

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

Code	44632
Name	Developments in basic science and therapeutic physical exercise
Cycle	Master's degree
ECTS Credits	10.0
Academic year	2023 - 2024

Study (s)

Degree	Center	Acad. year	Period
2220 - M.U. en Recuperación Funcional en Fisioterapia	Faculty of Physiotherapy	1	First term

Subject-matter

Degree	Subject-matter	Character
2220 - M.U. en Recuperación Funcional en Fisioterapia	1 - Developments in basic science and therapeutic physical exercise	Obligatory

Coordination

Name	Department
INGLES DE LA TORRE, MARTA	191 - Physiotherapy

SUMMARY

The subject is divided into three sections:

- 1- anatomy, biomechanics, histology and physiology applied.
- 2- Pharmacology applied to functional recovery.
- 3- The exercise physical therapy.

PREVIOUS KNOWLEDGE**Relationship to other subjects of the same degree**



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

Other requirements

OUTCOMES

2220 - M.U. en Recuperación Funcional en Fisioterapia

- Students should be able to integrate knowledge and address the complexity of making informed judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities associated with the application of their knowledge and judgments.
- Students should demonstrate self-directed learning skills for continued academic growth.
- Students should possess and understand foundational knowledge that enables original thinking and research in the field.
- Ser capaces de obtener y de seleccionar la información específica y las fuentes relevantes para la resolución de problemas, elaboración de estrategias y planes de actuación, asesoramiento y ejecución de las diferentes actuaciones fisioterápicas en los ámbitos de la recuperación funcional.
- Profundizar en el conocimiento de las respuestas y adaptaciones del organismo al ejercicio físico.
- Profundizar en la fisiopatología de las lesiones y enfermedades más frecuentes.
- Aumentar los conocimientos sobre los efectos e indicaciones de los medicamentos no sujetos a prescripción médica así como, las interacciones de fármacos que puedan influir en la Recuperación Funcional.
- Aplicar las cualidades físicas básicas y resultantes y su importancia en Recuperación Funcional.
- Planificar adecuadamente la recuperación funcional del paciente en base a los principios fisiológicos del rendimiento físico.
- Diseñar programas de intervención de actividad física para personas con o sin patologías en diferentes entornos y en función de los objetivos de la persona, basados en criterios de evidencia científica.
- Aplicar la anatomía y biomecánica desde una perspectiva clínica.
- Ser capaces de diferenciar las características histológicas específicas de los tejidos sanos y patológicos y su correlación con las funciones motrices y funcionales.
- Fomentar, en contextos académicos y profesionales del ámbito de la política económica, el avance tecnológico, social o cultural dentro de una sociedad basada en el conocimiento y en el respeto a: a) los derechos fundamentales y de igualdad de oportunidades entre hombres y mujeres, b) los principios de igualdad de oportunidades y accesibilidad universal de las personas con discapacidad y c) los valores propios de una cultura de paz y valores democrático.



LEARNING OUTCOMES

Pursue this matter will enable the student to locate the different anatomical structures by palpation. He also relates the anatomy with movement and different motor functions. On the other hand, you will be able to analyze the motor actions and movements from a biomechanical perspective and to relate changes in this body biomechanics with some pathologies. It will be inserted in the aspects of pharmacotherapy relating to functional recovery. You will learn the importance of physical qualities and their relationship to health and functional recovery, as well as proper planning and evaluating them.

DESCRIPTION OF CONTENTS

1. Surface anatomy

Surface anatomy of the main anatomical structures related to functional recovery.

2. Physiology of functional recovery

The subject is focused on the study of the mechanisms underlying physiological adaptations and modifications that physical exercise produces in a healthy individual. The changes referred to are addressed in several areas: neurological, musculoskeletal, cardiorespiratory and metabolic. important to analyze the mechanisms by which exercise has beneficial effects on the body are also dedicated space.

3. Biomechanics of functionanal recovery

In this subject, the main basis of joint and muscle biomechanics are presented. In addition, there will be an overview of the main bases of biomechanics applied to tasks of daily living in different population groups.

4. Histology and pathology.

This topic sets out the specific histological characteristics of healthy and pathological tissues, as well as their correlation with motor and functional functions.

5. Pharmacology and pharmacokinetics.

In this topic, the basics of pharmacokinetics and pharmacodynamics, as well as those factors that influence drug response are explained. Furthermore, the main route of administration and the fundamental aspects of the drugs most commonly used in the functional recovery field (i.e. drugs that act on the autonomic nervous system and neuromuscular, psychoactive drugs (benzodiazepines), analgesics and anti-inflammatories, drugs that regulate hemostasis, drugs affecting bone - anabolic steroids).

**6. The process of motor learning. Conditional and coordinating physical qualities**

This topic discusses basic aspects related to learning, developing and controlling motor skills. It will distinguish between conditional (resistance, strength, speed and flexibility) and coordination physical qualities (basic, special and complex).

7. Physical activity planning, systematic of physical exercise and design of intervention programs.

Early functional recovery.

Planning. General aspects of physical activity programming.

The intervention session. The motor learning process. Aspects to consider.

Specific aspects of planning therapeutic intervention programs through exercise.

Design intervention programs and prevention through physical exercise. Practical cases.

8. Health and Exercise

The importance of physical activity in the prevention and treatment of disease: current scientific evidence.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	45,00	100
Classroom practices	15,00	100
Study and independent work	190,00	0
TOTAL	250,00	

TEACHING METHODOLOGY

1. Theoretical and practical contact sessions in which the subject content will work, will discuss and perform activities using various teaching resources.
2. The performance of work group aims to promote cooperative learning and strengthen individual.
3. Individual and group tutorials should serve as a means to coordinate the / as students in individual and group tasks.



EVALUATION

Evaluation system	Percentage of qualifying
Theoretical and practical final test.	80%
Assistance and participation at class	20%

The final grade of the subject will be the weighted sum of the marks obtained in each evaluation test, as long as the student has obtained at least 50% of the maximum mark in each of the tests

REFERENCES

Basic

- FLOREZ, JESÚS. 6ª Ed. Elsevier España SL. 2013. Farmacología Humana.
- ODOOVAN G, BLAZEVOICH AJ, BOREHAM C, AT AL. 2010. The ABC of Physical Activity for Health: A consensus statement from the British Association of Sport and Exercise Sciences. Journal of Sport Sciences 2010;28(6):573-91.

Additional

- Kapandji, A. (2012), Fisiología Articular. Ed. Panamericana
- Busquet, L. (2001) Las cadenas musculares Vol. I. Barcelona: Paidotribo.
- Gómez-Conesa, A.; Méndez Carrillo, F. (2000) Ergonomía en las actividades de vida diaria en la infancia. Fisioterapia, Vol. 22(3), pp: 130-142.