



University of Jordan

Faculty of Rehabilitation Sciences

Neuromuscular Physiotherapy I (1801339)

Fall 2015

Course Instructors

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Lab Instructors

Monday: Ms. Aseel Nassar and Mrs. Muna Bader

Wednesday: Mrs. Abeer Kharabsha and Mrs. Reham Ateeq

Course Description:

This three-credit course incorporates the foundations of the latest findings from motor control research and best evidence in rehabilitation science to develop a problem-solving approach for the evaluation and management of a broad range of motor control impairments resulting from neurological dysfunctions. The course will provide students with a systematic approach of motor control issues as they relate to normal and abnormal posture and balance, mobility, and upper extremity function.

Additionally, this course will provide basic knowledge and essential clinical reasoning skills for the physiotherapy assessment and treatment of complex problems and multiple handicaps encountered by patients with stroke. By emphasizing the fundamentals of neurological assessment, problem analysis, clinical reasoning, and treatment planning, this course builds a conceptual framework that continues into the following Neurological Physiotherapy II (1801434) course, where more neurological conditions and treatment methods will be presented.

Course Structure: The course includes two 1-hour classes per week for 15 weeks. Both weekly lectures and laboratory sessions (labs) provide the theoretical knowledge base and the opportunity for clinical skill development and practice.

Learning Outcomes:

The aim of this course is to introduce the principles of practice of assessment and treatment in the rehabilitation of neurological disorders across the lifespan.

Upon successful completion of this course, attendance and active participation in lectures, labs the student will be able to:

Knowledge understanding

- ✓ Define and discuss the principles of normal motor control and how it related to normal development and control in pathological conditions.
- ✓ Demonstrate a broad knowledge and understanding of the anatomy and physiology of the nervous system in relation to movement, function, and patient profiles.
- ✓ Recognize the principles of neurological rehabilitation across the life span and explain the underlying assumptions and scientific basis for intervention.
- ✓ Outline the essential pathophysiology and basis for sensori-motor dysfunctions and evidence-informed treatment for movement disorders and functional problems associated neurological conditions.

Intellectual thinking skills

- ✓ Appraise the principles of normal motor control, its development and aging and apply basic neuroscience concepts in the appraisal.
- ✓ Apply the International Classification of Functioning (ICF) model to people with neurological disorders and recognize the individual bio-psycho-social, and environmental and contextual factors affecting health, rehabilitation, and disease management.

Practical skills

- ✓ Perform components of neurological assessment related to physiotherapy (including postural and balance control, motor and sensory evaluations, and functional mobility assessments) and interpret assessment results.
- ✓ Demonstrate an evidence-informed choice and application of selected standardized assessment tools and (re-) evaluation techniques for neurological populations.
- ✓ Develop and demonstrate basic clinical skills related to the performance of selected assessment procedures and some basic treatment methods (hands-on skills, task-oriented approaches, and neurofacilitation techniques).

Transferable skills

- ✓ Utilize knowledge gained from this course in the assessment and treatment planning of patients with a wide variety of neurological disorders based on patients' functional limitations.
- ✓ Learn how to extend knowledge from this course in critiquing scientific articles or treatment methods and apply the concepts of evidence-based practice.

Professional attitudes, values, and behaviors

- ✓ Develop and demonstrate professional and effective communication (verbal, non-verbal and written) during both the assessment and application of treatment for selected neurological conditions.

Instructional Methods:

Lecture: Didactic lecture with assigned readings and power point presentations available through elearning.ju.edu.jo

- Monday and Wednesday 9:00 – 10:00 am, room 104

Labs: Hands-on practical skill laboratories for clinical assessment and some basic treatment techniques. Preparatory work/reading is required. Attendance is compulsory.

- Monday 12:00 – 4:00 pm, gait lab on 3rd floor

Course Content: Refer to elearning.ju.edu.jo for weekly schedule and content. Below is an outline of major topics discussed.

Theoretical Sessions

- Introduction
- Postural and balance control [S-C & W: Ch 7 + 10]
 - Normal postural control
 - Abnormal postural control
- Mobility and gait functions [S-C & W: Ch 12 + 14]
 - Control of normal mobility
 - Abnormal mobility
- Reach, grasp, and manipulation [S-C & W: Ch 16 + 18]
 - Control of normal reach, grasp, and manipulation
 - Abnormal reach, grasp, and manipulation
- The neurological impairment: constraint on motor control [S-C & W: Ch 5]
- Stroke [Handouts + lecture's notes]
 - Definition, epidemiology and pathophysiology
 - Anatomic basis of stroke syndromes

- Problems in body structure and function
- Recovery after stroke
- Principles of physical management of stroke related impairment, disability, and functioning
- Parkinson's Disease [Handouts + lecture's notes]
 - Definition and pathophysiology
 - Functional problems associated with PD
 - Principles of physical management

Practical Sessions

- A conceptual framework clinical practice [S-C & W: Ch 6]
 - Frameworks for neurological assessment
 - Models of clinical reasoning and care
 - Promoting function [O'S & S: Ch 1]
- Principles of neurological examination [selected chapters from Jones K]
 - Assessment of basic sensory function
 - Assessment of motor systems and muscle tone
 - Assessment of basic cognitive functions
 - Assessment of cranial nerves functions
- Assessment of balance and posture [S-C & W: Ch 11]
- Assessment of gait and mobility functions [S-C & W: Ch 15]
- Assessment of hand functions [S-C & W: Ch 19]
- Interventions to improve motor control and motor learning [O'S & S: Ch 2]
- Interventions to improve bed mobility and early trunk control [O'S & S: Ch 3]
- Interventions to improve sitting and sitting balance skills [O'S & S: Ch 4]
- Interventions to improve kneeling and half-kneeling control [O'S & S: Ch 5]
- Interventions to improve standing control and standing balance skills [O'S & S: Ch 7]
 - Clinical management of abnormal postural control [S-C & W: Ch 11]
- Interventions to improve locomotor skills [O'S & S: Ch 8]
 - Clinical management of abnormal mobility [S-C & W: Ch 15]
- Interventions to improve hand and upper extremity skills [O'S & S: Ch 9]
 - Clinical management of abnormal reach, grasp, and manipulation [S-C & W: Ch 19]
- Current approaches in rehabilitation of stroke related impairment and disability [O'S & S: Ch 18 + 19 + 20]

Course material:

Required textbooks:

1. Shumway-Cook, A. & Woollacott, M. (2012). *Motor Control: translating research into clinical practice* (4th edition). Baltimore, Maryland: Lippincott Williams & Wilkins.
2. O’Sullivan, S. & Schmitz, T. (2010). *Improving Functional Outcomes in Physical Rehabilitation*. Philadelphia, Pennsylvania: FA Davis.

Recommended textbooks:

1. Jones, K. (2011). *Neurological Evaluation: A clinician’s guide*. Elsevier.

In addition to assigned book readings, some material (including handouts, lecture’s notes, and videos) may be provided through Jordan University e-learning website. In particular, lecture’s notes should guide students through their textbooks. In addition, students are expected to check the website for announcements. For access go to: elearning.ju.edu.jo

Course Evaluation

Midterm – theory	30%
Midterm – practical	10%
Final – theory	30%
Final – practical	20%
Assignments and quizzes	10%

Midterm written and practical parts times will be arranged with the class.

In-Class Behavior: 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. No side conversations. No cell phones. No arriving late to classes. Students caught cheating or attempting to cheat during exams will be assigned ZERO grade in that exam and will be reported to the Dean.

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 are required to attend all classes and labs. Beyond absence of 15% of the course sessions, the student will not be allowed to sit for the final exam. Attendance of part of the lab and leaving without permission will be assigned as missing the whole lab. Students should discuss any concerns regarding this matter with the course instructor.