

Exercise Therapy-II

Course Title	Exercise Therapy-II	
Course Code	PT404	
Course Credit	Lecture: 4	
	Practical/ Clinical Training: 3	
	Total: 7	
Course Objectives		
<ol style="list-style-type: none"> The students will learn the principles and effects of exercise as a therapeutic modality and learn the techniques in the restoration of physical and functional movements. The student will be able to list the indications and contraindications of various types of exercise, demonstrate the different technique, and describe the effects To understand the basic principles and applications of various therapeutic exercises and acquire the hands on skills. To learn the applied aspect of the subject for physiotherapy practice. 		
#	Detailed Syllabus	Hours
Section I		
1.	Introduction : Exercise therapy – II Effect of therapeutic exercise in restoration of physical and functional movements	2
2.	Types of skeletal muscle fibers properties (Type I and Type II, red and white) and its physiology	2
	Classification of muscle -Based on arrangement of fascicule Parallel-strap, fusiform, rhomboidal, triangular Oblique- Unipinnate, bipinnate, multipinnate, Circular, etc...	2
	Types of muscular contraction Isotonic, Isometric, Concentric, Eccentric, Group muscle action, etc...	2
3.	Stretching - Definition and Types of stretching Passive, Active or self or auto stretching PNF, Ballistic stretching, Dynamic, Isometric Physiological and therapeutic effects Clinical application, etc...	2
	Upper extremity, neck, shoulder and Trunk muscles stretching Emphasis on Neck and shoulder muscles - Middle fibers of trapezius and Rhomboids major and minor, Pectoralis major, Supraspinatus, Subscapularis, Infraspinatus and teres minor, Lattismus dorsi Elbow flexors-biceps, Elbow extensors-triceps, Wrist extensors, Wrist Flexors, Common extensors-ECRL, ECRB, ECV, ED, Wrist and finger flexors- FCR, FCU, FDS, FDP, Intrinsic muscles of hand Low back extensors, Levator scapulae and upper fibers of trapezius, etc...	8

4.	<p>Lower extremity muscle stretching Iliacus and psoas major, adductor, hamstring, Tensor fascia latae, quadriceps, Tendo Achilles (gastrocnemius and sole us), Piriformis, Tibialis anterior, Peroneus longus, Peroneus brevis, EHL, EDL, EDB, etc...</p>	8
5.	<p>Traction Definition, Mechanism of action of traction Indication and Contraindication of traction Physiological and therapeutic effects Clinical application Types of traction, etc...</p>	2
	<p>Based on methods of application- Manual, Mechanical, Positional, Inversion, Hydraulic, etc...</p>	2
	<p>Based on nature of pull- Continuous traction, Sustained traction, Intermittent traction Based on regions applied-, etc...</p>	4
	<p>Mechanical Traction for Cervical, Lumbar spine and Pelvic Traction parameters: Weight, Time, Hold, Relax, etc...</p>	4
6.	<p>Passive movements - Passive manual mobilization Mobilization: Introduction, Definition, principle and techniques Physiological and therapeutic effects Principle: Position of patient, Position of therapist, Relaxation, Fixation Support or Stabilization, Direction of movement, Force and Range / Distraction or Traction, etc...</p>	4
	<p>Intensity and Duration Causes of restrictions of range of movements and prevention of restrictions Definition, Principles, Grades, Indications, Contraindications, Precautions, Effects and Uses – Maitland and Kaltenborn mobilization, etc...</p>	2
	<p>Techniques of mobilization of various joints of upper limb and lower limb Clinical application</p>	12
7.	<p>Proprioceptive Neuromuscular Facilitation (PNF) Introduction, Definition, Principles Pattern of motion, Diagonals, Motion components, Basic procedure Agonist and Antagonist, Traction and Approximation, Normal timing Stretch stimulus, Stretch reflex, Manual contact, Command and Communication, Line of movement, etc...</p>	3
	<p>Physiological and therapeutic effects Clinical application</p>	
	<p>PNF patterns for Upper Extremity D1 Flexion, D1 Extension, D2 Flexion, D2 Extension</p>	6
	<p>PNF pattern for Lower Extremity D1 Flexion, D1 Extension, D2 Flexion, D2 Extension</p>	6

	<p>Principles and Demonstrate PNF Technique Repeated contractions, Slow reversals, Rhythmic stabilization, Hold relax, Rhythmic initiation, etc...</p>	5
8.	<p>Hydrotherapy - aquatic therapy Introduction, Definition, Principle, Buoyancy Hydrostatic pressure , Hydrodynamic pressure, Turbulence</p>	2
	<p>Indication and Contraindication Physiological and Therapeutic effects Advantages, Clinical application in non-weight bearing programs, etc...</p>	2
Section II		
9.	<p>Suspension Therapy Definition, Principle, Friction, Pendulum, Eliminating gravity movement Advantages and Disadvantages Clinical application, etc...</p>	2
	<p>Suspension Instruments Suspension frame, Supporting ropes, Pulleys, Slings, S-hook and dog clip Wooden cleat, etc...</p>	2
	<p>Procedure Types of suspension - Axial suspension, Vertical suspension, Pendular suspension</p>	4
	<p>Demonstrate suspension therapy for upper extremity and lower extremity Upper extremity and Lower extremity, etc...</p>	6
10.	<p>Resisted Exercise Definition Types of resisted exercise-Manual and Mechanical (isokinetic machine) Manual-Definition, principle, technique by therapist and patient Mechanical-Definition, principle, technique by weights, pulleys, spring Uses of resisted exercise and its Clinical application, etc...</p>	3
	<p>Progressive Resisted Exercises (PRE) Definition Physiological and therapeutic effects Method of delivering resistance Repetition maximum (1RM and 10 RM) method, calculation Delorme, Watkins, Mac queen, Zinovieff (oxford technique) Demonstrate the progressive exercise in strengthening using various methods (According to muscle power-Grade I to Grade V), etc...</p>	10
11.	<p>Coordination Exercise Freckle Exercise in Supine, Sitting, Walking including functional activity retraining, Brushing, Combing hair, Pick up small object from table or floor, Practice writing, Draw numbers or alphabets Physiological and therapeutic effects, etc... Clinical application</p>	6

12.	<p>Balance Exercise Exercise for weakness Exercise for movement strategies</p> <p>Physiological and therapeutic effects</p> <p>Clinical application Static balance exercise Dynamic balance exercise Balance exercise for vestibular dysfunction, etc...</p>	6
13.	<p>Mat Exercises: Introduction, Physiological and therapeutic effects, , Advantages</p> <p>Clinical application - NFT, functional reeducation program</p> <p>Demonstrate common mat (functional) activities Rolling-Prone on elbows-Prone on hands-Hook lying-Bridging-Quadruped position-Long Sitting-Short sitting-Kneeling-Half kneeling-Standing-Walking, etc...</p>	8
14.	<p>Group exercise Introduction Advantages and Disadvantages Indication, etc...</p>	4
	<p>Formation of group, Space Selection of patients, Number of people, patients, Instruction to patients Group type, Type of exercise Group exercises for health and wellness – fitness</p> <p>Clinical application</p>	4
15.	<p>Strengthening protocol – graded muscles strengthening program Graded strengthening program e.g. 0 to 1 to 2 to 3 to 4 to 5 Facilitation, Stretching, muscles reeducation, assisted gravity, active assisted, against gravity, PNF, suspension, graded resisted exercises program</p> <p>Clinical application, etc...</p>	4
16.	<p>Walking aids Definition, Indication Types of walking aids Crutches, Canes, Walkers, Wheel chair, Crutches, Types-Axillary, Elbow or Forearm, Gutter, etc...</p> <p>Methods of measurement and adjustment of walking aids with its application in reference to various conditions for Gait training program</p> <p>Clinical application, etc...</p>	4
17.	<p>Breathing exercises Definition, Indication and Contraindication</p> <p>Physiological and therapeutic effects</p> <p>Clinical application</p>	2
	<p>Types of Breathing Exercises</p>	4

	Diaphragmatic breathing exercise Apical breathing, Costal breathing, Posterior basal Glossopharyngeal, Pursed lip breathing, Inspiratory hold, Segmental breathing, constrain induce breathing, etc...	
18.	Postural Drainage Definition, Goals, Indication, Contraindication, Manual technique used with postural drainage, Postural drainage positions and instruction to patient, Modified postural drainage, etc...	6
19.	Applied aspect of exercises therapy II Close chain and open chain exercise Exercises prescription and method of practice - Dosimetry Mode, type, frequency, repetition, progression, specificity, reversibility of exercisers therapy or training, etc...	5

Instruction Method

1. Teaching and training sessions will be carried out through active learning. Active participation and contribution in group discussion and seminars are mandatory for students
2. Lectures to be conducted with the help of black board and/or audio-visual aids that includes multi-media projector, OHP, etc.
3. Problem based and/or case based assignments based on course content will be given to the students at the end of each unit/topic and will be evaluated at regular interval.
4. The course includes a laboratory where the students have an opportunity to build and appreciation for the concepts being taught in lectures.
5. Instruction method will be integrated with clinical training, bedside / class room teaching and tutorials as necessary.

Text Books

1. Therapeutic Exercise: 6th edition. Carolyn K; Kolby. Jaypee Brothers Medical Publishers
2. Practical Exercise Therapy: 3rd edition. Hollis M; Cook PF. Wiley-Blackwell
3. Therapeutic exercise. Basmajian JV. Krieger Pub Co

Reference Books

1. Daniels and Worthingham's Muscle Testing: Techniques of Manual Examination. 8th edition. Hislop H; Montgomery J. Saunders Publication
2. Muscles: Testing and Function, with Posture and Pain: 5th edition. Kendall FP; McCreary EK et al. Lippincott Williams and Wilkins
3. Principles of Exercise Therapy. 4th edition. M Deena Gardiner. CBS publication, India.
4. Therapeutic Exercise for Physical Therapist Assistants: Techniques for Intervention. 2nd edition. Barbara S; Bandy WD. Lippincott Williams and Wilkins
5. Therapeutic exercise: 2nd edition. Sydney Licht. Weaverly Press.
6. Therapeutic Exercise Moving Toward Function: 3rd edition. Carie MH; Brody LT. Lippincott Williams



SYLLABUS

and Wilkins