REHABILITATION AND MOVEMENT SCIENCE, DOCTOR OF PHILOSOPHY (PH.D.) WITH A CONCENTRATION IN NEUROMUSCULOSKELETAL DYNAMICS [COLLEGE OF HEALTH PROFESSIONS]

Program goal
The Ph.D. in Rehabilitation and Movement Science is an interdisciplinary degree program developed through a collaborative partnership of the departments of Kinesiology and Health Sciences, Physical Therapy, and Physical Medicine and Rehabilitation. The mission of this collaborative degree program is to prepare applied scientists capable of approaching multifaceted health care, preventive medicine and rehabilitation initiatives from an integrative perspective and to prepare graduates to assume research, teaching and leadership positions within rehabilitation and movement science professions.

There are two program concentrations: exercise physiology and neuromusculoskeletal dynamics. The exercise physiology concentration prepares individuals to conduct research, direct external funding initiatives and teach in the area of exercise physiology, with particular focus on physical activity's impact on chronic disease states. The neuromusculoskeletal dynamics concentration prepares individuals for research, teaching and clinical initiatives associated with the identification and rehabilitation of movement disorders.

Student learning outcomes
At the completion of the program students will:
1. Demonstrate comprehensive foundational knowledge within his/her area of program specialization
2. Develop testable hypotheses and appropriate study designs to address relevant research questions in his/her area of program specialization
3. Develop the skills and abilities to collect and manage research data while ensuring ethical and responsible conduct of research
4. Develop the ability to analyze research data and subsequently interpret and synthesize results and draw appropriate conclusions
5. Demonstrate teaching effectiveness in the classroom and/or clinical environment
6. Disseminate research findings effectively in oral and/or written formats

VCU Graduate Bulletin, VCU Graduate School and general academic policies and regulations for all graduate students in all graduate programs

The VCU Graduate Bulletin website documents the official admission and academic rules and regulations that govern graduate education for all graduate programs at the university. These policies are established by the graduate faculty of the university through their elected representatives to the University Graduate Council.

It is the responsibility of all graduate students, both on- and off-campus, to be familiar with the VCU Graduate Bulletin as well as the Graduate School website and academic regulations in individual school and department publications and on program websites. However, in all cases, the official policies and procedures of the University Graduate Council, as published on the VCU Graduate Bulletin and Graduate School websites, take precedence over individual program policies and guidelines.

Visit the academic regulations section for additional information on academic regulations for graduate students.

Degree candidacy requirements
A graduate student admitted to a program or concentration requiring a final research project, work of art, thesis or dissertation, must qualify for continuing master's or doctoral status according to the degree candidacy requirements of the student's graduate program. Admission to degree candidacy, if applicable, is a formal statement by the graduate student's faculty regarding the student's academic achievements and the student's readiness to proceed to the final research phase of the degree program.

Graduate students and program directors should refer to the following degree candidacy policy as published in the VCU Graduate Bulletin for complete information and instructions.

Visit the academic regulations section for additional information on degree candidacy requirements.

Graduation requirements
As graduate students approach the end of their academic programs and the final semester of matriculation, they must make formal application to graduate. No degrees will be conferred until the application to graduate has been finalized.

Graduate students and program directors should refer to the following graduation requirements as published in the Graduate Bulletin for a complete list of instructions and a graduation checklist.

Visit the academic regulations section for additional information on graduation requirements.

Apply online at graduate.admissions.vcu.edu (http://www.graduate.admissions.vcu.edu).
Admission requirements

<table>
<thead>
<tr>
<th>Degree</th>
<th>Semester(s) of entry</th>
<th>Deadline dates</th>
<th>Test requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ph.D.</td>
<td>Fall preferred</td>
<td>Applications received prior to Jan. 9 will be given priority consideration. Applications received following the deadline may be considered if space and resources are available.</td>
<td>GRE</td>
</tr>
</tbody>
</table>

In addition to the general admission requirements of the VCU Graduate School (http://bulletin.vcu.edu/graduate/study/admission-graduate-study/admission-requirements), applicants must:

1. Have completed at least one of a master's degree in a related area, 30 hours of post-baccalaureate work (e.g. course work at 500 level or greater) or a first-professional degree program
2. Provide official GRE score
3. Submit a curriculum vitae or professional resume indicating an applicant's educational and career experience as well as evidence of research potential

Admission decisions are made only on the basis of a completed application packet.

Applicants being considered for admission must complete an interview with a Ph.D. admissions committee representative and/or research faculty member with whom the student would like to work.

Degree requirements

In addition to general VCU Graduate School graduation requirements (http://bulletin.vcu.edu/academic-reggs/grad/graduation-info), students pursuing the Ph.D. in Rehabilitation and Movement Science must successfully complete:

1. A minimum of 50 credit hours developed in conjunction with their advisers
2. Written and oral comprehensive examinations
3. All other university requirements of qualification for degree candidacy
4. Written dissertation based on a focused line of research
5. Oral defense of the dissertation

Curriculum requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 543</td>
<td>Statistical Methods I</td>
<td>3</td>
</tr>
<tr>
<td>or BIOS 543</td>
<td>Graduate Research Methods I</td>
<td></td>
</tr>
<tr>
<td>STAT 544</td>
<td>Statistical Methods II</td>
<td>3</td>
</tr>
<tr>
<td>or BIOS 544</td>
<td>Graduate Research Methods II</td>
<td></td>
</tr>
<tr>
<td>Select one of the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALHP 761</td>
<td>Health Related Sciences Research Design</td>
<td>3</td>
</tr>
</tbody>
</table>

EDUS 710 Quantitative Research Design
HADM 761 Health Services Research Methods I
HEMS 600 Introduction to Research Design in Health and Movement Sciences
PSYC 636 Research Methods in Developmental Psychology

Select one additional research design class of above or of the following:

ALHP 716 Grant Writing and Project Management in Health Related Sciences
BIOS 553 Biostatistical Methods I
BIOS 531 Clinical Epidemiology
BIOS 571 Clinical Trials
BIOS 572 Analysis of Biomedical Data I
SBHD 610 Behavioral Measurement

Core concentration

REMS/HEMS 611 Biomechanics of Human Motion 3
REMS/HEMS 660 Neuromuscular Performance 3
REMS 665 Instrumentation in Motion Analysis 3

Approved electives (from list below) 9

Labratory rotations

REMS 710 Research Techniques in Rehabilitation and Movement Science 3

Professional development course work

REMS 690 Research Seminar in Rehabilitation and Movement Science (.5 credit-hour course repeated for a total of 3 credits) 3
REMS 793 Teaching Practicum in Higher Education 1
REMS 794 Research Presentation Seminar 1

Dissertation research

REMS 798 Research in Rehabilitation and Movement Science 12

Total Hours 50

Approved electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPID 622</td>
<td>Maternal and Child Health</td>
<td>3</td>
</tr>
<tr>
<td>HEMS 601</td>
<td>Movement Physiology</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 603</td>
<td>Developmental Processes</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 614</td>
<td>Development in Infancy and Early Childhood</td>
<td>3</td>
</tr>
<tr>
<td>REMS/PHTY 608</td>
<td>Advanced Musculoskeletal Sciences</td>
<td>3</td>
</tr>
<tr>
<td>REMS/PHTY 612</td>
<td>Advanced Biomechanics</td>
<td>3</td>
</tr>
<tr>
<td>REMS 692</td>
<td>Independent Study</td>
<td>1-3</td>
</tr>
<tr>
<td>REMS 701</td>
<td>Advanced Exercise Physiology</td>
<td>3</td>
</tr>
<tr>
<td>REMS 702</td>
<td>Advanced Exercise Physiology II</td>
<td>3</td>
</tr>
<tr>
<td>REMS 703</td>
<td>Cardiovascular Exercise Physiology</td>
<td>3</td>
</tr>
<tr>
<td>REMS 704</td>
<td>Psychobiology of Physical Activity</td>
<td>3</td>
</tr>
<tr>
<td>REMS 705</td>
<td>Metabolic Aspects of Physical Activity</td>
<td>3</td>
</tr>
</tbody>
</table>

Total graduate credit hours required (minimum) 50

Graduate program director

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Additional contact
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