

PHTH 561 INTEGRATED NEUROLOGICAL REHABILITATION

Credits: 5

Prerequisites: Successful completion of PHTH 551 Physical Therapy - Neurological Rehabilitation, given in the Fall semester.

Instructors/Course co-coordinators:

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Other instructors: Anouk Lamontagne, PT, PhD; Isabelle Gagnon, PT, PhD; Mindy Levin, PT, PhD; Sara Ahmed, PT, PhD.; Jadranka Spahija, PT, PhD.; Richard Preuss, PT, PhD; Philippe Archambault OT, PhD; Isabelle Gelinias, OT, PhD.; Elizabeth Dannenbaum, PT, MSc.; Maria Dritsa, PhD (clinical psychologist); Michel Danakas, PT.

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

Course Description: This five-credit course pursues the integration of the principles of neurological rehabilitation as applied to complex neurological conditions. Emphasis is on evidence-based practice, interdisciplinary and client-centered care as well as health promotion and prevention of secondary conditions pertaining to neurological conditions across the lifespan. This practical and problem-based course fosters clinical reasoning skills for the PT assessment and treatment of complex problems and multiple handicaps encountered by patients with neurological conditions.

Course Structure:

The course includes three classes each week of 3-hour duration. Classes are divided between lectures, clinical reasoning workshops and laboratories. Clinical site visits are included within this time frame.

Learning Outcomes: Following attendance and active participation in class, the student will be able to:

1. Recognize key principles of different neurological rehabilitation models and how these are applied to an evidence-informed physiotherapy assessment and treatment of complex neurological conditions across the lifespan. Complex neurological conditions may include multiple handicaps and secondary conditions.
2. Appraise how the motor, cognitive and social domains interact with each other during normal and abnormal development, in motor learning and throughout the ageing process.
3. Explain the essential pathophysiology and basis for movement dysfunction in conditions such as stroke, head injuries (TBI), movement disorders (Parkinson's disease), vestibular dysfunction, chronic pain as well as most common paediatric conditions.
4. Demonstrate the components of evidence - informed physiotherapy neurological assessment for the conditions listed under objective 3, as well as for the assessment of complex neurological cases.
5. Formulate treatment goals which are objectively measurable, client-centered, and functional. Demonstrate clinical reasoning based on an integration of assessment findings to reach an appropriate clinical impression using the International Classification of Functioning.
6. Elaborate and justify an evidence-informed treatment plan integrating manual techniques, exercises, rehabilitation technology and biophysical agents as well as patient and family education for cases presenting the neurological conditions listed under objective 3.
7. Demonstrate skill and competence in carrying out a treatment for the neurological conditions described under objective 3.
8. Evaluate the effectiveness of a treatment, recognize the need to modify treatment parameters and readjust goals in order to maximize rehabilitation outcomes.

9. Appraise the importance of inter-disciplinary teams in the intervention of multiple handicaps resulting from complex neurological problems.
10. Describe and apply principles of health promotion and prevention of secondary conditions as key aspects of neurorehabilitation.
11. Comprehend the latest evidence-informed concepts and philosophies of individualized care including prevention, restoration, remediation, compensation, maintenance, health promotion and self-management.
12. Explain the alterations in cardiovascular and respiratory pathophysiology as well as in exercise response for complex neurological conditions, using emerging evidence.
13. Demonstrate skill and competence in the cardiorespiratory assessment and treatment of complex neurological conditions.
14. Continue developing professional behaviours that contribute to becoming a physical therapist. Eg: conducts self within legal and ethical standards within the class and during clinical site visits, accepts responsibility and is accountable for own actions, respects autonomy of clients and the health care environment.

Course Content: The topics listed below are not necessarily presented in order. A detailed schedule will be posted on Desire2Learn on the first day of class. Unless otherwise specified, the topics are presented in the format of a lecture.

1. Frameworks in neurorehabilitation
2. Paediatric assessment and treatment principles (lecture & lab)
3. Assessment & treatment of common paediatric conditions (lecture & lab)
4. Paediatric rehabilitation setting (clinical site visit)
5. Multidisciplinary approaches to chronic neurological conditions across the lifespan (CRW)
6. Assessment and management of movement disorders such as Parkinson's disease
7. Stroke rehabilitation: general principles & approaches
8. Stroke assessment & treatment (lab)
9. Chronic diseases & health promotion (CRW)
10. Aging & CNS control of posture & movement (Inter-professional education)
11. Advanced balance & mobility (lab)
12. Advanced sensory & UE functional tests (lab)
13. Traumatic brain Injury
14. Traumatic brain injury: assessment and treatment (clinical site visit)
15. Neurological physiotherapy intervention in acute care and intensive functional rehabilitation (two clinical site visits)

16. Integration of PT rehabilitation concepts for cardiorespiratory/pediatrics/neurotrauma cases and complex case analysis (CRW)
17. SCI cardiorespiratory techniques for secretion clearance (lecture/lab)
18. Acute neuro/ICU mobilizing, positioning (lab/Simulation Centre)
19. Pain mechanisms & pharmacology
20. Assessment and management of chronic pain conditions.
21. Principles of functional electrical stimulation and sensory electrical stimulation (TENS)
22. Applications of (functional) muscle electrical stimulation and TENS (Labs)
23. Vestibular rehabilitation (two sessions lecture & lab)
24. Assistive technologies in rehabilitation
25. Cognitive rehabilitation
26. Geriatric rehabilitation/Pharmacology
27. Clinical reasoning workshop focusing on complex cases eg: spinal cord injury;
28. Open laboratories and tutorials (optional)
29. OSCE preparation (lab)

Instructional Methods:

Lecture: Didactic lecture with assigned readings and power point presentations available through Desire2Learn.

Labs: Hands-on skills laboratories requiring previous preparation. Attendance is compulsory.

Clinical reasoning workshops (CRW): Generally case-based workshops where problem-solving skills are practiced. Preparation includes pre-class case history discussion and/or readings. Attendance is compulsory.

Clinical site visits: Students visit an acute care centre (McGill University Health Centre) and a rehabilitation centre (Jewish Rehabilitation Hospital, Institut de Réadaptation Gingras-Lindsay de Montreal (IRGLM), Centre de Readaptation Constance Lethbridge or Centre de Readaptation Lucie Bruneau), and Centre de Réadaptation Marie-Enfant (a paediatric rehabilitation centre) to participate in the assessment and treatment of TBI, paediatric and other adult neurological conditions. The students will be in small groups and asked to prepare an assignment based on the visit.

Open labs: These are optional labs for students to attend to practice the skills learned to date. The labs are staffed by clinical instructors or teaching assistants.

Course Materials:

Required textbooks: Can be purchased through the McGill bookstore. The first two textbooks are also required for PHTH 551.

- Shumway-Cook, A. and Woollacott, M. (2012). *Motor Control: Translating Research into Clinical Practice*. (4th ed.) William & Wilkins
- Umphred, D.A. (2007) (Ed.) *Neurological Rehabilitation* (5th ed) St. Louis: Mosby Elsevier.
- Manual describing the Chedoke-McMaster Stroke Assessment. Details available the first week of class.
- Coursepack from PHTH 550 is used for Functional Electrical Stimulation and TENS.

Student Assignment and Evaluation (final version to be presented the first day of class)

Assignment/evaluation	%
Final OSCE	50%
Assignment	10%
Test 1	15%
Test 2	15%
Reading assessment tests (individual 1.5% x 4 and group 1% x 4)	5%
Site visits – clinical reports (one of three reports graded)	5%

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

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 Section 3.6 Examinations, of the 2012-2013 [McGill University Health Sciences Calendar](#) for information on University regulations regarding final examinations and supplementals.

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 of the Physical Therapy Course Guides.

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

Plagiarism/Academic Integrity: McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures. For more information please refer to: www.mcgill.ca/files/integrity/Code_of_Student_Conduct.pdf

L'université McGill attache une haute importance à l'honnêteté académique. Il incombe 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 Code de conduite de l'étudiant et des procédures disciplinaires (pour de plus amples renseignements, veuillez consulter le site <http://www.mcgill.ca/students/srr/honest>).

Dress Code: Students are expected to demonstrate professional behaviour and wear appropriate attire at all times.

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

Right to submit in English or French: 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, except in 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).

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. Assignments submitted late will receive a penalty of 2% per day late, including week-ends.

Disability: If you have a disability please contact the instructor to arrange a time to discuss your situation. It would be helpful if you contact the Office for Students with Disabilities at 398-6009 before you do this.

Mobile computing and communications devices are permitted in class insofar as their use does not disrupt the teaching and learning process.