UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

# Rehabilitative Approach To The Neural System Impairments

**2425-2-I0201D136-I0201D203M**

## Aims

Offer elements of neurophysiology and clinical data to favor a first correct approach to the observation and evaluation of the patient with focal damage to the nervous system

## Contents

After completing this course the student will be able to assess the person with disabilities derived from lesion of the nervous system and be able to perform evaluation tests and techniques for functional recovery that are consistent with the rehabilitation of the person. Moreover the recent available technologies will be presented. The course aims at developing the students' understanding of the approach to treatment of the person affected by neural lesion and the use of assistive devices and prostheses for injuries to the nervous system. The course aims to thoroughly prepare the student to address the neuromotor physiotherapy treatment of these syndromes in terms of technical/professional and relationalskills, using all the instruments for an objective assessment, in order to integrate the various therapeutic approaches in the field of physical therapy in congenital or acquired neural lesions, with particular reference to the EBP and clinical settings, care and the needs of the person (ICF).

## Detailed program

**Hemiplegia** and rehabilitation :

**- Clinical**: classification of stroke according to localization of focal damage (syndromic-topographic-pathological), affected hemisphere. Information on the purpose of the neurological and neurocognitive semiotic investigation (cranial nerves, sensitivity, higher cortical functions).

- **Concept of Spasticity** in relation to the **Upper Motor Neuron Syndrome**. Vision abnormal movement patterns "primitive mass synergies" of hyper tonicity .." "associated reactions and movements".

- **Plasticity of the CNS following injury**: Intrinsic and extrinsic spontaneous recovery, compensation, neuronal reorganization inducible through targeted therapeutic exercise

- **Evolution** possible **over time and in somatic distribution of the "tone**" from the acute phase to the "outcomes ( normo, hyper, hypo, dys - tonia )

**Postural control** : Multifactorial informational integration and representations of the Postural Body Schema. Posture control and systems involved. Tasks of postural control Anticipatory Postural Adjustments (feedback and feedforward)
**- Characteristics and problems of gait in stroke outcomes**: clinical observation of possible dyssynergies of dynamic events, of the main signs, hypotheses of muscle control dysfunctions prevalent in the main gait phases.

**- The Rehabilitation Assistance Planning**, criteria for taking charge from the acute phase to returning home with particular attention to the purposes and necessary moments of evaluation by the individual members of the reference team.

**- Global assessment of the hemiplegic subject**

Answers to functional evaluation questions: what can you do? How does it do it? Why so?

Contents for: medical history, choice of rating scales, physical examination, postural observation,

**Measurement Scales**

Of the Impairment

- Structural parameters (neurological scales): *European Stroke Scale, Banford*

- Functional parameters (of motor damage): *Motor Assessment Scale, Motricity Index*

- Degree of Spasticity : *Ashworth*

- Upper limb : *Wolf Motor Function Test*

Trunk Control : *Sitting Balance Score* ,(*Trunk Control Test)*

- Standing station : *Standing balance by Bohannon*

- Gait : *Gait Assessment Raiting Scale, Time Walking Test*

Disability Measures : *Modified Bartel Index*

**Rehabilitation Approach**

- Therapeutic exercise: choice of task to evoke certain skills. adaptation of the task proportional to potential

- Facilitation, inhibition of functional activity according to the Bobath concept, obtaining central stability - *balance* skills to orient distal segments.

## Prerequisites

Preliminary knowledge: concepts of biomechanics, anatomical-physiology of the components responsible for postures, gestures, walking, the specific professional of the physiotherapist in the rehabilitation team, observational skills, some notions of neurological semiology.

## Teaching form

Frontal lessons in delivery mode

Interactive teaching: case study through films and group discussion

## Textbook and teaching resource

Teaching material stored on the e-learning platform
Short handouts. recorded multimedia lessons, summary in pw point.,

Bibliographical insights updated and proposed at the end of the lesson
Basic texts shared with other modules

## Semester

1st semester

## Assessment method

Multiple choice and open questions
Ongoing training assessments through short group reports on clinical questions.
Closed-ended tests and open questions within the sessions of the entire course

## Office hours

By appointment

## Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION | GENDER EQUALITY