



# PRAVARA INSTITUTE OF MEDICAL SCIENCES (DEEMED TO BE UNIVERSITY)

Loni, Tal. Rahata, Dist. Ahmednagar 413736  
NAAC Re-accredited with 'A' Grade

## SYLLABUS

### PG Programme- Master of Physiotherapy (MPT)

(Programme Outcomes (PO's) & Course Outcomes (CO's) Post Graduate Revised Curriculum will be implemented from batch admitted for 2022-23)

## MASTER OF PHYSIOTHERAPY (MPT) SYLLABUS

**1. Preamble:** The Master of Physiotherapy is a dynamic academic course offered for qualified physiotherapists. It is a 2 year full time program .It creates the opportunity for qualified and experienced clinicians to broaden their knowledge, clinical skills in Physiotherapy field. The course recognizes the need to adopt principles of learning and emphasizes the importance of facilitating graduates to develop independent, self-directed and critical philosophies in the field of Physiotherapy.

The MPT course is offered for 5 specialties. Orthopaedic Physiotherapy, Neuro Physiotherapy, Cardiovascular and Respiratory Physiotherapy and Community Physiotherapy and Pediatric Physiotherapy. The contents of these subjects are chosen critically so as to support the physiological basis of physiotherapy practice, provide a framework for evaluation of evidence for physiotherapy and develop advanced communication skills and awareness of professional and ethical issues in physiotherapy and the broader healthcare community.

The course contents present advanced knowledge and understanding the current issues in Physiotherapy and their application to clinical practice. It also provides opportunities for students to acquire cutting edge information and skills related to treatment and management in Physiotherapy. The clinical placement allows students to broaden or deepen their clinical practice experience and expertise.

A high level of expert tuition is provided for all units and clinical placements. This course focuses on the integration between evidence based practice and current clinical practice. Throughout the course, students review the literature critically and apply this information in the evaluation and management of Physiotherapy. Research projects will be completed and manuscripts will be submitted to a peer-review journal.

**2. Objectives:** The objectives of this Master degree program offered by Pravara Institute of Medical Sciences;

- Integrate the use of basic principles of research in critical analysis of concepts and findings generated by self and others.
- To enhance clinical competency in evaluation, treatment planning and implementation.
- Function as competent physiotherapist in any health care setting.
- Possess the theoretical and practical skills required to teach the undergraduate students.
- Inculcate the quality of patient care handling with ethical values.

**3. Eligibility:** A candidate who has passed Bachelor of Physiotherapy (BPT/BPhT/BPT/B.Physio/BSc Physiotherapy) or any equivalent degree examination of a recognized Indian university by law in India or any other degree course in physiotherapy recognized as equivalent by PIMS, Association of Indian Universities or Indian Association of Physiotherapists and who has scored not less than 50% of maximum marks in prescribed qualifying examination shall be eligible for the Masters of Physiotherapy.

**5. Total intake of students:** The total intake of students will be as per norms of the Pravara Institute of Medical Sciences, Deemed University, Loni-413736.India.

**6. Course fee structure:** The tuition fee and other fee structure will be as per the notifications by Pravara Institute of Medical Sciences, Deemed University from time to time. The fee structure is different for resident Indians, non-resident Indian and foreign students.

**7. Course duration:** The course duration shall be 2 years. This duration includes also includes submission of dissertation on the research topic. No additional time is given for the submission of the dissertation.

#### 8. Course Subjects:

##### I Year MPT

Subject Code PGIPHY01	Paper I	Applied Physiotherapeutics I	Section I	Professional Practice
			Section II	Research Methodology & Biostatistics
Subject Code PGIPHY02	Paper II	Applied Physiotherapeutics II	Section I	Biomechanics & Clinical Kinesiology
			Section II	Exercise Physiology & Electro Physiology
Subject Code PGIPHY03	Paper III	Applied Physiotherapeutics III	Section I	Physiotherapy Diagnosis & clinical decision making
			Section II	Advanced Physiotherapeutics

## II YEAR MPT

Subject Code		Speciality I
PGIIPHY01	Paper I	

Subject Code	Paper II	Speciality I
PGIIPHY02		

**9. Medium of instructions:** The medium of instructions for this course shall be only English. This includes theory lectures, practicals, laboratory works and assignments and clinical training.

**10. Course location:** This course is offered at Dr. A.P.J. Abdul Kalam College of Physiotherapy, Pravara Institute of Medical Sciences, Loni, Taluka: Rahata, District: Ahmednagar, Maharashtra, India-413736.

**11. Course:** The courses should define learning objectives and learning outcomes. A course may be designed to comprise lectures/ tutorials/laboratory work/ field work/ outreach activities/ project work/Journal club/viva/ seminars/Academic debate/Microteaching /assignments/ case presentations/ self-study etc. or a combination of some of these.

**12. Clinical postings:** Clinical postings will be at various Physiotherapy Departments, Pravara rural Hospital wards and Pravara rural public health centers. Since the teaching clinics operate 48 weeks per year, students will be required to attend clinical sessions on a rotation basis to maintain public service and provide continuity of patient care.

**13. Monitoring process:** A candidate pursuing M.P.T. course shall study in the concerned department of the college of physiotherapy, Pravara Institute of Medical Sciences, Loni for the entire period as full time student. No candidate is permitted to work in any other hospital, clinic, college etc., while studying this postgraduate course. No candidate should join another course of study or appear for any other examination conducted by this university or any other university in India or abroad during the period of registration. Each year shall be taken as a unit for the purpose of calculating attendance. Every student shall attend lectures, practicals, laboratory works, seminars, research clubs, journal clubs, review meeting, tele-physiotherapy sessions and state level conferences, national level conferences or occasionally international conferences during each year as prescribed by the Pravara Institute of medical Sciences, Deemed University, Loni. Candidate who has put in a minimum of 80% of attendance in the theory and practical assignments separately shall be permitted to appear for M.P.T. examination. Candidate who has put in a minimum of 80% of attendance in first

year of M.P.T. shall only be eligible to submit the dissertation. Any student who fails to complete the course in the manner stated above shall not be permitted to appear for the University examination. Every candidate shall maintain a work diary and record of his/her participation in the training programs conducted by the department such as journal reviews, seminars, etc. The work diary shall be scrutinized and certified by the Head of the Department and the Principal, College of Physiotherapy, and presented in the university practical examination if called for. Every clinical case discussion, case presentation, seminars, journal clubs and research clubs will be monitored by faculty members, guide and peers using relevant checklists.

**14. Dissertation:** Every candidate pursuing M.P.T. 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 a dissertation. The dissertation is aimed to train a postgraduate student in research methods and techniques. It includes identification of the problem, formulation of a hypothesis, review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, and comparison of results, drawing conclusions and evaluation of research project. Every candidate shall submit a research proposal or synopsis containing particulars of proposed dissertation to the Registrar of the university in the prescribed Performa within 6 months from the date of commencement of the course on or before the dates notified by the university. The research proposal or synopsis shall be sent through the proper channel. Such synopsis will be reviewed and the university will register the dissertation topic. No change in the dissertation topic or guide shall be made without prior approval of the university. The dissertation should be written under the following headings;

1. Introduction
2. Aims or objectives of study.
3. Research question
4. Review of literature.
4. Material and methods.
5. Outcome measures
5. Results.
6. Discussion
7. Conclusion
8. Summary
9. References
10. Tables
11. Annexure.

The Dissertation should be neatly typed in double line spacing on one side of paper (A4 size, 8.27" x 11.69") and bound properly. Spiral binding should be avoided. The guide & Principal, college of Physiotherapy shall certify the dissertation. Four copies of dissertation thus prepared shall be submitted to the Controller of Examinations, three months before final examination on or before the

dates notified by the university. The examiners appointed by the university shall value the dissertation. Approval of dissertation work is an essential precondition for a candidate to appear in the university examination

**15. Assessment:** Assessment of the student in this course will be by written, oral and practical examination at the completion of the each year. However, the student should submit the research dissertation prior to appearing for the final university examination. Student's dissertation should be accepted by the examiners prior to appearing for the final examination.

## 16. Scheme of Examination

### I Year MPT

S.no		Total Marks	Minimum Marks required for Passing
1.	Theory	300	150
2.	Practical	150	75

#### Theory Examination

- There shall be three theory papers of 100 marks each
- Each paper shall be of three hours duration
- All the questions are compulsory

Section I	Long Essay Question 1 x 20	20 Marks
	Short Essay Questions 3 x 10	30 Marks
Section II	Long Essay Question 1 x 20	20 Marks
	Short Essay Questions 3 x 10	30 Marks

#### Practical Examination - 150 Marks

Short Case I - Speciality	50marks
Short Case II - General	50marks
Spots( Based Screening of various Systems)	30marks
Teaching skills	20 marks

## Scheme of Examination

### II Year MPT

S.no		Total Marks	Minimum Marks required for Passing
1.	Theory	200	100
2.	Practical	350	175

#### Theory Examination

- There shall be two theory papers of 100 marks each
- Each paper shall be of three hours duration
- All the questions are compulsory

Qn.1	Long Answer Question	1 x30	30 Marks
Qn.2	Long Answer Question 1 x 30	30 Marks	30 Marks
Qn.3	Solve any four out of five SAQ	4 X 10	40 Marks

#### Practical Examination - 350 Marks

Long Case Speciality I	150 Marks
Long Case Speciality II	150 Marks
Dissertation VIVA	50 Marks
Total	350 Marks

**17. Schedule of examination:** The examination for M.P.T. course shall be held at the end of each academic year. The university shall conduct two examinations in a year such as regular and supplementary at an interval of six months between the two examinations. No more than two exams shall be conducted in one academic year.

**18.Criteria for passing:** The criteria for passing includes, minimum of 50% of total marks in theory aggregate and minimum of 50% of total marks in clinical and Viva-Voce aggregate.

**19. Declaration of class:** The declaration of class shall be as follows;

1. First class with distinction: 75% & above in aggregate provided the candidate passes the examination in first attempt.

2. First class: 60% & above in aggregate provided the candidate passes the examination in first attempt.
3. Pass: 50% of maximum marks in theory aggregate and 50% of maximum marks in clinical and Viva-Voce aggregate

**20. Guide:** The criteria for recognition of guide shall be as follows;

- A PG guide with five year's post PG full time teaching experience in a recognized teaching institute.
- The age of guide shall not exceed 60 years.
- The guide student ratio should be 1: 3.

Considering the shortage of qualified teachers, relaxation may be given to the teachers with three years of post PG teaching experience till 2015 or until further amendments by the university in this regard.

**21. Change of Guide:** In the event of registered guide leaving the college for any reason or in the event of death, guide may be changed with prior permission from the university.

**I YEAR**  
**Code: IMPT**

**Programme Outcomes (PO)s:7**

PO No.	Attributes	By the end of course student will have/be able to
PO1	Clinician	Provides preventive, promotive, curative, palliative and holistic care with compassion.
PO2	Leader and member of healthcare team and system	Act as leader and member of the health care team and system with capabilities to collect, analyze and synthesize health data
PO3	Communicator	Communicates effectively with patients, families, colleagues and community.
PO4	Professional	Illustrates professional skills by being ethical, responsive and accountable to patients, community and profession.
PO5	Critical Thinker	Develops problem solving skills in professional practice.
PO6	Researcher	Generates and interprets evidence.
PO7	Lifelong Learner	Recognizes the need and has the ability to engage in life-long learning to update knowledge and professional skills.

**Rating relevance of each Course Outcome of the curriculum to each of the above-mentioned Programme Outcomes of the programme**

To be rated on a scale of zero (0) to three (3):

- 0- No correlation
- 1- Low correlation
- 2- Moderate correlation
- 3- High correlation

**Paper I: Applied Physiotherapeutic I**  
**No. of Course Outcomes (CO)s/Competencies: 6**  
**CODE: AP1**

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communicator	PO4 Professional	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
AP1.1	Acquire knowledge of basic concept of research, design, problems & sampling techniques of research, professional practice and administration	1	0	1	3	3	3	3
AP1.2	Describe various types of study designs and planning for the same	3	0	1	3	3	3	3



AP1.3	Apply the terminologies in research, ethical issues in research process	3	0	1	3	3	3	3
AP1.4	Describe important sources, and steps in reviewing of literature	0	1	0	3	3	3	3
AP1.5	Describe the nature, meaning and principals of bioethics	3	3	3	3	3	3	3
AP1.6	Describe human dignity and human rights and professional practice.	3	3	3	3	1	3	3

## SYLLABUS APPLIED PHYSIOTHERAPEUTICS - I

### i. PROFESSIONAL PRACTICE -

(History, Laws, Ethics, Administration, Education)

1. Development of Physiotherapy Profession

2. Laws governing physiotherapy practice

3. Ethical issues in practice of physiotherapy-Clinical, Research and Academics.

Ethics in Physiotherapy practice, clinical and research, code of conduct for safe disciplined practice – legal aspect, Rights and responsibility of physiotherapist and client, PWD Act .

Rules and regulations governing physiotherapy practice- National & International Administration, legislation, rules and regulations governing physiotherapy practice- National & International.

4. Administration -

Physiotherapy Management in Hospital, community & Industry.

Principles of management, planning, organisation, budget, policy procedures and quality assurance.

Communication skills, leadership quality & teamwork

Importance of documentation, types of documentation systems, documentation of professional assessment including International Classification of Functioning Disability & Health (ICF) format.

5. Scope of Physiotherapy in Hospital, Community & Industry.

6. Roles of the physiotherapist as per WCPT/WHO

7. Standards for practice for physiotherapist and the criteria as competency statements

8. Education – Formal and non-formal – Philosophy of health education, curricular planning.

Teaching technology – teaching learning methods, interactive learning, methods to facilitate learning, use of audio-visual aids, clinical teaching, methods of assessment of student competencies

9. Documentation of rehabilitation assessment and management using International Classification of Functioning Disability and Health (ICF)

10. Future challenges in physiotherapy.

## ii. RESEARCH METHODOLOGY AND BIOSTATISTICS

1. Basic Concepts of Research: Meaning, Objectives, Purpose, Characteristics, Barriers of Research
2. Types of Research: Descriptive, Analytical, Applied, Exploratory, Qualitative, Quantitative, Conceptual, Empirical, Longitudinal, Field, Diagnostic Research.
3. Research Process: Assessment phase, Diagnosis Phase, Planning phase, Implementation phase, Evaluation phase.
4. Research Ethics: Good Clinical Practice, Boundaries between Practice and Research (Belmont Report), Moral Principles of Action, Informed Consent, Research Codes of Ethics (Nuremberg Code, Helsinki Declaration), Research Risks.
5. Research Proposal: Writing Research Proposal, Guidelines for Research Proposal, Components of Research Proposal
6. Research Designs: Descriptive (Case Report, Case Series, Cross Sectional, Longitudinal) Analytical (Case Control, Cohort, Analytical Cross Sectional) Experimental Design (Group Design, Single System Design)(Classical Experimental Design, Quasi Experimental Design), Qualitative (Interviews and Questionnaires, Design of Surveys).
7. Research Variables: Independent, Dependent, Extraneous, Intervening, Active, Attribute, Discrete, Continuous.
8. Sampling: Designs, Techniques, Laws of Sampling Significance of Sampling, Populations and Samples, Probability/Non Probability Sampling, Assignment to groups, Sample size.
9. Descriptive and Inferential Statistics: Mean Median, Mode, Range, Standard Deviation, and Percentage. Probability, Hypotheses Testing, Type 1 Error, Type 2 Error.
10. Correlation: Meaning, Rank order, Product Moment correlation, Pearson's product moment, Spearman's Regression analysis.
11. Scales of Measurement : Nominal Scale ,Ordinal Scale ,Ratio Scale ,Interval Scale
12. Concepts of Measurement: Principles of measurements, Reliability, Validity, Specificity, Sensitivity, Accuracy and other Psychometric Tests.
13. Data Collection: Technique of data collection, Process of data collection.
14. Parametric Tests: Paired "t" test, Unpaired "t" test, ANOVA, ANCOVA Multistage ANOVA.
15. Non-Parametric Tests: Chi-square test, Mann Whitney U test, 'Z' test, Wilcoxon's matched pairs test.  
Data Management: Coding, Entry, Editing, Classification, Tabulation.
16. Statistical Softwares: SPSS, My STAT, Instat, GraphStat.
17. Interpretation & Presentation of Data: Quantitative & qualitative analysis, Graphical representation of data, Conclusion and Discussion.
18. Research Reports: Writing Research Report, Components of Research Report (Introduction, Methodology, Data analysis and Results, Discussion).
19. Research publication: Journal search, writing manuscript, Publication bias, Plagiarism.

**Paper II: Applied Physiotherapeutics II**  
**No. of Course Outcomes (CO)s/Competencies: 6**  
**CODE:AP 2**

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communi- cator	PO4 Professi- onal	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
AP2.1	Acquire an in depth knowledge of musculoskeletal system to help assess and manage musculoskeletal impairments. .	3	0	2	3	3	3	3
AP2.2	Understand the role of applied mechanics as an essential skill for Physiotherapist	3	0	1	3	3	3	3
AP2.3	Develop the ability to predict and prevent secondary impairments and/or pathologies across systems.	3	0	1	3	3	3	3
AP2.4	Develop the ability to diagnose the cause of biomechanical impairments and activity limitations	0	1	0	3	3	3	3
AP2.5	Understand the role of various energy systems and different metabolic pathways during exercises in exercise physiology	3	0	3	3	3	3	3
AP2.6	Develop an in the knowledge of Electrophysiology & Electro Diagnosis skills, instrumentation and clinical applications.	3	3	0	3	3	3	3

**i. BIOMECHANICS & CLINICAL KINESIOLOGY**

1. Biomechanics of Tissues and structures of the musculoskeletal system and clinical application.
2. Normal and applied Biomechanics of Spine, Upper extremity and Lower extremity.
3. Clinical kinesiology of posture.
4. Biomechanics and patho-mechanics of respiration, circulation, hand function and gait.
5. Methods of kinetics and kinematics investigation
6. Patient Positioning, Body Mechanics and Transfer Techniques
7. Ergonomic Approach to lifting and handling, workspace and Environment

**ii. EXERCISE PHYSIOLOGY & NUTRITION**

1. Sources of Energy, Energy Transfer and Energy Expenditure at rest and various physical activities.
2. Physiology of Movement
3. Responses and Adaptations of various systems to Exercise and training.
4. Environmental influence on Performance.
5. Body composition, nutrition and caloric balance and performance
6. Considerations of age and sex in exercise and training.
7. Exercise prescription for health and fitness with special emphasis to cardiovascular disease, Obesity and Diabetes.
8. Fatigue assessment and scientific organization of work-rest regimes to control fatigue.
9. Supplementary nutrition

**ii. ELECTROPHYSIOLOGY & ELECTRO DIAGNOSIS**

1. Characteristics and components of Electro therapeutic stimulation systems and Electro Physiological assessment devices.  
PAIN (neuro biology, modulation and management of pain)  
Biophysical measurements  
Physiotherapy modalities techniques and approaches
2. Electromyography (EMG) and Nerve Conduction Velocity (NCV), Bio Feedback.
3. Instrumentation for neuromuscular electrical stimulation.
4. Anatomy and physiology of peripheral nerve, muscle and neuromuscular junction.
5. Electrical properties of muscle and nerve.
6. Muscles plasticity in response to electrical stimulation.
7. Electrical stimulation and its effects on various systems.
8. Clinical Electro physiological testing and clinical interpretation.
9. Safety considerations in electrotherapy

**Paper III: Applied Physiotherapeutics III**  
**No. of Course Outcomes (CO)s/Competencies: 6**  
**CODE: AP3**

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communi cator	PO4 Professional	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
AP3.1	Acquire an in depth knowledge of musculoskeletal system to help assess and manage musculoskeletal impairments. .	3	0	2	3	3	3	3

AP3.2	Understand the role of applied mechanics as an essential skill for Physiotherapist	3	0	1	3	3	3	3
AP3.3	Develop the ability to predict and prevent secondary impairments and/or pathologies across systems.	3	0	1	3	3	3	3
AP3.4	Develop the ability to diagnose the cause of biomechanical impairments and activity limitations	0	1	0	3	3	3	3
AP3.5	Understand the role of various energy systems and different metabolic pathways during exercises in exercise physiology	3	0	3	3	3	3	3
AP3.6	Develop an in the knowledge of Electrophysiology & Electro Diagnosis skills, instrumentation and clinical applications.	3	3	0	3	3	3	3

### PAPER - III : APPLIED PHYSIOTHERAPEUTICS III

#### i. PHYSIOTHERAPY DIAGNOSIS AND CLINICAL DECISION MAKING

1. Clinical examination in general and detection of movement dysfunction.
2. Principles of pathological investigations and imaging techniques related to neuromuscular, Musculoskeletal Skeletal and cardiopulmonary disorders with interpretation.  
(X ray, Computerized Tomography, Magnetic Resonance Imaging, Intracranial Pressure monitoring  
Lumbar puncture, Common Laboratory tests, ABG, PFT, ECG )
3. Developmental screening, motor learning -motor control assessment.
4. Anthropometric measurements.
5. Physical fitness assessment - Body composition, Flexibility, Muscle strength, endurance, Cardio-respiratory endurance. Skills, testing of agility- balance, co-ordination.
6. Evaluation Methods, Special tests used in Musculoskeletal, Neurological and Cardiopulmonary disorders.
7. EMG and Biofeedback.
8. Biophysical measurements, physiotherapy modalities, techniques and approaches.
9. Evaluation of aging.
10. Aids and appliances, adaptive functional devices to improve movement dysfunction.
11. Exercise ECG testing and monitoring.
12. Pulmonary function tests and Spirometry.
13. Physical disability evaluation and disability diagnosis.

14. Posture and Gait analysis and diagnosis.
15. Clinical decision making in electrotherapeutics

## ii. ADVANCED PHYSIOTHERAPEUTICS -

1. Pain (neurobiology, various theories, assessment, modulation and management of pain)
2. Maternal and child care in general physiotherapy.
2. Applied embryology, Neuro-anatomy and neurophysiology
3. Growth and Development of neuromusculoskeletal system
4. Scales for evaluation pediatric developmental disorders
5. Theories of motor control and motor learning.
3. Effect of medications on activity performance.
4. Exercise planning and prescription.
5. Use of Exercise therapy techniques and application on various types of cases.
6. Effect of aerobic, anaerobic, Isometric, Isotonic and Isokinetic exercises on muscle and cardio-pulmonary function
7. Application of advanced electrotherapy modalities & techniques on patients, monitoring of dosages and winding up procedure.
8. Ergonomic aspects of exercise on oxygen, energy consumption MET value of various exercises and activity.
9. Physiotherapy for health and stress management.
10. Massage, Mobilization and Manipulation
11. Manual therapy – different schools of thought
12. Principles of Neurological approaches.
13. Facilitation and inhibition techniques.
14. General Guidelines to be followed in Cardiac Rehabilitation, Pulmonary Rehabilitation, Burns Rehabilitation and Cancer Rehabilitation Protocol.
15. CPR, monitoring systems and defibrillators and artificial respirators.
16. Physiotherapy in Disaster management
17. Physiotherapy in common conditions of skin.
18. Physiotherapy following Plastic Surgery.
19. Physiotherapy following Obstetric and Gynecological Disorders.
20. Integration of Yoga in Physiotherapy for Health promotion and Dysfunction

## PRACTICAL -

1. Introduction to Screening for Referral In Physiotherapy
  - a. Reasons to Screen
  - b. Screenings and Surveillance
  - c. Diagnosis by the Physiotherapist
  - d. Differential Diagnosis versus Screening
  - e. Direct Access
  - f. Decision-Making Process Case Examples and Case Studies.

2. Introduction to the interviewing process
  - a. Concepts in Communication
  - b. Cultural Competence
  - c. The Screening Interview
  - d. Subjective Examination
  - e. Core Interview
  - f. Hospital Inpatient Information
  
3. Overview of the physiology of pain and systemic causes of pain
  - a. Mechanisms of Referred Visceral Pain
  - b. Multi-segmental Innervations
  - c. Assessment of Pain and Symptoms
  - d. Sources of Pain
  - e. Types of Pain
  - f. Comparison of Systemic Versus Musculoskeletal Pain
  - g. Patterns
  - h. Characteristics of Viscerogenic Pain,
  - i. Screening for Emotional and Psychologic Overlay
  - j. Screening for Systemic Versus Psychogenic Symptoms
  
4. Physical assessment as a screening tool
  - a. General Survey
  - b. Techniques of Physical Examination
  - c. Integumentary Screening Examination
  - d. Nail Bed Assessment
  - e. Lymph Node Palpation
  - f. Musculoskeletal Screening Examination
  - g. Neurologic Screening Examination
  - h. Regional Screening Examination
  - i. Systems Review
  
5. Screening for hematologic disease
  - a. Signs and Symptoms of Hematologic Disorders
  - b. Classification of Blood Disorders
6. Screening for cardiovascular disease
  - a. Signs and Symptoms of Cardiovascular Disease
  - b. Cardiac Pathophysiology
  - c. Cardiovascular Disorders
  - d. Laboratory Values.

## 6. Screening for pulmonary disease

- a. Signs and Symptoms of Pulmonary Disorders
- b. Inflammatory/Infectious Disease
- c. Genetic Disease of the Lung
- d. Occupational Lung Diseases
- e. Pleuropulmonary Disorders

### **PRACTICAL CONTENT:**

- Application of principles of Neurodevelopmental therapy
- Facilitation and inhibition techniques.
- Early intervention program
- Sensory Integration

### **Recommended Books:**

- 1) Public Power And Administration – Wilenski, Hale And Iremonger, 1986
- 2) Physical Therapy Administration And Management – Hickik Robert J
- 3) Management Principles For Physiotherapists – Nosse Lorry J.
- 4) Medical Education: Principles and Practice: Published by the National teacher Training Center, JIPMER, Pondicherry: latest Edition
- 5) Medical Education: Trainer’s Manual : Published by the National teacher Training Center, JIPMER, Pondicherry: latest Edition
- 6) Basics in Medical Education : Zubair Amin &HoonEngKhood: World Scientific: 2009
- 7) A Practical Guide for Medical Teachers : John A Dent& Ronald M Harden: Elsevier Health Sciences: 2009
- 8) International Handbook of Medical Education : Abdul W Sajid, Christie H McGuire et al: Greenwood Press 1994
- 9) PRINCIPLES OF MEDICAL EDUCATION, Tejinder Singh, Piyush Gupta, DaljitSingh.year: 2009. Edition: 3 rd editionPublisher: JAYPEE brothers
- 10) Carolyn Hicks. Research Methods for Clinical Therapists. Applied Project design and Analysis. Fourth Edition. London: Elsevier; 2004.
- 11) Elizabeth Domholdt. Rehabilitation research: Principles and applications. ThirdEdition.St.Louis : Elsevier Saunders; 2005.
- 12) Portney LG, Watkins MP. Foundations of Clinical Research. Applications and Practice.3<sup>rd</sup> Edition. New Jersey: Pearson; 2007.
- 13) Kothari CR. Research Methodology Methods and Techniques.2<sup>nd</sup> Revised edition. New Delhi: New Age International Publishers; 2004.
- 14) GoyalRC.Research Methodology for Health Professionals. New Delhi.Jaypee Publishers; 2013.
- 15) KulkarniAP. Basics of Research Methodology.Kolkata.Power Publishers; 2013.



- 16) Ranjit Kumar. Research Methodology a step-by- step guide for beginners.3<sup>rd</sup> Edition.London.Sage Publications; 2011.
- 17) Prabhat Pandey, Meenu Mishra Pandey. Research Methodology: Tools and Techniques.Buzau.Bridge Center.2015.
- 18) Mahajan B K. Methods in Biostatistics. For Medical Students and Research Workers.7<sup>th</sup> Edition. New Delhi: Jaypee Publishers; 2010.
- 19) Ian Scott, Debbie Mazhindu. Statistics for health Professionals. An Introduction.2<sup>nd</sup> Edition.London.Sage Publication; 2014
- 20) American Physical Therapy Association: Guide To Physical Therapy Practice, 2nd Edition 2001.
- 21) Physical Rehabilitation (4& 5th Edition) By Susan B O Sullivan And Thomas J Schmitz. (Jaypee Publication)
- 22) International Classification Of Functioning, Disability And Health: Short Version. (IT'S Publication)
- 23) Professionalism In Physical Therapy: History, Practice And Development By Laura Lee Swisher And Catherine G.Page, (Elsevier Publication 2005)
- 24) Effective Documentation For Physical Therapy Professionals, By Eric Shamus And Debra (McgrawHill Company2004)
- 25) Physical Therapy Documentation: From Examination To Outcome By Mia Erickson, Ralph Utzman(Slack Incorporated 2008)
- 26) Writing SOAP Notes With Patient / Client Management Formats By GingeKettenbach, Ph. D., PT, 3rd Edition, 2004 ,F.A. DAVIS COMPANY. Philadelphia
- 27) Practical Evidence-Based Physiotherapy Rob Herbert, GroJamtvedt, Judy Mead, KareBirger Hagen Elsevier Butter Worth Heinemann; Oxford UK (2005)
- 28) Guide To Evidence-Based Physical Therapy Practice By Dianne V. Jewell, PT, Phd, Virginia Commonwealth University, Virginia
- 29) Concern Specialty Books For Physical Therapy Assessment And Outcome Measures
- 30) Electromyography In Clinical Practice By Michael J. Aminoff, 3rd Edition (Churchill Livingstone)
- 31) Clinical Neurophysiology By UK MisraAnd Kalita, 2nd Edition (Churchill Livingstone)
- 32) Electro Diagnosis In Diseases Of Nerve And Muscle: Principles And Practice By Jun Kimura (Oxford University Press)
- 33) The ABC Of EMG: A Practical Introduction To KinesiologicalElectromyography By Peter Conrad (Noroxon Inc. USA 2005)
- 34) Integrating Physical Agents In Rehabilitation By Bernadette HecoxAnd John Sanko, 2nd Edition (Pearson Prentice Hall 2006)
- 35) Integrating Physical Agents In Rehabilitation By Bernadette HecoxAnd John Sanko, 2nd Edition (Pearson Prentice Hall 2006)
- 36) Physicals Agents In Rehabilitation: From Research To Practical By Michell H. Cameron, 2nd Edition (Saunders And Elsevier, 2003)
- 37) Therapeutic Modalities For Allied Health Professionals By William E. Prentice And Frank Underwood (Mcgraw-Hill, 1998)
- 38) Therapeutic Exercise: Treatment Planning For Progression By Francis E. Huber, Christly. Wells (W.B. Saunders Company, 2006)

- 39) Therapeutic Exercise: Foundations And Techniques By Carolyn Kisner And Lynn Allen Colby (W.B. Saunders Company, 2007)
- 40) Therapeutic Exercise, Moving Towards Function By Carrie M. Hall And Lori Thein Brody (Lippincott Williams &Wilkins, 2004)
- 41) Grieve's Modern Manual Therapy: The Vertebral Column By Jeffrey Boyling And Grad Dip Man Ther (Churchill Livingstone)
- 42) Exercise Physiology By Mc Ardle, Katch & Katch (Lippincott Williams And Wilkins, 2000)
- 43) Exercise Physiology: Exercise, Performance, And Clinical Applications By Robert A. Roberts And Scott O Roberts William C Brown, 1997)
- 44) Clinical Exercise Testing And Prescription Theory And Applications By Scott O. Roberts, Peter Hanson (C RC Press, 1997)
- 45) Basic Biomechanics Of The Musculoskeletal System By Margareta Nordin And Victor H. Frankle, 2nd Edition ( Lea And Febiger)
- 46) Kinesiology Of The Human Body: Under Normal And Pathological Condition By Arthur Steindler, 5th Edition (Charles C Thomas, 1977)
- 47) Joint Structure & Function :A Comprehensive Analysis By Cynthia C Norkin, Pamela K Levangie (Jaypee Brothers, 2006)
- 48) Brunnstrom's Clinical Kinesiology By Laura K. Smith & Don Lehmkuh, 5th Edition (F A Davis, 1996)
- 49) The Physiology Of The Joints By Kapandji & Matthew J Kendel (Churchill Livingstone, 2008)
- 50) Clinical Biomechanics Of The Spine By Augustus A White & Manohar M Panjabi, 2nd Edition (Lippincott Williams & Wilkins; 1990)
- 51) Kinesiology :The Mechanics And Pathomechanics Of Human Movement By Carol Oatis (Lippincott Williams & Wilkins; 2008)
- 52) Kinesiology: Application To Pathological Motion By Soderberg, 2nd Edition (Williams & Wilkins, 1997)

**II YEAR**  
**Master of Physiotherapy in Musculoskeletal Sciences**  
**Code: MS**  
**Programme Outcomes (PO)s:**

PO No.	Attributes	By the end of course student will have/be able to
PO1	Clinician	Provides preventive, promotive, curative, palliative and holistic care with compassion.
PO2	Leader and member of healthcare team and system	Act as leader and member of the health care team and system with capabilities to collect, analyse and synthesize health data
PO3	Communicator	Communicates effectively with patients, families, colleagues and community.
PO4	Professional	Illustrates professional skills by being ethical, responsive and accountable to patients, community and profession.
PO5	Critical Thinker	Develops problem solving skills in professional practice.
PO6	Researcher	Generates and interprets evidence.
PO7	Lifelong Learner	Recognizes the need and has the ability to engage in life-long learning to update knowledge and professional skills.

**Rating relevance of each Course Outcome of the curriculum to each of the above-mentioned Programme Outcomes of the programme**

To be rated on a scale of zero (0) to three (3):

- 0- No correlation
- 1- Low correlation
- 2- Moderate correlation
- 3- High correlation

**PAPER I: MUSCULOSKELETAL SCIENCES I : CODE MS1**  
**Programme Outcome - Course Outcome (PO-CO) Mapping**

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communi- cator	PO4 Profess- i-onal	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
MS1.1	Assess and manage different movement dysfunctions, musculoskeletal health and sports related injuries of upper quadrant	3	0	2	3	3	2	2

MS1.2	Develop Clinical decision making skills in evaluation & management of various pediatric & geriatrics dysfunctions of the upper quadrant	3	0	2	3	3	2	2
MS1.3	Perform recent advances in functional diagnostic procedures of upper quadrant	3	1	1	3	3	3	3
MS1.4	Practice recent advances in Manual Therapy for Upper Quadrant	3	1	1	3	3	3	2
MS1.5	Practice evidence based practice to formulate effective assessment and treatment program for upper quadrant	3	0	1	3	3	3	2
MS1.6	Evaluate disability and plan assistive technology used for stability and mobility for upper quadrant	3	1	1	3	3	3	2
MS1.7	Assess and Plan various ergonomic advices for different industries	3	2	2	3	3	2	2
MS1.8	Perform recent advances in evaluation and management of various musculoskeletal pains	3	1	2	3	3	3	2
Total		3	1	1	3	3	3	2

(Musculo-skeletal Dysfunctions of the Upper Quadrant)

(Upper Quadrant includes occiput, cervical spine, thoracic spine, shoulder girdle and upper extremities)

1. Anatomical, Physiological and Biomechanical basis for assessment of movement dysfunctions of the upper quadrant
2. Pathophysiological and Pathomechanical basis for management of movement dysfunctions of the upper quadrant
3. Clinical decision making skills in evaluation & management of all pediatric, adult and geriatric dysfunctions of the upper quadrant
4. Advances in functional diagnostic procedures & various outcome measures relevant to musculo-skeletal dysfunctions of the upper quadrant
5. Pathobiological mechanisms of pain; Recent advances in pain evaluation and management
6. Advances in the field of Manual Therapy (joint manipulation, MFR, MET, Neural mobilization – Cyriax, Maitland, butler, McKenzie, Kaltenborn, Mulligan)
7. Principles of musculo-skeletal health and performance related fitness and Physiotherapeutic management of musculo-skeletal injuries & dysfunctions in various sports
8. Principles of assessment of industrial fitness and assessment & management of musculoskeletal dysfunctions related to various industries.
9. Ergonomics in Musculo-skeletal dysfunction of the upper quadrant
10. Assistive technology used for stability and mobility to enhance function.
11. Evidence based practice to formulate effective assessment and treatment program
12. Evaluation of disability
13. Legislation and social care.
14. Assessment, clinical reasoning and management of Integumentary impairments due to musculoskeletal dysfunction
15. Pharmacotherapeutics in musculoskeletal conditions and its relevance in physiotherapy
16. Clinical decisions for lower quadrant function in presence of upper quadrant dysfunction.

**Practical Contents:**

1. Surface anatomical landmarks in spinal cord, heart, lungs and brain.
2. Exercise testing.
3. Posture assessment.
4. Evaluation/assessment procedures.
5. Gait assessment and retraining.
6. Physical fitness, Assessment and Training.

**Paper II: Musculoskeletal Sciences II CODE:MS 2**  
**No. of Course Outcomes (CO)s/Competencies: 08**  
**Programme Outcome - Course Outcome (PO-CO) Mapping**

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communicator	PO4 Professional	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long learner
MS2.1	Assess and manage different movement dysfunctions, musculoskeletal health and sports related injuries of lower quadrant	3	0	2	3	3	2	2
MS2.2	Develop Clinical decision making skills in evaluation & management of various pediatric & geriatrics dysfunctions of the lower quadrant	3	0	2	3	3	2	2
MS2.3	Perform recent advances in functional diagnostic procedures of lower quadrant	3	1	1	3	3	3	3
MS2.4	Practice recent advances in Manual Therapy for lower Quadrant	3	1	1	3	3	3	2
MS2.5	Practice evidence based practice to formulate effective assessment and treatment program for lower quadrant	3	0	1	3	3	3	2
MS2.6	Evaluate disability and plan assistive technology used for stability and mobility for lower quadrant	3	1	1	3	3	3	2
MS2.7	Assess and Plan various ergonomic advices for different industries	3	2	2	3	3	2	2
MS2.8	Analyze cause and effect of various orthopedic implants and other materials used in musculoskeletal dysfunctions	3	1	2	3	3	3	2
Total		3	1	1	3	3	3	2

**PAPER II: MUSCULOSKELETAL SCIENCES II****(Musculoskeletal Dysfunctions of the Lower Quadrant)****(Lower Quadrant includes lumbar spine, sacrum, pelvis and lower extremities)**

1. Anatomical, Physiological and biomechanical basis for assessment of movement dysfunctions of the lower quadrant
2. Pathophysiological and Pathomechanical basis for management of movement dysfunctions of the lower quadrant
3. Clinical decision making skills in evaluation & management of all pediatric, adult and geriatric dysfunctions of the lower quadrant
4. Advances in functional diagnostic procedures & various outcome measures relevant to musculo-skeletal dysfunctions of the lower quadrant
5. Pathobiological mechanisms of pain; Recent advances in pain evaluation and management
6. Advances in the field of Manual Therapy
7. Principles of musculo-skeletal health and performance related fitness and Physiotherapeutic management of musculo-skeletal injuries & dysfunctions in various sports
8. Principles of assessment of industrial fitness and assessment & management of musculoskeletal dysfunctions related to various industries.
9. Ergonomics in Musculo-skeletal dysfunction of the lower quadrant
10. Assistive technology used for stability and mobility to enhance function.
11. Assistive technology used for stability and mobility to enhance function.
12. Evidence based practice to formulate effective assessment and treatment program
13. Evaluation of disability
14. Legislation and social care.
15. Assessment and management of Integumentary impairments due to musculoskeletal dysfunction.
16. Orthopaedic implants, design, material. External aids, appliances, adaptive self help devices
17. Clinical decisions for upper quadrant function in presence of lower quadrant dysfunction

**Practical Contents:**

1. Peripheral and spinal joints mobilization techniques.
2. Peripheral and spinal joints manipulation techniques.
3. Strength, Endurance, Balance & Proprioception.
4. Orthotics and Prosthetics prescription, checkouts and Training.
5. Taping, bandaging and strapping techniques.
6. Application of electro physical agents.
7. Compression and Traction intervention/procedure/techniques.
8. Physical Assessment - History, physical examination, special tests and outcome Measures.

**CLINICAL POSTING:**

Orthopedic ward, Physiotherapy OPD, burns ward

**Recommended Books:**

1. Standring, Susan. Gray's anatomy : the anatomical basis of clinical practice. 41<sup>st</sup> edition. United States New York : Elsevier Limited; 2016.
2. Richard Snell. Clinical Anatomy: By Regions. 9<sup>th</sup> edition. Philadelphia, PA: Lippincott Williams & Wilkins; 2014.
3. Guyton and Hall. Textbook of Medical Physiology. 10<sup>th</sup> Edition. Philadelphia: Elsevier; 2016.
4. Sembulingam K, Prema Sembulingam. Essentials of Medical Physiology. 6<sup>th</sup> Edition. New Delhi: Jaypee Brothers Medical Publishers Ltd; 2012.
5. Clifford Morgan, King Richard. Introduction to Psychology. 7<sup>th</sup> Edition, Tata Mcgraw-Hill, 1986.
6. ACSM's: Guidelines for exercise testing and prescription, 9<sup>th</sup> edition, Lippincott Williams & Wilkins; 2013.
7. McArdle W, Katch F. Exercises Physiology energy, Nutrition, & Human Performance. 8<sup>th</sup> Edition, North America: Wolters Kluwer Health; 2015.
8. Carolyn Kisner, L N Colby. Therapeutic Exercises: Foundation and techniques , 6<sup>th</sup> edition. Philadelphia E. A. Davis Company; 2013.
9. Pamela Levangle, Cynthia Norkin. Joint Structure and Function: A Comprehensive Analysis. 5<sup>th</sup> edition. Philadelphia. F. A. Davis Company; 2011.
10. Frownfelter Donna, Cardiovascular And Pulmonary Physical Therapy Evidence And Practice, 4<sup>th</sup> edition, St. Louis, Missouri, Mosby Elsevier, 2006.
11. Boyling J, Jull G. Grieve's modern manual therapy: The vertebral column.
12. Churchill Livingstone ; 3<sup>rd</sup> edition 2005.
13. Magee D.J , Orthopaedic Physical therapy assessment, university of Alberta: Elsevier; 2014
14. Williams PL, Warwick R, Dyson M, Bannister LH. Gray's anatomy. 37<sup>th</sup> ed. Edinburgh: Churchill Livingstone; 1989.
15. Grants JC. Grant's Method of Anatomy: A Clinical problem-solving Approach. Philadelphia, United states: Willams and Wilkins; 1989
16. Hall JE. Guyton and Hall textbook of medical Physiology. Philadelphia: Elsevier; 2016
17. Kumar V, Fausto N, Abbas A. Robbins and cotran: Pathologic Basic of Disease. Philadelphia: 7<sup>th</sup> edition, WB Saunders; 2004
18. Sutton D. Text Book of Radiology and imaging. University of Michigan: Churchill Livingstone; 1998
19. Goodman LS, Bromton LL, Chabner B. The Pharmacological basis of Therapeutics . New York: McGraw-Hill; 2011
20. Hay JG . The Biomechanics of Sports Techniques. University of Michigan: Prentice Hall; 1993.
21. Brunnstrom SL, Lehmkuhl D, Smith LK. Brunnstrom Clinical Kinesiology. Philadelphia: F.A. Davis Co; 1983
22. Chaitow L. Positional release techniques. 3<sup>rd</sup> ed. London: Churchill Livingstone; 2007.



**II YEAR**  
**MASTER IN Neurophysiotherapy**  
**Code: NU**

**Programme Outcomes (PO)s:**

PO No.	Attributes	By the end of course student will have/be able to
PO1	Clinician	Provides preventive, promotive, curative, palliative and holistic care with compassion.
PO2	Leader and member of healthcare team and system	Act as leader and member of the health care team and system with capabilities to collect, analyse and synthesize health data
PO3	Communicator	Communicates effectively with patients, families, colleagues and community.
PO4	Professional	Illustrates professional skills by being ethical, responsive and accountable to patients, community and profession.
PO5	Critical Thinker	Develops problem solving skills in professional practice.
PO6	Researcher	Generates and interprets evidence.
PO7	Lifelong Learner	Recognizes the need and has the ability to engage in life-long learning to update knowledge and professional skills.

**Rating relevance of each Course Outcome of the curriculum to each of the above-mentioned Programme Outcomes of the programme**

To be rated on a scale of zero (0) to three (3):

- 0- No correlation
- 1- Low correlation
- 2- Moderate correlation
- 3- High correlation

**Paper I: NEUROPHYSIOTHERAPY I**

**No. of Course Outcomes (CO)s/Competencies: 10**

**CODE: NU1**

**Programme Outcome - Course Outcome (PO-CO) Mapping**

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communicator	PO4 Professional	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
NU1.1	Neurodevelopmental and neurophysiological approaches in Adult Neurological condition	3	3	2	3	3	3	3

NU1.2	Basic and Advance skills in assessment in dult neuro-pathological , neuropsychological and neurosurgical condition	2	2	2	3	3	3	3
NU1.3	Various outcome measures and assessment methods used in adult neurological condition	3	3	3	2	3	3	3
NU1.4	Brain diseases and disorders- Definition,causes,clinical features,Pathophysiology and General Investigations	3	2	3	2	2	3	3
NU1.5	Physiotherapy in Cranial nerve disorder	3	2	2	3	2	3	3
NU1.6	Spinal cord injury/ diseases (Traumatic/non Traumatic- Infective,Degenerative and Demyelinating , Tumor)	3	3	3	3	2	3	3
NU1.7	Peripheral nerve injury (Traumatic/non-Traumatic)	3	2	3	3	3	3	3
NU1.8	Muscle disorder and Neuromuscular disorder	3	2	3	3	3	3	3
NU1.9	Autonomic nervous system disorders	3	2	2	3	3	3	3
NU1.10	Psychosomatic disorders	2	2	2	2	3	3	3

### PAPER I: NEUROPHYSIOTHERAPY I

This paper will focus on advances in theory and practices in adult neurological conditions

1. Neurodevelopmental and neurophysiological approaches in Adult neurological condition.

Neuro-anatomy and neurophysiology-

- Development of nervous system, Peripheral nerves and ganglia, receptors and effectors, dermatomes and muscular activity, CNS an overview, spinal cord, brainstem.
- Blood supply of the brain
- Meninges, cerebrospinal fluid and Fluid compartments and fluid balance in the CNS
- Autonomic nervous system

- Reflex maturation- Neurophysiologic basis
  - Normal sequential physiological changes throughout the developmental age
  - Physiology of pain: Models of pain, Basic molecular biology, neurobiology, stress biology and pain, Peripheral and central pain mechanisms, theory of modulation of pain.
2. Basic and Advance skills in assessment of adult neuro-pathological, neuropsychological and neurosurgical conditions
  3. Various outcome measures and assessment methods used in adult neurological condition

**Physiotherapy in following condition:-**

4. **Brain diseases and disorders-** Definitions, Causes, Clinical features, Pathophysiology & General Investigation
5. **Physiotherapy in cranial nerve disorders:-**Bell's Palsy, Trigeminal Neuralgia, Facial nerve Palsy, Glossopharyngeal Nerve Injury, Vestibular system dysfunction and other Cranial Nerve Disorders
6. **Spinal cord injury/diseases (Traumatic / non Traumatic- Infective, Degenerative & Demyelinating, Tumor**
7. **Peripheral nerve injury(Traumatic/non Traumatic)**
8. **Muscle disorders-** Myotonic disorders, progressing muscular dystrophy, Duchenne muscular dystrophy, Becker muscular dystrophy, Limb-girdle muscular dystrophy, Spinal muscular atrophy,
9. **Neuromuscular disorders-**Myasthenia gravis, Lambert-Eaton syndrome,
10. **Autonomic nervous system disorders-**Acute Autonomic Paralysis, Primary Autonomic Failure, Peripheral Neuropathy with Secondary Orthostatic Hypotension, Autonomic Failure, Horner and Stellate Ganglion Syndromes, Sympathetic and parasympathetic paralysis in tetraplegia and paraplegia
11. **Psychosomatic disorders:-** Anxiety disorder, Mood disorder, Psychotic, Personality, Sleeping, Eating Disorder, Drug addiction, Identity disorder, Memory and cognitive disorder

**Practical content:**

1. Neurophysiologic approaches Proprioceptive neuromuscular facilitation, Rood's approach, Bobath/NDT approach, Motor re-learning program, Brunnstrom
2. Functional re-education
3. Balance retraining
4. Sensory integration & re-education
5. Wheelchair Prescription, assessment and Wheelchair skills
6. Neuromuscular electrical stimulation
7. Coma stimulation program
8. Neurogenic pain management
9. Theories of Motor Control
10. Theories of Motor learning
11. Relaxation techniques

**Paper II: Neurophysiotherapy II**  
**No. of Course Outcomes (CO)s/Competencies: 10**  
**CODE:NU2**  
**Programme Outcome - Course Outcome (PO-CO) Mapping**

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communi- cator	PO4 Professi-onal	PO5 Critical Thinker	PO6 Researc her	PO7 Life-long Learner
NU2.1		3	2	1	3	3	3	3
NU2.2	Advanced Neuro-therapeutic skills for management	2	1	2	3	3	3	3
NU2.3	Evaluation,Asses-ment and Acute/long term goals for Physiotherapy management in neurological condition	3	3	2	3	3	3	3
NU2.4	Role of Physiotherapy in progressive neurological condition,mana-gement of terminally ill patient	3	3	2	3	3	3	3
NU2.5	Pharmacothera-peutics in neurological conditions,and its relevance in Physiotherapy	2	2	2	3	3	3	3
NU2.6	Recent Advances/ techniques in Physiotherapy	2	1	2	3	3	3	3
NU2.7	Recent advances in Neuro-surgeries and role of physiotherapy in neurological condition	2	1	2	2	3	3	3
NU2.8	Orthoses used in neurological condition : Material used ,Assessment,Presc ription of splints and Braces, Orthosis for upper and lower limb	3	1	2	2	3	3	3

NU2.9	ICU management of a neurologically ill patient	3	2	2	3	3	3	3
NU2.10	Neuro-Rehabilitation : Introduction,team, equipments, Phases,exercise testing,exercise prescription and Exercise intervention in neurological condition	3	1	3	2	2	3	3

### PAPER II: NEUROPHYSIOTHERAPY II

1. Advanced Neuro-therapeutic skills for management
2. Evaluation, Assessment and Acute/long term goals for Physiotherapy management in neurological conditions
3. Role of Physiotherapy in progressive neurological conditions, management of terminally ill patient.
4. Clinical decision making and evidence based practice to formulate effective assessment and treatment program
5. Pharmacotherapeutics in neurological conditions and its relevance in physiotherapy
6. **Recent Advances/ techniques in Physiotherapy**
7. **Recent Advances in Neuro-surgeries and role of physiotherapy in neurological conditions**
8. **Orthoses used in neurological conditions** :-Material used, Assessment, Prescription of Splints and Braces, Orthosis for Upper limb and lower limb
9. ICU management of a neurologically ill patient
10. **Neuro- Rehabilitation**:-Introduction, team, Equipments, phases, exercise testing, exercise prescription and Exercise interventions in neurological conditions.

#### CLINICAL POSTING:

Adult Neuro-medical, neurosurgical ,Physiotherapy OPD,Medicine & Surgical ICU, SCI Rehabilitation Unit

#### **Recommended Books:**

1. Martin & kessler: Neurologic Interventions for Physical Therapy. 2<sup>nd</sup> Edition. Elsevier, Evansville; 2006.
2. Anneshumway-cook: Motor Control: Translating Research into Clinical Practice. 4<sup>th</sup> Edition. North American; 2011.
3. Susan Herdman: Vestibular Rehabilitation. 3<sup>rd</sup> Edition. Atlanta US: F.A. Davis Company; 2007.

4. Susan O'Sullivan:Physical Rehabilitation.5<sup>th</sup>Edition. New Delhi, India:Jaypee brothers;2007.
5. Kerb D: Bio–feed back - A practitioners guide.Guiford press, North Carolina.
6. Wilkins,Rengachar:Neurosurgery Update I: Diagnosis, Operative Technique and Neuro. 1<sup>st</sup>Edition. San Francisco: McGraw-Hill Professional;1990.
7. Brian T. Andrews: Neurosurgical Intensive Care. 1<sup>st</sup>Edition. San Francisco:McGraw-Hill Professional;1993.
8. Philip L. Gildenberg:Textbook of Stereotactic and Functional Neurosurgery. 1<sup>st</sup>Edition.San Francisco:McGraw-Hill Professional Publishing;1997.
9. Lindsay Kenneth:Neurology and neuro surgery illustrated. 1<sup>st</sup>Edition. Churchillivingstone;1986.
10. SettiRengachary Richard Ellenbogen:Principles of Neurosurgery. 2<sup>nd</sup>Edition.Mosby;2004.
11. Kasper Hauser, Harrisons: Principle of internal Medicine. 16<sup>th</sup>Edition. San Francisco USA: McGraw Hill Medical;2005.
12. Maureen Salter, Lynn Cheshire:Hand Therapy Principles and Practice. Oxford, Middlesex UK;2000.
13. A Arturo Leis:Atlas of Nerve conduction studies and Electromyography. Oxford University Press. NewYorkUSA;2013.
14. Michael J. Aminoff:Electromyography in clinical practice. 3<sup>rd</sup>Edition.Amsterdam Netherlands:Elsevier Health Sciences;1998.
15. Greenberg:Hand book for neurosurgery. 8<sup>th</sup>Edition. Florida;2016.
16. Andrew H. Kaye: Essential of Neurosurgery. 3<sup>rd</sup>Edition.Hoboken New Jersey: Published by Blackwell Publishing Ltd;2005.
17. VincetThamburaj: Textbook of contemporary Neurosurgery. 1<sup>st</sup>Edition.New Delhi India: Jaypee brothers;2012.
18. David C. Preston, E. Shapiro: Electromyography and neuromuscular disorders. 2<sup>nd</sup>Edition.Amsterdam Netherlands:Elsevier Health Sciences;2005March 11.
19. Michael E.SelzerStephanie Clarke:Textbook of Neural repair and rehabilitation: Medical Neurorehabilitation.New York :Cambridge University Press;2006.
20. Umphred DA, Lazaro RT, Roller M, Burton G: Neurological Rehabilitation E-Book. Elsevier Health Sciences.6<sup>th</sup>Edition. Amsterdam Netherlands;7<sup>th</sup>Aug2013
21. Adams RD, Victor M, Ropper AH, Daroff RB: Principles of neurology.10<sup>th</sup>Edition. San Francisco USA:McGraw Hill Education;2014.
22. Young PA, Young PH, Tolbert DL: Basic clinical neuroscience; 2008.
23. Wiener C, Fauci A, Braunwald E, Kasper D, Hauser S, Longo D, Jameson J, Loscalzo J, Brown C:Harrisons Principles of Internal Medicine Self-Assessment and Board Review.18<sup>th</sup>Edition. San Francisco USA:McGraw Hill Professional;17Jul 2012.
24. Katirji B, Kaminski HJ, Ruff RL: Neuromuscular disorders in clinical practice. Springer Science & Business Media. 2<sup>nd</sup>Edition. Berlin Germany;11Oct2013.
25. Amato and Richard Barohn: Neuromuscular disorders. 1<sup>st</sup>Edition. San Francisco USA.
26. Wadia NH, Khadilkar SV, editors. Neurological Practice: An Indian Perspective-E-Book. Elsevier Health Sciences.Amsterdam Netherlands;5Feb 2015.
27. Gardiner PF: Neuromuscular aspects of physical activity. Human Kinetics. 1<sup>st</sup>Edition. USA;2001.

28. Brashear A, Elovic E: Spasticity diagnosis and management. Demos medical publishing. 2<sup>nd</sup>Edition.NewYork;2011.
29. David Robertson: Primer on the Autonomic Nervous System. 2<sup>nd</sup>Edition.USA:Elsevier;2004.
30. John pattern: Neurological differential diagnosis. 2<sup>nd</sup>Edition. New York ;2005.
31. Michelle M. Lusardi& C. Nielsen:Orthotics and Prosthetics in Rehabilitation. 2<sup>nd</sup>Edition.Caroline PhD.
32. Susan O'Sullivan: Physical Rehabilitation. 5<sup>th</sup>Edition. New Delhi, India:Jaypee brothers; 2007.
33. Edwards S. Neurological Physiotherapy: A problem-solving approach.Amsterdam Netherland: Elsevier Health Sciences; 2002.
34. Critchley EM. Neurological emergencies. WB Saunders Company.Philadelphia;1988.
35. Bryce TN. Spinal cord injury. Springer Publishing Company.Berlin Germany;2009.

**II YEAR****Master of Physiotherapy in Cardiovascular and Respiratory Physiotherapy**

Code: CR

**Programme Outcomes (PO)s:**

PO No.	Attributes	By the end of course student will have/be able to
PO1	Clinician	Provides preventive, promotive, curative, palliative and holistic care with compassion.
PO2	Leader and member of healthcare team and system	Act as leader and member of the health care team and system with capabilities to collect, analyse and synthesize health data
PO3	Communicator	Communicates effectively with patients, families, colleagues and community.
PO4	Professional	Illustrates professional skills by being ethical, responsive and accountable to patients, community and profession.
PO5	Critical Thinker	Develops problem solving skills in professional practice.
PO6	Researcher	Generates and interprets evidence.
PO7	Lifelong Learner	Recognizes the need and has the ability to engage in life-long learning to update knowledge and professional skills.

**Rating relevance of each Course Outcome of the curriculum to each of the above-mentioned Programme Outcomes of the programme**

To be rated on a scale of zero (0) to three (3):

- 0- No correlation
- 1- Low correlation
- 2- Moderate correlation
- 3- High correlation

**Paper I: Cardiovascular and Respiratory Physiotherapy I :CODE:CR 1**

No. of Course Outcomes (CO)s/Competencies: 11

**Programme Outcome - Course Outcome (PO-CO) Mapping**

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communi- cator	PO4 Professi- onal	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
CR1.1	Describe structural, functional and biomechanical basis for assessment and management of respiratory dysfunctions	3	0	1	3	3	3	3



CR1.2	Acquire assessment and PT management skills in obstructive and restrictive diseases, chest trauma, pulmonary fibrosis, atelectasis, ILD, GB syndrome, pulmonary embolism, ARDS, ventilator associated pneumonia, respiratory failure, OP poisoning	3	1	1	3	3	3	3
CR1.3	Apply clinical reasoning in physiotherapeutic evaluation and management of neonatal, pediatric and geriatric respiratory dysfunctions	3	1	1	3	3	3	3
CR1.4	Describe and apply advances in functional diagnostic procedures and outcome measures in assessment of respiratory dysfunctions	3	1	0	3	3	3	3
CR1.5	Interpret and apply investigations related to respiratory dysfunctions	3	0	0	3	3	3	3
CR1.6	Apply evidence-based practice in respiratory and thoracic impairments	3	0	0	3	3	3	3
CR1.7	Describe pulmonary Rehabilitation, team, equipment, exercise testing and exercise prescription	3	3	2	3	3	3	3
CR1.8	Acquire knowledge and skill of ergonomics and energy conservation in respiratory dysfunction	3	1	3	3	3	3	3

CR1.9	Acquire knowledge and skill of pain evaluation and management in medical and post-surgical conditions	3	1	2	3	3	3	3
CR1.10	Acquire knowledge and PT management skills in pulmonary surgery	3	1	1	3	3	3	3
CR1.11	Acquire knowledge of surgical, microbiological, pathological and radiological investigations and recent advances in these investigations	3	1	1	3	3	3	3

### **PAPER I: CARDIOVASCULAR AND RESPIRATORY PHYSIOTHERAPY I**

1. Structural, functional and Biomechanical basis for assessment and management of dysfunctions of the respiratory system and thorax throughout the life span. Assessment and Physiotherapy Management in Obstructive diseases: Chronic obstructive pulmonary disease, chronic Bronchitis, Emphysema, Asthma, Bronchiectasis, Cystic fibrosis. Assessment and Physiotherapy Management in Restrictive diseases: Pleural disorders, Pneumonia, lung abscess, Empyema, Pulmonary tuberculosis. Assessment, Acute and long term Physiotherapy management in acute chest trauma, pulmonary fibrosis, atelectasis, interstitial lung disease, Guillain Barre syndrome, pulmonary embolism, acute respiratory distress syndrome, ventilator associated Pneumonia, respiratory failure, organophosphorous poisoning.
2. *Clinical reasoning* in physiotherapeutic evaluation & management of all neonatal, pediatric, adult and geriatric dysfunctions of the respiratory system and thorax in acute care and in rehabilitation.
3. Advances in functional diagnostic procedures & various outcome measures relevant to assess intervention to dysfunctions of thorax and respiratory system.
4. Interpretation and application of Investigations related to Respiratory and thoracic dysfunction and its relevance to physiotherapy.
5. Evidence based practice in management of Respiratory & Thoracic impairments & dysfunction.
6. Pulmonary rehabilitation: Introduction, team, equipments, phases, exercise interventions, exercise testing and exercise prescription in respiratory conditions
7. Ergonomics and energy conservation in Respiratory dysfunction and use of assistive devices to enhance function and performance.
8. Pathology of pain in medical and Post-surgical conditions related to thoracorespiratory dysfunction and advances in its evaluation and management

9. Pulmonary Surgery: Classification of Pulmonary surgeries, Complications and Role of Physiotherapy in Pulmonary Surgeries.
10. Surgical investigations: Microbiological investigations, Pathological investigations, Radiological investigations, recent advances in pulmonary surgical investigations .
11. Clinical decision making and evidence based practice in physiotherapeutic evaluation & management of all medical , surgical and traumatic disorders across the life span in a critical care (ICU) setting.
12. Respiratory Physiotherapy in intensive Care Unit: Mechanical Ventilation, initiation of Mechanical ventilation, modes of mechanical ventilation, complications during mechanical ventilation, monitoring during mechanical ventilation, weaning criteria, post-extubation care, lung recruitment maneuvers, non invasive mechanical ventilation, oxygen therapy, aerosol therapy and nebulization, bronchial hygiene techniques, humidification, suctioning methods .
13. Principles of health and performance, Risk stratification, Prevention and health promotion
14. Pharmacotherapeutics in respiratory condition and its relevance with physiotherapy

**Practical Contents:**

1. Physiotherapy techniques in Obstructive diseases
2. Physiotherapy techniques in Restrictive diseases
3. Management of patient in ICU
4. Application of Pulmonary rehabilitation
5. Disease specific approach for pulmonary rehabilitation
6. Handling of ICU equipments
7. Handling of Monitors and other Life support equipment

**Paper II: Cardiovascular and Respiratory Physiotherapy II:CODE:CR2**

**No. of Course Outcomes (CO)s/Competencies: 14**

**PO-CO Mapping**

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communi- cator	PO4 Professi-onal	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
CR2.1	Describe structural, functional and biomechanical basis for assessment and management of dysfunctions of circulatory system	3	0	1	3	3	3	3
CR2.2	Acquire clinical decision- making skills in PT evaluation and management of neonatal, paediatric, adult and geriatric cardiovascular dysfunctions	3	2	0	3	3	3	3

CR2.3	Apply physiotherapy and cardiac rehabilitation in cardiac disorders	3	1	0	3	3	3	3
CR2.4	Acquire skills of exercise testing and prescription in clinical population other than cardiac disease	3	0	0	3	3	3	3
CR2.5	Interpret and apply investigations of cardiac and peripheral vascular dysfunctions Acquire knowledge and skills of advances in functional diagnostic procedures in cardiovascular and peripheral vascular disorders	3	1	0	3	3	3	3
CR2.6	Apply evidence-based practice in assessment and management of cardiovascular and peripheral vascular system	3	0	0	3	3	3	3
CR2.7	Acquire knowledge and skill of ergonomics and energy conservation in cardiovascular dysfunction and use of assistive devices to enhance function	3	0	1	3	3	3	3
CR2.8	Describe types, complications and role of in physiotherapy in cardiac surgeries	3	1	1	3	3	3	3
CR2.9	Acquire knowledge and skill of post-surgical intensive care and management of critically ill	3	1	0	3	3	3	3
CR2.10	Acquire knowledge and PT management skills in peripheral vascular diseases	3	1	0	3	3	3	3

CR2.11	Apply lifestyle modifications for cardiac patients, cardiorespiratory fitness testing and training in sports and diseases	3	1	2	3	3	3	3
CR2.12	Acquire knowledge of pharmacotherapeutics in cardiac conditions	3	2	0	3	3	3	3
CR2.13	Acquire clinical decision-making skills in evaluation and management of lifestyle disorders, integumentary and other system impairments due to cardiovascular and respiratory conditions	3	3	0	3	3	1	3
CR2.14	Apply cardiopulmonary resuscitation and post resuscitation care	3	1	0	3	3	3	3

## PAPER II: CARDIOVASCULAR AND RESPIRATORY PHYSIOTHERAPY II

1. Structural and functional and Biomechanical basis for assessment and management of dysfunctions of the circulatory system including peripheral vessels and mediastinum throughout the life span.
2. Clinical decision making skills in physiotherapeutic evaluation & management of all neonatal ,pediatric, adult and geriatric dysfunctions of the cardiovascular including peripheral vasculature system and mediastinum in acute care and rehabilitation
3. **Physiotherapy and Cardiac Rehabilitation in Cardiac Disorders :** Myocardial Infarction, Congestive Cardiac failure, Ischemic heart disease, Physiotherapy after cardiac surgery, Physiotherapy after angioplasty.
5. **Exercise testing and prescription in clinical population other than cardiac disease:** Exercise testing and prescription in Hypertension, Diabetes mellitus, Cancer, Dyslipidemia, Metabolic syndrome. Advances in functional diagnostic procedures & various outcome measures relevant to assess intervention to dysfunctions of cardiovascular and peripheral vascular system. Evidence based practice in assessment and management of cardiovascular and peripheral vascular dysfunction and failure
6. Ergonomics and energy conservation in cardiovascular dysfunction and use of assistive devices to enhance function and performance.
7. Classification of surgeries, Complications of surgeries and role of Physiotherapy in Cardiac Surgeries
7. Post-surgical intensive care: Overview, Patient's Monitoring, Airway clearance , Prevention of complications & Physiotherapy Management in Cardiac Intensive Care Unit.
8. Management of the critically ill: knowledge of Airways -types & management Mechanical ventilator, use of Oxygen therapy; Physiotherapeutic Interventions in intensive care, weaning and ICU monitoring
9. Physiotherapy in Peripheral vascular Disorders: Peripheral arterial diseases, venous disorders, lymphatic diseases.
10. Life style modification for Cardiac Patients: Teaching patient to monitor heart rate, for unsupervised exercise, incorporation of physical activity in daily schedule, methods to motivate for regular physical activity. Interpretation and application of Investigations related to Respiratory, cardiac and thoracic dysfunction and its relevance to physiotherapy. Pharmacotherapeutics in cardiac condition and its relevance with physiotherapy.
11. Clinical decision-making skills in physiotherapeutic evaluation & management of Lifestyle disorders.

12. Cardio-Respiratory fitness testing and training in sports and diseases
13. Cardiopulmonary Resuscitation: Chest Compression, Airway, Breathing, BLS for adults and pediatric age group, ACLS, Post Resuscitation care.
14. Clinical reasoning, assessment and management of Integumentary and other system impairments due to cardiovascular and respiratory diseases.

**Practical contents:**

1. ECG monitoring during exercise
2. Exercise testing with application of various maximal and sub maximal tests
3. Exercise Prescription
4. Application of Cardiac rehabilitation
5. Disease specific approach for cardiac rehabilitation
6. Handling of ICU equipment
7. Handling of Monitors and other Life support equipment

**CLINICAL POSTING:**

Medicine ICU, Surgical ICU, Respiratory ICU, Coronary Care Unit, Medicine Ward ,  
Surgery Ward, Burn Ward, OPD.

**Recommended Books:**

1. Donna Frownfelter, Elizabeth Dean. Principles and practices of Cardiopulmonary Physical therapy. 3rd edition. USA. Mosby; 1996.
2. Jennifer A Pryor, S Ammani Prasad. Physiotherapy for Respiratory and Cardiac Problems. 3rd edition, Churchill Livingstone, Edinburgh; 2005.
3. Eleanor Main, Linda Denehy. Cardiorespiratory Physiotherapy: Adult and Paediatrics. 5th edition. Elsevier; 2016.
4. Downie Patricia A. Cash's Textbook of Chest Heart and Vascular Disorders for Physiotherapists, 4th edition. New Delhi. Jaypee Publishers; 1993.
5. Ellen Hillegass. Essential of Cardiopulmonary Physical Therapy. 3rd edition. Saunders. USA; 2011.
6. Smith Mandy, Val Ball. Cash's Textbook of Cardiovascular Respiratory Physiotherapy. 2nd edition. Mosby; 2005.
7. Alexandra Hough. Physiotherapy in Respiratory Care. 4th edition. USA. Cengage Learning EMEA; 2014.
8. Colin F. Mackenzie, P. Cristina Imle, Nancy Ciesta. Chest Physiotherapy in the Intensive Care Unit. 2nd edition. USA. Williams & Wilkins; 1989.
9. AACVPR Guidelines for Pulmonary Rehabilitation Programs, 4th edition. USA. Human Kinetics; 2011.

10. Beverley Harden, Jane Cross, Mary Ann Broad, Matthew Quint, Sandy Thomas. Respiratory Physiotherapy: An On-Call Survival Guide. 2<sup>nd</sup> Edition. USA. Elsevier; 2008.
11. G B Madhuri: Textbook of Physiotherapy for Cardio Respiratory Cardiac Surgery and Thorasic Surgery Conditions. New Delhi. Jaypee Publishers. 2008.
12. Pushpal K Mitra: Textbook of Physiotherapy in Surgical Conditions. New Delhi. Jaypee Publishers.
13. Douglas J. Mathisen, Christopher R. Morse: Thorasic Surgery. Lung resections, Bronchoplasty. Wolter Kluwer. 2014.
14. ACSM's Guidelines for Exercise Testing and Prescription. 9<sup>th</sup> edition. USA. Lippincott Williams and Wilkins; 2013.
15. Scot Irwin, Jan Stephen Tecklin. Cardiopulmonary Physical therapy, a guide to practice. 3<sup>rd</sup> edition. USA. Elsevier; 2005.
16. Stuart Porter. Tidy's Physiotherapy. 15<sup>th</sup> Edition. USA. Elsevier; 2013.
17. Dhalavi Girinath: Cardiac Rehabilitation for Physiotherapist, Paras Medical Publisher, 2000.
18. Narain Moojrani, Sunil K. Ohri, Andrew S. Wechsler. Cardiac Surgery. Recent Advances and Techniques. Taylor & Francis. 2012.



**II YEAR**  
**Master of Physiotherapy in Paediatrics Physiotherapy**  
**Code: PP**  
**Programme Outcomes (PO)s:**

<b>PO No.</b>	<b>Attributes</b>	<b>By the end of course student will have/be able to</b>
PO1	Clinician	Provides preventive, promotive, curative, palliative and holistic care with compassion.
PO2	Leader and member of healthcare team and system	Act as leader and member of the health care team and system with capabilities to collect, analyse and synthesize health data
PO3	Communicator	Communicates effectively with patients, families, colleagues and community.
PO4	Professional	Illustrates professional skills by being ethical, responsive and accountable to patients, community and profession.
PO5	Critical Thinker	Develops problem solving skills in professional practice.
PO6	Researcher	Generates and interprets evidence.
PO7	Lifelong Learner	Recognizes the need and has the ability to engage in life-long learning to update knowledge and professional skills.

**Rating relevance of each Course Outcome of the curriculum to each of the above-mentioned Programme Outcomes of the programme**

To be rated on a scale of zero (0) to three (3):

- 0- No correlation
- 1- Low correlation
- 2- Moderate correlation
- 3- High correlation

**Paper I: Pediatrics Physiotherapy I :CODE:PP 1**  
**No. of Course Outcomes (CO)s/Competencies: 10**  
**Programme Outcome - Course Outcome (PO-CO) Mapping**

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communi-cator	PO4 Professi-onal	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
PP1.1	Acquire assessment skills and physiotherapy management in obstructive diseases: emphysema, bronchial asthma, bronchiectasis, cystic fibrosis, inhaled foreign tracheal esophageal fistula	3	1	1	3	3	3	3
PP1.2	Acquire assessment and PT management skills in restrictive diseases: pneumonia, lung abscess, empyema, pulmonary tuberculosis, acute respiratory failure	3	1	1	3	3	3	3
PP1.3	Acquire skills in assessment in respiratory physiotherapy in NICU and PICU : meconium aspiration syndrome, respiratory distress syndrome, pulmonary fibrosis, atelectasis, ventilator associated pneumonia, respiratory failure	3	1	1	3	3	3	3
PP1.4	Describe and acquire skills in physiotherapy management in cardiac conditions acyanotic and cyanotic heart diseases, rheumatic heart diseases, cardiac arrhythmia and pericarditis, cardiac failure	3	1	1	3	3	3	3

PP1.5	Describe and acquire assessment skills and physiotherapy management in pulmonary and cardiac surgeries: pneumonectomy, lobectomy, pleural tapping, intercostal drainage, heart transplantation, pericarditis, cardiac failure	3	1	1	3	3	3	3
PP1.6	Describe assessment skills and management of congenital disorders - congenital talipes equinovarus. Congenital dislocation of hip, idiopathic scoliosis, congenital muscular torticollis, arthrogryposis, osteogenesis imperfecta	3	1	1	3	3	3	3
PP1.7	Describe physiotherapy management of infection and joints: osteomyelitis, Tom Smith arthritis, pyogenic arthrititis, Pott's spine	3	3	2	3	3	3	3
PP1.8	Acquire knowledge and skill in physiotherapy for inflammatory conditions: Juvenile rheumatoid arthritis	3	1	3	3	3	3	3
PP1.9	Acquire knowledge and physiotherapy skill in traumatic conditions : limb and spinal fractures	3	1	2	3	3	3	3
PP1.10	Acquire knowledge of clinical decision making in prosthetic and orthotic prescription in pediatrics	3	1	1	3	3	3	3

**PAPER I: PEDIATRIC PHYSIOTHERAPY I**

**Theory Contents:**

1. **Physiotherapy in Obstructive diseases:** Emphysema, bronchial Asthma, Bronchiectasis, Cystic fibrosis, Inhaled foreign tracheal esophageal fistula.
2. **Physiotherapy in Restrictive diseases :** Pneumonia, Lung abscess, Empyema, Pulmonary Tuberculosis, acute respiratory distress syndrome.
3. **Respiratory Physiotherapy In NICU and PICU-** Meconium aspiration syndrome, respiratory distress syndrome, Pulmonary fibrosis, Atelectasis, Ventilator Associated Pneumonia , Respiratory failure.
4. **Physiotherapy in cardiac conditions-** Acynotic and cyanotic heart diseases, Rheumatic heart diseases, cardiac arrhythmia and pericarditis, cardiac failure.
5. **Pulmonary and cardiac surgeries-** Pneumonectomy, Lobectomy, Pleural tapping, Intercostal drainage, Heart transplantation, Pericardiocentesis, valve replacement surgery, congenital heart surgeries.
6. **Congenital disorders and Physiotherapy-** Congenital talipesequinovarus (CTEV), Congenital dislocation or dysplasia of hip, Idiopathic scoliosis, congenital muscular torticollis, arthrogyrosis, osteogenesis imperfect,
7. **Infection of bones and joints and Physiotherapy-** Osteomyelitis, Tom smith arthritis, Pyogenic arthritis, Pott's spine
8. **Inflammatory conditions and Physiotherapy-**Juvenile rheumatic arthritis.
9. **Traumatic-**Limb and spinal fracture
10. Clinical decision making in prosthetic and orthotic prescription in pediatrics

**Practical Contents:**

1. Physiotherapy techniques in Obstructive diseases and Restrictive diseases (Bronchial hygiene therapy, Breathing exercises, Self and assisted cough techniques, Lung expansion therapy,)
2. Management of patient in NICU and PICU (Monitoring of ventilator and telemetry monitors, Bronchial hygiene, prevention of complications associated with prolonged bed rest and patient on ventilator, Weaning techniques,)
3. Application of Pulmonary rehabilitation (Setting up of program, functioning as a pulmonary rehabilitation team member, Application and/or interpretation of maximal and submaximal exercise tolerance tests,
4. Cardiac rehabilitation
5. Exercise prescription.
6. Mobilization and manipulation
7. Stretching and strengthening
8. Deformity correction
9. Gait and balance training
10. Orthosis and prosthesis prescription.

**Paper II: Paediatric Physiotherapy II: CODE:PP2**  
**No. of Course Outcomes (CO)s/Competencies:10**  
**Programme Outcome - Course Outcome (PO-CO) Mapping**

Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communi- cator	PO4 Professi-onal	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
PP2.1	Describe high risk infant-low birth weight, prematurity, spina bifida, seizures disorders	3	0	1	3	3	3	3
PP2.2	Acquire clinical decision-making skills in PT evaluation and management in central nervous system and peripheral nervous system: cerebral palsy, hydrocephalous, syringomyelia, facial palsy, obstetrics Erb's palsy	3	2	2	3	3	3	3
PP2.3	Apply physiotherapy in inherited disorders, traumatic injuries, infectious diseases: myopathies and dystrophies, traumatic brain injury, spinal cord injury, meningitis, encephalitis & GBS	3	1	2	3	3	3	3
PP2.4	Acquire skills of Physiotherapy in neurosurgical conditions: nerve repair and grafting, neurovascular surgeries, rhizotomies, stereotactic surgeries, surgeries for cerebral palsy, surgeries for poliomyelities	3	1	2	3	3	3	3
PP2.5	Describe and acquire physiotherapy skills in psychological and behavioural disorder: learning disabilities,	3	1	0	3	3	3	3

	autism 7 pervasive disorder, ADHD, developmental coordination disorder, perception and sensory disorder							
PP2.6	Apply evidence-based practice in clinical decision making in fitness and exercise prescription for special paediatric population: cerebral palsy, Down's syndrome, poilo, muscular Dystrophies, obesity	3	0	0	3	3	3	3
PP2.7	Acquire knowledge and skill of physiotherapy for physical and functional diagnosis in oncology and palliative care	3	0	1	3	3	3	3
PP2.8	Describe recent advances in paediatric physiotherapy	3	1	1	3	3	3	3
PP2.9	Acquire knowledge and skill of functional assessment in paediatric physiotherapy	3	1	2	3	3	3	3
PP2.10	Acquire knowledge and Physiotherapy skillsin current concept in paediatric science: Hippotherapy, kangaroo mother care, Botox and physiotherapy management, stem cell therapy and physiotherapy	3	1	2	3	3	3	3

**PAPER II: PEDIATRIC PHYSIOTHERAPY II**

**Theory Contents:**

1. **High risk infants-** Low birth weight, prematurity, spina bifida, seizures disorder.
2. **Physiotherapy in central nervous system and peripheral nervous system-** cerebral palsy, hydrocephalus, Syringomyelia, Facial palsy, Obstructed Erb's palsy..
3. **Physiotherapy in inherited disorders, traumatic injuries, infectious diseases-** Myopathies & Dystrophies, Traumatic brain injury, Spinal cord injury, Meningitis, Encephalitis & GBS.
4. **Neurosurgeries-** Nerve repair and grafting, Neurovascular surgeries, Rhizotomies, Stereotactic surgeries, Surgeries for cerebral palsy, Surgeries for poliomyelitis
5. **Psychological and behavioral disorder-** Learning disabilities, Autism & pervasive disorder, ADHD , Developmental Coordination Disorder, Perception and sensory disorder.
6. **Clinical decision making in fitness and exercise prescription for special pediatric population:** Cerebral palsy, Down's syndrome, Polio, Muscular dystrophies, Obesity
7. **Tumors and physiotherapy:** physical and functional diagnosis in oncology and palliative care
8. **Recent advances in pediatric physiotherapy**
9. **Functional assessment**
10. **Introduction of current concept in pediatric science-** Hippotherapy, Kangaroo mother care, Botox and physiotherapy management, stem cell therapy and physiotherapy management.

**Practical Contents:**

1. Physiotherapy techniques in neurological conditions- Stretching, strengthening, balance training, gait training, posture correction
2. Management of patient in NICU and PICU (Bed side physiotherapy, coma stimulation program, positioning)
3. Application of treatment- neurodevelopmental technique, sensory integration, CIMT
4. Handling techniques.
5. Early intervention therapy.
6. Integrated approaches in management of pediatric disorders.
7. Adaptive equipments prescription. (crutches, walkers, standing frames etc.)
8. Community based rehabilitation in pediatric physiotherapy.
9. Assessment of spasticity in upper extremity, lower extremity and trunk.
10. Bowel- bladder training planning and management.

**CLINICAL POSTING:** Pediatric OPD, PICU, NICU, Pediatric ward, Burns ward, Surgery ward, Onco Ward, Ortho ward.

**Recommended Books:**

1. Frownfelter D & Dean E Principles and practices of cardiopulmonary physical therapy. Third Edition. USA: Mosby;1996.
2. PryorJ. and Prasad A. Physiotherapy for Respiratory and Cardiac Problems. Third Edition.Edinburgh:Churchill Livingstone;2005.
3. Creenough A. Neonatal respiratory disorder. Second Edition. Great Britain: Arnold publication;1996.
4. Paul V,Bagga A. Ghai Essential Pediatrics. Eight Edition. Delhi: CBS publisher; 2016.
5. Behrman R. Nelson textbook of pediatrics. Eight Edition. Philadelphia: W.B. Saunders; 2003.
6. Dr. Agrawal M. Textbook of Pediatrics. Second Edition, New delhi: CBS publisher; 2017.
7. Tecklin J. Pediatric Physical Therapy. Fourth Edition, Philaldephia: Lippincott Williams &wilkins; 2008.
8. Campbell S. Physical Therapy for Children, Fourth Edition. USA: Elsevier saunders; 2012.
9. Walsh B. Prenatal and Pediatric Respiratory Care, Third Edition. USA: Elsevier saunders; 2009.
10. Dranch m. The Clinical Practice of Pediatric Physical Therapy.First Edition, Philaldephia: Lippincott Williams & Wilkins; 2008
11. Bret E. Pediatric Neurology. Third Edition. Edinburgh New York: churchillivingstones; 1997.
12. Kenneth, Swaiman. Pediatric Neurology(Principles & Practice) Third Edition. Toronto: ST, Loui; 1989.
13. BehrmanR . Nelson textbook of pediatrics., Eight Edition. Philadelphia, W.B. Saunders Co 2003.
14. Shepherd R. Physiotherapy in Pediatrics. Third Edition. London united kingdom:Elsevier health sciences; 1990.
15. Fenichel G. Neonatal Neurology. Fourth Edition. China: Churchill Livingstone Elsevier; 2007.
16. Miller F. Physical Therapy for Cerebral Palsy. Second Edition. New Delhi: Springer publication; 2007.
17. Bundy A, Murray E. Sensory Integration theory and practice. Second EditionPhilaldephiA: F.A. Devis; 2002.
18. UmphredD . Neurological Rehabilitation, Sixth Edition. USA: Elsevier; 2012.
19. Brett EM. Pediatric neurology, 3<sup>rd</sup>ed. New york; 1997.
20. Creenough A. Neonatal respiratory disorder, Great Britain; 1996.
21. Swaiman KF, Ashwal S, Ferriero D, Scor N. Pediatric neurology- Principles & Practice, (5<sup>th</sup>ed). Toronto; 1989.
22. Ghai OP, Gupta PK, Paul VK. Essential pediatrics, 6<sup>th</sup> ed.. Delhi: 1994.



23. Kliegman RM , Behrman R, Jrnson H, Stannton B. Nelson textbook of pediatrics,( 8<sup>th</sup>ed), Philadelphia; 2007.
24. Oneill JA. Principles of Pediatricsurgery. 6<sup>th</sup>ed: Mosby; 2006.
25. Glick PL. Pediatricsurgery secrets,1<sup>st</sup>ed; 2000.
26. Menkes JH, Sarnat HB, Maria BL. Child neurology,7<sup>th</sup>ed. Lippincott Williams & Wilkins; 2005.
27. Tunnessen WW. Signs and symptoms in pediatrics, 2<sup>nd</sup>edlippincottcompany: Philadelphia.
28. Agarwal M. Text books of pediatrics, 1<sup>st</sup>edBhalani publishers; 2008.
29. Wilhelm IJ. Physical therapy assessment in early infancy. New York: Churchill Livingstone; 1993.
30. Makenzie CF, Imle PC, Ciesla N. Chest physiotherapy in Intensive Care Unit. 2<sup>nd</sup>ed Baltimore Willams& Wilkins.
31. Cohen M, Sidney. Cardio pulmonary symptoms in physiotherapy. (Principles and practice in physical therapy), London, Churchil, Livingstone; 1988.
32. Schwartz MS, Andrasik F. Biofeed back - A practitioners guide. Guiford press; 2005.
33. Knott M, Voss DE. Proprioceptive neuromuscular facilitation: pattern and techniques. 2<sup>nd</sup> ed, New york. Harper and Row; 1972.
34. Pamela ME. Elements of pediatric physiotherapy. Churchill livingstone; 1993.
35. Garry LL. Play therapy- The art of the relationship.2<sup>nd</sup>ed; 2002.

**II YEAR**  
**Master Of Physiotherapy In Community Based Rehabilitation**  
**Code: CBR**  
**Programme Outcomes (PO)s:**

<b>Programme Outcomes (PO)s: PO No.</b>	<b>Attributes</b>	<b>By the end of course student will have/be able to</b>
PO1	Clinician	Provides preventive, promotive, curative, palliative and holistic care with compassion.
PO2	Leader and member of healthcare team and system	Act as leader and member of the health care team and system with capabilities to collect, analyse and synthesize health data
PO3	Communicator	Communicates effectively with patients, families, colleagues and community.
PO4	Professional	Illustrates professional skills by being ethical, responsive and accountable to patients, community and profession.
PO5	Critical Thinker	Develops problem solving skills in professional practice.
PO6	Researcher	Generates and interprets evidence.
PO7	Lifelong Learner	Recognizes the need and has the ability to engage in life-long learning to update knowledge and professional skills.

**Rating relevance of each Course Outcome of the curriculum to each of the above-mentioned Programme Outcomes of the programme**

To be rated on a scale of zero (0) to three (3):

0- No correlation

1- Low correlation

2- Moderate correlation

3- High correlation

**Paper I: COMMUNITY BASED REHABILITATION I:CODE:CBR1**

No. of Course Outcomes (CO)s/Competencies: 9

**Programme Outcome - Course Outcome (PO-CO) Mapping**

PO-CO Mapping Course Outcomes (CO)s		Program Outcomes (PO)s						
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communicator	PO4 Professional	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
CBR 1.1	Define health and fitness, describe levels of health and fitness	1	3	1	1	1	0	1
CBR 1.2	Understand and perform fitness related assessments in community. Apply principles of fitness training in various populations like, children's, adults and geriatric individuals.	3	3	2	2	0	1	1
CBR 1.3	Learn about basic concepts of rehabilitation. And gain insights of various aspects of community and Institute based rehabilitation process along with multi-disciplinary rehabilitation team and role of Physiotherapist.	1	3	3	3	0	1	1
CBR 1.4	Comprehend the structure of national healthcare delivery system and related community- based rehabilitation process and stakeholders for effective planning of CBR.	2	3	3	3	2	1	1

CBR 1.5	Know the roles of national and local healthcare agencies in rehabilitation process and highlight the role of Physiotherapists in their functioning.	0	3	2	2	0	1	2
CBR 1.6	Define and classify the disabilities, identifying the various communication strategies, policies and legislation of United Nations and Indian Government for information dispersal in community related to disability and rehabilitation with prevention	1	3	2	3	1	1	1
CBR 1.7	Perform the evaluation of disability and plan early intervention	0	2	2	3	1	1	1
CBR 1.8	Learn about various assistive devices and technologies to be used for improving stability and mobility in various physical disorders.	3	1	0	1	2	1	0
CBR 1.9	Identify and plan the home exercise programs for various physical disabilities.	3	1	1	1	3	3	1

**PAPER I: COMMUNITY BASED REHABILITATION I**

1. Health and Illness; Levels of Healthcare & Fitness
2. Principles and practice of fitness training for health promotion in community
3. Basic Concepts of rehabilitation and foundations of rehabilitation
4. Institute based rehabilitation services and multi-disciplinary approach.
5. Methodology of CBR with reference to National Health Delivery system.
6. Role of National Institutes, District Rehabilitation Centre and Primary Health Centre (with appropriate exposure).
7. Public awareness to the various disabilities. Communications, Message generation and dissipation.
8. National and UN (United Nations) Legislations for persons with disability.
9. Disability detection and early intervention.
10. Appropriate Technology, Assistive devices used for Stability & Mobility to enhance function
11. Home exercise programs for various classifications of disabilities.
12. Physical fitness, stress management through yoga and psychosomatic approaches.
13. Principles and practice of Rehabilitation and outreach services including domiciliary services
14. Role of Government in CBR, inter-sectoral programs and co-ordination. Implementation of the Act.
15. Role of Non-Government organizations in CBR.
16. Community dynamics & scope of community physiotherapy.
17. Physiotherapist as a Master Trainer in CBR.
18. Disaster management team ,Disaster cycle ,Role of physiotherapist in Disaster management , Advances in Disaster management

**Paper II: COMMUNITY PHYSIOTHERAPY II (Geriatrics, Women's  
Health, Industrial Therapy): CODE: CBR 2**

**No. of Course Outcomes (CO)s/Competencies:**

PO-CO Mapping Course Outcomes (CO)s					Program Outcomes (PO)s			
Competency No.	Competency	PO1 Clinician	PO2 Leader and Member	PO3 Communicator	PO4 Professional	PO5 Critical Thinker	PO6 Researcher	PO7 Life-long Learner
CBR 2.1	To learn various theoretical bases of ageing process, and perform assessment of geriatric cases through various aspects.	3	1	3	3	2	2	1
CBR 2.2	To understand various physical and psychosomatic issues in elderly and prescribe the appropriate exercises for elderly patients.	3	2	3	3	3	3	3
CBR 2.3	Acquire the knowledge about various holistic approaches for geriatric patients.	3	2	2	3	2	3	2
CBR 2.4	To identify and use various electrotherapy modalities in geriatric care.	3	1	1	2	3	3	2
CBR 2.5	Assess and evaluate various health disorders in mother and child care, and apply Physiotherapeutic management.	3	2	3	3	3	3	3
CBR 2.6	Learn anatomical and physiological aspects of reproductive and women health.	3	1	0	1	3	3	1

CBR 2.7	Assess and diagnose various health issues in antenatal, natal and postnatal care and provide Physiotherapeutic management with exercise prescription. Evaluate and manage musculoskeletal pain and dysfunctions during pregnancy.	3	2	3	3	2	2	2
CBR 2.8	Assess, diagnose and manage musculoskeletal pain and dysfunction during post-menopausal care.	3	2	3	3	3	3	3
CBR 2.9	Evaluate the pelvic floor function and incontinence, provide exercise prescription for pelvic floor dysfunction.	3	2	3	3	3	3	3
CBR 2.10	To identify and classify various occupational hazards and issues in occupational health. To understand the approaches to maintain the industrial hygiene. Study the labor laws about vulnerable worker groups at national and international levels.	1	2	3	2	2	2	2

CBR 2.11	Learn principles of ergonomics, appropriate methods of material handling and lifting with postural correction measures, along with ergonomical workplace management and occupational stress management.	1	2	3	2	2	2	2
CBR 2.12	Assessment, diagnosis and exercise prescription in various physical disorders and problems in Cancer rehabilitation.	3	2	3	3	3	3	2
CBR 2.13	Evaluation of various wounds and ulcers, using appropriate Physiotherapeutic approaches for early healing and prevention.	3	2	3	3	3	3	2
CM 2.14	Familiarizing with community health issues by visiting various local healthcare delivery settings, including primary health centres, elderly care centres, women care centres, child care centres, etc. Working at artificial limb centre and studying the utility of various assistive devices and technologies in physical rehabilitation management.	3	3	3	3	2	3	3



**PAPER II COMMUNITY BASED REHABILITATION II****(Geriatrics, Women's Health, Industrial Therapy) :**

1. Evaluation and theories of aging; Assessment of the elderly;
2. Exercise prescription for the elderly; Psychosocial and safety issues in elderly
3. Geriatric Rehabilitation
4. Holistic physiotherapy for the aged.
5. *Electrotherapy in geriatric conditions*
6. Physiotherapy in maternal and child health care.
7. Women's, Health: Women's reproductive health and health care;
8. Assessment and exercise prescription for antenatal and post- natal females
9. Diagnosis and treatment of musculoskeletal pain and dysfunction during pregnancy
10. Diagnosis and treatment of musculoskeletal pain and dysfunction during post menopause.
11. Treatment of Incontinence and Pelvic floor dysfunction; Special problems related to women
12. *Clinical reasoning and recent advances in Electrotherapy in obstetrics and gynecological conditions.*
13. Occupational Health, Occupational Hazards, Industrial Hygiene, Vulnerable workers group and labor law;
14. Industrial therapy, Injury prevention and returning the worker to productivity
15. Ergonomics, Principles, Issues related to hand tools, posture, material handling and lifting
16. Prevention of work related Injuries and redesigning workspace, Designing auditory and visual displays for workers; Occupational stress; Environmental Pollution – noise, vibration etc.
17. Physiotherapy role in industry – preventive, intervention, ergonomic and rehabilitative.
18. Recent Advances in Women's Health, Industrial Health and Geriatric Health in Community Physiotherapy.
19. Evidence Based Practice in Community Health.
20. Vocationalrehabilitation: Overview, Indications, Types of employment, Role of vocational counselor, Role of physiotherapist
21. Oncology rehabilitation: Overview, Types of cancer, screening and diagnosis, Treatment of cancer, Physiotherapy Management of cancer, Palliative care, Recent advances
22. Wound Healing: Overview, Stages of healing, Assessment of wound, Management of wound, Recent advances in wound healing

**Practical contents**

1. Assessment tools in Community Health
2. Antenatal postnatal OPD and IPD *Assessment and exercise prescription for antenatal and postnatal females* postmenopausal and post hysterectomy females,
3. Evaluation and Fitness training for geriatric population
- 4 Visit to Industries: Assessment of environmental health hazards and prevention Assessment of Occupational Health Hazards, Assessment Of Anthropometric Measures in Industrial Workers,. Job Site Analysis, Functional Capacity Evaluation, Job Site Modifications, Ergonomic Evaluations and Workstation Modifications.
9. Health promotion and lifestyle modifications for various population
8. Assessment & Evaluation of Disabled Children.
11. Visit to NGO's /voluntary health organization
13. Assessment and exercise prescription for cancer patients
14. Wound assessment and use of different modalities for wound healing

**Clinical Posting:****Second year**

Geriatric OPD, PHCs, Gynecology and Obstetrics OPD and IPD, Visits to Urban slums, Industry, Old Age Homes, Physical Rehabilitation Centers ,*artificial limb centre*

**RECOMMENDED BOOKS:**

1. Rebecca G. Stephenson, Linda J. O' Connor, "Obstetric And Gynecologic Care In Physical Therapy", 2000, Slack Incorporated 2 Edition.
2. Carolyn Kisner, Colby Allen Lynn, "Therapeutic Exercise Foundations And Techniques, 5th Edition.
3. Bo, Kari; Berghmans, Bary, "Evidence-Based Physical Therapy For The Pelvic Floor: Bridging Science And Clinical Practice", 2007, Churchill Livingstone (London)
4. Irion, Jean M.; Irion, Glenn, " Women's Health In Physical Therapy: Principle And Practices For Rehabilitation Professional", 2009, Lippincott Williams And Wilkins (Philadelphia).
5. Park, K. "Park's textbook of preventive and social medicine." (2007).
6. Pruthivsh S: Community based rehabilitation of persons with disabilities:2006
7. Michelle Lusardi; orthotic & prosthetics in rehabilitation: Woburn, USA:2000
8. Harder HG: Comprehensive Disability Management: 2005.
9. Demeter Stephen: Disability evaluation: 2nd ed: 2003.
10. Ratan Vidya: Community medicine viva in preventive and social medicine (Hygiene and public health) : 4th ed: 2000.

11. Compton Ann: Community care for health professionals: 2nd ed: 2000.
12. Higgs Joy: Clinical reasoning in the health professions: 2nd ed: 2000.
13. Dhaar G.M.: Foundations of community medicine: 2006.
14. Braddom R.L.: Handbook of physical medicine and rehabilitation: 2006.
15. Sunder S. Textbook of rehabilitation. Jaypee Brothers, Medical Publishers Pvt. Limited; 2008.
16. Guccione AA, Avers D, Wong R. Geriatric Physical Therapy-eBook. Elsevier Health Sciences; 2011 Mar 7.
17. Compton Ann: Community care for health professionals: 2nd ed: 2000.
18. Sapsford R, Bullock-Saxton J, Markwell S, editors. Women's health: a textbook for physiotherapists. WB Saunders; 1998.
19. Polden M, Mantle J. Physiotherapy in obstetrics and gynaecology. Elsevier Health Sciences; 1990.
20. Brotzman S. Brent: Clinical Orthopaedic Rehabilitation, 2nd Ed, MosbyInc 11830 Westline Industrial Drive St. Louis, 2003.
21. Park K: Parks Textbook of preventive and social medicine: Publisher Bhanot, 2007
22. Ratan Vidya: Community medicine viva in preventive and social medicine (Hygiene and public health) : 4th ed: 2000.
23. Khatri: Basics of Electrotherapy Jaypee Brothers, Medical Publishers, 2003
24. Clayton EB, Forster A, Palastanga N. Clayton's electrotherapy: theory and practice. Baillière Tindall; 1981.
25. Bonder BR, Dal Bello-Haas V. Functional performance in older adults. FA Davis; 2017 Dec 4
26. Menckel Ewa: Evaluation in occupational health practice : 1999
27. Hendrick David J: Occupational disorders of the lung: 2002.
28. Snashall David: ABC of work related disorders: 1997.
29. Key GL, editor. Industrial therapy. Mosby Incorporated; 1995.
30. Park, K. "Park's textbook of preventive and social medicine." (2007).
31. Gardiner MD. The principles of exercise therapy. Bell; 1957. 1
32. Detels R, Holland WW, Knox GE, editors. Oxford textbook of public health. New York: Oxford University Press; Jan 2002.
33. Brotzman SB, Manske RC. Clinical Orthopaedic Rehabilitation E-Book: An Evidence-Based Approach-Expert Consult. Elsevier Health Sciences; 2011 May 6.
34. David Hober: Health promotion and aging, 4th ed., Springer, Newyork 2007.
35. McArdle WD, Katch FI, Katch VL. Exercise physiology: nutrition, energy, and human performance. Lippincott Williams & Wilkins; 2010.

36. Comoss P, Hillegass EA, Sadowsky HS, Jewell DV. Essentials of Cardiopulmonary Physical Therapy. Journal of Cardiopulmonary Rehabilitation and Prevention. 1994 Mar 1;14(2):138.
37. Jacobs K, editor. Ergonomics for therapists. Elsevier Health sciences; 2008.
38. Dhaar GM, Robbani I. Foundations of community medicine. 1st ed., Elsevier, New Delhi, 2006.
39. Edeleman C.L.: Health promotion throughout Lifespan, 8th ed., Elsevier, Newyork. 2014.
40. ACSM's Guidelines for Exercise Testing and Prescription, 9th edition. Lippincott Williams and Wilkins.2013.
41. Subhash Khatri:Basics Of Orthopedic Physiotherapy,Jaypee,New Delhi,2013.
42. Geriatric Rehabilitation Manual By Timothy L. Kauffman (1999)
43. Manual Of Geriatric Rehabilitation By David X. Cifu (2003)
44. Functional Fitness For Older Adults By Patricia A. Brill (2004)
45. Developing Cultural Competence In Physical Therapy Practice, Jill Black Lattanzi, Larry D. Purnell (2006 F.A. Davis).
46. Physiotherapy In The Community , Gibson, Ann. 1988, Woodhead-Faulkner (Cambridge, Wolfeboro, N.H., USA)
47. Community Care For Health Professionals, Ann Crompton And Mary Ashwin, (Butterworth - Heinemann 2000)
48. Rehabilitation. 2.Disabled Persons. 3.Community Health Services. 4.Health Policy. 5.Human Rights.6.Social Justice. 7.Consumer Participation. 8.Guidelines.
49. WHO Library Cataloguing-in-Publication Data
50. I.World Health Organization. II.UNESCO.
51. III.International Labour Organisation. Iv.International Disability Development Consortium.
52. © World Health Organization 2010.



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