

# Instrumental Assessment in Physiotherapy of the Locomotor System

Code: 102984 ECTS Credits: 6

2025/2026

Degree	Туре	Year
Physiotherapy	ОВ	2

#### Contact

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**Teachers** 

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## **Teaching groups languages**

You can view this information at the <u>end</u> of this document.

### **Prerequisites**

It is recommended to have acquired basic knowledge and competences of Human Anatomy I and II, Biological Bases of the Human Body, as well as Function of the Human Body.

## **Objectives and Contextualisation**

This subject intends to give the student the necessary knowledge for the evaluation of the patient with pathology of the locomotor system, as well as of the nervous system, based on the indispensable criteria that describe the need to evaluate to be able to plan a treatment physiotherapist This subject will be carried out simultaneously with the subjects of Physiotherapy in Neurology I, Pathological Clinical Concepts. Diagnostic Techniques, Clinical Evaluation in Locomotor System Physiotherapy, Therapeutic Techniques in Locomotor System Physiotherapy, Physiotherapy in Locomotor System Pathology I, and Medico-Surgical Pathology, necessary and very useful knowledge to give the patient a quality Healthcare and an optimal return to functionality.

- -Demonstrate the importance of monitoring and instrumentation to plan patient treatments.
- -To adequately evaluate the different ailments of the patients.
- -Determine the evolutionary changes or involved of the patients in relation to certain treatments.

## Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Analyse and synthesise.
- Apply quality-assurance mechanisms in physiotherapy practice, in accordance with the recognised and validated criteria.
- Display critical reasoning skills.
- Display knowledge of the morphology, physiology, pathology and conduct of both healthy and sick people, in the natural and social environment.
- Display knowledge of the physiotherapy methods, procedures and interventions in clinical therapeutics.
- Evaluate the functional state of the patient, considering the physical, psychological and social aspects.
- Express ideas fluently, coherently and correctly, both orally and in writing.
- Integrate, through clinical experience, the ethical and professional values, knowledge, skills and attitudes of physiotherapy, in order to resolve specific clinical cases in the hospital and non-hospital environments, and primary and community care.
- Make a physiotherapy diagnosis applying internationally recognised norms and validation instruments.
- Make changes to methods and processes in the area of knowledge in order to provide innovative responses to society's needs and demands.
- Make the most correct decisions in given situations.
- Organise and plan.
- Participate in drawing up physiotherapy protocols on the basis of scientific evidence, and promote professional activities that facilitate physiotherapy research.
- Solve problems.
- Take account of social, economic and environmental impacts when operating within one's own area of knowledge.
- Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.

## **Learning Outcomes**

- 1. Analyse a situation and identify its points for improvement.
- 2. Analyse and synthesise.
- 3. Apply physiotherapy methods, procedures and interventions in the different clinical specialisations that treat conditions of the musculoskeletal system.
- 4. Apply specific physiotherapy methods to promote a healthy lifestyle, in relation to the musculoskeletal system, through health education.
- 5. Communicate using language that is not sexist.
- 6. Consider how gender stereotypes and roles impinge on the exercise of the profession.
- 7. Critically analyse the principles, values and procedures that govern the exercise of the profession.
- 8. Describe and analyse human movement.
- 9. Describe and analyse the evidence-based physiotherapy protocols for disorders of the musculoskeletal system.
- 10. Describe and apply advanced evaluation procedures in physiotherapy in order to determine the degree of damage to the musculoskeletal system and possible functional repercussions.
- 11. Describe clinical practice guidelines applied to disorders of the musculoskeletal system.
- 12. Display critical reasoning skills.
- 13. Establish diagnostic physiotherapy hypotheses through clinical cases with disorders of the musculoskeletal system.
- 14. Express ideas fluently, coherently and correctly, both orally and in writing.
- 15. Identify situations in which a change or improvement is needed.
- 16. Identify the physiological and structural changes that may occur as a result of physiotherapy intervention in disorders of the musculoskeletal system.
- 17. Identify the principal forms of sex- or gender-based inequality present in society.
- 18. Identify the social, economic and environmental implications of academic and professional activities within one?s own area of knowledge.
- 19. Locate the different muscles through surface palpation.
- 20. Make the most correct decisions in given situations.
- 21. Organise and plan.
- 22. Propose new methods or well-founded alternative solutions.

- 23. Propose new ways to measure success or failure when implementing innovative proposals or ideas.
- 24. Solve problems.
- 25. Use physiotherapy to treat clinical cases involving musculoskeletal system conditions.
- 26. Weigh up the impact of any long- or short-term difficulty, harm or discrimination that could be caused to certain persons or groups by the actions or projects.
- 27. Weigh up the risks and opportunities of suggestions for improvement: one's own and those of others.

#### Content

- 1 Measure and evaluation. What and why
  - Observational methodology
  - Observation vs. Experimentation
- 2 Deficiency, disability and handicap
  - ICIDH model
  - CIF model
- 3 General exploration:
  - 1. Modulating factors and biotypology
  - Intrinsic
  - Extrinsic
  - Physiological
  - Psychological
  - Pathological modulating factors
- 4 Exploration of lesions of the nervous roots by neurological level:
  - Upper extremity
  - Trunk
  - Lower extremity
- 5 Introduction muscular balance (Goniometry and Oxford Scale)
  - Measuring
  - variables
  - Interferences in measure
  - Measurement systems
  - New conception of the muscle
- 6- Joint Balance and Balance of the Trunk and the Head (Goniometry and Oxford Scale)
  - Measuring variables
  - Measurement systems
  - Special tests
- 7- Stance and balance
  - Posture analysis
  - Characteristics and main evaluation systems
  - Functional ladders

- 8- Normal human walking
  - Biomechanics of the normal march
  - Analysis of the personal employer
  - Muscle dysfunction and walking
  - Functional ladders
- 9- Communication with the patient as an instrumental tool
  - Contents of the communication
  - Variables and interferences in communication
  - Expectations and beliefs
  - Legibility
- 10- General evaluation of spinal cord injury and brain damage. Validated scales
- 11- Specific techniques of functional evaluation:
  - Daily cleansing activities. Validated scales
  - Upper Tip Validated scales
  - Lower extremity Validated scales
- 12- Kinematic, kinetic, electromyographic analysis and pressure map. Interpretation of results.
- 13 Evaluation of technical aids:
- a. Support products
- a.1. Upper limbs
- a.2. Lower limbs
- a.3.Trunk
- 14 -Assessment of the perception of health and quality of life. Validated scales

## **Activities and Methodology**

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
laboratory practice	15	0.6	3, 4, 8, 10, 11, 13, 16, 19, 25
Theory	30	1.2	3, 4, 8, 10, 13, 16, 19, 25
Type: Autonomous			
PREPARATION OF WRITTEN WORKS	31.5	1.26	2, 9, 14, 21
READING ARTICLES /REPORTS OF INTEREST	40	1.6	2, 9, 14, 21
Self Study	30	1.2	2, 9, 14, 21

The methodology is based on theory (master classes) and practice.

Laboratory hours are mandatory. You must have at least 80% attendance to pass the course.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

#### **Assessment**

#### **Continous Assessment Activities**

Title	Weighting	Hours	ECTS	Learning Outcomes
Assessment :structured test	20 %	0.5	0.02	7, 2, 1, 3, 4, 5, 8, 9, 10, 11, 13, 14, 16, 18, 17, 15, 19, 21, 27, 20, 22, 23, 12, 25, 24, 6, 26
Narrative records	20 %	1	0.04	7, 2, 1, 3, 4, 5, 8, 9, 10, 11, 13, 14, 16, 18, 17, 15, 19, 21, 27, 20, 22, 23, 12, 25, 24, 6, 26
Written avaluation:objective tests	60 %	2	0.08	7, 2, 1, 3, 4, 5, 8, 9, 10, 11, 13, 14, 16, 18, 17, 15, 19, 21, 27, 20, 22, 23, 12, 25, 24, 6, 26

#### Single assessment

The student is not required to attend practical sessions or PLABs. The contents of the PLABs may be included in the written exam.

The assessment will take place on the date of the final exam as published in the official calendar.

On that same day, all evaluative tasks will be carried out and the necessary assignments will be submitted in order to pass the course.

The assessment of the course consists of the following components:

40% of the final grade will correspond to a written exam:

A multiple-choice test with 60 questions worth 1 point each. Incorrect answers deduct 0.33 points. Students must answer at least 70% of the questions correctly.

This exam will include questions from both the lectures and the topics covered in the practical sessions.

40% of the final grade will correspond to the resolution of clinical cases (2 cases):

Determining the examinations to be performed in each clinical case and demonstrating the appropriateness of the scales administered for each case.

20% of the final grade will correspond to a complementary activity to be chosen from among the following:

A video recording related to the practical examination classes.

Commentary on an article.

Oral or written dissertation on a topic addressed in class.

Commentary on clinical cases.

NOTE: To pass the course, a minimum grade above 5 is required. This grade will be the average of the three assessments, and students must achieve at least a 5 in each component in order to compute the average.

If a student fails one part, it is not necessary to take a synthesis test covering the entire course, but only the part that was failed. This part may achieve a maximum grade of 5 in the synthesis test.

This course/module does not offer a single assessment system.

Art. 116.8. When it is determined that the student has not provided sufficient evidence for assessment, this course will be recorded in the transcript as "not assessable."

Students who have not passed the course through continuous assessment may sit for a final exam or a final resit assessment.

## **Bibliography**

- Sánchez Blanco, I. i cols., Manual SERMEF de rehabilitación y medicina física. Sociedad Española de Rehabilitación y Medicina física, Ed. Panamericana, 2006
- Shumway-Cook, A., Woollacott, MH., Motor Control, Theory and practical Applications 2nd edition. Lippincot Williams and Wilkins, 2000
- Alcott, D., Dixon, K., Swann, R. (1997). The reliability of the items of the Functional Assessment Measures (FAM): differences in abstractness between FAM items. Disabil Rehabil. 19(9):355-8.
- Badia, X., Salamero, M., Alonso, J. (2002). La medida de la salud. Edimac, 3ª edició.
- Barbeau, H., Ladouceur, M., Norman, K., Pépin, A., Leroux, A. (1999). Walking After Spinal Cord Injury: Evaluation, Treatment, and Functional Recovery. Arch Phys Med Rehabil. Vol. 80, February
- Cid Ruzafa J., Damián Moreno J. (1997). Valoración de la discapacidad física: El Índice de Barthel. Rev. Esp Salud Pública; 71: 127 - 137.
- Harada, N., Chiu, V., Stewart, A. Mobility-Related Function in Older Adults: Assessment With a 6-Minute Walk Test. (1999). Arch Phys Med Rehabil. Vol. 80.
- Hayek, V.E., Gagnon, S., Ruderman, J. E. (1997). Cognitive and Fuctional Assessments of Stroke Patients: An Analysis of Their Relation. Arch Phys Med Rehabil .78:1331-7.
- Heinemann, K. (2003). Introducción a la metodología de la investigación empírica. Editorial Paidotribo.
- Hoppenfeld, S. (1979). Exploración física de columna vertebral y extremidades. Manual Moderno.
- Hoppenfeld, S. (1981). Neurología ortopèdica. Manual Moderno
- Mahoney Fl., Barthel DW (1965). Functional evaluation: the Barthel Index. Maryland State Med J. 14; 61 65.
- Riener R., Lünenburger, L., Colombo, G. (2006). Human-centered robotics applied to gait training and assessment. Journal of Rehabilitation Reseach & Development. Vol 43, No 5, 679-694.
- Bermejo Pareja, F.,Porta Etessam, J., Díaz Guzmán, J., Martínez-Martín, P. Más de cien escalas en neurología. (Vol. I-II). Serie Manuales, Biblioteca Aula Médica.

#### Software

No specific software is required.

## **Groups and Languages**

Please note that this information is provisional until 30 November 2025. You can check it through this <u>link</u>. To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(PLAB) Practical laboratories	201	Catalan	first semester	afternoon
(PLAB) Practical laboratories	202	Catalan	first semester	afternoon
(PLAB) Practical laboratories	203	Catalan	first semester	afternoon
(PLAB) Practical laboratories	204	Catalan	first semester	afternoon
(TE) Theory	201	Catalan	first semester	afternoon