COURSE DATA

DATA SUBJECT

Code: 33020
Name: Physiotherapy of the nervous system
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1202 - Degree in Physiotherapy	Facultat de Fisioteràpia	3	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1202 - Degree in Physiotherapy	Specific intervention methods in physiotherapy	COMPULSORY

COORDINATION

SENTANDREU MAÑO TRINIDAD

QUEROL GINER FELIPE

SUMMARY

The Physiotherapy Nervous System course aims for students to develop the knowledge, skills and attitudes necessary to plan, treat, and assess physiotherapy interventions in order to promote, prevent, and restore health in various neurological conditions, specifically spinal cord injury, as well as peripheral nervous system and neuromuscular disorders.

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 not necessary previous requirements.

COMPETENCES / LEARNING OUTCOMES

1202 - Degree in Physiotherapy

Acquire knowledge related to the information and communication technologies.

Acquire sensitivity to environmental issues.

Assess a patients function, including physical, psychological and social aspects.

Establish evidence-based physiotherapy protocols and promote professional activities that facilitate physiotherapy research.

Have the ability to organise and plan work.

Know how to apply the different physiotherapy techniques for the promotion, prevention and health preservation in the pathologies of the locomotor, respiratory, cardiovascular and nervous systems. Know how to apply manual techniques, manipulative therapy, osteopathy and chiropractic techniques.

Know how to assess the results of the physiotherapy treatment.

Know how to establish a therapeutic plan to reach the proposed goals.

Know how to evaluate the physiotherapy treatment applied.

Know how to plan treatment goals in the different pathologies of the locomotor, respiratory, cardiovascular and nervous systems from the data of the Physiotherapy Clinical Records.

Perform comprehensive healthcare-based physiotherapy interventions, which involve multidisciplinary cooperation, integration of processes and continuity of care.

Recognise diversity, multiculturality, democratic values and peace culture.

Respect fundamental rights and equality between men and women.

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 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.

Work in teams.

Work on and systematically complete physiotherapy records

DESCRIPTION OF CONTENTS

1. Introduction to Neurological Physiotherapy

Unit 1. Introduction to Neurological Physiotherapy.

2. Physiotherapy in disorders of the nervous system I: Spinal cord injury (part I)

Unit 2. Fundamentals of physical therapy spinal cord injury syndrome
Unit 3. Assessment of the person with spinal cord injury.ASIA scale. Spinal cord syndromes.
Unit 4. Neurological examination and functional objectives in the rehabilitation of spinal cord injury: cervical, thoracic, and lumbosacral levels.
Unit 5. Functional assessment tools. Activity limitations and participation restrictions following spinal cord injury according to the ICF. Disability versus dependence.
Unit 6. A case report of an acute post-traumatic spinal cord injury: basic notions of first aid and medical care. Radiology and other complementary tests in spinal cord injury.
Unit 7. Complications associated with spinal cord injury.

2. Physiotherapy in disorders of the nervous system I: Spinal cord injury (part II)

Unit 8. Principles of physiotherapy in the acute and subacute phase of spinal cord injury.
Unit 9. Respiratory physiotherapy in the injured spinal cord.
Unit 10. Cardiocirculatory physiotherapy in individuals with spinal cord injury.
Unit 11. Prevention and physiotherapy treatment of skin care. Pressure ulcers following spinal cord injury.
Unit 12. Physiotherapy in the prevention of musculoskeletal disorders. Therapeutic exercise following spinal cord injury.
Unit 13. Physiotherapeutic approach to hand function in individuals with tetraplegia.
Unit 14. Adaptation to standing and sitting posture in individuals with spinal cord injury.
Unit 15. Training of basic motor tasks. Transfers and bed mobility in individuals with lower limb paralysis Wheelchair management.
Unit 16. Standing and gait training in spinal cord injury.
Unit 17. Assistive products following spinal cord injury. Orthoses.
Unit 18. New technologies in the rehabilitation of spinal cord injury.
Unit 19. Physiotherapeutic approach to contractures and spasticity in individuals with spinal cord injury.
Unit 20. Physiotherapeutic approach to pain in individuals with spinal cord injury.
Unit 21. Management of bladder and bowel dysfunction in spinal cord injury.
Unit 22. Neurocognitive techniques and Cognitive Therapeutic Exercise in neurological conditions.
Unit 23. Spinal cord injury, physical exercise and adapted sports.
Unit 24. Spinal cord injury and aging.

3. Physiotherapy in disorders of the nervous system II. Peripheral nerve injury and neuromuscular disorders

Unit 25. Fundamentals of physiotherapy in the treatment of peripheral nerve injury.
Unit 26. Physiotherapy for sciatica, cruralgia, and compressive neuropathic syndromes of the lower limb.

Unit 27. Physiotherapy in cervical radiculopathy, thoracic outlet syndrome, carpal tunnel syndrome, and other compressive neuropathic syndromes of the upper limb.
Unit 28. Neurodynamics. Longitudinal neurodynamic system: neuroaxis and lower limbs. Transversal neurodynamic system: upper limbs.
Unit 29. Physiotherapy for neuropathies involving conduction deficits.
Unit 30. Cranial nerve injuries suitable for physiotherapy treatment.
Unit 31. Physiotherapy in migraine.
Unit 32. Physiotherapy in acquired and hereditary polyneuropathies.
Unit 33. Physiotherapy in adult and childhood muscle disorders. Post-polio syndrome.

4. Practical program

Practice 1. Assessment in spinal cord injury. ASIA scale.
Practice 2. Physiotherapeutic approach to training basic motor tasks. Transfers, bed mobility, and wheelchair management in spinal cord injury.
Practice 3. Planning physiotherapy intervention in spinal cord injury. Practical application in real-life settings with a neurological patient.
Practice 4. Introduction to Cognitive Therapeutic Exercise I.
Practice 5. Introduction to Cognitive Therapeutic Exercise II.
Practice 6. Simulation and clinical cases in spinal cord injury.
Practice 7. Physiotherapy in peripheral nervous system disorders.
Practice 8. Physiotherapy applied to the neural pathomechanics I.
Practice 9. Physiotherapy applied to neural pathomechanics II.
Practice 10. Physiotherapy applied to neural pathomechanics III. Clinical cases in peripheral nervous system disorders.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	45,00
Laboratory	15,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	25,00
Independent study and work	25,00
Preparation of lessons	0,00
Preparation for assessment activities	40,00
Resolution of case studies	0,00
Total hours	**90,00**

TEACHING METHODOLOGY

The theoretical teaching will take place in the classroom through traditional lectures and participatory activities, as well as through flipped learning methodologies such as flipped classroom. Students will have the topics in order to facilitate the study.

Practical lessons will take place in the laboratory where the skills and specific intervention procedures contained in this subject will be trained through simulating physiotherapy techniques in the professional context, solving clinical cases and planning objectives and physiotherapeutic management.

Students will complete a portfolio of theoretical-practical activities that seek to promote inductive learning by work groups. This portfolio will be part of the continuous evaluation, aiming at encouraging the exchange of ideas and a reflexive space, as well as fostering students´ active participation.

The teaching program might be modified during the development of the subject if the teaching staff considers iit appropriate, in order to guarantee the teaching quality and the learning process.

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EVALUATION

1. Theoretical program (60% of the final mark).

Written test: Test with 60 questions, with 4 options and one valid option. Score=[hits-(errors/nº options-1)]* (maximal score/number of questions).

2. Practical program (20% of the final mark).

- Resolution of a clinical case in which functional diagnosis and physiotherapy strategy are requested.
- Simulation of physiotherapy techniques.

3. Continuous evaluation through theoretical-practical activities of the portfolio (20% of the final mark).

The rating of the course will be averaged provided the student has earned at least 5 out of 10 in each of the theoretical and practical blocks. All written tests will be penalized spelling impropriety. Those activities of continuous evaluation cannot be recoverable outside the established time frame during the first call.

REFERENCES

Basic

Cano de la Cuerda C, Collado Vázquez S. Neurorrehabilitación: métodos específicos de valoración y tratamiento. Madrid: Editorial Médica Panamericana; 2012.
Esclarín de Ruz, A. Lesión medular. Enfoque multidisciplinario. 2º ed. Madrid: Médica Panamericana; 2021.
Gómez-Soriano J. Fisioterapia en el paciente con lesión medular. Un enfoque clínico y científico. 1º ed. Madrid: Médica Panamericana; 2023.
Harvey L. Tratamiento de la lesión medular. Guía para fisioterapeutas. Barcelona: Elsevier; 2010.
Hoppenfeld JD, Hoppenfeld S. Neurología ortopédica. Exploración diagnóstica de los niveles medulares. 2ª ed. Barcelona: Wolters Kluwer; 2018.
López Cubas C. Neurodinámica en la práctica clínica. 3ª ed. Barcelona: Wolters Kluwer; 2022.
Seco Calvo J. Sistema nervioso: métodos, fisioterapia clínica y afecciones para fisioterapeutas. Madrid: Médica Panamericana; 2020.

Additional

Bisbe Gutiérrez M, Santoyo Medina C, Segarra Vidal VT. Fisioterapia en Neurología. Procedimientos para restablecer la capacidad funcional. Madrid: Panamericana; 2012.
Bromley I. Tetraplegia and Paraplegia: A guide for physiotherapists. Fifth edition. Edinburg UK; 2012.
Stokes M & Stack E. Fisioterapia en la rehabilitación neurológica. 3ª ed. España: Elsevier; 2013.

Additionally, each unit will include recommended books, scientific articles, readings, and other relevant digital resources to support the preparation of the covered content.