

GURU KASHI UNIVERSITY



Master of Physiotherapy (M.P.T.)

in Cardio-Pulmonary Sciences

Session: 2026-27

Faculty of Allied and Healthcare

PROGRAMME LEARNING OUTCOMES

Master of Physiotherapy (M.P.T)

A Postgraduate Degree in Physiotherapy is awarded to students who have demonstrated advanced competency-based learning outcomes corresponding to Level 6.5/7 of the National Higher Education Qualification Framework and NCAHP curriculum.

Element of the Descriptor	Programme Learning Outcomes relating to M.P.T
Knowledge and understanding	The graduates shall acquire advanced theoretical and clinical knowledge in their respective specialty areas, research methodology, evidence-based practice, advanced diagnostics, rehabilitation sciences, healthcare management, and contemporary physiotherapy interventions.
General, technical and professional skills required to perform and accomplish tasks	The graduates shall demonstrate advanced competency in specialized clinical assessment, rehabilitation planning, evidence-based intervention, critical clinical reasoning, teaching-learning methodologies, research implementation, healthcare leadership, and interdisciplinary collaboration.
Application of knowledge and skills	The graduates shall independently apply advanced physiotherapy knowledge and clinical expertise in specialty practice, rehabilitation research, patient management, academic training, and healthcare administration.
Generic learning outcomes	The graduates shall demonstrate advanced communication skills, leadership, mentorship, research aptitude, ethical professionalism, lifelong learning attitude, critical thinking, and innovation in healthcare practice.
Constitutional, humanistic, ethical, and moral values	The graduates shall practice with integrity, social accountability, professional ethics, inclusiveness, patient advocacy, empathy, and

	respect for human rights and dignity.
Employability and job-ready skills, and entrepreneurship skills and capabilities/qualities and mindset	The graduates shall develop advanced employability skills for clinical specialization, teaching, research, healthcare management, consultancy, entrepreneurship, and independent specialty practice.
Credit requirements	Successful completion of prescribed theory credits, clinical training, dissertation work, competency-based assessments, specialty practical examinations, and university evaluation requirements.
Entry requirements	Candidates possessing Bachelor of Physiotherapy (BPT) degree from a recognized institution and fulfilling eligibility requirements prescribed by the university/NCAHP guidelines.

**SCHEME OF STUDY: MASTER OF PHYSIOTHERAPY (M.P.T.) in
Cardiopulmonary Sciences (M.P.T(C))**

First Year M.P.T Examination Scheme

Component	Learning Outcomes
Advanced Knowledge	Acquire advanced knowledge in cardiopulmonary physiotherapy, exercise physiology, pulmonary rehabilitation, intensive care physiotherapy, and cardiopulmonary functional diagnosis.
Clinical Competency	Demonstrate competency in cardiopulmonary assessment, exercise testing, airway clearance techniques, ICU physiotherapy, and rehabilitation planning.
Research Competency	Apply evidence-based cardiopulmonary physiotherapy principles and research methodology in specialty practice.
Professional Attributes	Demonstrate communication skills, ethical practice, interdisciplinary collaboration, and patient-centered cardiopulmonary care.

S.N o.	Course Code	Course Title	L	T	P	No. of Credits	Internal Examination		External Examination		Total Marks
							Theory	Practical	Theory	Practical	
1.	M.P.T(C)-101	Laws, Ethics, Administration & Educational Methodology (LEM)	6	0	0	6	50*	-	100	-	100
2.	M.P.T(C)-102	Research methodology and biostatistics, EBP (RMB)	6	0	0	6	50*	-	100	-	100
3.	M.P.T(C)-103	Biomechanics & Therapeutics (BCT)	6	0	0	6	50*	-	100	-	100
4.	M.P.T(C)-104	Clinical, Physical and Functional diagnosis in Cardio- Pulmonary Physiotherapy	8	0	8	12	50*	50*	100	-	100

		(CCPFD)									
5.	M.P.T(C) -105	Skills Acquisition & Refinement (SAR-I)	0	0	16	8	-	50*	Non Creditable Marks		
6.	M.P.T(C) -106	Clinical Training (CT-I)	0	0	46	23	-	50*	Non Creditable Marks		
7.	M.P.T(C) -107	Dissertation (DSS-I)	0	0	6	3	-	50*	Non Creditable Marks		
	Grand Total		26	0	76	64	-	-	400		400

* Non Creditable Marks

The practical competencies of M.P.T(C)-104, shall be assessed through the Comprehensive Final University Practical Examination conducted at the end of the programme as prescribed by NCAHP.

Second Year M.P.T Examination Scheme

Component	Learning Outcomes
Advanced Specialty Practice	Demonstrate advanced expertise in cardiopulmonary rehabilitation, exercise prescription, pulmonary function interpretation, ICU rehabilitation, and evidence-based cardiopulmonary physiotherapy practice.
Clinical Decision Making	Apply independent clinical reasoning and advanced rehabilitation planning in cardiopulmonary physiotherapy.
Research and Innovation	Conduct dissertation research and critically evaluate contemporary evidence in cardiopulmonary physiotherapy.
Professional Development	Demonstrate leadership, academic competency, mentorship, and professional accountability.

S.N o.	Course Code	Course Title	L	T	P	No. of Credits	Internal Examination		External Examination		Total Marks
							Theory	Practical	Theory	Practical	
1.	M.P.T(C)-201	Exercise Physiology (EP)	6	0	0	6	50*	-	100	-	100
2.	M.P.T(C)-202	Cardio-Pulmonary Physiotherapy (CPT)	8	0	8	12	50*	50*	100	-	100
3.	M.P.T(C)-203	Recent advances and Evidence Based practice in Cardio-Pulmonary Physiotherapy (CRAEB)	8	0	8	12	50*	50*	100	-	100
4.	M.P.T(C)-204	Dissertation (DSS-II)	0	0	44	22	-	50*	-	-	-
5.	M.P.T(C)-205	Skills Acquisition & Refinement	0	0	16	8	-	50*	Non Creditable Marks		

		(SAR-II)									
6.	M.P.T(C)-206	Clinical Training (CT-II)	0	0	40	20	-	50*	Non Creditable Marks		
	Practical										
7.	Long case=1	M.P.T(C)-104 M.P.T(C)-202 M.P.T(C)-203 M.P.T(C)-204								150	150
8.	Short case=2									150	150
9.	OSCE/O SPE									100	100
10.	Dissertation									50	50
	Grand Total		22	0	116	80	-	-	300	450	750

The practical competencies of M.P.T(C)-104, M.P.T(C)-202, M.P.T(C)-203 and M.P.T(C)-204 shall be assessed through the Comprehensive Final University Practical Examination conducted at the end of the programme as prescribed by NCAHP.

First Year**COURSE CODE: M.P.T(C)-101****COURSE TITLE: Laws, Ethics, Administration & Educational Methodology-Theory****Credits: 6****Total Hours: 90****LEM 1.0 Subject Description**

This course is designed to provide postgraduate physiotherapy students with comprehensive knowledge of professional ethics, legal responsibilities, healthcare administration, educational methodology, and entrepreneurship relevant to advanced physiotherapy practice. The course emphasizes ethical decision-making, professional conduct, research ethics, institutional governance, healthcare management principles, quality assurance, communication skills, and educational strategies required for clinical teaching and leadership roles. It also develops competencies in curriculum planning, adult learning principles, assessment strategies, and administration of physiotherapy services. The course prepares students to function effectively as clinicians, educators, researchers, managers, and healthcare leaders while adhering to legal and ethical standards prescribed by national and international regulatory bodies.

LEM 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Explain the historical evolution and principles of ethics applicable to healthcare professions. (K)
2. Demonstrate understanding of professional conduct and ethical responsibilities in physiotherapy practice. (KH)
3. Apply ethical principles in clinical practice, research, education, and administration. (P)

4. Discuss national and international ethical guidelines governing healthcare research. (KH)
5. Analyze informed consent procedures and ethical issues in vulnerable populations. (KH)
6. Explain the structure and functions of Institutional Ethics Committees. (K)
7. Evaluate ethical challenges and conflict-of-interest situations in professional practice. (KH)
8. Apply principles of healthcare management and administration to physiotherapy services. (P)
9. Demonstrate effective communication and leadership skills in healthcare settings. (SH)
10. Develop teaching-learning plans using contemporary educational methodologies. (P)
11. Formulate learning outcomes and assessment strategies for physiotherapy education. (P)
12. Explore entrepreneurship opportunities and professional development pathways in physiotherapy. (KH)

Competency Levels:

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

LEM 1.0.2 Teaching Learning Methods

1. Interactive Lectures
2. Seminars
3. Group Discussions
4. Problem-Based Learning
5. Case-Based Learning
6. Self-Directed Learning
7. Journal Club Activities
8. Workshops
9. Role Play
10. Reflective Learning Exercises
11. Educational Technology Demonstrations
12. Assignments and Presentations

LEM 1.0.3 Assessment Methods

1. Multiple Choice Questions (MCQs)
2. Short Answer Questions

3. Long Answer Questions
4. Case-Based Discussions
5. Seminar Presentations
6. Assignments
7. Reflective Reports
8. Viva Voce
9. End Semester Examination

Unit I: Ethics and Professional Practice

Total Hours: 18

LEM 1.1 History and evolution of ethics

LEM 1.2 Helsinki Declaration and Nuremberg Code

LEM 1.3 Principles of ethics:

- Autonomy
- Beneficence
- Non-maleficence
- Justice

LEM 1.4 Professionalism in healthcare

LEM 1.5 Ethics in physiotherapy practice

LEM 1.6 Privacy, confidentiality and patient rights

LEM 1.7 Shared decision-making and informed consent

LEM 1.8 Equality, equity and justice in healthcare

Unit II: Research Ethics and Legal Framework

Total Hours: 18

LEM 2.1 ICMR ethical guidelines

LEM 2.2 Responsible conduct of research

LEM 2.3 Risk-benefit assessment

LEM 2.4 Informed consent process

LEM 2.5 Components of informed consent documentation

LEM 2.6 Special situations and proxy consent

LEM 2.7 Institutional Ethics Committee:

- Constitution
- Functions
- Review process

LEM 2.8 Research involving vulnerable populations

LEM 2.9 Conflict of interest:

- Definition
- Types
- Identification
- Management

LEM 2.10 Publication ethics and plagiarism

LEM 2.11 Authorship guidelines (ICMJE)

LEM 2.12 NCAHP Act

LEM 2.13 Consumer Protection Act

LEM 2.14 Rights of Persons with Disabilities Act

Unit III: Healthcare Administration and Management

Total Hours: 18

LEM 3.1 Principles of management

LEM 3.2 Healthcare administration

LEM 3.3 Planning and strategic management

LEM 3.4 Organizing and staffing

LEM 3.5 Financial management

LEM 3.6 Marketing of healthcare services

LEM 3.7 Leadership and supervision

LEM 3.8 Monitoring and controlling

LEM 3.9 Quality assurance in healthcare

LEM 3.10 Total Quality Management

LEM 3.11 Medical audit

LEM 3.12 Accreditation systems

LEM 3.13 International quality standards

LEM 3.14 Establishment and management of physiotherapy services

Unit IV: Communication and Educational Methodology

Total Hours: 18

LEM 4.1 Communication process

LEM 4.2 Types of communication

LEM 4.3 Written versus oral communication

LEM 4.4 Barriers to communication

LEM 4.5 Principles of effective communication

LEM 4.6 Education: concept, aims and objectives

LEM 4.7 Formal and informal education

LEM 4.8 Educational philosophies

LEM 4.9 Taxonomy of educational objectives

LEM 4.10 Adult learning theories

LEM 4.11 Learning styles and motivation

LEM 4.12 Teaching-learning process

LEM 4.13 Clinical teaching methods

LEM 4.14 Lesson planning and unit planning

LEM 4.15 Educational technology

LEM 4.16 Teaching aids

Unit V: Curriculum Planning and Entrepreneurship

Total Hours: 18

LEM 5.1 Intended Learning Outcomes

LEM 5.2 Tyler's Principles

LEM 5.3 Bloom's Taxonomy

LEM 5.4 Miller's Pyramid

LEM 5.5 Clinical Competence Framework

LEM 5.6 Dreyfus Model of Skill Acquisition

LEM 5.7 Assessment and evaluation methods

LEM 5.8 Curriculum planning

LEM 5.9 Programme evaluation

LEM 5.10 Entrepreneurship in physiotherapy

LEM 5.11 Opportunities in private practice

LEM 5.12 Healthcare consultancy

LEM 5.13 Startup development in rehabilitation services

LEM 5.14 Professional leadership and future trends

Recommended Books

1. Swisher LL, Page CG. Professionalism in Physical Therapy.
2. Purtilo RB, Jensen GM. Ethical Dimensions in Rehabilitation.
3. APTA Guide to Professional Conduct.
4. Basavanthappa BT. Nursing Administration.
5. Gupta SC. Fundamentals of Management.
6. Suresh K Sharma. Educational Technology and Teaching Strategies.
7. ICMR National Ethical Guidelines for Biomedical and Health Research.
8. NCAHP Act and Associated Regulations.
9. Consumer Protection Act of India.
10. UNESCO Handbook on Higher Education Teaching and Learning.

COURSE CODE: M.P.T(C)-102

COURSE TITLE: Research Methodology, Biostatistics & EBP-Theory

Credits: 6

Total Hours: 90

RMB 1.0 Subject Description

This course is designed to develop advanced competencies in research methodology, biostatistics, scientific inquiry, evidence-based practice, and

scholarly communication. It enables postgraduate physiotherapy students to formulate research questions, design appropriate research methodologies, critically appraise scientific literature, analyze quantitative and qualitative data, interpret statistical findings, and translate research evidence into clinical practice. The course also focuses on scientific writing, publication ethics, thesis preparation, and dissemination of research findings. The knowledge and skills acquired through this course will facilitate evidence-informed clinical decision-making and contribute to the advancement of physiotherapy practice and research.

RMB 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Explain the principles and processes of scientific research. (K)
2. Formulate clinically relevant research questions and hypotheses. (KH)
3. Differentiate qualitative and quantitative research methodologies. (KH)
4. Select appropriate study designs for research problems. (P)
5. Apply principles of sampling and sample size estimation. (P)
6. Evaluate reliability, validity, responsiveness, and outcome measures.
(KH)
7. Critically appraise published research literature. (P)
8. Apply evidence-based practice principles in clinical decision-making. (P)
9. Perform statistical analyses using appropriate biostatistical techniques.
(SH)
10. Interpret research findings and statistical outcomes accurately. (P)

11. Prepare scientific manuscripts, reports, abstracts, and dissertations. (P)
12. Demonstrate competency in scientific communication and publication processes. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

RMB 1.0.2 Teaching Learning Methods

1. Interactive Lectures
2. Seminars
3. Journal Club Discussions
4. Critical Appraisal Exercises
5. Research Proposal Development
6. Group Discussions
7. Computer-Assisted Statistical Analysis
8. Problem-Based Learning
9. Case-Based Learning
10. Workshops on Research and Scientific Writing

11. Self-Directed Learning
12. Literature Review Assignments

RMB 1.0.3 Assessment Methods

1. Multiple Choice Questions (MCQs)
2. Short Answer Questions
3. Long Answer Questions
4. Critical Appraisal Assignments
5. Research Proposal Preparation
6. Statistical Data Analysis Exercises
7. Seminar Presentations
8. Journal Review
9. Viva Voce
10. End Semester Examination

Unit I: Foundations of Research Methodology

Total Hours: 18

RMB 1.1 Introduction to research

RMB 1.2 Importance of research in physiotherapy

RMB 1.3 Types of research

RMB 1.4 Research process

RMB 1.5 Defining a research problem

RMB 1.6 Formulating research questions

RMB 1.7 Hypothesis formulation

RMB 1.8 Variables in research

RMB 1.9 Qualitative research designs

RMB 1.10 Quantitative research designs

RMB 1.11 Ethical considerations in research

RMB 1.12 Literature review and evidence synthesis

Unit II: Research Design and Measurement

Total Hours: 18

RMB 2.1 Study designs and classifications

RMB 2.2 Case study design

RMB 2.3 Case series

RMB 2.4 Cohort studies

RMB 2.5 Longitudinal studies

RMB 2.6 Pre-test and post-test designs

RMB 2.7 Time series designs

RMB 2.8 Repeated measures designs

RMB 2.9 Randomized controlled trials

RMB 2.10 Sampling techniques

RMB 2.11 Sample size calculation

RMB 2.12 Reliability and validity

RMB 2.13 Responsiveness and MCID

RMB 2.14 Outcome measures in rehabilitation research

Unit III: Evidence-Based Practice and Critical Appraisal

Total Hours: 18

RMB 3.1 Designing research methodology

RMB 3.2 Data collection methods

RMB 3.3 Reporting research findings

RMB 3.4 Sources of bias

RMB 3.5 Type I and Type II errors

RMB 3.6 Evaluating published literature

RMB 3.7 Levels of evidence

RMB 3.8 Principles of evidence-based practice

RMB 3.9 Asking clinical questions (PICO framework)

RMB 3.10 Searching scientific databases

RMB 3.11 Critical appraisal of evidence

RMB 3.12 Clinical practice guidelines

RMB 3.13 Clinical pathways

RMB 3.14 Clinical prediction rules

RMB 3.15 Translating evidence into clinical practice

Unit IV: Biostatistics

Total Hours: 18

RMB 4.1 Introduction to biostatistics

RMB 4.2 Descriptive statistics

RMB 4.3 Measures of central tendency

RMB 4.4 Measures of dispersion

RMB 4.5 Inferential statistics

RMB 4.6 Hypothesis testing

RMB 4.7 t-tests

RMB 4.8 Analysis of variance (ANOVA)

RMB 4.9 Multiple comparison tests

RMB 4.10 Parametric tests

RMB 4.11 Non-parametric tests

RMB 4.12 Correlation analysis

RMB 4.13 Regression analysis

RMB 4.14 Chi-square test

RMB 4.15 Statistical measures of validity and reliability

RMB 4.16 Factorial design analysis

RMB 4.17 Power analysis

RMB 4.18 Epidemiological measures:

- Rate
- Ratio
- Proportion
- Incidence
- Prevalence
- Relative Risk
- Odds Ratio

RMB 4.19 Application of statistical software

Unit V: Scientific Writing and Dissertation Preparation

Total Hours: 18

RMB 5.1 Scientific communication

RMB 5.2 Types of scientific documents

RMB 5.3 Research papers

RMB 5.4 Review articles

RMB 5.5 Conference papers

RMB 5.6 Thesis and dissertation writing

RMB 5.7 Project reports

RMB 5.8 Role of authors, guides, and co-authors

RMB 5.9 Structure of scientific manuscripts

RMB 5.10 Citation and referencing styles

RMB 5.11 APA style

RMB 5.12 MLA style

RMB 5.13 Abstract writing

RMB 5.14 Oral presentation of research

RMB 5.15 Poster presentation

RMB 5.16 Research report writing

RMB 5.17 Thesis structure and formatting

RMB 5.18 Dissertation planning and preparation

Recommended Books

1. Portney LG, Watkins MP. Foundations of Clinical Research: Applications to Practice.
2. Hicks CM. Research Methods for Clinical Therapists.
3. Domholdt E. Rehabilitation Research: Principles and Applications.
4. Jewell DV. Guide to Evidence-Based Physical Therapist Practice.
5. Mahajan BK. Methods in Biostatistics.

6. Daniel WW, Cross CL. Biostatistics: A Foundation for Analysis in the Health Sciences.
7. Katz DL. Clinical Epidemiology and Evidence-Based Medicine.
8. Greenhalgh T. How to Read a Paper: The Basics of Evidence-Based Medicine.
9. APA Publication Manual.
10. ICMJE Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work.

COURSE CODE: M.P.T(C)-103

COURSE TITLE: Biomechanics & Therapeutics-Theory

Credits: 6

Total Hours: 90

BCT 1.0 Subject Description

This course provides advanced knowledge of biomechanics, kinesiology, movement analysis, therapeutic exercise, electrotherapeutic interventions, and evidence-based rehabilitation techniques applicable to musculoskeletal physiotherapy practice. The course emphasizes biomechanical principles governing human movement, kinetic and kinematic analysis, gait assessment, ergonomics, therapeutic exercise prescription, electrodiagnostic procedures, and advanced physiotherapy interventions. Students will develop competencies in clinical reasoning, movement dysfunction analysis, selection of therapeutic techniques, and application of advanced rehabilitation technologies to optimize functional outcomes in patients with musculoskeletal disorders.

BCT 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Explain advanced biomechanical principles governing human movement and function. (K)
2. Analyze kinetics and kinematics of normal and pathological movement patterns. (KH)
3. Interpret biomechanical assessment findings for clinical decision-making. (P)
4. Evaluate movement dysfunctions using advanced biomechanical tools. (SH)
5. Analyze gait and posture using quantitative and qualitative methods. (P)
6. Apply ergonomic principles in injury prevention and rehabilitation. (P)
7. Prescribe advanced therapeutic exercise programs based on biomechanical principles. (P)
8. Demonstrate proficiency in proprioceptive neuromuscular facilitation and functional re-education techniques. (SH)
9. Interpret electrodiagnostic investigations relevant to physiotherapy practice. (KH)
10. Apply electrotherapeutic modalities safely and effectively. (P)
11. Integrate evidence-based therapeutic interventions into musculoskeletal rehabilitation. (P)

12. Develop advanced clinical reasoning skills for differential diagnosis and treatment planning. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

BCT 1.0.2 Teaching Learning Methods

1. Interactive Lectures
2. Laboratory Demonstrations
3. Practical Workshops
4. Clinical Case Discussions
5. Movement Analysis Sessions
6. Video-Based Gait Analysis
7. Problem-Based Learning
8. Journal Club Activities
9. Simulation-Based Learning
10. Skill Demonstrations
11. Self-Directed Learning

12. Clinical Presentations

BCT 1.0.3 Assessment Methods

1. Multiple Choice Questions
2. Short Answer Questions
3. Long Answer Questions
4. Practical Demonstrations
5. Case-Based Discussions
6. Clinical Problem Solving Exercises
7. Assignments
8. Seminar Presentations
9. Viva Voce
10. End Semester Examination

Unit I: Foundations of Biomechanics

Total Hours: 18

BCT 1.1 Introduction to kinesiology and biomechanics

BCT 1.2 Biomechanics of musculoskeletal tissues

BCT 1.3 Mechanical properties of connective tissues

BCT 1.4 Principles of biomechanics

BCT 1.5 Force systems and mechanical loading

BCT 1.6 Levers and torque

BCT 1.7 Center of gravity and stability

BCT 1.8 Nature and importance of biomechanics in physiotherapy

BCT 1.9 Kinetics and kinematics of human movement

BCT 1.10 Introduction to biomechanical analysis

Unit II: Biomechanical Analysis of Human Movement

Total Hours: 17

BCT 2.1 Methods of kinetic investigation

BCT 2.2 Methods of kinematic investigation

BCT 2.3 Instrumentation in biomechanics

BCT 2.4 Isokinetic dynamometry

BCT 2.5 Kinesiological electromyography

BCT 2.6 Electronic goniometry

BCT 2.7 Force platform analysis

BCT 2.8 Videography and motion analysis

BCT 2.9 Upper extremity biomechanics:

- Shoulder complex
- Elbow joint
- Wrist and hand

BCT 2.10 Lower extremity biomechanics:

- Pelvis
- Hip
- Knee

- Ankle and foot

BCT 2.11 Spinal biomechanics

Unit III: Gait, Ergonomics and Functional Movement

Total Hours: 18

BCT 3.1 Normal gait cycle

BCT 3.2 Kinetic analysis of gait

BCT 3.3 Kinematic analysis of gait

BCT 3.4 Pathological gait patterns

BCT 3.5 Gait deviations and compensatory mechanisms

BCT 3.6 Functional movement analysis

BCT 3.7 Ergonomic principles

BCT 3.8 Manual handling techniques

BCT 3.9 Safe lifting techniques

BCT 3.10 Workspace design and ergonomics

BCT 3.11 Patient positioning

BCT 3.12 Body mechanics

BCT 3.13 Transfer techniques

Unit IV: Therapeutic Exercise and Manual Therapy Approaches

Total Hours: 19

BCT 4.1 Principles of therapeutic exercise

BCT 4.2 Dynamic exercises

BCT 4.3 Plyometric exercises

BCT 4.4 Isokinetic exercises

BCT 4.5 Kinetic chain exercises

BCT 4.6 Balance and coordination training

- BCT 4.7 Response of tissues to mechanical loading
- BCT 4.8 Biophysics of contractile tissues
- BCT 4.9 Biophysics of non-contractile tissues
- BCT 4.10 Functional assessment and re-education
- BCT 4.11 Clinical reasoning in musculoskeletal practice
- BCT 4.12 Maitland concept
- BCT 4.13 Kaltenborn concept
- BCT 4.14 Cyriax approach
- BCT 4.15 Mulligan concept
- BCT 4.16 McKenzie approach
- BCT 4.17 Proprioceptive Neuromuscular Facilitation (PNF)
- BCT 4.18 Hydrotherapy techniques
- BCT 4.19 Yoga in rehabilitation:
- Historical background
 - Asanas
 - Pranayama
 - Therapeutic applications

Unit V: Electrodiagnosis and Advanced Therapeutics

Total Hours: 18

- BCT 5.1 Principles of electrodiagnosis
- BCT 5.2 Strength-Duration Curve
- BCT 5.3 Electromyography:
- Technique

- Interpretation

BCT 5.4 Nerve conduction studies:

- Motor nerve conduction velocity
- Sensory nerve conduction velocity

BCT 5.5 Factors affecting nerve conduction

BCT 5.6 Interpretation of electrodiagnostic findings

BCT 5.7 Evoked potentials

BCT 5.8 H-reflex and F-wave studies

BCT 5.9 Visual, auditory and somatosensory evoked potentials

BCT 5.10 Superficial heating modalities

BCT 5.11 Deep heating modalities

BCT 5.12 Ultrasound therapy

BCT 5.13 Cryotherapy

BCT 5.14 Low-frequency currents

BCT 5.15 Diadynamic currents

BCT 5.16 Iontophoresis

BCT 5.17 High-voltage pulsed stimulation

BCT 5.18 TENS

BCT 5.19 Interferential therapy

BCT 5.20 Russian currents

BCT 5.21 LASER therapy

BCT 5.22 Advanced electrotherapeutics in tissue healing

BCT 5.23 Wound management

BCT 5.24 Scar and keloid management

BCT 5.25 Biofeedback applications

Recommended Books

1. Nordin M, Frankel VH. Basic Biomechanics of the Musculoskeletal System.
2. Hamill J, Knutzen KM. Biomechanical Basis of Human Movement.
3. Neumann DA. Kinesiology of the Musculoskeletal System.
4. Magee DJ. Orthopedic Physical Assessment.
5. Kisner C, Colby LA. Therapeutic Exercise: Foundations and Techniques.
6. Hall CM, Brody LT. Therapeutic Exercise.
7. O'Sullivan SB, Schmitz TJ. Physical Rehabilitation.
8. Prentice WE. Therapeutic Modalities in Rehabilitation.
9. Robinson AJ, Snyder-Mackler L. Clinical Electrophysiology.
10. Cameron MH. Physical Agents in Rehabilitation.
11. Basmajian JV. Biofeedback Principles and Practice.
12. Lehmann JF. Therapeutic Heat and Cold.

COURSE CODE: M.P.T(C)-104

COURSE TITLE: Clinical, Physical and Functional Diagnosis in Cardio-Pulmonary Physiotherapy-Theory

Credits: 8

Total Hours: 120

CPFD 1.0 Subject Description

This course is designed to develop advanced competencies in clinical examination, physical diagnosis, functional assessment, and physiotherapy diagnosis of patients with cardiovascular and pulmonary disorders. The course emphasizes interpretation of clinical findings, cardiopulmonary investigations, exercise testing, functional capacity assessment, differential diagnosis, and evidence-based clinical decision-making. Students will develop expertise in identifying impairments, activity limitations, participation restrictions, and rehabilitation needs in patients with cardiopulmonary dysfunction.

CPFD 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Perform comprehensive cardiovascular and pulmonary assessment. (P)
2. Interpret clinical signs and symptoms associated with cardiopulmonary disorders. (P)
3. Analyze diagnostic investigations relevant to cardiopulmonary physiotherapy. (KH)
4. Conduct exercise and functional capacity evaluations. (P)

5. Apply principles of differential diagnosis in cardiopulmonary rehabilitation. (P)
6. Identify risk factors and rehabilitation needs in cardiopulmonary disorders. (P)
7. Formulate physiotherapy diagnoses based on clinical findings. (P)
8. Utilize outcome measures in cardiopulmonary physiotherapy. (P)
9. Demonstrate evidence-based clinical reasoning. (P)
10. Recognize red flags and indications for medical referral. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

CPFD 1.0.2 Teaching Learning Methods

1. Interactive Lectures
2. Clinical Demonstrations
3. Cardiopulmonary Assessment Workshops
4. Case-Based Learning

5. Problem-Based Learning
6. Clinical Grand Rounds
7. Simulation-Based Learning
8. Journal Clubs
9. Seminars
10. Self-Directed Learning

CPFD 1.0.3 Assessment Methods

1. MCQs
2. Short Answer Questions
3. Long Answer Questions
4. Clinical Case Discussions
5. Practical Demonstrations
6. Seminar Presentations
7. Viva Voce
8. End Semester Examination

Unit I: Foundations of Cardiopulmonary Assessment (Total Hours: 24)

CPFD 1.1 Applied cardiovascular anatomy

CPFD 1.2 Applied respiratory anatomy

CPFD 1.3 Applied cardiovascular physiology

CPFD 1.4 Applied respiratory physiology

CPFD 1.5 Clinical history taking

CPFD 1.6 Observation and general examination

CPFD 1.7 Vital signs assessment

CPFD 1.8 Physical examination principles

CPFD 1.9 Functional assessment principles

CPFD 1.10 Evidence-based cardiopulmonary assessment

Unit II: Cardiovascular Assessment and Diagnosis (Total Hours: 24)

CPFD 2.1 Cardiovascular clinical examination

CPFD 2.2 Heart sounds and murmurs

CPFD 2.3 Peripheral vascular assessment

CPFD 2.4 Electrocardiography interpretation

CPFD 2.5 Echocardiography overview

CPFD 2.6 Cardiac stress testing

CPFD 2.7 Functional capacity assessment

CPFD 2.8 Exercise tolerance testing

CPFD 2.9 Cardiovascular outcome measures

CPFD 2.10 Differential diagnosis of cardiovascular disorders

Unit III: Pulmonary Assessment and Diagnosis (Total Hours: 24)

CPFD 3.1 Respiratory clinical examination

CPFD 3.2 Chest wall assessment

CPFD 3.3 Breathing pattern assessment

CPFD 3.4 Pulmonary function testing

CPFD 3.5 Arterial blood gas interpretation

CPFD 3.6 Chest radiography interpretation

CPFD 3.7 Advanced pulmonary investigations

CPFD 3.8 Dyspnea assessment

CPFD 3.9 Pulmonary outcome measures

CPFD 3.10 Differential diagnosis of pulmonary disorders

Unit IV: Functional Evaluation and Exercise Testing (Total Hours: 24)

CPFD 4.1 Exercise physiology in rehabilitation

CPFD 4.2 Six-minute walk test

CPFD 4.3 Incremental shuttle walk test

CPFD 4.4 Cardiopulmonary exercise testing

CPFD 4.5 Functional Independence Measure

CPFD 4.6 Quality of life assessment

CPFD 4.7 Fatigue assessment

CPFD 4.8 Physical activity assessment

CPFD 4.9 Functional outcome measures

CPFD 4.10 Interpretation of functional assessment findings

Unit V: Clinical Decision-Making and Physiotherapy Diagnosis (Total
Hours: 24)

CPFD 5.1 Differential diagnosis in cardiopulmonary physiotherapy

CPFD 5.2 Acute cardiopulmonary conditions

CPFD 5.3 Chronic cardiopulmonary conditions

CPFD 5.4 Critical care considerations

CPFD 5.5 Risk stratification

CPFD 5.6 Red flag identification

CPFD 5.7 ICF framework application

CPFD 5.8 Physiotherapy diagnosis formulation

CPFD 5.9 Goal setting and prognosis

CPFD 5.10 Evidence-based clinical decision making

COURSE CODE: M.P.T(C)-104

COURSE TITLE: Clinical, Physical and Functional Diagnosis in Cardio-Pulmonary Physiotherapy – Practical

Credits: 4

Total Hours: 120

Practical Competencies

Section A: Cardiovascular Assessment Skills (24 Hours)

1. Cardiovascular history taking
2. Vital signs assessment
3. Cardiac examination
4. Peripheral circulation assessment
5. Exercise tolerance assessment

Section B: Pulmonary Assessment Skills (24 Hours)

6. Respiratory examination
7. Chest expansion measurement

8. Breathing pattern assessment
9. Pulmonary function testing
10. Dyspnea evaluation

Section C: Diagnostic Investigation Interpretation (24 Hours)

11. ECG interpretation
12. Chest X-ray interpretation
13. Pulmonary function report interpretation
14. Arterial blood gas analysis
15. Echocardiography report interpretation

Section D: Functional Capacity Assessment (24 Hours)

16. Six-minute walk test
17. Shuttle walk test
18. Functional Independence Measure
19. Quality of life assessment
20. Functional outcome evaluation

Section E: Clinical Reasoning and Diagnosis (24 Hours)

21. Differential diagnosis exercises

22. Risk stratification procedures
23. Physiotherapy diagnosis formulation
24. Goal setting
25. Comprehensive cardiopulmonary case presentation

Recommended Books

1. Hillegass E. Essentials of Cardiopulmonary Physical Therapy.
2. Irwin S, Tecklin JS. Cardiopulmonary Physical Therapy.
3. Frownfelter D, Dean E. Cardiovascular and Pulmonary Physical Therapy.
4. AACVPR Guidelines for Cardiac Rehabilitation.
5. ATS/ERS Guidelines for Pulmonary Function Testing.
6. ACSM Guidelines for Exercise Testing and Prescription.
7. Pryor JA, Prasad SA. Physiotherapy for Respiratory and Cardiac Problems.
8. Dean E, Frownfelter D. Cardiovascular and Pulmonary Rehabilitation.

COURSE CODE: M.P.T(C)-105

COURSE TITLE: Skills Acquisition & Refinement (SAR-I)-Practical

Credits: 8

Total Hours: 240

SAR-I 1.0 Subject Description

Skills Acquisition and Refinement (SAR-I) is designed to facilitate the development of advanced clinical competencies in Cardio-Pulmonary Physiotherapy through structured practical training, simulation-based learning, supervised laboratory sessions, and clinical problem-solving activities. The course focuses on cardiopulmonary assessment, airway clearance techniques, breathing retraining, exercise testing, cardiac and pulmonary rehabilitation, critical care physiotherapy, patient monitoring, and evidence-based intervention strategies. Students will progressively develop advanced psychomotor, cognitive, and clinical reasoning skills necessary for independent cardiopulmonary physiotherapy practice.

SAR-I 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Demonstrate advanced cardiopulmonary assessment skills. (P)
2. Perform comprehensive cardiovascular and pulmonary evaluations. (P)
3. Apply airway clearance and breathing retraining techniques effectively.
(P)
4. Conduct exercise testing and functional capacity evaluations. (P)
5. Design individualized cardiopulmonary rehabilitation programmes. (P)
6. Monitor physiological responses during rehabilitation. (P)

7. Demonstrate competency in critical care physiotherapy techniques. (P)
8. Utilize outcome measures in cardiopulmonary rehabilitation. (P)
9. Demonstrate effective communication with patients and caregivers. (P)
10. Integrate evidence-based practice into cardiopulmonary physiotherapy management. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

SAR-I 1.0.2 Teaching Learning Methods

1. Practical Demonstrations
2. Skills Laboratories
3. Simulation-Based Learning
4. Clinical Workshops
5. Case-Based Learning
6. Video Analysis

7. Peer-Assisted Learning
8. Journal Clubs
9. Reflective Learning
10. Self-Directed Learning

SAR-I 1.0.3 Assessment Methods

1. Objective Structured Clinical Examination (OSCE)
2. Skill Demonstration
3. Clinical Viva Voce
4. Logbook Assessment
5. Portfolio Assessment
6. Case Presentation
7. Direct Observation of Procedural Skills (DOPS)

Students must be engaged in

- Teaching Assignment, Seminars, journal club & Case Studies etc

Locomotor disability Assessment content:

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

Detail study of Government Gazette to be done: (The Gazette of India is regularly updated, and its publications can change over time. Refer the recent Gazette publications issued by the Government of India, from the official

website) PWD Act 1995 and Rights of person with Disability Act 2016, to study in detail.

BLS and ACLS Training:

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

ECLS 1.0. Subject Description and instruction to teacher

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

ECLS 1.0.1. Course Outcomes:

After completion of this course the student shall be able to

1. Perform Opening and maintaining and patent airway: assessment and knowledge of airway maneuvers and adjuncts
2. Ventilate patients: Assessment and management of breathing with Mouth to mouth and mouth to mask
3. Administer basic life support skills including cardiopulmonary resuscitation
4. Provide first aid of simple and multiple system trauma such as • Controlling hemorrhage • Managing Burns and wounds • Response to effects of weapons of mass destruction • manually stabilizing injured extremities
5. Provide first aid to patients with medical emergencies like heart attack and stroke • Identifying signs of Stroke and heart attack and safe transfer after first aid without delay in transfer. • Manage general medical complaints seizures and animal bites (snake /dog bite)

6. Reassure patients and bystanders by working in a confident, efficient manner • Avoid mishandling and undue haste while working expeditiously to accomplish the task
7. Manage safe patient transport Entailing-Extrication of the victim, helmet removal and spine protection during transport.
8. Explain Roles, responsibilities and limitation of first responder.

Course Contents:

SECTION -A UNIT 1

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

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

ECLS 1.3. Well-being of first responder Personal protection

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

UNIT 2

ECLS 2.1. Airway

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

6. Ensuring patent airway during seizures and vomiting.

ECLS 2.2. Ventilation

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

ECLS 2.3. Circulation

1. Evaluate the cardiac status of the patient
2. Determine the need for and take necessary action to proper circulation
3. Steps for control of bleeding: Pressure bandage and tourniquet ECLS 2.4.
Clearing a foreign body airway obstruction

ECLS 2.5. CPR

1. Implications of cardiac arrest
2. Cardiopulmonary resuscitation (CPR)
 - i. How it works
 - ii. Steps
 - iii. When to stop CPR
3. Brief overview of AED Automated external defibrillator (only demonstration –no hands on)

SECTION -B UNIT 3

ECLS 3.1. Bleeding and Soft Tissue Injuries

1. Difference between arterial and venous bleeding
2. Stopping external bleeding
3. Identification of Internal bleeding
4. types and Functions of dressings and bandages
5. How to help a victim of burn injury ECLS 3.2. Injuries to Muscles and Bones
 1. Suspecting bony/spinal injury

2. Splinting –materials used
3. Importance of splinting

UNIT 4

ECLS 4.1 Medical Emergencies

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

- i. A general medical complaint –
- ii. Seizures
- iii. Chest-pain
- iv. Shortness of breath
- v. Exposure to heat
- vi. Including other medical complaints like allergy, diarrhea, fainting, low blood sugar, stroke
- vii. Drowning
- viii. Poisoning

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

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

Practicals

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

- ECLS (P) 5.1. Provide Airway & Ventilation
- ECLS (P) 5.2. Perform Basic Life Support: CPR
- ECLS (P) 5.3. Perform Initial management of Thermal injury, electric injury

- ECLS (P) 5.4. Perform stabilizing injured extremity and wound management
- ECLS (P) 5.5. Demonstrate bandaging techniques to various body parts
- ECLS (P) 5.6. Demonstrate Extrication, Helmet removal and spine protection
- ECLS (P) 5.7. Demonstrate Stretcher use

Recommended text books for ECLS

Indian red cross : INDIAN FIRST AID MANUAL 2016 (7th edition) available at <https://www.indianredcross.org/publications/FA-manual.pdf>

Assessment Methods

1. Objective Structured Clinical Examination (OSCE)
2. Direct Observation of Procedural Skills (DOPS)
3. Case Presentation
4. Clinical Viva Voce
5. Logbook Assessment
6. Reflective Portfolio
7. Skill Demonstration

Disaster Management:

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

DM 1.0 Subject Description and instruction to teacher: The commission's goal is to emphasize the vital role physical therapists (physios) play in disaster management and contribute to national and global preparedness. To achieve this, it's essential to raise awareness among physiotherapists about national

and international organizations and emphasize the crucial role physical therapists play in disaster management, particularly within Emergency Medical Teams. Also it may be noted that the acts, policies, gazettes are regularly updated, and its publications can change over time. The teachers and students should thus refer the recent publications issued on the official website

DM 1.0.1. Course Outcomes: After completion of this course the student shall be able to

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

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

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

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

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

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

1. The legal framework for disaster management in India: Key takeaways of Disaster Management Act 2005, National Policy on Disaster Management 2009 and National Disaster Management Plan 2018
2. Different types of disasters managed in India, Epidemiologic surveillance and disease control, main goal of the National Disaster Management Authority,

areas in India are most prone to disasters, Institutional structure for disaster management in India at various levels, Central Ministry that coordinates disaster management and leader of NDMA in India

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

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

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

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

2. Prevention of a disaster

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

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

5. Developing international humanitarian response

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

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

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

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

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

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

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

Recommended websites for references: Disaster management

National Disaster Management Plan, 2016. A publication of the National Disaster Management Authority, Government of India. May 2016, New Delhi at www.mha.gov.in

www.wcpt.org/disaster-management.

COURSE CODE: M.P.T(C)-106

COURSE TITLE: Clinical Training (CT-I)-Practical

Credits: 23

Total Hours: 690

CT-I 1.0 Subject Description

Clinical Training-I provides structured supervised clinical exposure in Cardio-Pulmonary Physiotherapy settings. The course is designed to facilitate integration of theoretical knowledge, practical skills, evidence-based practice, and professional behavior into cardiopulmonary rehabilitation. Students will gain experience in cardiovascular rehabilitation, pulmonary rehabilitation, critical care physiotherapy, exercise prescription, patient monitoring, airway

clearance techniques, and interdisciplinary management. The training aims to develop competency in managing patients with acute, subacute, and chronic cardiopulmonary conditions.

CT-I 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Independently assess patients with cardiopulmonary disorders. (P)
2. Formulate physiotherapy diagnoses based on clinical findings. (P)
3. Develop individualized cardiopulmonary rehabilitation programmes. (P)
4. Apply evidence-based cardiopulmonary physiotherapy interventions. (P)
5. Evaluate functional outcomes using standardized measures. (P)
6. Demonstrate competency in exercise testing and prescription. (P)
7. Monitor physiological responses during rehabilitation. (P)
8. Educate patients and caregivers regarding rehabilitation strategies. (P)
9. Work effectively within interdisciplinary healthcare teams. (P)
10. Demonstrate ethical and professional conduct in cardiopulmonary rehabilitation practice. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

CT-I 1.0.2 Clinical Training Areas

Cardiac Rehabilitation Unit (Total Hours: 180)

CT 1.1 Cardiac patient assessment

CT 1.2 Post-myocardial infarction rehabilitation

CT 1.3 Post-cardiac surgery rehabilitation

CT 1.4 Heart failure rehabilitation

CT 1.5 Exercise prescription and monitoring

CT 1.6 Risk factor modification

CT 1.7 Functional outcome evaluation

CT 1.8 Documentation and reporting

Pulmonary Rehabilitation Unit (Total Hours: 180)

CT 1.9 Chronic obstructive pulmonary disease rehabilitation

CT 1.10 Bronchial asthma management

CT 1.11 Interstitial lung disease rehabilitation

CT 1.12 Pulmonary function assessment

CT 1.13 Airway clearance techniques

CT 1.14 Breathing retraining programmes

CT 1.15 Exercise tolerance assessment

CT 1.16 Pulmonary rehabilitation planning

Critical Care Physiotherapy Unit (Total Hours: 120)

CT 1.17 Intensive care assessment

CT 1.18 Mechanical ventilation monitoring

CT 1.19 Positioning and mobilization

CT 1.20 Secretion clearance management

CT 1.21 Early mobilization programmes

CT 1.22 Prevention of ICU complications

CT 1.23 Weaning support procedures

CT 1.24 Functional rehabilitation in ICU

Specialized Cardiopulmonary Services (Total Hours: 90)

CT 1.25 Cardiopulmonary exercise testing

CT 1.26 Functional capacity assessment

CT 1.27 Oxygen therapy monitoring

CT 1.28 Non-invasive ventilation exposure

CT 1.29 Sleep disorder rehabilitation exposure

CT 1.30 Cardiopulmonary outcome measures

CT 1.31 Community rehabilitation programmes

CT 1.32 Home-based rehabilitation planning

Academic and Professional Activities (Total Hours: 120)

CT 1.33 Case presentations

CT 1.34 Journal clubs

CT 1.35 Clinical conferences

CT 1.36 Multidisciplinary team meetings

CT 1.37 Research discussions

CT 1.38 Clinical audits

CT 1.39 Reflective practice

CT 1.40 Professional development activities

Clinical Requirements

1. Minimum 50 complete cardiopulmonary case records.

2. Minimum 20 detailed cardiopulmonary case presentations.
3. Participation in cardiac and pulmonary rehabilitation programmes.
4. Maintenance of clinical logbook.
5. Participation in journal clubs and clinical audits.
6. Completion of cardiopulmonary assessment portfolio.
7. Documentation of rehabilitation outcomes.

CT-I 1.0.3 Assessment Methods

1. Clinical Performance Evaluation
2. Case Presentation
3. Clinical Viva Voce
4. Logbook Assessment
5. Portfolio Assessment
6. Supervisor Evaluation
7. Professional Behaviour Assessment
8. Competency-Based Clinical Assessment

Recommended Books

1. Hillegass E. Essentials of Cardiopulmonary Physical Therapy.

2. Irwin S, Tecklin JS. Cardiopulmonary Physical Therapy.
3. Frownfelter D, Dean E. Cardiovascular and Pulmonary Physical Therapy.
4. Pryor JA, Prasad SA. Physiotherapy for Respiratory and Cardiac Problems.
5. AACVPR Guidelines for Cardiac Rehabilitation.
6. ACSM Guidelines for Exercise Testing and Prescription.
7. ATS/ERS Clinical Practice Guidelines.
8. Dean E, Frownfelter D. Cardiovascular and Pulmonary Rehabilitation.

COURSE CODE: M.P.T(C)-107

COURSE TITLE: Dissertation (DSS-I)-Practical

Credits: 3

Total Hours: 90

DSS-I 1.0 Subject Description

The Dissertation (DSS-I) course introduces postgraduate students to scientific research in Cardio-Pulmonary Physiotherapy and Rehabilitation. The course focuses on identification of clinically relevant research problems, literature review, research methodology, protocol development, ethical considerations, and preparation of a dissertation synopsis. Students will acquire competencies

necessary to conduct independent research and contribute to evidence-based cardiopulmonary physiotherapy practice.

DSS-I 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Identify clinically relevant research problems in cardiopulmonary physiotherapy. (P)
2. Conduct comprehensive literature reviews. (P)
3. Formulate research questions and hypotheses. (P)
4. Design appropriate cardiopulmonary rehabilitation research protocols.
(P)
5. Select suitable outcome measures for cardiopulmonary research. (P)
6. Prepare ethics committee submissions. (P)
7. Develop scientifically sound research proposals. (P)
8. Present and defend research protocols effectively. (P)
9. Apply principles of scientific writing and research ethics. (P)
10. Demonstrate readiness for dissertation implementation. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

DSS-I 1.0.2 Teaching Learning Methods

1. Research Supervision Meetings
2. Literature Review Sessions
3. Research Methodology Workshops
4. Journal Clubs
5. Research Seminars
6. Proposal Development Workshops
7. Statistical Planning Sessions
8. Self-Directed Learning
9. Peer Review Activities
10. Research Presentations

DSS-I 1.0.3 Assessment Methods

1. Literature Review Assessment
2. Research Protocol Evaluation

3. Synopsis Presentation
4. Ethics Submission Review
5. Research Proposal Defense
6. Viva Voce

Module I: Research Problem Identification (Total Hours: 15)

DSS 1.1 Identification of research areas in cardiopulmonary rehabilitation

DSS 1.2 Selection of dissertation topic

DSS 1.3 Problem statement formulation

DSS 1.4 Feasibility assessment

DSS 1.5 Development of research objectives

DSS 1.6 Formulation of hypotheses

Module II: Literature Review (Total Hours: 25)

DSS 1.7 Literature search strategies

DSS 1.8 Database searching

DSS 1.9 Critical appraisal of literature

DSS 1.10 Evidence synthesis

DSS 1.11 Gap identification

DSS 1.12 Review writing

Module III: Research Methodology Development (Total Hours: 25)

DSS 1.13 Selection of study design

DSS 1.14 Sampling methods

DSS 1.15 Sample size estimation

DSS 1.16 Selection of outcome measures

DSS 1.17 Data collection procedures

DSS 1.18 Statistical planning

DSS 1.19 Research protocol preparation

Module IV: Ethics and Regulatory Requirements (Total Hours: 10)

DSS 1.20 Research ethics

DSS 1.21 Informed consent procedures

DSS 1.22 Ethics committee submission

DSS 1.23 Participant confidentiality

DSS 1.24 Research governance

Module V: Synopsis Preparation and Presentation (Total Hours: 15)

DSS 1.25 Synopsis writing

DSS 1.26 Research proposal presentation

DSS 1.27 Protocol defense

DSS 1.28 Expert review and revision

DSS 1.29 Final protocol submission

DSS 1.30 Dissertation progress reporting

DSS-I Deliverables

1. Approved dissertation topic.
2. Comprehensive literature review.
3. Completed research protocol.
4. Ethics committee application.
5. Approved synopsis presentation.
6. Dissertation progress report.

Recommended Books

1. Portney LG, Watkins MP. Foundations of Clinical Research: Applications to Practice.
2. Domholdt E. Rehabilitation Research: Principles and Applications.
3. Hicks CM. Research Methods for Clinical Therapists.

4. Greenhalgh T. How to Read a Paper.
5. Mahajan BK. Methods in Biostatistics.
6. APA Publication Manual.
7. ICMJE Recommendations for Scholarly Publications.
8. CONSORT and STROBE Reporting Guidelines.

Second Year

COURSE CODE: M.P.T(C)-201

COURSE TITLE: Exercise Physiology-Theory

Credits: 6

Total Hours: 90

EP 1.0 Subject Description

Exercise Physiology is an advanced course designed to provide postgraduate physiotherapy students with an in-depth understanding of physiological responses and adaptations to exercise in healthy individuals, athletes, and patients with various musculoskeletal conditions. The course emphasizes cellular, cardiovascular, respiratory, neuromuscular, endocrine, and metabolic adaptations to physical activity and exercise training. It also focuses on exercise testing, fitness assessment, fatigue mechanisms, environmental physiology, and exercise prescription. The knowledge gained through this course will facilitate evidence-based exercise programming and rehabilitation planning in musculoskeletal physiotherapy practice.

EP 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Explain physiological responses to acute and chronic exercise. (K)
2. Analyze cardiovascular and respiratory adaptations to exercise. (KH)

3. Interpret neuromuscular and metabolic responses during physical activity. (KH)
4. Evaluate energy systems involved in exercise performance. (P)
5. Assess physical fitness using standardized testing procedures. (P)
6. Explain mechanisms of fatigue and recovery. (KH)
7. Apply exercise physiology principles in rehabilitation and performance enhancement. (P)
8. Design evidence-based exercise programs for different populations. (P)
9. Evaluate environmental influences on exercise performance. (KH)
10. Interpret exercise testing results and prescribe appropriate interventions. (P)
11. Demonstrate competency in fitness assessment and exercise prescription. (SH)
12. Integrate exercise physiology principles into musculoskeletal rehabilitation. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

EP 1.0.2 Teaching Learning Methods

1. Interactive Lectures
2. Seminars
3. Laboratory Demonstrations
4. Practical Exercise Testing Sessions
5. Case-Based Learning
6. Journal Club Discussions
7. Fitness Assessment Workshops
8. Problem-Based Learning
9. Self-Directed Learning
10. Research Article Reviews

EP 1.0.3 Assessment Methods

1. Multiple Choice Questions
2. Short Answer Questions
3. Long Answer Questions
4. Practical Demonstrations
5. Exercise Prescription Assignments
6. Case Presentations

7. Seminar Presentations

8. Viva Voce

9. End Semester Examination

Unit I: Fundamentals of Exercise Physiology

Total Hours: 18

EP 1.1 Introduction to exercise physiology

EP 1.2 Homeostasis and exercise

EP 1.3 Cellular physiology of exercise

EP 1.4 Skeletal muscle structure and function

EP 1.5 Muscle fiber types

EP 1.6 Neuromuscular adaptations to exercise

EP 1.7 Bioenergetics and energy transfer

EP 1.8 ATP production and utilization

EP 1.9 Aerobic and anaerobic metabolism

EP 1.10 Physiological basis of exercise performance

Unit II: Cardiovascular and Respiratory Responses to Exercise

Total Hours: 18

EP 2.1 Cardiovascular physiology during exercise

EP 2.2 Cardiac output and exercise

EP 2.3 Blood pressure regulation

EP 2.4 Peripheral circulation during exercise

EP 2.5 Respiratory physiology during exercise

EP 2.6 Pulmonary ventilation

EP 2.7 Gas exchange mechanisms

EP 2.8 Oxygen transport

EP 2.9 VO₂ Max

EP 2.10 Cardiovascular adaptations to training

EP 2.11 Respiratory adaptations to training

Unit III: Metabolic and Endocrine Responses to Exercise

Total Hours: 18

EP 3.1 Energy systems in exercise

EP 3.2 Carbohydrate metabolism

EP 3.3 Fat metabolism

EP 3.4 Protein metabolism

EP 3.5 Hormonal regulation during exercise

EP 3.6 Endocrine responses to training

EP 3.7 Fluid and electrolyte balance

EP 3.8 Thermoregulation

EP 3.9 Nutritional considerations in exercise

EP 3.10 Exercise and body composition

EP 3.11 Obesity and metabolic health

Unit IV: Exercise Testing, Fitness Assessment and Fatigue

Total Hours: 18

EP 4.1 Principles of exercise testing

EP 4.2 Aerobic fitness assessment

EP 4.3 Anaerobic fitness assessment

EP 4.4 Strength testing

EP 4.5 Endurance assessment

EP 4.6 Flexibility evaluation

EP 4.7 Functional capacity testing

EP 4.8 Physical activity assessment

EP 4.9 Exercise tolerance testing

EP 4.10 Mechanisms of fatigue

EP 4.11 Recovery physiology

EP 4.12 Overtraining syndrome

Unit V: Applied Exercise Physiology in Rehabilitation

Total Hours: 18

EP 5.1 Principles of exercise prescription

EP 5.2 Exercise programming

EP 5.3 Exercise progression

EP 5.4 Exercise physiology in musculoskeletal rehabilitation

EP 5.5 Exercise for chronic pain conditions

EP 5.6 Exercise and aging

EP 5.7 Exercise in occupational health

EP 5.8 Environmental physiology:

- Heat
- Cold
- Altitude

EP 5.9 Exercise for health promotion

EP 5.10 Physical activity guidelines

EP 5.11 Evidence-based exercise prescription

EP 5.12 Contemporary advances in exercise physiology

Recommended Books

1. Powers SK, Howley ET. Exercise Physiology: Theory and Application to Fitness and Performance.
2. McArdle WD, Katch FI, Katch VL. Exercise Physiology: Nutrition, Energy and Human Performance.
3. Kenney WL, Wilmore JH, Costill DL. Physiology of Sport and Exercise.
4. Brooks GA, Fahey TD, Baldwin KM. Exercise Physiology: Human Bioenergetics and Its Applications.
5. ACSM's Guidelines for Exercise Testing and Prescription.
6. Heyward VH. Advanced Fitness Assessment and Exercise Prescription.
7. Ehrman JK, Gordon PM, Visich PS, Keteyian SJ. Clinical Exercise Physiology.
8. Kisner C, Colby LA. Therapeutic Exercise: Foundations and Techniques.
9. Brukner P, Khan K. Clinical Sports Medicine.
10. ACSM Resource Manual for Guidelines for Exercise Testing and Prescription.

COURSE CODE: M.P.T(C)-202

COURSE TITLE: Cardio-Pulmonary Physiotherapy-Theory

Credits: 8

Total Hours: 120

CPP 1.0 Subject Description

Cardio-Pulmonary Physiotherapy is an advanced specialty course designed to provide comprehensive knowledge and clinical expertise in the prevention, assessment, treatment, rehabilitation, and long-term management of cardiovascular and pulmonary disorders. The course focuses on evidence-based rehabilitation, exercise prescription, critical care physiotherapy, chronic disease management, cardiopulmonary exercise testing, and community-based rehabilitation. Students will develop advanced clinical reasoning and practical competencies necessary for managing patients with acute, subacute, and chronic cardiopulmonary conditions.

CPP 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Apply advanced principles of cardiopulmonary rehabilitation. (P)
2. Design individualized rehabilitation programmes for cardiovascular and pulmonary disorders. (P)
3. Perform advanced exercise testing and prescription. (P)
4. Implement evidence-based cardiopulmonary physiotherapy interventions. (P)
5. Manage critically ill cardiopulmonary patients. (P)
6. Utilize functional outcome measures effectively. (P)

7. Apply risk stratification and patient monitoring strategies. (P)
8. Integrate community and home-based rehabilitation programmes. (P)
9. Demonstrate advanced clinical reasoning in cardiopulmonary physiotherapy. (P)
10. Function effectively within interdisciplinary healthcare teams. (P)

CPP 1.0.2 Teaching Learning Methods

1. Interactive Lectures
2. Clinical Demonstrations
3. Case-Based Learning
4. Problem-Based Learning
5. Simulation-Based Learning
6. Clinical Conferences
7. Journal Clubs
8. Workshops
9. Seminars
10. Self-Directed Learning

CPP 1.0.3 Assessment Methods

1. MCQs
2. Short Answer Questions
3. Long Answer Questions
4. Case Presentations
5. Seminar Presentations
6. Practical Demonstrations
7. Viva Voce
8. End Semester Examination

Unit I: Advanced Cardiovascular Rehabilitation (Total Hours: 24)

CPP 1.1 Cardiac rehabilitation principles

CPP 1.2 Risk stratification

CPP 1.3 Post-myocardial infarction rehabilitation

CPP 1.4 Heart failure rehabilitation

CPP 1.5 Coronary artery disease management

CPP 1.6 Post-cardiac surgery rehabilitation

CPP 1.7 Cardiac transplantation rehabilitation

CPP 1.8 Exercise prescription in cardiac disorders

CPP 1.9 Functional outcome evaluation

CPP 1.10 Secondary prevention strategies

Unit II: Advanced Pulmonary Rehabilitation (Total Hours: 24)

CPP 2.1 Pulmonary rehabilitation principles

CPP 2.2 COPD rehabilitation

CPP 2.3 Bronchial asthma management

CPP 2.4 Interstitial lung disease rehabilitation

CPP 2.5 Bronchiectasis management

CPP 2.6 Pulmonary fibrosis rehabilitation

CPP 2.7 Breathing retraining programmes

CPP 2.8 Airway clearance strategies

CPP 2.9 Exercise training in pulmonary disorders

CPP 2.10 Outcome assessment in pulmonary rehabilitation

Unit III: Critical Care Physiotherapy (Total Hours: 24)

CPP 3.1 ICU physiotherapy principles

CPP 3.2 Mechanical ventilation

CPP 3.3 Ventilator-associated complications

CPP 3.4 Early mobilization in ICU

CPP 3.5 Physiotherapy management of critically ill patients

CPP 3.6 Weaning strategies

CPP 3.7 Airway management

CPP 3.8 Secretion clearance techniques

CPP 3.9 ICU outcome measures

CPP 3.10 Critical care rehabilitation pathways

Unit IV: Exercise Testing and Prescription (Total Hours: 24)

CPP 4.1 Cardiopulmonary exercise testing

CPP 4.2 Six-minute walk test

CPP 4.3 Incremental shuttle walk test

CPP 4.4 Exercise prescription principles

CPP 4.5 Aerobic training

CPP 4.6 Resistance training

CPP 4.7 Interval training

CPP 4.8 Functional training

CPP 4.9 Monitoring exercise responses

CPP 4.10 Exercise progression strategies

Unit V: Community and Preventive Cardio-Pulmonary Rehabilitation

Total Hours: 24

CPP 5.1 Community-based rehabilitation

CPP 5.2 Home-based rehabilitation

CPP 5.3 Lifestyle modification

CPP 5.4 Smoking cessation programmes

CPP 5.5 Obesity management

CPP 5.6 Health promotion strategies

CPP 5.7 Tele-rehabilitation

CPP 5.8 Long-term disease management

CPP 5.9 Quality of life enhancement

CPP 5.10 Emerging trends in cardiopulmonary physiotherapy

COURSE CODE: M.P.T(C)-202

COURSE TITLE: Cardio-Pulmonary Physiotherapy – Practical

Credits: 4

Total Hours: 120

Practical Competencies

Section A: Cardiovascular Rehabilitation Skills (24 Hours)

1. Cardiac patient assessment
2. Risk stratification procedures
3. Exercise tolerance evaluation
4. Cardiac rehabilitation programme design
5. Functional outcome assessment

Section B: Pulmonary Rehabilitation Skills (24 Hours)

6. Pulmonary rehabilitation assessment
7. Airway clearance techniques
8. Breathing retraining exercises
9. Pulmonary exercise training
10. Dyspnea management

Section C: Critical Care Physiotherapy Skills (24 Hours)

11. ICU patient assessment
12. Positioning and mobilization
13. Oxygen therapy monitoring
14. Mechanical ventilation observation

15. Secretion management techniques

Section D: Exercise Testing and Prescription (24 Hours)

16. Six-minute walk test
17. Shuttle walk test
18. Aerobic exercise prescription
19. Resistance training prescription
20. Monitoring physiological responses

Section E: Community Rehabilitation Skills (24 Hours)

21. Home programme planning
22. Tele-rehabilitation applications
23. Lifestyle counselling
24. Patient education
25. Community rehabilitation planning

Recommended Books

1. Hillegass E. Essentials of Cardiopulmonary Physical Therapy.
2. Irwin S, Tecklin JS. Cardiopulmonary Physical Therapy.
3. Frownfelter D, Dean E. Cardiovascular and Pulmonary Physical Therapy.

4. ACSM Guidelines for Exercise Testing and Prescription.
5. AACVPR Guidelines for Cardiac Rehabilitation.
6. Pryor JA, Prasad SA. Physiotherapy for Respiratory and Cardiac Problems.

COURSE CODE: M.P.T(C)-203

COURSE TITLE: Recent Advances and Evidence-Based Practice in Cardio-Pulmonary Physiotherapy-Theory

Credits: 8

Total Hours: 120

RAEBP 1.0 Subject Description

This course is designed to provide postgraduate students with advanced knowledge of contemporary developments, emerging technologies, innovative rehabilitation approaches, and evidence-based clinical practices in Cardio-Pulmonary Physiotherapy. The course emphasizes cardiopulmonary rehabilitation advancements, critical care innovations, tele-rehabilitation, wearable technologies, artificial intelligence applications, exercise science developments, and translation of research evidence into clinical practice. Students will develop competencies necessary to critically evaluate scientific evidence and integrate contemporary rehabilitation approaches into cardiopulmonary physiotherapy practice.

RAEBP 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Critically appraise current evidence in cardiopulmonary rehabilitation.
(P)
2. Interpret systematic reviews, meta-analyses, and clinical practice guidelines. (KH)
3. Apply evidence-based decision-making in cardiopulmonary physiotherapy. (P)
4. Evaluate emerging technologies in cardiopulmonary rehabilitation. (KH)
5. Integrate advanced exercise science principles into rehabilitation programmes. (P)
6. Utilize contemporary outcome measures and monitoring systems. (P)
7. Analyze advances in critical care physiotherapy and rehabilitation. (P)
8. Apply tele-rehabilitation and digital health strategies. (P)
9. Evaluate innovative rehabilitation approaches for cardiopulmonary disorders. (P)
10. Demonstrate leadership in translating research evidence into clinical practice. (P)

Competency Levels

K – Knows

KH – Knows How

SH – Shows How

P – Performs Independently

RAEBP 1.0.2 Teaching Learning Methods

1. Interactive Lectures
2. Journal Clubs
3. Critical Appraisal Workshops
4. Research Seminars
5. Case-Based Learning
6. Problem-Based Learning
7. Technology Demonstrations
8. Clinical Practice Guideline Reviews
9. Student Presentations
10. Self-Directed Learning

RAEBP 1.0.3 Assessment Methods

1. MCQs

2. Short Answer Questions
3. Long Answer Questions
4. Journal Critique
5. Evidence Appraisal Assignment
6. Seminar Presentation
7. Case-Based Discussion
8. Viva Voce
9. End Semester Examination

Unit I: Evidence-Based Cardio-Pulmonary Rehabilitation (Total Hours: 24)

RAEBP 1.1 Principles of evidence-based practice

RAEBP 1.2 Hierarchy of evidence

RAEBP 1.3 Systematic reviews and meta-analysis

RAEBP 1.4 Clinical practice guidelines

RAEBP 1.5 Critical appraisal of literature

RAEBP 1.6 Outcome measures in cardiopulmonary rehabilitation

RAEBP 1.7 Knowledge translation

RAEBP 1.8 Clinical decision-making models

RAEBP 1.9 Evidence implementation strategies

RAEBP 1.10 Contemporary rehabilitation frameworks

Unit II: Advances in Cardiovascular Rehabilitation (Total Hours: 24)

RAEBP 2.1 High-intensity interval training

RAEBP 2.2 Contemporary cardiac rehabilitation models

RAEBP 2.3 Heart failure rehabilitation advances

RAEBP 2.4 Post-cardiac surgery rehabilitation advances

RAEBP 2.5 Exercise prescription innovations

RAEBP 2.6 Remote cardiac monitoring

RAEBP 2.7 Wearable technology in cardiac care

RAEBP 2.8 Cardiovascular risk management updates

RAEBP 2.9 Community-based cardiac rehabilitation

RAEBP 2.10 Precision cardiac rehabilitation

Unit III: Advances in Pulmonary and Critical Care Rehabilitation (Total

Hours: 24)

RAEBP 3.1 Pulmonary rehabilitation advances

RAEBP 3.2 COPD rehabilitation innovations

RAEBP 3.3 Interstitial lung disease rehabilitation

RAEBP 3.4 Critical care physiotherapy advances

RAEBP 3.5 Early mobilization in ICU

RAEBP 3.6 Mechanical ventilation rehabilitation

RAEBP 3.7 Inspiratory muscle training

RAEBP 3.8 Airway clearance innovations

RAEBP 3.9 Post-COVID rehabilitation

RAEBP 3.10 Long COVID rehabilitation strategies

Unit IV: Emerging Technologies and Digital Health (Total Hours: 24)

RAEBP 4.1 Tele-rehabilitation

RAEBP 4.2 Digital health technologies

RAEBP 4.3 Wearable monitoring devices

RAEBP 4.4 Remote patient monitoring

RAEBP 4.5 Artificial intelligence in rehabilitation

RAEBP 4.6 Mobile health applications

RAEBP 4.7 Virtual reality in rehabilitation

RAEBP 4.8 Robotics-assisted rehabilitation

RAEBP 4.9 Data-driven rehabilitation planning

RAEBP 4.10 Technology-enabled patient engagement

Unit V: Future Directions in Cardio-Pulmonary Physiotherapy (Total Hours: 24)

RAEBP 5.1 Precision rehabilitation

RAEBP 5.2 Personalized exercise medicine

RAEBP 5.3 Biomarkers in rehabilitation

RAEBP 5.4 Contemporary rehabilitation research

RAEBP 5.5 International consensus statements

RAEBP 5.6 Lifestyle medicine

RAEBP 5.7 Population health approaches

RAEBP 5.8 Value-based rehabilitation

RAEBP 5.9 Emerging global trends

RAEBP 5.10 Future directions in cardiopulmonary physiotherapy

Recommended Books

1. Hillegass E. Essentials of Cardiopulmonary Physical Therapy.
2. Frownfelter D, Dean E. Cardiovascular and Pulmonary Physical Therapy.

3. ACSM Guidelines for Exercise Testing and Prescription.
4. AACVPR Guidelines for Cardiac Rehabilitation.
5. ATS/ERS Clinical Practice Guidelines.
6. Recent Systematic Reviews and Meta-Analyses in Cardiopulmonary Rehabilitation.
7. Current International Consensus Statements.
8. World Physiotherapy Cardiorespiratory Specialty Resources.

COURSE CODE: M.P.T(C)-203

COURSE TITLE: Recent Advances and Evidence-Based Practice in Cardio-Pulmonary Physiotherapy – Practical

Credits: 4

Total Hours: 120

Practical Competencies

Section A: Evidence-Based Practice Skills (24 Hours)

1. Literature searching
2. Critical appraisal of research articles
3. Interpretation of systematic reviews

4. Clinical guideline implementation
5. Evidence synthesis

Section B: Advanced Cardiovascular Rehabilitation (24 Hours)

6. High-intensity interval training protocols
7. Advanced exercise prescription
8. Cardiac rehabilitation programme design
9. Risk stratification procedures
10. Wearable cardiac monitoring applications

Section C: Advanced Pulmonary Rehabilitation (24 Hours)

11. Inspiratory muscle training
12. Advanced airway clearance techniques
13. Pulmonary rehabilitation programme design
14. Long COVID rehabilitation planning
15. Functional outcome assessment

Section D: Technology-Assisted Rehabilitation (24 Hours)

16. Tele-rehabilitation implementation
17. Remote patient monitoring

18. Mobile health applications
19. Digital rehabilitation systems
20. Virtual rehabilitation applications

Section E: Clinical Application and Research Translation (24 Hours)

21. Evidence-based case management
22. Clinical guideline-based intervention planning
23. Outcome measure selection
24. Rehabilitation programme evaluation
25. Research-to-practice implementation

Assessment Methods

1. Practical Demonstration
2. OSCE
3. Clinical Viva Voce
4. Logbook Assessment
5. Skill Assessment
6. Case Presentation

Recommended Books

1. Hillegass E. Essentials of Cardiopulmonary Physical Therapy.
2. Frownfelter D, Dean E. Cardiovascular and Pulmonary Physical Therapy.
3. ACSM Guidelines for Exercise Testing and Prescription.
4. AACVPR Guidelines for Cardiac Rehabilitation.
5. ATS/ERS Clinical Practice Guidelines.
6. Evidence-Based Cardiorespiratory Rehabilitation Resources.
7. Current Consensus Statements in Cardiopulmonary Rehabilitation.
8. Recent Research Publications in Cardiorespiratory Physiotherapy.

COURSE CODE: M.P.T(C)-204

COURSE TITLE: Dissertation (DSS-II)-Practical

Credits: 22

Total Hours: 660

DSS-II 1.0 Subject Description

Dissertation (DSS-II) represents the culmination of postgraduate research training in Cardio-Pulmonary Physiotherapy. The course provides students with opportunities to conduct independent, original, and clinically relevant research in cardiovascular rehabilitation, pulmonary rehabilitation, critical care physiotherapy, exercise science, and evidence-based cardiorespiratory physiotherapy. Students are expected to implement approved research protocols, collect and analyze data, interpret findings, prepare a dissertation thesis, and disseminate research outcomes.

DSS-II 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Conduct independent research in Cardio-Pulmonary Physiotherapy. (P)
2. Implement approved research protocols effectively. (P)

3. Apply appropriate outcome measures and data collection procedures. (P)
4. Utilize statistical methods for data analysis. (P)
5. Interpret research findings accurately and scientifically. (P)
6. Relate findings to current evidence and clinical practice. (P)
7. Prepare a dissertation according to academic standards. (P)
8. Present and defend research findings effectively. (P)
9. Demonstrate competency in scientific writing and publication. (P)
10. Translate research evidence into cardiopulmonary rehabilitation practice. (P)

Module I: Research Implementation (Total Hours: 120)

DSS 2.1 Finalization of research protocol

DSS 2.2 Participant recruitment

DSS 2.3 Baseline assessment

DSS 2.4 Informed consent procedures

DSS 2.5 Pilot testing

DSS 2.6 Standardization of procedures

DSS 2.7 Quality assurance measures

DSS 2.8 Research documentation

DSS 2.9 Progress monitoring

DSS 2.10 Protocol adherence

Module II: Data Collection and Management (Total Hours: 180)

DSS 2.11 Participant screening

DSS 2.12 Data collection procedures

DSS 2.13 Intervention monitoring

DSS 2.14 Functional assessment procedures

DSS 2.15 Follow-up assessments

DSS 2.16 Outcome measure administration

DSS 2.17 Data coding

DSS 2.18 Data entry

DSS 2.19 Database management

DSS 2.20 Data validation

Module III: Statistical Analysis

Total Hours: 120

DSS 2.21 Data organization

DSS 2.22 Data cleaning

DSS 2.23 Statistical software applications

DSS 2.24 Descriptive statistics

DSS 2.25 Inferential statistics

DSS 2.26 Hypothesis testing

DSS 2.27 Interpretation of findings

DSS 2.28 Graphical presentation

DSS 2.29 Tabular presentation

DSS 2.30 Statistical reporting

Module IV: Dissertation Writing (Total Hours: 180)

DSS 2.31 Introduction chapter

DSS 2.32 Review of literature

DSS 2.33 Methodology chapter

DSS 2.34 Results chapter

DSS 2.35 Discussion chapter

DSS 2.36 Conclusion and recommendations

DSS 2.37 Reference management

DSS 2.38 Formatting and editing

DSS 2.39 Dissertation compilation

DSS 2.40 Final manuscript preparation

Module V: Research Dissemination and Defense (Total Hours: 60)

DSS 2.41 Abstract preparation

DSS 2.42 Scientific poster preparation

DSS 2.43 Oral presentation skills

DSS 2.44 Manuscript preparation

DSS 2.45 Journal submission process

DSS 2.46 Dissertation presentation

DSS 2.47 Viva voce preparation

DSS 2.48 Dissertation defense

DSS 2.49 Incorporation of corrections

DSS 2.50 Final submission

COURSE CODE: M.P.T(C)-205

COURSE TITLE: Skills Acquisition & Refinement (SAR-II)-Practical

Credits: 8

Total Hours: 240

SAR-II 1.0 Subject Description

Skills Acquisition and Refinement (SAR-II) is an advanced competency-based practical course focusing on specialized cardiopulmonary physiotherapy skills, advanced rehabilitation techniques, critical care management, exercise prescription, technology-assisted rehabilitation, and evidence-based clinical decision-making. The course aims to develop expertise required for independent management of complex cardiopulmonary conditions.

SAR-II 1.0.1 Course Outcomes

At the completion of the course, the student will be able to:

1. Demonstrate advanced cardiopulmonary rehabilitation skills. (P)
2. Apply contemporary rehabilitation approaches. (P)
3. Design individualized rehabilitation programmes for complex cardiopulmonary disorders. (P)
4. Integrate technology-assisted rehabilitation into practice. (P)
5. Utilize advanced outcome measures for rehabilitation planning. (P)
6. Demonstrate advanced exercise prescription skills. (P)
7. Apply evidence-based practice in cardiopulmonary physiotherapy. (P)
8. Independently manage complex cardiopulmonary cases. (P)

Students must be engaged in

- Teaching Assignment, Seminars, journal club & Case Studies etc

COURSE CODE: M.P.T(C)-206

COURSE TITLE: Clinical Training (CT-II)

Credits: 20

Total Hours: 600

CT-II 1.0 Subject Description

Clinical Training-II provides advanced supervised clinical exposure in specialized cardiopulmonary rehabilitation settings. Students are expected to independently assess, plan, implement, and evaluate comprehensive rehabilitation programmes for patients with complex cardiovascular, pulmonary, and critical care conditions while demonstrating professional competency, leadership, and evidence-based clinical practice.

Clinical Training Areas

Advanced Cardiac Rehabilitation Unit – 180 Hours

CT 2.1 Heart failure rehabilitation

CT 2.2 Coronary artery disease rehabilitation

CT 2.3 Post-cardiac surgery rehabilitation

CT 2.4 Cardiac transplantation rehabilitation

CT 2.5 Advanced exercise prescription

Advanced Pulmonary Rehabilitation Unit – 180 Hours

CT 2.6 COPD rehabilitation

CT 2.7 Interstitial lung disease rehabilitation

CT 2.8 Pulmonary fibrosis rehabilitation

CT 2.9 Long COVID rehabilitation

CT 2.10 Advanced pulmonary rehabilitation planning

Critical Care Physiotherapy Unit – 120 Hours

CT 2.11 ICU rehabilitation

CT 2.12 Mechanical ventilation management

CT 2.13 Early mobilization

CT 2.14 Airway management

CT 2.15 Critical care outcome monitoring

Community and Home Rehabilitation Services – 60 Hours

CT 2.16 Home rehabilitation programmes

CT 2.17 Community rehabilitation

CT 2.18 Lifestyle modification programmes

CT 2.19 Tele-rehabilitation services

Academic and Professional Activities – 60 Hours

CT 2.20 Case presentations

CT 2.21 Journal clubs

CT 2.22 Clinical conferences

CT 2.23 Clinical audits

CT 2.24 Research discussions

CT 2.25 Professional development activities

Clinical Requirements

1. Minimum 75 complete cardiopulmonary case records.
2. Minimum 40 detailed case presentations.
3. Maintenance of clinical logbook.
4. Participation in multidisciplinary rehabilitation meetings.
5. Completion of outcome assessment portfolio.
6. Documentation of rehabilitation outcomes.