

Faculty of Medicine



KINE1028 Biomechanics applied to physiotherapy

[15h+0h exercises] 2 credits

Teacher(s): Léon Plaghki, Patrick Willems (coord.)
Language: French
Level: First cycle

Aims

The aim of this course is to apply the principles of biomechanics in physiotherapy. Using these principles, the student will be able to identify the mechanical causes of several pathologies of the locomotory system, et de justifier therapeutic design from a biomechanical point of view.

Main themes

The main themes to achieve these objectives are :

- biomechanics of the muscle,
- electromyography and kinesiology,
- strength of biological material like bones, tendons and ligaments

Content and teaching methods

- Notion of tribology (how to study the mechanical properties of biological structures: static sollicitation (creep, stress - strain diagram, stress relaxation...) dynamic sollicitation (effect of speed on the visco-elastic properties of biological structures, resonant frequency...), fatigue test.
- Rheological properties of bone tissues, effect of growth and aging on these properties, effect immobilization and of exercise on these properties, mechanical properties of osteo-synthesis materiel...
- Rheological properties of cartilage, wear of cartilage, effect of immobilization and exercise on these properties.
- Rheological properties of ligaments et tendons, effect of immobilization and exercise on these properties.
- Biomechanical properties of muscle, effect of exercise and immobilization on these properties.
- Muscular reinforcement: isotonic reinforcement, isometric reinforcement, isokinetic reinforcement, the stretching.
- Electromyography (EMG), origin and characteristic of the signal, electrodes, treatment of the signal, effect of force, length, speed and fatigue of the muscle on the EMG.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Pre-requisite Mechanics, biomechanics, Fundamentals of locomotory physiotherapy

Evaluation Oral or written exam

Support Books or syllabus

Supervision Teachers

Others

Other credits in programs

KINE12BA	Deuxième année de bachelier en kinésithérapie et réadaptation (2 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)	Mandatory