

Faculty of Medicine



IEPR1024

Fundamentals of neurophysiology and neuropsychology in motor control and motor learning

[45h+0h exercises] 5 credits

Teacher(s): Marcus Missal, Etienne Olivier
Language: French
Level: First cycle

Aims

- To study the normal function of the sensory systems, especially the visual and somatosensory systems.
- To study the neurophysiological mechanisms responsible for controlling movements, from the simple reflexes to the most sophisticated voluntary hand movements.
- To investigate the neural basis of learning and memory.
- To provide the basic knowledge for further advanced Neuroscience courses.

Main themes

- Introduction to the most important techniques in Neurosciences: recordings, reversible lesions, transcranial magnetic stimulation, functional brain imaging;
- Receptors and transduction mechanisms
- Central processing of sensory informations: vision, tactile, pain, proprioception and balance.
- Motor control: spinal reflexes, muscle tone, posture, corticospinal system, motor cortical areas, basal ganglia, cerebellum, voluntary movements, locomotion, motor coordination;
- Sensori-motor integration; role of the posterior parietal cortex in movement control.
- Distinct forms of learning and memory.

Content and teaching methods

- Introduction to the most important techniques in Neurosciences: recordings, reversible lesions, transcranial magnetic stimulation, functional brain imaging;
- Receptors and transduction mechanisms
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- Motor control: spinal reflexes, muscle tone, posture, corticospinal system, motor cortical areas, basal ganglia, cerebellum, voluntary movements, locomotion, motor coordination;
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Other credits in programs

EDPH13BA	Troisième année de bachelier en sciences de la motricité	(5 credits)	Mandatory
EDPH1PM	Année d'études préparatoire au master en sciences de la motricité, orientation éducation physique (60 & 120)	(5 credits)	Mandatory
ELEC22	Deuxième année du programme conduisant au grade d'ingénieur civil électricien	(5 credits)	
FSA13BA	Troisième année de bachelier en sciences de l'ingénieur, orientation ingénieur civil	(5 credits)	
KINE12BA	Deuxième année de bachelier en kinésithérapie et réadaptation	(5 credits)	Mandatory
KINE1PM	Année d'études préparatoires au master en kinésithérapie et réadaptation (60) et au master en sciences de la motricité, orientation générale (120)	(5 credits)	Mandatory