



## Teaching Guide

Identifying Data				2022/23	
Subject (*)	Functional Rehabilitation in Foot and Leg Disorders [to extinguish]	Code	750G02037		
Study programme	Grao en Podoloxía				
Descriptors					
Cycle	Period	Year	Type	Credits	
Graduate	2nd four-month period	Fourth	Optional	6	
Language	SpanishGalician				
Teaching method	Face-to-face				
Prerequisites					
Department	Fisioterapia, Medicina e Ciencias Biomédicas				
Coordinador	Souto Gestal, Antonio	E-mail	antonio.souto@udc.es		
Lecturers	Souto Gestal, Antonio	E-mail	antonio.souto@udc.es		
Web	<a href="https://campusvirtual.udc.gal/">https://campusvirtual.udc.gal/</a>				
General description	This subject has as aim give to know to the students of podiatry a protocol of character interdisciplinar for the assessment of the complex articulate of the ankle and foot, as well as his global implications in the rest of corporal segments, using for this the physical exploration and clinical reasoning been still in the process of physiotherapy.				

## Study programme competences / results

Code	Study programme competences / results
A4	Coñecer o concepto anatómico e funcional da enfermidade e a clasificación das enfermidades. Describir a patoloxía dos diferentes órganos, aparatos e sistemas. Semioloxía médica. Dermatoloxía. Reumatoloxía. Traumatoloxía. Neuroloxía. Endocrinoloxía. Procesos vasculares patolóxicos. Patoloxías sistémicas con repercusión no pé.
A11	Coñecer os fundamentos da biomecánica e a cinesiología. Teorías de apoio. A marcha humana. Alteracións estruturais do pé. Alteracións posturais do aparato locomotor con repercusión no pé e viceversa. Instrumentos de análise biomecánico.
A23	Coñecer e aplicar os métodos físicos, eléctricos e manuais na terapéutica das distintas patoloxías do pé. Vendaxes funcionais. Terapia da dor e inflamación no pé.
A39	Desenvolver as técnicas de exploración física.
A45	Desenvolver a capacidade de establecer protocolos, executalos e avalialos.
A48	Desenvolver as habilidades sociais para a comunicación e o trato co paciente e outros profesionais.
A49	Establecer intercambio de información cos distintos profesionais e autoridades sanitarias implicadas na prevención, promoción e protección da saúde.
A50	Prescribir, administrar e aplicar tratamentos farmacolóxicos, ortopodolóxicos, físicos e quirúrxicos.
A54	Manter actualizados os coñecementos, habilidades e actitudes.
A55	Garantir a calidade asistencial na práctica da podoloxía.
A60	Integrar os coñecementos, habilidades, destrezas, valores e actitudes adquiridos durante o itinerario curricular do alumno.
A62	Adquirir habilidades de traballo en equipo como unidade na que se estruturan de forma uni ou multidisciplinar e interdisciplinar os profesionais e demais persoal relacionados coa prevención, avaliación diagnóstica e tratamento podolóxico.
B1	Aprender a aprender.
B2	Resolver problemas de forma efectiva.
B3	Aplicar un pensamento crítico, lóxico e creativo.
B4	Traballar de forma autónoma con iniciativa.
B5	Traballar de forma colaborativa.
B7	Comunicarse de maneira efectiva nun entorno de traballo.
B12	Capacidade de xestión da información.
B13	Traballo en equipo de carácter interdisciplinar.
B19	Capacidade de aplicar os coñecementos na práctica.
C1	Expresarse correctamente, tanto de forma oral coma escrita, nas linguas oficiais da comunidade autónoma.
C6	Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.



Learning outcomes			
Learning outcomes	Study programme competences / results		
Be able to apply the techniques of clinical examination of the musculoskeletal system in supine position, static bipedestation and dynamic for the diagnostic of the foot dysfunctions	A11		
Be able to apply the protocol of analytical examination of foot and ankle complex, as well as to identify its possible relation with the superjacent levels (knee, hip, pelvic belt and raquis), integrating these appearances in the treatment of the more frequent foot dysfunctions.	A4 A11 A39 A45 A49 A50 A54 A55 A60 A62	B1 B3 B4 B5 B7 B19	C1 C6
Be able to identify the physiotherapy techniques (curative or palliative) employees in the treatment of the foot dysfunctions.	A11 A39 A48 A49 A50 A62	B1 B2 B3 B5 B7 B13	C6
To know the principles and indications of the physical agents used in the treatment of the foot dysfunctions.	A23 A45 A50 A55 A60 A62	B2 B12 B19	C6
Be able to apply some physical agents in the treatment of the foot dysfunctions.	A23 A45 A50 A60	B2 B3 B19	C6
Know the therapeutic foundations of the handle of the patient with pain	A11 A23 A45 A50 A60	B3 B12	C6

Contents	
Topic	Sub-topic
Bloque Temático I. Valoración funcional do pé e membro inferior.	Tema 0. Recordo anatómo-biomecánico do pé e as súas relacións cinéticas e cinemáticas co membro inferior.  Tema 1. Exploración funcional e neuro-ortopédica do membro inferior. Xeneralidades do proceso de valoración. Concepto de disfunción e adaptación biomécanica. O sistema nervioso como estrutura integradora. Heterometrías, cadeas disfuncionais ascendentes e descendentes.



<p>Bloque Temático II. Reeducación funcional e Fisioterapia nos procesos inflamatorios e dexenerativos do pé. Modelo de tensión de tecidos e rexeneración de partes brandas.</p>	<p>Tema 2. O sistema fascial como fonte de dor e disfunción. Mecanotransdución celular.</p> <p>Tema 3. Sistema nervioso e neuromecánica. O sistema nervioso como fonte de dor e disfunción. Avaliación e principios de tratamento neurodinámicos.</p> <p>Tema 4. Modelo de rexeneración de tecidos brandos baseado no estímulo mecánico controlado. Resposta inflamatoria, fases e implicacións clínicas. Escordadura de nocello, Implicacións locais e ascendentes. Inestabilidade crónica de nocello. Propiocepción e captos posturais.</p> <p>Tema 5. Modelo de estrés de tecidos. Teoría rotacional e o sistema de windlass. Consideracións cinéticas e as súas implicacións clínicas. Relacións ascendentes e descendentes.</p>
<p>Bloque Temático III. Avaliación e intervención funcional nas principais afeccións podolóxicas. Dor, propiocepción e control motor.</p>	<p>Tema 6. Manifestacións de estrés tisular no sistema suro-aquileo-plantar. Tendinopatía aquilea. Implicacións locais e ascendentes.</p> <p>Tema 7. Manifestacións de estrés tisular no sistema tibial: síndrome de estrés tibial medial, túnel tarsal e disfunción do tibial posterior. Implicacións locais e ascendentes.</p> <p>Tema 8. Manifestacións de estrés tisular dos tecidos plantares. Implicacións locais e ascendentes.</p> <p>Tema 9. Manifestacións de estrés tisular no antepé: metatarsalxias, síndrome de predislocación, fibrose perineural e disfuncións do primeiro radio. Implicacións locais e ascendentes.</p>
<p>Bloque Práctico I. Valoración funcional do pé. Exploración neuro-ortopédica do pé e membro inferior.</p>	<p>Práctica 1. Exploración da postura e dos captadores posturais.</p> <p>Práctica 2. Exploración neurodinámica do membro inferior: test de provocación neural e avaliación dos potenciais puntos de conflito mecánico do sistema nervioso periférico no membro inferior.</p> <p>Práctica 3. Avaliación estática e dinámica da pelvis. Test ortopédicos e funcionais.</p> <p>Práctica 4. Exploración da estática e dinámica da articulación coxofemoral. Alteracións torsionais e capacidade rotacional. Exploración do xeonllo.</p> <p>Práctica 5. Exploración da mobilidade articular analítica do complexo nocello-pé.</p> <p>Práctica 6. Valoración dinámica: marcha e test funcionais de control motor.</p>
<p>Bloque Práctico II. Reeducación funcional e Fisioterapia nas principais afeccións podolóxicas.</p>	<p>Práctica 7. Técnicas articulares do complexo nocello-pé.</p> <p>Práctica 8. Estiramientos, técnicas miofasciais manuais e instrumentais.</p> <p>Práctica 9. Estratexias para a mellora da propiocepción e control motor do membro inferior.</p> <p>Práctica 10. Vendaxe funcional e propioceptiva.</p>



Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Mixed objective/subjective test	A4 A11 A23 A39 A45 A48 A49 A50 A54 A55 A60 A62 B1 B2 B3 B4 B5 B7 B12 B13 B19 C1 C6	2	100	102
Practical test:	A4 A11 A23 A39 A45 A48 A49 A50 A54 A55 A60 A62 B1 B2 B3 B4 B5 B7 B12 B13 B19 C1 C6	1	44	45
Personalized attention		3	0	3

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

Methodologies	
Methodologies	Description
Mixed objective/subjective test	Regarding questions of essay, collects open questions of development. Besides, regarding objective questions, can combine questions of multiple answer, of ordenación, of brief answer, of discrimination, to complete and/or of association.
Practical test:	Consiste nun exame práctico en laboratorio no que se solicita a demostración e posta en práctica de varios procedementos (proba de exploración e diagnóstico ou técnica de tratamento), coa finalidade de garantir a adecuada adquisición das competencias asociadas á materia.

Personalized attention	
Methodologies	Description
Mixed objective/subjective test	In the laboratory class, the professor supervises of individual form the correct execution of the test ant techniques by students.
Practical test:	In the discussion directed and in the study of clinical cases, the professor is the attendant to moderate it debate and to propose them questions that promote it, as well as that each of the students take part and benefit of the ideas that all aportan.

Assessment			
Methodologies	Competencies / Results	Description	Qualification
Mixed objective/subjective test	A4 A11 A23 A39 A45 A48 A49 A50 A54 A55 A60 A62 B1 B2 B3 B4 B5 B7 B12 B13 B19 C1 C6	The mixed proof will consist in a combination of questions type test of only answer and one or several short questions about the assessment and/or resolution of a clinical case posed during the course.	50
Practical test:	A4 A11 A23 A39 A45 A48 A49 A50 A54 A55 A60 A62 B1 B2 B3 B4 B5 B7 B12 B13 B19 C1 C6	Consiste nun exame práctico en laboratorio no que se solicita a demostración e posta en práctica de varios procedementos (proba de exploración e diagnóstico ou técnica de tratamento), coa finalidade de garantir a adecuada adquisición das competencias asociadas á materia.	50

Assessment comments



In order to pass the subject, it will be compulsory:

1. Attendance at a minimum of 70% of the practical sessions. For these purposes, absences duly motivated by health issues will not be taken into account, especially in the case of suspected viriasis compatible with SARS-CoV-2 infection.
2. Only 20% of absences from practical sessions without providing the corresponding justification will be considered.
3. Obtain a mark of more than 5 points out of 10 in the mixed test. In general, this test will have a maximum time of 1 hour.

Given the practical and clinically oriented nature of the subject, there is no possibility of academic dispensation to exempt part-time students from attending practical classes.

No different assessment methodologies are contemplated for the second opportunity, nor for those students with partial enrolment or in second and subsequent enrolments, regardless of the fact that the grade obtained in the continuous assessment of the practical and interactive block as well as the case study will be retained.

Students who do not sit the combined examination will be given a grade of Not Presented, regardless of whether the grade obtained in the continuous assessment of the practical and interactive block as well as the case study is retained.

Students who achieve a grade equal to or higher than 9.0/10 may opt for the mention of Honours, in accordance with the quotas established in article 21 of the UDC's "Rules for the assessment, review and complaint of grades in undergraduate and master's degree courses". Honours will be awarded in all cases to the highest overall grade/s.

**PLAGIARISM:** Plagiarism and the use of non-original material, including material obtained from the internet, without express indication of its origin and, if applicable, the permission of its author, will be graded with a fail (0.0) in the activity. This is without prejudice to any disciplinary responsibilities that may arise following the corresponding procedure.

Sources of information



<p>Basic</p>	<ul style="list-style-type: none"><li>- Butler, David S. (2009). Movilización del sistema nervioso. Barcelona: Paidotribo</li><li>- Kirby, K. A. (2012). Biomecánica del pie y la extremidad inferior. Payson: Precisión Intracast</li><li>- Rueda-Sánchez, M. (2004). Podología: los desequilibrios del pie.. Barcelona: Paidotribo</li><li>- Zamorano Zárata, E. (2013). Movilización neuromeníngea : tratamiento de los trastornos mecanosensitivos del sistema nervioso. Madrid : Panamericana</li><li>- Neumann, Donald A. (2017). Kinesiology of the musculoskeletal system : foundations for rehabilitation. St. Louis : Elsevier</li><li>- Cleland, Joshua (2006). Netter, Exploración clínica en ortopedia : un enfoque para fisioterapeutas basado en la evidencia. Barcelona : Masson,</li><li>- Jon Parsons, Nicholas Marcer (2007). Osteopatía: modelos de diagnóstico, tratamiento y práctica.. Madrid : Elsevier,</li><li>- François Ricard ; Pedro Vicente Munuera Martínez, Ángel Oliva Pascual Vaca y Cleofás Rodríguez Blanc (2012). Medicina osteopática: miembro inferior. Alcalá de Henares: Escuela de Osteopatía de Madrid,</li><li>- Mulligan, Brian R. (2010). Manual therapy : NAGS, SNAGS, MWMS etc.. Wellington: Plane View</li><li>- Myers, Thomas W. (2010). Vías anatómicas : meridianos miofasciales para terapeutas manuales y del movimiento. Barcelona : Elsevier Masson</li><li>- Arnold G. Nelson, Jouko Kokkonen (2014). Anatomía de los estiramientos. Madrid: Tutor</li><li>- Kisner, Carolyn (2010). Ejercicio terapéutico: fundamentos y técnicas. Buenos Aires: Médica Panamericana,</li><li>- Bové, T (2011). El vendaje funcional. Barcelona: Elsevier</li></ul> <p>Astrom M., y Arvidson T. Alignment And Joint Motion In The Normal Foot. Journal Of Orthopaedic And Sports Physical Therapy 1995; 22 (5): 216-222 Bové, T. El vendaje funcional. 5ª ed. Barcelona: Elsevier; 2011. Castillo-Montes, F. J. Título Bases y aplicaciones del vendaje neuromuscular. Jaén: Formación Alcalá; 2012. Dueñas-Moscardó, L., Balasch-Bernat, M., y Espi-López, G. V. Técnicas y nuevas aplicaciones del vendaje neuromuscular. Sevilla: Lettera; 2010. Kendall, F.; Kendal, E., y Geise, P. Kendall's músculos, pruebas, funciones y dolor postural. 4º Ed. Ed. Marbán. Madrid: 2000. Kirby, K. A. Biomecánica del pie y la extremidad inferior. Payson: Precisión Intracast; 1997 (2012 imp.). McPoil, T. G., y Hunt, G. C. Evaluation and management of foot and ankle disorders?present problems and future-directions. Journal of Orthopaedic &amp; Sports Physical Therapy 1995; 21:381-8. Rueda-Sánchez, M. Podología: los desequilibrios del pie. Barcelona: Paidotribo; 2004 Martínez D. Cuidados del pie diabético. Madrid: Arán; 2001. Root M. L., Orien W. P., Weed J. H., Hugues, R. J. Exploración Biomecánica Del Pie. Vol. I. Madrid: Ortocen; 1991. Tixa S. Atlas de anatomía palpatoria de la extremidad inferior. Barcelona: Masson; 1999</p>
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<b>Complementary</b>	<p>Bonnel, .F, Toullec, E., Mabit, C., Tourné, Y. y Sofcot. Chronic ankle instability: biomechanics and pathomechanics of ligaments injury and associated lesions. <i>Orthop Traumatol Surg Res.</i> 2010; 96(4):424-32. Cleland, J. A., Mintken, P. E., McDevitt, A., Bieniek, M. L., Carpenter, K. J., Kulp, K., Whitman, J. M. Manual physical therapy and exercise versus supervised home exercise in the management of patients with inversion ankle sprain: a multicenter randomized clinical trial. <i>J Orthop Sports Phys Ther.</i>, 2013; 43(7):443-55. Golanó, P., Vega, J., de Leeuw, P. A., Malagelada, F., Manzanares, M. C., Götzens, V., van Dijk, C. N. Anatomy of the ankle ligaments: a pictorial essay. <i>Knee Surg Sports Traumatol Arthrosc.</i> 2010; 18(5):557-69. Kirby K. A. Subtalar joint axis location and rotational equilibrium theory of foot function. <i>J Am Podiatr Med Assoc.</i> 2001; 91(9): 465-87. Lemont, H., Ammirati, K. M., y Usen N. Plantar fasciitis: a degenerative process (fasciosis) without inflammation. <i>J Am Podiatr Med Assoc.</i> 2003; 93(3): 234-7. Levy-Benasuly, A. E., Cortés, J. M. <i>Ortopodología y aparato locomotor ortopedia de pie y tobillo.</i> Barcelona: Masson; 2003.</p> <p>Martos-Mora, C., Gentil-Fernández, J., Conejero-Casares, J. A., y Ramos-Moreno, R. Metatarso aducto congénito, clasificación clínica y actitud terapéutica. <i>Rehabilitación</i> 2012; 46(2): 127?134 Monaghan K, Delahun E, Caulfield B. Ankle Function During Gait In Patients With Chronic Ankle Instability Compared To Controls. <i>Clin Biomech</i> 2006; 21(2): 168-74. Neumann DA. Ankle and foot. In: Neumann DAKinesiology of the musculoskeletal system: foundations for physical rehabilitation. 2nd ed. St. Louis (MO): Mosby; 2011. pp. 477-521. Nyska M, Shabat S, Simkin A, Neeb M, Matan Y, Mann G. Dynamic Force Distribution During Level Walking Under The Feet Of Patients With Cronic Ankle Instability. <i>Br J Sports Med</i> 2003; 37(6): 495-7. Ouzounian T. Reumatoid Arthritis of the Foot and Ankle. En: Myerson MS. <i>Foot and Ankle Disorders.</i> Vol. 2. Philadelphia: WB Saunders Company; 2000. p. 1189-1204. Pascual-Gutiérrez, R., Arnao-Rodríguez, M.C., Chinchilla-Villaescusa, P., López-Ros, P., y García-Campos, J. Criterios de selección de tratamiento en el síndrome de predislocación. <i>Rehabilitación</i> 2010; 44(4): 364-370. Pearce TJ, Buckley RE. Subtalar Joint Movement: Clinical and Computed Tomography Scan Correlation. <i>Foot &amp; Ankle Internacional</i> 1999; 20 (7): 428-432. Radford, J. E., Landorf, K. B., Buchbinder, R., y Cook, C. Effectiveness of low-Dye taping for the short-term treatment of plantar heel pain: a randomised trial. <i>BMC Musculoskeletal Disorders</i> 2006, 7:64 Rees J.D., Wilson, A. M., Wolman, R. L. Current concepts in the management of tendon disorders. <i>Rheumatology (Oxford).</i> 2006; 45(5): 508-21. Thomas, J. L., Christensen, J. C., y Kravitz, S. R., et al. The diagnosis and treatment of heel pain: a clinical practice guideline-revision 2010. <i>J Foot Ankle Surg</i> 2010; 49(3 Suppl):S1-19. Trojian T. H., y Mckeag D. B. Single leg balance test to identify risk of ankle sprains. <i>Br J Sports Med</i> 2006; 40(7): 610-3. Yu G. V., Judge, M. S., Hudson, J. R., Seidelmann, F. E. Predislocation syndrome. Progressive subluxation/dislocation of the lesser metatarsophalangeal joint. <i>J Am Podiatr Med Assoc.</i> 2002; 92(4): 182-99.</p>
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**Recommendations**

**Subjects that it is recommended to have taken before**

Specific Anatomy of the Lower Limb [extinct]/750G02002

Biomechanics of the Lower Limb [extinct]/750G02013

Physical Podiatry [to extinguish]/750G02023

**Subjects that are recommended to be taken simultaneously**

Practicum 3 [to extinguish]/750G02035

Final Dissertation [to extinguish]/750G02036

**Subjects that continue the syllabus**

Final Dissertation [to extinguish]/750G02036

**Other comments**



As this subject is usually taken by fourth-year students, it is recommended that it be taken simultaneously with Practicum 3, so that they can apply the new knowledge to the clinical-care context. ADAPTATION OF PRESENTATION TO THE EPIDEMIOLOGICAL SITUATION: All classroom activities will be carried out with pre-assigned seats, masks, ventilation, not allowing the consumption of food and drink and ensuring that the centre's prevention and hygiene measures established and published at: <https://udc.es/es/fep/coronavirus/> are complied with. In the event that the lecture teaching group exceeds the capacity of the classroom, rotating hybrid teaching groups will be established, where students who do not fit in the classroom will follow the telematic teaching that week and the following week will be face-to-face, and another group will follow the telematic teaching, according to the planning established by the lecturer of the subject. Environmental considerations: SUSTAINABLE DEVELOPMENT OBJECTIVES: To help achieve an immediate sustainable environment and comply with the objective of action number 5: "Healthy and environmentally and socially sustainable teaching and research" of the "Green Campus Ferrol Action Plan": The delivery of the documentary work carried out in this subject will be done through Moodle, in digital format without the need to print them, in the case of being done on paper: no plastics will be used, double-sided printing will be carried out, recycled paper will be used and the printing of drafts will be avoided. A sustainable use of resources and the prevention of negative impacts on the natural environment should be made, taking into account the importance of ethical principles related to sustainability values in personal and professional behaviour. The full integration of students who, for physical, sensory, mental or socio-cultural reasons, experience difficulties in gaining suitable, equal and beneficial access to university life will be facilitated.

**(\*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.**