



TEERTHANKER MAHAVEER UNIVERSITY

(Established under Govt. of U. P. Act No. 30, 2008)

Delhi Road, Moradabad (U.P.)

PhD PROGRAMME

SYLLABUS FOR DISCIPLINE-SPECIFIC COURSE PHYSIOTHERAPY (SPORTS)

Course Code: PDS240116	Sports rehabilitation & advances	L	T	P	C
		0	0	0	4
Objective:	In this course, one will develop clinical reasoning with evidence that integrates the effect of Physiotherapy into SPORTS INJURIES. They shall also know about the recent advancements in rehabilitation for sports injuries and related conditions.				
Course Outcomes:	On completion of the course, students will be able to:				
CO 1:	Understand and apply the recent advances and techniques in rehabilitating sports injuries and related conditions.				
CO 2:	Apply the principles of Exercise Physiology & Electrophysiology.				
CO 3:	Analyze community-based rehabilitation in sports injuries and related conditions.				
CO 4:	Analyze the exercise performance.				
CO 5:	Create the exercise prescription.				
Course Content:					
Unit 1:	RECENT ADVANCES: Research practiced in Plyometrics Training, High Altitude Simulation Training, Anti-gravity treadmill, exoskeletons, bio-harnesses, and Virtual and Augmented Reality are revolutionizing sports, Data Visualization (DV) in Sports Performance Analysis, Artificial Intelligence (AI) in Sports Performance Analysis.				
Unit 2:	ELECTROPHYSIOLOGY: Concepts of bioelectricity and neurophysiology; recent advances in NCV, EMG, Evoked potential- VEP, SSEP, QST, EEG, BAER, and RNS in relation to physiotherapy; Clinical electrophysiology along with evidence-based principles and practice from case study analysis.				
Unit 3:	EXERCISE PHYSIOLOGY: ENERGY PRODUCTION, EXPENDITURE AND TRANSFER Energy transfer in cells during exercise Oxygen metabolism and transfer during metabolism Oxygen transportation in the blood Oxygen deficit and oxygen debt Oxygen measurements during exercise and recovery Energy release from carbohydrates, lipids, and protein BMR - during rest and activity Energy expenditure during activity Short-term and long-term energy system EXERCISE PERFORMANCE Lung function & its role in exercise performance Regulation of ventilation and blood pressure during exercise				

	<p>Cardiovascular adjustment during exercise Muscle fiber, types and its role in exercise performance Ventilation during steady and non-steady rate exercise Energy cost and breaking Blood pressure response to exercise Cardiac output during exercise in trained/untrained Cardiovascular drift</p>
Unit 4:	RECENT ADVANCES AND EVIDENCE-BASED PRACTICES IN SPORTS-RELATED CONDITIONS
Unit 5:	<p>COMMUNITY PHYSIOTHERAPY: Population studies and epidemiological implications of impairment, handicap and disability. Evidence-based practice in community health and community rehabilitation. Evidence-based practice and recent advances in women's health physiotherapy, mother and childcare. Health promotion and recent advances in the role of physiotherapy in industrial health, geriatrics health. Psychosomatic approaches in the management of disorders of stress.</p>
Textbooks:	<ol style="list-style-type: none"> 1. Athletic Injuries & Rehabilitation – Zachazewski James E., Magee David J. 2. Zuluaga et al: Sports Physiotherapy, W.B. Saunders. 3. Brukner and Khan: Clinical Sports Medicine, McGraw Hill. 4. Reed: Sports Injuries – Assessment and Rehabilitation, W.B. Saunders. 5. G. Sinha, Principle and Practices of Therapeutic Massage. Jaypee Brothers. 6. Mc Ardle, Katch, Katch: Exercise Physiology Edition IV. 7. Therapeutic Exercise by Kisner & Colby, 4th Edition; Jaypee Publication 8. Claytons Electrotherapy 10th Ed. – Sarah & Bazin – W.B. Saunders 9. Joint structure and function- Cynthia Norkins, 4th Edition, Jaypee Publication 10. Introduction to Sports Biomechanics: Analysing Human Movement Patterns. Roger Bartlett. Routledge; 3rd edition. 2014
Reference Books:	<ol style="list-style-type: none"> 1. Kuprian: Physical Therapy for Sports, W.B. Saunders. 2. Bates: Aquatic Exercise Therapy, W.B. Saunders. 3. Maitland's Vertebral Manipulation. Geoff Maitland, Elly Hengeveld and Kevin 4. Banks Butterworth-Heinemann; 7th edition.2005 5. Maitland's Peripheral Manipulation. Elly Hengeveld and Kevin Banks.Butterworth-Heinemann; 4th edition 2005. 6. Sports Biomechanics: The Basics: Optimizing Human Performance. Anthony