



**HARYANA STATE COUNCIL FOR PHYSIOTHERAPY**  
**Bays 55-58, Sector-2, Panchkula**

**SYLLABUS FOR**  
**MASTER OF PHYSIOTHERAPY (M.P.T.)**  
**TWO YEARS DEGREE COURSE**  
**TO BE IMPLEMENTED FROM: 2024-25**

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## PREAMBLE

At the outset it must be mentioned that the present document should best be taken as a guiding framework. In preparing the same we are well aware that in some small pockets in the country, the teaching of Physiotherapy is thriving in creative directions. A few departments are grounded in clinical perspectives, some other in the experimental research and industrial-organizational areas. The Learning Outcome based curriculum framework (LOCF), it is to be better understood as a document to be studied in relation to other advances in the field of Physiotherapy. It intends to offer a broad guideline to reorient the organization of teaching learning processes at the UG and PG level to augment the quality of learning in the context of contemporary challenges of higher education in India. It explores the opportunities to improve class room transaction, teacher preparation and sense of relevance for the learners. In this endeavor it departs from the earlier scheme in a major way and explicitly states the learning outcomes and uses that to organize the diverse teaching-learning processes. In so doing it tries to address the needs of society, groups and the individual.

This scheme considers learning as an experiential and participatory activity with sufficient space for innovation and initiative, building the scientific spirit of objectivity and critical perspective. In this venture teachers and learners are assumed to jointly engage in a creative exercise of knowledge construction and skill building. In the last few decades, the discipline of Physiotherapy has also emerged as a new treatment measure. Its training can empower students assess, diagnose and treat various disorders or diseases and mal alignments. Teaching program therefore must include the agenda/ courses which are meaningful to the surrounding society. Educational institutions must reach out to the society. This will give us opportunity to get validation of skill training, knowledge acquisition, research and demonstration of relevance of graduate attributes. In turn, this kind of experience will also help shaping the learning outcomes. The employability gap would also be addressed. Preparing teachers to teach through pedagogies suitable to promote the values given in the LOCF document is an essential condition for the attainment of LOCF. It is perhaps the most daunting challenge in order to fulfil the mandate of LOCF. The diversity maintenance and appreciation, along with standardization of teaching -learning across the nation requires accommodating local realities with an open mind.

Physiotherapy or Physical Therapy (P.T.) is a Movement Science with an established theoretical and scientific base and widespread clinical applications in the Prevention, Restoration and Rehabilitation, Maintenance and Promotion of optimal physical function. 5 Physiotherapists diagnose and manage movement dysfunction and enhance physical and functional abilities. This physical dysfunction may be the sequelae of involvement of any of the systems like Musculoskeletal, Neurological, Cardiovascular, Respiratory or other body systems. These practitioners contribute to society and the profession through practice, teaching, administration and the discovery and application of new knowledge about physiotherapy experiences of sufficient excellence and breadth by research to allow the acquisition and skills and behaviors as applied to the practice of physiotherapy. Learning experiences are provided under the guidance and supervision of competent faculty, in both, classroom as well as in clinic. The designed curriculum will prepare the entry-to-practice physiotherapist (PT) to be an autonomous, effective, safe and compassionate professional, who practices collaboratively in a variety of healthcare set ups such as neonatal to geriatric, from critical care to community fitness to sports training and is responsive to the current and future needs of the health care system.



This holistic approach incorporates a broad range of physical and physiological therapeutic interventions and aids. The core skills used by Physiotherapy include manual therapy, therapeutic exercises and the application of electro-therapeutic modalities.

Specifically, physiotherapists improve the client's quality of life by:

- Promoting optimal mobility, physical activity, and overall health and wellness;
- Preventing disease, injury, and disability;
- Geriatric care and Rehabilitation;
- Managing acute and chronic conditions, activity limitations and participation restrictions;
- Improving and maintaining optimal functional independence and physical performance;
- Rehabilitating injury and the effects of disease or disability with therapeutic exercise programs and other interventions; and
- Educating and planning maintenance and support programs to prevent re-occurrence, re-injury or functional decline

## 1. MASTER OF PHYSIOTHERAPY (MPT)

### INTRODUCTION

The Master of Physiotherapy program shall be under the Faculty of Medicine/Health Sciences (under Department/College/Institution of Physiotherapy). The name of the Degree program shall be Master of Physiotherapy (Master of Physical Therapy) – M.P.T

A student may be admitted to one of the following four courses leading to the Degree of Master of Physiotherapy (M.P.T.).

- i. M.P.T. Orthopedics
- ii. M.P.T. Neurology
- iii. M.P.T. Sports
- iv. M.P.T. Cardiopulmonary

These REGULATIONS & CURRICULUM will be applicable from the academic year 2021-22 and thereafter.

### LEARNING OBJECTIVES OF THE COURSE

#### ➤ **COMMUNICATION**

- Effective communication and interpersonal skill which are adapted to meet the needs of diverse individuals and groups.

#### ➤ **ETHICAL AND LEGAL STANDARDS**

- Adherence to safe, ethical and legal standards of current practice (as identified by professional organizations, federal and state law and accrediting bodies).

#### ➤ **DIAGNOSIS AND PLAN OF CARE**

- Development of physiotherapy diagnoses and an individualized plan of care for the management and prevention of movement dysfunction across the life span.
- Demonstrate effective physiotherapy screening of the following systems for keep-refer decisions: Musculoskeletal; Neuromuscular; Cardiovascular and Pulmonary; Integumentary.
- Demonstrate effective history taking, examination, evaluation, and re-evaluation that leads to an appropriate physiotherapy diagnosis and prognosis for patients with disorder of the following systems: Musculoskeletal; Neuromuscular; Cardiovascular and Pulmonary; Integumentary
- Develop an appropriate plan of care and intervention for patients with disorders of the following systems: Musculoskeletal; Neuromuscular; Cardiovascular and Pulmonary; Integumentary.
- Assess and address needs of individuals and communities for health promotion and prevention of movement dysfunction.



- **TEAM MEMBER**  
Effective participation as an intra- and inter-professional team member.
- **PRACTICE MANAGEMENT**  
Effective clinical practice management for delivery of physiotherapy services in diverse settings.
- **TEACHING AND LEARNING PRINCIPLES**  
Application of teaching and learning principles in educational, practice, and community settings.
- **EVIDENCE-BASED PRACTICE**  
Application of principles of critical thinking and clinical reasoning to evidence-based physiotherapist practice.
- **PROFESSIONAL RESPONSIBILITY AND COMMITMENT**  
Responsibility and commitment to the profession and society through life-long learning and involvement in activities beyond the job responsibilities.

### **LEARNING OUTCOMES OF THE COURSE**

On completion of this course, the students will be able to:

- ❖ Integrate concepts from the biological, physical, behavioral, and clinical sciences into physical therapy services
- ❖ Exhibit professional conduct and behaviors that are consistent with the legal and ethical practice of physical therapy
- ❖ Demonstrate compassion, caring, integrity, and respect for differences, values, and preferences in all interactions with patients/clients, family members, health care providers, students, other consumers, and payers
- ❖ Demonstrate culturally sensitive verbal, nonverbal, and written communications that are effective, accurate, and timely
- ❖ Collect and critically evaluate data and published literature to apply in the delivery of care, practice management, and to examine the theoretical and scientific basis for physical therapy
- ❖ Screen patients/clients to determine if they are candidates for physical therapy services or if a referral to, or consultation with, another health care professional or agency is warranted
- ❖ Complete a patient/client examination/ re-examination and evaluate and interpret the examination data to determine a physical therapy diagnosis and prognosis

- ❖ Employ critical thinking, self-reflection, and evidence-based practice to make clinical decisions about physical therapy services
- ❖ Collaborate with patients/clients, caregivers, and other health care providers to develop and implement an evidence-based plan of care that coordinates human and financial resources
- ❖ Provide services and information related to health promotion, fitness, wellness, health risks, and disease prevention within the scope of physical therapy practice.
- ❖ Advocate for patient/client and profession
- ❖ Provide consultative services and education to patients/clients, caregivers, health care workers, and the public using culturally sensitive methods that are adapted to the learning needs, content, and context
- ❖ Employ effective leadership skills in the context of supervising, delegating, and mentoring within the profession



## **ELIGIBILITY FOR ADMISSION**

A Candidate who has passed Bachelor of Physiotherapy from any Indian/Foreign Universities/ Board aggregate 55% marks in Bachelor of Physiotherapy or from recognized college and has completed six months of compulsory rotatory internship.

## **COURSE DURATION**

The duration of the course of Institution leading to the Degree of Master of Physiotherapy (M.P.T.) shall be two years including compulsory submission of dissertation and clinical practice. M.P.T. first Examination will be held at the end of First academic year, second at the end of second academic year, in the month of April/ May on such dates as may be fixed by the Vice Chancellor.

## **SELECTION CRITERIA FOR ADMISSION**

Selection criteria for admission in M.P.T. shall be as per the norms adopted for post graduate selection in physiotherapy under state council/university from time to time.

## **MEDIUM OF INSTRUCTION:**

English shall be the medium of instruction for all the subjects of study and for examination of the course.

## **OBTAINING MEMBERSHIP OF HARYANA STATE COUNCIL FOR PHYSIOTHERAPY**

Candidates should obtain registration of **Haryana State Council for Physiotherapy** in one month (maximum period) after getting admission in course. In case of foreign nationals the most recent guidelines of state council/university may be followed.

## **INTAKE OF STUDENTS**

The guide to student's ratio shall be 1:3 for admission in first year M.P.T. and cannot be extended in any case. Guide should be of the same post graduate degree. The intake of students to the course shall be at the starting of academic year only. No postgraduate seats left unfilled in an academic year shall be carried forward to the next or subsequent academic years.

## **EXAM**

### **a) SCHEDULE OF EXAMINATION**

Final examination will be held at the end of two academic years.

### **b) ESSENTIALITY TO APPEAR IN EXAM**

Student must be having attendance as described.

Dissertation submitted by student must be accepted by authority.

### **c) SCHEME OF EXAMINATION**

The exam of Master in Physiotherapy will be taken by theory, practical and viva-voce.

- i. A candidate will be declared pass in the MPT-2<sup>nd</sup> year examination if he/she has passed all the papers including theory and practical of MPT. 1<sup>st</sup> year has passed all the papers of MPT-2<sup>nd</sup> year besides acceptance of research dissertation, passing in viva-voce of research dissertation.
- ii. A candidate is required to pass all MPT-1<sup>st</sup> year 2<sup>nd</sup> year examination within 4 years from the date of admission to M.P.T. 1<sup>st</sup> year.

## **EXAMINERS**

All examiners shall be recognized post graduate teachers. At least 50 % of total examiners shall be externals. (Other universities)

## **CRITERIA FOR PASS**

A candidate is declared to have passed in university exam if he/she secures minimum 50% marks in Theory and Practical separately.

- 1) The minimum number of marks required to pass in each examination shall be.
  - 50% in theory including written, oral and internal assessment of theory subject
  - 50% in the Practical including clinical of each subject and internal assessment.

## **SUPPLEMENTARY EXAM**

A candidate will have to reappear in the whole examination including theory and practical during the supplementary examination.

Supplementary examination can be conducted after 6 months of the main Examination.

A candidate is required to pass the re-appear papers (S) within consecutive chances i.e., supplementary and annual examination excluding the chance of main examination, failing which he/she shall repeat the entire course subject to class- (Exam C ii).

## **DECLARATION OF CLASS:**

- Successful candidate who obtained 80% marks or more in any subject shall be declared to have passed with 'Distinction' in that subject provided he passes in all the subjects of the Examination at one and same time.
- MPT. Degree with "Honor" shall be awarded to candidate who has completed the course in the minimum period.
- Has passed each to the first and second examination in the first attempt obtaining not less than 70% of the marks to each subject of every examination.

## **ATTENDANCE**

No candidate shall be permitted to appear for the examination unless he/she puts 75% of the training during each academic year of the post graduate course and produces the necessary certificate of study and attendance from head of the institution.

- 75% of the full course of the Lectures delivered and
- 75% of the full course of practical held separately
- 75% of the full of clinical practice held separately.
- Submission of Research dissertation of respective discipline selected in MPT. Course

## **RE-ADMISSION AFTER BREAK OF STUDY:**

All re-admissions of candidates are subject to the approval of the Vice Chancellor of concerned university.

## **COMMENCEMENT OF THE COURSE -**

The course shall commence as per the notification of Council/University.



### COURSE OF THE STUDY

The course of the study, subjects and teaching schedule for I and II year M.P.T. course is shown separately in table 1 and 2.

### SCHEME OF EXAMINATION: SUBJECTS AND DISTRIBUTION OF MARKS

#### FIRST YEAR (Common to all disciplines)

Sr. No.	Course	Subjects	Theory	Practical	Total Marks	Credit Hours
1.	MPT 01	Review of basic sciences I (Anatomy & physiology)	80+20	-	100	3
2.	MPT 02	Review of basic sciences II (Pathology & Pharmacology)	80+20	-	100	3
3.	MPT 03	Applied physiotherapy	80+20	80+20	200	4+4
4.	MPT 04	Applied biomechanics & Ergonomics	80+20	-	100	4
5.	MPT 05	Biostatistics and Research Methodology	80+20	-	100	3
6.	MPT 06	Professional development & Ethics	80+20*	-----	100	4
7.	MPT 07	Seminar/Case Presentations	-	100	100	4
8.	MPT 08	Clinical Training	-	-	-	12
Total			600	200	800	41

## MASTER OF PHYSIOTHERAPY SECOND YEAR

SR. NO.	COURSE NO.	SUBJECTS	MARKS			
			Theory	Practical	Total Marks	Credit Hours
1	MPT 01	Assessment and diagnosis of musculoskeletal Conditions/ Sports Condition/ Neurological Conditions/cardiopulmonary Conditions	80+20*	-----	100	4
2	MPT 02	Medical and Surgical Management of Musculoskeletal Conditions/Sports Conditions/Neurological Conditions/Cardiopulmonary Conditions	80+20*	-----	100	4
3	MPT 03	Physiotherapy Management in Musculoskeletal Conditions/Sports Conditions /Neurological Conditions/Cardiopulmonary Conditions	80+20*	-----	100	5
4	MPT 04	Recent Advances in Musculoskeletal Conditions/Sports Conditions /Neurological Conditions/Cardiopulmonary Conditions	80+20*	-----	100	5
5	MPT 05	Practical	-----	100+50*	150	8
6	MPT 06	Seminars/ Case Presentations	-----	100*	100	4
7	MPT 07	DISSERTATION PROJECT WORK (based on clinical/ case presentation including viva voce)	-----	80+20* (Accepted/ Rejected)	100 (Accepted/ Rejected)	10
			400	350	750	40

- Internal Assessment Marks



## **METHOD OF TRAINING**

The training of post-graduate for MPT degree shall be on a full time pattern with graded responsibilities in the management and treatment of patients entrusted to his/ her care. The participation of all the students in all facets of educational process is essential. Every candidate should take part in Seminar, Journal reviews, Case presentations, teaching skill, Field work etc. Every candidate should be required to participate in training programs of under-graduate students. Training should include the teaching involvement in laboratory and research studies. All the students must maintain logbook duly signed by head of clinical posing as well as guide.

## **DISSERTATION / THESIS**

Every candidate pursuing MPT degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate teacher. The results of such a work shall be submitted in the form of dissertation.

The dissertation is aimed to train a post graduate student in research methods and techniques. It includes identification of a problem, formulation of hypothesis, search and review of literature getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, comparison of results and drawing conclusion.

Every candidate shall submit to the registrar (Academic) of the university in the prescribed form, a synopsis duly approved by the institutes containing particulars of proposed dissertation work within six month from the date of commencement of the course or before the dates notified by the university. The synopsis shall be sent through the proper channel.

The dissertation should be written under the following headings.

1. Introduction
2. Aims or objectives of study
3. Review of literature
4. Need of study
5. Material and methods
6. Results
7. Discussion
8. Conclusion
9. References
10. Annexures
11. Master chart

The written text of dissertation shall not be less than 50 pages and shall not exceed 100 pages excluding references, tables, questionnaires and other annexure. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27" X 11.69") and bound properly. Text in dissertation should be in Times New Roman Font with 12 size. Spiral binding should be avoided. The guide, head of the department and head of the institution shall certify the dissertation. Four copies of dissertation thus prepared shall be submitted to the registrar, six months before final examination or before the dates notified by the university.

The thesis will be sent to all external examiners appointed by the university and evaluation shall be conducted during practical examination of the university. The candidate has to present the dissertation in front of the examiners in the university examination where it will be awarded with the marks and will be graded as accepted/accepted with modification(s). If the dissertation is graded as accepted with

modification(s), the candidate has to submit the modified dissertation on or before the date notified by the university.

## **GUIDE**

### **a) QUALIFICATION OF GUIDE:**

The academic qualification and teaching experience required for recognition as guide is 5 years of teaching experience after post-graduation as lecturer/assistant professor. From time to time guidelines of the state council has to be followed. Students cannot be left without guide for more than 3 months total during their post graduation study. (i.e in the event of resignation of guide college should appoint the guide within 3 months as per the essential criteria of guide) or as prescribed by University/Government. Guide should be of the same elective of students.

### **b) CHANGE OF GUIDE**

In the event of registered guide leaving the college for any reason or in the event of death of guide, guide may be changed with prior permission from the university but as per the mentioned guideline here before.

## **REVIEW OF ANSWER PAPERS OF FAILED CANDIDATES**

As per the regulations prescribed for review of answer papers by the concerned University.

## **DRESS CODE**

Professionalism with respect to dressing is encouraged throughout the course. It is each student's responsibility to have appropriate dressing during all class assignments and learning activities. Students are supposed to wear apron compulsorily during practical and clinical hours.

## **MIGRATION/TRANSFER OF CANDIDATES**

The Vice Chancellor shall have the powers to place any migration/transfer he/she is fit for grant of permission for migration/transfer to candidates undergoing course of study in another University as prescribed by university.

## M.P.T. First Professional Year

CourseNo.	Subject
MPT.01	Review of Human Sciences I (Anatomy & Physiology)

### Instruction for Paper Setters

There will be Eight Question of Fifteen Marks each. Candidate will have to answer any six questions.

### \*A Review of clinical and applied Anatomy

#### **1 Human Anatomy**

- i) Bone/Joints (Osteo and Arthrology)
- ii) Muscle (Myology)
- iii) Nervous and Nervous System
- iv) Integumentary System

#### **2 Upper Limb and Lower Limb**

- i) Bone and Joints
- ii) Muscles
- iii) Nervous and Nervous System
- iv) Vascular System

#### **Various regions:**

- Upper limb pectoral, axilla, scapular, arm, forearm, acubital fossa and hand
- Lower limb-thigh, gluteal region, popliteal fossa, leg and foot

#### **Introduction to trunk region**

- i) Bone and joints (Vertebrae, Ribs and Sternum)
- ii) Muscle
- iii) Nerve and plexuses
- iv) Vascular Structures
- v) Various region-
  - Thracic
  - Lurnbar
  - Sacro-coccygeal.

#### **Head & Neck**

- i. Bone & Joints



- ii. Muscles
- iii. Nerve and plexuses
- iv. Vascular Structures
- v. Various regions-
  - Head-coronial cavity, orbit, nasal, cavity, oral cavity
  - Neck-triangles (anterior & posterior) back of neck
  - TMJ

### **Cardio-Respiratory system**

- i) Pleura and lungs
- ii) Pericardium and heart
- iii) Vessels and large Vessels

### **Neuro-Anatomy**

- i) Nervous System
  - Central Nervous System (Brain and Spinal Cord)
  - Somatic Nervous System (Cranial and Spinal Nervous)
  - Autonomic Nervous System
- ii) Meanings and Ventricular System of C.N.S.
- iii) Blood Supply to C.N.S.

### **Human Physiology**

\*A Review of clinical and applied Physiology

#### **1) Cardiovascular System**

- i) Structure and Properties of heart.
- ii) Cardiac Cycle.
- iii) The regulation of Heart's performance / circulation during Exercise
- iv) Cardiac Output
- v) The Arterial Blood Pressure
- vi) The Physiology of Vascular System
- vii) Lymphatic Circulation
- viii) Protection from Coronary Heart Disease
- ix) Sudden Cardiac Death of Sports

#### **2) Respiratory System**

- i) Ventilation and Control of Ventilation
- ii) Alveolar air
- iii) Regulation of Breathing/ Respiration during Exercise
- iv) Pulmonary Function test
- v) Air Conditioning
- vi) Second Wind
- vii) Oxygen Debt
- viii) Breath holding and scuba diving. Health Pressure Ventilation.

#### **3) Muscle Physiology**

- i) Electrical properties of Neuron
- ii) Classification of Nerve Injury

- iii) Effects of Nerve Injury
- iv) Structure of Skeletal Muscle
- v) Electrical properties of Skeletal Muscle
- vi) The contractile Mechanism
- vii) Length- Tension Relationship
- viii) Fast and slow Muscles
- ix) Skeletal Muscle metabolism
- x) Growth and Exercise
- xi) Repair and Adaptation during exercise
- xii) Training for Muscular Strength and Endurance
- xiii) Muscle tissue fiber typing and its significance

#### 4) **Exercise Physiology**

Muscle & its contraction- Architecture of skeletal muscles, sliding filament theory, types of muscle fibers, mechanical efficiency of muscle contraction, force-velocity, motor unit, muscle fatigue- blood supply, **prolonged exercise**.

##### **Blood & Circulation**

Cardiac cycle – pressure during cardiac cycle, Hemodynamics mechanical work and pressure hydrostatic pressure, flow and resistance, venous – capillary structure and transport mechanisms, filtration & osmosis, visualization of skeletal muscles, regulation circulation during exercise, cardiac output & O<sub>2</sub> uptake- stroke volume, blood pressure.

##### i) **Respiration**

Lung compliance air way resistance, pulmonary ventilation rest and during exercise, diffusion in lung tissues, gas pressure- ventilation & perfusion- Regulation of breathing – Exercise, high air pressure- Breath holding diving.

##### ii) **Physical Performance**

Aerobic process intensity & duration of exercise, prolonged exercise, muscular stress involved in Exercise

Anaerobic Process: Power & Capacity of high energy breakdown.

Lactate: Production- Distribution & Disappearance, effect of metabolism on tissue & blood, pH, Anaerobic, oxygen uptake in various sports.

Evaluation of anaerobic power exercise electrocardiogram.

##### iii) **Physical Training:**

Training Principles, continuous vs. Intermittent exercise training methods & biological longterm effects of training. Disuse, isometric strength training, dynamic strength training. Training of aerobic training, Endurance training, retaining, recovery after exercise, Mechanical efficiency technique, body composition, stretching, psychological aspects muscular soreness, ischemic heart diseases, contra indication to physical training.

##### iv) **Applied work Physiology:**

Factors affecting sustained Physical work, assessment of work load relation to work capacity, Assessment of maximal aerobic power measurement of oxygen uptake in a typical work situation, Assessment of load exerted on specific muscles, classification of work, Daily rates of energy expenditure, energy expenditure during specific activities like sleeping, sedentary, work

house work, light industry, manual labour.

v) **Fatigue**

General Physical fatigue, local muscular fatigue, cardiac rhythm in humans, shift work, effect of menstruation.

vi) **Nutrition & Physical Performance:**

Nutrition in general digestion, energy metabolism & factors governing the selection of fuel for muscular exercises, food for the athlete, energy balance, regulation of food intake, ideal weight obesity, slimming diets, optional supply of Nutrients.

vii) **Factors Affecting Performance:**

High altitude- limited factors, oxygen transport, adaptation of high altitude, high gas pressure, pressure effects, nitrogen, oxygen, carbon dioxide metabolism in sports, tobacco smoking- circulatory effects, reparatory effects, metabolic effects, smoking habits among athletes, alcohol & exercise –Neuromuscular function, aerobic & anaerobic alcohol power, metabolic effects, caffeine, Doping and “THE WILL TO WIN”

**5) Gastrointestinal tract & Endocrine**

- i) Effect of sports on G.I.T. and liver
- ii) Hormone regulation fluid and electrolytes during Exercise
- iii) Exercise and Menstrual Cycle
- iv) Stress Hormones in Exercise
- v) Effects of Exercise on various Hormones in the body
- vi) Opioids, Runner's high

**6) Nervous System**

- i) Elementary Neuro-anatomy
- ii) Neurons and Neuralgia
- iii) Properties of nerve fibers, synapse
- iv) Spinal cord
- v) Cerebral cortex
- vi) Pyramidal and extra Pyramidal system
- vii) The cerebellum
- viii) Autonomic nervous system
- ix) Cerebrospinal fluid
- x) Cranial nerves

**Reference books**

- ❖ Mom inn's Color Human Anatomy / Abrahams, Peter H.
- ❖ Cunningham's Manual of practical Anatomy / by G.J. Romanes.
- ❖ Textbook of human Neuroanatomy / Singh, Inderbir.
- ❖ Clinical Anatomy for medical students. / Snell, Richard S.
- ❖ Essential clinical anatomy/ More, Keith L.
- ❖ Human Anatomy: Regional and applied / by B.D. Chaurasia.



- ❖ Principles of exercise physiology/ Axen , Kenneth .
- ❖ Physiology of sport and exercise by Wilmore, Jack M
- ❖ Textbook of practical physiology / Ghai , C.L.
- ❖ Concise medical physiology / Chaudhry Surjit K.
- ❖ Human physiologcy / by N.M Muthaya / Muthaya , M.N.
- ❖ Textbook medical physiology / Guyton, Arthur C.
- ❖ Textbook of physiology / by A.K. Jain.



Course No.	Subject
MPT 02	Review of basic sciences II (Pathology & Pharmacology)

**Instructions for Paper Setters:** - There will be Eight Questions of Fifteen Marks each. Candidate will have to answer any six questions.

### **Pathology**

1. **General Pathology** (cell injury, inflammation, Repair, immune system)
2. **Geriatric**
  - i) Theories of aging
  - ii) Pathological & Physiological changes of aging
3. **General body systems**

#### **A. Nervous System**

- i) Infection
  - Meningitis
  - Encephalitis
- ii) Vascular Disease
  - Ischemic encephalopathy
  - Cerebral infarction
  - Intracranial infarction
  - Intracranial hemorrhage
- iii) Degenerative disease
  - Alzheimer's disease
  - Huntington's disease
  - Parkinson's disease
  - Motor neuron disease
- iv) Demyelinating disease
  - Multiple sclerosis
- v) The peripheral nervous system
  - peripheral neuropathy
  - Acute idiopathic polyneuropathy
  - Diabetic neuropathy

## **B. Musculoskeletal System**

### *i)* Bones

- Hereditary and metabolic disease (Osteoporosis, rickets, osteomalacia, osteitis fibrosa cystica, renal osteodystrophy)
- Infection (Osteomyelitis and tuberculosis)

### *ii)* Joints

- Degenerative joint disease
- Bursitis

## **C. Skeletal muscles**

- muscle atrophy
- Myositis
- Myasthenia

## **D. Cardiovascular system**

- i)* Rheumatic heart disease
- ii)* Myocardial infarction
- iii)* Atherosclerosis
- iv)* Congenital heart disease

## **Pharmacology**

- i)* Drugs used in pain
- ii)* Local anesthetics
- iii)* Steroids
- iv)* Muscle relaxants
- v)* Drug acting upon central and Automatic nervous system
- vi)* Topically acting upon Cardio Respiratory system
- vii)* Drugs acting upon Musculoskeletal System

## **Reference books**

- Text of Pathology / Mohan, Harsh
- Pathology illustrated /by Peter S. Macfarlane, Robin
- Pathology: implication for the physical therapist / by Catherine Cavallaro DGoodmann and Willams G. Boissonn
- Essential of medical Pharmacology / K.D. Tripathy
- Pharmacology drug action & reaction
- Text of Pharmacology, Seth, SD



CourseNo.	Subject
MPT03	Applied physiotherapy

**Instructions for Paper Setters**

There will be Eight Questions of Fifteen marks each. Candidate will have to answer any six questions.

**1) Exercise Therapy**

- i. Assessment techniques: Manual Muscle Testing and Goniometry.
- ii. Stretching and Mobilization.
- iii. Re-education and strengthening.
- iv. Balance and Coordination Ex.
- v. Gait Analysis and Training (Both Normal and Pathological Gaits)
- vi. Relaxation and soft Tissue Manipulations.
- vii. Posture.
- viii. PNF and Neuromuscular Coordination
- ix. Hydrotherapy.
- x. Joint Mobilization

**2) Electro-Therapy**

- i. General Review of Low, Med and high currents and their modifications like Di-dynamic and Russian Currents etc.
- ii. Laser
- iii. Cryotherapy
- iv. UVR and IRR
- v. Other thermal modalities like SWD, MWD, Hydro Collator, Wax therapy Fluidotherapy.

**Clinical reasoning & Evidence Based Physiotherapy for the above Exercise Therapy. Electrotherapy and Advanced Therapeutics Via means of Seminars presentation. Journal presentation. Case presentation. Recent advances discussion cum presentation.**

**Practicals :-**

**1) Ex. Therapy :**

- i. Muscular skeleton and Neurological Assessment
- ii. Strengthening techniques
- iii. Soft tissue stretching and mobilization
- iv. Gait analysis and training
- v. Postural assessment and re-education
- vi. Balance and coordination
- vii. Hydrotherapy

## **2) Electrotherapy**

### **A. All types of low and medium frequency currents**

- Faradic
- Galvanic
- High Voltage Current
- Russian
- Interferential Therapy
- Tens
- Micro currents

### **B. All types of high frequency currents and modalities**

- Cryotherapy
- UVR
- IRR
- LASER
- Other thermal modalities like Hydro-Collator Wax therapy, Fluid therapy.

### **Reference books**

- The principles of exercise therapy / Gardniner , M Dena .
- Therapeutic exercise : foundations and techniques / by Carolyn Kisner and Lynn Allen Colby . / Kisner,
- Practical exercise therapy /by Margaret Hollis & Phyl Fletcher-Cook
- Electrotherapy explained : principles and practice /by John low , Ann Reedand Mary Dyson . / low , JohnClayton's electrotherapy / edited by Sheila Kitchen and Sarah Bazin . / Kitchen, Sheila
- Muscles testing and function / by Florence Peterson Kendall (et,al) / Kendall , Florence Peterson
- Therapeutic modalities for physical therapists / by William E.Prentice , William Quillen and Frank Underwood / Prentice , William E.
- Therapeutic exercise moving toward Function / by Carrie M.Hall and LoriThein Brody . / Hall , Carrie M.
- Daniels and worthingham's muscle testing techniques of manual examination / by Helen J. Hislop and Jacqueline Montgomery / Hislop ,Helen J.

CourseNo.	Subject
MPT 04	Applied Biomechanics & Ergonomics

### **Instructions for Paper Setters**

There will be Eight Questions of Fifteen Marks each. Candidate will have to answer any six questions.

Students will be able to identify and apply principles of Biomechanics while setting up individualized treatment protocols.

#### **1. Fundamental Mechanics**

- Forces; composition and resolution of forces ; force systems
- Force of gravity and COG
- Stability
- Reaction forces
- Friction
- Moments
- Newton's laws
- Equilibrium: static and dynamic
- Simple machines: Levers, pulleys and wheel and axle
- Segmental dimensions
- Poisson's effect
- Static and cyclic load behaviors
- Load: Load sharing and load transfer

#### **2. Kinematics**

- i. Motion : types , location , magnitude and Direction
- ii. Angular motion and its various parameters
- iii. Linear motion and its various parameters
- iv. Projectile motion

#### **3. Muscle Mechanics**

- i. Structure and composition of muscle
- ii. Fiber length and cross-section areas
- iii. Mechanical properties
- iv. EMG changes during fatigue
- v. Changes in mechanical properties because of aging, exercise and immobilized of immobilization
- vi. Clinical application



4. **Ligament and Tendon mechanics:**

- ❖ Structure, composition and mechanical properties
- ❖ Cross- sectional area measurement
- ❖ Muscle tendon properties
- ❖ Temperature sensitivity
- ❖ Changes in mechanical properties because of ageing, exercise and immobilization
- ❖ Mechanoreceptors
- ❖ Clinical application

5. **Bone Mechanics:**

- ❖ Structure and composition of bone
- ❖ Stress
- ❖ Strain
- ❖ Modulus of Rigidity & Modulus of elasticity
- ❖ Mechanical properties of Trabecular system
- ❖ Mechanical properties of cortical bone
- ❖ Bone Remodeling
- ❖ Response of bone to aging & exercise & immobilization
- ❖ Mechanics to prevent fracture in bone
- ❖ Clinical application

6. **Joint Mechanics**

- ❖ Joint design
- ❖ Joint categories
- ❖ Joint Functions: Arthrokinematics, Osteokinematics and kinematics chains
- ❖ Joint forces, equilibrium and distribution of these forces
- ❖ Degenerative changes in weight bearing joints and compensatory actions
- ❖ Joint stability and mechanisms
- ❖ Clinical applications

7. **Measurement Instruments**

- ❖ Photo- optical devices
- ❖ Pressure transducers and Force Plates
- ❖ Gait Analyzer
- ❖ Isokinetic device
- ❖ EMG (Electro physiology of muscle contraction, recording, processing)
- ❖ Relationship between EMG and Biomechanical Variables

8. **Mechanical energy. Work and power**

- Definitions
- Positive and negative muscles work
- Muscle mechanical power

- Causes of inefficient , movement co-contractions, Isometric contractions, against gravity jerky movement, energy generation at one joint and absorption at another, energy flow.
- Energy Storage

## 9. **Gait**

- ❖ Gait parameter: kinetic, kinematics, time- space
- ❖ Pathological gait
- ❖ Running
- ❖ Stair climbing Changes in gait following various surgeries/diseases/disorders

## 10. **Pathomechanics**

Bone and joint Patho-mechanics Neural Patho-mechanics  
Cardio Patho –mechanics Pulmonary Patho - mechanics Vascular Patho-mechanics

## 11. **Ergonomics**

- ❖ Definitions
- ❖ Physiological and bio-mechanical risk factors
- ❖ Job design
- ❖ Developing and implementing work site programme
- ❖ Ergonomics in home ,child care and leisure activities
- ❖ Addressing problems at computer workstation

### **Practical in applied Biomechanics**

This course will enable the students to apply their knowledge of biomechanics and ergonomics in practical situation on their patients.

- ❖ Evaluation and assessment of joint motion (planes, axes, etc)
- ❖ Evaluation and assessment of posture
- ❖ Evaluation and assessment of Gait
- ❖ Practical usage of all examination and assessment devices

### **Reference books**

- Introduction to kinesiology/Hoffman , Shirf
- Kinesiology: the Mechanics & Pathomechanics of human
- Movement/by Carol A. Oatis. / Oatis , Carol A.
- Joint Structure and Function Cynthia Norkins
- Joint Structure and Function : a comprehensive Analysis./ Levangie, Pamela K
- Fundamentals of Biomechanics, Orkaya, N
- Ergonomics for therapists: Karen Jacobs Carl M. Bettencourt
- Handbook of human Factors and ergonomics : Gavriel Salvendy
- Ergonomics: How to design for ease and efficiency: K.H.E.Kroemer.H.B. Kroemer,K.E.Kroemer-Elbert
- Ergonomics, Work, and Health:Pheasant, Stephen

CourseNo.	Subject
MPT 05	Biostatistics and Research Methodology

### **Instructions for Paper Setters**

There will be Eight Questions of Fifteen marks each. Candidate will have to answer any six questions

#### **1) Research Methodology**

- i. How to read and critique research
- ii. Introduction to research: Framework, levels of measurements, variables
- iii. Basic research concepts: Validity and reliability
- iv. Design instrumentation and analysis of qualitative research
- v. Design instrumentation and analysis of Quantitative research
- vi. How to write a research proposal
- vii. The use and protection of human and animals subjects

#### **2) Biostatistics**

- i. Introduction  
Description and inferential statistics  
Methods of collection, classification, Tabulation and presentation of data
- ii. Central Tendency:  
Mean, Median, Mode and Standard deviation
- iii. Co-relation and Regression  
Karl Pearson's co-relation method Rank co-relation method Regression and co efficient  
sampling and hypothesis and testing Data collection  
Types of sampling Tests
- iv. Probability, Binomial distribution, poisson distribution, Normal distribution
- v. One way ANOVA, Two Way ANOVA
- vi. Test of significance (t, chi square, f, z)
- vii. Non parametric tests
- viii. Simple statistical analysis using available software

#### **Reference books**

- Research methods in physical activity : Thomas, J
- Bio-Statistics. Prof. S.C. Gakhar
- Clinical research : a guide for therapists./ French, Sally
- Rehabilitation Research: Principles and applications: Elizabeth Domholdt
- Methods in biostatistics for medical students and research workers. Mahajan, B.K.
- Manual of Biostatistics: Baride, JP



Course No.	Subject
MPT 06	Professional Development & Ethics

### **Instructions for Paper Setters**

There will be Eight Questions of Fifteen Marks each. Candidate will have to answer any six questions  
This course will provide students information on improving their teaching skills in the classroom and clinical setting, basic issue of management to assist the practitioner in efficiently addressing issue related to the organization and administration of the physiotherapy department.

#### **1. Concepts of Teaching and Learning**

- i) Meaning and Scope of Educational Psychology
- ii) Meaning and Relationship between Teaching and Learning
- i) Learning Theories
- ii) Dynamics of Behavior
- iii) Individual Differences

#### **2. Curriculum**

- i) Meaning and Concepts
- ii) Basis of Curriculum Formulation Development
- iii) Framing Objectives for Curriculum
- iv) Process of Curriculum Development and Factors Affecting Curriculum Development
- v) Evaluation of Curriculum

#### **3. Method and Techniques of Teaching**

- i) Lecture, Demonstration, Discussion, Seminar, Assignment, Project and Case Study

#### **4. Planning for Teaching**

- i) Bloom's Taxonomy of Instructional Objectives, Writing Instructional
- ii) Unit planning and Lesson planning

#### **5. Teaching Aides**

- i) Types of Teaching Aides
- ii) Principles of Selection, Preparation & Use of Audio-Visual aids.

#### **6. Measurements and Evaluation**

- i) Nature of Educational Measurement; Meaning, Process and Types of Tests
- ii) Construction of Achievement Test and its Analysis Standardized Test
- iii) Introduction of some Standardized tool. Important of Intelligence, Aptitude Personality.

#### **7. Guidance and Counseling**

- i) Meaning and Concepts of Guidance and Counseling
- ii) Principles

- iii) Guidance and Counseling Services for Students and Faculty members
- iv) Faculty Development and Development of Personnel for physiotherapy Services

## 8. Clinical education

- i) Awareness and guidance to the common people about health diseases and available professional services
- ii) Patient education
- iii) Education of the practitioners

## 9. Functions of management

10. Management process: planning, organization, direction, controlling, and decision- making

11. Personal management: staffing, recruitment selection performance appraisal, collective bargaining, discipline, and job satisfaction.

12. Quantitative methods of management: relevance of statistical and /or techniques in management.

13. Marketing: marketing segmentation, marketing research production, planning pricing, and channels of distribution, consumer behavior and licenser.

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

15. Hospital as an organization: functions and types of hospitals selected, clinical supportive and ancillary staff of the hospital, emergency department, nursing, physical medicine and rehabilitation, clinical laboratory, pharmacy and dietary department.

16. Roles of Physiotherapy Director, Physiotherapy Supervisor, Physiotherapy Assistant, Physiotherapy, Occupational therapist, Home Health Aide and Volunteer.

17. Direct care and referral relationships and confidentiality.

18. Physiotherapy: Definition and Development.

19. Implications and conformation to the Rules of Professional Conduct.

20. Legal responsibility for their action in the professional context and understanding the Physiotherapist's liability and obligations in the case of medico-legal action.

21. Code of Ethics: wider knowledge of ethics relating to current social and medical policy in the provision of health care.

22. Function of relevant professional associations education body and trade union

23. Role of the International Health agencies such as the World Health Organization

24. Standards of practice for Physiotherapy

25. Current Issues

26. Basic of Computer-Hardware and Software

27. Basic Computer Applications- Windows, MS Word, Excel, Power Point, etc.

**Reference books**

- . Educational Technology, Dr. S.C. Gakhar
- . Fox pro 2.5 made simple for DOS & Windows, Taxali, RK.
- . Computers and commonsense, Hunt, R & Shely, J
- . Health Studies: an Introduction, Naidoo,

CourseNo.	Subject
MPT 07	Seminar/Case Presentation

**Seminar**

These will serve as platform for students to integrate various components of patient management and debate contentious issues on the efficacy of physiotherapy techniques. Students will give presentations on topic provided to them.

CourseNo.	Subject
MPT 08	Clinical Training

**Clinical Training**

Students will engage in hospital based medical and physiotherapy departments/settings to enhance their clinical skills and apply contemporary knowledge gained during teaching sessions



## M.P.T Second Professional Year (ORTHOPAEDICS)

Course No.	Subject
MPT 01	Assessment and diagnosis of musculoskeletal conditions

Instructions for Paper Setters

There will be Eight Questions of Fifteen Marks each. Candidate will have to answer any six questions

### 1. Orthopedic Assessment

- Patient History
- Observation
- Examination-Active and Passive Movements, functional Assessment, Special Tests, Reflexes and Cutaneous Distribution, Joint Play Movements Palpation
- Gait-Definitions, Gait Cycle, Abnormal Gait patterns
- Posture-Normal and Abnormal, Spinal Deformities
- Disability Evaluation
- Assessment of Amputees
- Examination and Assessment of Geriatric patient

### 2. Regional Examination with Special Emphasis on Special Test:

- Head and Face
- Cervical Spine
- Shoulder
- Elbow
- Forearm, Wrist and Hand
- Thoracic Spine
- Lumbar Spine
- Pelvis
- Hip
- Knee
- Lower Leg, Ankle and foot

### 3. Orthopedic Diagnosis (for Practical Purposes only)

- Biomechanical measurements –Limbs and Spine
- Hematology and serology
- Biopsy
- Plain Radiography
- Contrast Radiography
- Myelography
- Radioactive Scanning
- Discography
- Tomography
- Magnetic Resonance Imaging

- Arthroscopy
- Electromyography, Nerve Conduction Velocity, Strength Duration Curve
- BMO- Bone Densitometry- Ultrasound Densitometer and Dual Energy X-ray Absorptiometry (DEXA)

2. Differential Diagnosis in different cardiopulmonary conditions.

### Reference books

Physical Assessment, David Magee

Orthotics in rehabilitation: splinting the hand and body/ Mckee, Pat Physiotherapy in Orthopedics: a problem – solving approach/ Atkinson, Karen. Examination of Musculoskeletal injuries: Shultz, SJ

Clinical orthopedics rehabilitation. / Brotzman, S. Brent. Orthopedics Physical Therapy: Donatelli, RA & Wooden MJ

Joint Structure and Function: a comprehensive analysis: Levangie, PK & Norkin CC Essentials of orthopedics & applied physiotherapy: Joshi, J & Kotwal, P.

Course No.	Subject
MPT 02	Medical Surgical Management of Musculoskeletal Condition

Instructions for Paper Setters

There will be Eight Questions of Fifteen Marks each. Candidate will have to answer any six questions

### Unit-I

#### General Orthopedics

1. Infection Disorders of the Bones and Joints
2. Metabolic Disorders of the bones and joints
3. Congenital Disorders of the bones and joints
4. Inflammation of the bones and joints
5. Degeneration of the bones and joints
6. Developmental of the bones and joints
7. Connective tissue Disorders
8. Neuromuscular disorders
9. Tumors of bones
10. Complex Regional Pain Syndrome
11. Myopathies

## **Unit-II**

### **Regional Orthopedics**

1. Disorders of Upper Limb
2. Disorder of the Lower Limb
3. Disorder of Spine

## **Unit-III**

### **Traumatology (Fractures, Subluxations, Dislocations and Soft tissue injury)**

1. Trauma of the upper limb
2. Trauma of the lower limb
3. Trauma of the spine
4. Peripheral Nerve Injuries

## **Unit-IV**

### **Orthopedic Surgeries: -**

1. Osteotomy
2. Arthrodesis
3. Arthroplasty
4. Tendon transfers, repairs and grafting
5. Nerve Suturing
6. Soft tissue release
7. Spinal Stabilization
8. Spinal Fusion
9. Discectomy
10. Laminectomy
11. Reattachment of Limbs
12. Illizarou' s technique
13. Meniscectomy

## **Unit-V**

### **Amputation**

- 1 Types, Level and Procure
- 2 Preoperative, operative and Prosthetic Mgt.
- 3 Prevention and Treatment of complication

## **Unit –VI**

### **Geriatric Care**

- 1 Examine and assessment of geriatric Patient
- 2 Disorders specific to ageing



## Reference Books

Pediatric Orthopedics: more knowledge in Orthopaedics / Dormans, John P

Clinical Orthopedics Examination / Mcrae, Ronald

Apleys system of Orthopedics and Fractures/ Solomn, Louis

Fractures of the upper extremity. / Ziran, Bruce H. ed.

Musculoskeletal disorders in the workplace: Principles and Practice. / Nordin, Margareta. The

Orthopedic physical Examination. / Reider, Bruce

Orthopedic Physical Assessment, David Magee

Essentials of orthopedics for physiotherapist: Ebnezar, J

Chiropractic care of the older patient. / Gleberzon, Brian J.ed

Orthopaedics Principles of basic and Clinical Science; Bronner, F & Warrell, RV

Burnsides working with olderadults group process and techniques: Haight, B

Course No.	Subject
MPT 03	Physiotherapy Management in Musculoskeletal Conditions

### Instruction for Paper Setters

**There will be Eight Questions of Fifteen Marks each. Candidate will have to answer any six questions**

Classification, path physiology, causes, Clinical feature, complication examinations, management physiotherapy treatment including advance techniques.

#### **Unit- I**

##### **Congenital deformities :**

Upper limb congenital anomalies Lower limb congenital anomalies Spine

#### **Unit-II**

Development disorders of the Bones: Cartilage dysplasia

Bony dysplasia

#### **Unit- III**

Metabolic conditions affecting bones and joints:

Parathyroid bone diseases (osteoporosis, algal dystrophy, heterotopic classification)

Osteomalacia and Rickets Scurvy

#### **Unit-IV**

Infection Disorders of the bones and joints: Osteomyelitis

Infective Arthritis

Tuberculosis

#### **Unit-V**

**Connective tissue disorders:**

Rheumatoid Arthritis Ankylosing Spondylitis Psoriatic arthritis

Scleroderma

Dermatomyositis

#### **Unit-VI**

**Geriatrics Care:**

Examine and assessment of geriatric patient

Disorders specific to ageing

#### **Unit-VII**

**Bone Tumors:**

Benign Tumors Malignant

Tumors Metastatic Tumors

#### **Unit-VIII**

Traumatology (Fractures, Subluxation, Dislocations and Soft tissue injury) Trauma of the upper Limb

Trauma of the Lower Limb Trauma of the spine

Peripheral Nerve and Vascular Injuries

#### **Unit-IX**

Amputation

Classification

Preoperative and treatment of complications Unit-X

Neuromuscular Disorders

Poliomyelitis Muscular

dystrophies Leprosy

### Unit-XI

Orthopedic Surgeries: Osteotomy Arthrodesis Arthroplasty

Tendon transfers, repairs and grafting Nerve Suturing

Soft tissue release Spinal fusion Discectomy Laminectomy Reattachment of limbs Ilizarov's technique Memisectomy

### Unit-XII

**Regional Orthopaedics :** Classification, Clinical Features, pathogenesis, complications and management of Disorders of Upper Limb, Disorder of Lower Limb Disorder of Spine

### Unit-XIII

#### Advance Manual Therapy:

- 1 Manual Therapy: Introduction, History, Basic Classification Assessment for manipulation, discussion in brief about the concepts of mobilization & Special techniques like Cyriax, Maitland, Mulligan, Butcher, Kaltenborn, Meekenzie.
- 2 Muscle Energy techniques and positional stretch: The basic concept and application of these techniques.
- 3 Positional Release Therapy: The basic concept and Application of these techniques.
- 4 Myofascial Release: Concept and Application.
- 5 Nerve Conduction Studies and Electromyography: normal, abnormal action potential, its recording protocols analysis, application.
- 6 Bio-feedback

#### Reference books

Cash's textbook of orthopaedics and rheumatology for physiotherapists: Downie, PA  
Physical rehabilitation in arthritis: Walker,  
JM & Heleura, A Hand therapy principles and practice: Salter, M & Cheshire, L Hand  
fractures repair reconstruction & rehabilitation: Freeland, AE



Course No.	Subject
MPT 04	Recent Advances in Musculoskeletal Physiotherapy

## **1. Advanced soft tissue mobilization Techniques**

- 1.1 Myofascial release technique
  - 1.1.1 Principle and technique
  - 1.1.2 Trigger point assessment
  - 1.1.3 Myofascial pain Syndrome
  - 1.1.4 Concept of Myofascial cycle
  - 1.1.5 Myofascial Release technique for various syndrome
- 1.2 Cyriax concept and technique
  - 1.2.1 Principles of Diagnosis
  - 1.2.2 Principles of Treatment
  - 1.2.3 Cyriax techniques for peripheral joints
  - 1.2.4 Cyriax techniques for spine
  - 1.2.5 Capsular stretching
  - 1.2.6 Soft tissue manipulation by cyriax

## **2. Manual Mobilization Techniques**

- 2.1. Muscle energy technique
  - 2.1.1 Principles of MET
  - 2.1.2 Types of MET
  - 2.1.3 Techniques and application of MET
  - 2.1.4 Lower quarter MET
  - 2.1.5 Upper quarter MET
- 2.2. Positional release therapy
  - 2.2.1 Principles of PRT
  - 2.2.2 Variations of PRT
  - 2.2.3 Technique and Application of PRT
  - 2.2.4 Integrated Neuromuscular Inhibition technique

### **3. Neurotherapeutic manual Techniques**

- 4.1 Butler principles and concept
  - 4.1.1 Neurophysiology and neurodynamics
  - 4.1.2 Clinical neurobiomechanics
  - 4.1.3 Neural tension and mobilization-upper limb and lower limb
  - 4.1.4 Different schools of thoughts for neural mobilization techniques

### **4. Core Stabilization and Pilates**

- 5.1 Segmental Stabilization Concepts of Spine
  - 5.1.1 Muscle function in spinal stabilization
  - 5.1.2 Contribution of various muscles to spinal stabilization
  - 5.1.3 Local Muscle dysfunction in Low back pain
  - 5.1.4 Principles of clinical management of deep muscle system for
  - 5.1.5 Segmental stabilization
  - 5.1.6 Core stability exercise
- 5.2 Pilates
  - 5.2.1 Introduction
  - 5.2.2 Principle & Technique
  - 5.2.3 Types of Pilates
  - 5.2.4 Pilates for different sports

### **Text Books/References Book:**

1. J. Maitland, 2001, Spinal manipulation made simple-A manual of soft tissue techniques. 2<sup>nd</sup> Edition. North Atlantic Books.
2. C. J. Manheim, 2008, The Myofascial Release Manual. 4<sup>th</sup> Edition. SLACK Incorporated.
3. J. Langendoen, 2014, Kinesiology Taping The Essential Step-By-Step Guide: Taping for Sports, Fitness and Daily Life, 1<sup>st</sup> Edition, Robert Rose Inc.
4. G. Cook, 2011, Movement: Functional Movement Systems: Screening, Assessment, Corrective Strategies. 2<sup>nd</sup> Edition. Lotus Publisher.
5. N. Swedan, 2001, Women's Sports Medicine and Rehabilitation, 1<sup>st</sup> Edition, Aspen Publishers Inc.

Course	Subject
<b>MPT 05</b>	<b>Practical</b>

Related to assessments, investigations and Physiotherapy management of all the above condition

Students will be judged one elective and non-elective case. They will be expected to assess, diagnose and plan effective treatment plan for both cases.

**(1) Demonstration of following manual Therapy Techniques:-**

- Cyriax
- Maitland
- Mulligan
- Butler
- Meckenzie
- Nerve Mobilization

**(2) Outline and Practical Knowledge of**

- Muscle Energy Techniques
- Positional Stretch
- Myofascial release etc

**(3) Demonstration and Practical Knowledge of**

- NCV, EMG
- Biofeedback

**Reference books**

Electrotherapy explained: Principles and practice/ by

John Low, Ann Reed and Mary Dyson. / low, John

Clayton's electrotherapy/ edited by Sheila Kitchen and Sarah Bazin / Kitchen, Sheila

Positional release techniques Deig, D

Muscle Energy Techniques Chaitow L.

Course	Subject
<b>MPT 06</b>	<b>Seminar/ Case Presentations</b>

**Seminars/ Case Presentations**

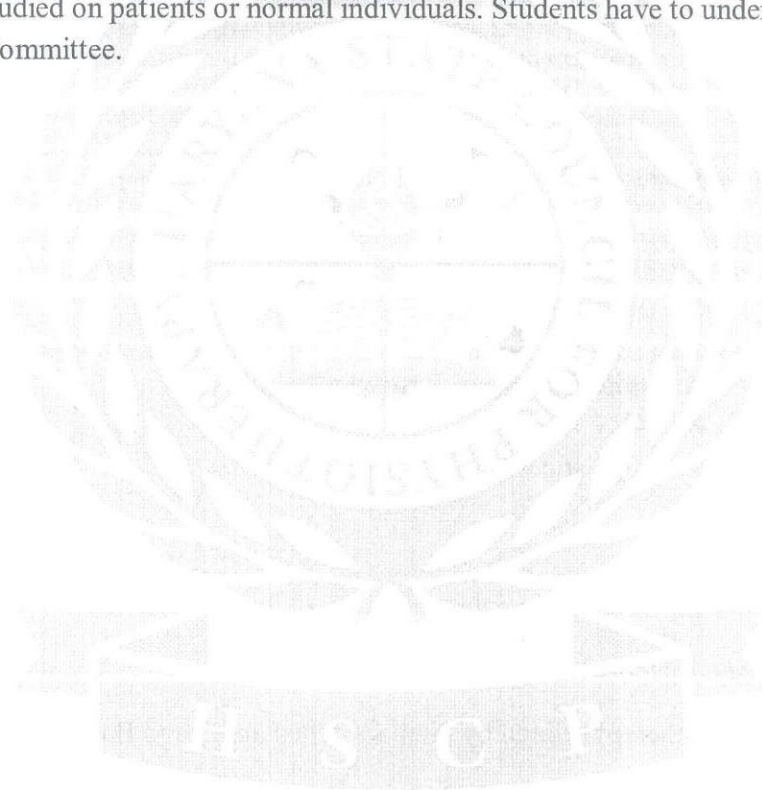
These will serve as platform for students to integrate various components of patient management and



debate contentious issues on the efficacy of physiotherapy techniques. Students will give presentations on topic provided to them.

Course	Subject
MPT 07	<b>DESERTATION PROJECT WORK</b> <b>(Based on clinical/ case presentation including viva voce)</b>

As part of their requirement for the Master Degree the Students is required to undertake a research study under the guidance of Guide and Co-guide. Research Study must be selected only from the chosen specialization i.e. Musculoskeletal Condition or Sports Injuries or Neurological Condition or Pediatrics Conditions and to be studied on patients or normal individuals. Students have to undergo a dissertation viva-voce by examination Committee.



# M.P.T. Second Year Professional Year

## (NEUROLOGY)

Course No.	Subject
MPT 01	Assessment and Diagnosis of Neurology Condition

### Instructions for Paper Setters

There will be Eight Questions of Fifteen Marks each. Candidate will have to Answer any Six Questions

#### 1. Neurological Assessment

- i) Neurological History.
- ii) General Observation and order to procedure.
- iii) Mental Functions examination, mental status examination
- iv) Language and motor speech
- v) Central nervous examination
- vi) Tone, coordination, abnormal involuntary movement, gait, muscle eyes, Response to muscle percussion examination, reflexes (Superficial and deep, developmental), posture
- vii) Sensory examination.
- viii) Autonomic examination
- ix) Cerebellar function examination
- x) Clinical examination of all Neurological problems

#### 2. Neurodiagnosis:

- i) Pain roentgenography
- ii) Myelography
- iii) Cerebral angiography
- iv) Computer Tomography
- v) MRI
- vi) MRI Angiography
- vii) Radio nucleotide imaging
- viii) Neurophysiology –EEG, EMG and NCV
- ix) Examination of CSF
- x) Other special techniques I Neurodiagnosis

#### 3. Differential diagnosis in Neurological Conditions.

Course No.	Subject
MPT 02	Medical and Surgical Management in neurological disorders

There will be Eight Questions of Fifteen Marks each. Candidate will have to answer any Six Questions.

This Course provides the student with information on the epidemiology, Pathophysiology, clinical presentation and

medical and surgical management in neurological conditions. Students will be able to use this information in planning and tailoring effective, specific, safe physiotherapy treatment programmes and in-depth knowledge of the central nervous system (CNS) and condition caused by damage of the CNS such as stroke, MS, Parkinson, cerebral palsy, spina bifida and mental retardation.

- Improved skills in assessing, treating and evaluating patients with CNS Disorders
- Ability to analyze the patient's problems according to the ICF
- Ability to analyze ethical dilemmas
- Ability to find, understand and report result from research related to the field.

### **1 Congenital and hereditary disorders**

### **2 Head Injury.**

- i) Comatose patient
- ii) Closed skull fractures
- iii) Hematomas, subdural, epidural and intracerebral
- iv) Open cranio- cerebral injuries
- v) Reconstruction operations in head injuries

### **3 Disorders of spinal cord and cauda equine**

- Acute traumatic injuries
- Haematomyelia and acute central cervical cord injuries
- Slow progressive compression of the spinal cord
- Syringomyelia
- Ischemia and infarction of the spinal cord and cauda
- Spina bifida

### **4 Disorders of cranial nerves**

### **5 Disorders of peripheral nerves**

- Peripheral Neuropathies
- Causalgia
- Reflex sympathetic dystrophy
- Irradiation neuropathy
- Peripheral nerves tumors
- Traumatic, compressive and ischemic neuropathy
- Spinal radiculitis and radiculopathy
- Hereditary motor and sensory neuropathy
- Acute idiopathic polyneuritis/chronic
- Neuropathy due infections
- Vasculomotor Neuropathy due to systemic medical disorders
- Drug induced neuropathy



## **6 Disorders of Muscle**

- The myotonic disorders
- Inflammatory disorders of the muscle
- Myasthenia gravis
- Endocrine and Metabolic Myopathies
- Muscular dystrophies

## **7 Cerebellar disorders**

- Ataxia
- Motor neuron disease

## **8 Demyelinating disorders**

- Multiple sclerosis
- Diffuse sclerosis

## **9 Deficiency and nutritional disorders**

- Deficiency of vitamins and related disorders
- Other Nutritional neuropathies

## **10 Disorders of cerebral circulation-Stroke**

## **11 Infectious disorders**

- Meningitis
- Encephalitis
- Brain abscess
- Syphilis
- Herpes simplex
- Chorea
- Poliomyelitis
- Tuberculosis
- Transverse myelitis

## **12 Disorders of vestibular system**

**13 Extra pyramidal disorders**

Parkinsonism Balance disorders

**14 Epilepsy, Dementia, Alzheimer's disease**

**15 Development of Child-** weight, height, circumference measurement related to age in normal child, developmental milestones, neonatal reflexes, factors, influencing growth and development, types of body built, physical examination of the child, growth patterns

**16 Nutrition and immunization of a normal child-** normal nutrition requirement of a child, infant feeding, prevention of nutrition disorders, immunization

**17 General principles of neurosurgery**

**18 Tumors**

- Tumors of cranial bones
- Meningiomas
- Tumors in spinal
- Intra- cranial tumors
- Other space-occupying lesions

**19 Intracranial abscess**

**20 Vascular disease of the brain**

- Aneurysms
- Thrombosis

**21 Stereo tactic surgeries.**

**22 Cerebral malformations**

**23 Operations of the discs – cervical and lumbar disc operation**

**24 Malformations of the spine and spinal cord**

**25 Lumbar and cisternal punctures technique and complication**

**26 General rules of surgical repair of the peripheral nerves**

**27 Muscle lengthening/ release operations**

**28 Spasticity reductions**

**29 Intensive Care Unit management of the neurologically Impaired Patient.**

Course No.	Subject
MPT 03	Physiotherapy Management in neurological disorders

There will be Eight Questions of fifteen marks each. Candidate will have to answer any six questions

This course provides the student with information on the epidemiology, pathophysiology, Clinical presentation and medical and surgical management in neurological conditions. Students will be able to use this information in planning and tailoring effective, specific, safe physiotherapy treatment programmes and in-depth knowledge of the central nervous system (CNS) and condition caused by damage of the CNS such as stroke, MS, Parkinson, Cerebral Palsy, spina bifida and mental retardation.

- Improved skills in assessing, treatment and evaluating patient with CNS disorders.
- Ability to analyze the patient's problems according to the ICF.
- Ability to analyze ethical dilemmas.
- Ability to find, understand and report results from research related to the field
  1. Congenital and hereditary disorders
    - Hydrocephalus
  2. Head Injury.
    - Comatose patient.
    - Closed skull fractures
    - Hematomas, subdural, epidural and intracerebral
    - Open cranio- cerebral injuries
    - Reconstruction operations in head injuries
  3. Disorders of spinal cord and cauda equina
    - Acute traumatic injuries
    - Haematomyelia and acute central cervical cord injuries
    - Slow progressive compression of the spinal cord
    - Syringomyelia
    - Ischemia and infarction of the spinal cord and cauda



- Spina bifida

#### **4. Disorders of cranial nerves**

#### **5. Disorders of peripheral nerves**

- Peripheral neuropathies
- Causalgia
- Reflex sympathetic dystrophy Irradiation neuropathy
- Traumatic, compressive and ischemic neuropathy
- Spinal radiculitis and radiculopathy
- Hereditary motor and sensory neuropathy
- Acute idiopathic polyneuritis/ chronic
- Neuropathy due to infections
- Vasculomotor neuropathy
- Neuropathy due to systemic medical disorders
- Drug induced neuropathy
- Traumatic neuropathy
- Peripheral nerve tumors

#### **6. Disorders of muscle**

- The myotonic disorders
- Inflammatory disorders of the muscle
- Myasthenia gravis
- Endocrine and metabolic myopathies
- Muscular dystrophies

#### **7. Cerebellar disorders**

- Ataxia
- Motor neuron disease

#### **8. Demyelinating disorders**

- Multiple sclerosis

- Diffuse sclerosis

## **9. Deficiency and nutritional disorders**

- Deficiency of vitamins and related disorders
- Other nutrition neuropathy

## **10. Disorders of cerebral circulation- Stroke**

## **11. Infectious disorders**

- Meningitis
- Encephalitis
- Brain abscess
- Syphilis
- Herpes simplex
- Chorea
- Poliomyelitis
- Tuberculosis
- Transverse myelitis

## **12 Disorders of vestibular system 13 Extra pyramidal disorders**

- Parkinsonism
- Balance disorders

## **14 Epilepsy, Dementia, Alzheimer's disease**

**15 Development of Child-** weight, height, circumference measurement related to age in normal child, developmental milestones, neonatal reflexes, factors, influencing growth and development, types of body built, physical examination of the child, growth patterns

**16 Nutrition and immunization of a normal child-** normal nutrition requirement of a child, infant feeding, prevention of nutrition disorders, immunization

## **17 General principles of neurosurgery**

## **18 Tumors**

- Tumors of cranial bones
- Meningiomas
- Tumors in spinal
- Intra- cranial tumors
- Other space-occupying lesions

## **19 Vascular disease of the brain**

- Aneurysm
- Thrombosis

## **20 Spinal Surgeries**

- Disc operations- cervical, thoracic, lumbar and sacro-coccygeal.
- Stenosis
- Edema, abscess
- Lumbar puncture, cisternal, punctures technique and complication

## **21 Neuromuscular disorders**

- Cerebral Palsy
- Poliomyelitis
- Surgeries in leprosy

**22 Neuro- development techniques 23 Principles and techniques of MRP24 Principles and techniques of PNF 25 Motor control and learning**

**23 Balance and coordination**

**24 Assessment and pain management Stereo tactic surgery**

**25 Cerebral malformations**

**26 Malformations of the spine and spinal cord**

**27 General rule of surgical repair of the peripheral nerves32 Muscle lengthening/release operations**

**28 Spasticity reductions**



- 29 Intensive Care Unit management of the neurologically Impaired Patient.
- 30 Group exercise
- 36 Physiotherapy in home setting
- 37 Biofeedback
- 38 Usage and critical analysis of exercises and electrotherapeutic modalities\
- 39 Disability evaluation

Course No.	Subject
MPT 04	Recent Advances in Neuro-Physiotherapy

### 1. Neuro-psychological Therapies

- 1.1 Cognitive rehabilitation
- 1.2 Behavioral Therapy
- 1.3 Stress management strategies
- 1.4 Functional and Remedial Techniques

### 2. Advanced soft tissue mobilization Technique

#### 2.1 Myofascial release technique

- 2.1.1 Principle and technique
- 2.1.2 Trigger point assessment
- 2.1.3 Myofascial pain Syndrome
- 2.1.4 Concept of Myofascial cycle
- 2.1.5 Myofascial Release technique for various syndrome

#### 2.2 Cyriax concept and technique

- 2.2.1 Principles of Diagnosis
- 2.2.2 Principles of Treatment
- 2.2.3 Cyriax techniques for peripheral joints
- 2.2.4 Cyriax techniques for spine
- 2.2.5 Capsular stretching
- 2.2.6 Soft tissue manipulation by cyriax

### 3. Virtual Reality and Robotics in Neuro-rehabilitation

- 3.1 Virtual Reality - Medical Games, Immersive approaches
- 3.2 Robotics and Haptics -simulation -- understanding motivational aspects of rehabilitation
- 3.3 Concept and Principle of Lumosity

#### **4. Core Stabilization and Pilates**

- 4.1 Segmental Stabilization Concepts of Spine
- 4.1 Muscle function in spinal stabilization
- 4.2 Contribution of various muscles to spinal stabilization
- 4.3 Local Muscle dysfunction in Low back pain
- 4.4 Principles of clinical management of deep muscle system for segmental stabilization
- 4.5 Core stability exercise
- 4.2 Pilates
- 4.2.1 Introduction
- 4.2.2 Principle & Technique
- 4.2.3 Types of Pilates
- 4.2.4 Pilates for different sports

#### **5. Neurotherapeutic manual Techniques**

- 5.1 Butler principles and concept
- 5.1.1 Neurophysiology and neurodynamics
- 5.1.2 Clinical neurobiomechanics
- 5.1.3 Neural tension and mobilization-upper limb and lower limb
- 5.1.4 Different schools of thoughts for neural mobilization techniques

#### **Recommended books:**

- 1 J. Maitland, 2001, Spinal manipulation made simple-A manual of soft tissue techniques. 1<sup>st</sup> Edition. North Atlantic Books.
- 2 E. Cara, A. MacRae, 2004, Psychosocial Occupational Therapy: A Clinical Practice. 2<sup>nd</sup> Edition. Delmar Cengage learning
- 3 C. Manheim, 2008, The Myofascial Release Manual. 4<sup>th</sup> Edition. SLACK Incorporated
- 4 M. Sohlberg, 2001, Cognitive Rehabilitation: An Integrative Neuropsychological Approach. 2<sup>nd</sup> Edition. Guilford Press.
- 5 E.C. Haskins, L.E. Trexler, A. Shapiro-Rosenbaum, K. Dams-O'Connor, R. Eberle, 2012, Cognitive Rehabilitation Manual: Translating Evidence-Based Recommendations into Practice. 1<sup>st</sup> Edition. ACRM Publishing

Course No.	Subject
MPT 05	Practical

Related of assessments, investigations and Physiotherapy management of all the above condition Students will be judged on one elective and one non-elective case. They will be expected to assess, diagnose and plan effective treatment plan for both cases

Course No.	Subject
MPT 06	Seminar/Case Presentations

### **Seminar / Case Presentations**

There will serve as platform for students to integrate various components of patient management and debate contentious issues on the efficacy of Physiotherapy techniques. Students will give presentations on topic provided to them.

Course No.	Subject
MPT 07	<b>DISSERTATION PROJECT WORK</b> (Based on Clinical/ case presentation including viva voce)

As part of their requirement for the Master Degree the Student is required to undertake a research study under the guidance of Guide and Co-guide. Research study must be selected only from the chosen specialization i.e., Musculoskeletal Condition or Sports Injuries or Neurological Conditions or Pediatric Conditions and to be studied on patients or normal individuals. Students have to undergo a dissertation viva-voce by examination committee.



## **M.P.T SECOND PROFESSIONAL YEAR**

### **(CARDIOTHORACIC & PULMONARY DISORDERS)**

<b>Course Code</b>	<b>Subject</b>
<b>MPT 01</b>	<b>Assessment and diagnosis of (cardiopulmonary condition)</b>

Instruction for Paper Setter

There will be Eight Questions of Fifteen Marks each. Candidates will have to answer any six questions.

This course provides the students with information on assessment procedures and relevant diagnostic tests in cardio-pulmonary conditions, which the students will use in planning and tailoring effective specific safe physiotherapy treatment programme.

#### **1. Cardio-pulmonary assessment**

- i) History taking
- ii) Observation
- iii) Palpation
- iv) Auscultation
- v) Percussion
- vi) Functional ability

#### **2. Relevant diagnosis tests (for practical knowledge only)**

- i) Hematology
- ii) ABG analysis
- iii) Spirometry
- iv) Invasive and Non-invasive techniques
- v) ECG
- vi) Echocardiography
- vii) Imaging
  - Plain X-ray
  - Computed Tomography
  - Magnetic resonance imaging
- viii) Cardiac catheterization
- ix) Radio nuclide Scanning
- x) Stress testing
- xi) Lung Function Testing
- xii) Biofeedback
- xiii) Humidification and Aerosol Therapy

#### **3. Differential Diagnosis in different cardiopulmonary conditions.**

##### **Reference**

Principal and practice of Cardiopulmonary  
Physiotherapy, Donna Brownfelter  
Case textbook of general medical and surgical condition  
Brompton guide to chest PT  
Cardiopulmonary PT Irwin & Technin Mosby  
Cardiovascular (Respiratory PT) Smith & ball, Mosby

Course Code	Subject
MPT 02	Medical and Surgical management of cardiopulmonary conditions

**Instruction for Paper Setters**

There will be Eight Questions of Fifteen Marks each. Candidates will have to answer any six questions.

This course provides the students with information on the epidemiology, pathomechanics, clinical presentation and medical and surgical management in disorders of the cardiovascular system. Students will be able to use this information in planning and tailoring effective, specific, safe physiotherapy treatment programme.

**CARDIOLOGY**

- a) Assessment of system of heart disease.
- b) Disorders of cardiac rate rhythm and conduction
- c) Cardia Arrest
- d) Shock
- e) Rheumatic fever
- f) Congenital Heart Diseases
- g) Disease of Heart Valves
- h) Infective endocarditis
- i) Ischemic heart disease
- j) Hypertension
- k) Ortho static hypertension
- l) CPR
- m) Pericarditis
- n) Heart disease in pregnancy
- o) Degenerative arterial Disease
- p) Inflammatory arterial Disease
- q) Raynaud's Disease
- r) Venous Thrombosis
- s) Peripheral Vascular Disease
- t) Cardiomyopathy
- u) Disease of the pericardium

**PULMONOLOGY**

- a) Obstructive Pulmonary Disease
- b) Infection of the respiratory System
- c) Interstitial and Infiltrative Pulmonary Disease
- d) Pulmonary Disease due to Exposure to Organic and Inorganic Pollutants
- e) Pulmonary Disorders due to Systemic Inflammatory disease
- f) Pulmonary Vascular disease
- g) Disease of the Pleura
- h) Respiratory Failure
- i) Supplementary Oxygen and Oxygen Delivery Devices in chronic Respiratory disease



- j) Neuromuscular and Skeletal Disorder leading to Global alveolar Hypoventilation, Myopathics, Spinal muscular Atrophics, Poliomyelitis, Motor Neuron Disease, Kyphoscoliosis, Pectus carinatum Pectus Excavatum.
- k) Path physiology of Paralytic-Restrictive Pulmonary Syndromes
- l) Conventional Approaches to Managing Neuromuscular Ventilatory Failure
- m) Mechanical Ventilation: Concepts, Physiological effects and Complications.

#### **CARIOTHORACIC SURGERIES**

- a) Closed versus Open Heart Surgeries
- b) Incisions
- c) Preoperative Assessment of Patients
- d) Pre and Post operative Blood Gas Exchange
- e) Haemodynamics Performances of CTVS Patient
- f) Emergencies in CTVS
- g) AV Shunts
- h) Heart Transplant
- i) Left Ventricular Assistive Devices
- j) Procedure on Sternum, Chest Wall, Diaphragm, Mediastinum and Esophagus
- k) Cardiopulmonary Bypass
- l) Maintaining and Removing Artificial Airway
- m) All Pulmonary Surgeries like Labectomy, Pneumonectomy, Pleurectomy, Thoracotomy etc.

#### **References**

Practice in general medicine, M. Davidson  
 Practice in general surgery, S Das Basu  
 Essential of cardiopulmonary PT, Sadowsky w B Saunder  
 Physiotherapy for Respiratory and Cardiac problems, Jennifer A Pryor, Barbara A Webber  
 Cash textbook of general medical and surgical condition  
 Cardiovascular (Respiratory PT), Smith & ball, Mosby  
 ACSM guidelines for exercise testing and prescription, ACSM William and Wilkins  
 Multiskilled respiratory therapist a competitive based approach, David W. Chang  
 Textbook of medicine, Harrison

Course Code	Subject
MPT 03	Physiotherapy management of cardiopulmonary conditions

#### **Instructions for Paper Setters**

There will be Eight Questions of Fifteen Marks each. Candidate will have to answer any six questions.

This course provides students with information on the management of the following conditions using the principle of management.

#### **CARDIOLOGY**

- i) Assessment of system of heart disease
- ii) Disorders of cardiac rate rhythm and conduction
- iii) Cardiac Arrest



- iv) Shock
- v) Shock
- vi) Rheumatic fever
- vii) Congenital Heart Values
- viii) Disease of Heart Values
- ix) Infective endocarditis
- x) Ischemic heart disease
- xi) Hypertension
- xii) Ortho static hypertension
- xiii) C.P.R
- xiv) Pericarditis
- xv) Heart disease in pregnancy
- xvi) Inflammatory arterial disease
- xvii) Raynaud's Disease
- xviii) Venous Thrombosis
- xix) Peripheral Vascular Disease
- xx) Cardiomyopathy
- xxi) Disease of the pericardium

## **PULMONOLOGY**

- i. Obstructive Pulmonary Disease
- ii. Infections of the respiratory System
- iii. Interstitial and Infiltrative Pulmonary Diseases.
- iv. Pulmonary Disease due to Exposure to Organic an Inorganic Pollutants
- v. Pulmonary Disorders due to Systemic Inflammatory disease
- vi. Pulmonary Vascular disease
- vii. Disease of the Pleura
- viii. Respiratory Failure
- ix. Supplementary Oxygen and Oxygen Delivery in chronic Respiratory disease
- x. Neuromuscular Atrophic, Poliomyelitis, Motor Neuron Disease, Kyphoscoliosis Pectus carinatum, Pectus Excavatum
- xi. Pathophysiology of Paralytic-Restrictive Pulmonary Syndromes
- xii. Conventional Approaches to Managing Neuromuscular Ventilatory Failure
- xiii. Mechanical Ventilation: Concepts, Physiological effects and Complications

## **CARDIOTHORACIC SURGERIES**

- 1. Closed versus open Heart Surgeries
- 2. Incisions
- 3. Preoperative Assessment of Patients
- 4. Pre and Post-Operative Blood Exchange
- 5. Hemodynamics Performance of Patient
- 6. Emergencies in CTVS
- 7. AV Shunts
- 8. Heart Transplant
- 9. Left Ventricular Assistive Devises
- 10. Procedure on Sternum, Chest wall Diaphragm, Mediastinum and Esophagus
- 11. Cardiopulmonary Bypass
- 12. Maintaining and Removing Artificial always
- 13. All Pulmonary Surgeries like Lobectomy, Pneumonectomy Pleurectomy, Thoracotomy etc.

## **References**

Principle and practice of Cardiopulmonary

Physiotherapy, Donna Brownfelter  
 Essential of cardiopulmonary PT, Sadowsky w, B. saunder  
 Physiotherapy for Respiratory and cardiac problem, Jennifer A Pryor, S Ammani Prasad  
 Physiotherapy for Respiratory and cardiac problem, Jenniger A Pryor, Barbara A Webber  
 Cash text book of general medical and surgical condition Brompton guide to chest PT  
 Cardiopulmonary PT, Irwin & Technin, Mosby  
 Chest PT in ICU, Meckenzie et al, William and Wilkins  
 ACSM guidelines for exercise testing and prescription, ACMS William and Eilkins  
 Cardiopulmonary physiotherapy, M. Jones, F. Moffat  
 Heart disease and rehabilitation, Michal I pollock, Donald H. Schtmleit  
 Multiskilled respiratory therapist a competitive based approach, David W chang

Course Code	Subject
MPT 04	Recent Advances in Cardiopulmonary Physiotherapy

### **1. Exercise Testing and prescription**

- 1.1. Principle and technique
- 1.2. Patient assessment
- 1.3. Protocols
- 1.4. Exercise testing for special group

### **2. Precision heart rate training**

- 2.1 Heart rate monitoring and training
- 2.2 Training in heart zones
- 2.3 Precision heart rate training for specific sports
- 2.4 Multi Activity training
- 2.5 Monitoring of training effects

### **3. Neurophysiological facilitation of respiration**

- 3.1 Chest Mobilization
- 3.2 Muscle lengthening technique
- 3.3 Postural retraining

### **4. Proprioceptive Neuromuscular Facilitation**

- 4.1. Basic of chest PNF
- 4.2. Technique of chest PNF
- 4.3. Pilates for different sports

## **5. Cardiopulmonary manual Techniques**

Cardiopulmonary technique in acute condition

5.1 Techniques in pneumothorax

5.2. Pleural surgeries and techniques

### **Text Books/References Book:**

1. J. Maitland, 2001, Spinal manipulation made simple-A manual of soft tissue techniques. 2<sup>nd</sup> Edition. North Atlantic Books.
2. C. J. Manheim, 2008, The Myofascial Release Manual. 4<sup>th</sup> Edition. SLACK Incorporated.
3. J. Langendoen, 2014, Kinesiology Taping The Essential Step-By-Step Guide: Taping for Sports, Fitness and Daily Life, 1<sup>st</sup> Edition, Robert Rose Inc.
4. G. Cook, 2011, Movement: Functional Movement Systems: Screening, Assessment, Corrective Strategies. 2<sup>nd</sup> Edition. Lotus Publisher.
5. N. Swedan, 2001, Women's Sports Medicine and Rehabilitation, 1<sup>st</sup> Edition, Aspen Publishers Inc.

<b>Course Code</b>	<b>Subject</b>
<b>MPT 05</b>	<b>Practical</b>

Related to assessments, investigations and physiotherapy management of all above conditions. Students will be judged on one elective and one non-elective case. They will be expected to assess diagnose and plan effective treatment plan for both cases.

<b>Course Code</b>	<b>Subject</b>
<b>MPT 06</b>	<b>Seminar Case Presentations</b>

### **Seminar Case Presentations**

These will serve as platform for student to integrate various components of patient management and debate contentious issue on the efficacy of physiotherapy techniques students will give presentation on topic provided on them.



Course Code	Subject
MPT 07	<b>DISSERTATION PROJET WORK</b> (Based on clinical case presentation including viva voce)

As part of their requirement for the Master Degree the student is required to undertake a research study under the guidance to Guide and Co- guide. Research study must be selected only from the chosen specialization i.e. Musculoskeletal Conditions or Sports Injuries or Neurological Conditions or Pediatric Conditions and to be studied on patients or normal individuals. Students have to undergo a dissertation viva-voce by examining committee



**M.P.T SECOND PROFESSION YEAR**  
**SPORTS**

Course Code	Subject
MPT 01	Assessment and diagnosis in sports injuries

**Instruction for Paper Setters**

There will be Eight Questions of Fifteen Marks each. Candidates will have to answer any Six questions.

**1. Orthopedic Assessment**

- i) Patient History
- ii) Observation
- ii) Examination- Active and Passive Movements, functional Assessment, Special Tests, Reflexes and Cutaneous Distribution, Joint Play Movements Palpation.
- iv) Assessment, special test, reflexes and cutaneous distribution, joint play movements, palpation.
- v) Immediately after injury.
- v) Acute stage.
- vii) Chronic Stage.
- viii) Rehabilitation stage.
- ix) Emergency sports evaluation
- x) Biomechanics of running and jumping

**2. Regional examination with special emphasis on special tests**

- i) Head and face
- ii) Cervical spine
- iii) Shoulder
- iv) Elbow
- v) Forearm, wrist and hand
- vi) Thoracic spine.
- vii) Lumbar spine
- viii) Pelvis
- ix) Hip
- x) Knee
- xi) Lower leg, ankle and foot.

**3. Sports medicines diagnosis (for practical purpose only)**

- i) Bio mechanical measurement- limbs and spine
- ii) Serology
- iii) Biopsy
- iv) Plain radiography
- v) Contrast radiography
- vi) Myelography
- vii) Radioactive scanning
- viii) Discography
- ix) Tomography

- x) MRI
- xi) Arthroscopy
- xii) EMG, NCV and SD curve
- xiii) BMO – Bone Densitometry, ultrasound densitometry and DEXA

#### 4. Differential diagnosis of common sports injuries

##### Reference Books:

Orthotics in rehabilitation – splinting the hand and body MCKEE, PAT  
 Physiotherapy in orthopedics – a problem solving approach, Atkinson. Karem  
 Examination of Musculo skeletal injuries. Shultz SJ  
 Clinical orthopedic rehabilitation. Brotzman. S. Brent  
 Orthopedic physical therapy- Donatelli. RA and Wooden. MJ  
 Joint Structure and function- a comprehensive analysis. Levengie PK and Norkin. CC.  
 Essential of orthopedics and applied physiotherapy. Joshi J and Kotwal

Course Code	Subject
MPT 02	Medical and surgical Management of Sports Injuries

##### Instruction for Paper Setters

There will be Eight Questions of Fifteen Marks each. Candidate will have to answer any six questions. This course provides the study of the definition, terminologies, epidemiology, pathomechanics, clinical features and prevention, medical and surgical management of all sports injuries but not limited to the following. It will also enable the students to use this information in planning and tailoring effective, specific, safe physiotherapy treatment programmes.

##### Medical Problem

Definition and terminology.

Medical problems of athletes – fungal infections, viral infections, common cold, diarrhea, dysentery, T.B., amoebiasis etc.

##### Special considerations:

1. Female athletes – sports amenorrhea, injury to female reproductive tract., menstrual asynchrony
2. Adolescent athlete
3. Disabled athlete

Doping amongst athletes

Protective equipment consideration

Emergency care, athletes first aid and cardiopulmonary resuscitation

Weight management



**Sports injuries:**1. Frequency and site if injury

2. Etiological factors.

Prevention of injury

Mechanism of injury

Role of teachers and coaches in prevention of injury

Physiology of sports rehabilitation

Sports specific injury pattern

Acute, overuse and traumatic injuries related to cricket

Acute, overuse and traumatic injuries related to judo

Acute, overuse and traumatic injuries related to throw ball

Acute, overuse and traumatic injuries related to basket ball

Acute, overuse and traumatic injuries related to discuss throw

Acute, overuse and traumatic injuries related to football

Acute, overuse and traumatic injuries related to baseball

Acute, overuse and traumatic injuries related to badminton

Acute, overuse and traumatic injuries related to tennis

Acute, overuse and traumatic injuries related to gymnastics

Acute, overuse and traumatic injuries related to javelin

Acute, overuse and traumatic injuries related to judo

Sports injuries of lower limb

Sports injuries of spine

Sports injuries of head and neck

Stroke management

Internal and external bleeding

#### **Reference books**

Sports injuries diagnosis and mgmt. Norris. CM

Physical aspects of sports training and performance. Hoffman. Jay

Sports psychology. Yadvindra singh

Sports medicine. Jain. R

Evidence based sports medicine Macually D and Best

Sports medicine in primary care. Jhomson R

Sports medicine of the lower extremity. Subotmic S

Surgical atlas if sports medicine. Mark D Miller. Richard F Howard and Kevin D Plancher. Mark D Miller.

Course Code	Subject
MPT 03	Physiotherapy Management in Sports Injuries

#### **Instruction for Paper Setters**

There will be eight questions of Fifteen Marks each. Candidates will have to answer any six questions. This course provides the students with information on the sports psychology, sports injuries related

miscellaneous issues. This will enable the students to use this information in planning and tailoring effective, specific, safe physiotherapy treatment program.

### **Sports psychology**

1. **Definition and Terminologies**
2. **Role of Sports Psychology in Sports performance**
3. **Instincts – Killer instincts and motivation**
4. **Attention, interests and motivation.**
5. **Personality of sports person-type, dynamic nature, factors affecting personality development, characteristics.**
6. **Role of sports in personality development**
7. **Learning relation to Sports:**
  - i) Nature and meaning of learning and maturation.
  - ii) Characteristics of learning
  - iii) Laws of learning maturation
  - iv) Transfer of Training
8. **Emotions in Sports**
  - i) Characteristics of emotions
  - ii) Controlling and training of emotions
  - iii) Sentiments - types, importance and formations
9. **Mental Health**
  - i) Concepts, Meaning and Importance
  - ii) Characteristic of mentally healthy person/ athlete
10. **Role of Physical Education in promotion of mental health**
11. **Factor affecting growth and development**
  - i) Role of heredity
  - ii) Character of growth
  - iii) Heredity on relation to Environment
12. **Group Behaviors and leadership in Sports**
  - i) Nature of Group Behavior.
  - ii) Type, quality, Training and Functioning of Leader performance
13. **Anxiety, Model Stress and its Functioning of Leader performance**
  - i) Isolate training
  - ii) Sudden Change in Opponent

- iii) Audience Stress.
- iv) Strategy change
- v) Cognitive Stress Modeling

**14. Contemporary Stress Reduction Strategies**

- i) Bio Feedback
- ii) Mental Coping Strategies
- iii) Visual Imagery
- iv) Meditation and Yoga

**15. Performance Factors**

- i) Stress and Performance
- ii) Motivation and performance

**16. Anthropometry**

**17. Protective Equipment Consideration**

**18. Emergency Care**

**19. Sports Techniques**

- i) Sports Massage and soft tissue manipulation
- ii) Splinting, Taping and Bandaging-techniques, indications and contra indications
- iii) Balance, co-ordination and PNF Techniques
- iv) Hydrotherapy
- v) Jacuzzi
- vi) Sauna Bath and Spas
- vii) Moist Heat Chambers
- viii) Hot Showers

**20. Health Club and fitness centers – Use and Misuse of Equipment's**

**21. Instrumentation in sports training and rehabilitation**

- i) Iso Kinetic Exerciser.
- ii) Treadmill
- iii) Ergometer – Upper and Lower Limb
- iv) Body Fate Platfrom
- v) Motion Analyser
- vi) Cardio-respiratory evaluation apparatus

**22. Prevention and Rehabilitation of heart attack**

**23. Role of Physiotherapy Exercise in high blood pressure athlete**

**24. Role of Physiotherapy exercise in diabetic athlete**

**25. Role of Physiotherapy in different medical conditions**

**26. Physiotherapy of sports rehabilitation**

**27. Special Exercise programme for sports person**



## **28. Bio mechanical principals for all sports injuries:**

- i) Bio mechanics and injuries related to cricket
- ii) Bio mechanics and injuries related to Judo
- iii) Bio mechanics and injuries related to Throw Ball
- iv) Bio mechanics and injuries related to Basket Ball
- v) Bio mechanics and injuries related to Discus Throw
- vi) Bio mechanics and injuries related to Football
- vii) Bio mechanics and injuries related to Base Ball
- viii) Bio mechanics and injuries related to Badminton
- ix) Bio mechanics and injuries related to Tennis
- x) Bio mechanics and injuries related to Gymnastics
- xi) Bio mechanics and injuries related to Javelin
- xii) Bio mechanics and injuries related to Swimming
- xiii) Bio mechanics and injuries related to Jumping Sports
- xiv) Bio mechanics and injuries related to Track and Field Sports (Atheletics, Soccer, Hockey etc.)
- xv) Sports injuries of Upper Limb
- xvi) Sports injuries of Lower Limb
- xvii) Sports injuries of Lower limb
- xviii) Sports injuries of Thorax, Spine
- xix) Sports injuries of Head and Neck

## **29. Advanced Manual Therapy:**

- i) Manual Therapy – History, Basic Classification, Assessment for manipulation, discussion in brief about the concepts of mobilization and special techniques like cyriax, Maitland, Mulligan, Butler, Kalternborn, Meckenzie.
- ii) Muscle energy techniques and positional stretch – Basic concepts and application of techniques.
- iii) Positional release therapy – Basic concepts and application of techniques
- iv) Myofascial techniques – Basic concepts and application of techniques
- v) Nerve conduction studies and electromyography – normal , abnormal, action potential , its recording protocols analysis, applications.
- vi) Bio feedback

## **Reference:**

Sports injuries diagnosis and management. Norris, CM.  
Physical aspects of sports training and performance. Hoffman. Jay  
Evidence based sports medicines. Macaulay, D and Best  
Sports medicine in primary care. Johnson. R  
Sports medicine in primary care. Johnson R.  
Sports atlas if sports medicine. Mark D Miller. Richard F Howard and Kevin D Plancher. Mark D Miller  
Positional Release Techniques Deig. D  
Muscle energy techniques. Chaitow. L.

Course Code	Subject
MPT 04	Recent Advances in Sports Physiotherapy

# **1. Advanced soft tissue mobilization Technique**

- 1.1 Myofascial release technique
  - 1.1.1 Principle and technique
  - 1.1.2 Trigger point assessment
  - 1.1.3 Myofascial pain Syndrome
  - 1.1.4 Concept of Myofascial cycle
  - 1.1.5 Myofascial Release technique for various syndrome
- 1.2 Cyriax concept and technique
  - 1.2.1 Principles of Diagnosis
  - 1.2.2 Principles of Treatment
  - 1.2.3 Cyriax techniques for peripheral joints
  - 1.2.4 Cyriax techniques for spine
  - 1.2.5 Capsular stretching
  - 1.2.6 Soft tissue manipulation by cyriax

## **2. Precision heart rate training**

- 2.1. Heart rate monitoring and training
- 2.2. Training in heart zones
- 2.3. Precision heart rate training for specific Sports
- 2.4. Multi Activity training
- 2.5. Monitoring of training effects

## **3. Adjuncts to Injury Recovery**

- 3.1 Kinesiotaping
- 3.2 Current Concept and Principles of Wound healing

## **4. Core Stabilization and Pilates**

- 4.1 Segmental Stabilization Concepts of Spine
  - 4.1.1 Muscle function in spinal stabilization
  - 4.1.2 Contribution of various muscles to spinal stabilization
  - 4.1.3 Local Muscle dysfunction in Low back pain
  - 4.1.4 Principles of clinical management of deep muscle system for
  - 4.1.5 Segmental stabilization
  - 4.1.6 Core stability exercise
- 4.2 Pilates
  - 4.2.1 Introduction
  - 4.2.2 Principle& Technique
  - 4.2.3 Types of Pilates
  - 4.2.4 Pilates for different sports

## 5. Neurotherapeutic manual Techniques

- 5.1 Butler principles and concept
  - 5.1.1 Neurophysiology and neurodynamic
  - 5.1.2 Clinical neurobiomechanics
  - 5.1.3 Neural tension and mobilization-upper limb and lower limb
  - 5.1.4 Different schools of thoughts for neural mobilization techniques

### Text Books/References Book:

1. J. Maitland, 2001, Spinal manipulation made simple-A manual of soft tissue techniques. 2<sup>nd</sup> Edition. North Atlantic Books.
2. C. J. Manheim, 2008, The Myofascial Release Manual. 4<sup>th</sup> Edition. SLACK Incorporated.
3. J. Langendoen, 2014, Kinesiology Taping The Essential Step-By-Step Guide: Taping for Sports, Fitness and Daily Life, 1<sup>st</sup> Edition, Robert Rose Inc.
4. G. Cook, 2011, Movement: Functional Movement Systems: Screening, Assessment, Corrective Strategies. 2<sup>nd</sup> Edition. Lotus Publisher.
5. N. Swedan, 2001, Women's Sports Medicine and Rehabilitation, 1<sup>st</sup> Edition, Aspen Publishers Inc.

Course No.	Subject
MPT 05	Assessment, diagnosis and treatment in sports injuries

Related to assessments, investigations and physiotherapy management of all the above conditions.

Students will be judged on one elective and one non-elective case. They will be expected to assess diagnose and plan effective treatment plan for both cases.

### 1. Demonstration of following manual therapy techniques:

- i. Cyriax
- ii. Maitland
- iii. Mulligan
- iv. Butler
- v. McKenzie
- vi. Nerve mobilization

### 2. Outline and practical knowledge of

- i) Muscle energy technique
- ii) Positional Stretch
- iii) Myofascial release etc.

### 3. Demonstration and practical knowledge of



- i) NCV, EMG
- ii) Biofeedback

### Reference Books:

Electrotherapy explained: principal and practice by Jhon Low, Ann  
 Reed and Mary Dyson/Low Jhon  
 Postional Release Techniques Deig. D  
 Muscle energy techniques. Chaitow. L  
 Clayton's electrotherapy edited by Sheela Kichen and Sarah Bazin Kitchen Sheila

Course No.	Subject
MPT 06	Seminar Case Presentation

### Seminar Case Presentations

These will serve as platform for student to integrate various component of patient management and debate contentious issue on the efficacy of physiotherapy techniques students will give presentation on topic provided to them.

Course No.	Subject
MPT 07	DISSERTATION PROJECT WORK (Based on clinical case presentation including viva voce)

As part of their requirement for the Master Degree the student is required to undertake a research study under the guidance to Guide and Co-guide. Research study must be selected only from the chosen specialization i.e. Musculoskeletal Conditions or Sports Injuries or Neurological Conditions or Pediatric Conditions and to be studied on patients or normal individuals. Students have to undergo a dissertation viva-voce by examining committee.