

ID	3178
Curricular Unit	Clinical Biomechanics
Regent	António Prieto Veloso
Learning Outcomes	To provide the fundamental concepts of biophysics, including mechanics, kinematics and dynamics. To learn more about the different biomechanical techniques used to evaluate human function and biological materials. To provide the basic knowledge concerning analysis of movement and the processes responsible for the initiation of movement. To discuss movement patterns within a clinical contents.
Syllabus	Arthrokinematics - Evaluation of external and internal forces acting on the human body - Biomechanical characteristics of bone, ligaments, cartilage, muscles, Tendons, synovial fluids - Load and overload - Kinematics and dynamics of motor tasks (gait, running, ...) - Playing surfaces - Biomechanical measurement devices - Human movement, initiating movement (CNS to periphery) - Locomotion and gait, running, selected movements - Gait analysis - Balance - Co-ordination (intramuscular, intermuscular, movement patterns) - Pathological movements (ataxia, athetosis, hemiplegia, ...) - Inverse dynamics
Evaluation	Written exam
Bibliography	<p>Baeyens J-P, Van Roy P, Clarijs JP , Intra-articular kinematics of the normal glenohumeral joint in the late preparatory phase of throwing: Kaltenborn's rule revisited. In: Reilly T. and Greeves J. (Eds.), Advances in Sport, Leisure and Ergonomics, London and New York, Routledge, 2002, 321-332</p> <p>Baeyens JP, Van Roy P, Clarijs JP. Intra-articular dysfunctions in minor anterior glenohumeral instability, Journal of Sports Sciences 1999, 17, 906-907</p> <p>Van Roy P, Gys T, Baeyens JP, Lanssiers R, Clarijs JP. An in-vivo study of helical motion patterns of the knee using a magnetic tracking device, Journal of Sports Sciences, 1999, 17, 925-926</p> <p>Baeyens J-P, Cattrysse E, Van Roy P, Clarys JP, Measurement of three-dimensional intra-articular kinematics : methodological and interpretation problems. Ergonomics 48, 2005, 1638-1644</p>