

KHALSA UNIVERSITY, AMRITSAR



**Faculty of Pharmaceutical and Allied Health
Sciences**

**School of Allied & Healthcare Sciences
Department of Physiotherapy**

**Master of Physiotherapy (MPT)
(Two years Postgraduate Programme)**

**Annual System
Session 2026-2027
(As per the NCAHP Act-2021)**

SCHEME OF STUDY OF MASTER OF PHYSIOTHERAPY (M.P.T)
FIRST YEAR M.P.T EXAMINATION SCHEME

Subject	Internal Assessment Marks		University Examination Marks		Total Marks	Theory hours	Practical hours	Total Hours	Credits Theory	Credits Practical	Credits Total
	Theory	Practical	Theory	Practical							
M.P.T -101 Laws, Ethics, Administration Educational methodology (LEM)			100		100	90		90	6		6
M.P.T-102 Research methodology and biostatistics, EBP (RMB)			100		100	90		90	6		6
M.P.T – 103 Biomechanics & Therapeutics (BCT)			100		100	90		90	6		6
M.P.T -104 Physical & Functional Diagnosis in the speciality. (Speciality paper-1)			100		100	120	120	240	8	4	12
M.P.T-105 Skills acquisition and refinement (SAR-I)	(Teaching Assignment, Seminars, journal club & Case Studies)						240	240		8	8
M.P.T-106 Clinical training (CT-I)							690	690		23	23
M.P.T-107 Dissertation (DSS-I)							90	90		3	3
Theory Total					400	390	1140	1530	26	38	64

- i. The NUES [Non- University Examination Subjects] examinations are to be conducted at the college/institution level as suggested by the Board of Studies of the concerned university. Earned credits may be calculated based on grades secured in college/institutional examinations. Passing criteria remain a minimum of 50% for university and non-university exam subjects.
- ii. The Board of Studies of the concerned university may develop structured rubrics for assessment of student performance in clinical setups.

MASTER OF PHYSIOTHERAPY CURRICULUM

Speciality offered

- Master of Physiotherapy in Musculoskeletal science
- Master of Physiotherapy in Neuroscience
- Master of Physiotherapy in Cardio-Pulmonary science
- Master of Physiotherapy in Sports science

Common subjects for all PG

- Laws, Ethics, Administration and Educational methodology
- Research methodology, biostatistics and EBP
- Biomechanics and Therapeutics
- Locomotor Disability Assessment : To be taught in First year under M.P.T-105 Skills Acquisition and Refinement (SAR-I)
- BLS and ALS- To be taught in First year under M.P.T-105 Skills Acquisition and Refinement (SAR-I)
- Disaster Management – To be taught in First year under M.P.T-105 Skills Acquisition and Refinement (SAR-I)
- Dissertation
- Practical / clinical examination

General design for specialties

- Clinical and functional diagnosis in specialty

MASTER OF PHYSIOTHERAPY

M.P.T-101: LAWS, ETHICS & ADMINISTRATION AND EDUCATIONAL METHODOLOGY (LEM)

(Common subject for all PG)

Course Contents:

SECTION -A: ETHICS AND LAW

LEM 1.1 Principles of ethics History and evolution of ethics - Helsinki declaration; Nuremberg Code; Principles of ethics and its importance - Autonomy, Beneficence, Non maleficence, Justice

LEM 1.2 Professionalism

LEM 1.3 Ethics in professional practice Principles of practice in respective profession. Privacy, confidentiality, shared decision making, informed consent, equality and equity, justice

LEM 1.4 ICMR Guidelines General principles, Responsible conduct of research, Risk benefit assessment

LEM 1.5 Informed Consent Process Components of informed consent document, Procedure in obtaining informed consent, Special situations, waivers, and proxy consent

LEM 1.6 Roles and Responsibilities of IEC Ethical Review process, Classification of projects for review, Roles and responsibilities of members, Communications with investigators and authorities

LEM 1.7 Ethics in Special and Vulnerable Populations Types of Vulnerability and vulnerable population, Challenges for research in vulnerable population, Guidelines for research in special and vulnerable population

LEM 1.8 Conflict of Interest Definition and Types of Conflict of Interest, Identifying, mitigating and managing Conflict of Interest, Conflicts of interest in international collaborations

LEM 1.9 Publication Ethics Importance of publishing, Authorship guidelines according to ICMJE, Plagiarism

LEM 1.10 Laws governing Physiotherapy practice: NCAHP Act, Consumer Protection Act, Rights of persons with disability act Ethical issues in practice of Physiotherapy-Clinical, Research and Academics

SECTION -B: MANAGEMENT AND ADMINISTRATION IN PHYSIOTHERAPY

LEM 2.1. Principles and applications of Management and Administration to Physio Therapy practice:

LEM 2.2. Management PROCESS: planning, organizing, staffing, finance, marketing, controlling, directing.

LEM 2.3. Quality assurance: Total Quality Management: basis of quality management, quality assurance program in hospitals, medical audit and international quality system.

LEM 2.4. COMMUNICATION: Process of Communication Barriers to Communication Types of Communication Written vs. Oral Communication Elements of good communication

LEM 2.5. Hospital as an organization: functions and types of hospitals MANAGEMENT IN HOSPITAL Setting of a physiotherapy service unit.

SECTION-C: MANAGEMENT OF TEACHING INSTITUTION AND EDUCATIONAL METHODOLOGY IN PHYSIOTHERAPY

LEM 3.1. Education: definition, aims and objectives of education, Agencies of education, Formal and informal education, brief introduction to the philosophies of education, taxonomy of educational objectives, essentials of Physiotherapy education, NEP

LEM 3.2. Basics of Adult Learning Theories including Learning Styles and Motivation

LEM 3.3. Concept of teaching – learning - nature of learning, type and stages of learning, factors affecting learning, laws of learning, learning style teaching learning process, role of teacher in teaching learning process, Adult learning

LEM 3.4. Teaching skills, Teaching Methods in Classroom Setting, clinical teaching methods, planning of teaching: lesson planning and unit planning Teaching aids and educational technology

LEM 3.5. Formulating Intended Learning Outcomes Including Tyler's principles, Bloom's Taxonomy, Miller's Pyramid, Clinical Competence, and Dreyfus' Model of Skill Acquisition

LEM 3.6. Entrepreneurship in Physiotherapy Practice: Need, Advantages and Opportunities

RECOMMENDED BOOKS FOR LEM

1. Beauchamp and Childress, Principles of Biomedical Ethics, Fourth Edition. Oxford.
2. Patricia A Marshall. Ethical challenges in study design and informed consent for health research in resource poor settings. World Health Organization. 2007.
3. Natio4n2a6l Ethical guidelines for Biomedical and Health Research involving human participants. Indian Council of Medical Research. 2017.
4. ABC of Learning and Teaching in Medicine. Editor(s): Peter Cantillon, Diana Wood, Sarah Yardley. Ed: 3
5. Understanding Medical Education: Evidence, Theory, and Practice, Editor(s): Tim Swanwick Kirsty Forrest Bridget C. O'Brien. Ed 3
6. Principles of Medical Education. Editor(s): Tejinder Singh, Piyush Gupta, Daljit Singh. Jaypee Brothers. 2012. New Delhi

MASTER OF PHYSIOTHERAPY
M.P.T-102: RESEARCH METHODOLOGY AND
BIostatISTICS AND EVIDENCE BASED PRACTICE (RMB)

(Common subject for all PG)

Course Contents:

SECTION-A: RESEARCH METHODOLOGY

- RMB 1.1. Introduction to research
- RMB 1.2. Types of research
- RMB 1.3. Defining a research question
- RMB 1.4. Qualitative study designs
- RMB 1.5. Quantitative study
- RMB 1.6. Type I and type II bias
- RMB 1.7. Study design: types
- RMB 1.8. Case study, Case series, longitudinal cohort, Pre post design, Time series design, repeated measures design, Randomized control design.
- RMB 1.9. Sampling design, calculating minimum sample size based on design
- RMB 1.10. Measurement: Properties of measurement: reliability, validity, responsiveness, MCID.
- RMB 1.11. Outcome measures: Use of outcome measures in rehabilitation research
- RMB 1.12. Research Methods: Designing methodology, Reporting results, Type I and Type II bias.
- RMB 1.13. Communicating research.
- RMB 1.14. Evaluating published research: looking at the evidence
- RMB 1.15. Introduction to evidence-based practice, evaluating evidence,
- RMB 1.16. Asking clinical questions
- RMB 1.17. Translating of evidence into practice: strategies
- RMB 1.18. Use of clinical practice guidelines, clinical pathways, prediction rules to inform practice.

SECTION-B: BIostatISTICS

- RMB 2.1. Descriptive Statistics and measurement variability
- RMB 2.2. Inferential Statistics
- RMB 2.3. Comparison of group means: T-test
- RMB 2.4. Analysis of variance
- RMB 2.5. Multiple comparison tests
- RMB 2.6. Parametric and Non parametric tests
- RMB 2.7. Correlations
- RMB 2.8. Regression
- RMB 2.9. Analysis of frequencies: Chi square

RMB 2.10. Statistical measure of validity and reliability

RMB 2.11. Factorial Design analysis

RMB 2.12. Power analysis – Determining sample size, Epidemiological Measures – Rate, Ratio, Proportion, Incidence and prevalence, Relative risk, Risk ratio, Odds ratio

RMB 2.13. Application of various statistical software.

SECTION-C: SCIENTIFIC WRITING

RMB 3.1. Definition and kinds of scientific documents – Research paper, Review paper, Book, Reviews, Thesis, Conference and project reports (for the scientific community and for funding agencies).

RMB 3.2. Publication – Role of author, Guide, Co-authors.

RMB 3.3. Structure, Style and contents; Style manuals (APA, MLA); Citation styles: Footnotes, References; Evaluation of research

RMB 3.4. Significance of Report writing; Different steps in Report writing; Mechanics and precautions of writing research reports Oral and poster presentation of research papers in conferences/symposia; Preparation of abstracts.

RMB 3.5. Structure of Thesis and Content – Preparing Abstracts.

RECOMMENDED BOOKS FOR RMB

1. Bailey, N.T.J. -Statistical methods in Biology. The English universities press, London
2. Bajpai, S.R.- Methods of Social Survey and Research, Kitab Ghar, Kanpur.
3. Colton - Statistics in medicine, Little Brown Company, Boston
4. Gupta, S.P -Statistical methods. Sultan Chand and Sons Publishers , New Delhi.
5. Goulden C.H.- Methods of Statistical Analysis. Asia Publishing House , New Delhi.
6. Mohsin S.M.- Research Methods in Behavioral Sciences: Orient Publications. New Delhi.
7. Mahajan - Methods in Biostatistics, Jay Pee Brothers.Medical Publishers (P) Ltd. New Delhi.
8. Hicks- Research for Physiotherapists, Churchill Livingstone, London.
9. Meenakshi. - First Course in Methodology of Research. Kalia Prakashan, Patiala.
10. Kumar , R.- Research Methodology. Pearson Education , Australia.
11. Snedecor,G.W -Statistical Methods, Allied Pacific Pvt. Ltd., London
12. Singh, I.- Elementary Statistics for Medical Workers. Jaypee Brothers Medical Publishers (P) Ltd. New Delhi.
13. Rehabilitation Research: Principles and Applications by Elizabeth Domholdt (Elsevier Science Health Science Div, 2004)

MASTER OF PHYSIOTHERAPY
M.P.T-103: BIOMECHANICS & THERAPEUTICS (BCT)

(Common subject for all PG)

Course Contents:

SECTION A – CONCEPTS OF BIOMECHANICS:

- BCT 1.1. Introduction to Kinesiology and Biomechanics. Biomechanics of Tissues and structures of the musculoskeletal system
- BCT 1.2. Principle of Biomechanics
- BCT 1.3. Nature and importance of Biomechanics in Physiotherapy.
- BCT 1.4. Methods of kinetics and kinematics investigation
- BCT 1.5. Introduction to biomechanical analysis of human motion.
- BCT 1.6. Analytical tools and techniques –
 - 1. Isokinetic Dynamometer,
 - 2. Kinesiological EMG,
 - 3. Electronic Goniometer,
 - 4. Force Platform,
 - 5. Videography.
- BCT 1.7. Upper Extremity: Shoulder and Shoulder girdle, Elbow joint, Wrist joint and Hand.
- BCT 1.8. Lower Extremity: Pelvic Girdle, Hip joint, Knee joint, Ankle & Foot
- BCT 1.9. Spine
- BCT 1.10. Gait
- BCT 1.11. Gait Analysis: Kinetic & Kinematic Analysis.
- BCT 1.12. Pathological Gait: Kinetic & Kinematic Analysis
- BCT 1.13. Ergonomic approach to lifting and handling, workspace and environment. Patient positioning, body mechanics and Transfer techniques

SECTION-B: PHYSIOTHERAPY TECHNIQUES

- BCT 2.1. Principle of therapeutic exercises
- BCT 2.2. Definition, details of effects and uses of following exercises.
- BCT 2.3. Dynamic Exercises
- BCT 2.4. Plyometric Exercises
- BCT 2.5. Isokinetic Exercises
- BCT 2.6. Kinetic chain exercises
- BCT 2.7. Balance and coordination exercises
- BCT 2.8. Biophysics of contractile and non-contractile tissues, Response to mechanical loading
- BCT 2.9. Clinical reasoning and differential clinical diagnosis based on various approaches such as Maitland, Kaltenborne, Cyriax, Mulligan, Mckenzie etc.
- BCT 2.10. Proprioceptive neuromuscular Facilitation,

BCT 2.11. Hydrotherapy Techniques

BCT 2.12. Functional assessment and re-education

BCT 2.13. Yoga: Introduction, Historical background and Origin of Yoga, Meaning and Concept of Yoga and its relationship with Physical Education and Sports, Yoga in Global Scenario, Pranayama: Meaning, Types and its importance. Asanas: Asanas- meaning, types, principles, Techniques of asanas and effects of asanas on various systems of the body - circulatory, respiratory and digestive system.

BCT 2.14. Electro diagnosis: introduction to methods of electro diagnosis SD CURVE

BCT 2.15. Electromyography: technique of EMG, interpretation of normal and abnormal responses

BCT 2.16. Nerve conduction studies: MNCV, SNCV, variables affecting nerve conduction, measurement of NCV of nerves of upper limb and lower limb, interpretations of normal and abnormal responses.

BCT 2.17. Evoked potentials, H-reflex, P wave, repetitive nerve stimulation, VEP, BAEP, SSEP, SSR.

BCT 2.18. Review of Principles underlying the application of following modalities with reference to their Production, biophysical and therapeutic effects, indications and contraindications and the specific uses of:

1. Superficial heating modalities
2. Deep heating modalities
3. Ultrasound
4. Cryotherapy

BCT 2.19. Review of Principles underlying the application of following modalities with reference to their Production, biophysical and therapeutic effects, indications and contraindications and the specific uses of Physiotherapy

BCT 2.20. Low Frequency Current: Diadynamic Current, Iontophoresis

BCT 2.21. High Voltage, Pulsed Galvanic Stimulation, TENS, IFT, Russian Currents. LASER

BCT 2.22. Advanced Electro Therapeutics in Tissue healing, Wound care, Management of Scars, keloids, Muscle Plasticity & Integumentary Conditions.

BCT 2.23. Bio-feed backs

RECOMMENDED BOOKS FOR BCT

1. James G. Hay – The Biomechanics of Sports Techniques, Prentice Hall.
2. Brunnstrom - Clinical Kinesiology, F.A. Davis.
3. Luttgens K., Hamilton N.: Kinesiology – Scientific Basis of Human Motion, Brown & Benchmark.
4. Kreighbaum E., Barthels K.: Biomechanics – A Qualitative approach for studying human Motion, MacMillan.
5. Rasch and Burk: Kinesiology and Applied Anatomy, Lee and Fabiger.
6. White and Punjabi - Biomechanics of Spine - Lippincott.
7. Norkin & Levangie: Joint Structure and Function - A Comprehensive Analysis - F.A.

8. Davis.
9. Kapandji: Physiology of Joints Vol. I, II & III, W.B. Saunders.
10. Northrip et al: Analysis of Sports Motion: Anatomic and Biomechanics perspectives,
11. W.C. Brown Co., IOWA.
12. Leveac B.F.: Basic Biomechanics in Sports and Orthopedic Therapy, C.V. Mosby.
13. De Boer & Groot: Biomechanics of Sports, CRL Press, Florida.
14. Basmajian - Muscle alive - Williams & Wilkins.
15. Nordin & Frankel - Basic Biomechanics of Muscular Skeletal System - Williams & Wilkins.
16. Bartlett - Introduction to Sports biomechanics - F & FN Spon Madras.

**MASTER OF PHYSIOTHERAPY IN MUSCOLOSKELETAL
SCIENCES
PHYSICAL & FUNCTIONAL DIAGNOSIS IN THE
SPECIALITY. SPECIALITY PAPER-1
MPT (MS) 104: CLINICAL, PHYSICAL AND FUNCTIONAL DIAGNOSIS
IN MUSCULOSKELETAL PHYSIOTHERAPY (MCPFD)**

Course Contents:

Part-I

MCPFD 1.1 Clinical Decision Making - Planning Effective Treatment, Clinical decision making models, Team approach, Foundation for clinical decision making.

MCPFD 1.2 Vital Signs, Identification of reasons for monitoring vital signs; importance of monitoring vital signs; common techniques of monitoring vital signs; identification and analysis of normal values with that of abnormal values.

MCPFD 1.3 Principles and application of investigative and imaging techniques in Physiotherapy

- Blood test
- Arterial Blood Gas (ABG) analysis
- Pulmonary Function Test (PFT)
- Radiological examination
- Computerized Tomography (CT)
- Magnetic Resonance Imaging (MRI)
- Ultrasonography (US)
- Electrocardiography (ECG)
- Dope testing

MCPFD 1.4 Evaluation assessment and treatment planning strategies for musculoskeletal, neurological, cardiopulmonary, sports specific and other physiotherapy conditions: Principles of evaluation, clinical manifestations, general and specific clinical examination.

i. Physiotherapy assessment of the following:

- Range of motion (ROM)
- Tone
- Muscular strength and endurance
- Flexibility
- Coordination - Non equilibrium test - Equilibrium test
- Sports specific skills
- Cardiac efficiency
- Sensory evaluation
- Functional Evaluation - Various scoring methods in functional assessment - Validity and reliability
- Fitness evaluation - Aerobic – Anaerobic
- Spasm
- Trigger Point

- Tender Point
- Spasm

ii. Assessment of cognitive, perceptual dysfunctions and vestibular dysfunction

MCPFD 1.5 Electro-Diagnosis: Characteristics and components of Electro therapeutic stimulation systems and Electro physiological assessment devices, Instrumentation for neuromuscular electrical stimulation, Electrical properties of muscle and nerve, Neurobiology of afferent pain transmission and central nervous system mechanisms of pain modulation, Electrical stimulation and circulation.

MCPFD 1.6 Clinical Electro physiological testing: Instruments, Techniques and Interpretations of: Nerve conduction velocity including Repetitive Nerve Stimulation (RNS), Electromyography, Bio-feedback technique, Late responses

MCPFD 1.7 Concepts of electro physiological studies in neuro muscular diseases as a diagnostic and therapeutic tool.

MCPFD 1.8 Evoked potentials – VEP, SSEP, MEP, BAEP

Part II

MCPFD 2.1 Psychological aspects of rehabilitation in disability: Psychological tests.

MCPFD 2.2 Developmental Screening

- Factors Motor control assessment
- Motor control theories/mechanism
- Patterns of normal development
- Specific procedures and tests used to assess motor control defects

MCPFD 2.3 Anthropometry

- Body measurements - Height - Weight - Circumference
- Body Proportion - Body Mass Index (BMI) - Waist Hip Ratio (WHR)
- Body Composition
 - Somatotyping
 - Methods of measurement
 - Water displacement method for body fat.
 - Skin fold measurement
 - Under water weighing
 - Bioelectric Impedance Analysis (BIA)

MCPFD 2.4 Differential diagnosis in Physiotherapy

MCPFD 2.5

- Functional evaluation.
 - The concepts of health status impairment, functional limitations,
 - Disability and handicap;
 - Definition of functional activity and the purposes and components of the functional assessment;
 - Selection of activity and roles for an individual based on his or her capabilities and functional limitations.
- Various forms of functional tests;
 - Physical function test
 - Multi-dimensional functional assessment instrument

- c. Identification of instrument for testing function.
 - iii. Various scoring methods used in functional assessment;
 - iv. Reliability and validity of various functional assessments
- MCPFD 2.6 Evaluation of aging

SUGGESTED READING

1. Jones, M. A., & Rivett, D. A. Clinical reasoning for manual therapists. Edinburgh: Butterworth Heinemann.
2. Eyal Lederman - Fundamentals of manual therapy.
3. Grieve's Modern manual therapy
4. Walter Herzog - Clinical Biomechanics of spinal manipulation
5. Sandy Fritz, Kathleen Paholsky and M. Janes Grosenbach - Basic Science for soft tissue and movement therapies.
6. Jean Sayne Adams, Steve Wright - Theory and practice of therapeutic touch.
7. Akhoury Gourang Sinha – Principle and practice of therapeutic massage
8. Carol Manheim – The Myofascial release manual 3rd Edition
9. Maitland's – Peripheral manipulation
10. Maitland's – Vertebral manipulation
11. Chaitow – Cranial manipulation theory and practice
12. Lynn Paul Taylor – Taylor's manual of physical evaluation and treatment
13. Denise Deic – Positional release technique from a dynamic systems perspective.
14. Goodman and Snyder – Differential diagnosis in physical therapy
15. Tidy's Physiotherapy, Elsevier Publication.
16. Chaitow - Muscle energy technique
17. Reid et al – Sports injury assessment and rehabilitation.
18. Kjaer et al – Text book of sports medicine

**MASTER OF PHYSIOTHERAPY IN CARDIO-PULMONARY
SCIENCES
PHYSICAL & FUNCTIONAL DIAGNOSIS IN THE
SPECIALITY. SPECIALITY PAPER-1
MPT (C) 104: CLINICAL, PHYSICAL AND FUNCTIONAL DIAGNOSIS IN
CARDIO- PULMONARY PHYSIOTHERAPY (CCPFD)**

Course Contents:

SECTION- A

CCPFD 1.1 ICF conceptual frame work

CCPFD 1.2 Importance of assessment & evaluation, Outlines of principles and Methods of evaluation
Need and types of Documentation

CCPFD 1.3 Critical decision making and selection of outcome measures in cardiopulmonary
Physiotherapy

CCPFD 1.4 GENERAL: Review of Anatomy, Embryology and Epidemiology of cardio-vascular,
pulmonary and lymphatic pulmonary system.

CCPFD 1.5 Role of cardio respiratory therapist in patient assessment.

1. Patient clinician interaction and communication with assessment findings.
2. Confidentiality, concern and universal precautions.
3. A detailed and comprehensive cardio-respiratory health history.
4. Assessment standards, common scales, questionnaire indices used for patients with cardio-pulmonary dysfunction.

CCPFD 1.6 Detailed assessment of cardio- vascular and pulmonary symptoms (dyspnea, cough, sputum production, hemoptysis, clubbing, cyanosis, chest pain, syncope, fever, night sweating, headaches, altered sensorium, personality changes.

CCPFD 1.7 Vital signs assessment

1. Obtaining vital signs, clinical impressions
2. General clinical presentation
3. Temperature
4. Pulse including the peripheral pulses
5. Blood pressure
6. Respiratory rate

CCPFD 1.8 Fundamentals of physical examination with diagnosis in cardiovascular and respiratory
Physiotherapy

1. Examination of head and neck
2. Lung topography – thoracic cage landmarks
3. Examination of Thorax/ pulmonary system
4. Examination of Pericardium/cardiac system
5. Examination of Abdomen

6. Examination of Extremities

CCPFD 1.9 Assessment of neonatal and pediatrics patients – new born, critically ill infants, older infants and child

CCPFD 1.10 Comprehensive geriatric assessment – age related sensory deficits, cardio-respiratory deficits and diagnostic tests, standard scales and questionnaires used in geriatric assessment

CCPFD 1.11 Nutritional assessment of patients with cardio- respiratory diseases

CCPFD 1.12 Fitness assessment

1. Anthropometric and biophysical measurement and body composition
2. Flexibility tests and standards
3. Muscle strength and standard
4. Endurance tests and standards
5. Agility tests and coordination tests

CCPFD 1.13 Exercise testing and standardization and interpretation

1. TMT protocols- Maximal and submaximal protocols
2. Field protocols
3. Bicycle protocols
4. Step test protocols
5. Six minute walk test
6. Protocols for pediatric and geriatric population

CCPFD 1.14 Interpretation and clinical relevance of investigations in cardio- pulmonary Physiotherapy

1. Clinical laboratory studies – hematology, microbiology, urine analysis, histology, pathology
2. Pulmonary function tests – normal values
3. Spirometry, arterial blood gas analysis and its interpretation in cardio – respiratory Physiotherapy, capnography and pulse oximetry and its relevance in cardio- pulmonary Physiotherapy
4. Clinical application of chest radiograph – chest x-ray, examination, views; computed tomography, magnetic resonance imaging, lung scans - PET scan. Evaluation of chest radiography – clinical and radiographic findings in cardio- pulmonary disorders and its relevance cardio-pulmonary Physiotherapy
5. Laboratory and bedside interpretation of ECG findings – interpretation of normal and abnormal ECGs and its importance in cardio-respiratory physio- therapy and various ECG patterns in cardiac and lung disease
6. Cardio respiratory monitoring in critically ill patients including patients with artificial airways
 - i. Ventilator assessment and evaluation of oxygenation in ICU
 - ii. Assessment of cardiac output in ICU
 - iii. Assessment of haemodynamic pressures in ICU
 - iv. Clinical diagnosis in cardio- respiratory disorders in intensive care.

SECTION- B

CCPFD 2.1 Blood flow studies-arteriography, venography, Color Doppler, ANS testing and interpretation used in cardio- respiratory Physiotherapy and edema evaluation and interpretation.

CCPFD 2.2 Cardio respiratory assessment and diagnosis of patient on mechanical ventilator and interpretation of graphical forms, weaning modes and indices

CCPFD 2.3 Risk factor stratification, disability evaluation with reference to cardio vascular and pulmonary disorders

CCPFD 2.4 Psychological evaluation with reference to stress and anxiety in cardio- pulmonary disorders, Evaluation of stress and anxiety using various scales and questionnaires

CCPFD 2.5 Outcome measures used in Cardio – vascular and pulmonary Physiotherapy

CCPFD 2.6 Cardio-pulmonary Exercise Testing, VO₂ max, METs – its importance in calculating energy expenditure and physical activities

CCPFD 2.7 Calculating energy expenditure using calorimetry method, various formulae and equations with emphasis on its importance in prescribing exercise in various patient populations

CCPFD 2.8 Evaluation and diagnosis of sleep and breathing disorders

RECOMMENDED BOOKS

- 1) Froelicher /Myers- “Exercise and heart’ Saunders publication.
- 2) Jean Jobin et al. Advances in Cardio-Pulmonary Rehabilitation”
- 3) Scot Irvin, Lan Stephen Tecklin- “Cardio-Pulmonary physical therapy-a guide to practice”, Mosby.
- 4) Frances J Brannon, Margaret W Foley, Julie Ann Stars, Lauren M Saul
- 5) “Cardio-Pulmonary Rehabilitation-Basic Theory and Application”, F A Davis Company.
- 6) Cynthia Coffin Zadai- “Pulmonary management in Physical therapy”, Churchill Livingstone.
- 7) Barbara A Webber and Jennifer A Pryor- “Physiotherapy for respiratory and cardiac problems”, Churchill Livingstone.
- 8) George G. Burton, John E Hodgkin, Jeffrey J Ward- “Respiratory Care-A Guide to Clinical Practice” 4th edition, Lippincott Williams and Wilkins,
- 9) Robert M Berne, Matthew N Levy- “Cardio-vascular physiology”, Mosby.
- 10) John B. West- “Respiratory Physiology-the essentials”, Lippincott Williams and Wilkins.
- 11) Macleod’s Clinical Examination.
- 12) Andrews Davies and Carl Moores- “The Respiratory System”, illustrated by Robert Britton, Churchill Livingstone.
- 13) George G. Burton, John E Hodgkin, Jeffrey J Ward- “Respiratory Care-A Guide to Clinical Practice”, Lippincott Williams and Wilkins,
- 14) Richard d Branson/Robert L Chatburn- “Respiratory Care Equipment”, J B Lippincott Company.

MASTER OF PHYSIOTHERAPY IN NEUROSCIENCES
PHYSICAL & FUNCTIONAL DIAGNOSIS IN THE SPECIALITY.
SPECIALITY PAPER-1
MPT (N) 104: CLINICAL, PHYSICAL AND FUNCTIONAL DIAGNOSIS IN
NEURO-PHYSIOTHERAPY (NCPFD)

Course Contents:

SECTION- A

NCPFD 1.1 ICF conceptual frame work

NCPFD 1.2 Importance of assessment & evaluation, Outlines of principles and Methods of evaluation

NCPFD 1.3 Need and types of Documentation

NCPFD 1.4 Critical decision making and selection of outcome measures in Musculoskeletal Physiotherapy

NCPFD 1.5 Assessment, differential diagnosis and diagnosis of various Neurology conditions

NCPFD 1.6 Associated functional disturbances of higher function and their testing

NCPFD 1.7 Outcome measures used in Neuro-physiotherapy-for Cognitive impairment and disability, Focal disabilities, Global measures of disability, Motor impairment, ADL and extended ADL tests, Handicap and quality of life, Multiple Sclerosis, Parkinson's disease, Stroke, Head injury, Spinal cord injury, Pain scales

NCPFD 1.8 Clinical analysis of posture, movement and gait, use of gait analyzer

NCPFD 1.9 Principles, Techniques and interpretation of Pathological investigations and diagnostic imaging (CT, MRI, Ultra sound, PET, fMRI, bone scan and other diagnostic imaging) for diagnosis of neurological conditions.

NCPFD 1.10 Clinical examination and detection of movement dysfunction

NCPFD 1.11 Evaluation of ANS dysfunction with reference to Psycho physiological testing

NCPFD 1.12 Motor control assessment, reflexes and automatic reactions

NCPFD 1.13 Neurodevelopment assessment

SECTION- B

NCPFD 2.1 Assessment of Hand Function

NCPFD 2.2 Voluntary control assessment

NCPFD 2.3 Neuropsychological tests

NCPFD 2.4 Electrophysiological assessment devices – Instrumentation, Characteristics and components EMG (Qualitative and Quantitative EMG), NCV, Conventional Methods, RNS, EPS, EEG related to neurological disorders with interpretation

NCPFD 2.5 Physical disability evaluation and disability diagnosis

NCPFD 2.6 Assessment of progressive locomotor disorder- Neuropathic, myopathic and NMJ conditions

NCPFD 2.7 Assessment and scales for diagnosis of pain

NCPFD 2.8 Biomarkers specific to neurological disorders

NCPFD 2.9 Assessment of Emotional Intelligence

NCPFD 2.10 Assessment of Peripheral nerve injuries and Cranial nerve disorders
NCPFD 2.11 Neurophysiology and evaluation of Balance and Coordination
NCPFD 2.12 Assessment of Physical and Neurological Functions of Patients in ICU

RECOMMENDED BOOKS

1. American Psychological Association. Publication manual of the American Psychological Association. Washington, DC: Author.
2. Chichester, UK: John Wiley. Domholdt, E. Physical therapy research: Principles and applications, WB Saunders, Philadelphia, USA.
3. Kuzma, J. W., & Bohnenblust, S. E. Basic statistics for the health sciences. Boston: McGraw Hill.
4. Munro, B. H. Statistical methods for Healthcare research. Philadelphia: Lippincott.
5. Coakes, S. J., & Steed, L. G. SPSS: Analysis without anguish: Version 11.0 for Windows. Milton, Australia: John Wiley & Sons Inc. Jenkins, S., Price CJ, & Straker L.
6. The researching therapist. A practical guide to planning, performing and communicating research. Edinburgh: Churchill Livingstone.
7. Campbell, M.J., & Machin, D. Medical statistics: A commonsense approach. Chichester, UK: John Wiley.
8. Domholdt, E. Physical therapy research: Principles and applications. Philadelphia: WB Saunders.
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10. Handbook of Physiology in Aging- Masoro, C.R.C. Press.
11. Hicks C: Research of Physiotherapists. Churchill Living stone, Edingburgh
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**MASTER OF PHYSIOTHERAPY IN SPORTS SCIENCES
PHYSICAL & FUNCTIONAL DIAGNOSIS IN THE SPECIALITY.
SPECIALITY PAPER-1
MPT (S) 104: SPORTS TRAUMATOLOGY (STT)**

Course Contents:

SECTION- A

STT 1.1 ICF conceptual frame work

1. Importance of assessment & evaluation Outlines of principles and Methods of evaluation Need and types of Documentation
2. Critical decision making and selection of outcome measures in SPORTS Physiotherapy
3. Investigative Procedures. Diagnostic imaging (CT, MRI, Ultra sound, bone scan and other diagnostic imaging's) for diagnosis of congenital anomalies and normal variants, traumatic injuries, scoliosis, degenerative disorders and infections)
4. Principles of pathological investigations and imaging techniques related to musculoskeletal disorders with interpretation Causes & Mechanism of Sports Injuries

STT 1.2 Evaluation of Risk Factors and Pre-Participation Examination:

1. Components of pre-participation evaluation, Scope and implementation of pre-participation program in Sports PT
2. Evaluation of Physical Fitness: Assessment of components of physical fitness including functional tests: muscle strength, flexibility, agility, balance, co-ordination, sensory deficits, cardio-pulmonary endurance
3. Sports-Specific evaluation and criteria for return to sport
4. Examination of lower limb: Pelvis, Hip, Thigh, Knee, Leg, Ankle and Foot
5. Examination of Upper Extremity: Shoulder girdle, Shoulder, Arm, Elbow & Forearm, Wrist and hand
6. Assessment of vertebral column: Cervical, Thoracic, Lumbosacral including Tests of Neural Tension
7. Sporting emergencies screening: Head and neck, Face, Abdominal injuries
8. Anthropometric evaluation
9. Kinesiological EMG

SECTION- B

STT 2.1 Causes & Mechanism of Sports Injuries

STT 2.2 Prevention of Sports injuries

STT 2.3 Principle of management of sports injuries

STT 2.4 Common acute and overuse injuries, causation, prevention and management of lower Extremity in Sports PT

STT 2.5 Common acute and overuse injuries, causation, prevention and management of upper Extremity in Sports PT

STT 2.6 Common sports injuries of spine with respect to causation, prevention and management

STT 2.7 Sporting emergencies first aid

STT 2.8 Emergency Medical Planning and Cover for Sports Events

STT 2.9 Emergency Situations, Primary and secondary emergency assessment, emergency plan, Transportation of an injured person

STT 2.10 Treatment of collapsed athlete- Severe head injury, Athlete with spinal injury

STT 2.11 Causes of Collapse

STT 2.12 Sports specific injuries, with special emphasis on the specific risk factor, nature of Sports,

STT 2.13 Biomechanical Analysis of Skills, kind of medical intervention anticipated and prevention with respect to various sporting events : Individual events: Field & Track, Team events, Contact and Non-contact sports, Water sports

MASTER OF PHYSIOTHERAPY
M.P.T-105: SKILLS ACQUISITION AND REFINEMENT
(SAR-I)

(Common subject for all PG)

Course Content:

Teaching Assignment, Seminars, journal club & Case Studies

**MASTER OF PHYSIOTHERAPY IN MUSCOLOSKELETAL
SCIENCES
/MASTER OF PHYSIOTHERAPY IN CARDIO-PULMONARY
SCIENCES
/MASTER OF PHYSIOTHERAPY IN NEUROSCIENCES
/MASTER OF PHYSIOTHERAPY IN SPORTS SCIENCES
Under M.P.T-105 Skills Acquisition and Refinement (SAR-I)**

1. Locomotor disability Assessment content:

**DISABILITY (PERMANENT PHYSICAL IMPAIRMENT) ASSESSMENT AND
CERTIFICATION GUIDELINES & GAZETTE NOTIFICATION:**

- Detail study of Government Gazette to be done: (The Gazette of India is regularly updated, and its publications can change over time. Refer the recent Gazette publications issued by the Government of India, from the official website)
- PWD Act 1995 and Rights of person with Disability Act 2016, to study in detail

2. BLS and ACLS Training:

Course Title: Basics of Emergency Care and Life Support Skills (ECLS): Theory (L) Practical (P)

ECLS 1.0. Subject Description and instruction to teacher

- Basic life support (BLS) is the foundation for saving lives following cardiac arrest.
- Fundamental aspects of BLS include immediate recognition of sudden cardiac arrest (SCA) and activation of the emergency response system, early cardiopulmonary resuscitation (CPR), and rapid defibrillation with an auto-mated external defibrillator (AED).
- Initial recognition and response to heart attack and stroke are also considered part of BLS. The student is also expected to learn about basic emergency care including first aid and triage.
- The purpose of this course is to equip the students with the skill to save the life of a person in different emergency situation as first responder.
- The training should be provided using Mannequins and dummies and Videos presentations and Role plays should be also used to impart knowledge and skill besides the lecture - demonstrations.

ECLS 1.0.1 Course Outcomes

After completion of this course the student shall be able to

1. Perform Opening and maintaining and patent airway: assessment and knowledge of airway maneuvers and adjuncts
2. Ventilate patients: Assessment and management of breathing with Mouth to mouth and mouth to mask
3. Administer basic life support skills including cardiopulmonary resuscitation
4. Provide first aid of simple and multiple system trauma such as
 - Controlling hemorrhage

- Managing Burns and wounds
 - Response to effects of weapons of mass destruction
 - Manually stabilizing injured extremities
5. Provide first aid to patients with medical emergencies like heart attack and stroke
 - Identifying signs of Stroke and heart attack and safe transfer after first aid without delay in transfer
 - Manage general medical complaints seizures and animal bites (snake /dog bite)
 - Reassure patients and bystanders by working in a confident, efficient manner
 - Avoid mishandling and undue haste while working expeditiously to accomplish the task
 6. Manage safe patient transport Entailing-Extrication of the victim, helmet removal and spine protection during transport.
 7. Explain Roles, responsibilities and limitation of first responder

Course Contents:

SECTION-A

UNIT-1

ECLS 1.1 Emergent conditions and magnitude, Concept of golden hour, Duties and responsibilities of first responder

ECLS 1.2 Ethical issues and Gather information from observation, experience and reasoning Identification of rapidly changing situations and adapt accordingly Planning and organization of work. Scene safety dealing with emotional reactions family members and bystanders

ECLS 1.3 Well-being of first responder Personal protection

1. Steps to be taken against airborne and blood-borne pathogens
2. Personal protective equipment necessary for each of the following situations: Hazardous materials
Rescue Operations Violent Scenes Crime scenes
3. Electricity, Water and ice
4. Exposure to blood-borne pathogens Exposure to airborne pathogens

UNIT-2

ECLS 2.1 Airway

1. Signs of inadequate breathing
2. Mechanism of injury to opening the airway
3. Steps in the head-tilt chin-lift
4. Steps in the jaw thrust
5. Taking out foreign body
6. Ensuring patent airway during seizures and vomiting

ECLS 2.2 Ventilation

1. of a patient with a mask or barrier device
2. Steps in providing mouth-to-mouth and mouth-to-stoma ventilation

ECLS 2.3 Circulation

1. Evaluate the cardiac status of the patient

2. Determine the need for and take necessary action to proper circulation

3. Steps for control of bleeding: Pressure bandage and tourniquet

ECLS 2.4 Clearing a foreign body airway obstruction

ECLS 2.5 CPR

1. Implications of cardiac arrest

2. Cardiopulmonary resuscitation (CPR)

i. How it works

ii. Steps

iii. When to stop CPR

3. Brief overview of AED Automated external defibrillator (only demonstration –no hands on)

SECTION-B

UNIT-3

ECLS 3.1 Bleeding and Soft Tissue Injuries

1. Difference between arterial and venous bleeding

2. Stopping external bleeding

3. Identification of internal bleeding

4. Types and Functions of dressings and bandages

5. How to help a victim of burn injury

ECLS 3.2 Injuries to Muscles and Bones

1. Suspecting bony/spinal injury

2. Splinting –materials used

3. Importance of splinting

UNIT-4

ECLS 4.1 Medical Emergencies

ECLS 4.2 Identification of the patient steps in providing first aid to a patient with

i. A general medical complaint –

ii. Seizures

iii. Chest-pain

iv. Shortness of breath

v. Exposure to heat

vi. Including other medical complaints like allergy, diarrhea, fainting, low blood sugar, stroke

vii. Drowning

viii. Poisoning

ECLS 4.3 Transportation Importance of timely and proper transportation methods of transportation of victim from site of injury to ambulance. Importance of spine protection methods of spine protection during transportation

ECLS 4.4 Disaster preparedness - Preparedness and risk reduction Incident command and institutional mechanisms Resource management

PRACTICAL

Student should practice on Mannequins and dummies and should be able to

ECLS (P) 5.1. Provide Airway & Ventilation

ECLS (P) 5.2. Perform Basic Life Support: CPR

ECLS (P) 5.3. Perform Initial management of Thermal injury, electric injury

ECLS (P) 5.4. Perform stabilizing injured extremity and wound management

ECLS (P) 5.5. Demonstrate bandaging techniques to various body parts

ECLS (P) 5.6. Demonstrate Extrication, Helmet removal and spine protection

ECLS (P) 5.7. Demonstrate Stretcher use

Recommended text books for ECLS

Indian Red Cross: INDIAN FIRST AID MANUAL 2016 (7th edition) available at

<https://www.indianredcross.org/publications/FA-manual.pdf>

3. Disaster Management:

Course Title: Disaster Management (DM): Theory (L)

DM 1.0 Subject Description and instruction to teacher:

- The commission's goal is to emphasize the vital role physical therapists (physios) play in disaster management and contribute to national and global preparedness.
- To achieve this, it's essential to raise awareness among physiotherapists about national and international organizations and emphasize the crucial role physical therapists play in disaster management, particularly within Emergency Medical Teams.
- Also it may be noted that the acts, policies, gazettes are regularly updated, and its publications can change over time. The teachers and students should thus refer the recent publications issued on the official website

DM 1.0.1 Course Outcomes:

After completion of this course the student shall be able to

- Understand the crucial role physical therapists play in disaster management, particularly within Emergency Medical Teams.
- Should be able to identify national and international organizations that play a vital role in disaster management
- Should be able to identify the legal framework for disaster management in India and disaster prone areas
- Provide essential information to other physical therapists interested in disaster response work and to make them aware of national and international agencies already active in the field
- Promote global preparedness and support physical therapists in making a meaningful difference in disaster response and recovery efforts

Course Content: Disaster Management (DM): Theory (L)

DM 1.1 Definition of disaster and the hazards associated with disaster, vulnerable groups in Disaster

DM 1.2 Definition of Advocacy, disability advocacy, Contingency planning wrt to disaster management, Hazard, Risk , Vulnerable groups

DM 1.3 History of involvement of Physiotherapists in rehabilitation efforts during emergencies

DM 1.4 National organizations who are involved in disaster preparedness and management strategies:

1. The legal framework for disaster management in India: Key takeaways of Disaster Management Act 2005, National Policy on Disaster Management 2009 and National Disaster Management Plan 2018

2. Different types of disasters managed in India, Epidemiologic surveillance and disease control, main goal of the National Disaster Management Authority, areas in India are most prone to disasters, Institutional structure for disaster management in India at various levels, Central Ministry that coordinates disaster management and leader of NDMA in India

3. Disaster Management Act of 2005 key take always and its significance, Phases of Disaster management, Long term prevention measures, role of various stake holders in disaster management, role of community involvement in disaster management, challenges faced in disaster management in India

4. Prime minister's 10 point agenda and Community based and Technology driven approaches: Key policies and strategies

DM 1.5 International organizations who facilitate contributions of physiotherapists in disaster preparedness and management strategies. Role of physiotherapists in:

1. Disaster management within their own countries, benefits of rehabilitation provided following disasters

2. Prevention of a disaster

3. Preparedness for disaster with respect to essential locally appropriate preparedness for a disaster,

4. Identifying and connecting professional associations, health service providers and training institutions.

5. Developing international humanitarian response

6. Response to disaster: Required skills and knowledge and required actions and secure resources with respect to assessment, coordination, psycho-social support and advocacy

7. Recovery: with respect to planning of medical management and local capacity building and physiotherapy rehabilitation, advocacy

DM 1.6 The type and distribution of injuries caused by disasters, the type of hazards, common injuries that can lead to long-lasting or permanent disability

DM 1.7 Clinical Practice in Response phase along with documentation (conservative and surgical), record management, data and research, informed consent and confidentiality, regulations and scope of practice, hand hygiene and infection control, communication, referral, discharge planning with respect to international management strategies.

DM 1.8 International Disaster Management Rehabilitation Response Plans and role of Physiotherapists with respect to: Systems in Place, Identifying Personnel, Facilities and Resources, Advocacy and Partnerships, Training and Capacity Building

DM 1.9 Elements to be considered "essential" components in any disaster education or training programme for health professionals as defined by Global Response Framework

DM 1.10 The World Health Organization (WHO) : the lead UN agency in the health cluster and its emergency response framework and Humanitarian principles

Recommended websites for references

Disaster management National Disaster Management Plan, 2016. A publication of the National Disaster Management Authority, Government of India. May 2016, New Delhi at www.mha.gov.in
www.wcpt.org/disaster-management

MASTER OF PHYSIOTHERAPY
M.P.T-106: Clinical Training (CT-I)

(Common subject for all PG)

Course Content: Practical / clinical examination

Compulsory rotatory Clinical Posting as per the Speciality and Clinical Assessment during Clinical posting is mandatory.

MASTER OF PHYSIOTHERAPY
M.P.T-107: Dissertation (DSS-I)

(Common subject for all PG)

Course Contents:

Each candidate will have to carry out of a dissertation on Speciality related subject of MPT.
Ethical approval certificate from **Registered Institutional Ethical committee** and Clinical Trial
Registration is mandatory for interventional Dissertation study topic.