

Degree	Type	Year
2500892 Physiotherapy	OT	4

Contact

Name: Carina Francisco

Email: carina.francisco@uab.cat

Teaching groups languages

You can view this information at the [end](#) of this document.

Prerequisites

Knowledge of anatomy and physiology of the nervous system necessary to interpret typical diseases in neurorehabilitation.

Basic knowledge and practice of physiotherapy techniques.

Basic knowledge of the role of the physiotherapist in neurorehabilitation.

It is recommended to have approved the Physiotherapy in Neurology subjects.

Objectives and Contextualisation

The objectives of the subject are:

- Lay the foundations of physiotherapeutic treatment in advanced neurology
- Deepen skills of complementary techniques applied in neurorehabilitation
- Develop clinical reasoning in neurorehabilitation for the approach of the neurological patient due to its potential complexity
- Know the different techniques of advanced neurological physiotherapy
- Practice the applicability of the different techniques of advanced neurological physiotherapy in simulated or real patients
- Learn about multidisciplinary teamwork in neurorehabilitation

Competences

- Act with ethical responsibility and respect for fundamental rights and duties, diversity and democratic values.
- Design the physiotherapy intervention plan in accordance with the criteria of appropriateness, validity and efficiency.
- 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.
- 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.
- Solve problems.
- Take sex- or gender-based inequalities into consideration when operating within one's own area of knowledge.
- Work in teams.

Learning Outcomes

1. Analyse a situation and identify its points for improvement.
2. Apply advanced physiotherapy methods and techniques to neurological pathologies..
3. Communicate using language that is not sexist.
4. Consider how gender stereotypes and roles impinge on the exercise of the profession.
5. Critically analyse the principles, values and procedures that govern the exercise of the profession.
6. Define the general and specific objectives of advanced physiotherapy treatment in neurological pathologies.
7. Describe and apply advanced evaluation procedures in physiotherapy in order to determine the degree of damage to the nervous system and possible functional repercussions.
8. Describe the circumstances that condition priorities in advanced physiotherapy treatment for neurological pathologies.
9. Display critical reasoning skills.
10. Enumerate the different types of material and equipment used in advanced physiotherapy treatment for neurological pathologies.
11. Enumerate the medico-surgical treatments, mainly in the area of physiotherapy and orthopaedics, that are used in neurological diseases.
12. Establish a diagnostic physiotherapy hypothesis based on complex clinical cases in neurological pathologies.
13. Explain in detail the physiopathology of neurological diseases and identify the symptoms that appear during the process.
14. Explain the explicit or implicit code of practice of one's own area of knowledge.
15. Identify situations in which a change or improvement is needed.
16. Identify the principal forms of sex- or gender-based inequality present in society.
17. Propose new methods or well-founded alternative solutions.
18. Propose new ways to measure success or failure when implementing innovative proposals or ideas.
19. Solve complex clinical cases in the field of neurology.
20. Solve problems.
21. 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.
22. Weigh up the risks and opportunities of suggestions for improvement: one's own and those of others.
23. Work in teams.

Content

THEORETICAL-PRACTICAL CONTENT:

All content will be taught in person by the teacher.

- Scientific bases of motor control and learning.
- Early intervention and neurologically critical patient.
- Review of the most useful manual techniques in neurorehabilitation.
- Frequent non-motor disorders in neurological patients with great influence on physiotherapy.
- Stability (core stability) and mobility in neurological patients.
- Treatment of postural control and balance.
- Correction of gait patterns.
- Treatment and functional approach of the upper limb.
- Treatment of sensory disorders and neuropathic pain.
- Virtual reality and mirror therapy.
- Constraint-induced movement therapy (CIMT).
- Other therapeutic techniques frequently used in current clinical practice Clinical case study

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
PRACTICAL LABORATORY WORK	30	1.2	2, 9, 19, 20, 23
THEORY	10	0.4	2, 6, 7, 9, 13, 19, 20, 23
Type: Supervised			
WORK PRESENTATIONS	2	0.08	2, 6, 7, 8, 9, 10, 11, 12, 13, 19, 23
Type: Autonomous			
SELF STUDY	78	3.12	2, 6, 8, 9, 10, 19
elaboration of works and reports as well as research of information to share in classes	26	1.04	2, 6, 7, 8, 9, 10, 11, 12, 13, 19, 23

There are theoretical and practical classes.

Theoretical classes:

- Presentation of the content by the teacher

Practical classes:

- Practice among students
- Study of real clinical cases in group

- Exhibition of research work by students

The practical classes are mandatory with a minimum attendance of 80%. During the practical classes a guide previously published in moodle will be followed but it is the students who are responsible for creating their own notes and conclusions of each practical class.

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
Narrative records/porfolios	10%	1	0.04	3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 16, 20, 21, 23
Practical evaluation	50%	1	0.04	1, 2, 6, 7, 8, 9, 10, 12, 15, 17, 19, 20, 22
Theoretical evaluation	40%	2	0.08	2, 6, 8, 9, 10, 11, 13, 14, 18, 19, 20

Single Evaluation: This subject does not provide a single assessment system

Evaluation

Description of the evaluation system

1. Written work

Delivery of and presentation of written work done in a group
Job Note [NT] (10% of the final grade)

2. Exam I - Practical

Objective structured evaluation: the manual skill in the application of the different techniques will be assessed, as well as the adequacy of the chosen technique / maneuver to the situation posed. Simulation of the resolution of a clinical case / execution of a therapeutic plan between couples in 15 minutes. All necessary materials will be available in the room. Aspects related to the therapist's attitude, choice of treatment techniques, patient management and manual skills and suitability of the therapeutic plan are valued.
Practical test score [NEP] 50% of the final grade

3. Exam II - Theoretical

Written evaluation by means of objective tests of selection of multiple choice items (20 questions with 4 possible answers, only one will be correct, the correct answers are worth 0.35 points), open answer questions (2 questions of development in which each correct answer is worth 1 value) and short answer questions (3 questions whose correct answer is worth 0.5 points)
Note of the theoretical final exam [NET] 40% of the final grade

All evaluable tests must be done in order to pass the subject. $([NET] \cdot 0.40) + ([NP] \cdot 0.50) + ([NT] \cdot 0.10) =$
FINAL NOTE

The subject will be approved with a final grade equal to or greater than 5.

When the student can not provide sufficient evidence of evaluation, ie, bynot presenting and presenting the work and / or not to take the final exam of the subject, the record will be recorded as not assessable.

The students of exchange programs will be evaluated following the same criteria as the students of the UAB.

Recovery: The same recovery system will be applied as for continuous evaluation.

The review of the final qualification will follow the same procedure as for continuous evaluation.

Bibliography

- Nijboer TCW, Winters C, Kollen BJ, Kwakkel G. Impact of clinical severity of stroke on the severity and recovery of visuospatial neglect. *PLoS One*. 2018;13(7):1-11.
- Furie KL, Jayaraman M V. 2018 Guidelines for the Early Management of Patients With Acute Ischemic Stroke. *Stroke*. 2018;49:509-10.
- Powers WJ, Rabinstein AA, Ackerson T, Adeoye OM, Bambakidis NC, Becker K, et al. Guidelines for the early management of patients with acute ischemic stroke: 2019 update to the 2018 guidelines for the early management of acute ischemic stroke a guideline for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke*. 2019. 344-418
- Imura T, Nagasawa Y, Fukuyama H, Imada N, Oki S, Araki O. Effect of early and intensive rehabilitation in acute stroke patients: retrospective pre-/post-comparison in Japanese hospital. *Disabil Rehabil [Internet]*. 2018;40(12):1452-5.
- Dąbrowski J, Czajka A, Zielińska-Turek J, Jaroszyński J, Furtak-Niczyporuk M, Mela A, et al. Brain Functional Reserve in the Context of Neuroplasticity after Stroke. *Neural Plast*. 2019;1-10.
- Sasmita AO, Kuruvilla J, Ling APK. Harnessing neuroplasticity: modern approaches and clinical future. *Int J Neurosci*. 2018;128(11):1061-77.
- Carey L, Walsh A, Adikari A, Goodin P, Alahakoon D, De Silva D, et al. Finding the Intersection of Neuroplasticity, Stroke Recovery, and Learning: Scope and Contributions to Stroke Rehabilitation. *Neural Plast*. 2019;1-15.
- Pin-Barre C, Laurin J. Physical Exercise as a Diagnostic, Rehabilitation, and Preventive Tool: Influence on Neuroplasticity and Motor Recovery after Stroke. *Neural Plast*. 2015;1-12.
- Livingston-Thomas J, Nelson P, Karthikeyan S, Antonescu S, Jeffers MS, Marzolini S, et al. Exercise and Environmental Enrichment as Enablers of Task-Specific Neuroplasticity and Stroke Recovery. *Neurotherapeutics*. 2016;13:395-402.
- Crozier J, Roig M, Eng JJ, MacKay-Lyons M, Fung J, Ploughman M, et al. High-intensity interval training after stroke: An opportunity to promote functional recovery, cardiovascular health, and neuroplasticity. *Neurorehabil Neural Repair*. 2018;32(6-7):543-56.
- Cano de la Cuerda. *Nuevas Tecnologías en Neurorehabilitación. plicacione diagnósticas y terapéuticas*. Madrid: Panamericana, 2018.
- Shumway-Cook A, Woollacott MH. *Motor Control: Translating Research into Clinical Practice*. 5th ed. Philadelphia: Lippincott Williams & Wilkins; 2016
- Krakauer J, Carmichael S. *Broken Movement: the neurobiology of motor recovery after stroke*. 2017
- Yang J, Zhao Z, Du C, Wang W, Peng Q, Qiu J, Wang G. The realization of robotic neurorehabilitation in clinical: use of computational intelligence and future prospects analysis. *Expert Rev Med Devices*. 2020 Dec;17(12):1311-1322.
- Wiers RW, Verschure P. Curing the broken brain model of addiction: Neurorehabilitation from a systems perspective. *Addict Behav*. 2021 Jan;112:106602.
- Yamout B, Sahraian M, Bohlega S, Al-Jumah M, Goueider R, Dahdaleh M, Inshasi J, Hashem S, Alsharoqi I, Khoury S, Alkhawajah M, Koussa S, Al Khaburi J, Almahdawi A, Alsaadi T, Slassi E, Daodi S, Zakaria M, Alroughani R. Consensus recommendations for the diagnosis and treatment of multiple sclerosis: 2019 revisions to the MENACTRIMS guidelines. *Mult Scler Relat Disord*. 2020 Jan;37:101459.
- Learmonth YC, Motl RW. Exercise Training for Multiple Sclerosis: A Narrative Review of History, Benefits, Safety, Guidelines, and Promotion. *Int J Environ Res Public Health*. 2021 Dec 16;18(24):13245.
- Osborne JA, Botkin R, Colon-Semenza C, DeAngelis TR, Gallardo OG, Kosakowski H, Martello J, Pradhan S, Rafferty M, Readinger JL, Whitt AL, Ellis TD. *Physical Therapist Management of Parkinson Disease: A Clinical Practice Guideline From the American Physical Therapy Association*. *Phys Ther*. 2022 Apr 1;102(4):pzab302.
- Powers WJ, Rabinstein AA, Ackerson T, Adeoye OM, Bambakidis NC, Becker K, Biller J, Brown M, Demaerschalk BM, Hoh B, Jauch EC, Kidwell CS, Leslie-Mazwi TM, Ovbiagele B, Scott PA, Sheth KN,

- Southerland AM, Summers DV, Tirschwell DL. Guidelines for the Early Management of Patients With Acute Ischemic Stroke: 2019 Update to the 2018 Guidelines for the Early Management of Acute Ischemic Stroke: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association. *Stroke*. 2019 Dec;50(12):e344-e418.
- Gittler M, Davis AM. Guidelines for Adult Stroke Rehabilitation and Recovery. *JAMA*. 2018 Feb 27;319(8):820-821. doi: 10.1001/jama.2017.22036. PMID: 29486016.
 - Demont A, Gedda M, Lager C, de Lattre C, Gary Y, Keroulle E, Feuillerat B, Caudan H, Sancelme Z, Isapof A, Viehweger E, Chatelin M, Hochard M, Boivin J, Vurpillat P, Genès N, de Boissezon X, Fontaine A, Brochard S. Evidence-Based, Implementable Motor Rehabilitation Guidelines for Individuals With Cerebral Palsy. *Neurology*. 2022 Aug 16;99(7):283-297.
 - de Silva RN, Vallortigara J, Greenfield J, Hunt B, Giunti P, Hadjivassiliou M. Diagnosis and management of progressive ataxia in adults. *Pract Neurol*. 2019 Jun;19(3):196-207. doi: 10.1136/practneurol-2018-002096.
 - Keita M, McIntyre K, Rodden LN, Schadt K, Lynch DR. Friedreich ataxia: clinical features and new developments. *Neurodegener Dis Manag*. 2022 Oct;12(5):267-283. doi: 10.2217/nmt-2022-0011. Epub 2022 Jun 29.
 - Martin Ginis KA, van der Scheer JW, Latimer-Cheung AE, Barrow A, Bourne C, Carruthers P, Bernardi M, Ditor DS, Gaudet S, de Groot S, Hayes KC, Hicks AL, Leicht CA, Lexell J, Macaluso S, Manns PJ, McBride CB, Noonan VK, Pomerleau P, Rimmer JH, Shaw RB, Smith B, Smith KM, Steeves JD, Tussler D, West CR, Wolfe DL, Goosey-Tolfrey VL. Evidence-based scientific exercise guidelines for adults with spinal cord injury: an update and a new guideline. *Spinal Cord*. 2018 Apr;56(4):308-321.

Software

- Moodle
- Microsoft teams
- Face-to-face theoretical classes
- Face-to-face practical classes

Language list

Name	Group	Language	Semester	Turn
(PLAB) Practical laboratories	301	Catalan/Spanish	second semester	afternoon
(TE) Theory	301	Catalan/Spanish	second semester	afternoon