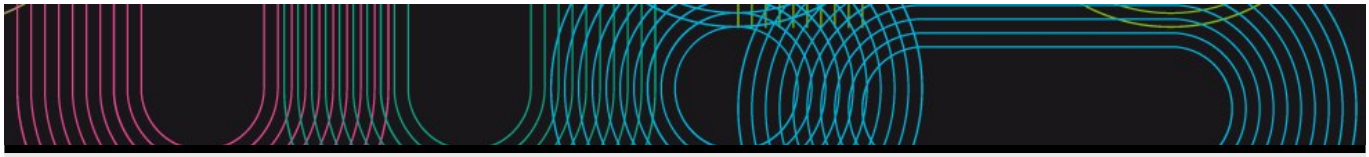

IDENTIFYING DATA				
(*)Exercicio terapéutico na prevención e tratamento de enfermidades cardiovasculares				
Subject	(*)Exercicio terapéutico na prevención e tratamento de enfermidades cardiovasculares			
Code	P05M191V01104			
Study programme	Máster Universitario en Ejercicio terapéutico en fisioterapia			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	3	Mandatory	1st	1st
Teaching language	#EnglishFriendly Spanish Galician			
Department				
Coordinator	González Represas, Alicia			
Lecturers	González Represas, Alicia			
E-mail	alicia@uvigo.es			
Web				
General description	The subject Therapeutic exercise in the prevention and treatment of cardiovascular diseases is structured in two fundamental parts. In a first part, the cardiovascular responses in exercise as well as in cardiovascular diseases as well as in the evaluation of the cardiovascular system are delved into, to then address in a second part the prescription of therapeutic and functional exercise in the prevention and treatment of diseases cardiovascular.			

Training and Learning Results	
Code	
A2	That the students know how to apply the knowledge acquired and their ability to solve problems in new or little-known environments within broader (or multidisciplinary) contexts related to their area of study.
A4	That the students know how to communicate their conclusions and the knowledge and ultimate reasons that support them to specialized and non-specialized audiences in a clear and unambiguous way.
B1	Know how to work in teams that are structured in a uni or multidisciplinary and interdisciplinary way as a professional specialized in Therapeutic Exercise in Physiotherapy.
B2	Incorporate the ethical and legal principles of the physiotherapist profession into professional practice, as well as integrate social and community aspects in decision-making in interventions focused on Therapeutic Exercise in Physiotherapy.
B3	Transmit information in a clear way to the users of the health system, as well as with other professionals.
C4	Analyze, program and apply movement as a therapeutic measure, promoting the participation of the patient/user in the process.
C6	Ability to solve problems in new and imprecisely defined environments to identify the most appropriate treatment based on therapeutic exercise in the different processes of alteration, prevention and health promotion, as well as integration with other professionals for the benefit of health of the patient/user.
C9	Understand the complexity of the effects of therapeutic exercise at the cardiovascular, respiratory, endocrine, neurological and skeletal muscle levels in different population groups.
C10	Design and apply therapeutic exercise programs in the prevention and treatment of pathologies or musculoskeletal, cardiovascular, respiratory, endocrine, neurodegenerative diseases, in urogynecological and obstetric dysfunctions, and oncological processes.
C12	Apply a protocol for measuring the functional capacity of patients based on their characteristics, as well as the pathology in the different areas of specialization.
D1	Ability to understand the meaning and application of the gender perspective in the different fields of knowledge and in professional practice with the aim of achieving a fairer and more equal society.

D5	Recognition of diversity and multiculturalism.
D8	Maintain an attitude of learning and improvement.

Expected results from this subject

Expected results from this subject	Training and Learning Results
LO1: Know the cardiovascular effects of exercise.	A2 B3 C9 D1 D5 D8
LO2: Carry out and/or interpret the results of the cardiovascular assessment.	A2 A4 B1 B2 B3 C6 C9 C12 D1 D5 D8
LO3: Know and apply risk stratification systems.	A4 B1 B3 C12 D8
LO4: Design and apply therapeutic exercise programs in prevention and treatment of pathologies and cardiovascular diseases.	A2 A4 B1 B2 B3 C4 C6 C9 C10 D1 D5 D8
LO5: Know and apply safety, control and cardiovascular monitoring systems.	A2 A4 B1 B2 B3 C4 C6 C10 D8

Contents

Topic	
Theoretical content: 1. Functional anatomy and cardiovascular hemodynamics.	1.1. Structure and function of the cardiovascular system. 1.2. cardiovascular hemodynamics. 1.3. heart disease 1.4. Cardiovascular response to exercise.
3. Cardiovascular evaluation.	3.1. Cardiovascular clinical examination. 3.2. Cardiovascular tests. 3.3. Risk factor.
4. Prescription of cardiovascular therapeutic exercise.	4.1. Therapeutic exercise prescription. 4.2. Safety, control and cardiovascular monitoring during exercise. 4.3. emergency action.
5. Design of therapeutic and functional exercise programs in the prevention and treatment of pathologies or cardiovascular diseases.	5.1. Design of programs for the prevention and promotion of cardiovascular health. 5.2. Design of therapeutic and functional exercise programs in the treatment of pathologies or cardiovascular diseases.

Practical content: 1. Cardiovascular evaluation	1.1. Risk stratification systems. 1.2. Cardiovascular evaluation.
2. Prescription of therapeutic exercise in the prevention and treatment of cardiovascular diseases.	2.1. Design of therapeutic and functional exercise programs in the prevention and treatment of pathologies or cardiovascular diseases.

Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	1	0	1
Lecturing	6	12	18
Problem solving	2	4	6
Case studies	2	4	6
Previous studies	0	4	4
Collaborative Learning	4	0	4
Laboratory practical	6	10	16
Mentored work	0	17	17
Systematic observation	2	0	2
Presentation	1	0	1

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies

	Description
Introductory activities	Activities aimed at making contact and gathering information about students, as well as presenting the subject.
Lecturing	Presentation by the teacher of the contents on the subject object of study, theoretical bases and / or guidelines of a work, exercise that the student has to develop.
Problem solving	Activity in which problems and / or exercises related to the subject are formulated. The student must develop the appropriate or correct solutions through the exercise of routines, the application of formulas or algorithms, the application of procedures for the transformation of available information and the interpretation of results. It is usually used as a complement to the master class.
Case studies	Analysis of a real fact, problem or event in order to know it, interpret it, solve it, generate hypotheses, test data, reflect, complete knowledge, diagnose it and train in alternative solution procedures.
Previous studies	Search, reading and work of documentation, previous to the classes or practices of laboratory, that realizes the alumnado of autonomous form.
Collaborative Learning	It includes a group of teaching procedures that start from the organization of the class in small mixed and heterogeneous groups where the students work in a coordinated way with each other to develop academic tasks and delve into their own learning.
Laboratory practical	Activities of application of the knowledge to concrete situations and of acquisition of basic and procedural abilities related to the matter object of study. They are developed in special spaces with specialized equipment (Laboratories, computer rooms, etc ...)
Mentored work	The student, individually or in groups, prepares a document on the subject or prepares seminars, research, reports, essays, summaries of readings, lectures, etc.

Personalized assistance

Methodologies	Description
Lecturing	In addition to the attention to students in the established tutorials and depending on the topic to be dealt with, students will also be attended through email and the remote campus platform (online) at the times available and agreed by both parties. Personalized attention will aim to answer any questions that may arise regarding the subject and/or advise on academic and professional matters in those cases that so request.
Case studies	In addition to the attention to students in the established tutorials and depending on the topic to be dealt with, students will also be attended through email and the remote campus platform (online) at the times available and agreed by both parties. Personalized attention will aim to answer any questions that may arise regarding the subject and/or advise on academic and professional matters in those cases that so request.
Problem solving	In addition to the attention to students in the established tutorials and depending on the topic to be dealt with, students will also be attended through email and the remote campus platform (online) at the times available and agreed by both parties. Personalized attention will aim to answer any questions that may arise regarding the subject and/or advise on academic and professional matters in those cases that so request.

Previous studies	In addition to the attention to students in the established tutorials and depending on the topic to be dealt with, students will also be attended through email and the remote campus platform (online) at the times available and agreed by both parties. Personalized attention will aim to answer any questions that may arise regarding the subject and/or advise on academic and professional matters in those cases that so request.
Collaborative Learning	In addition to the attention to students in the established tutorials and depending on the topic to be dealt with, students will also be attended through email and the remote campus platform (online) at the times available and agreed by both parties. Personalized attention will aim to answer any questions that may arise regarding the subject and/or advise on academic and professional matters in those cases that so request.
Laboratory practical	In addition to the attention to students in the established tutorials and depending on the topic to be dealt with, students will also be attended through email and the remote campus platform (online) at the times available and agreed by both parties. Personalized attention will aim to answer any questions that may arise regarding the subject and/or advise on academic and professional matters in those cases that so request.
Mentored work	In addition to the attention to students in the established tutorials and depending on the topic to be dealt with, students will also be attended through email and the remote campus platform (online) at the times available and agreed by both parties. Personalized attention will aim to answer any questions that may arise regarding the subject and/or advise on academic and professional matters in those cases that so request.

Assessment

	Description	Qualification	Training and Learning Results			
Case studies	Analysis of a fact, problem or real event in order to know it, interpret it, solve it, generate hypotheses, compare data, reflect, complete knowledge, diagnose it and train in alternative solution procedures: RA1, RA2, RA3, RA4.	10	A2 A4	B1 B2	C4 C6 C9 C10 C12	D1 D5 D8
Mentored work	Students in small groups prepare a document on a relevant and interesting topic related to the subject. Learning outcomes: LO1, LO2, LO3, LO4, LO5.	40	A2 A4	B1 B2 B3	C4 C6 C9 C10 C12	D1 D5 D8
Systematic observation	A systematic record of knowledge, skills, attitudes and values that students have in different activities/contexts will be made. The observation criteria will be defined and explained in the presentation of the subject. All this information will also be published on the virtual platform of the subject. Students will receive information about their progress throughout the process. Learning outcomes: LO1, LO2, LO3, LO4, LO5.	30	A2 A4	B1 B2 B3	C4 C6 C10 C12	D1 D5 D8
Presentation	Presentation and defense of the supervised work will be valued. Learning outcomes: LO1, LO2, LO3, LO4, LO5.	20	A2 A4	B1 B2 B3	C4 C6 C9 C10 C12	D1 D5 D8

Other comments on the Evaluation

Students may request the waiver of continuous assessment by informing the coordinator of the subject within the established period.

If so, the evaluation will be 60% work, 40% exam of objective questions.

To pass the subject, students must have independently passed all the evaluation sections and have attended 80% of the practical classes. The non-attendance to the practices supposes the loss to the continuous evaluation.

Students who have one of the approved parts will keep the passed part for the next call within the same academic year.

2nd chance

The students can examine 100% of the subject having two tests: 60% work, 40% exam of objective questions.

To pass the subject, students must independently pass the different parts of the evaluation.

In any of the calls, if the students obtain a numerical grade greater than 5, but do not meet the requirements established to pass the subject, they will have a grade of 4.5 (failed). In case of lower grades, the grade obtained will be given.

Considerations:

Students taking this course are required to behave in a responsible and honest manner. Any form of fraud (i.e. copying and/or plagiarism) tending to falsify the level of knowledge or skill achieved by a student in any type of test, report or work designed for that purpose is considered inadmissible. Fraudulent conduct may result in the subject being suspended for an entire course. It will keep an internal record of these actions so that, in case of recidivism, the opening of a disciplinary file can be requested at the rectory.

Ethical commitment:

The student must exhibit appropriate ethical behavior. In case of unethical conduct (copying of seminars, plagiarism of works, use of unauthorized electronic equipment, etc.) that prevent the correct development of the teaching activity, it will be considered that the student does not meet the necessary requirements to pass the subject, and in this case your grade will be suspended in the current academic year (0.0). The use of any electronic device during the evaluation tests will not be allowed unless expressly authorized. The fact of introducing an unauthorized electronic device in the exam room will be considered a reason for not passing the subject in the current academic year and the overall grade (0.0) will be suspended.

Image and/or audio recording: Unless expressly authorized by the professor, total or partial recording, both of sound and image, of the lectures, seminars or practices of the subject will not be allowed, in accordance with the provisions of the the Law on Intellectual Property, the Organic Law on the Protection of Personal Data and the Organic Law on Civil Protection of the Right to Honour, Personal and Family Privacy and Own Image. Depending on the subsequent use, recording without consent may give rise to civil, disciplinary, administrative and, where appropriate, criminal responsibilities.

Sources of information

Basic Bibliography

Gregory S. Thomas, L. Samuel Wann, Myrvin H. Ellestad, **Libros en Google Play Ellestad's Stress Testing: Principles and Practice**, 2, Oxford University Press, 2018

James S. Skinner, **Exercise Testing and Exercise Prescription for Special Cases: Theoretical Basis and Clinical Application**, 3, Lippincott Williams & Wilkins, 2005

Robert B. Schoene, H. Thomas Robertson, **Making Sense of Exercise Testing**, 2, CRC Press, 2018

AACVPR, **Guidelines for Cardiac Rehabilitation Programs**, 6, Human Kinetics, 2020

Peter Libby, Robert O. Bonow, Douglas L. Mann, Gordon F. Tomaselli, Douglas P. Zipes, **Braunwald's Heart Disease. Single Volume: A Textbook of Cardiovascular Medicine**, 12, Elselvier, 2021

Malcolm S. Thaler, **El Libro del ECG**, 8, Wolters Kluwer, 2017

Complementary Bibliography

Miquel Fiol-Sala, Yochai Birnbaum, Kjell Nikus, **Electrocardiography in Ischemic Heart Disease: Clinical and Imaging Correlations and Prognostic Implications**, 2, Wiley-Blackwell, 2019

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S. Kim Suvarna, **Cardiac Pathology: A Guide to Current Practice**, 1, Springer, 2019

Sociedad Española de Cardiologia, **https://secardiologia.es/**,

European Society of Cardiology, **https://www.escardio.org/**,

Barker K, Eickmeyer S., **Therapeutic Exercise.**, Med Clin North Am., 2016

Villella M, Villella A., **Exercise and cardiovascular diseases.**, Kidney Blood Press Res., 2014

Fiuza-Luces C, Santos-Lozano A, et al., **Exercise benefits in cardiovascular disease: beyond attenuation of traditional risk factors.**, Nat Rev Cardiol., 2018

Hansen D, Dendale P, et al., **The European Association of Preventive Cardiology Exercise Prescription in Everyday Practice and Rehabilitative Training (EXPERT) tool**, Eur J Prev Cardiol., 2017

Williams MA, Haskell WL, **Resistance exercise in individuals with and without cardiovascular disease**, Circulation., 2007

Thomas E, Bellafiore M, Gentile A, Paoli A, Palma A, Bianco A., **Cardiovascular Responses to Muscle Stretching: A Systematic Review and Meta-analysis.**, Int J Sports Med., 2021

Recommendations

Subjects that continue the syllabus

(*)Prácticas externas/P05M191V01207

(*)Traballo fin de máster/P05M191V01208

Subjects that are recommended to be taken simultaneously

(*)Metodoloxía da investigación/P05M191V01103

Subjects that it is recommended to have taken before

(*)Bases anatomofuncionais no exercicio terapéutico/P05M191V01101
(*)Fundamentos do exercicio terapéutico e deseño de programas/P05M191V01102