ID	429
Curricular Unit	Research Methods on Sport Sciences I
Regent	Pedro Vítor Mil-Homens Ferreira Santos
Learning Outcomes	Practical experience in research techniques related with Metabolic Evaluation, Neuromuscular Function, Anthropometric Measurements and Kinematic Analyses of the Movement.
Syllabus	1. Metabolic Evaluation Main parameters of physiological training evaluation: Heart rate; VO2, VCO2 and derived parameters; blood lactate; ergometry Anaerobic energy production evaluation; Aerobic energy production evaluation; Determination of a metabolic profile 2. Evaluation of the Neuromuscular Function Electromyography. Basic procedures, for signal detection and signal processing. EMG-force relationship. 3. Kineanthropometry Body dimensions and composition measurements. Sexual dimorphism; Maturation (early, normal and late matures). 4. Kinematic Analyses of the Movement Video cameras Design and implementation of a practical situation for video analyses Utilization the the APAS system Video capture procedures Digitalization procedures Calculations: transformation and smoothing Results representation Results interpretation
Evaluation	The teaching methodology in this unit is strongly "hands-on" (on the lab). For each topic of the program, the students have to collect and process data, for posterior analysis. The evaluation consists in a written report based on the laboratory work.

Bibliography	MacDougall, J. D., Wenger, H. A., Green, H. J. (Eds.), Physiological Testing of the High-Performance Athlete (2ª edição), Human Kinetics, 1991. Mil-Homens, P. e M. J. Valamatos (2004). Manual de Procedimentos. In, Pezarat-Correia, P., P. Mil-Homens (Eds.). A Electromiografia no estudo do movimento humano: Métodos de recolha e processamento, Manual de Procedimentos, Estudos experimentais. Edições FMH, Lisboa Fragoso, I. & Vieira, F. (2011). Morfologia e Crescimento. Curso Prático. Cruz Quebrada: FMH - Serviço de Edições. Robertson, G., Caldwell, G., Hamill, J., Kamen, G., Whittlesey, S.,(2004) Research Methods in Biomechanics. Human Kinetics Champaign IL. 61825-5076.