EDPH1028 Sports biomechanics

[30h] 3 credits

Teacher(s): Dominique De Jaeger, Pierre Defrance, 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 justify 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

Part 1: Joint forces and muscular moments during an athletic movement
- Estimation anthropometric parameters during a athletic movement
- Measure of kinematic and kinetic variables
- Estimation joint forces and muscular moments
Part 2: Energy, work et muscular power during an athletic movement
- The motor function and the breaking function of the muscle
- Classification of the exercises
- Transfer and transformation of energy
- Utilization of the elastic properties of biological structures
Part 3: The mechanisms of terrestrial locomotion
- The mechanics of walking and running
- The mechanics of speed skating
- The mechanics of bicycling
- Efficiency of terrestrial locomotion
Part 4: The mechanisms of terrestrial locomotion
- The mechanics of swimming (breast stroke, crawl, butterfly)
- The mechanics of rowing
- Efficiency of aquatic locomotion
Part 5: Analysis of athletic movements
- The rotation movements in gymnastic
- The mechanics of sprint running
- The mechanics of throwing in athletics'

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

EDPH12BA	Deuxième année de bachelier en sciences de la motricité	(3 credits)	Mandatory
EDPH1PM	Année d'études préparatoire au master en sciences de la motricité, orientation éducation physique (60 & 120)	(3 credits)	Mandatory
IEPR3DS/SP	Diplôme d'études spécialisées en sciences de la motricité (Entraînement des sportifs)	(3 credits)	Mandatory