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| **ID** | 1965 |
| **Curricular Unit** | Energy metabolism and cardiorespiratory function |
| **Regent** | José Henrique Fuentes Gomes Pereira |
| **Learning Outcomes** | To understand and to describe the different bioenergetics transformation processes of chemical energy into mechanical energy in the skeletal muscle tissue.<br>To identify the processes responsible for fatigue cause by bioenergetics determinants<br>To establish the interdependencies between bioenergetics and muscle metabolism and the cardiovascular and respiratory systems.<br>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. |
| **Syllabus** | 1 – Energy metabolism and its relation with the cardio respiratory function.<br><br>2 – The metabolic map and energy metabolism: The citosolic high energy phosphate system (CHEP) and the regulation of the phosphorilation level.<br><br>3 – ATP regeneration mechanisms: Glycolitic pathway; Oxidative phosphorilation.<br><br>4 – Oxidative potential at the muscular level and its determinants; Quantification methods.<br><br>5 – Energy production parameters; Evaluation techniques.<br><br>6 – Levels and domains of metabolic intensity in the predominantly aerobic activities.<br><br>7 – Gas exchange kinetics.<br><br>8 – Cardiovascular function acute and chronic adaptations.<br><br>9 – Respiratory function acute and chronic adaptations. |

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| **Evaluation** | It is a theoretical course with a feature eminently expository.<br>For the development and explanation of the different subjects in the program, a slide power-point support is used, to which students have access.<br>The supporting literature for each subject consists of a book basis, 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 second rigid rules of writing - like a review article. The successful students can perform an oral examination if they wish to |
| **Bibliography** | Kenney,W.L.;Wilmore,J.H; Costill,D.L. Physiology of Sport and Exercise. Fifth edition. HK,1012.<br><br>Tipton,C.M.;Sawka,M.N; Tate,C.A; Terjung,R.T. ACSM Advanced Exercise Physiology. Lippincott Williams & Wilkins, 2006<br><br>Jones,A.M;Poole,D.C. Oxygen uptake kinematics, in sport,exercise and medicine. Routledge. Taylor & Francis,2005. |