



UCAM
UNIVERSIDAD
CATÓLICA DE MURCIA

Guía Docente 2018/2019

Exercise Physiology

Fisiología del ejercicio

Master's in High Performance Sport: Strength and
Conditioning

Mode: Semi-presencial

Table of Contents

Exercise Physiology	3
Brief Description	3
Pre-requisites	3
Objectives	3
Competencies and Learning Outcomes	4
Methodology	6
Syllabus	6
Relationship with other subjects of the curriculum	7
Evaluation System	7
Bibliography	8
Related websites	8
Study tips	9
Educational materials	9

Exercise Physiology

Module: **IV**.

Subject matter: **Exercise Physiology**.

Requisite: **Mandatory**.

Nº of credits: **4.5**.

Academic term: **1st semester**

Professors: **Dr. Brad Schoenfeld, Dra. Amelia Guadalupe and Dr. José Antonio López Calbet.**

Email: **djramos@ucam.edu**

Office hours: **by appointment via email**

Coordinator: **Dr. Domingo J. Ramos Campo**

Brief Description

In this module, the contents included are: new research trends to study the structure and muscle function and the different systems of the human body. New research trends to study of the muscular mechanics and biological tissue response to different types of loads.

Breve descripción del módulo

En esta materia los contenidos que se incluyen son los siguientes: Nuevas tendencias de investigación para el estudio de la estructura y de la función muscular y de los diferentes sistemas y aparatos del cuerpo humano. Nuevas tendencias de investigación para el estudio de la mecánica muscular y respuesta de los tejidos biológicos ante los diferentes tipos de cargas.

Pre-requisites

None.

Objectives

1. To gain a deeper understanding of the physiological characteristics of the human body during physical exercise using both theory and practice.
2. To know the physiological processes, acute responses and adaptations of different systems, and devices with different training loads.

3. To analyze and to identify the different trends in scientific research in exercise physiology.

Competencies and Learning Outcomes

MECES1: Students will know how to apply the acquired knowledge and have the capacity to problem solve in new or unfamiliar settings within broader (or multidisciplinary) contexts related to their field of study.

MECES2: Students will be able to integrate knowledge and handle the complexity of formulating judgment based on information that may be incomplete or limited, including reflections on social and ethical responsibilities linked to the application of their knowledge and judgment.

MECES3: Students will know how to communicate their conclusions (and the knowledge and rationale underpinning them) to the public (specialists and non-specialists) in a clear and unambiguous manner.

MECES4: Students will possess learning skills that will allow them to continue studying in a way that is largely self-directed or autonomous.

MECES5: To have and understand knowledge that will provide them the foundation or opportunity to be original in the development and/or application of ideas, often within the research context.

G1: To acquire skills through the teaching-learning process that allows them to continue learning in the field of sports training and conditioning not only with established contacts with Master's Degree professors and professionals but also autonomously.

G2: To acquire and to consolidate the initiative, the entrepreneurial spirit to start up projects related to sports training and conditioning.

T1: Capacity for analysis and synthesis.

T2: Capacity for organization and planning.

T4: Decision making.

T5: Teamwork.

T7: Capable of interpersonal relationships

T8: Critical Thinking.

T9: Ethical commitment.

T10: Study autonomously.

T11: Adapting to new situations.

T12: Creativity.

T14: Motivation for quality.

T15: Capacity for reflection.

Exercise Physiology

U1: Consider the principles of Christian humanism as core values in the development of professional practice.

U2: Being able to project the acquired knowledge and skills to promote a society based on the values of freedom, justice, equality and pluralism.

S1: Be able to acquire advanced scientific training and applied to Sport Performance and conditioning.

S5: Know the specific and practical fundamentals of metabolism in training and in high level competition and its evaluation using scientific rigor.

S10: To know the function of various systems and structures limiting the physiological performance and its evaluation using scientific rigor.

E4: To be able to apply the physiological, biomechanical, behavioral and social principles as the research object.

E13: Being able to identify the physiological and metabolic changes that occur with interventions in the area of Sport Performance and Conditioning.

Methodology

Methodology	Hours	Work hours Required attendance	Work hours no attendance
Theoretical exposition	7.9	22.5 hours (20 %)	
Discussion groups, seminars	7.9		
Evaluation	2.25		
Tutorial	4.5		
Personal study	45	90 hours (80 %)	
Preparation of work and exposition	27		
Analysis of scientific articles	9		
Literature searches	9		
TOTAL	112.5	22.5	90

Syllabus

Theoretical Teaching Program

Topic 1. The effects of exercise on the musculoskeletal and endocrine systems: acute and chronic effects.

Topic 2. Musculoskeletal and endocrine adaptations to resistance training and conditioning. New methods for the development of the musculoskeletal and endocrine systems.

Topic 3. The effects of exercise on the neuromuscular system: acute and chronic effects.

Exercise Physiology

Topic 4. Neuromuscular adaptations to resistance training and conditioning: new methods for the development of the neuromuscular systems.

Topic 5. Cardiorespiratory and metabolic adaptations to training: acute and chronic effects.

Topic 6. Cardiorespiratory and metabolic adaptations to strength training and conditioning. New methods for the development of the cardiovascular and metabolic systems.

Practical teaching program

Seminar 1. Instruments, protocols and variables of interest of the muscular system.

Seminar 2. Instruments, protocols and variables of interest of the neuromuscular system.

Seminar 3. Instruments, protocols and variables of interest of the cardiorespiratory system.

Relationship with other subjects of the curriculum

This material is related to: Biomechanics and Movement Analysis, Strength Training and Conditioning in the Elderly, and Program Design as related to Strength and Conditioning.

Evaluation System

February/June/September Call:

The evaluation system of the acquisition of learning outcomes of each of the modules' compulsory subjects will be based, in general, with the following grade distribution:

- 20% for written tests, in which evaluate the topic contents presented through theoretical-practical presentation, reading and analysis of documents provided in the module.
- 20% for assessment on workshops, presentations and classroom discussions.
- 60% for assessment of dynamic course work developed in seminars and workshops

The weighting range established in the evaluation system is 5%, and it will be determined based on the type of evaluations given in the module.

The module will have 2 calls for turning in assigned work: a regular call (set at the end of the module) and an extraordinary call (set prior to the first call the final Master's Thesis work).

Exercise Physiology

The scoring system will be as follows, set by R.D. 1.125/2003 of September 5th: Fail: 0-4,9; Pass: 5-6,9; Notable: 7-8,9; Outstanding: 9-10. The honorable mention of Distinction (Matrícula de honor) will be awarded by the professor to the student. Based on the number of students enrolled, only 5% will be eligible for this honorable mention, except for when the enrollment is under 20 in which case only one student will be granted this honor.

The honorable mention of Distinction (Matrícula de honor) will be awarded by the professor to the student. Based on the number of students enrolled, only 5% will be eligible for this honorable mention, except for when the enrollment is under 20 in which case only one student will be granted this honor.

To have a passing grade for this module, one must obtain at least half of the total score for each of the instruments of evaluation.

Bibliography

Basic Bibliography

- Baechle E (2000). *Principios del entrenamiento de la fuerza y del acondicionamiento físico*. Madrid: Ed. Médica Panamericana.
- Barbany JR. (2013). *Fisiología del ejercicio y del entrenamiento*. Barcelona: Paidotribo.
- López JL, Fernández A. (2006). *Fisiología del Ejercicio*. Madrid: Ed. Médica Panamericana.
- Strømme SB, Dahl HA, Rodahl K, Åstrand PO. (2010). *Manual de Fisiología del Ejercicio*. Barcelona: Paidotribo.

Complementary bibliography

- Australian Sports Comission. *Physiological test for elite athletes*. United States: Human Kinetics
- Green HJ, Wenger HA, Mac Dougall DJ. (2013). *Evaluación fisiológica del deportista*. Barcelona: Paidotribo.

Related websites

Facultad de Ciencias de la Actividad Física y del Deporte de la UCAM

<http://www.ucam.edu/estudios/grados/cafd>

Exercise Physiology

CCD - Cultura, Ciencia y Deporte. Revista del Departamento de Ciencias de la Actividad Física y del Deporte.

<http://www.ucam.edu/ccd>

Master's in High Performance Sport: Strength and Conditioning (UCAM)

<http://www.ucam.edu/estudios/postgrados/high-performance-semipresencial>

Fisiología del Ejercicio Fisiología Clínica del Ejercicio

<http://lchicharro.blogspot.com.es/>

Blog - Fisiología del Ejercicio | G-SE.com

<http://g-se.com/es/fisiologia-del-ejercicio/blog>

Study tips

- Attend classes and actively participate in the classroom.
- Orient effort and study to the comprehension of the course contents.
- Utilize office hours, Campus Virtual or email of the professor to help clarify or resolve any questions or doubts you may have regarding the course or course material.

Educational materials

Educational materials used in the course to facilitate the acquisition of skills are:

- PowerPoint presentations that professors' use will serve as an outline or guide of the content presented in class (and not as detailed notes on the subject). Students will make their own notes using all the educational materials described herein.
- Scientific articles, shared through Campus Virtual, will be related to specific content taught in class. Forum and social networks (Twitter) will be used to raise questions that would require some critical thought and to provide practical application for each article.
- Supporting documents will be shared also through Campus Virtual or will be sought by students through information technology and communication. These documents should also be related to specific content presented in class.
- Conceptual maps and discussion reports for each one of the content topics.