| | | | | | |
|---|---|---|---|---|---|
| **Course Title** | **Physiotherapy of Musculoskeletal Disorders II** | | | | |
| **Course Code** | PHYS306 | | | | |
| **Course Type** | Compulsory | | | | |
| **Level** | Bachelor (Level 1) | | | | |
| **Year / Semester** | 3rd/ Spring | | | | |
| **Instructor's Name** | Dr Spyridon Athanasopoulos, Michail Pantouveris | | | | |
| **ECTS** | 6 | **Lectures / week** | 2 | **Laboratories/week** | 2 |
| **Course Purpose** | The aim of the course is to expand the student's knowledge and clinical skills in the diagnosis and treatment of neuro-musculoskeletal dysfunctions of the lower extremity joints. The course incorporates the basic principles of clinical reasoning and evidence-based clinical practice, while placing particular emphasis on the development of critical thinking during the evaluation, categorization, prognosis and treatment of complex neuro-musculoskeletal dysfunctions of the lower extremity. In addition, the aim of the course is to guide students to understand the mechanisms of causing musculoskeletal injuries of the lower extremity, the distinction between pathology and dysfunction as well as to adjust their treatment with the aim of functionally restoring the patient and eliminating individual symptoms. | | | | |
| **Learning Outcomes** | Upon completion of the theoretical part of the course, students are expected to be able to:<br>• **Implement assessment and clinical reasoning approach through the ICF model of musculoskeletal disorders and dysfunctions**<br>• know the mechanisms of musculoskeletal injuries of the lower extremities and their healing stages.<br>• recognize and understand the influence of predisposing and aggravating factors on musculoskeletal disorders of the lower extremities.<br>• collect the subjective information from the patient and record it in a scientific way.<br>• recognize the pathology of musculoskeletal problems and correlate it with the clinical picture of the patient.<br>• perform a properly structured physical examination based on the history of the condition and the latest scientifically substantiated data.<br>• **Comprehend the role of digital physiotherapy approaches in the assessment and treatment of musculoskeletal conditions(electronic measures and platforms, smartphone applications for joint motion and body posture etc)** | | | | |

| | | | |
|---|---|---|---|
| | • provide ergonomic and other advice to deal with predisposing and aggravating factors.<br>• design a comprehensive intervention program to treat the symptoms and the functional rehabilitation of the patient. Prematurely identify risk factors for chronicity and adjust their intervention accordingly.<br>• develop the ability to evaluate research data on musculoskeletal rehabilitation in order to deepen and renew his knowledge in this field.<br>Upon completion of the laboratory part of the course, the student is expected to be able to:<br>• perform a structured clinical examination of the musculoskeletal problems of the lower extremities **according to the ICF model of dysfunction (joint, muscle, mobility disorders)**<br>• recognize the pathology and distinguish it from the dysfunction of the musculoskeletal system.<br>• classify the problems into categories according to their clinical picture.<br>• recognize deviations from normal to the pattern of posture and movement in all joints of the lower extremity.<br>• detect the deviations from normal in the biomechanical chain of the lower extremities well as the functional disabilities resulting from these deviations.<br>• choose documented means of intervention for the progressive restoration of the normal loading capacity of the tissues of the lower extremity.<br>• design and execute structured functional rehabilitation programs for lower extremity diseases and injuries.<br>• **Apply digital physiotherapy approaches in the assessment and treatment of musculoskeletal conditions(electronic measures and platforms, smartphone applications for joint motion and body posture etc)**<br>• reassess the effect of their therapeutic intervention with documented means of evaluating the result and modify their intervention accordingly.<br>• suggest practical advice for dealing with predisposing and aggravating factors. | | |
| **Prerequisites** | None | Co-requisites | None |
| **Course Content** | • Physiotherapeutic evaluation of lower extremities<br>• **ICF model of musculoskeletal and movement related dysfunctions classification**<br>• Introduction to fractures – common lower extremity fractures<br>• Postoperative repair of hip and knee arthroplasties<br>• Common lower extremity tendinopathies<br>• Common lower extremity muscle contusions<br>• Common lower extremity osteoarthritis<br>• Lower extremity rheumatism<br>• Entrapment syndromes – peripheral nervous tissue diseases in the lower extremities | | |

| | |
|---|---|
| | • Hip dysfunctions – evaluation, differential diagnosis, rehabilitation<br>• Knee dysfunctions – evaluation, differential diagnosis, rehabilitation<br>• Foot dysfunctions – evaluation, differential diagnosis, rehabilitation<br>• Anatomical deviations of the lower extremities<br>• The role of biomechanical evaluation and orthotic treatment of the lower extremities |
| **Teaching Methodology** | **Theory**<br>The course is delivered to the students through lectures, using computer-based presentations programmes. Case Studies, Discussion, Questions / Answers are also used depending on the content of the lecture. Lecture notes and presentations are available online for use by students in combination with textbooks. Relevant material published in international scientific journals is also used to follow the latest developments related to the subject of the course.<br>**Laboratory**<br>During the laboratory courses, students develop their clinical skills in skill trainers and patient simulators so that they can successfully and safely apply them in a real clinical environment. |
| **Bibliography** | **Textbooks:**<br>Kisner, C., Colby, L. A., & Borstad, J. (2017). Therapeutic exercise: foundations and techniques. Fa Davis.<br><br>Magee, D. J., Zachazewski, J. E., & Quillen, W. S. (2007). Scientific foundations and principles of practice in musculoskeletal rehabilitation. Elsevier Health Sciences.<br><br>Neumann, D. A. (2010). Kinesiology of the musculoskeletal system; Foundation for rehabilitation. Mosby & Elsevier.<br><br>Petty, N., & Moore, A. (1998). Neuromusculoskeletal examination and assessment-a handbook for therapists. Churchill Livingstone.<br><br>Petty, N. J., & Ryder, D. (Eds.). (2017). Musculoskeletal Examination and Assessment E-Book: A Handbook for Therapists. Elsevier Health Sciences.<br><br>Brotzman, S. B., & Manske, R. C. (2015). Orthopedic rehabilitation in clinical practice. Athens: Konstantaras Medical Publications.<br><br>Poulis A., Pouli S., Poulis G. (2008) Physiotherapy in Orthopedics. Arthritis and Arthroplasty. DKS Publications.<br><br>Hoogenboom, B., Voight, M., &Prentice, W. (2016). Physiotherapeutic Interventions in the Musculoskeletal System – Techniques for Therapeutic Exercises. Konstantaras Medical Publications.<br><br>Kisner, C., &Colby, L. A. (2003). Therapeutic exercises. Basic principles and techniques. Siokis Medical Publications. |

| | |
|---|---|
| | References<br><br>Barros dos Santos, A. O., Pinto de Castro, J. B., Lima, V. P., da Silva, E. B., & de Souza Vale, R. G. (2021). Effects of physical exercise on low back pain and cortisol levels: a systematic review with meta-analysis of randomized controlled trials. Pain Management, 11(1), 49-57.<br><br>Challoumas, D., Pedret, C., Biddle, M., Ng, N. Y. B., Kirwan, P., Cooper, B., ... & Millar, N. L. (2021). Management of patellar tendinopathy: a systematic review and network meta-analysis of randomised studies. BMJ open sport & exercise medicine, 7(4), e001110.<br><br>Gianola, S., Bargeri, S., Del Castillo, G., Corbetta, D., Turolla, A., Andreano, A., ... & Castellini, G. (2022). Effectiveness of treatments for acute and subacute mechanical non-specific low back pain: a systematic review with network meta-analysis. British journal of sports medicine, 56(1), 41-50.<br><br>Hayden, J. A., Ellis, J., Ogilvie, R., Stewart, S. A., Bagg, M. K., Stanojevic, S., ... & Saragiotto, B. T. (2021). Some types of exercise are more effective than others in people with chronic low back pain: a network meta-analysis. Journal of physiotherapy, 67(4), 252-262.<br><br>Jeon, H. G., Lee, S. Y., Park, S. E., & Ha, S. (2021). Ankle instability patients exhibit altered muscle activation of lower extremity and ground reaction force during landing: A systematic review and meta-analysis. Journal of Sports Science & Medicine, 20(2), 373.<br><br>Lapner, P., Henry, P., Athwal, G. S., Moktar, J., McNeil, D., MacDonald, P., ... & Society, E. (2021). Treatment of rotator cuff tears: a systematic review and meta-analysis. Journal of Shoulder and Elbow Surgery.<br><br>Van Der Vlist, A. C., Winters, M., Weir, A., Ardern, C. L., Welton, N. J., Caldwell, D. M., ... & De Vos, R. J. (2021). Which treatment is most effective for patients with Achilles tendinopathy? A living systematic review with network meta-analysis of 29 randomised controlled trials. British journal of sports medicine, 55(5), 249-256.<br><br>Wagemans, J., Bleakley, C., Taeymans, J., Schurz, A. P., Kuppens, K., Baur, H., &Vissers, D. (2022). Exercise-based rehabilitation reduces reinjury following acute lateral ankle sprain: A systematic review update with meta-analysis. PloS one, 17(2), e0262023.<br><br>Yoon, S. Y., Kim, Y. W., Shin, I. S., Kang, S., Moon, H. I., & Lee, S. C. (2021). The beneficial effects of eccentric exercise in the management of lateral elbow tendinopathy: A systematic review and meta-analysis. Journal of clinical medicine, 10(17), 3968. |
| **Assessment** | **Continuous Assessment (50%):**<br><br>The assessment may include any combination of the following:<br><br>• **Written and/or oral**, and it consists of multiple – choice, short answer, open ended questions and/or essay questions, that align with the learning outcomes, in order to assess the theoretical knowledge gained. The questions ensure that students will demonstrate a deep |

understanding of the subject matter and apply their knowledge to solve problems or analyse scenarios.

- **Assignments and projects** provide opportunities for students to apply their theoretical knowledge in practical ways. The assignments are designed in a way that require critical thinking, research, analysis, and synthesis of information. Projects can be individual, self directed learning or group-based and should align with the learning outcomes. Students are evaluated on the quality of their work, the depth of understanding displayed, and their ability to effectively communicate their ideas. Assignments and projects may be individual or group work.
- Use of **case studies or problem-solving exercises** to assess how students can apply theoretical knowledge to real-life situations. Students are presented with scenarios that require analysis, critical thinking, and the application of theoretical concepts and they are assessed based on their ability to perform verbal presentations, viva voce examinations, identify and evaluate relevant information, propose solutions, and provide justifications for their choices.
- **Online quizzes or interactive assessments**: Online quizzes or interactive assessments, reflective writing can be used through the Moodle platform, to create quizzes with various question formats. These assessments can be self-paced or timed, and immediate feedback can be provided to students.
- **Classroom discussions and debates**: Students engage in classroom discussions and debates to assess their theoretical knowledge. Active participation is encouraged to hone their critical thinking skills by posing open-ended questions and facilitating dialogue.
- **Peer and self-assessment**: Students are assigned to review and provide feedback on each other's work, encouraging them to critically evaluate their peers' understanding and provide constructive suggestions.

**Laboratory** evaluation consists of assessment of the expected skills and competences, critical thinking, problem-solving and teamwork skills. During the laboratory sessions, students are closely observed as they engage in the assigned tasks and note is taken regarding the actions, approach and any relevant observations that demonstrate their understanding of the subject matter and application of skills. After assessing the laboratory work, constructive feedback is provided to students. Their strengths and areas for improvement are highlighted, linking them back to the learning outcomes to help students understand their progress and guide them towards further development. Depending on the nature of the laboratory work, peer assessment can be incorporated, where students evaluate each other's work based on the established criteria to promote self-reflection, collaboration, and a deeper understanding of the subject matter.

**Final Exam (50%):** comprehensive final exam, to assess students' overall theoretical knowledge. These assessment covers a broader range of topics and learning outcomes from the entire program of study, to gauge the students' understanding and integration of knowledge across different areas.

| | |
|---|---|
| **Language** | Greek / English |