

ID	3096
Curricular Unit	Energy Metabolism and Cardiorespiratory Function
Regent	José Henrique Fuentes Gomes Pereira
Learning Outcomes	<p>To understand and to describe the different bioenergetics transformation processes of chemical energy into mechanical energy in the skeletal muscle tissue.</p> <p>To identify the processes responsible for fatigue caused by bioenergetics determinants.</p> <p>To establish the interdependencies between bioenergetics and muscle metabolism and the cardiovascular and respiratory systems.</p> <p>To identify and to describe the relationship between the systematic prescription of stimuli (sports training) and the different forms of acute and chronic adaptation considering the cardiopulmonary, cardiovascular and muscular domain.</p>
Syllabus	<p>1 - Energy metabolism and its relation with the cardio-respiratory function.</p> <p>2 - The metabolic map and energy metabolism: The cytosolic high energy phosphate system (CHEP) and the regulation of the phosphorylation level.</p> <p>3 - ATP regeneration mechanisms: Glycolitic pathway; Oxidative phosphorylation.</p> <p>4 - Oxidative potential at the muscular level and its determinants; Quantification methods.</p> <p>5 - Energy production parameters; Evaluation techniques.</p> <p>6 - Levels and domains of metabolic intensity in the predominantly aerobic activities.</p> <p>7 - Gas exchange kinetics.</p> <p>8 - Acute and chronic adaptations of cardiovascular function.</p> <p>9 - Acute and chronic adaptations of respiratory function.</p>
Evaluation	<p>It is a theoretical course with an eminently expository feature. For the development and explanation of the different subjects in the program, a slide power-point support is used, to which students have access. The supporting literature for each subject consists of a central book, by way of Textbook, and references specific to each subject. The evaluation consists in a written test in two ways: 1) multiple choice test; 2) essay question on selected topics, one topic per student, carried out in 24 hours, with consultation and according to rigid rules of writing - like a review article. The successful students can perform an oral examination if they wish to.</p>
Bibliography	<p>Kenney, W.L.; Wilmore, J.H; Costill, D.L. Physiology of Sport and Exercise. Fifth edition. HK,1012.</p> <p>Tipton, C.M.; Sawka, M.N; Tate, C.A; Terjung, R.T. ACSM Advanced Exercise Physiology. Lippincott Williams & Wilkins, 2006.</p> <p>Jones, A.M.; Poole, D.C. Oxygen uptake kinematics, in sport, exercise and medicine. Routledge. Taylor & Francis, 2005.</p>