

**COURSE DATA****Data Subject**

<b>Code</b>	33033
<b>Name</b>	Sports physiotherapy
<b>Cycle</b>	Grade
<b>ECTS Credits</b>	4.5
<b>Academic year</b>	2022 - 2023

**Study (s)**

<b>Degree</b>	<b>Center</b>	<b>Acad. year</b>	<b>Period</b>
1202 - Degree in Physiotherapy	Faculty of Physiotherapy	4	First term

**Subject-matter**

<b>Degree</b>	<b>Subject-matter</b>	<b>Character</b>
1202 - Degree in Physiotherapy	20 - Sports physiotherapy	Optional

**Coordination**

<b>Name</b>	<b>Department</b>
ALAKHDAR MOHMARA, YASSER	191 - Physiotherapy

**SUMMARY**

The Sport Physiotherapy subject aims to give students a range of knowledge, attitudes and skills using different special physiotherapy techniques correctly. With these, they will cover correctly the most characteristic physiotherapeutic problems of the sport physiotherapy at the different stages of the treatment as the prevention, the injuries treatment and the rehabilitation.

The contents of this subject are:

- General and specific aspects of the physical activity.
- Athlete's basic physical capacities.
- Most common injuries in the sport area.



- Physiotherapy techniques applied to the sports injuries treatment.

## PREVIOUS KNOWLEDGE

### Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

### Other requirements

It is advisable to the student to like the sport or want to belong to a multidisciplinary sport team since the subject will try to establish the necessary basis for the physiotherapists training in sport.

## OUTCOMES

### 1202 - Degree in Physiotherapy

- Students must have acquired knowledge and understanding in a specific field of study, on the basis of general secondary education and at a level that includes mainly knowledge drawn from advanced textbooks, but also some cutting-edge knowledge in their field of study.
- Students must be able to apply their knowledge to their work or vocation in a professional manner and have acquired the competences required for the preparation and defence of arguments and for problem solving in their field of study.
- Students must have the ability to gather and interpret relevant data (usually in their field of study) to make judgements that take relevant social, scientific or ethical issues into consideration.
- Students must be able to communicate information, ideas, problems and solutions to both expert and lay audiences.
- Students must have developed the learning skills needed to undertake further study with a high degree of autonomy.
- Know and understand the physiotherapy methods, procedures and interventions applied in clinical settings for both, functional recovering or re-education and in activities aimed at health promotion and maintenance
- Keep updated one's professional knowledge, competences and skills.
- Work in teams.
- Have the ability to organise and plan work.
- Know general and specific aspects of physical activity.
- Understand the effects of exercise on the organs and systems.
- Know the basic physical conditions of the sports player.



- Know how to carry out the functional assessment of the sports player.
- Know the most frequent injuries in the sports area.
- Know how to establish the objectives of the physiotherapeutic treatment of the sports player.
- Apply the physiotherapy techniques in the treatment of sports injuries.

## LEARNING OUTCOMES

1. To know the general and specific aspects of the physical activity such as the training strength, the control of the exercise of loads assessing whether if it is performed preventive, performed during the injury recovery or during the rehabilitation to the effort controlling the fatigue limits. Also, to know the specific biomechanic in each sport speciality and levers used.
2. To understand the effects of the physical exercise on the different organs and systems by its recruitment during the exercise, also their referred and reflexes pains that can produce such organs and systems in different parts of the body. To do so, students must understand the operation and function of all of them, helping to predispose and prevent a sports injury knowing in advance the immediate assistance rules of the athlete.
3. To recognize the athlete's basic physical capacities including his performance, his evolving capacities; indeed, students must understand the types and characteristic of the force. Also, you will learn the types and effect of the resistance, as the speed deciding factors and the types and objectives of the flexibility. Finally, students must know the rules and the types and effects of the warm-up and cool-down in sport.
4. To know how to carry out the athlete's functional evaluation learning how to do his/her analytical assessment and then learning how to do a joint and muscular balance together with neurodynamic and myofascial assessments in order to generate passive and active differential diagnosis in sports injuries.
5. To know the most common injuries in the sport area since the growing age while understanding the characteristic of the locomotor system, the acute injuries and the sport-specific overload in children. It must be learnt the preventive measures in the sport during the growing age.

Student must know the causes and determinant factors of bone and joint injuries in sports, as its types and most characteristic in accordance with the sport.

Moreover, it could be known the soft tissue's sport injuries' production mechanisms, as their determinant factors emphasizing the tendon, ligament and muscle injuries.



Also, student will learn the factors that favour the muscle injury in sport, types of muscle injury and the physiotherapy required for the injury depending on the stage it is located.

Finally, it must be known the muscular injuries' preventive measures in sport.

6. To learn to establish the athlete physiotherapy treatment objectives depending on the sport he/she plays, his/her position, the sport gesture he/she executes most, the type and the injury evolution, tests and assessments to evaluate his/her balance, strength, posture, stamina, elasticity and his/her medical, nutritional and lesion history in order to properly readapt the athlete and do not relapse.

7. To apply the applied physiotherapeutic techniques in the treatment of the sports injuries as the massage in different sport injuries in soft tissues learning its effects, modalities before and after the competition considering its indication and contradictions.

To be concern of the effects and indications of deep transverse massage in tendon, ligament and muscle injuries in sport.

To know the rules and types of manual therapy techniques, previously learning to locate and asses the most common joint dysfunctions applied in sport.

To know the rules and types of neural movement techniques, previously learning to locate and asses the most common neural dysfunctions applied in sport.

To know the rules and types of myofascial techniques, previously learning to locate and asses the most common dysfunctions in sport.

To know the rules and types of muscle techniques, previously learning to locate and assess the most common muscle dysfunctions in sport.

To learn the fundamentals and characteristics of the functional and neuromuscular dressings applied in sports.

To assess the functionality of the spine, as well as the acute injuries and the injuries caused by cervical rachis' overload in sport.

To assess the functionality of the spine, as well as the acute and static injuries of the dorsal rachis in sport.

To assess the functionality of the spine, as well as the acute injuries, contractures and joint instability (spinal disk herniation) of the lumbar raquis in sport.

To know and assess the pelvic girdle injuries in sport, taking into account the types of muscle-tendon injuries of the pelvis. All in all, assessing the pubis osteopathy production mechanisms and valuing the joint fixations of the sacrum and sacroiliac articulations.

To assess the functionality of the shoulder girdle and most frequent pathologies in sport as the swimmer's shoulder, pitcher's shoulder and dislocated shoulder.



To assess the functionality of the upper limb and most frequent pathologies in sport as the tennis elbow, golfer's elbow, dislocated elbow, wrist sprain, scaphoid fracture and hand injuries as sprains, fractures and dislocations.

To assess the knee joint and most frequent pathologies as the femoro-patellar syndrome (chondromalacia patella), jumper's knee, knee ligament injuries and meniscal injury.

To know the most effective way to stabilize the knee: fitness and proprioception of the knee in sport.

To assess the ankle and foot joints and the most frequent pathologies as the ankle sprain, the Achilles tendinitis, the Achilles tendon rupture and the plantar fasciitis.

To understand the hypomobility and hypermobility concepts.

To relate the different athlete's injuries finding the primary injury and his/her compensations or secondary injuries assessing the ascending and descending lesion chains.

8. Teaming up knowing the work of other professionals involved in the recovery of the athlete to plan, among all the multidisciplinary team, the goals of each athlete's recovery phase.

9. Ability to organize and plan the work with objective data obtained from the different tests, those taken from the different multidisciplinary team professionals to define the objectives and methodology used in each recovery stage, without forgetting to assess the subjective information provided by the athlete.

## DESCRIPTION OF CONTENTS

### 1. General and specific aspects of the physical activity

- Overload and injuries in sport.
- Force and motion.
- Levers and force magnitude.
- Intern and extern forces.
- Mechanical effort and energy.
- Tension and compression forces.
- Torque forces and bending effect.
- Shears.
- Repeated load and fatigue.

### 2. Understand the effects of the physical exercise on the different organs and systems

- Effects of physical exercise on different organs and systems.
- Predisposition and prevention of sports injury.
- Operation, functions and recruitment of each organ and systems during and after the exercise.
- Referred and reflexes pains of the different organs and systems.





### 3. Athletes basic physical capacities

- Athletes performance.
- Athletes evolving physical abilities.
- Force: types and characteristics.
- Resistance: types and effects.
- Speed: determinants.
- Flexibility: types and objectives.
- Warming-up and cooling-down in sport: rules, types and effects.

### 4. Athletes functional evaluation

- Athletes analytical assessment.
- Athletes joint balance.
- Athletes muscle balance.
- Neurodynamic assessment.
- Myofascial assessment.
- Passive and active differential diagnosis in sport injuries.

### 5. Most common injuries in the area of the sport

- Physiotherapy in sport injuries in growing age.  
Locomotor system characteristics in growing age.  
Characteristic acute injuries in the child and his/her physiotherapy.  
Specific overload injuries in the child and his/her physiotherapy.  
Preventive measures in sport during the growing age.
- Physiotherapy in bones and joints in sport.  
Causes and determinant factors of bones and joints injuries in sport.  
Types of bones and joints lesions in sport and its physiotherapy.  
Most common bones and joints injuries depending on sports.
- Physiotherapy in soft tissues sport injuries.  
Production mechanisms of the soft tissues sport injuries.  
Determinant factors of the soft tissues sport injuries.  
Physiotherapy of the tendon injuries in sport.  
Physiotherapy of the ligament injuries in sport.  
Factors that favour the muscular injury in sport.  
Types of muscular injuries in sport.  
Physiotherapy of the muscular injury in sport.  
Muscular injuries preventive measures in sport.



## **6. Athlete physiotherapy treatment objectives**

- Analysis of the static and dynamic posture with postural test (video-foto)
- Posture control (eye-pelvis-ankle)
- Balance, force, posture, stamina and elasticity assessment tests.
- Medical, nutritional and lesion history
- Planning a correct rehabilitation.
- Prevention of relapses

## **7. Applied physiotherapeutic techniques in the treatment of the sports injuries**

- Massage in sports.

Massage effects at sport level.

Massage modalities in sport. Before, in resting periods and after the competition.

Massage indications and contradictions in sport.

The massage in different soft tissues sport injuries.

- Deep transversal massage.

Effects and indications of the MTP in sport injuries.

Applications of the MTP in different sport injuries: tendons, ligaments, muscles.

- Manual therapy techniques

Rules and types of manual therapy applied to the sport.

Joint hipomobility and hipermobility concept.

Localization and evaluation of the most common dysfunctions in sport.

- Rules and types of neural movement techniques.

Locate and assess of the most common neural dysfunction in sport.

- Rules and types of myofascial techniques

Locate and assess the most common myofascial dysfunctions in sport.

- Fundamentals and characteristics of the functional and neuromuscular dressings in sport.

- Spine injuries physiotherapy in sport:

Functional assessment of the spine.

Physiotherapy in the cervical raquis injuries in sport.

Acute

By overload

Physiotherapy in the thoracic raquis injuries in sport.

Statics

Acute

Physiotherapy in the lumbar raquis injuries in sport.

Contractures

Instabilities

Spinal disk herniation

Physiotherapy in pelvic girdle injuries in sport.

Pelvic muscle-tendon injuries.

Types

Pubis osteopathy

Production mechanisms



Joint fixations in the pelvic girdle  
Physiotherapy of the shoulder girdles injuries in sport.  
Shoulder girdles functional assessment  
Physiotherapy of the swimmers shoulder  
Physiotherapy of the pitchers shoulder  
Physiotherapy of the athletes dislocated shoulder  
Physiotherapy of the elbow, wrist and hand injuries in sport.  
Physiotherapy of the elbows injuries in sport.  
Tennis elbow  
Golfers elbow  
Dislocated elbow  
Physiotherapy of the wrists injuries in sport.  
Wrist sprain  
Scaphoid fracture  
Physiotherapy of the hands injuries in sport.  
Sprains.  
Fractures.  
Dislocations  
Physiotherapy of the knees

## **8. Teamwork**

- Roles and responsibilities of each multidisciplinary teams component.
- Teaming work to do.
- Identifying the goals to achieve in each athletes recovery, rehabilitation or fitness stage.

## **9. Ability to organize and plan the work**

- Proper objective data organization of trials and specific tests.
- Assessment of the subjective information provided by the athlete.
- Planning of the objectives and methodology to be used in each stage of the recovery.





## WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Classroom practices	15,00	100
Development of individual work	15,00	0
Study and independent work	24,50	0
Readings supplementary material	5,00	0
Preparation of evaluation activities	14,00	0
Preparation of practical classes and problem	6,00	0
Resolution of case studies	3,00	0
<b>TOTAL</b>	<b>112,50</b>	

## TEACHING METHODOLOGY

The teaching –learning methodology will be framed in the learning cognitive-constructivist theory that emphasizes the essential active role of the student. It will be the protagonist of its educative process and it will try to develop a meaningful learning process based on previous knowledge. The teacher will act as mediator and learning facilitator using motivating, modeling, maieutics, introspection and problem-solving techniques.

The teaching program may be modified during the development of the course if the teacher under teacher quality criteria and assimilation of knowledge by the student, deems it appropriate.

## EVALUATION

The evaluation of the acquired skills by the student in this subject will be based on the marks obtained from the theoretical and practical tests of the final exam. Also, there will be a student continuous assessment based on his/her assistance, attitude and participation in different training activities.

The assessment of the acquired competences by the student in this subject is based on a Final theoretical exam and a practical exam.

The student must pass both parts in order to pass the subject.

Theory: the last written exam could consist of a multiple choice test composed by 25-50 questions with 4 alternatives to be chosen as right answer. The correct answers add up 0.20; the incorrect ones 0.10. It also could consist of a 5-10 essay questions to develop.

The last theory exam is the 50% of the final mark.



Practice: the final oral exam consists of a case study exposition, which is the 10% of the final mark; and the implementation of different techniques and treatments, which are the 30% of the final mark.

It is necessary to pass the case study exposition in order to be able to do the second part of the practical exam.

It will be assessed the assistance to the theoretical and practical classes, as well as the punctuality, the respect, the morality and the ethic toward peers and teachers assuming the 10% of the final mark.

It is necessary to pass the theoretical and practical exams in order to get the medium with the percentage of the student's attendance.

## REFERENCES

### Basic

- Izquierdo, M. Biomecánica y bases neuromusculares de la actividad física y el deporte. Panamericana. 2008
- Thiebault, C. El niño y el deporte. Tratado de medicina del deporte infantil. INDE Publicaciones. 2009
- Mora, R. Fisiología del deporte y el ejercicio. Practicas de campo y laboratorio. Panamericana. 2009
- Córdova, A. - Garcés, E. - Seco, J. Masaje deportivo. Síntesis. 2012
- Selva, F. Vendaje neuromuscular. Manual de aplicaciones prácticas. 2Ed. Physi-rehab-kineterapy-eivissa. 2011
- Bové, T. El vendaje funcional. ELSEVIER. 2011
- Ricard. Sallé. Tratado de osteopatía. 3Ed. Panamericana. 2003
- Benítez, J. Recuperación deportiva. Reeduación funcional, neuomotriz y propioceptiva. Carena. 2008

### Additional

- Naclerio, F. Entrenamiento deportivo. Fundamentos y aplicaciones e diferentes deportes. Panamericana. 2010
- Ylinen, J. Estiramientos terapéuticos en el deporte y en las terapias manuales. ELSEVIER. 2009
- Jiménez Díaz. Ecografía en traumatología del deporte. Marban. 2007
- Martin, R. Deportes de equipo. Comprender la complejidad para elevar el rendimiento. INDE Publicaciones. 2005
- González Iturri JJ. Tratamiento y rehabilitación de las lesiones del atleta. Monografías Ed. A.M.D. 1994



- Smith NJ Stanitski CL. Guía práctica de medicina deportiva. McGraw-Hill-Interamericana. 1992
- Boyer TH. Patología del aparato locomotor en el deporte. Masson. 1991
- Frank H. Netter. Atlas de Anatomía Humana. 4 Ed. MASSON. 2007

