Universitat de Girona
Facultat de Medicina
Unitat d'Educació Mèdica

M25 A36: FUNCTIONAL ANATOMY AND BIOMECHANICS OF THE LOCOMOTOR SYSTEM

Introduction

Biomechanics is the study of forces and their effects on living systems. The application of mechanical principles to the human body in motion and at rest is the basis for this module. The focus will be on the combination of concepts from engineering, anatomy and physiology.

The knowledge and understanding of the functions of articulations and muscles and of the external forces that operate on the human body have a broad application. This is of fundamental importance not only for the professional who specializes in the locomotor system, but also for any practitioner of general medicine in which the pathology of this system is prevalent.

To open a door, to lift an object, to walk or standstill, although these are every day actions, they are very complex and many forces play a role in them. The understanding of their normal function and alterations goes further than understanding the function of an isolated muscular structure.

Learning Objectives

By the end of this module the student will be able to:

- Explain the basic principles of biomechanics and their applicability to articulation (joint) function.
- Analyse the force systems that act on the key articulations of the locomotor system.
- Describe the role played by the different muscles that act on an articulation and body position at the start of and during a movement.
- Analyse how a muscular impairment generates compensation by other parts of the system, and explain the possible consequences on locomotor system pathology.
- Demonstrate a deep understanding of neuromuscular movement and analyse the applicable mechanisms of functional feedback.

Learning Activities

<u>Problem-Based Learning</u>

The exploration of three problems or situations related to the learning objectives of this module will be carried out.

<u>Lectures</u>

Three conceptual lectures will be delivered.

<u>Workshops</u>

Three workshops related to the exploration of the problems or situations used in the PBL sessions will be given.

Evaluation
Formative Assessment
Problem-Based Evaluation Exercise (PBL examination).

ECTS Credits
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