

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

Code	33014
Name	General proceedings for Intervention in physiotherapy I
Cycle	Grade
ECTS Credits	6.0
Academic year	2022 - 2023

Study (s)

Degree	Center	Acad. year	Period
1202 - Degree in Physiotherapy	Faculty of Physiotherapy	2	First term

Subject-matter

Degree	Subject-matter	Character
1202 - Degree in Physiotherapy	10 - General procedures in physiotherapy intervention	Obligatory

Coordination

Name	Department
INGLES DE LA TORRE, MARTA	191 - Physiotherapy
MUÑOZ GOMEZ, ELENA	191 - Physiotherapy

SUMMARY

In the subject General Intervention Procedures in Physiotherapy I the student is expected to acquire the knowledge related to specific procedures related to electrotherapy and related areas, as well as its practical application in specific clinical cases.

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

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
- Apply, direct and coordinate the physiotherapy intervention plan using the own therapeutic tools and considering the patient's individuality.
- Work in teams.
- Have the ability to organise and plan work.
- Acquire knowledge related to the information and communication technologies.
- Know about general physiotherapy procedures: Masotherapy, Electrotherapy, Magnetotherapy, Ergotherapy, Hydrotherapy, Balneotherapy, Climatotherapy, Thalassotherapy, Thermotherapy, Cryotherapy, Vibrotherapy, Phototherapy, Pressotherapy, and those derived from other physical agents.
- Know how to use general physiotherapy procedures: Masotherapy, Electrotherapy, Magnetotherapy, Ergotherapy, Hydrotherapy, Balneotherapy, Climatotherapy, Thalassotherapy, Thermotherapy, Cryotherapy, Vibrotherapy, Phototherapy, Pressotherapy, and those derived from other physical agents.



- Know, design and apply other therapies related to the physiotherapy field.
- Encourage the participation of the user in the recovering process.

LEARNING OUTCOMES

The student will be able to apply the general physiotherapeutic procedures such as electrotherapy, magnetic therapy, vibrotherapy, light therapy, acupressure, and those resulting from physical agents.

DESCRIPTION OF CONTENTS

1. DIDACTIC UNIT I. INTRODUCTION TO ELECTROTHERAPY

1. Electrotherapy: concept and historical evolution. General physicochemical effects. Classification of currents. Patient safety.

2. DIDACTIC UNIT II. GALVANIC CURRENT. IONTOPHORESIS

2. Galvanic current. Iontophoresis.
3. Introduction to other techniques based on galvanic current: percutaneous electrolysis and transcranial direct current stimulation.

3. DIDACTIC UNIT III. LOW AND MEDIUM-FREQUENCY CURRENTS

4. Electrostimulation I. Concept. Application parameters. Types of low- and medium-frequency currents with an excitomotor effect. Faradic and exponential currents.
5. Electrostimulation II. Electrical muscle stimulation (EMS). Kotz currents. Technique for the application of variable currents.
6. Electroanalgesia I. Analgesic exponential currents. Träbert currents.
7. Electroanalgesia II. Diadynamic currents: types, application techniques and uses.
8. Transcutaneous electrical nerve stimulation (TENS): concept, characteristics and types of stimulation.
9. Medium-frequency currents: Interferential currents: concept and application procedures.

4. DIDACTIC UNIT IV. HIGH-FREQUENCY CURRENTS AND MAGNETOTHERAPY

10. High-frequency currents I. Characteristics. Physiological effects. Dosages. Indications and contraindications.
11. High-frequency currents II. Short wave. Radar. Diathermy by radiofrequency. Physiological effects. Application techniques.
12. Magnetotherapy I. Physical principles, action mechanisms, biological effects. Magneto-osteogenesis: devices and parameters, norms of application, indications and contraindications
13. Magnetotherapy II.. Introducció a la estimulació magnética transcranial



5. DIDACTIC UNIT V. PHOTOTHERAPY

- 14. Phototherapy: concept, main laws. Classification of phototherapeutic radiations.
- 15. Infrared and Ultraviolet radiation. Physiological and therapeutic effects. Application techniques and modalities.
- 16. Laser radiation. Physical aspects, characteristic and types of laser. Laser therapy.

6. DIDACTIC UNIT VI. VIBROTHERAPY

- 17. Vibrotherapy I. Ultrasounds. Physical properties. Biological effects.
- 18. Vibrotherapy II. Application techniques of ultrasounds. Dosages. Indications and contraindications. Shock waves.

7. DIDACTIC UNIT VII. OTHER APPLICATIONS

- 19. Pressure therapy: techniques and applications.
- 20. Biofeedback: principles, applications and indications.

8. PRACTICE

- P1. Introducción a la electroterapia.
- P2. Galvanic current. Iontophoresis
- P3. Electrostimulation I. Faradic and exponential currents.
- P4. Electrostimulation II. Electrical Muscle Stimulation (EMS). P5. Electroanalgesia I. Träbert and diadynamic currents.
- P6. Electroanalgesia II. Transcutaneous electrical nerve stimulation (TENS).
- P7. Medium-frequency currents. Interferential currents.
- P8. High-frequency currents.
- P9. Ultrasounds
- P10. Laser therapy + magnetotherapy.
- P11. Biofeedback.
- P12. Clinical cases resolution

**WORKLOAD**

ACTIVITY	Hours	% To be attended
Laboratory practices	40,00	100
Theory classes	20,00	100
Development of individual work	25,00	0
Study and independent work	14,00	0
Preparation of evaluation activities	26,00	0
Preparing lectures	25,00	0
TOTAL	150,00	

TEACHING METHODOLOGY

Theoretical lessons will be delivered in the form of lectures in the classroom following the contents of the syllabus, and the development of certain activities proposed by the teacher.

Practical lessons will take place in the laboratory. Attendance to 80% of the practical lessons will be mandatory. Students will practise skills and will apply the theoretical knowledge acquired by using adequate apparatuses of different types.

They will also practise the general intervention skills and procedures covered in this subject through simulation practices, case studies and group work.

The teaching programme can be modified during the course if the lecturer deems it appropriate for the sake of the quality of education and of the acquisition of knowledge by students.

EVALUATION

The practical exam will consist on the resolution of 3 clinical cases using the available equipment, and the students will be asked to demonstrate the skills, attitudes and knowledge acquired in practical sessions. It will be held in the laboratory. Participation and attitude towards practical sessions will also be taken into consideration.

The theory exam will consist of 40 multiple-choice questions.

Each exam (practice and theory) will be evaluated from 1 to 10 and a minimum mark of 5 will be required in each exam for it to count towards the final mark. Pass marks obtained in one exam can be carried forward for the next examination session. Marks will be not kept between academical courses. Student's participation in the activities proposed by the teacher will be positively valued.

**6. 1. Theory exam**

Multiple-choice questions	P Test with 40 multiple-choice questions with only one correct answer.	40%
	P Results will be based on this formula: Mark = [correct answers -(errors/number of choices - 1)]x(highest mark possible/number of questions).	
		40% of final mark

6.2. Practical exam

Practical test	P Resolution of 3 cases proposed by the teacher	60%
	P Each of the cases will be scored from 0 to 10, and the mean is then calculated. The student's attitude and skills when using the equipment will be evaluated	
		60% of final mark

REFERENCES**Basic**

- Albornoz Cabello, M.; Maya Martín; J. y Toledo Marhuenda, J.V. (2016). Electroterapia Práctica: Avances en Investigación Clínica. 1ª ed. Barcelona: Elsevier.
- Aramburu C, Muñoz E, Igual C (2003). Electroterapia, termoterapia e hidroterapia.Ed.Síntesis. 1ª edición. Madrid: Síntesis.



- Behrens, B.J.y Beinert, H. (2014). Physical agents: Theory and practice. 3a ed Philadelphia: F.A. Davis Company.
- Bélanger, A.Y. (2015). Therapeutic electrophysical agents: Evidence behind practice. 3a ed Philadelphia: Wolters Kluwer Health.
- Cameron, M.D. (2009) Agentes físicos en rehabilitación. 3a ed. Barcelona: Elsevier.
- Khan J. Principles and Practice of Electrotherapy(2000).Ed. Churchill Livingstone 4º Edición.
- Martín Cordero, J.E. (2008). Agentes físicos terapéuticos. 1a ed. La Habana: Ciencias Médicas.
- Plaja, J. Analgesia por medios físicos (2003). 1a ed. Madrid: McGraw-Hill Interamericana.
- Rodríguez Martín JM (2004). Electroterapia en Fisioterapia. Ed.Panamericana 2ª edición.
- Watson T (2009). Electroterapia. Práctica basada en la evidencia. 12ª edición.

Additional

- Albornoz-Cabello M. et al. (2019). Effects of Adding Interferential Therapy Electro- Massage to Usual Care after Surgery in Subacromial Pain Syndrome: A Randomized Clinical Trial. J Clin Med. 8 (2): 175.
- Albornoz-Cabello M. et al. (2017). Effect of interferential current therapy on pain perception and disability level in subjects with chronic low back pain: a randomized controlled trial. Clin Rehabil. 31(2): 242-249.
- Boschetti, G.; Margareto, E. y Arcelli, E. (2004) ¿Qué es la electroestimulación? Teoría, práctica y metodología del entrenamiento. 1a ed. Barcelona: Paidotribo.
- Can, F. et al. (2003). Rehabilitation of patellofemoral pain syndrome: TENS versus diadynamic current therapy for pain relief. Pain Clin. 15 (1): 61-68.
- Heipartz W.; Schewe, H. y Hüter-Becker A. (2005). Terapia física. Termoterapia, mecanoterapia, electroterapia, ultrasonidos, fototerapia, inhalación. 1a ed. Barcelona: Paidotribo.
- Demida, A., Zarzycki, M. (2019). Touch and Pain Sensations in Diadynamic Current (DD) and Transcutaneous Electrical Nerve Stimulation (TENS): A Randomized Study. Biomed Res Int. 2019:9073073. doi: 10.1155/2019/9073073. eCollection 2019.
- Kim, E.D. (2019). Efficacy and Safety of a Stimulator Using Low-Intensity Pulsed Ultrasound Combined with Transcutaneous Electrical Nerve Stimulation in Patients with Painful Knee Osteoarthritis. Pain Res Manag. 2019:7964897.
- Maya, J. (2010). Estimulación Eléctrica Transcutánea y Neuromuscular. 1a ed. Barcelona: Elsevier.
- Nalty T. (2000) Electrotherapy clinical procedures manual. 1a ed. New York: Mc Graw Hill.
- Pariser, D.M. y Ballard, A. (2014). Iontophoresis for palmar and plantar hyperhidrosis. Dermatol Clin. 32(4):491-4.
- Pavez Ulloa, F.J. (2009). Agentes físicos superficiales y dolor. Análisis de su eficacia a la luz de la evidencia científica. Rev. Soc. Esp. Dolor 2009, 16 (3): 182-189. Peng, W.W. et al (2019). Neurobiological mechanisms of TENS-induced analgesia. Neuroimage.195: 396-408.



- Prentice, W.E. (2017). Therapeutic Modalities in Rehabilitation. 5a ed. New York: Mc Graw-Hill.
- Purcell E.M. (2005). Electricidad y magnetismo. Berkeley Physics Course, Vol. 2. 2ª ed. Barcelona: Reverté.
- Robertson, V. (2006). Electrotherapy explained. Principles and practice. 4a ed. New York: Butherworth.
- Vrouva, S. et al. (2019). Comparative Study of Pain Relief in Two Non-Pharmacological Treatments in Patients with Partial Rotator Cuff Tears: A Randomized Trial. Anesth Pain Med. 9(2):e88327