT, Washington University in St. Louis  
Rehabilitation research for orthopaedic conditions

Mary K. Hastings  
DPT, Washington University in St. Louis  
Foot and ankle injury and recovery

Joseph W. Klaesner  
PhD, Vanderbilt University  
Rehabilitation engineering

Catherine E. Lang  
Associate Director, Movement Science Program  
PhD, Washington University  
Stroke recovery and rehabilitation; neurorehabilitation

Michael J. Mueller  
PhD, Washington University  
Metabolic and movement factors in people with diabetes mellitus

Susan B. Racette  
PhD, University of Chicago  
Dietary and exercise interventions for health promotion and disease prevention

Linda R. Van Dillen  
PhD, Washington University  
Musculoskeletal pain problems in the low back, hip and neck

Assistant Professors
Michael Harris  
PhD, University of Utah  
Whole body and joint-level orthopaedic biomechanics

Jacob G. McPherson  
PhD, Northwestern University  
Sensorimotor neural plasticity and neurological injury

Laura McPherson  
PhD, Northwestern University  
Neurological injury and neurorehabilitation

Gretchen A. Meyer  
PhD, University of California, San Diego  
Mechanical and cellular contributors to skeletal muscle disease
Degree Requirements

PhD in Movement Science

Students in the Movement Science Program complete core course work, electives, original laboratory research, and a dissertation.

Degree Requirements

Students must complete 48 credit units*:

- 28 units of required course work
- 20 units of elective course work

* Students with master's or doctoral degrees can receive up to 12 units of transfer credit.

The following elements are also required of all students:

- **Qualifying examination**: Part one of the qualifying exam requires the student to develop a research proposal pertinent to the projected area of dissertation research that is based on a question/problem provided by the student’s mentor(s). Part two of the qualifying exam is an oral examination that consists of a presentation of the proposal by the student followed by a question-and-answer period with the faculty reviewers.

- **Laboratory research**: Students will develop, implement and complete original laboratory research appropriate for a doctoral dissertation.

- **Doctoral dissertation**: Students will successfully provide an oral defense of their dissertation proposal, complete a written doctoral dissertation, and defend an oral presentation of the doctoral dissertation.

On average, students complete the degree in four and a half years.