CourseTitle	**Advanced Sport Injury rehabilitation**				
CourseCode	**DLSEM504**				
Coursetype	Elective				
Level	Master				
Year / Semester of study	1st or 2nd / 2nd or 3rd				
Teacher's Name	**Dr. Emmanouil Papadopoulos & Dr. Christos Savva**				
ECTS	10	Lectures / week		Laboratories/week	
Course Purpose	This advanced-level course aims to provide students with comprehensive knowledge and specialized skills in the rehabilitation of acute and chronic sports injuries and syndromes of the trunk and limbs. Students will be involved in in-depth assessment of risk factors, injury mechanisms, diagnostic and clinical assessment, imaging techniques, and both surgical and conservative management. The course focuses on the rehabilitation of acute and overuse injuries of the trunk and limbs at both early and advanced stages, promoting the acceleration of the healing process and ensuring a safe return to pre-injury competitive levels.				
LearningOutcomes	Upon successful completion of the course, students will be able to: • Apply therapeutic interventions for the prevention and rehabilitation of trunk and upper and lower limbs sports injuries, based on identified risk factors and appropriate phases of the healing process. • Implement first aid techniques and utilize medical and physical interventions to manage acute injuries and minimize the effects of immobilization in sports settings. • Analyze the pathophysiology, anatomical, and kinesiological mechanisms of acute and chronic sports injuries, and differentiate between overuse syndromes and acute injuries for effective diagnosis and treatment planning. • Evaluate sports injuries and conditions using valid and reliable clinical tools, and synthesize clinical, laboratory, and radiological test results for accurate diagnosis. • Design and implement comprehensive prevention and rehabilitation protocols for trunk, upper and lower limbs sports injuries, integrating evidence-based clinical reasoning and athlete-centered considerations. • Critically assess the effectiveness of rehabilitation programs and interventions, monitor the progress of functional rehabilitation, and collaborate with multidisciplinary teams to ensure optimal recovery and return to pre-injury fitness level.				
Prerequisites			Corequisites		
CourseContent	***Module 1***	Students will delve into the clinical anatomy of craniocerebral injuries and injuries of the spine, chest, pelvis and			

		musculoskeletal system. They will understand the mechanisms of trunk and upper and lower limbs sports injuries and the importance of treating them. The peculiarities of the developing musculoskeletal system (children, adolescents) and their differences with adults in the diagnosis and rehabilitation will be emphasized. The severity and frequency of injuries will be analyzed depending on the anatomical area and the type of exercise/sport in order to understand the importance and ways of preventing trunk and upper and lower limbs sports injuries. The rough clinical and imaging findings (X-ray, CT, MRI) and their usefulness in proper diagnosis and monitoring will be explained. The differences between acute and chronic injuries and overuse syndromes will be explained.
	Section 2	In the following two weeks, the concerns and rationales for the treatment of the trunk and upper and lower limbs sports Injuries will be analyzed based on the assessment findings, as well as the requirements of the injured athlete. The advantages and disadvantages of each type of orthopedic treatment (conservative or surgical) will be explained. Particular attention will be paid to the consequences of prolonged immobilization following surgery and the understanding and technical details of the treatment in order to enable a more complete approach and implementation of rehabilitation protocols.
	Section 3	During these two weeks, they will focus on the epidemiology of trunk and upper limbs sports injuries according to sporting activity, and in the discussion and investigation of the principles of pre-competitive sports physiotherapy assessment and clinical reasoning. The clinical and laboratory tests for the evaluation of acute and chronic sports injuries of the trunk and upper limbs including, muscle contusions and strains, tendinopathies, stress fractures, bursitis, shoulder instability, adolescent injuries, intra-articular injuries as well as the risk factors that predispose to their occurrence will be analyzed. They will thoroughly study overuse syndromes (enthesopathies, rotator cuff, bursitis, musculotendinous inflammation etc) and explore research-based prevention and rehabilitation interventions. Finally, they will become familiar with the process of systematic evaluation of differential diagnosis, and recording of findings, and the establishment of rehabilitation goals (YASO), clinical reasoning and design of special programs and methods for the prevention of sports injuries in high-risk athletes.
	Section 4	In this module, students will study the basic principles of early and postoperative rehabilitation of a wide range of acute and overuse sports injuries of the trunk and upper limbs. They will be informed about the application of cardiopulmonary resuscitation (CPR), sports bandage, splints and safe handling of the injured athlete in the sports area. They will Investigate research-based therapeutic interventions to reduce edema, reduce or minimize pain, maintain joint orbital range, maintain muscle functional capacity, maintain cardiorespiratory endurance, become familiar with the effects of immobilization,

		surgery and lack of exercise on biological tissues and body systems, as well as with rehabilitation in the process of healing fractures, collagen tissue injuries, muscle injuries and cartilage damage. They will also learn the basic principles of functional rehabilitation and functional tests in the sports area as well as the progressiveness of a rehabilitation program to maximize all fitness parameters with clinical reasoning and rational and scientifically documented use of rehabilitation tools, based on the type of injury and the stage of healing. Important parameters that are evaluated and included in the rehabilitation program will be examined, such as the effect of sports injury on proprioception and neuromuscular coordination: Kinesthesia, Dynamic joint stability, prepared & reactive muscle activity / control, conscious & unconscious functional motor patterns. They will investigate the effectiveness of closed and open kinetic chain exercises, plyometric training and functional aquatic rehabilitation. Finally, they will explore the importance of functional rehabilitation of athletes based on individual needs per sport and the prevention of sports injuries. Particular emphasis will also be given to the clinical, biomechanical-orthotic and imaging evaluation and treatment of sports injuries and to the design of rehabilitation programs for the most common acute sports injuries of the trunk and the upper limbs (neck and back strains, shoulder instability, rotator cuff tendinitis, calcification and bursitis, tennis and golfer's elbow, de quervain's enthesitis etc).
	Section 5	In this module students will study the most common sports injuries of the pelvis area and lower extremities (muscle strains, runners knee, adolescent osteochondrits, jumper's knee, Achilles tendinitis, stress fractures, plantar fasciitis etc). They will focus on the pathology of each injury and the anatomical structures affected, such as tendons, muscles, bones, serous pockets, ligaments and cartilaginous surfaces. At the same time, the injury mechanisms and the stages of the healing process for each tissue will be mentioned. They will also study the epidemiology of injuries of the most popular sports and the risk factors for them. Finally, they will be taught clinical tests and evaluation tests for each anatomical area and injury. They will become familiar with the assessment and clinical reasoning valid and reliable methods of pelvis ans loer limb injuries. They will be able to differentiate between injuries with similar symptomatology and establish short- and long-term treatment goals.

	Section 6	In this module students will study the basic principles of sports injury rehabilitation of the trunk and the upper limbs (muscle strains, runners syndrome, adolescent osteochondrits, jumper's knee, Achilles tendinitis, stress fractures, plantar fasciitis etc). They will understand the basic therapeutic mechanisms of exercise in injured structures and the effect of immobilization on injured tissues. They will study evidence based treatment methods and their application in acute and chronic phases of injuries. Treatment protocols for common injuries such as muscle contusions, overuse syndromes following surgery or conservative management, will also be studied extensively. They will understand the progressivity required in a rehabilitation protocols and the clinical criteria that the patient will need to achieve in order to progress to the next stage. The multifaceted effects of a trunk and the upper limb injury not only on tissue structure or range of motion but also on proprioception, kinesthesia, motor patterns, cadriorespiratory endurance and psychology will also be mentioned. All the above are necessary elements for meeting the learning outcomes and students will be able to evaluate and integrate them during the final stage of rehabilitation, formulating a personalized treatment program so that the athlete is ready to return safely to the sporting activity.
TeachingMethodology	The course is structured and developed based on the principles of distance learning, good practices as well as the guidelines of the Evaluation Body and finally the Pedagogical Framework developed and implemented by our University. Also, through the design and development of distance learning courses, synchronous and asynchronous interaction, communication and collaboration are taken into account at 3 levels: 1) between instructor and student, 2) between students, and 3) between students and content. The course is taught entirely online through the electronic platform Moodle LMS. Mandatory, optional and additional bibliography (e.g. books, articles, links, open educational resources, case studies) in combination with notes, course presentations and suggestions for reading study (bibliography) are available to students through an electronic platform. Also, a variety of appropriate educational material is given through the online platform in the form of presentations with notes, presentations with narration, interactive presentations and videos, interactive learning scenarios, gamification activities, avatars, digital twins, audio files, online quizzes). Various online tools, new and emerging technologies are being exploited: communication tools (e.g. video conferencing, chat rooms), collaboration tools (e.g. discussion forums, blogs, wikis), as well as content development tools. Students are encouraged through the platform and various technological tools to interact with their fellow students and the instructor, in order to become active members of the online learning community created within the framework of the course. Finally, with the use of various technological tools, each student is expected to create his own online learning community. More information about distance learning at Frederick University, the Pedagogical Background developed and implemented, as well as the toolkit used, can be found at the following link. About Distance Learning - Frederick University	

<table>
<tr><td rowspan="2">Bibliography</td><td>Module 1 (Week 1 - 2)</td><td>Mandatory Bibliography
<u>Chapters from books:</u>

Piedade, Sérgio&Neyret, Philippe &Espregueira-Mendes, Joao & Cohen, Moises & Hutchinson, Mark. (2021). Specific Sports-Related Injuries. Springer, ISBN 978-3-030-66320-9

Walker, Brad. (2018). The Anatomy of Sports Injuries.

<u>Articles/Conference Proceedings:</u>
López-Valenciano, A., Ruiz-Pérez, I., Garcia-Gómez, A., Vera-Garcia, F. J., De Ste Croix, M., Myer, G. D., & Ayala, F. (2020). Epidemiology of injuries in professional football: a systematic review and meta-analysis. British journal of sports medicine, 54(12), 711–718. <u>https://doi.org/10.1136/bjsports-2018-099577</u>
Makdissi, M., McNamee, M., Broglio, S., Emery, C. A., Feddermann-Demont, N., Fuller, G. W., Giza, C. C., Guskiewicz, K. M., Hainline, B., Iverson, G. L., Kutcher, J. S., Leddy, J. J., ... Meeuwisse, W. (2023). Consensus statement on concussion in sport: the 6th International Conference on Concussion in Sport-Amsterdam, October 2022. British journal of sports medicine, 57(11), 695–711. <u>https://doi.org/10.1136/bjsports-2023-106898</u>
Lin, C. Y., Casey, E., Herman, D. C., Katz, N., &Tenforde, A. S. (2018). Sex Differences in Common Sports Injuries. PM &R : the journal of injury, function, and rehabilitation, 10(10), 1073–1082. https://doi.org/10.1016/j.pmrj.2018.03.008</td></tr>
<tr><td>Module 2 (Week 3 - 4)</td><td>Mandatory Bibliography
<u>Chapters from books:</u>
Doral, Mahmut& Karlsson, Jon. (2015). Sports injuries: Prevention, diagnosis, treatment and rehabilitation, second edition. Springer. DOI 10.1007/10.1007/978-3-642-36569-0.

<u>Articles/ConferenceProceedings:</u>

• Choi, J. H., Ochoa, J. K., Lubinus, A., Timon, S., Lee, Y. P., & Bhatia, N. N. (2022). Management of lumbar spondylolysis in the adolescent athlete: a review of over 200 cases. The spine journal : official journal of the North American Spine Society, 22(10), 1628–1633. <u>https://doi.org/10.1016/j.spinee.2022.04.011</u>
• Wiggins, A. J., Grandhi, R. K., Schneider, D. K., Stanfield, D., Webster, K. E., & Myer, G. D. (2016). Risk of Secondary Injury in Younger Athletes After Anterior Cruciate Ligament Reconstruction: A Systematic Review and Meta-analysis. The</td></tr>
</table>

		American journal of sportsmedicine, 44(7), 1861–1876. https://doi.org/10.1177/0363546515621554
	Module 3 (Week 5 - 6)	**MandatoryBibliography** Chaptersfrombooks: ● Erik Meira (2022) **Sport Injury Prevention Anatomy,** Human Kinetics Publishers, ISBN1718208286 ● David Joyce & Daniel Lewindon (2016) Sports Injury Prevention and Rehabilitation, Routledge Taylor & Francis ● Kemp, J., Mendonça, L. D. M., Mosler, A. B., Bizzini, M., Thorborg, K., Wilson, F., M. Kumbuzi, (2023). Sports physiotherapists' contribution to the sports and exercise medicine team: moving forward, together. British Journal of Sports Medicine, 57(2), 74-75. Articles/ConferenceProceedings: ● Obërtinca, R., Hoxha, I., Meha, R. *et al.* Efficacy of Multi-Component Exercise-Based Injury Prevention Programs on Injury Risk Among Footballers of All Age Groups: A Systematic Review and Meta-analysis. *Sports Med* 53, 837–848 (2023). https://doi.org/10.1007/s40279-022-01797-7 ● Lau R, Mukherjee S, (2023) Effectiveness of overuse injury prevention programs on upper extremity performance in overhead youth athletes: A systematic review, Sports Medicine and Health Science, Volume 5, Issue 2, Pages 91-100, ISSN 2666-3376, https://doi.org/10.1016/j.smhs.2023.03.001. ● Rudisill SS, Varady NH, Kucharik MP, Eberlin CT, Martin SD. Evidence-Based Hamstring Injury Prevention and Risk Factor Management: A Systematic Review and Meta-analysis of Randomized Controlled Trials. The American Journal of SportsMedicine. 2023; 51(7):1927-1942. doi:10.1177/03635465221083998 ● Liaghat B, Pedersen JR, Husted RS, et al, (2023) Diagnosis, prevention and treatment of common shoulder injuries in sport: grading the evidence – a statement paper commissioned by the Danish Society of Sports Physical Therapy (DSSF) British Journal of Sports Medicine, 57:408-416. ● Paraskevopoulos, E.; Pamboris, G.M.; Papandreou, M. (2023) The Changing Landscape in Upper Limb Sports Rehabilitation and Injury Prevention. Sports, 11, 80. https://doi.org/10.3390/sports11040080
	Module	**MandatoryBibliography**

	4 (Week 7 - 8)	Chaptersfrombooks: ● Papadopoulos, K., & Richardson, M. (Eds.). (2021). The Sports Rehabilitation Therapists' Guidebook: Accessing Evidence-Based Practice. Routledge. ● Porter, S., Southorn, N., & Wilson, J. (Eds.). (2020). A Comprehensive ● Guide to Sports Physiology and Injury Management: An Interdisciplinary Approach. Elsevier Health Sciences. **Bibliography for AdditionalStudy** Articles/ConferenceProceedings: ● Barber P, Pontillo M, Bellm E, Davies G. (2023) Objective and subjective measures to guide upper extremity return to sport testing: A modified Delphi survey, Physical Therapy in Sport, Volume 62, Pages 17-24, ISSN 1466-853X,https://doi.org/10.1016/j.ptsp.2023.05.009. ● Purcell C, Duignan C, Fullen BM, et al (2023) Comprehensive assessment and classification of upper and lower limb pain in athletes: a scoping review British Journal of Sports Medicine; 57:535-542. ● Greising SM, Corona BT, Call JA. Musculoskeletal Regeneration, Rehabilitation, and Plasticity Following Traumatic Injury. Int J Sports Med. 2020 Jul; 41(8):495-504. doi: 10.1055/a-1128-7128. Epub 2020 Apr 2. PMID: 32242332. ● Zaremski JL, Zeppieri G Jr, Tripp BL. Sport Specialization and Overuse Injuries in Adolescent Throwing Athletes: A Narrative Review. J AthlTrain. 2019 Oct; 54(10):1030-1039. doi: 10.4085/1062-6050-333-18. PMID: 31633409; PMCID: PMC6805054.
	Module 5 (Week 9 - 10)	**MandatoryBibliography** Chaptersfrombooks: Brukner, Peter. *Brukner& Khan's clinical sports medicine*. North Ryde: McGraw-Hill, 2017. Chapters 30-43. **Bibliography for Additional Study** Articles/Conference Proceedings: ● López-Valenciano, Alejandro, etal. "Epidemiology of injuries in professional football: a systematic review and meta-analysis." *British journal of sportsmedicine* 54.12

		(2020): 711-718. ● Weir, Adam, et al. "Terminology and definitions on groin pain in athletes: building agreement using a short Delphi method." *British Journal of SportsMedicine* 49.12 (2015): 825-827. ● Valle, Xavier, et al. "Muscle injuries in sports: a new evidence-informed and expert consensus-based classification with clinical application." *Sportsmedicine* 47 (2017): 1241-1253. ● Andreoli CV, Chiaramonti BC, Biruel E, et al. Epidemiology of sports injuries in basketball: integrative systematic review. BMJ Open Sport &ExerciseMedicine 2018; 4:e000468. doi: 10.1136/bmjsem-2018-000468
	Module 6 (Week 11 - 12)	**MandatoryBibliography** Chaptersfrombooks: Brukner, Peter. *Brukner& Khan's clinical sports medicine*. North Ryde: McGraw-Hill, 2017.Chapters 30-43. **Bibliography for Additional Study** Articles/Conference Proceedings: ● Kotsifaki, Roula, et al. "Aspetar clinical practice guideline on rehabilitation after anterior cruciate ligament reconstruction." *British Journal of SportsMedicine* 57.9 (2023): 500-514. ● Pedret, Carles, et al. "Return to play after soleus muscle injuries." *Orthopaedic Journal of SportsMedicine* 3.7 (2015): 2325967115595802. ● Paton, Bruce M., et al. "London International Consensus and Delphi study on hamstring injuries part 3: rehabilitation, running and return to sport." *British journal of sportsmedicine* 57.5 (2023): 278-291. ● Zellers, Jennifer A., Michael R. Carmont, and Karin GrävareSilbernagel. "Return to play post-Achilles tendon rupture: a systematic review and meta-analysis of rate and measures of return to play." British journal of sportsmedicine 50.21 (2016): 1325-1332. ● Herbst, E., Hoser, C., Hildebrandt, C. et al. Functional assessments for decision-making regarding return to sports following ACL reconstruction. Part II: clinical application of a new test battery. Knee Surg Sports TraumatolArthrosc 23, 1283–1291 (2015). https://doi.org/10.1007/s00167-015-3546-3 ● Charlton, P.C., Drew, M.K., Mentiplay, B.F. et al. Exercise Interventions for the Prevention and Treatment of Groin Pain and Injury in Athletes: A Critical and Systematic Review. SportsMed 47, 2011–2026 (2017). https://doi.org/10.1007/s40279-017-0742-y ● Chen, Eric T. MD; McInnis, Kelly C. DO; Borg-Stein, Joanne MD. Ankle Sprains: Evaluation, Rehabilitation, and

		Prevention. CurrentSportsMedicine Reports 18(6):p 217-223, June 2019. | DOI: 10.1249/JSR.0000000000000603
Assessment	The evaluation of the course includes activities of continuous / formative assessment (formative), self-evaluation (self-evaluation and debriefing / final evaluation (summative). Specifically, the evaluation of this course includes the following: final written exam, 2 evaluation assignments, 2 evaluative online interactive discussions, various weekly educational activities such as interactive activities, interactive presentations/ videos and self-assessment activities. From the above, the following are scored: • Finalexam (**50%**) • 2 evaluationpapers (20% + 15% = 35%) • 2 onlineinteractiveactivities (7.5% + 7.5% = **15%**) All assignments (except the final exam) are assigned and delivered to the online platform, as well as a plagiarism check through the turnitin tool. The final exam is developed by the instructor and completed by the students on a special platform used exclusively for the exams.	
Language	English / Greek	