



Teaching Guide				
Identifying Data				2019/20
Subject (*)	Functional Rehabilitation in Foot and Leg Disorders	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	Ciencias Biomédicas, Medicina e Fisioterapia			
Coordinador	Souto Gestal, Antonio	E-mail	antonio.souto@udc.es	
Lecturers		E-mail		
Web	moodle.udc.es			
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 technicians 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



<p>Unidade Temática I: Valoración funcional do pé e membro inferior.</p>	<p>Tema 1. Recordo anatómo-biomecánico do pé e as súas relacións co membro inferior.</p> <p>Tema 2. Concepto de disfunción e adaptación. O sistema nervioso como estrutura integradora. Cadeas lesionales ascendentes e descendentes. Dismetrias anatómicas e funcionais.</p> <p>Tema 3. Xeneralidades do proceso de valoración.</p> <p>Tema 4. Valoración funcional do pé e membro inferior (I): Anamnesis, Valoración estática en carga.</p> <p>Tema 5. Valoración funcional do pé e membro inferior (II): Valoración en descarga.</p> <p>Tema 6. Valoración funcional do pé e membro inferior (III): Valoración dinámica.</p>
<p>Unidade Temática 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 7. Modelo de estrés de tecidos. Teoría rotacional e as súas implicacións clínicas. Relacións ascendentes e descendentes.</p> <p>Tema 8. Resposta inflamatoria. Fases e implicacións clínicas.</p> <p>Tema 9. Reparación e rexeneración tisular. Mecanotransducción celular e modelo de rexeneración de partes brandas baseado no estímulo mecánico controlado.</p> <p>Tema 10. Escordadura de nocello. Implicacións locais e ascendentes.</p> <p>Tema 11. Patoloxía e disfuncións do sistema suro-aquileo-plantar. Implicacións locais e ascendentes.</p> <p>Tema 12. Patoloxía e disfuncións de medio-pé e antepié. Implicacións locais e ascendentes.</p>
<p>Unidade Temática III. Dor, propiocepción e control motor. Avaliación e tratamento.</p>	<p>Tema 13. Nocicepción e dor. Dor fisiolóxico vs dor neuropático. O sistema nervioso como fonte de dor e disfunción. Neurodinámica do membro inferior; avaliación e principios de tratamento.</p> <p>Tema 14. O sistema miofascial como fonte de dor referida. Estiramientos: bases neurofisiolóxicas, principios, indicacións e contraindicacións.</p> <p>Tema 15. Bases da propiocepción e control motor. O pé e outros captadores posturales. Vendaxe: bases neurofisiolóxicas, principios, indicacións e contraindicacións.</p>
<p>Unidade Práctica I. Valoración funcional do pé. Exploración neuro-ortopédica do pé e membro inferior.</p>	<p>Práctica 1. Exploración da postura e dos captadores posturales.</p> <p>Práctica 2. Exploración neurodinámica do membro inferior: palpación e test de provocación neural.</p> <p>Practica 3. Exploración neurodinámica do membro inferior: avaliación dos potenciais puntos de conflito do sistema nervioso periférico no membro inferior.</p> <p>Práctica 4. Avaliación estática e dinámica da pelvis. Test ortopédicos e funcionais.</p> <p>Práctica 5. Exploración da estática e dinámica da articulación coxofemoral. Alteracións torsionales e capacidade rotacional. Exploración do xeonllo.</p> <p>Practica 6. Exploración da mobilidade articular do complexo nocello-pé.</p> <p>Práctica 7. Valoración dinámica: a marcha e test funcionais de control motor.</p>
<p>Unidade Práctica II. Reeducación funcional e Fisioterapia nas principais afeccións podolóxicas.</p>	<p>Práctica 8. Técnicas articulares do complexo nocello-pé.</p> <p>Práctica 9. Técnicas miofasciais.</p> <p>Práctica 10. Técnicas miofasciais. Estiramientos.</p> <p>Práctica 11. Estratexias para a mellora da propiocepción e control motor do membro inferior.</p> <p>Práctica 12. Vendaxe funcional.</p> <p>Práctica 13. Vendaxe propioceptiva.</p>

### Planning

Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
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Guest lecture / keynote speech	A4 A11 A23 A54 A55 A60 A62 B1 B3 C6	12	12	24
Laboratory practice	A23 A39 A45 A50 A54 A55 A60 B2 B4 B5 B13 B19	16	16	32
Directed discussion	A11 A23 A48 A49 A62 B1 B3 B7 C1	1	0	1
Case study	A50 A54 A55 A60 B2 B3 B12	12	36	48
Workbook	A11 A49 A60 B1 B3 B12 C1	0	20	20
Mixed objective/subjective test	A11 A23 A60 B3 B12 C1	2	18	20
Introductory activities	A60 B3 C1	2	0	2
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
Guest lecture / keynote speech	Oral exhibition complemented with the use of audiovisual means and the introduction of some questions headed to the students, with the purpose to transmit knowledges and facilitate the learning.
Laboratory practice	Methodology that allows that the students learn sure enough through the realisation of activities of practical character, such like demonstrations, exercises, experiments and investigations. In this matter the practical modules will centre by a part in the static exploration-dynamic of the complex articulate foot-ankle as well as his relation with the global assessment of the superjacent levels. Later they will experience some of the therapeutic technicians that give answer to the possible dysfunctions that result of the process of assessment, fundamentally consistent in the technician of taping (rigid, elastic and neuromuscular) as well as in the correct application of other physical agents.
Directed discussion	Methodology that allows that the students learn sure enough through the realisation of activities of practical character, such like demonstrations, exercises, experiments and investigations. Technician of dynamics of groups in which the students argue of free form, informal and spontaneous on a subject, especially the resolution of a problem generally of pathomechanics topic relative to clinical field, proposed and coordinated by the moderador of the debate, in this case the professor.
Case study	Methodology where the students confront in front of the description of a specific situation that arouses a problem that has to be comprised, valued and resolved by a group of students, through a process of discussion.
Workbook	Group of texts and documentation written that they were collected and/or edited with the aim to serve like source of profundización of the contents worked through other methodologies.
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.
Introductory activities	After the presentation of the subject, will establish a colloquium in which it will treat of identify which are the interests of the students in relation to the topics, its possible practical utility, as well as the initial knowledges of which splits . Activities that carry out before initiating or process of education-learning, with the purpose to know the competitions, student's interests and/or motivations for the attainment of the aims that pretend reach, linked to a formative program. With her it pretends obtain notable information that allow to articulate the teaching to favour an effective and significant learning, that split of the previous knowledges of the students.

Personalized attention	
Methodologies	Description



Laboratory practice Directed discussion Case study	<p>In the laboratory class, the professor supervises of individual form the correct execution of the test ant technicques by students.</p> <p>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.</p>
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Assessment			
Methodologies	Competencies / Results	Description	Qualification
Laboratory practice	A23 A39 A45 A50 A54 A55 A60 B2 B4 B5 B13 B19	The assessment of the practices of laboratory does reference fundamentally to the attitude and active participation and with exploitation of the same, what translates in the correct execution and in the degree of improvement reached in the techniques taught.	10
Case study	A50 A54 A55 A60 B2 B3 B12	Delivery in time and form of the resolutions of clinical cases posed along the course, and that will request with antelación sufficient for his realisation or will realise during the face-to-face hours (interactive classes).	30
Mixed objective/subjective test	A11 A23 A60 B3 B12 C1	The mixed proof will consist in a combination of questions type test of only answer and without penalty by error committed, and one or several short questions about the assessment and/or resolution of a clinical case posed during the course.	50
Guest lecture / keynote speech	A4 A11 A23 A54 A55 A60 A62 B1 B3 C6	Exposición oral complementada co uso de medios audiovisuais e a introdución de algunhas preguntas dirixidas aos estudantes, coa finalidade de transmitir coñecementos e facilitar a aprendizaxe. Valorarase fundamentalmente a asistencia e participación activa nas mesmas, a través da entrega puntual de pequenas probas de coñecemento de resposta inmediata (metodoloxía socrative) que facilitan a asimilación das ideas clave.	10

Assessment comments
<p>To pass this subject will be required:</p> <ol style="list-style-type: none"> <li>1. The assistance it a minimum of 70% of the practical sessions</li> <li>2. Only it contemplates the possibility of a 10% of fouts of assistance to practical sessions without documents.</li> <li>3. Obtain a calificación upper to 5 points on 10 in the mixed test. This test will have, with general character, a maximum time of execution of 1 hour.</li> </ol> <p>No they contemplate methodologies of assessment different stop those partial time students or in second enrollment and back, independently that conserve the calificación obtained in the evaluation continued of the practical and interactive block. It Will assign the calificación of No Presented to the students that no present to the mixed test, independently that conserve the calificación obtained in the evaluation continued of the practical and interactive block.</p> <p>The students that reach a calificación equal or upper to 9.0/10 could opt to the mention of with honor distinction, according to the rates established in the article 21 of the "Norms of evaluation, review and claim of the qualifications of the studies of degree and master university" of wool UDC. It enrols of honour will be granted anyway to the global higher calificación/s.</p>

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. 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, Delahunt 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., Seidemann, 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/750G02002

Biomechanics of the Lower Limb/750G02013

Physical Podiatry/750G02023

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

Practicum 3/750G02035

Final Dissertation/750G02036

**Subjects that continue the syllabus**

Final Dissertation/750G02036

**Other comments**



Ao tratarse dunha materia que habitualmente cursan estudantes de cuarto curso, recoméndase que se curse simultaneamente coa materia Prácticum 3, de forma que poidan aplicar novos coñecementos ao contexto clínico-asistencial. Consideracións medioambientais: Para axudar a conseguir unha contorna inmediata sustentable e cumprir co obxectivo da acción

número 5: "Docencia e investigación saudable e sustentable ambiental e social" do "Plan de Acción

Green Campus Ferrol": A entrega dos traballos documentais que se realicen nesta materia: 1. Solicitárase en formato virtual e/ou soporte informático; 2. Realízase a través de Moodle, en formato dixital sen necesidade de imprimilos; 3. De se realizar en papel:

- Non se empregarán plásticos.
- Realizaranse impresións a dobre cara.
- Empregarase papel reciclado.
- Evitarase a impresión de borradores.

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