

## NEUROLOGICAL PHYSIOTHERAPY

**Semester:** B (2<sup>nd</sup>)

**ECTS credits:** 8

**Code:** M17

**HOURS:** 2 Theory / 1 Exercise

**Type:** Mandatory Module

**Module aim:** The aim of the module is to provide specialized knowledge in relation to current, complex, changing developments in the field of Neurological Physiotherapy. Special feature of the module will be the discussion of current knowledge of a wide range of topics.

**Learning objectives:** Upon successful completion of the module, students will be able to:

- 1) Demonstrate knowledge, understanding and ability to develop knowledge from the first and second cycle of their studies on the pathological mechanisms of postural, motor and balance disorders, as manifested in neurological patients. To endorse their thorough understanding, as well as their ability to use it, based on sound clinical reasoning.
- 2) Set individualized short-term and long-term goals depending on the assessment, re-assessment and therapeutic course of the patient. Develop a physiotherapy plan, acknowledging whether or not the patient is progressing and the expected levels of improvement.
- 3) Have the ability to incorporate informed knowledge, manage complex clinical issues, and make decisions with incomplete or limited information.
- 4) Show an extended understanding and reflection on the social and ethical responsibilities associated with the application of their knowledge and decisions in the clinical assessment and rehabilitation of neurological and neurosurgical cases.
- 5) Identify new aspects of functional and clinical applications of therapeutic techniques and interventions in support or contrast of previous ones that are established based on current clinical guidelines, technological developments and documented data.
- 6) Upgrade the therapeutic techniques, based on international instructions and guidelines from global & international organizations.

### Module content:

- Current provision of Physiotherapy services. Interdisciplinary approach and neurorehabilitation. Principles, ethical parameters, objectives and goals. Record keeping. Reflective practice diary keeping.
- Current approaches to the evaluation, measurement and clinical observation in relation to the neurological disease, its stage, and the clinical picture of the patient. Appropriate tools, validity and reliability, customization.
- Clinical reasoning - research evidence - justification. Current clinical guidelines in physiotherapy for patients, such as stroke, TBI and brain tumors, spinal cord injuries, multiple sclerosis, basal ganglia disorders, cerebral palsy, hydrocephalus, developmental disorders. Designing customised physiotherapy programs based on different scenarios.
- Modern technological means of monitoring and physiotherapy intervention for the treatment of disorders affecting muscle tone, somatosensation, physical condition, balance and gait. Assistive technology in neurological rehabilitation.
- Motor disability, quality of life, self-care and autonomy in neurological patients. Accessibility and aids. Effects of long-term disability.
- Treatment of disorders of muscle tone and muscle weakness, disorders of neuromuscular coordination, balance and gait. Treatment of sensory, cognitive and perceptual deficits.
- Group therapeutic exercise programs in neurological diseases.
- Knowledge of the psychiatric semiology of neurological diseases in physiotherapy.
- Physiotherapeutic approach in pediatric neurological patients. Neurodevelopmental intervention model versus muscle retraining.
- Physiotherapeutic approach to chronic fatigue syndrome in neurological patients.
- Non-invasive brain stimulation techniques in neurorehabilitation and their neurophysiological effects. Technological approaches to neurorehabilitation. Transcranial Magnetic Stimulation (TMS). Transcranial Direct Current Stimulation (tDCS). Functional Electrical Stimulation (FES).

- Applications of special therapeutic techniques and approaches in neurological patients, research evidence.
  - Mirror therapy
  - Constrained induced movement therapy
  - Functional training
  - Robotic assisted training
  - Virtual reality training
  - Facilitation and activity-oriented approaches
- Cognitive rehabilitation aiming at attention deficits, neglect.

**Teaching methods and means:** 13 weeks X 2 hours theory & 1 hour practice

**Evaluation methods:**

The evaluation of students will be carried out in accordance with the regulation of the Post Graduate Program and the relevant decisions of the Assembly of the Department of Physiotherapy, as a weighting of their grade in mid-evaluation (20%), in the individual essay (30%) and the final examination (50%) of the module.

**Indicative Bibliography:**

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