Syllabus for Assistant Professor (Physiotherapy)

MASTER OF PHYSIOTHERAPY (Specialty) M.P.T (Specialty)

PAPER-I

A) PRINCIPLES OF PHYSIOTHERAPY PRACTICE

1. Development of Physiotherapy Profession
2. Ethical issues in practice of physiotherapy-
3. Rules and regulations governing physiotherapy practice-
4. Documentation of rehabilitation assessment and management using International Classification of Functioning Disability and Health (ICF)
5. Standardized tests and scales used in various types of cases for assessment and interpretation in Physiotherapy practice.
6. Hospital as an organization - Functions and types of hospitals
7. Roles of Physical therapist, Physical therapy Director, Physiotherapy Supervisor, Physiotherapy assistant, Physiotherapy aide, Home health aide, Volunteer.
8. Rules of Professional Conduct.
9. Legal responsibility
10. Code of ethics
11. Functions of Physiotherapy associations
12. Role of the International Health Agencies
13. Standards of practice for physiotherapists
14. Liability and obligations in the case of medical legal action
15. Law of disability & discrimination
16. Confidentially of the Patient's status
17. Consumer protection law, health law, MCI, DCP

B) Manual Medicine & Applied Physiotherapy

1. Physiological and accessory movements, Biophysics of contractile and non-contractile tissues, Response to mechanical loading.

2. Principles of Articular Neurophysiology and its Clinical Applications.

3. History of Manual Therapy. Overview of various Manual Therapy approaches for all the skeletal joints.

4. Clinical reasoning and differential clinical diagnosis based on various approaches such as Maitland, Kaltenborne, Cyriax, Mulligan, Meckenzie etc.

5. Principles of different soft tissue mobilizations like Myofascial Techniques, Neural Tissue Mobilization, Muscle Energy Technique etc.

6. Practical application of various Manual Therapy modes given in no. 4 & 5 above.

7. Therapeutic Exercise as an adjunct to manual therapy.

C) RESEARCH METHODOLOGY & BIOSTATISTICS

SECTION I

RESEARCH METHODOLOGY

1. Research in Physiotherapy
2. Research Fundamentals
3. Writing a Research Proposal, Critiquing a research article
4. Research Design
5. Research Ethics

SECTION II

BIOSTATISTICS

1. Biostatistics
2. Data Collection methods
3. Measures of central value
4. Measures of Dispersion
5. Normal Distribution Curve
6. Correlation analysis
7. Regression analysis
8. Sampling
9. Probability
10. Hypothesis Testing
11. Level of significance
12. Parametric & non parametric test

PAPER II

A) CLINICAL BIOMECHANICS & BIOENGINEERING

1. Kinematics
2. Kinetics
3. Mechanical energy, work and power
4. Muscle Mechanics
5. Ligament & Tendon mechanics
6. Joint mechanics & Pathomechanics
7. Gait
8. Biomechanics of Thoracic cage, Biomechanics of Respiration & Circulation.

BIOENGINEERING:

1. Analysis of functional hazards related to Environment / Industry and Clinical reasoning for the appropriate Ergonomic advice.
2. Applied mechanics in the application of Prostheses, Orthoses & Mobility aids.
3. Requirement and Prescription criteria in Orthotic, Prosthetic application
4. Check out procedures in Prosthesis & Orthoses

EXERCISE PHYSIOLOGY

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. Special aids to performance and conditioning.

6. Body consumption, nutrition and caloric balance.

7. Considerations of age and sex in exercise and training.

8. Exercise prescription for health and fitness with special emphasis to cardiovascular disease, Obesity and Diabetes.

9. Fatigue assessment and scientific organization of work-rest regimes to control fatigue.

ELECTROPHYSIOLOGY

1. Electrophysiological assessment devices.

2. Neuromuscular electrical stimulation.

3. Anatomy and physiology of peripheral nerve, muscle and neuromuscular junction.

4. Electrical properties of muscle and nerve.

5. Muscles plasticity in response to electrical stimulation.

6. Electrical stimulation and its effects on various systems.

7. Clinical Electro physiological testing.

PHYSICAL & FUNCTIONAL DIAGNOSIS

1. Movement dysfunction.

2. Principles of pathological investigations and imaging

3. Developmental screening, motor learning

4. Anthropometric measurements.

5. Physical fitness assessment

6. Evaluation Methods used in Musculoskeletal, Neurological and Cardiopulmonary disorders.

7. EMG and Biofeedback.

8. Biophysical measurements

9. Evaluation of aging.

11. Exercise ECG testing and monitoring.

12. Pulmonary function tests and Spirometry.

13. Physical disability evaluation and disability diagnosis.

14. Gait analysis and diagnosis.

EDUCATION TECHNOLOGY –

1. Educational Philosophy

2. Concept of Teaching and Learning

3. Curriculum

4. Method and techniques of teaching

5. Planning for teaching

6. Teaching aids
7. Measurement and Evaluation, Nature of educational measurement
8. Guidance and counseling
9. Awareness Programme

ADVANCED PHYSIOTHERAPEUTICS

1. Pain
2. Maternal and child care in general physiotherapy.
3. Theories of motor control and motor learning.
4. Theories of aging.
5. Cardiopulmonary medications and their effect on activity performance.
6. Exercise planning and prescription.
7. Use of Exercise therapy techniques and application on various types of cases.
8. Application of electrotherapy techniques on patients, monitoring of dosages and winding up procedure.
9. Ergonomic aspects of exercise on oxygen, energy consumption MET value of various exercises and activity.
10. Effect of aerobic, anaerobic as well as Isometric and Isokinetic exercises on cardiac function.
11. Physiotherapy in psychiatric conditions.
12. Massage, Mobilization and Manipulation
13. Manual therapy – different schools of thought
14. Principles of Neurological approaches.
15. Facilitation and inhibition techniques.
16. General Guidelines to be followed in Cardiac Rehabilitation, Pulmonary Rehabilitation, Burns Rehabilitation and Cancer Rehabilitation Protocol.
17. CPR, monitoring systems and defibrillators and artificial respirators.
18. Physiotherapy in common conditions of skin.
19. Physiotherapy following Plastic Surgery.
20. Physiotherapy Following Obstetric and Gynecological Disorders.
21. Concept of Yogic Practices

ELECTIVE SUBJECT

PHYSIOTHERAPY IN ORTHOPEDIC CONDITIONS

1. Rationale of Laboratory investigations along with differential diagnoses.
2. Clinical Symptomatology, Pathophysiology and Patho-mechanics of musculoskeletal conditions

3. Physiotherapy management following fractures, dislocations and their complications, Amputations, cumulative trauma disorders and Burns.
4. Physiotherapy management in degenerative disorders and allied conditions.
5. Physiotherapy in post operative management of metabolic, hormonal, neoplastic and infective conditions of bones and joints.
6. Physiotherapy following arthroplasty, implants and soft tissue repairs.
7. Pre & post operative physiotherapy in tendon transfer. Electrical stimulation and biofeedback procedures.
8. Kinetic and kinematics analysis for various functional activities.
9. Functional assessment (Hand function, Gait, Posture A.D.L; occupational work).
10. Hand Rehabilitation.
11. Assessment of locomotor impairments, disabilities and disability evaluation.
12. Physiotherapy management of locomotor disorder
13. Neurological complications of locomotor disorders.
14. Analysis and classification of sports and sports specific injuries and its management.
15. Management of sport injuries, sports fitness
16. Principles of Injury Prevention
17. Medico legal issues in sports, Sports Psychology, Sports Nutrition and Sports pharmacology.
18. Rehabilitation of pediatric musculoskeletal disorders.
19. Orthopedic implants
20. External aids, appliances, adaptive self-help devices
21. Manual therapy: soft tissue manipulations and mobilization, neural mobilization,
22. Pilates-school of thought, Chiropractic school of thought, Osteopathic school of thought
23. Myofascial Release technique and Muscle Energy technique
24. Joint manipulation – peripheral joints and vertebral joints.
25. Neuromuscular Taping Techniques
26. Electro diagnosis
27. Community based rehabilitation in musculoskeletal disorders.
28. Recent Advances in Musculoskeletal Disorders and Sports Physiotherapy.

PHYSIOTHERAPY IN NEUROLOGICAL AND PSYCHOSOMATIC DISORDERS

1. Anatomy and Physiology of Nervous System.
2. Neurophysiology of balance, coordination and locomotion.
3. Clinical symptomatology and Pathophysiology of the neurological disorders
4. Principles of clinical neuro diagnosis and investigation.
5. Various Evaluation Scales and Assessment methods used in neurological rehabilitation.
6. Electro diagnosis
7. Evaluation of A.N.S dysfunction

8. Neuro-psychological functions. Perception testing and training.
9. Theories of motor control and theories of motor learning
10. Treatment approaches in neurological rehabilitation
11. Musculoskeletal treatment concept applied to neurology
12. Pathophysiology and Management of abnormal tone
13. Medical and Physiotherapy management following Cerebrovascular accidents.
14. Traumatic Brain Injury
15. Traumatic spinal cord injuries.
16. Physical therapy management of demyelinating, inflammatory, infectious, degenerative and metabolic diseases of the nervous system.
17. Physical therapy management of Motor neuron diseases, neuromuscular junction disorders, Brain tumor, and Neurocutaneous disorders
18. Diseases of spinal cord, peripheral nerves and cranial nerves
19. Physiotherapy management for neuromuscular disorders.
20. Paediatric neurology
21. Cognitive disorders and its rehabilitation.
22. Oromotor rehabilitation.
23. Vestibular disorders and its rehabilitation.
24. Bladder and Bowel dysfunction and its rehabilitation.
25. Assessment and management of various neurological gaits.
26. Rehabilitation following disorders of Special Senses, Speech.
27. Associated functional disturbances of higher functions and their testing and training.
28. Application of Functional electrical stimulation and Bio-feedback in neurological rehabilitation.
29. Learning skills, A.D.L and functional activities.
30. Aids and appliances in neurological disorders. Prescriptions, testing and training.
31. Basic knowledge of drugs used for neurological conditions.
32. Assessment of fitness and exercise prescription for special neurological population – Stroke, Paraplegia, TBI, Multiple Sclerosis, MND, Parkinsonism, & Ataxia.
33. Community based rehabilitation for neurological dysfunction
34. Recent Advances in Neurological Rehabilitation
35. Advanced neuro-therapeutic skills for management.

PHYSIOTHERAPY IN CARDIO-RESPIRATORY DISORDER

1. Anatomy and physiology of cardio-vascular and respiratory systems.
2. Biomechanics of respiration.
3. Epidemiology, Symptomatology and pathophysiology of the cardio respiratory disorders.
4. Rationale of laboratory investigations and differential diagnosis,
5. Evaluation of respiratory dysfunctions
6. Evaluation cardiac dysfunction

7. Evaluation of peripheral vascular disorders
8. Risk factors and preventive measures in cardio respiratory conditions
9. Cardio-respiratory emergencies and management.
10. Intensive care unit
11. Oxygen therapy.
12. 14. Outcome measures to assess effectiveness of treatment.
13. 15. Cardio-pulmonary resuscitation.
14. 16. Respiratory physiotherapy techniques
15. Physiotherapy management for common conditions in the ICU
16. Poisoning, Drug overdose, and Drowning.
17. Physiotherapy management following general Medical & Surgical conditions
18. Physiotherapy management of peripheral vascular disorders
19. Exercise testing, planning and prescription
20. Respiratory Pharmacology
21. Physiotherapy management in Obstructive and Restrictive lung disorders
22. Pulmonary Rehabilitation
23. Physiotherapy management following congenital and acquired heart diseases
24. Cardiac rehabilitation – Conservative and post-operative management.
25. Physiotherapy modalities used for wound healing
26. Exercise Prescription for health promotion and fitness for special populations- DM, Obesity, IHD, COPD, HTN
27. C.B.R in Cardio-vascular and respiratory conditions.
28. Recent advances in Cardio respiratory physiotherapy

M.P.Th. (Community Physiotherapy)

PAPER I : Allied Physiotherapeutics- (Part I)

1. Epidemiology
2. Manual Medicine and Therapeutic Exercise
   - Principles of mobilization
   - Soft tissue mobilization
   - Types of techniques
   - Rationale of choice for therapeutic use
3. Clinical Biomechanics and Bioengineering
4. Fitness and Health Promotion

- Definition of Health, Fitness and Quality of Life
- Nutrition and fitness in normal of various ages, women, children, elderly and sports
- Application of Diet and fitness in case of PWD (Person with disability) due to disease
- Application of principles of exercise physiology in management of movement dysfunction in illness or disease in special populations e.g. the central neural v/s peripheral limitations to exercise or occupation-related performance in individuals with disease and dysfunction.

5. Research Methodology and Biostatistics

Basic concept of research

- Definition and scope – principles of measurement
- Research design – reliability
- Research problems – validity
- Sampling techniques
- Data collection

Types of studies

Case Control – prospective – survey – cross-sectional – retrospective – single case design – cohort – longitudinal – descriptive research – correlational – clinical – experimental design – sequential clinical design

Statistics

- Types of data
- Measures of average, median, frequency and dispersion
- Correlation and regression
- Test of significance
- Parametric and non-parametric test
- Gaussian Curve
- Standard deviation
- Data management

Scientific Communication

- Writing a research proposal, reporting the results and evaluation Introduction to computer-data communication, search engines, websites, MeSH
- Literature search
- Evaluating evidence
- Critical appraisal of article, systematic reviews and meta-analysis

PAPER II : Appied Physiotherapeutics- (Part II)

1) Applied Neuro-anatomy and neurophysiology

2)Principles and rationale of Neuro-therapeutic skills of management, neurodevelopmental and neurophysiological approaches

3) Growth, Development and Aging

4) Basis and Biomechanics of postural movement patterns, analysis of gait motion

5) Advanced Electrotherapeutics

6) Eectrodiagnosis and Electrophysiological investigation

7) Assessment scales for impairment / disability / handicap and Quality of Life (Generic and specific)

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

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

10) Administration -

- Ethical issues & legal aspects in practice of physiotherapy- Clinical, Research and Academics. Administration, legislation, Rules and regulations governing physiotherapy practice- National & International.
- Physiotherapy Management in Hospital, community & Industry.
- Principles of management, planning, organization, 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 and Health (ICF) format.

PAPER III: Advances in Community Physiotherapy (Part I)

1) Health care in the Community – Principles & delivery systems

2) Principles and practice of fitness training for health promotion in community

3) Clinical decision-making skill in assessment & management of dysfunction related to Community health.

4) Geriatric health, fitness, & rehabilitation

5) Ergonomic considerations, health, fitness, assessment, prevention and management of Injuries with special reference to Home, Industry and workplace

6) Occupational Health and related disorders

7) Man-machine interaction

8) Applied anatomy, physiology and biomechanics related to women's health, maternal & child health

9) Early detection of "at risk" babies and early intervention in the community

10) Yoga

Paper IV: Advances in Community Physiotherapy (Part II)

1) Community Dynamics
2) Principles and practice of Rehabilitation and outreach services including domiciliary services
3) Advances in disaster management
4) Principles and practice of Community Based Rehabilitation
5) Physiotherapist as a CBR manager & Master trainer for community health programmes
6) Disability Assessment for quantification of extent of disability
7) Quality of life and its measures
8) Survey
9) Evidence Based Practice in Community Health.
10) Information, Education and Communication (IEC) for Community Awareness
11) Access issues and appropriate interventions
12) Appropriate Technology, Assistive devices used for Stability & Mobility to enhance function
13) National & International Legislations for PWD and Regulatory Agencies

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