

<b>Course Title</b>	<b>Therapeutic Exercise</b>				
<b>Course Code</b>	PHYS203				
<b>Course Type</b>	Compulsory				
<b>Level</b>	Bachelor (Level 1)				
<b>Year / Semester</b>	2 <sup>d</sup> / Fall				
<b>Instructor's Name</b>	Dr. Christos Savva, Dimitris Sokratous				
<b>ECTS</b>	6	<b>Lectures / week</b>	2	<b>Laboratories/week</b>	2
<b>Course Purpose</b>	<p>The purpose of this course is the study the role of therapeutic exercise and its application in Physiotherapeutic rehabilitation. Students must also be able to evaluate, record and determine the quantity and quality of movement in relation to the principles of biomechanics, to know and evaluate in subjective and objective ways the functional deficit and to organize a rehabilitation program that will include therapeutic exercise and will be based on evidence-based practices.</p>				
<b>Learning Outcomes</b>	<p>Upon completion of the course, students will be able to:</p> <ul style="list-style-type: none"> <li>• Understand all kinds of therapeutic exercise.</li> <li>• Understand all kinds of therapeutic relaxation.</li> <li>• Evaluate the types of muscle contractions in relation to exercise.</li> <li>• Evaluate how macrodynamics and tachodynamics affect the choice of therapeutic exercise.</li> <li>• Evaluate muscle strength and muscular endurance in exercise programs.</li> <li>• Understand the effects of immobilization on the musculoskeletal system.</li> <li>• Understand the interaction of pain with therapeutic exercise and relaxation.</li> <li>• Understand the effect of exercise on proprioception, neuromuscular coordination and motor control.</li> <li>• Understand the indications and contraindications of therapeutic exercise.</li> <li>• <b>Implement the 'International classification of functioning' system for neuromusculoskeletal and movement related functions (joint mobility, muscle tone and power)</b></li> <li>• <b>Comprehend the role of digital physiotherapy techniques and applications in therapeutic exercise</b></li> </ul> <p>At the end of the practical part of the course students will be able to:</p> <ul style="list-style-type: none"> <li>• Design therapeutic exercise programs targeted at specific muscle dysfunctions.</li> <li>• Apply all kinds of therapeutic exercise.</li> <li>• Apply therapeutic means of relaxation.</li> <li>• Evaluate the mobility of the joints.</li> <li>• Apply therapeutic exercises aimed at reducing musculoskeletal pain.</li> </ul>				

	<ul style="list-style-type: none"> <li>• Apply therapeutic exercises in order to improve proprioception, neuromuscular coordination and motor control.</li> <li>• <b>Practice the implementation of the 'International classification of functioning' system for neuromusculoskeletal and movement related functions (joint mobility, muscle tone and power)</b></li> </ul>		
<b>Prerequisites</b>	None	Co-requisites	None
<b>Course Content</b>	<p>Therapeutic Exercise</p> <ul style="list-style-type: none"> <li>• Introduction to movement and therapeutic exercise</li> <li>• Introduction to muscle function and the role of muscle in movement and rehabilitation.</li> </ul> <p>Principles of mechanics and physiotherapeutic rehabilitation</p> <ul style="list-style-type: none"> <li>• Torque – force – strength – Power, Inertia – friction – gravity</li> <li>• Principles of movement and equilibrium, levers, base of support, support surfaces, pulleys and their role in restoration</li> <li>• Longitudinal and force-velocity relationship</li> </ul> <p>Types of movement</p> <ul style="list-style-type: none"> <li>• Passive exercise – indications – contraindications</li> <li>• Assisted – suspended exercise</li> <li>• Active movement (concentric, eccentric, isometric contraction, isotonic, isokinetic exercise)</li> </ul> <p>Resistance Exercise</p> <ul style="list-style-type: none"> <li>• Determination of Resistance Exercise</li> <li>• Resistance Exercise Goals</li> <li>• Resistance Exercise Precautions &amp; Contraindications</li> <li>• Strength Assessment, methods, techniques and tools</li> <li>• Progressiveness - parameters for the progressivity of the strengthening exercise program</li> <li>• Types of resistance exercise</li> <li>• Resistance exercise techniques</li> </ul> <p>Stretching and range of motion</p> <ul style="list-style-type: none"> <li>• Immobilization effects on soft tissues and joints</li> <li>• Evaluation of range of motion, durability/elasticity</li> <li>• Techniques and methods of stretching and restoring range of motion and elasticity of biological structures</li> <li>• Mechanical properties of stretched contractile tissue</li> <li>• Relaxation and its role in Physiotherapy</li> <li>• Therapeutic methods for soft tissue elongation</li> <li>• Precautions &amp; Contraindications of therapeutic methods of soft tissue lengthening</li> </ul>		

	<p>Proprioception and Kinaesthesia</p> <ul style="list-style-type: none"> <li>• Sensory Information and Properties of Muscle Sensation</li> <li>• Effects of proprioceptive information changes in posture and movement</li> <li>• Static and Dynamic Balance</li> <li>• Proprioception Assessment</li> <li>• Balance Restoration</li> <li>• Classification of balance exercises</li> <li>• Progressiveness of balance exercises</li> </ul> <p>Hydrotherapy</p> <ul style="list-style-type: none"> <li>• Physiological effects of aquatic exercise, Hydrotherapeutic means</li> <li>• Indications, contraindications and precautions of aquatic exercise,</li> <li>• Aquatic exercise techniques and auxiliary means,</li> <li>• Individual and group exercise of patients</li> </ul> <p>Gait</p> <ul style="list-style-type: none"> <li>• Separation of Walking Cycle Phases</li> <li>• Gait Characteristics/Parameters</li> <li>• Gait Evaluation</li> </ul> <p><b>Digital technology in the assessment and application of therapeutic exercise (electronic platforms, tablet and smartphone applications)</b></p> <p><b>International classification of functioning (ICF)</b></p> <ul style="list-style-type: none"> <li>• <b>Joint mobility</b></li> <li>• <b>Muscle power</b></li> <li>• <b>Muscle tone</b></li> <li>• <b>Involuntary movements</b></li> </ul>
<b>Teaching Methodology</b>	<p><b>Theory</b></p> <p>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.</p> <p><b>Laboratory</b></p> <p>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.</p>
<b>Bibliography</b>	<p><u><b>Textbooks:</b></u></p> <p>Kisner, C., Colby, L. A., &amp; Borstad, J. (2017). Therapeutic exercise: foundations and techniques. F.A. Davis.</p>

	<p>Hislop EJ &amp; Montgomery J (2013) Daniels and Worthingham's Testing of Muscular Functional Capacity. Parisian Scientific Publications.</p> <p>Fousekis, K., (2015). Applied Sports Physiotherapy. Paschalidis Scientific Publications.</p> <p>Comerford, M., &amp; Mottram, S. (2012). Kinetic control-e-book: The management of uncontrolled movement. Elsevier Health Sciences.</p> <p>Haff, G. G., &amp; Triplett, N. T. (Eds.). (2015). Essentials of strength training and conditioning 4th edition. Human kinetics.</p> <p>Boyle, M. (2016). New functional training for sports. Human Kinetics.</p> <p><b>References</b></p> <p>Ortega-Castillo, M., Cuesta-Vargas, A., Luque-Teba, A., &amp; Trinidad-Fernández, M. (2022). The role of progressive, therapeutic exercise in the management of upper limb tendinopathies: A systematic review and meta-analysis. Musculoskeletal Science and Practice, 102645.</p> <p>Han, J., Luan, L., Adams, R., Witchalls, J., Newman, P., Tirosh, O., &amp; Waddington, G. (2022). Can therapeutic exercises improve proprioception in chronic ankle instability? A systematic review and network meta-analysis. Archives of Physical Medicine and Rehabilitation.</p>
<b>Assessment</b>	<p><b><u>Continuous Assessment (50%):</u></b></p> <p>The assessment may include any combination of the following:</p> <ul style="list-style-type: none"> <li>• <b>Written and/or oral</b>, 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.</li> <li>• <b>Assignments and projects</b> 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.</li> <li>• Use of <b>case studies or problem-solving exercises</b> 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.</li> </ul>

	<ul style="list-style-type: none"> <li>• <b>Online quizzes or interactive assessments:</b> 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.</li> <li>• <b>Classroom discussions and debates:</b> 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.</li> <li>• <b>Peer and self-assessment:</b> 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.</li> </ul> <p><b>Laboratory</b> 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.</p> <p><b>Final Exam (50%):</b> comprehensive final exam, to assess students' overall theoretical knowledge. These assessments cover 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.</p>
<b>Language</b>	Greek / English