McGill

PHTH 551 Physical Therapy Neurological Rehabilitation

Credits: 4

Prerequisites: For students entering the qualifying year of the M.Sc. (A) PT program, knowledge of basic neuroanatomy and neurophysiology is required. Self-directed learning modules in basic neuroanatomy and neurophysiology will be available to students once registered.

For students currently registered in the B.Sc. Rehabilitation Science (major PT) program, successful completion of POTH 455 and ANAT 323 is required to register for PHTH 551.

Coordinators:

Joyce Fung, PT, PhD
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Lab coordinator(s):

Marco Bühler, PT, PhD(c)
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Adriana Venturini, PT, PhD(c)
(on partial leave)

Available by email or for meetings (virtual or in-person) by appointment.

Instructors*: PT clinicians/lab instructors - Sarah El Queisi, Debra Gelber, Stephania Palimeris, Romina Perrotti, Rosa Romano, Feng Shan He, Adele Vizcaino, and Sharon Ho;
Jill Boruff, MLIS (liaison librarian)
Isabelle Gagnon, PT, PhD
Michel Danakas, PT
Andrea Moreault, PT
Mindy Levin, PT, PhD

* All instructors are available through their McGill email accounts, unless otherwise specified.

Teaching Assistants: Rose Elekanachi, Thiago de Aquino Costa Sousa, Thiago Perreira - graduate students with physiotherapy clinical and teaching experiences in neurorehabilitation.

Course Description: This four-credit course introduces the principles of neurological rehabilitation pertinent to physical therapy. By emphasizing the fundamentals of neuro-assessment, problem analysis, clinical reasoning, treatment planning and progression in various neurological conditions, this course **builds a conceptual framework that continues into PHTH 561.** The fall semester course PHTH 551 incorporates the foundations of best evidence, informed practice, rehabilitation science, motor learning and neuroplasticity to develop a client-centered

approach for the evaluation and management of neurological impairments and dysfunctions. A "problem-solving" and "task-oriented" approach to treatment will be emphasized (as opposed to an approach based on medical diagnosis).

Course Structure: The course includes **one 3-hour lecture per week and one 3-hour hands-on skills lab** for 13 weeks. Mandatory **clinical reasoning workshops (CRWs)** are also included to provide opportunities for case discussion and the development of observational and clinical reasoning skills related to neurological conditions. Additionally, there are **two scheduled neuro-shadowing sessions** -1 pre-recorded clinical encounter videoclip and 1 on-site visit (if possible) which are associated with H-SOAPIER assignments. **Open labs** (unstructured, optional practice time are scheduled on Friday mornings).

Instructors' statement regarding course delivery: We are committed to do our best to provide a supportive learning environment. We encourage students to let us know if they are **feeling overloaded with work** so that we can **work together to address your concerns**. We also recommend **seeking support** as needed from any of the various services available at https://www.mcgill.ca/studentservices.

Commitment to intersectionality and inclusion: We would like to acknowledge that we are **all individuals with multiple socio-cultural identities that intersect and shape our worldview with possible biases**. Our commitment to you as your instructors is to **minimize systemic forces of oppression within the classroom such as ableism, classism, racism, sexism, transphobia, and heterosexism** in efforts to **create a safe learning environment for all of us**. We ask that you also **join us in this commitment to foster respect for one another, enhance solidarity, and build community.**

Instructional Method: Lectures, **Clinical reasoning workshops (CRW)** and **Clinical skills labs** will be delivered on campus with all presentations, class, and lab material (including Coursepack) **posted on MyCourses.** Instructional **videos** associated with the clinical skills labs will be posted on **MS Stream** (Microsoft Application accessible to all McGill students via their McGill Outlook accounts with restricted access). **Students are expected to watch the videos prior to their respective labs**. Additional videos will be posted (on MyCourses or Stream) to help in visualizing various neurological conditions and tips/tools for assessment and training.

We use **team-based learning** as one of our pedagogical strategies to **maximize student learning through collaboration** on group assignments and on the team-component of class tests. Teams will be created during the first week of classes and consist of ~4 students per team.

The course emphasizes a gradual increase in student responsibility for the course matter.

All lectures/CRWs in rooms with Lecture Recording System (LRS) will be recorded and made available on MyCourses.

McGill University is situated on the traditional territory of the Kanien'kehà:ka, a place which has long served as a site of meeting and exchange amongst nations. We recognize and respect the Kanien'kehà:ka people as the traditional custodian of the lands and waters on which we meet today.

Student Participation: All students are expected to actively participate in this course during lectures, interactive CRW sessions and labs. In-person attendance is strongly recommended for all lectures and mandatory for CRWs and labs.

Students are **expected to attend all CRW's and labs** (attendance will be taken) unless they receive prior approval from the course coordinators or have a University-accepted reason for not participating in a specific class (refer to Attendance policy below). Students are expected to **watch all instructional videos and review CRW and lab materials prior to class.**

Students should **check MyCourses announcements regularly for course updates, changes to weekly schedule, and other important information.**

Student Learning Objectives: This course aims to develop essential competencies and attain milestones related to the domains of **Physiotherapy Expertise, Communication, Collaboration, Management, Scholarship and Professionalism** according to the National Physiotherapy Advisory Group (NPAG) Competency Profile for Physiotherapists in Canada (2018). Additionally, the course refers to **Foundational knowledge** (Appendix 1) and **Common Conditions in Physiotherapy** (Appendix 3) of the **Canadian Council for Physiotherapy University Programs (CCPUP) National Curriculum Guidelines** (2019).

Upon completion of this course, the student will be able to:

Learning objectives	Milestones
1. Recognize the principles of neurological rehabilitation across the life span and explain the underlying assumptions and scientific basis for intervention. **2.** Appraise the principles of normal development and aging to apply basic neuroscience concepts. **3.** Apply the International Classification of Functioning (ICF) model/framework to neurological populations and recognize the individual bio-medical, psychological, social, environmental and contextual factors which can influence health, treatment, rehabilitation and disease management. **4.** Outline the essential pathophysiology and basis for sensori-motor dysfunctions and evidence-informed treatment for selected adult neuromuscular conditions (i.e. Guillain Barré Syndrome, Multiple Sclerosis, Amyotrophic Lateral Sclerosis, Post-Polio Syndrome) and for traumatic and non-traumatic lesions of the spinal cord. lesions of the spinal cord.	**Foundational knowledge** (Appendix 1) and **Common Conditions in Physiotherapy** (Appendix 3) of the Canadian Council for Physiotherapy University Programs (CCPUP) National Curriculum Guidelines (2019)

Learning objectives	Milestones
5. Understand and employ a client-centered approach with older adults and adults with neurological conditions **6.** Appraise information and communication that are relevant to the patient and to neurorehabilitation. **7.** Perform components of a physical therapy neuro-assessment.	**Employ a client-centered approach:** 1.1.1 - 1.1.6 **Ensure physical and emotional safety of client:** 1.2.1 - 1.2.5 **Conduct client assessment:** 1.3.1 – 1.3.7
8. Appraise, interpret, and analyze the results/findings from initial and on-going clinical assessments. **9.** Demonstrate basic clinical reasoning and problem-solving abilities, and sound rationales underlying PT role, client diagnosis/prognosis. **10.** Demonstrate basic clinical reasoning and problem-solving abilities, as well as sound rationales for determining goals and for planning, modifying progressing treatment.	**Establish a diagnosis and prognosis:** 1.4.1 – 1.4.6 **Develop, implement, monitor and evaluate an intervention plan:** 1.5.1 – 1.5.7
11. Develop clinical skills related to the performance of basic treatment methods. **12.** Determine when and how to end PT treatment.	**Complete or transition care**: 1.6.1, 1.6.2
13. Develop and demonstrate professional and effective communication (verbal & non-verbal) during the interview, assessment, and application of treatment. **14.** Document neuro-assessment results (impairments, activity limitations & participation restrictions), analysis of results, clinical impression & prognosis, treatment goals and intervention plans with skill and competency using the H-SOAPIER* framework. *H=history, S = subjective, O = objective, A = assessment/analysis, P = plan, I = intervention, E = effectiveness, R = recommendation	**Use oral & non-verbal communication effectively:** 2.1.1 - 2.1.4 **Use written communication effectively:** 2.2.1 – 2.2.3 **Adapt communication approach to context:** 2.3.1 – 2.3.5

Learning objectives	Milestones
15. Comprehend how the inter-professional team can enhance the management of the sensorimotor dysfunctions discussed. **16.** Develop skills in negotiating within a team.	**Promote an integrated approach to client services:** 3.1.1 - 3.1.2 **Facilitate collaborative relationships:** 3.2.1 - 3.2.5 **Contribute to effective teamwork:** 3.3.1 – 3.3.5
17. Develop skills in the management of time, equipment and environment to ensure efficiency, efficacy and safety at all times.	**Utilize resources efficiently & effectively:** 4.2.1 **Ensure a safe practice environment:** 4.3.1 – 4.3.4 **Manage practice information safely & effectively:** 4.6.4
18. Develop and use an evidence-informed approach to address clinical questions related to neuro-rehabilitation. **19.** Apply and integrate self-assessment and reflective learning.	**Promote innovation and solutions:** 5.2.3 **Use an evidence-informed approach:** 6.1.1 -6.1.4 **Engage in scholarly inquiry:** 6.2.1 – 6.2.4 **Integrate self-reflection & external feedback to improve personal practice:** 6.3.1 - 6.3.4 **Contribute to the learning of others:** 6.5.2

Learning objectives	Milestones
20. Demonstrate behaviors that are consistent with the professional role of physiotherapist at all times (i.e. during lectures, labs, CRWs, site visits)	**Maintain confidentiality and privacy as appropriate** 7.1.3 **Behave ethically:** 7.2.1 -7.2.3 **Embrace social responsibility as a health professional**: 7.3.2 **Act with integrity**: 7.4.1 – 7.4.5 **Maintain personal wellness** 7.5.1 -7.5.2

Course Content: The fall Neuro 551 course focuses on important **fundamental knowledge** and **components of a neurological assessment. Several neurological conditions** which mainly **do not involve cognitive dysfunctions** will be covered. **Basic treatment skills and handling** will be demonstrated and practiced in most labs as well some **specific approaches/techniques and modalities will be included.** The course is organized into 4 modules which generally but not always follow in chronological order.

Module 1: Foundational knowledge & fundamentals (weeks 1-3)

- Frameworks for neurological rehabilitation and models of clinical reasoning
- Neuro assessment and H-SOAPIER format
- Concepts and application of evidence-informed practice
- Normal development and movement acquisition across the lifespan
- Motor control and Motor learning principles

Module 2: Neuro-Assessment components (weeks 4-7)

- Control, assessment and management of balance and posture
- Control, assessment and management of mobility and gait functions
- Basic sensory assessment
- Assessment of muscle tone
- Assessment of motor coordination

Module 3: Specific adult conditions (weeks 4-5, 9, 11-13)

- Abnormal aging/frailty (primarily related to falls)
- Neuromuscular diseases (Guillain Barré, Post-Polio Syndrome) and neuro-degenerative conditions (Multiple Sclerosis, Amyotrophic Lateral Sclerosis)
- Spinal Cord Injury

Module 4: Specific Treatment (weeks 4-6, 9-13)

- Basic treatment skills using task-oriented approach for balance, functional mobility and gait
- Specific "hands-on" techniques - Proprioceptive Neuro-Facilitation (PNF)
- Basics of using electrical stimulation for PT assessment/treatment

Learning activities to consolidate learning:

- OSCE preparation (Mock OSCE & lab)
- Optional open labs

Please refer to MyCourses for details of content and readings in the **weekly schedule.**

Course Materials:

- **Required:**
  1. **PHTH 551 *Coursepack / Lab Manual***. Available on MyCourses.
  2. Shumway-Cook, A. and Woollacott, M. (2022) (6th Edition) ***Motor control: Translating research into clinical practice.**** Wolters Kluwer.
  3. Lennon, S. and Stokes M. (2009) ***Pocketbook of neurological physiotherapy.**** Churchill Livingstone Elsevier.
  4. ***Additional material*** available on MyCourses for labs and CRW.

  ***** These texts are also the required books for winter term PHTH 561. Please purchase the most updated version available from the bookstore.
- **Recommended:**
  1. Lazaro T, Reina-Guerra SG, Quiben M. (2019) (7th Edition) ***Umphred's Neurological Rehabilitation***. Elsevier. (ebook 2020)
  2. Supplementary readings available on MyCourses

Your Liaison Librarian can support you in searching for/accessing online materials in the McGill Library collection. She can also assist you if you want to investigate the possibility of **purchasing online versions** of your print course materials.

Copyright of course materials: Instructor generated course materials (e.g., **course pack, handouts, notes, summaries, exam questions, videos**, etc.) are **protected by law and may not be copied or distributed in any form** or in any medium without explicit permission of the instructor. Note that infringements of copyright can be subject to follow up by the University under the Code of Student Conduct and Disciplinary Procedures.

Student Assignment and Evaluation:

Assignment/Evaluation	Value	Due Date	Objectives & Milestones
2 Written H-SOAPIER reports on clinical shadowing	1% (formative) 4%	Sept 13 (formative), 2nd report TBA	3, 6, 8-10, 14, 15
4 Reading Assessment Tests *(RATs)	(2.5% each) 10%	Sept 15, Oct 13, Oct 20, Nov 3	7, 8, 18, 19
In-class test 1 ** (individual + team components)	12.5%	October 4	1-6, 16, 18-19
In-class test 2 ** (individual + team components)	12.5%	November 22	4-6, 16, 18-19
Group EIP Presentation Peer Feedback	15%	October 18	5, 16-19
4 Individual assignments/ short answers	15%	Sept 20, Sept 27, Oct 26, Nov 24	1-14, 18-19
Mock OSCE	0% (formative)	October 27	5-13, 15, 17, 19, 20
Final Objective Structured Clinical Examination (OSCE)	30%	December 7	5-13, 15, 17, 20

* Reading Assessment Tests (RATs) are completed by each student on MyCourses prior to a lab. In-class discussion of answers will follow.

** In-class tests have the same format with single-choice MCQs. It uses a team-based learning approach that helps foster shared problem solving and clinical reasoning. Each student completes the test individually (7.5%), and subsequently completes the same test with their team (5%). A class discussion follows. Questions are based on content to date from lectures and CRWs.

Special Requirements for Course Completion and Program Continuation: For U3 students, in order to pass the course, a grade of at least C+ (60%) must be obtained as a total course mark. For QY students, in order to pass the course, a grade of at least B- (65%) must be obtained as a

total course mark. Please refer to the appropriate sections in both undergraduate and graduate calendars on University regulations regarding final and supplemental examinations.

This course falls under the regulations concerning theoretical and practical evaluation as well as individual and group evaluation. Please refer to the section on marks in the Rules and Regulations for Student Evaluation and Promotion.

PHTH 551 and PHTH 561 need to be successfully completed before attending a **clinical placement**.

Plagiarism/Academic Integrity: McGill University and the Faculty of Medicine and Health Sciences value academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the McGill University Code of Student Conduct and Disciplinary Procedures and the Faculty of Medicine and Health Sciences Code of Conduct.

L'université McGill et Faculte de Medecine et des Sciences de la Sante attachent une haute importance à l'honnêteté académique. Ils incombent par conséquent à tous les étudiants de comprendre ce que l'on entend par tricherie, plagiat et autres infractions académiques, ainsi que les conséquences que peuvent avoir de telles actions, selon le Université de McGill Code de conduite de l'étudiant et des procédures disciplinaires *et* Faculté de médecine et des sciences de la santé.

Dress Code: Students are expected to demonstrate professional behavior and wear appropriate attire at all times. During lab sessions students are expected to be dressed appropriately for practicing and demonstrating clinical skills.

Attendance: Students who have missed more than 15% of hands-on laboratory sessions, clinical reasoning workshops or shadowing sessions without a university-sanctioned reason for their absence, will see their final course mark reduced by 10%. Please refer to the section on attendance in the Rules and Regulations guide.

Consequences of Not Completing Assignments as Requested: An individual who does not complete a required assignment and does not have a university recognized reason for deferral would receive a 0 in that portion of the evaluation.

Professional Conduct: Professionalism and accountability are expected throughout the course of the semester. This includes the on-going respectful nature of teacher-student as well as student-student interactions. Please refer to Code of Professional Conduct for Physical Therapy Students under Student Information.

Technology in Class: Your respectful attentive presence is expected, therefore while you are permitted to use your laptop for on campus classes, it is understood that you will not be using your laptop or cell phone for social purposes during class time (e.g. email, msn, sms, social media). Your cell phone should be on silent during class time and phone calls should only take place during the break or after class. **We do not endorse the use of ChatGPT or similar AI tools to replace or assist critical thinking. Any evidence of the use of such tools in the completion of assignments will be penalized with major mark deduction.**

Right to submit in English or French written work that is to be graded: In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded. This does not apply to courses in which acquiring proficiency in a language is one of the objectives.

Conformément à la Charte des droits de l'étudiant de l'Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté (sauf dans le cas des cours dont l'un des objets est la maîtrise d'une langue).

Course Accessibility: If you have a disability, please contact the instructor to arrange a time to discuss your situation as needed. You should be registered with the McGill Office for Student Accessibility and Achievement at 514-398-6009, especially if you need special accommodations for examinations.

We endeavor to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with us and/or the McGill Office for Student Accessibility and Achievement.

Course evaluations: End-of-course evaluations are one of the ways that McGill works towards maintaining and improving the quality of courses and the student's learning experience. You will be notified by e-mail when the evaluations are available. Please note that a minimum number of responses must be received for results to be available to students.

Additional policies governing academic issues which affect students can be found in the Academic Rights and Responsibilities

In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.

***Updates will be posted in MyCourses in the beginning of the Fall term.**

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