# Neurology and Motor Control in Neurological Diseases

## Prof. Alberto Albanese

***COURSE AIMS AND INTENDED LEARNING OUTCOMES***

*Knowledge and understanding*

At the end of the course, students will be able to:

1. analyse the fundamental mechanisms at the basis of normal and abnormal movements;

2. identify the sensorimotor functions of the nervous system;

3. recognise the main neurological syndromes;

4. list and categorise the clinical aspects and the motor deficits caused by the different diseases of the central and the peripheral nervous system.

*Applying knowledge and understanding*

At the end of the course, students will be able to:

1. integrate the skills acquired in the context of adapted physical activity;

2. apply the most up-to-date knowledge about clinical neurology to the planning and assessment of adapted physical activity individual programmes;

3. distinguish between the recommendations made by adapted physical activity and the ones coming from physiotherapy, with reference to neurological diseases;

4. meet patients’ expectations (as well as their relatives’) regarding neurological diseases and adapted physical activity.

***COURSE CONTENT***

– Movement and the motor system. General structure of the motor system - Voluntary movement - Types of movements.

– Sensory-motor integration. Sensory organs and functions - Visual field defects - Sensory-motor areas of integration - Balance and posture.

– Autonomic nervous system. Cardiovascular regulation - Thermoregulation - Pupil regulation - Gastrointestinal regulation - Autonomic evaluation - Syncope.

– Movement disorders, symptoms and syndromes. Voluntary movement: loss or alteration - Central and peripheral paralysis - Spasticity and rigidity - Ataxia.

– Movement disorders, symptoms and syndromes. Involuntary movements - Disorders of the basal ganglia and of the cerebellum.

– Neurological syndromes and diseases. Transitory and permanent - Topographic syndromes.

– Neurological syndromes and diseases. Epilepsy.

– Neurological syndromes and diseases. Pain syndromes and cranial pain.

– Neurological diseases. Types and classification - Cerebrovascular diseases.

– Degenerative neurological diseases. Parkinson's disease and Parkinsonian syndromes.

– Degenerative neurological diseases. Dementias.

– Degenerative neurological diseases. Motor neuron diseases - Ataxias.

– Inflammatory neurological diseases. Multiple sclerosis - Rachicentesis.

– Neuromuscular diseases. Myopathies - Neuropathies.

– Neuromuscular diseases. Myasthenia - Guillain-Barre syndrome.

– Sleep disorders. Parasomnia - Periodic movements in sleep - Obstructive apnoea syndrome - Disturbances in the consciousness state.

– Disturbances of consciousness. Disorders in the consciousness state - Coma.

– Neoplastic diseases. Tumours of the nervous system.

– Trauma-induced diseases. Cranial and somatic traumas.

– Neurological and chronic urgencies. Neurological urgencies: how to recognise and manage them - Chronicity and the patient in outcomes.

***READING LIST***

A. Padovani-B. Borroni-M.S. Cotelli, *Neurologia per le professioni sanitarie,* Piccin Nuova Libraria, 2017.

A. Federico-C. Angelini-P. Franza, *Neurologia e assistenza infermieristica*. *Manuale per le professioni sanitarie*, Edises, 2015.

***TEACHING METHOD***

Asynchronous lectures on topics covered and synchronous interactive lectures with discussion and verification on topics treated asynchronously.

***ASSESSMENT METHOD AND CRITERIA***

Oral assessment, individually or in small groups (up to three students). Students will have to prove their knowledge of the general concepts of neurology, as well as the main features of neurological diseases. The oral assessment will test their ability to orient themselves among the different syndromes and diseases illustrated during the course, with a focus on the features that combine or differentiate the several clinical forms.

Assessment will also consider the following factors: relevance of answers, proper use of technical jargon, coherence of discourse structure, ability to create links and identify open issues, the coherent deepening of the various arguments.

***NOTES AND PREREQUISITES***

In order to efficiently attend the course and pass the final assessment, students will need a proper background in the fields of neuroanatomy and neurophysiology. There are no neurology manuals specifically dedicated to sport science: the suggested readings are related to health professions and will allow students to integrate what is presented during the course. Therefore course attendance is highly recommended. The lecturer will provide students with the slides used during the course; however, the slides by themselves are not sufficient to pass the final exam.

Further information can be found on the lecturer's webpage at http://docenti.unicatt.it/web/searchByName.do?language=ENG, or on the Faculty notice board.