

SECTION – II
COURSE CONTENTS
I YEAR MPT

BASIC SCIENCES

Work physiology

1. Physiological & physical work.
2. Ergonomic aspects of work, energy transfer, oxygen intake and oxygen debt, cardiorespiratory and thermo regulatory changes during muscular work.
3. Body consumption, nutrition and caloric balance. Obesity and weight control.
4. Individual and environmental factors influencing muscle work and environmental control.
5. Fatigue assessment and scientific organization of work-rest regimes to control fatigue.

Electro physiology

1. Characteristics and components of electro therapeutic stimulation systems and characteristic and components of electro physiological assessment devices.
2. Electrical excitability of muscle and nerve and composition of peripheral nerves.
3. A muscle plasticity in response to electrical stimulation.
B instrument for neuromuscular electrical stimulation (NMES).
4. Neurobiology of afferent pain transmission and central nervous systems mechanisms of pain modulation.
5. Electrical stimulation and circulation.
6. Clinical Electro physiological testing.

Bio Mechanics

1. Material properties of bones and soft tissues.
2. Internal and external forces during posture and activities.
3. Biomechanics of respiration, circulation, hand function and gait.
4. Methods of kinetics and kinematics investigation, Anthropometrics measurements.
5. Neural control of locomotor functions.

Research Methodology and Biostatistics

1. Meaning of research, objectives, motivation & types of research.
2. Research process and criteria of good research.
3. Problems encountered by researchers in India & defining the research problem.
4. Research design & sampling design.
5. Measurement & scaling techniques. Method of data collection.
6. Processing and analysis of data. Sampling fundamentals.
7. Testing of hypothesis and Chi-square test.
8. Analysis of variance & co-variance.
9. Role of computer in research and ethical concepts.

PHYSICAL & FUNCTIONAL DIAGNOSIS – PART – I

1. Clinical examination in general and detection of movement dysfunction.
2. Principles of pathological investigations and imaging techniques related to neuromuscular, skeletal and cardiopulmonary disorders with interpretation.
3. Development screening, development diagnosis, neurodevelopment assessment and motor learning-Voluntary control assessment.
4. Anthropometric measurements.
5. Physical fitness assessment by:
 1. Range of motion.
 2. Muscle strength, endurance and skills.
 3. Body consumption.
 4. Cardiac efficiency tests and spirometry.
 5. Fitness test for sports.
6. Psycho-diagnosis and neuro-psychological tests.
7. Electro-diagnosis, clinical and kinesiology electromyography and evoked potential studies. Biophysical, measurements, physiotherapy modalities techniques and approaches. Electro diagnosis, conventional methods, electromyography, sensory and motor nerve conduction velocity studies, spinal and somato-sensory evoked potentials.

PHYSIOTHERAPEUTICS – PART – I

Clinical applied and applied Therapeutics

1. Physiotherapy in pain management such as electromagnetic radiations, ultrasound, laser, Electro acupuncture etc.
2. Maternal and child care in general physiotherapy.
3. Applied neuro-anatomy and neuro-physiotherapy.
4. Theories of motor learning.
5. Therapeutic bio feedback & psychosomatic training.
6. Combination therapy.
7. Functional training – Respiratory exercises. Training for feeding, bladder and bowel training, coughing and compression, artificial respiration, inhalation therapy & intensive care unit procedures.
8. Yogasanas & Pranayama.
 - a) Physiological & therapeutic principles of yoga.
 - b) Yogasanas for physical culture, relaxation and meditation.
 - c) Applications of yogasanas in physical fitness, flexibility, cardiac rehabilitation and neuromotor learning.
 - d) Pranayama and respiratory physiology.
 - e) Krias and their physiological significance. Therapeutic application of yoga.
 - f) Yoga-a holistic approach.
9. Acupuncture definition, principles, techniques, physiological effects, indications, contra-indications, dangers & integration of acupuncture with physiotherapy.
10. Magnetotherapy.
11. Naturopathy.

COURSE CONTENTS

II YEAR MPT

1. PHYSICAL AND FUNCTIONAL DIAGNOSIS – PART – II

1. Massage, mobilization and manipulations.
2. Geriatric physiotherapy.
3. Aids and appliances, adaptive functional devices to improve neurological dysfunction.
4. Inhibition and facilitation techniques.
5. Exercise ECG testing and monitoring.
6. Pulmonary function tests.
7. Cardio vascular function disorders & principles of management, cardio-respiratory function disorders and assessments.
8. Physical disability evaluation and disability diagnosis. Gait analysis and diagnosis.

2. PHYSIOTHERAPEUTICS (Medical) – Part II (A)

1. Physiotherapy in common conditions of skin.
2. Physiotherapy in common vascular diseases.
3. Physiotherapy in deficiency diseases.
4. Physiotherapy in respiratory disorders.
5. Physiotherapy management of Ischemic heart diseases.
6. Cardiopulmonary medications and their effect on activity performance.
7. Exercise planning and prescription.
8. Ergonomic aspects of exercise on oxygen, energy consumption MET value of various exercises and activity.
9. Effect of aerobic, anaerobic as well as Isometric and isokinetic exercises on cardiac function.
10. Physiotherapy in psychiatry.
11. Management of pain in neuro musculoskeletal disorders.
12. Physiotherapy management in arthritis and allied conditions.

2. PHYSIOTHERAPEUTICS (Surgical) – Part II (B).

1. Physiotherapy management of post operative patients in cardiopulmonary disorders.
2. Monitoring systems and defibrillators. Artificial respirators.
3. Physiotherapy in post operative management of metabolic, hormonal, neoplastic and infective conditions of bones and joints.
4. Physiotherapy following arthroplasty, implants and soft tissue repairs.
5. Pre & post operative physiotherapy in tendon transfer. Electrical stimulation and biofeedback procedures.
6. Physiotherapy management following head injuries, in intensive care and neurosurgical procedures.
7. Physiotherapy following general surgery.
8. Physiotherapy following Urosurgery.
9. Physiotherapy following plastic surgery.
10. Physiotherapy management following selective and common cases of oncologic surgery.
11. Physiotherapy following obstetric and gynecological disorders.

3. ELECTIVE SUBJECTS

1. Physiotherapy in neurological and psychosomatic disorders.

1. Anatomy and physiology of central nervous system and peripheral nervous systems.
2. Clinical symptomatology and pathophysiology of the neurological disorders.
3. Clinical assessment and investigations along with differential diagnosis.
4. Electrodiagnosis, conventional methods- Strength duration curves, Accommodation, skin temperature, resistance and blood flow.
5. Electromyography especially with reference to patho-physiology and patho-mechanics. Quantitative EMG.
6. Evoked potential studies.
7. Evaluation of A.N.S. dysfunction with reference to psycho-physiological testing Biofeedback training.
8. Neuro-psychological functions. Perception testing and training.
9. Motor Control Assessment, reflexes and automatic reactions- voluntary control Feedback mechanisms.

10. Motor learning and Motor control training techniques.
11. Functional electrical stimulations Bi-feedback methods.
12. Learning skills, A.D.L and functional activities.
13. Aids and appliances in neurological disorders. Prescriptions, testing and training.
14. Associated functional disturbances higher functions and their testing and training.
15. Community based rehabilitation for neurological dysfunction. Disability evaluation and management.

2. Physiotherapy in musculoskeletal disorders and sports physiotherapy.

1. Applied anatomy with emphasis on Biomechanics, Kinesiology, work physiology and locomotor function.
2. Clinical assessment and rationale of Laboratory investigations along with differential diagnosis.
3. Clinical Symptomatology, Pathophysiology and Patho-mechanics of musculoskeletal conditions.
4. Functional assessment (Hand function, Gait, Posture A.D.L. occupational work).
5. Kinetic and kinetic analysis.
6. Analysis and classification sports and sports injuries.
7. Assessment of locomotor impairments, disabilities and disability evaluation..
8. Physiotherapy management of locomotor disorder, principles of medical and surgical aspects, sports psychology and retaining. .
9. Management of sport injuries, sports fitness/ rehabilitation of paediatric musculoskeletal disorders.
10. Orthopaedic implants-designs, materials, indications, post-operative assessment and training.
11. External aids, appliances, adaptive self-help devices, prescription biomechanical compatibility, check-out and training.
12. Manual therapies: soft tissue manipulations and mobilization, neural mobilization, acupuncture.
13. Joint manipulation – peripheral joints and vertebral joints.
14. Neurological complications of locomotor disorders conservative electrodiagnosis, Electromyography and evoked potential studies.
15. Community based rehabilitation in musculoskeletal disorders.

3. Physiotherapy in Cardio-respiratory disorders and intensive care.

1. Anatomy and physiology of cardio-vascular and respiratory systems.
2. Epidemiology, symptomatology and pathophysiology of the cardio-differential diagnosis.
3. Clinical assessment, rationale of laboratory investigations and differential diagnosis.
4. Evaluation of respiratory dysfunctions, lung function tests-volumetric, analysis of blood gases, X-Ray chest.
5. Evaluation of cardiac dysfunction.

ECG, exercise ECG testing, Holder monitoring etc.

Echo-cardiogram, X-Ray, Imaging techniques etc.
6. Evaluation of peripheral vascular disorders: clinical blood flow studies, temperature plethysmography. A.N.S. dysfunctions measures.
7. Risk factors and preventive measures.
8. Cardio-respiratory emergencies and management principles – medication, critical care, indications of surgical intervention, stabilization of vital functions-Defibrillation.
9. Intensive Care Unit – Concept and set-up. Equipment for advanced methods of resuscitation, monitoring and patient management: Artificial airways, ventilators, pulse – oxymetry.
10. Cardio-pulmonary resuscitation.
11. Respiratory physiotherapy – Lung hygiene, humidifiers, nebulisers, intermittent positive pressure breathing etc., and rehabilitation.
12. Medical, surgical and physiotherapy management of peripheral vascular disorders.
13. Exercise testing, planning and prescription, aerobic and anaerobic exercise training.
14. Cardiac rehabilitation-Conservative and post-operative management.
15. C.B.R. in Cardio-vascular and respiratory conditions.

4. Community Physiotherapy and Community Based Rehabilitation (CBR).

1. Institute based rehabilitation services and multi-disciplinary approach.
2. Methodology of CBR with reference to National Health Delivery System.
3. Role of National Institute, District Rehabilitation Centre and Primary Health Centre (with appropriate exposure).
4. Public awareness to the various disabilities. Communications, Message generation and dissipation.
5. Persons with disability Act-1995 and related Government infrastructures.
6. Role of Government in CBR, Inter-sectoral Programs and co-ordination. Implementation of the Act.
7. Role of Non-Government organizations in CBR.
8. Scope of community physiotherapy.
9. Disability detection and early intervention.
10. Physical fitness, stress management through yoga psychosomatic approaches.
11. Home exercise programs for various classifications of disabilities.
12. Physiotherapists as a Master Trainer in CBR.
13. Physiotherapy in maternal and child health care.
14. Holistic physiotherapy for the aged.
15. Physiotherapy role in industry-preventive, intervention, ergonomic and rehabilitative.

5. Paediatric Physiotherapy

1. Genetic basis of paediatric disorders. Embryology 7 Genetic counseling.
2. Growth and development of a child and its disorders.
3. Neurodevelopment assessment, developmental diagnosis. Developmental careening.
4. Cardio-respiratory assessment of neonate and infant and related paediatric disorder.
5. Assessment of progressive locomotor disorders-Neuropathic and Myopathic.
6. Clinical symptomatology and patho-physiology of locomotor and cardiopulmonary disorders.
7. Principles of laboratory investigations for differential diagnosis.
8. Neonatal care, risk babies and management.

9. Management of congenital locomotor disorders including the prosthetic and orthotic management.
10. Management of neuropaediatric patients (NDT).
11. Motor learning process – Theory and Techniques.
12. Disorders of perception s and sensory integration.
13. Integrated approach in management of paediatric disorders.
14. Paediatric surgeries and its post-operative management.
15. CBR in paediatric conditions.