

The University of Jordan

Faculty of Rehabilitation Sciences

Department of Physical Therapy

2014/2015

Second semester

Neuromuscular Physiotherapy (1801334)

Credit hour	4	Pre-requisite	Neuromuscular Physiotherapy I (1801339)	Level	3 rd year
Lecturer	Alia Alghwiri (AA) Emad Al-Yahya (EA) MahaTayseer (MT)	Office number	326 (AA) 327 (AA) 321 (MT)	Office phone	23226 23219 23218
Course website	https://elearning.ju.edu.jo	Place	Faculty of Rehabilitation Sciences		
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Time:

Theory	Sunday 12:00 – 1:00 Tuesday 1:00 – 2:00
Lab	Tuesday or Thursday 8:00 – 12:00
Clinical	Monday or Wednesday 8:00 – 12:00

Course Description:

This four-credit course follows the integration of the principles of neurological rehabilitation as applied to complex neurological conditions (such as SCI, MS, PD, TBI). Emphasis is on evidence-based practice, interdisciplinary and client-centered care as well as health promotion and prevention of secondary complications. This practical and problem-based course promotes clinical reasoning skills for the PT assessment and treatment of complex problems and multiple handicaps encountered by patients with neurological conditions.

Intended Learning Outcomes (ILOs):

Successful completion of the course should lead to the following outcomes:

A. Knowledge and Understanding: student is expected to

A1- Recognize the principles of neurological rehabilitation across the life span and explain the underlying assumptions and scientific basis for intervention

A2- Outline the essential pathophysiology and basis for sensori-motor dysfunctions and evidence-informed treatment for selected movement disorders and neuromuscular conditions.

B. Intellectual Analytical and Cognitive Skills: student is expected to:

B1-Appraise the principles of normal motor control, its development and aging and apply basic neuroscience concepts in the appraisal.

C. Subject-Specific Skills: student is expected to

C1- Perform components of neurological assessment related to physiotherapy (including postural and balance control, motor (tone) and sensory evaluations, and functional mobility assessments) and interpret assessment results.

C2- Demonstrate an evidence-informed choice and application of selected standardized assessment tools and (re-) evaluation techniques for neurological populations.

D. Transferable Key Skills: student is expected to

D1- Develop and demonstrate professional and effective communication (verbal, non-verbal and written) during both the assessment and application of treatment for selected neurological conditions.

D2- 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).

ILOs: Learning and Evaluation Methods

Instructional Methods:

ILOs	Learning Methods	Evaluation Methods
A&B	Lectures	Theoretical midterm and final exams
C&D	Practical labs	Practical midterm and final exams
C&D	Clinical visits	Clinical (hands on) final exam

Content: theoretical	Reference	week	ILOs
Spinal cord injury (6 hrs) MT	Physical Rehabilitation, O’Sullivan, S., 6 th edition (2014), chapter 20	1 – 3	<ul style="list-style-type: none"> - Describe the clinical presentation following SCI - Identify

	Website: elearnsoci.org Lecture slides		expected functional outcomes following SCI based on lesion level - Understand the different complications following SCI
Vestibular Rehabilitation (2hrs) MT	Physical Management for Neurological Conditions, Stokes, M., 3 rd edition (2011), chapter 13 Lecture slides	4	- Know the components of the vestibular system and its connections and understand their relation with vestibular symptoms - Recognize few of the common vestibular pathologies
Peripheral nerve dysfunction (1hr) MT	Lecture slides Principles of Neuromusculoskeletal Treatment and Management, Petty, N., 2 nd edition (2011), chapter 6	5	- Recognize connective tissue surrounding peripheral nerves and its role in nerve tissue protection - Understand different nerve injury classification systems and the clinical presentation of nerve injury
Facial Palsy (1 hr) AA			
Acquired traumatic brain injuries (4 hrs) AA			
Degenerative movement disorders of the brain; Parkinson disease (2 hrs) EA			- Describe etiology, pathophysiology, clinical

			<p>manifestations, and sequelae of PD</p> <ul style="list-style-type: none"> - Describe role of PT in management of PD - Describe elements of exercise prescription for people with PD
Motor neuron disease; ALS (2 hrs) EA			<ul style="list-style-type: none"> - Describe etiology, pathophysiology, clinical manifestations, and sequelae of MND - Differentiate among impairments related to LMN, UMN, and bulbar pathology - Describe role of PT in management of MND and chronic neurodegenerative illnesses - Discuss problems commonly seen in individuals with ALS and physiotherapy interventions form them
Polyneuropathies (2 hrs) EA			<ul style="list-style-type: none"> - Describe etiology, pathophysiology, clinical manifestations, and sequelae of common peripheral polyneuropathies - Differentiate among impairments related to axonal and demyelinating neuropathies - Describe role of PT in management of acute and chronic neuropathies - Describe elements of exercise prescription and orthotic

			management for people neuropathies
Cognitive-motor interference; implications for rehabilitation (1 hr) EA			<ul style="list-style-type: none"> - Discuss the interaction between cognitive and motor functions of the brain - Discuss the interaction between motor and cognitive impairments in people with neurological disorders - Discuss the implications of CM in rehabilitation management
Chronic pain management (2 hrs) EA			<ul style="list-style-type: none"> - Appreciate the importance of chronic pain in terms of its effect on activity and participation by applying the ICF model to chronic pain - Contrast the presentation of acute, persistent, and chronic pain - Classify different types of chronic pain and propose causes and risk factors for each type - Relate psychosocial factors to the understanding of chronic pain - Describe intervention approaches for individuals with chronic pain -
Cerebellar ataxia (2 hrs) AA			
Multiples Sclerosis (2hrs) AA			

Content: practical	Reference	week	ILOs
Task-oriented training to improve control in sitting, kneeling, and standing positions(2 labs) MT	Improving functional outcomes in physical rehabilitation (2010), chapters 4, 5, 7	1 – 2	<ul style="list-style-type: none"> - Describe the general characteristics of sitting, kneeling, and standing positions and appropriate lead-up skills - Perform the different types of exercises that can be used in sitting, kneeling, and standing - Understand how exercises can be modified or graded according to different patients' needs
Practical SCI management (2 labs) MT	Physical Rehabilitation, O'Sullivan, S., 6 th edition (2014), chapter 20	3 – 4	<ul style="list-style-type: none"> - Identify motor and sensory levels of injury and use the American Spinal Injury Association impairment scale - Evaluate different outcome measures

			<p>used with SCI</p> <ul style="list-style-type: none"> - Formulate anticipated goals for patients with SCI - Apply a variety of training programs for patients following SCI to achieve maximum patient independence - Prescribe the proper wheelchair for patients and advice on proper transfer and skin care
Vestibular rehabilitation (1 lab) MT	Physical Management for Neurological Conditions, Stokes, M., 3 rd edition (2011), chapter 13	5	<ul style="list-style-type: none"> - Identify examination procedures used to evaluate patients with vestibular dysfunction - Determine appropriate interventions for clinical problems
Practical stroke management (1 lab) AA			
Practical TBI management (1 lab) AA			
Clinical management of gait problems (1 lab) EA			<ul style="list-style-type: none"> - Review the major requirements of

			<p>locomotion</p> <ul style="list-style-type: none"> - Review the major kinetic and kinematics parameters that contribute to normal and abnormal gait - Discuss the effects of neuromuscular impairments on gait - Describe a task-oriented approach to evaluating mobility function in neurologic population - Discuss clinical methods for impaired gait strategies - Discuss a task-oriented approach to treating functional mobility imitations - Review the evidence for mobility training in neurologic populations
Practical management of UE dysfunctions (1 lab) EA			<ul style="list-style-type: none"> - Review the major requirements for UE functions including reach, grasp and manipulation skills - Discuss a task-oriented approach to

			<p>treating functional EU limitations including reach, grasp and manipulation</p> <ul style="list-style-type: none"> - Review evidence for UE training in neurologic populations - Apply a task-oriented approach to retrain, reach, grasp and manipulation in patients with different neurologic disorders - Apply the ASAP principles to task-oriented management of EU dysfunctions
<p>Cognitive-motor interference; applications in rehabilitation (1 lab) EA</p>			<ul style="list-style-type: none"> - Review the implications of the interaction between cognitive and motor deficits in patients with neurological disorders - Practice of the assessment of cognitive and neurological disorders that are commonly associated with neurological conditions - Practice of the treatment of cognitive and

			<p>neurological disorders that are commonly associated with neurological conditions</p> <ul style="list-style-type: none"> - Describe and apply a and implicit DT approach to treat balance and mobility impairments in patients with neurological disorders
<p>Exercise prescription in neurological population (1 lab) EA</p>			<ul style="list-style-type: none"> - Review the benefits from staying active and taking regular exercise for individuals with neurological conditions - Discuss and provide examples of evidence supporting physical activity and exercise in neurological conditions - Describe guidance for exercise prescription in individuals with neurological conditions - Discuss aerobic training, resisted muscle strengthening, constraint-induced therapy and treadmill

			training in people with neurological conditions - Discuss different approaches to facilitate change in exercise behavior and good adherence in neurological rehabilitation
Task oriented balance training (1 lab) AA			
Practical MS rehabilitation management (1 lab) AA			

Learning Methodology

Evaluation

Midterm – theory	30%
Midterm – practical (lab)	10%
Final – theory	30%
Final – practical (site visit)	20%
Assignments and quizzes	10%

During practical assessment, students will be graded based on the proper choice of treatment techniques and correct technique application which includes: patient and therapist position, manual contact, and verbal command.

Main Reference/s:

1. Umphred, D.A. (2013). *Neurological rehabilitation*. (6thed) St. Louis: Mosby Elsevier.
2. O’Sullivan, S.B., Schmitz, T.J., Fulk, G.D. (2014). *Physical Rehabilitation*. (6th ed). Philadelphia, Pennsylvania: FA Davis

References:

1. O’Sullivan, S. & Schmitz, T. (2010). *Improving Functional Outcomes in Physical Rehabilitation*. Philadelphia, Pennsylvania: FA Davis.
2. Carr, J & Sepherd (2010). *Neurological Rehabilitation: Optimizing Motor Performance*. (2nded) Churchill Livingstone.

In-Class Behavior: Professional behavior is expected during classes. 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.