UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Movement System Impairment

2021-3-H4102D018-H4102D057M

Aims

To provide an in-depth knowledge of the mechanisms underlying neural control and coordination of voluntary movements. Models of motor control will be presented and discussed, including theories based on motor programming and internal models, control with muscle activation patterns, referent control theory and theory of synergies. Impairments of neural control of movements will be discussed within the kinesiopathologic framework.

Contents

Current theories of production and organization of gross and fine movements. Implications of motor control theory in healthy and individuals with movement system disorders. Movement system impairment syndromes overview. Basic neurophysiological knowledge of neuroplasticity, recovery and compensation.

Detailed program

Review of physiology and neurophysiology of sensorimotor system. Motor Control Theories: computational and physical models of motor control. Equilibrium point theory. Synergies and the uncontrolled manifold hypothesis. Controversies in motor control. Kinesiopathologic model and movement system impairment syndromes with implication for rehabilitation. Neural plasticity, compensation and recovery.

Prerequisites

Basic knowledge of anatomy and neurophysiology

Teaching form

During the Covid-19 emergency period, the lessons will take place in a mixed mode: partial presence and asynchronous / synchronous videotaped lessons

Textbook and teaching resource

Mark L. Latash. Fundamentals of Motor Control, 1st Edition. 2012. Imprint: Academic Press ISBN: 9780124159563. Scientific papers and suggested reading during the course.

Semester

1 Semester

Assessment method

Described in the subject's syllabus

Office hours

By Appointment