

**Elective Subject**  
(Academic Course 2024-2025)

**Subject title: PHYSICAL ACTIVITY AND SPORTS FOR HEALTH**

**Code:** 805451.

**Subject:** Elective.

**Responsibility Center:** Faculty of Nursing, Physiotherapy and Podiatry.

**Credits:** 3 ECTS.

**Number of places offered:** 100.

	Total (32% attendance)	Theory	Seminars	Practices
<b>Classroom activities</b>	24	12	4	8

Course schedule: (semester, day, and schedule):

- Teaching Dates: 25th September 2024 – 13th December 2024.
- Location: Classroom 1, Faculty of Physical Education and Sport.
- Hours:
  - Wednesday from 12:30 to 14:30 (Groups 1 and 2).
  - Friday from 12:30 to 14:30 (groups 3 and 4).

**STUDENT PROFILE (University degrees for which they are offered, if applicable)**

2nd to 4th year undergraduate nursing, physiotherapy, and podiatry students.

**BRIEF DESCRIPTOR**

This course aims to teach future health professionals the principles of physical activity and sport as a means of improving health and preventing disease, as well as the contribution of different health professions to the world of sport. Therefore, we will talk about the physiology of effort, exercise prescription for health and functional assessment tests.

**OBJECTIVES**

*General Objective.*

Provide students in the Nursing, Physiotherapy, and Podiatry degrees with basic knowledge of the benefits of physical exercise and sport for health. This will enable them to use exercise as a useful tool in promoting health, preventing, and treating disease in the future.

*Specific Objectives.*

- Perform the responses and physiological adaptations to exercise.
- Understand the fundamental principles of preparing athletes biologically, including medical-sports examinations and functional assessment methods.
- Determine the basic principles of sports nutrition and hydration.
- Developing the basic principles of exercise prescription in a healthy population.
- Developing the fundamental principles of exercise prescription for the most common pathologies in our environment.
- Differentiation between specific aspects of physical activity and sport in growth, aging, women, and physical disabilities.
- Differentiation the main sports injuries and their prevention mechanisms, are discussed in this text.
- Integrating the role of different health professionals in the sporting setting.

## ACADEMIC SKILLS

### A. KNOWLEDGE:

#### *Nursing:*

- Understand and assess the nutritional needs of both healthy individuals and those with health problems throughout the lifespan, to promote and reinforce healthy eating behaviors.
- Recognize health alterations in adults, identifying the manifestations that occur in their different phases. Identify care needs resulting from health problems.
- Understand and apply the principles underlying comprehensive nursing care.

#### *Physiotherapy:*

- Understand ergonomic and anthropometric principles.
- Understand the fundamental concepts of health and the role of the physiotherapist within the healthcare system.
- Understand factors related to health and issues related to physiotherapy in Primary Care, Specialized Care, and Occupational Health settings.
- Familiarize with quality mechanisms in physiotherapy practice, adhering to recognized and validated quality criteria, indicators, and standards for appropriate professional practice.
- Understand the ethical and legal foundations of the profession within a social context.

#### *Podiatry:*

- Acquire the concept of health and disease.
- Understand the determinants of health in the population.
- Understand the fundamentals of biomechanics and kinesiology. Supporting theories. Human gait. Structural alterations of the foot. Postural alterations of the musculoskeletal system with repercussions on the foot and vice versa. Biomechanical analysis tools.

### B. SKILLS:

#### *Nursing:*

- Promote healthy lifestyles and self-care, supporting the maintenance of preventive and therapeutic behaviours.
- Safeguard the health and well-being of individuals, families, or groups being served, ensuring their safety.

#### *Physiotherapy:*

- *Analytical and synthesis skills.*
- *Problem-solving.*
- *Decision-making.*
- *Teamwork.*
- *Working within an interdisciplinary team.*
- *Critical reasoning.*
- *Autonomous learning.*
- *Creativity.*
- *Analyse, plan, and apply movement as a therapeutic measure, promoting the participation of the patient/user in their process.*

#### *Podiatry:*

- Designing prevention protocols and their practical application. Public health. Concept, method, and use of epidemiology.

### **C. COMPETENCIES:**

#### *Nursing:*

- Establish effective communication with patients, families, social groups, or attended groups, ensuring their safety.

#### *Physiotherapy:*

- Promote healthy lifestyle habits through health education.
- Apply quality mechanisms in physiotherapy practice, adhering to recognized and validated quality criteria, indicators, and standards for appropriate professional practice.
- Analyze the management processes of a physiotherapy service or unit.

#### *Podiatry:*

- Develop the factors that influence the health-disease phenomenon.
- Acquire teamwork skills as a unit in which professionals and other personnel related to prevention, diagnostic evaluation, and podiatric treatment are structured in a uni- or multidisciplinary and interdisciplinary manner.

### **LEARNING OUTCOMES**

Upon completing the course, students will be able to:

- Understand the fundamentals of physical exercise and sports to improve the quality of life of their patients.
- Prescribe appropriate physical exercise and sports within their scope of practice for each patient based on their physical condition and/or prevalent underlying pathologies.
- Develop physical activity and sports programs for patients with the same pathology and within their age group.
- Calculate the cardiovascular risk profile based on certain anthropometric measures and their general nutritional recommendations.
- Employ critical thinking in practical situations regarding clinical assessment oriented towards sports.
- Interpret sports injury mechanisms to provide health education in the prevention of musculoskeletal injuries.
- Collaborate with other healthcare professionals in prescribing physical exercise and sports for health promotion and disease control.

## TEACHING ACTIVITIES (theoretical, practical, seminars, workshops, etc.)

### **Theoretical Classes:**

These will consist of lectures or presentations delivered by the professor on the thematic contents described, showcasing current evidence in sports medicine. These lectures will be delivered in person at the School of Sports Medicine, Physical Education, and Sports of the Faculty of Medicine.

### **Seminars:**

Interactive in-person classes will be conducted to reinforce the acquisition of concepts and to put into practice the topics covered in the theoretical classes. Clinical cases or practical problems will be presented and discussed with students using a problem-based learning and case study methodology, enabling the establishment of considerations or protocols of action in the field of sports dentistry.

### **Practical Classes:**

Practical sessions involving students will be supervised by faculty members and will cover the program's contents. These sessions will be held in person at the School of Sports Medicine, Physical Education, and Sports of the Faculty of Medicine.

### **Clinical Practices:**

Clinical evaluation practices of athletes' health may be conducted at the School of Sports Medicine, Physical Education, and Sports of the Faculty of Medicine.

### **Other Activities:**

Voluntary visits to sports medicine centers and medical services of sports clubs in the Community of Madrid.

## CONTENT TOPICS

### *THEORETICAL CLASSES:*

- Physiological responses and adaptations to exercise.
- Nutrition and exercise. Hydration.
- Sports medical examination. Functional assessment. Biomechanical analysis.
- Exercise prescription in healthy populations.
- Exercise prescription in prevalent pathologies.
- Sports injuries. Classification. Basic concepts of management and prevention.

### *PRACTICAL CLASSES:*

- Functional assessment tests.
- Aerobic and anaerobic tests.
- Strength and flexibility.
- Kinanthropometry and nutritional assessment of athletes.
- Biomechanical analysis of gait and running.
- Introduction to musculoskeletal ultrasound.

### *SEMINARS:*

- Exercise prescription in healthy populations.
- Exercise prescription in diseased populations.

### *CLINICAL PRACTICES (Voluntary):*

At the School of Sports Medicine, Physical Education, and Sports of the Complutense University:

- Performance of stress tests (aerobic and anaerobic, direct, and indirect).
- Biomechanics consultations and gait analysis.
- Nutrition consultations, diet prescription, and anthropometric assessment.
- Utilization of ultrasound in the diagnosis of soft tissue sports injuries.

Voluntary visits to sports medicine centers and medical services of sports clubs in the Community of Madrid.

## EVALUATION

The evaluation will consider the different activities described previously in the course (regular convocation and extraordinary call):

- Theoretical part: Objective test, with 30 multiple-choice questions, each with 4 options, one of which is correct. With this test, students can obtain a maximum score of 7 out of 10 (minimum grade of 3.5 required for the score to count).
- Practical part: Students must attend the scheduled practical sessions in the course. They can obtain a maximum score of 2 out of 10 (minimum of 1) based on attendance and participation, by submitting a theoretical-practical assignment related to the practical session.
- Class attendance and participation: Up to 1 point out of 10 (more than 90% attendance: 1 point, 70-90% attendance: 0.5 points).

<b>REGULAR CONVOCATION</b>			
<b>EVALUATION ACTIVITY</b>	<b>WEIGHTING</b>	<b>REMARKS</b>	<b>MAXIMUM SCORE</b>
Objective test	70%	Theoretical part	10
Theoretical-practical assignment	20%	Practical part	10
Class attendance and participation	10%	Theoretical and practical parts	10
<b>EXTRAORDINARY CALL</b>			
<b>EVALUATION ACTIVITY</b>	<b>WEIGHTING</b>	<b>REMARKS</b>	<b>MAXIMUM SCORE</b>
Objective test	70%	Theoretical part	10
Theoretical-practical assignment	30%	Practical part	10

## BIBLIOGRAPHY - INTERNET Resources

- Benardot, D. (2013), *Nutrición Deportiva Avanzada*, Madrid, Ediciones Tutor. (trad).
- Boron WF, Boulpaep EL (2017). *Fisiología Médica*. Ed Elsevier. 3ª ed. (trad).
- Calderón FJ (2018). *Fisiología humana aplicada a la actividad física*. Madrid, Panamericana.
- Colegio Americano de Medicina del Deporte (2019). *Manual ACSM para la valoración y prescripción del ejercicio*. Barcelona, Paidotribo.
- European Society of cardiology (ESC). (2020) ESC Guidelines on sports cardiology and exercise in patients with cardiovascular disease. *European Heart Journal* 2020:1-80.
- Kenney, W.L.; Wilmore, J.H.; Costill, D.L. (2017), *Fisiología del Deporte y el Ejercicio*. Madrid, Panamericana. (trad).
- Lara Hernández MT; Del Castillo Campos MJ; Ramos Álvarez JJ (2015). *Ejercicio físico y salud: pautas de actuación*. Conserjería de Educación, Juventud y Deporte. Madrid.
- Petersen BK, Saltin B (2006). Evidence for prescribing exercise in chronic disease. *Scand J Med Sci Sports*: 16: 3-63.
- Rocha Piedade S., Neyret P., Espregueira-Mendes J et al. (2021). *Specific Sports-Related Injuries*. ISAKOS. Cham, Switzerland: Springer Nature.
- Jeukendrup A., Gleeson M. (2019). *Nutrición deportiva*. Madrid. Ed Tutor. (trad).
- Segovia, J.C.; López Silvarrey, F.J.; Legido, J.C. (2007), *Manual de Valoración Funcional. Aspectos Clínicos y Fisiológicos*, Madrid, Elsevier.
- Viel, E. (2002). *La marcha humana, la carrera y el salto*, Barcelona, Ed Masson.

### **Medicine and Sport Journals (JCR 2022):**

- *British Journal of Sports Medicine* (1/88).
- *Journal of Sport and Health Science* (2/88).
- *Sports Medicine* (3/88).
- *Revista Internacional de Medicina y Ciencias de la Educación Física y el Deporte (España)* (77/88).

### **Internet Resources:**

- American College of Sport Medicine. Position Stands (2024). Disponible online: <https://www.acsm.org/education-resources/pronouncements-scientific-communications/position-stands>.  
Position Stands are official statements from the ACSM regarding topics related to sports medicine and exercise science, available for free download.
  - Physical Activity, Fitness, Cognitive Function and Academic Achievement in Children: A Systematic Review.
  - Quantity and Quality of Exercise for Developing and Maintaining Cardiorespiratory, Musculoskeletal, and Neuromotor Fitness in Apparently Healthy Adults: Guidance for Prescribing Exercise.
  - Exercise and Type 2 Diabetes: American College of Sports Medicine and the American Diabetes Association: Joint Position Statement.
  - Exercise and Physical Activity for Older Adults.
  - Nutrition and Athletic Performance.
  - Progression Models in Resistance Training for Healthy Adults.
  - Appropriate Physical Activity Intervention Strategies for Weight Loss and Prevention of Weight Regain for Adults.
  - The Female Athlete Triad.
  - Exercise and Acute Cardiovascular Events: Placing the Risks into Perspective.
  - Exertional Heat Illness during Training and Competition.
  - Exercise and Fluid Replacement.
  - Prevention of Cold Injuries during Exercise.
  - Physical Activity and Bone Health.
  - Exercise and Hypertension.
  - Joint Position Statement: Automated External Defibrillators (AEDs) in Health/Fitness Facilities.
  - AHA/ACSM Joint Position Statement: Recommendations for Cardiovascular Screening, Staffing, and Emergency Policies at Health/Fitness Facilities.
  - Weight Loss in Wrestlers.
  - The Use of Blood Doping as an Ergogenic Aid.
  - Exercise for Patients with Coronary Artery Disease.
  - The Use of Anabolic-Androgenic Steroids in Sports.
- World Anti-Doping Agency (2023). World Anti-Doping Code. Available online: [www.wada-ama.org](http://www.wada-ama.org)
- Del Castillo Campos MJ; Ramos Álvarez JJ; Polo Portes C. (2017). Muscle-tendon injuries in the sports environment. Ministry of Education, Youth, and Sports. Madrid. Available online: <http://www.madrid.org/bvirtual/BVCM016321.pdf>.
- Del Castillo Campos MJ; Ramos Álvarez JJ; Polo Portes C. (2018). Physical activity in relation to obesity and overweight in adolescents. Ministry of Education, Youth, and Sports. Madrid. Available online: <http://www.madrid.org/bvirtual/BVCM019633.pdf>.

## **TEACHING STAFF**

**Teacher Responsible (coordinator): Juan José Ramos Álvarez.**

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Teaching dedication:

### **Teachers:**

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