Maharashtra University of Health Sciences, Nashik.

Curriculum

For

Post-Graduate Degree Course

in

MD (Physical Medicine and Rehabilitation)

Passed by Academic Council, Vide Resolution No. 381/2010 dated 19/05/2010

Contents

1. Introduction

Physical Medicine and Rehabilitation, also called Physiatry, is an independent clinical branch of medical science emphasizing the prevention, diagnosis and treatment of disorders, particularly those of the neuro-musculo-skeletal, cardiovascular, and pulmonary systems, that may produce temporary or permanent activity limitation, disability, or participation restriction and myriad handicaps in society.

The specialty has a vast scope since it provides integrated comprehensive care in the diagnosis, treatment and rehabilitation management of neurological, musculo-skeletal, cardio-pulmonary disabilities from acquired or congenital conditions presenting at any stage in life from pediatric to geriatric phases. This specialty focuses on the restoration of function of people to the highest possible level, through a multi-disciplinary team approach, by a set of well planned interventions directed towards achievement of functional goals preset by the clinical investigation and evaluation by the team. This necessitates the utilization of diagnostic and therapeutic armamentarium including education and counseling, prescription of medicines, therapeutic exercises, equipments (mobility aids, orthotic-prosthetic appliances, assistive technology, physical agents and modalities, etc.), injections, surgical interventions for correction of deformities etc. in an institution-based (out-door and in-door/wards/ICUs/Nursing Homes/Old-Age Homes etc.), out-reach (Camps, Mobile Units), or community-based settings (CBR), based on the evaluation of the individual under consideration. It is also involved in disability prevention, evaluation and certification, besides development, monitoring and supervision of a rehabilitation plan and conducting research and development.

2. Program Objectives

The objective of MD PMR programme is to equip the medical graduate with adequate knowledge and skills to adopt the principles and practice of Physical Medicine and Rehabilitation (PMR) so as to provide Rehabilitation Medicine interventions of high standard during the phase of acute care, in the setting of hospitals even at district and sub-district levels and in the chronic stage to deal with individual impairments, disability and functional limitation at the community level.

Practice of PMR, a specialty known for its uniqueness for providing such interventions to return the individual patients back into society with optimum functions. In other words, the interventions go beyond the medical care premises. Such doctors trained will be specialist doctors for the ‘disabled’ or persons with disability (PWD), understanding their problems in totality. Also, the trained Physiatrist will have to exhibit exemplary leadership skills in pooling and harnessing the skills of other rehabilitation professionals namely, physiotherapists, occupational therapists, prosthetic and orthotic technicians, medico-social workers, rehabilitation nurses, audiologists and speech language pathologists, etc. so as to provide benefits in synergistic manner involving the patients in the decision making process.

The necessity of enhancing the number of such specialists is becoming more considering the epidemiological and demographic transitions and its antecedent high incidence and prevalence of chronic disorders and disabilities in the near future. Individual so afflicted has to become capable to live in the society with disability and also every society has to make provisions for the person with disability.

He/she should be able to identify, investigate, diagnose, confirm, evaluate, prognosticate, certify, treat, and rehabilitate if and when a person is suffering from a temporary or permanent limitation in function, disability, or restriction in participation as well as plan, prescribe, monitor, supervise and lead the execution of rehabilitation plan through an integrated, multi-disciplinary team involving

various medical, nursing, paramedical or allied health professionals such as therapists (occupational therapists, physiotherapists etc.), counselors, technicians etc. He/she should be able to interpret reports and plan research, teach medical and paramedical personnel, educate the person with disability, family, rehab team members and community, and be well versed with recent advances, administrative, financial, ethical and legal aspects related to the specialty.

3. Course Description

MD Physical Medicine and Rehabilitation (PMR)

Duration: 3 years

Nature of work: Full time medical programme. It also involves the candidates to be available for call duties and/or day or night duties as needed.

Eligibility: MBBS degree from recognized medical college included in Schedule as per IMC Act, 1956 and as per guidelines issued by MUHS, Nashik.

Medium of instruction and examination: English

4. Syllabus

1. Basic Sciences as Applicable to P M R

    - Basic sciences as applied to Physical Medicine and Rehabilitation with emphasis on functional and applied anatomy of Musculo-skeletal system including Kinesiology and Biomechanics, Nervous system, Cardio-vascular system, Respiratory system and Uro-genital system.
    - Physiology of exercise, and other basics of physiology as applied to PMR
    - Basics of Biochemical aspects of Calcium and Vit. D metabolism, osteoporosis, diabetes mellitus etc.,
    - Basics of electricity, heating properties of tissues (electrothermy), electromagnetic waves spectrum used in pain management, neuromuscular stimulation for diagnosis and management, etc.
    - Basic Pathological processes with natural history of diseases and disabilities, healing etc.
    - Knowledge of Pharmacology as applied to the conditions encountered in Physical Medicine and Rehabilitation.

2. History and Scope of PMR, Definitions and Terminology
    - Understanding PMR, Philosophy
    - Definition
    - Team Approach
    - Set up
    - Types
    - Process
    - Strategies
    - Global Status of PMR as A Specialty and its Subspecialties
    - Organization and administration of PMR services
    - Scope of PMR and Future in India
3. Understanding Disability

- Definition, Nomenclature/Terminology
- Magnitude of disability – Global vs Indian
- Statistics – Census and NSSO
- Epidemiology / Natural history of chronic disability and disorders
- Disability Prevention – levels and examples
- ICIDH and ICF classifications
- Socio-economic Impact
- Causes of Disability / chronic disorders
- Changing Disability profiles

4. Community Based Disability Prevention and Rehabilitation
    - Levels of disability prevention
    - Setting Up CBR Program
    - Activities, planning, implementation, evaluation and monitoring
    - WHO and UN Initiatives, Goals; Rights of persons with disability (PWD)
    - Relation of environmental factors and disability
    - Inter relationship between Primary Health Centre (PHC) and Community Based Rehabilitation (CBR)

Chronically ill patients or patients with chronic disorders with functional impairments face innumerable barriers at every level of their life and there are several guidelines to remove such barriers and to provide access in equitable manner to education, vocation, health care and the candidates will be sensitized and in their clinical practice will be in a position to address these issues which generally remain unattended.

5. Legislations and Policies related to disability
    - Govt. of India Initiatives
    - International Policies; Initiatives by WHO, UN
6. Disability Assessment and Certification
7. Schemes and Benefits for persons with disabilities (PWDs)

- Basic idea of major non-governmental organizations (NGOs) working for PWDs at national and international levels

8. Clinical Evaluation of Patients in P.M.R. and Documentation
    - History Taking in PMR
    - Clinical Examination

        General Physical examination
        Manual muscle testing (MMT) / muscle charting
        Joint range of motion (ROM) measurement (goniometry)
        Clinical assessment of spasticity
        Complete neurological evaluation including sensory examination, vibration testing, monofilament testing, etc.
        Complete musculoskeletal assessment for disability / functional limitation evaluation and to report extent of restriction of participation.
        Clinical examination of individual systems – cardiovascular, pulmonary, uro-genital, etc.
        Any other relevant clinical examination as applied to PMR
9. Quality and Outcome Measures

Familiarizing the candidates with the use of tested instruments / scales / scores for functional assessment and quality of life (QOL), etc. E.g., FIM, Barthel Index, etc.

10. Diagnostic Tests

I. Utility and Interpretation of

- Routine Laboratory Tests
- Noninvasive Imaging studies
- Invasive imaging studies
- Pulmonary function tests

II. Utility, Performance and Interpretation of

- Musculo-skeletal and work-related tests
- Exercise tolerance testing
- Functional assessment instruments
- Psychologic tests

11. Therapeutic Exercises (including PNF & NDT)
    - Principles
    - Types
    - Indications
    - Contraindications
    - Precautions
    - Prescription and evaluation of Program
12. Electro Therapy and Physical Modalities

(All physical agents like heat, cold, electricity, etc.)

- Principles
- Types
- Indications
- Contraindications
- Precautions
- Prescription and evaluation of Program
- Manipulation, traction and Massage

13. Electrodiagnostic Medicine – EMG/NCV
14. Pharmacotherapy in PMR
15. Gait and its Deviations, Gait Analysis
16. Orthotics
    - Principles of orthotic prescription, biomechanics
    - Types of orthoses, specific joints, for upper and lower limbs, spine,
    - Materials used in orthotics
    - Indications – condition-specific
    - Precautions
    - Prescription
    - Check-out / evaluation

17. Prosthetics
    - Principles of prosthetic prescription, biomechanics
    - Types of prostheses for upper and lower limbs
    - Materials used in prosthetics, components, joints
    - Level specific prosthetic prescriptions and indications for different types of prosthetic components
    - Precautions in prosthetic use
    - Check-out / evaluation
    - Prosthetic gait training, deviations
    - Advances in prosthetics
18. Wheel chairs, Seating Systems and Assistive Devices
    - Prescription, check-out of wheel chairs and seating systems
    - Prescription of assistive aids, evaluation
    - Crutch gaits
    - Assistive Technology related to PMR
19. Principles and scope of Occupational Therapy
    - Assessment and Training in Activities of Daily Living (ADL)
    - Prescription of self-help devices
20. Vocational and Psycho Social evaluation and Rehabilitation
21. Rehabilitation of Patients with Amputations
    - General Considerations
    - Pre Amputation Counseling and Therapy
    - Surgical Techniques, Level of amputations
    - Immediate Post Operative Phase
        i. Residual limb management, rigid dressings, exercises, temporary / pylon prosthetic fitment
    - Definitive prosthetic considerations
        ii. Prosthetic prescription
        iii. Testing
        iv. Trial
        v. Training
    - Complications

- Upper and Lower Limbs – specific amputation levels and their holistic rehabilitation
- Congenital Limb Deficiencies
- Paediatric Amputees
- Special problems of multiple limb amputees

22. Spasticity Management
    - Pathophysiology
    - Medical Management
    - Corrective and Surgical Management
    - Prescription of orthoses/devices
23. Holistic Rehabilitation of Cerebral Palsy
    - Normal Growth and Development
    - Neonatal Reflexes
    - Definition, Pathophysiology
    - Rehabilitation Management including Neuro-Developmental Therapies (NDT)
    - Special devices, educational and recreational counseling, parent/caretaker counseling
    - Surgical Options available
    - Follow Up
    - Adults with CP
24. Pediatric Rehabilitation including children with Autism Spectrum Disorders, learning disabilities and multiple disabilities, etc.
25. Rehabilitation interventions in patients suffering from endocrinologic / metabolic disorders / metabolic syndromes, causing impairment, functional limitation or participation restriction
    - Hypothyroidism, Diabetes mellitus, Rickets, Osteomalacia, Osteoporosis, etc.
26. Rehabilitation of Patients with Neck and Back Pain
    - Review of Anatomy and Biomechanics, Posture
    - Approach to Patients – clinical evaluation, assessment of disability, impairment and functional restriction

- Differential Diagnoses
- Rehabilitation: General Principles, Disease-specific
- Concepts with Back Schools
- Failed back syndrome

27. Rehabilitation of Patients with Arthritic & Rheumatological conditions
    - Review of Classifications
    - Clinical evaluation, assessment of disability, impairment and functional limitation
    - Impact of disorder on person, family members, vocational, educational, recreational aspects and on society
    - Diagnosis
    - Comprehensive management including monitoring of disease control
    - Disease-specific Rehabilitation
        i. Osteoarthrosis (OA)
        ii. Rheumatoid arthritis (RA)
        iii. Ankylosing spondylitis (AS)
        iv. Psoriatic arthropathy
        v. Crystal arthropathies (gout, pseudogout)
        vi. Other inflammatoty Arthritides (Sjogren's, Reiter's , Behcet's, etc.)
        vii. Other Connective tissue disorders
        viii. Haemophilic arthropathy
        ix. Other autoimmune disorders impairing functional activities and causing participation restriction
28. Rehabilitation of Patients with Chronic Pain (Pain Medicine)
    - Pathophysiology, Comprehensive Management and Rehabilitation of chronic painful conditions including Neuropathic and psychosomatic pain
29. Rehabilitation of Cumulative Trauma Disorders including common occupational disorders
    - Study of job environment and Ergonomic considerations

- Disease-specific Management
- Work studies, Work simulation and work hardening programs for industrial workers for increasing the output and reducing absenteeism

30. Other Musculoskeletal Conditions of Upper and Lower Limbs including sequelae of infections, etc.
31. Rehabilitation of Patients with Spinal Cord Injury (SCI)
    - Introductions, Epidemiology and need; Models of Care
    - Anatomy, Mechanics and Syndromes of Traumatic Injury
    - Non-Traumatic SCI; Outcomes
    - Acute Phase Management: Conservative vs Surgical
    - Comprehensive Rehabilitation
    - Secondary Conditions, Complications and their management
    - Chronic Phase
    - Testing, suitability, trial and training for suitable wheelchairs and other ambulatory devices / orthoses for functional / ADL independence
32. Stroke Rehabilitation
    - Introduction, Pathophysiology and Risk Factors
    - Clinical Stroke Syndromes
    - Comprehensive Rehabilitation in the acute, sub-acute and chronic phases
    - Complications and Special Problems
33. Rehabilitation of Patients with Traumatic Brain Injury
    - Epidemiology, Prevention, Pathophysiology, Prognosis
    - Comprehensive Rehabilitation in the acute, sub-acute and chronic phases
    - Complications and Special Problems
34. Rehabilitation of Patients with other Neurologic Disorders
    - Rehabilitation of Patients with Peripheral Neuropathies, nerve injuries
    - Rehabilitation of Patients with Hansen’s Disease

i. Special emphasis on prevention of deformities
ii. Protective footwear
iii. Foot and hand care
iv. Interaction with prominent NGOs in the field of leprosy
v. Rehabilitation measures and National programs

- Rehabilitation of plexopathies
- Motor Neuron Diseases (MND)
- Rehabilitation of Patients with Poliomyelitis
    i. Aetiopathogenesis, Prevention, Acute Flaccid Paralysis (AFP) Surveillance
    ii. Post Polio Residual Paralysis (PPRP) (conservative and surgical management of deformities around each joint)
    iii. Upper and Lower Limbs, Trunk
    iv. Adults and elderly with poliomyelitis – Delayed consequences, post polio syndrome
- Rehabilitation of Patients with Diseases of Muscles & Myoneural Junction

    Muscular dystrophies, Myopathies, Myasthenia gravis, polymyositis, dermatomyositis, etc.
- Rehabilitation of Patients with Movement Disorders and other neurodegenerative disorders
- Rehabilitation of patients with ataxia
- Multiple Sclerosis
- Other Infective and Inflammatory disorders causing neurologic impairments necessitating rehabilitation

35. Rehabilitation of Patients with Neural Tube Defects
    - Meningomyeloceole and other spinal dysraphisms
    - Clinical Presentations
    - Rehabilitation
    - Long Term Complications
    - Rehabilitation management of Hydrocephalus
36. Neurogenic Bladder and Bowel Dysfunction & Management

37. Prevention and Management of Chronic Wounds
    - Pressure Ulcer Management
    - Diabetic Foot Management
38. Speech and Hearing-Assessment and Rehabilitation
    - Basics of audiometric studies and their interpretation
    - Types of deafness / hearing loss
    - Basic knowledge of hearing aids
    - Types of speech disorders
    - Communication skills interventions
    - Basics of sign language
39. Rehabilitation of Swallowing Disorders
40. Visual Rehabilitation
    - Common causes of blindness in India and their prevention
    - Assistive devices / technology for the visually impaired
    - Basic knowledge of Braille system
41. Assessment, counseling and interventions for Sexual Dysfunctions in persons with disabilities
42. Rehabilitation of patients with HIV/AIDS
43. Principles of rehabilitation of persons with mental retardation and mental illness
44. Sports Medicine
    - Principles of sports training
    - Common sports injuries around shoulder, elbow, wrist, hip, knee, ankle and foot
    - General principles of management in acute and chronic stage
45. Burn Rehabilitation
46. Pulmonary Rehabilitation
    - General principles
    - Conditions like COPD, bronchiectasis, etc.
47. Cardiac Rehabilitation
    - General principles
    - Rehabilitation of Common conditions

48. Vestibular Rehabilitation
49. Rehabilitation of patients with Peripheral Vascular Diseases
50. Geriatric Rehabilitation
51. Cancer Rehabilitation
52. Rehabilitation of Joint Replacements
53. Rehabilitation of Patients with Congenital Deformities of upper and lower extremities like radial clubhand, CTEV, CDH, AGMC etc. and Spinal Deformities (Orthotic Management)
54. Diet, Nutrition, and Obesity
    - Management of obesity and its complications
    - Issues related to obesity and disability
55. Women's Health and Rehabilitation
    - Pre- and post partum rehabilitation programs
56. Architectural Barriers, Environmental Modification
    - Identification of barriers, accessibility of persons with disabilities and barrier free environment
57. Organ Transplantation and Rehabilitation
58. Rehabilitation in ICU setting
59. Medical emergencies in PMR
    - Autonomic dysreflexia
    - Aspiration pneumonitis
    - DVT / PE,
    - Urinary retention / obstruction, etc.
60. Palliative care / long-term care of terminally ill
61. Ethics in Rehabilitation
62. Evidence Based Rehabilitation
63. Role of rehabilitation in Disaster Management
64. Quality assurance in PMR
65. Information & communication technology (ICT) and rehabilitation
66. Current Developments / Recent Advances in PMR

5. List of Skills

5.1 Clinical Procedures

1. Clinical Evaluation of Patients in P.M.R. and Documentation
    - History Taking in PMR
    - Clinical Examination

        General Physical examination
        Manual muscle testing (MMT) / muscle charting
        Joint range of motion (ROM) measurement (goniometry)
        Clinical assessment of spasticity
        Complete neurological evaluation including sensory examination, vibration testing, monofilament testing, etc.
        Complete musculoskeletal assessment for disability / functional limitation evaluation and to report extent of restriction of participation.
        Clinical examination of individual systems – cardiovascular, pulmonary, uro-genital, etc.
        Any other relevant clinical examination as applied to PMR
2. Quality and Outcome Measures

Candidates should be familiar with the use of tested instruments / scales / scores for functional assessment and quality of life (QOL), etc. E.g., FIM, Barthel Index, etc.

3. Rehabilitation Diagnosis

Candidates should be able to make a comprehensive rehabilitation diagnosis after thorough history taking, complete physical examination and ordering appropriate investigation.

4. Disability Assessment and Certification

1. Skills for prescription and assessment of effectivity of Physical Modalities

a. Heat – Superficial, Deep
b. Cold
c. Electricity
d. LASER
e. Magnetic fields, etc.

2. Skills for assessment, check-out and effectivity relating to Orthotic and Prosthetic prescriptions
    a. Prostheses – Upper and Lower Extremities
    b. Orthoses - Upper and Lower Extremities, Spinal
    c. Assistive devices
    d. Orthotic prescription for Sports Injuries
3. Biomechanical Studies (minimum of 5)
    a. Instrumented Gait Analysis
    b. Pressure Studies
    c. Dynamic Posturography (Balance Assessment)
4. Skills for manipulations and casting for prevention and correction of deformities causing disability
5. Injection Skills/Techniques
    a. For Management of Pain (mostly chronic)
        i. Intra-articular injections – in such conditions painful and functionally restricting – elbow, shoulder, wrist, knee, ankle and small joints of hands and feet
        ii. Injections for other painful conditions – chronic tendinitis, tenosynovitis, bursitis, epicondylitis, ITB syndrome, trigger finger, myofascial trigger points, tight bands, etc.
        iii. Injections for chronic entrapment neuropathies
    b. For pharmacotherapy of osteoporosis, biological for arthritic conditions, etc.
    c. For control/remedy and reduction of spasticity restricting ambulation or prehensile function
        i. Phenol blocks
        ii. Botulinum toxin injections
    d. Epidural / Caudal blocks for neuralgic type of pain

e. Neural ganglion blocks. E.g.:- stellate ganglion block for RSD

6. Nebulizaton
7. Concepts, methodology and interpretation of arthroscopy, cystoscopy, urodynamic studies, etc. in the context of sports injuries, neurogenic bladder management, spinal cord injuries, etc.

5.2 Surgical Skills

Surgical skills to the extent required for disability limitation / minimization / averting the restriction and strengthening the extremities or girdles.

An indicative list is given below

1. Pre-, Peri- and Post-operative care of individuals
2. Standard procedures for correction of deformities including tendon transfers, arising from congenital, infective and inflammatory diseases or disorders and residual sequelae of orthopaedic and / or neurologic disorders of and around
    a. Hip
    b. Knee
    c. Ankle and foot
    d. Shoulder
    e. Elbow
    f. Wrist and hand

    Such conditions – CP, PPRP, myopathies, nerve injuries, etc.

3. Surgical interventions required for residual limb preparation for appropriate prosthetic fitting
    a. Interventions will include appropriate site, refashioning, control of edema, long term prosthetic user's skin and residual limb problems, etc.
4. Imparting skills of management of leprosy – hand and feet assessment and reconstructive surgical procedures
5. Surgical skills for management of pressure sores with basic knowledge of grafts and flaps
6. Surgical skills for management of spasticity for conditions other than Cerebral Palsy mentioned in point 2.

Examples: Spinal cord injury (SCI), spinal dysraphisms, CVA or stroke, traumatic brain injury (TBI), etc.

7. Diabetic foot – rehabilitation interventions such as pressure relief, ulcer management, day-care surgical procedures etc. for the in-patient rehabilitation or for management of patients who are under the rehabilitation program at the institute.
8. Surgical skills necessary for the management of usual complications encountered in rehabilitation practice like urinary retention, ischiorectal abscess, joint effusions, stress fractures, muscle and tendon tears, etc.

6. Teaching – Learning Activities and Opportunities

1. Out-patient Management
2. In-patient Management
   Academic ward rounds
3. Case Presentations and Discussions
4. Practical Hands-on training of skills in Major and Minor Operation Theatres.
5. Participation and Contribution in various Rehabilitation Team Clinics
   Case discussions for planning and execution of rehabilitation program with inputs from all rehabilitation team members, centering the patient and caregiver in the decision making is encouraged.
6. Seminars
7. Journal Clubs
8. Disability evaluation and certification
9. Training shall also include preparation of study materials and engaging classes for medical and paramedical undergraduate students, for other rehabilitation team members, and for patients, caregivers or community groups.

7. Research

Candidates are expected to plan and conduct original research work under the supervision of the faculty as per guidelines of MUHS.

He/she should be able to recognize a research topic, state the objectives in terms of what is expected to be achieved in the end, plan a rational approach with full awareness of the statistical validity, spell out the methodology and carry out most of the technical procedures required for the study, accurately and objectively record on systematic lines the results and observations made, analyse the data using appropriate statistical approach, interpret the observations in the light of existing knowledge and highlight in what ways the study has advanced existing knowledge on the subject and what remains to be done, draw conclusions which should be reached by logical deduction and he should be able to assess evidence both as to its reliability and its relevance, write a thesis in accordance with the prescribed instructions, and be familiar with the ethical aspects of research etc.

Date of submission of thesis synopsis and final thesis are intimated by the university from time to time.

Submission and approval of final thesis 6 months prior to final examination is a prerequisite for appearing in the MD examination as per MUHS guidelines.

8. Scheme of Examination

A. Theory:

Paper I: Basic Sciences and Basic Concepts as applied to Physical Medicine and Rehabilitation

Paper II: Principles and Practice of Physical Medicine; and Rehabilitation Management of Musculoskeletal Conditions

Paper III: Principles and Practice of Rehabilitation Management of Neurological, Cardio-pulmonary and other Conditions

Paper IV: Legislation, Recent Advances as applied to Physical Medicine and Rehabilitation etc.

There may be some overlap of topics between the papers.

Each theory paper may contain two Long Questions of 30 marks each and four Short Notes of 10 marks each.

B. Practicals:

A total of four examiners (two external examiners and two internal examiners) from the specialty of Physical Medicine and Rehabilitation and involved in teaching-training at Post-Graduate level in the respective discipline.

Long Case – One

Short Cases – Three

Viva-Voce involving

- X-Ray/CT Scan/MRI /Bone Scan Films
- Rehabilitation Surgery Instruments
- Pathology Specimens
- Physical Medicine Instruments/Equipments/Modalities
- Orthotic-Prosthetic Appliances

The emphasis whould be laid on the Objective Structured Clinical Examination (OSCE). All the four examiners conducting practical, clinical and viva voce shall have “equal assessment marks” at their disposal for evaluation of the examinees.

System of marking/evaluation and weightage given to each area shall be as follows: -

Long Case, One Case, Maximum Marks: 100.

	Item	Maximum Marks
i)	Written Work (including history, examination, summary & provisional diagnosis)	10
ii)	Presentation Style	10
iii)	Demonstration	
	Elicitation of signs or maneuvers (two)	20
iv)	Discussion	
	Differential Diagnosis	10
	Investigations	10
	Management	20
v)	Attitudes	10

Short Cases, Three Cases, 40 marks each case.

	Item	Maximum Marks
i)	Written Work (including General Physical Examination, Systemic/Regional Examination & diagnosis)	5
ii)	Diagnosis (including Differential Diagnosis)	5
iii)	Demonstration / Elicitation of signs (two signs)	10
iv)	Discussion (Differential Diagnosis & Management)	15
v)	Attitudes	5

Viva voce, comprising of 80 Marks, shall be in the following areas:

	Item	Maximum Marks
i.	Pathology specimens	10
ii.	X-rays, US Scan, CT Scan, MRI etc.	20
iii.	Surgical Instruments	15
iv.	Prosthetic and Orthotic devices	20
v.	Physical Medicine Instruments/Equipments	15

The **Qualifying marks** for Theory will be 50%. The qualifying marks for the Clinical Practical and Viva Voce combined would be 50%.

9. Reference Books and Suggested Reading

The list is indicative only, and not exhaustive.

Text Books:

Essential

1. Braddom RL *Physical Medicine & Rehabilitation*, Saunders (latest edition)
2. DeLisa JA. *Rehabilitation Medicine: Principles and Practice*. Lippincott (latest edition)
3. Solomon L. *Apley's System of Orthopaedics and Fractures*. Arnold London (latest edition)
4. Fauci, Braunwald, Kasper, Hauser et al. *Harrison's Principles of Internal Medicine* McGraw-Hill Company (latest edition)
5. DeLisa. *Spinal Cord Medicine* (latest edition)

Desirable

1. *Campbell's Operative Orthopaedics* (latest edition)
2. Helen M. Horstmann and Eugene E. Bleck. *Orthopaedic Management in Cerebral Palsy.* Mac Keith Press Distributed by Blackwell Publishing. (latest edition)
3. Kaplan. *Physical medicine & Rehabilitation Review* (latest edition)
4. Rusk HA. *Rehabilitation Medicine*. CV Mosby
5. Silver. *Essentials of Physical medicine & Rehabilitation* (latest edition)
6. Downey. *Physiological basic of rehabilitation medicine* (latest edition)
7. Patten. *Neurological Different Diagnoses* (latest edition)
8. Vernon W Lin. *Spinal Cord Medicine- Principles and Practice*. Demos
9. Helander E, Mendis P, Nelson G, Goerdt A, *Training in the Community for People with Disabilities* WHO, Geneva, 1989.
10. Helander E. *Prejudice and Dignity- An Introduction to Community-Based Rehabilitation.* UNDP, 1999.
11. Humm. *Rehabilitation of the lower limb Amputee* (latest edition)
12. Zankel. *Stroke Rehabilitation* (latest edition)
13. Gold burg. *Atlas of orthoses & Assistive devices* (latest edition)
14. AAOS. *Atlas of limb Prosthetics* (latest edition)

15. AAOS. *Orthopedic Appliance Atlas* (latest edition)
16. Basmajian. *Orthotics Etecetera* (latest edition)
17. Moberg. *The upper limb in Tetraplegia* (latest edition)
18. Sammarco. *Rehabilitation of the Foot & Ankle* (latest edition)
19. Liebenson. *Rehabilitation of the Spine* (latest edition)
20. Andrew's *Physical Rehabilitation of the Athlete* (latest edition)
21. Simonds. *Pulmonary Rehabilitation* (latest edition)
22. Ozar. *Treatment Planning for Rehabilitation: A patient centered Approach* (latest edition)
23. Konig. *Cardiac Rehabilitation* (latest edition)
24. O'sullivan. *Physical Rehabilitation Assessment & Treatment* (latest edition)
25. Kimura's *Electrodiagnosis* (latest edition)

Journals:

1. Archives of Physical Medicine & Rehabilitation
2. American Journal of Physical Medicine & Rehabilitation
3. American Journal of Physical therapy
4. American Journal of Occupational Therapy
5. Arthritis and Rheumatism
6. American Journal of sports Medicine
7. British Journal of Bone and Joint Surgery
8. British Medical Journal
9. Development Medicine & Child Neurology
10. Disability and Rehabilitation
11. Indian Journal of Physical Medicine & Rehabilitation (IJPMR)
12. Indian Journal of Pediatrics
13. Indian Pediatrics
14. Journal of Bio-Mechanics
15. Journal of Hand therapy
16. Journal of Paediatric Orthopaedics
17. Journal of Post Graduate Medical Education, Training and Research (NBE)

18. Journal of Prosthetics Orthotics International
19. Journal of Rehabilitation Research and Development
20. Journal of Rheumatology
21. Leprosy in India
22. National Medical Journal of India (NMJI)
23. Neurology India
24. Physical Medicine & Rehabilitation Clinics of North America
25. Physical Therapy
26. Scandinavian Journal of Rehabilitation Medicine
27. Spinal Cord
28. Stroke
29. The Hand