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AND HEALTH PROFESSIONS**

Department of Physical Therapy

**Guidelines for Completing a Doctorate Level
Research Project**

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Overview:

The guidelines for fulfilling the research requirements of the Doctor of Physical Therapy (DPT) program at Georgia State University have been designed as a resource for you. The following sections (see Table of Contents) are included for your reference. As a student at Georgia State University, you are well prepared to meet this final requirement. Having said that, you are not alone in this pursuit. Please reach out to faculty, other students, and clinical site mentors for additional guidance and assistance as you need it. We are proud of your accomplishments and look forward to reviewing the culmination of your work.

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THE REQUIREMENTS

With the assistance and guidance of a faculty project advisor, DPT students are required to take research related courses and conduct non-thesis project(s). For a non-thesis project, the scientific method is followed to create a tangible product, such as a clinical intervention program, a model of clinical procedures, manuals of best practices related to physical therapy, testing of a hypothesis related to the field of physical therapy, meta-analysis of the literature articles. The project must provide usable results for the field of physical therapy. Ideas can be generated from the faculty advisors' research projects, a careful review/examination of selected literature, inquiry during clinical rotation, and recommendations from faculty.

Course Requirements

This handbook pertains to the following courses: PT 7600, PT 8500, and PT 8999. All students **must register, complete, and pass** a series of 11 credit hours of research courses (a minimum of 6 credits of PT 8999 are required):

- 1) Summer Semester of 1st Year (3 credit hours): PT 7600 Research I: Methodology
- 2) Spring Semester of 1st Year (2 credit hours):
PT 8999 Research **or** PT 8500 Systematic Review & Meta-Analysis
- 3) Fall Semester of 2nd Year (2 credit hours): PT 8999 Research
- 4) Spring Semester of 2nd Year (2 credit hours): PT 8999 Research
- 5) Fall Semester of 3rd Year (2 credit hours): PT 8999 Research

When taking each research course, you must communicate with your faculty advisor at the start of each semester and set a general plan for the semester. Three times during the semester (see Table 1 for an example of review schedule) you will formally review your work objectives and accomplishments with your advisor. At the end of the semester, you will also need to submit a summarized progress report and peer evaluations to your advisor (due 1-2 weeks before the end of each semester, Table 1).

Table 1. Example of review activity during each semester

Time	Review Activity
Week 3-4	Review objectives and accomplishments #1
Week 7-8	Review objectives and accomplishments #2
Week 10-11	Review objectives and accomplishments #3
Week 14-15	Summarized progress report and peer evaluations

Depending on the student's interest, number of available faculty and planned projects, and number of students the faculty need for their projects, two research approaches are available with corresponding courses offered in the Spring Semester of the 1st Year of the DPT program. Specifically, students who are interested in obtaining hands-on experience in the conduct of quantitative and/or qualitative research (including developing research question(s) and subsequent research designs, data acquisition and analysis, and presentation of research findings) will register for PT 8999 Research. On the other hand, PT 8500 Systematic Review & Meta-Analysis offers the opportunity of hands-on experience in the conduct of a systematic review and meta-analysis, to include development of a research question, extraction and analysis of data from the research literature, synthesis of the data using meta-analytic procedures, and presentation of the study's findings. Such skills are important for determining the most effective course of treatment and planning new studies for clinical advancement.

Starting from the Fall semester of the 2nd Year, all students will need to register for 2 credit hours of the PT 8999 course during the subsequent Fall and Spring semesters. A minimum of 6 credits of PT 8999 are required.

Objectives

1. Formulate a testable research question given the current knowledge in a field, available resources, personnel and time constraints, etc.
2. Determine the research design most appropriate to address the research question. The student should be able to explain differences and similarities of commonly-employed research designs.

3. Conduct a comprehensive review of the literature. Assess published studies for their relevance to practice and the adequacy of research design and subject selection in regard to hypothesis, design, method, and appropriateness of analysis, discussion, and conclusions.
4. Apply the principles of ethical and professional behavior involved in research
5. Assess patient/client responses to intervention using credible measures
6. Collect and manage data while dealing with data collection problems (e.g., difficulties in selecting a sample, subject mortality, unforeseen events, etc.).
7. Manage data in compliance with the Profession's code of ethics and the University's Institutional Review Board.
8. Using a commercial statistics software package, perform the statistical analysis procedure most appropriate for a given research design.
9. Evaluate and synthesize the findings from the study with current available research.
10. Professionally communicate a research study's findings in both oral and written formats.
11. Access sources of information to support clinical decision making
12. Apply test and measurement standards in physical therapy to the selection of assessment strategies and measurement devices
13. Integrate best research with clinical expertise and patient/client values
14. Evaluate effectiveness of patient/client care protocols using measures with documented credibility
15. Participate in self-assessment and peer-review during the performance of the research project.

Overall Research Requirements

Regardless of the approach taken, students will work as a group (≤ 5 for hands-on research projects and 2-3 for systematic review/meta-analysis) with identical expected outcome at the time of graduation. With the assistance and guidance from the faculty advisor(s), the research work from each group must result in at least one of the following three outcome before receiving the DPT degree:

1. Submission of a manuscript to a peer-reviewed journal

2. Submission of a grant proposal for external funding
3. Two conference presentations at international, national, state/local, and/or professional society meetings. (Some examples of conferences related to physical therapy are listed in Appendix 1.)

Note1: Students cannot present the exact same data twice nor submit the same abstract twice. The two abstracts must differ in a certain way, such as adding more data/papers for analysis, addressing a different research question, performing different type of analysis, changing to a completely different topic/area, etc.

Note 2: Before submitting and presenting in a conference, abstract and presentation materials (e.g., poster) must be approved by the students' faculty advisor or the chair of department research committee.

Requirements of the PT 8999 Course at Each Semester

The following four items are required and will be used to determine whether you receive a passing grade (> 69.49/100) of the PT 8999 research course at each semester:

- | | |
|--|-----|
| a. Group written objectives/accomplishments in the beginning of the semester | 20% |
| b. Group written progress report at the end of the semester | 20% |
| c. Evaluation of your performance by your peers | 20% |
| d. Evaluation of your performance by the course instructor | 40% |

PROJECT SELECTION AND COMPLETION

Before the end of the Fall semester of your 1st year, you will submit your preferences for the topic and faculty member who you would like to work with on your research project. You will rank and submit your top three choices. For quantitative and/or qualitative research projects, a faculty member will select the students (≤ 5) to supervise based on students' preferences as well as the faculty member's availability and needs. For those who decide to pursue the systematic review/meta-analysis route

or are not selected by a faculty member for conducting quantitative and/or qualitative research project(s), you will register for the PT 8500 course in the Spring semester of your 1st year. During the PT 8500 course, you will form a group (2-3) with your course peers and develop your research topic. Instructor of the PT 8500 course will act as the technical advisor for your project. However, you must identify and be approved by a faculty member who can be a content expert for your meta-analysis research topic (see Appendix 2 for the research interests and expertise of faculty members).

Regardless of the project type, a research project often involves an introduction identifying the research problem, purpose, the gap in knowledge, significance, and conclusion. Some projects may require a more detailed literature review than others. You will discuss this process with your advisor. Through the proposal and project completion process you will identify and expand your knowledge about the topic. During implementation you will develop new information that contributes significantly to the field of physical therapy.

You and your advisor must agree on research activities and a timeline for project implementation. It is important that you adhere to those plans. Upon completion of the projects, you will submit findings to your advisor in the format that has been determined to be the most appropriate by both you and your advisor during the planning process.

WORKING WITH AN FACULTY ADVISOR

Your advisor is a key person in helping you successfully carry out your research project. It is important to work with someone who shares your research interest. It is also important that you work with an advisor that you respect and trust. Your advisor is not a friend. However, she/he does have your best interests in mind. Your advisor will be giving you direction and will be working with you to set and approve benchmarks in this process. It is your responsibility to work with your advisor to fulfill the requirements of the research project.

You will submit your preferences for research projects based on the availability of the faculty members and projects in the Department of Physical Therapy. However, the faculty member will make the final decision on which students will be involved in his/her

research project. If you wish to work with someone who is not a Department of Physical Therapy faculty member, such decision must be pre-approved by the chair of the department research committee. If you have been appointed as a graduate research assistant (GRA) under a faculty member, you will automatically be enrolled in that faculty member's research project(s).

Advisor Responsibilities

The advisor has the responsibility to mentor you in the conduct of your research project such that it fulfills the requirements of the Department for the DPT program. Your advisor shall: 1) have adequate time available for your research work and be accessible to you, 2) help you develop a focused, specific topic for the project(s), 3) help you develop a realistic and efficient timeline for completing your project(s), 4) review and provide feedback at project benchmarks, and 5) approve final product and provide guidance and assistance with preparation for data dissemination.

Student Responsibilities

While it is expected that you will receive guidance and support from your advisor, you are responsible for actually defining and carrying out the project approved by your advisor and completing the project. As such, it is expected that you assume a leadership role in defining and carrying out all aspects of your project; within this context, you have the following responsibilities:

- To register for the required research courses/hours
- To participate in research activities arranged by your advisor. In addition to the time specified by your advisor, the Department has also designated every Friday to be used for research activities (Friday should not be used for activities/events that are not related to research)
- To call meetings with your advisor and/or group member(s) as needed
- To actively inform and solicit feedback from your advisor and peers on progress made toward completing the project
- To respond to and act on feedback from your advisor and peers in a timely and constructive manner

- To understand and then apply the institutional and programmatic standards related to the ethical conduct of research in the completion of your project
- To know, understand and follow deadlines defined by the institution and the degree program related to all aspects of your degree program. For example, it is the student's responsibility to submit progress reports at the end of each semester and to plan with his/her advisor to fulfill the research requirement before graduation.

SUBMITTING THE GSU IRB AND/OR IACUC RESEARCH PROTOCOL

Most research (except systematic review/meta-analysis) conducted by Georgia State University students must be reviewed by the GSU Institutional Review Board (IRB, for human subject research) or the Institutional Animal Care & Use Committee (IACUC, for animal research) before proceeding with data collection. When the IRB or IACUC receives an application for research, it is reviewed to make sure the application is complete and the level of review is determined by the Chair of the IRB or IACUC. Researchers/applicants will be notified via email of the decision to approve or disapprove the application. If the researcher's application is not approved, revisions may be requested and the application may be reconsidered upon re-submission. The entire process can take more than 2-3 months.

GATHERING DATA FOR A PROJECT MAY NOT COMMENCE UNTIL THE PRINCIPAL INVESTIGATOR (I.E., YOUR FACULTY ADVISOR) GAINS APPROVAL FROM THE IRB OR IACUC. Please plan and discuss with your advisor so you can receive IRB approval in a timely manner.

For more details, please see GSU IRB Guidelines for Human Subjects and IACUC guidelines for research involving animal subjects at:

IRB: http://www.gsu.edu/research/electronic_submissions.html

IACUC: <http://ursa.research.gsu.edu/ursa/compliance/iacuc/>

PUBLICATION, GRANT PROPOSAL SUBMSSION AND/OR PRESENTATION

Publication and/or submission of your project for funding are highly encouraged. Additionally, presenting at scientific meetings either for a poster or podium presentation is also an option. While financial support to present at research conferences is available, it depends on the faculty advisor's research funding status and/or department budget. These resources vary from year to year. It is the student's responsibility to secure financial support for attending conferences. Please discuss/plan with your advisor in advance.

Appendix 1. Examples of Conferences Related to Physical Therapy

Conferences Related to Physical Therapy	Submission Date	Presentation Date
American Congress of Rehabilitation Medicine	Late February	October
American Society of Biomechanics	Early March	August
South Carolina Chapter of the APTA	Late March	May
Neuroscience	Early May	October
Regenerative Rehabilitation Symposium	TBD (every 1-3 years)	TBD (every 1-3 years)
APTA Combined Section Meeting	June	<i>next</i> February
Physical Therapy Association of Georgia	August/September	September/October
American College of Sports Medicine (ACSM)	Early November	<i>next</i> May
Southeast Chapter of ACSM	Late September	<i>next</i> February
APTA NEXT Conference	Late September	<i>next</i> June

Appendix 2. Research Interests and Expertise of Department Faculty for Selecting a Content Advisor on a Systematic Review/Meta-Analysis

Name	Research Interest/Expertise
Andrew J. Butler, PT, PhD, FAHA	Volitional movement, motor learning, and organized motor behavior in human
Yu-Ping Chen, PT ScD	Physical therapy interventions in improving upper-extremity function in infants and children with and without developmental disabilities
Bradley J. Farrell, PhD	Interventions to facilitate improved sensorimotor function after injury, e.g., spinal cord stimulation to reduce spasticity and pain, locomotor training to improve gait function after neurological damage, and osseointegrated prosthetic devices
Jodan D. Garcia, PT, DPT, OCS, Cert SMT	Management of musculoskeletal conditions and evidence-based practice
Jane B. Gore, PhD	Neuroanatomy, Neurophysiology, and student learning/engagement through teaching innovation
Carla F. Huggins, PT, DPT	Hospital setting, management, clinical rotations
Jacob Irwin, DPT	Biomechanics and prevention of injuries in sports through exercise-based approach to therapy
Anne K. Lorio, PT, DPT, NCS	Neuromuscular Disorders, Dementia education and training, Technology behaviors In the classroom and clinic, Peer assisted learning, Interdisciplinary education
Kimberly M. Morelli, PT, DPT, MTC	Management of neuromuscular conditions/disorders
Kimberly Richards, PT, DPT, OCS	Management of neuromuscular conditions/disorders
Deon L. Thompson, PhD, FAACVPR	Human gross anatomy and exercise science
Liang-Ching Tsai, PT, PhD	Biomechanical analyses regarding the injury mechanisms and interventions of the lower extremity injuries
Gordon Warren, PhD, FACSM	Work-/exercise-induced and traumatic injuries of skeletal muscle, functional interactions of bone and skeletal muscle, Estrogen's effect on skeletal muscle function, and factors affecting skeletal muscle activation (e.g., caffeine, body posture, clinical measures)