THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI – 32

M.D. PHYSICAL MEDICINE & REHABILITATION
(Regulations and Syllabus)

1. REGISTRATION:

A candidate admitted in to MD (PMR) Post-Graduate Degree clinical course in any of the affiliated institutions of the Tamilnadu Dr. M.G.R. Medical University, Chennai shall register with the university by remitting the prescribed fees along with the application form by registration duly filled in and forwarded to the Controller of Examinations of this University through the Head of the affiliated institution within the stipulated date.

2. ELIGINIILTY

a. Candidate for admission to the first year of the MD (PMR) Post-Graduate degree clinical course shall be required to possess the following qualifications:
   i. He/She having qualified for the M.B.B.S. Degree of this university or any other university recognized as equivalent thereto by the authority of this university and the Medical Council of India and obtained permanent registration from any of the State Medical Councils.
   ii. The admitting authorities of the institutions will strictly ensure that every candidate admitted to the MD (PMR) Post-Graduate clinical course has obtained permanent registration certificate from any one of the State Medical Councils.

3. RECOGNISTION FEE:

a. Candidates who have passed the M.B.B.S. Degree from any other university shall remit a recognition fee as prescribed along with the stipulated registration fees.

4. DURATION OF THE COURSE:

a. The period of certified study and training for the MD (PMR) Post-Graduate clinical course shall be three calendar years or 36 months for the award of the degree. No exemption shall be given from this period of study and training for any other experience gained prior to the admission to the course.

5. COMMENCEMENT OF THE COURSE:

a. The academic year for the MD (PMR) course shall commence from 1st March of every year.

6. LATE ADMISSION:

a. Late admission are possible only upto 30th April of the academic year.

7. EXAMINATION:

a. The university examination shall be as follows:
   i. Part I at the end of the First year.
   ii. Part II (Final) at the end of the Third year.
   iii. Examinations will be held twice a year starting on March 15th / September 15th.
   iv. If the date of commence of the examination falls on Saturdays / Sundays or declared Public Holidays, the examination shall begin on the next working days.

8. ATTENDANCE REQUIREMENT FOR ADMISSINO TO EXAMINATION:

a. No candidate shall be permitted to appear for the examination unless he / she has put in 90% of the attendance during his/her period of study and training in the affiliated institutions. He/She should produce the necessary certificate of study, attendance and progress from the Head of the Institution. Candidates admitted after 30th April shall take the twelve (12) months of training and take the Part-I examination conducted by the University and Part-II (Final) after the completion of prescribed 36 months of the course.

9. CONDONATION OF ATTENDANCE:

a. There shall be no condonation of attendance in this Post-Graduate course of study and training.

10. MAINTENANCE OF LOG BOOK:

a. Every Post-Graduate Degree candidate shall maintain in record of skills he/she has acquired during the three years of training period certified by the various Heads of Departments where he/she has undergone training.
b. The candidates should also be required to participate in the teaching and training programme of Under-Graduate students in the subjects of medical rehabilitation.
c. In addition, the Head of the Department shall involve the candidates in seminars, journal clubs, group discussions and participation in clinical, clinico-pathological conferences.
d. The Head of the Department shall scrutinize the Log Book once in every three months.
e. At the end of the course, the candidate should summarise the contents and get the Log book certified by the Head of the Department.
f. The Log Book should be submitted at the time of practical examination for the scrutiny of the Board of Examiners.

11. REVALUATION OF ANSWER PAPERS:

a. There shall be no re-evaluation of answer papers in Post-Graduate examination.

12. TRAINING IN OUTSIDE CENTRES:

a. The Head of the Post-Graduate Department shall make necessary arrangements for their Post-Graduate candidates to undergo training in various skills in other centres within and outside the state if facilities are not available in their own institutions or hospitals at the expenses of the candidate.

13. NUMBER OF APPEARANCES:

a. A candidate registered for their three years M.D (PMR) clinical course must qualify in the examination within six years of the date of his/her admission.
b. The candidates will not be, however permitted to appear for more than 10 attempts (maximum) within 6 years after the completion of the course and shall be discharged from the course if he/she fails to fulfill this provision.

14. DISSERTATION:

a. All candidates registered to undergo MD Post-Graduate Degree / clinical courses shall be assigned a topic for dissertation/thesis within 4 months of his/her admission to the course and the title of the topics assigned to the candidates be intimated to the controller of examinations of this university.
b. The candidate shall submit Dissertation/thesis on any topic pertaining to his/her speciality. The Head of the Department shall guide on the topic of the thesis to the candidates.
c. The candidate shall have the option in lieu of Dissertation/thesis to submit proof of publication or acceptance of a paper as a principal author in a reputed Medical journal.
d. The dissertation/thesis shall be a bound volume of minimum 50 pages and not exceeding 75 pages of types matter (double line spacing and on one side only) excluding certification, acknowledgements, annexures and bibliography.
e. 4 copies of Dissertation shall be submitted 4 months prior to the commencement of the examinations on the prescribed date to the controller of Examinations of this University.

15. EVALUATION OF DISSERTATION:

a. The Dissertation shall be evaluated by four examiners in two months prior to the commencement of the University theory examinations.
b. Two copies of statement of marks for dissertation shall be sent by the examiners to the controller of examinations of this University. The Controller of Examinations shall forward a copy of the statement of marks to the chairman of the Board of Examiners who will consolidate the marks at the time of clinical examinations.
c. If the Dissertation is approved but the examiners suggest minor corrections and resubmission of the dissertation, the candidate's results shall be withheld. The chairman, Board of Examiners shall submit a detailed report to the Controller of Examination of this University, the corrections that the candidate has to carry out and the dissertation shall be resubmitted by the candidate with a month from the date of publication of the results. The dissertation shall be revalued by the same set of 4 examiners and on receipt of approval the results of the candidate shall be declared.
d. If the candidate fails in the written/practical examination but his dissertation is approved the marks awarded for dissertation shall be carried over to the subsequent examination(s).
e. If the dissertation is rejected by two of more examiners the candidate is permitted to appear for the written/practical examinations but the results shall be withheld.

16. SCHEME OF TRAINING:

a. The course will be conducted at the Department of Physical Medicine & Rehabilitation of the Medical College. During their tenure the Post-Graduate would be posted in the Department of PMR and various departments related to department of Rehabilitation for their clinical training for the duration as indicated below. The actual time table for postings would be chalked out individually for a candidate.

FIRST YEAR:

1. Physical Medicine (Introduction)	4 months
2. Applied Basic Sciences (concurrent study)	
i. Anatomy-Basic Applied with Bio-Mechanics	100 hrs.
ii. Physiology	50 hrs
iii. Clinical Pharmacology	50 hrs
iv. Pathology & Microbiology	50 hrs
v. Community Medicine	50 hrs
vi. Clinical Epidemiology	50 hrs
vii. Biochemistry	30 hrs
viii. Basic computer Application	20 hrs

3. During the 1st year will undergo training in Orthotics & Prosthetics, Electrodiagnosis, Occupational therapy, speech and hearing, assessment, social rehabilitation therapy.

SECOND YEAR:

1. Rheumatology	4 weeks
2. Cardio-Thoracic, Cardiology and Vascular Surgery	4 weeks
3. Neurology & Neuro Surgery	6 weeks
4. Orthopaedics including Sports injuries	6 weeks
5. Hand surgery and Rehabilitation	3 weeks
6. Leprosy & Dermatology	15 days
7. Diabetology and foot care	15 days.
9. Chest Medicine – Pulmonology and Respiratory therapy	2 weeks
10. Community Medicine	2 weeks
11. Obstetrics & gynaecology	15 days
12. Urology bladder disorders	3 weeks
13. Geriatrics	15 days
14. Speech and hearing rehabilitation	3 weeks
15. Psychiatry	15 days
16. Neuro ICU	2 weeks
17. Plastic surgery – pressure ulcer flap cover	3 weeks

Total:	12 Months

THIRD YEAR:
Specialised areas in Training:

(1) Locomotor Rehabilitation:	
a. Orthopaedics – foot clinic	2 months
b. Neuro Surgery and Neurology	2 months
c. Cardio Respiratory Rehabilitation	3 months
d. Visually handicapped Rehabilitation	1 months
e. Community based Rehabilitation	3 months
f. Rehabilitation of Deaf, Dumb and Speech	1 month

Total:	12 months

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17. SCHEME OF EXAMINATION

END ASSESSMENT, NAMELY ASSESSMENT AT THE END OF TRAINING

Post-Graduate Examinations:

Thesis:

Submission- Duly typed, checked and approved by the Guides, to be submitted 6 months before the final MD Examination.

Evaluation- To be done by two external examiners. The external examiner need not be the same as the external examiner appointed for Practical Examination.
Approval of the Thesis by external examiners is mandatory before the Degree is awarded after theory and practical Examinations.

A. Theory:

The broad curriculum covered in each paper is as per the four Sections indicated above. Sections A, B, C, and D correspond with Papers I, II, III, and IV respectively. However, some overlap may occur.

Distribution of Marks:

Part I (At the end of First Year)

Theory	Title	Duration of Hours	Maximum marks
Paper I	Applied Basic sciences relating to Physical Medicine and Rehabilitation	3 hrs	100

PART II (FINAL) AT THE END OF THIRD YEAR

Theory	Title	Duration in hours	Maximum Marks
Paper I	PMR I Principles and Practice of Physical Medicine and Rehabilitation Community based Rehab, Management of Musculoskeletal Conditions	3	100
Paper II	PMR II		

	Principles and Practice of Rehabilitation Management of Neurological, Cardio-pulmonary and other Conditions	3	100
Paper III	PMR III Legislation, Recent Advances as applied to Physical Medicine and Rehabilitation etc	3	100

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

OSCE Based Examination Scheme for MD (PMR) Examinations

1. Theory Examination

Pattern of the types of questions and their weightage suggested is as follows:

Types of question	**No. of questions**	**Maximum Marks**	**Total**
Pattern I			
Long Question	Two	30	60
Short Notes	Four	10 x 4	40
Pattern II			
Short Notes	Ten	10 x 10	100
Pattern III			
Long Question	One	30	30
Short Notes	Seven	10 x 7	70

2. Practical and Clinical Examination.

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.

Clinical Examination shall consist of the following: -

a) Long Case
b) Short Cases

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%.

Maximum Number of candidates to be examined per day: 4

INTERNAL ASSESSMENT

FORMATIVE ASSESSMENT i.e., Assessment during the residency programme

Formative assessment would include:

Case presentation,

case work up,

case handling/management day to day basis by faculty members during each posting besides assessment of log book.

In addition to bedside teaching rounds, formal teaching is necessary.

Journal club	Once a week
Seminar/ lecture	Once a week
Case discussions	Once a week
Disabilities evaluation & prosthetic and orthotic check out clinic	Once a week

Attend accredited scientific meetings (CME, symposia, and conferences)

18. MIGRATION / TRANSFER OF CANDIDATES:

a. Migration / Transfer of candidates from one recognized Medical College to another recognized Medical college of this University shall not be granted unless a "NO OBJECTION CERTIFICATE" is obtained from the Medical Council of India.
b. The provision of combination of attendance shall be granted to a transferee for admission to the examinations of this University on satisfactory fulfillment of the regulations of this University.

19. BREAK OF STUDY – READMISSION:

a. Candidates having a break of study of 5 years and above from the date of first break of study and more than two spells of break will not be considered for readmission.
b. The five years period of break of study shall be calculated from the date of first break of study of the candidate to the course for the subsequent spells of break of studies.
c. A candidate having a break of study shall be readmitted after satisfactory fulfillment of the regulations of the University at the commencement of an academic year only and shall undergo the full duration of the prescribing course and will be permitted to appear for the examinations as prescribed in the regulations.

SYLLABUS

M.D. PHYSICAL MEDICINE AND REHABILITATION

Preamble:

The **goal** of this programme is to standardize Physical Medicine and Rehabilitation (PM&R) teaching at the Post Graduate level throughout the country so that it will benefit in achieving uniformity in postgraduate as well as undergraduate medical teaching.

World Health Organization estimated that 10 percent of the population is differently abled. According to UN Development Program (UNDP) 80 percent of the differently abled people live in developing countries. The World Bank estimates that 20 percent of poorest people have some kind of disability. Population growth, increasing number of older people, increase in vehicular traffic, expansion of industry, mechanization of agriculture along with social-economic backwardness will magnify the problem in future.

Medical Council of India has recommended starting departments of rehabilitation at all Medical Colleges in India. The directive was circulated by the Central government vide letter No. V-11072/91 M.E. (Policy), dated 25th March, 1986.

Understanding the magnitude of problems faced by differently abled persons the Group of Ministers, under Government of India while drafting the plan for 12th five year plan decided to provide *"equal opportunities to differently abled persons"* and the recommendation was at least 50% of medical colleges should conduct MD PMR courses before the end of 11th five year plans i.e., before 2012. The MCI has also issued the necessary instructions to all medical colleges to take necessary steps to create the department and start post graduate Diploma and Degree courses in Physical Medicine and Rehabilitation in order to satisfy these norms vide reference MCI – 23 (1)/2009 – Med./ 56239 dated 11.12.09 circulated to all medical colleges in India..

Physical Medicine and Rehabilitation:

Physical Medicine and Rehabilitation, also called physiatry, (pronounced fizz ee at´ tree), or physical and rehabilitation medicine, is an important branch of medical sciences 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. Physical Medicine and Rehabilitation is an independent clinical discipline. It has a vast scope as 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, making use 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.

Community Based Rehabilitation Medicine: He should be able to practice rehabilitation medicine at the door step of community. He should be familiar with the common problems occurring in rural areas and deal with them effectively with the involvement local voluntary community leaders and available sources and also other voluntary social work agencies. Given and opportunity to participate in surveys and camps, the students should be able to:

i. Organise and conduct surveys in rural, urban and industrial communities and in specified groups of population.
ii. Organise and conduct camps for disability prevention and rehabilitation of disabled persons.
iii. Guide rehabilitation workers at the peripheral level for rehabilitation of disabled.

Programme Objectives:

The overall objective is to impart a thorough and comprehensive training to a medical graduate so that at the end of this training he/she becomes a knowledgeable, skilled, and competent Physical Medicine and Rehabilitation specialist, capable of discharging his/her duties as expected under different settings, in an ethical manner.

He/she should be able to suspect, 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.

SPECIFIC LEARNING OBJECTIVES

Upon completion of the training and successfully qualifying in the MD (Physical Medicine and Rehabilitation) examinations he/she should be able to demonstrate:

1. **Theoretical knowledge:** He/she should be able to demonstrate possession of basic knowledge of (1) the basic medical sciences such as Anatomy, Physiology, Biochemistry, Pathology, Microbiology, Pharmacology, and Molecular Biology etc. as related to Physical Medicine and Rehabilitation; (2) factors which may disturb structure or function and result in disability; (3) bed-side procedures (diagnostic and therapeutic).

2. **Teaching-Training:** He/she should be able to plan educational programs in Rehabilitation Medicine in association with his senior colleagues/Faculty and be familiar with the modern methods of teaching and evaluation; teach and/or deliver lectures to medical students, residents, other health professionals and persons with disabilities and their family members etc. and hold clinical demonstrations for them; write and discuss a seminar or a symposium and critically discuss it; methodically summarise published articles according to prescribed instructions and critically evaluate and discuss each selected article etc.

CURRICULUM

SUBJECT SPECIFIC THEORETICAL COMPETENCIES

Course Contents

The course contents for MD (Physical Medicine and Rehabilitation) is divided into four broad sections, covering four Theory Papers. However, certain degree of overlapping may occur among different sections. The content would include the following:-

Section A:

1) Basic Anatomy of the Musculoskeletal, Cardio-pulmonary and Nervous Systems, etc.

    1) Embryology – Development of Heart and Great Vessels
        (a) Foetal Circulations – Development of Brain and Spinal Cord.
    2) Anatomy of Brain and Spinal Cord with their blood supply and venous drainage.
    3) Cranial Nervous and Autonomic Nervous system.
    4) Anatomy of the Muscular Skeletal System.
    5) Nervous control of Bladder and Rectum.
    6) Anatomy including Histopathology of Kidneys, Spleen.
    7) Anatomy including Histopathology of Endocrine Glands
    8) Anatomy of Broncho – Pulmonary Segments. Pleura and Medlastium.

2) Basic physiology of Musculoskeletal, Cardio-pulmonary and Nervous Systems, etc. and Biochemical aspects of Calcium and Vit. D metabolism, osteoporosis, diabetes mellitus etc.

    1. Liver: Function – Laboratory test of liver function.
    2. Kidney: Laboratory tests of kidney function.
    3. Exocrine and Endocrine function of Pancreas.
    4. Harmones: Pituitary, Adrenal, Thyroido, Parathyroid – Chrmistry of Steroids – Various tests to study function of Endocrine Glands.
    5. Pulmonary functions tests.
    6. The mechanism of Deglutition.
    7. Heart: Basic Principles of condition system and electro – Cardiogram – Circulation – Measurement of cardiac output – Factors controlling arterial blood pressure – Mechanism of production of cardiac failure and syndrome of shock.
    8. Blood, Plasma, Proteins – Coagulation of blood RBC and WBC development – Platelets – Erythropoiesis and its regulation – Blood groups – Iron metabolism.
    9. Physiology of Micturation and Defaecation.
    10. Fluid and electrolyte balags.
    11. Calcium and phosphorous metabolism
    12. Inborn errors of metabolism.
    13. Jaundice-Types and Diagnosis.
    14. Immunoglobulin and the mechanism of Immunity.
    15. Physiology of consciousness
    16. Temperature regulation.

3) Basic Pathological processes causing diseases and disabilities, healing etc.

    1. Central nervous system: Brain and spinal cord meningitis and Encephalitis – Abscess tumours – Syphilis of nervous system – Nutritional and metabolic disorders epilepsy – Vascular diseases

2. Heart: Rheumatic fever and carditis – coronary artery diseases – Hypertension – Artherosclerosis – Cardiomyopathy – Pericarditis – Specific and non-specific arteritis – Congenital heart diseases.
3. Kidneys: Nephritis – Nephtosis – Kidney – Changes in Metabolic and collagen diseases – Acute and chronic renal failure.
4. Lungs: Pulmonary tuberculosis – Atypical mycobacteria – Tumors of lung.
5. Bone: Disorders of Mineral and bone matrix bone tumour.
6. Endocrine Glands: Myxoedema and Thyrotoxicosis – Hyper and Hypo-parathyroidism – Pituitary – Adrenal – Cortex and medulla.
7. Diabetes Mellitus and its complications – pathological changes in Viscera.
8. Gastro intestinal disorders: Peptic ulcer – Malabsorption sundrome – Ulcerative colitis – Amoebiasis (Intestinal and extra-intestinal).
9. Lymphomas, Leukemias and blood dyscrasiasis.

4) Basic principles of Pharmacology as applied to the conditions encountered in Physical Medicine and Rehabilitation

1. Chemotherapy: Antibiotics and atimicrobials.
2. Analgesics
3. Sedative
4. Tranquilizers
5. Drugs acting on Autonomic nervous system
6. Hormones
7. Insulin and oral anti-diabetic drugs
8. Drugs for Epilepsy
9. Coagulants and Anticoagulants
10. Histamine and Anti-histamine drugs
11. Alcohol
12. Vaccines and immune sera
13. Drug abuse – Drug tolerance – Drug addiction
14. Anti-Spastic
15. Antiparkinsonism
16. Bronchodilators
17. Antihypertensives

5) Biophysics and Biomechanics:

1. Principles of statics and dynamics as applied to human movement.
2. Kinesiology
3. Biophysics of Physical agents used in Physical Medicine, Heat, Light, Ultra-Violet rays, Electricity and Ultrasound.

Section B:

6) Basic principles of diagnostic modalities as applied to Physical Medicine and Rehabilitation.

7) Philosophy, history, scope and need of Physical Medicine and Rehabilitation.

8) Basic concepts in Physical Medicine and Rehabilitation - definitions, rehabilitation team, team members, scope, role and responsibilities of different members etc.

9) Principles of evaluation and rehabilitation management of social problems

10) Principles of evaluation and rehabilitation management of vocational problems

11) Organisation and Administration of Physical Medicine & Rehabilitation Services.

12) Disability process. Impairment, disability, International Classifications

13) Disability Prevention- levels and examples

14) Epidemiology of Disability, magnitude, causes, changing trends and Commnity based medicine etc.

15) Gait Analysis – Terminology, types, Clinical Applications

16) Electrodiagnostic Medicine - basic principles, clinical methods, interpretation etc.

17) Outcome Measures in Physical Medicine and Rehabilitation

18) Impairment Rating and Disability Evaluation

19) Therapeutic Exercises - principles, types, indications, contraindications

20) Physical Agents/Modalities - principles, types, indications, contra-indications, precautions.

21) Manipulation, Traction, Massage - principles, types, indications, contra-indications, precautions.

22) Electrical Stimulation - principles, types, indications, contra-indications, precautions.

23) Principles and scope of Occupational Therapy

24) Rationale of A.D.L. (Activities of Daily Living) in various conditions

25) Integrative Medicine and Physical Medicine and Rehabilitation

26) Assistive Technology related to Physical Medicine and Rehabilitation

27) Upper limb orthotic devices – principles, types, materials and indications

28) Lower limb orthotic devices – principles, types, materials and indications

29) Spinal orthoses – principles, types, materials and indications

30) Upper limb prosthetics and amputee rehabilitation

31) Lower limb prosthetics and amputee rehabilitation

32) Mobility aids, wheelchairs and seating systems

33) Low back pain and Physical Medicine and Rehabilitation

34) Musculoskeletal trauma and Physical Medicine and Rehabilitation

35) Rehabilitation of persons suffering from:

- Arthritis, including Rheumatoid Arthritis, Osteoarthritis, Ankylosing Spondylitis etc.
- Spinal deformity
- Neck Pain, Shoulder Pain etc.
- Osteoporosis
- Sports Injury
- Burns Injury
- Spinal Cord Injury

36) Rehabilitation of persons:

- with obesity, dyslipidemia etc.
- after Arthroplast
- after POP cast, Fracture treatment, Surgical intervention

37) Principles of Sports Medicine

38) Basic principles of rehabilitative surgeries such as deformity correction in poliomyelitis, cerebral palsy, clubfoot, contractures, revision of amputation stump, closure of pressure sore, flap cover for pressure ulcers, tendon transfers, urological procedures for complications of paraplegia etc.

Section C:

39) Rehabilitation of persons suffering from:

- Plexus or Nerve Injury
- Traumatic Brain Injury
- Stroke
- Parkinsonism, Multiple sclerosis, Ataxia, neurodegenerative disorders etc.
- Neuropathy, Bell's Palsy etc.
- Hansen's Disease
- diseases of Muscles e.g. myopathy, motor-neuron disease, myasthenia gravis etc.
- Cerebral Palsy
- Spasticity
- Poliomyelitis and its sequalae
- Cardiovascular Disease e.g. CAD, MI, CABG Surgery, Angioplasty, Cardiac transplantation etc.
- Pulmonary Disease e.g. COPD, Bronchiectesis, Cystic fibrosis etc.
- Cancer
- Swallowing disorder
- Bladder dysfunction

- Bowel dysfunction
- Vertigo
- HIV/AIDS
- Chronic Pain

40) Rehabilitation of persons:

- after Organ Transplantation
- in ICU setting

41) Pediatric Rehabilitation including children with Autism Spectrum Disorders, learning disabilities, multiple disabilities etc.

42) Geriatric Rehabilitation

43) Principles of evaluation and rehabilitation management of persons with:

- visual impairment
- mental retardation
- hearing /speech impairment
- psychological problems or mental illness

44) Medical Emergencies in Physical Medicine and Rehabilitation

45) Sexuality and Disability

Section D:

46) Evidence-based Medicine and Physical Medicine and Rehabilitation

47) Legislation in relations to disability- National and International

48) Schemes and Benefits extended to persons with disabilities by the Govt.

49) Barrier-free Environment and access related issues

50) Computers in Physical Medicine and Rehabilitation

51) Recent Advances related to Physical Medicine and Rehabilitation

SUBJECT SPECIFIC PRACTICAL COMPETENCIES

1. **Clinical/Practical skills:** Understand and develop competence in executing common general procedures employed in diagnosis, investigations and management of conditions encountered in rehabilitation medicine. He/she should be able to practice and handle independently most of the day to day problems as encountered in Rehabilitation Medicine in a safe, effective and

ethical manner. He/she should be able to plan a comprehensive rehabilitation service independently. He/she should be able to demonstrate understanding of the fabrication and competence in prescription and check out of orthoses and Prostheses, the principles, prescription and supervision of physiotherapy, occupational therapy, psycho-socio-vocational counselling. He should be able to practice rehabilitation medicine at the door step of community. He should be familiar with the common problems occurring in the urban, semi-urban, and rural areas and deal with them effectively, should be able to organize, conduct, and supervise surveys in rural, urban and industrial communities and in specified groups of population; organise and conduct camps for disability prevention and rehabilitation of disabled persons, and guide rehabilitation workers at the peripheral level for rehabilitation of persons with disabilities.

2. **Research:** He/she should be able to recognise 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.

Section A:

1. Evaluation Process:
    - History taking in Physical Medicine and Rehabilitation
    - Clinical evaluation, Manual Muscle Strength Testing, Joint Range of Motion, Goniometry, Activities of Daily Living
    - Investigations – Laboratory and Radiological imaging studies
2. Gait Analysis – Terminology, types, Clinical Applications
3. Electrodiagnostic Medicine - basic principles, clinical methods, interpretation etc.
4. Outcome Measures in Physical Medicine and Rehabilitation
5. Impairment Rating and Disability Evaluation

Section B:

6. Therapeutic Exercises- settings, equipments, applications

7. Physical Agents/Modalities - precautions, prescription, application, follow-up etc.

8. Traction, Massage - principles, types, indications, contra-indications, precautions, prescription, application, follow-up etc.

9. Electrical Stimulation - precautions, prescription, application, follow-up etc.

10. Prescription of Occupational Therapy

11. Training of A.D.L. (Activities of Daily Living) in various conditions

12. Injection Techniques (e.g. intra-articular, peri-articular, trigger-point, epidural etc.) in Physical Medicine and Rehabilitation

13. Interventions in Physical Medicine and Rehabilitation e.g. Botulinum toxin injection, Phenol block, Alcohol blocks etc.

14. Upper limb orthotic devices - applications

15. Lower limb orthotic devices - applications

16. Spinal orthoses - applications

17. Upper limb prosthetics and amputee rehabilitation

18. Lower limb prosthetics and amputee rehabilitation

19. Mobility aids, wheelchairs and seating systems

20. Low back pain and Physical Medicine and Rehabilitation

21. Musculoskeletal trauma and Physical Medicine and Rehabilitation

22. Rehabilitation of persons suffering from:

    - Arthritis including Rheumatoid Arthritis, Osteoarthritis, Ankylosing Spondylitis etc.
    - Spinal deformity
    - Neck Pain, Shoulder Pain etc.
    - Osteoporosis
    - Sports Injury
    - burns Injury
    - Spinal Cord Injury

23. Rehabilitation of persons:

    - with obesity, dyslipidemia etc.

- after Arthroplasty
- after POP cast, Fracture treatment, Surgical intervention

24. Basic principles of rehabilitative surgeries such as deformity correction in poliomyelitis, cerebral palsy, clubfoot, contractures, revision of amputation stump, closure of pressure sore, tendon transfers etc.

Section C:

25. Rehabilitation of persons suffering from:

- Plexus or Nerve Injury
- Traumatic Brain Injury
- Stroke
- Parkinsonism, Multiple sclerosis, Ataxia, neurodegenerative disorders etc.
- Neuropathy, Bell's Palsy etc.
- Hansen's Disease
- diseases of Muscles e.g. myopathy, motor-neuron disease, myasthenia gravis etc.
- Cerebral Palsy
- Spasticity
- Poliomyelitis and its sequalae
- Cardiovascular Disease e.g. CAD, MI, CABG Surgery, Angioplasty, Cardiac transplantation etc.
- Pulmonary Disease e.g. COPD, Bronchiectesis, Cystic fibrosis etc.
- Cancer
- ICU setting
- Swallowing disorder
- Bladder dysfunction
- Bowel dysfunction
- Vertigo
- HIV/AIDS
- Chronic Pain
- Organ Transplantation

26. Pediatric Rehabilitation including children with Autism Spectrum Disorders, learning disabilities, multiple disabilities etc.

27. Geriatric Rehabilitation

28. Principles of evaluation and rehabilitation management of persons with:

- visual impairment
- mental retardation
- hearing /speech impairment
- psychological problems or mental illness

29. Medical Emergencies in Physical Medicine and Rehabilitation

30. Sexuality and Disability

Section D:

31. Evidence-based Medicine and Physical Medicine and Rehabilitation
32. Legislation in relations to disability- National and International
33. Schemes and Benefits extended to persons with disabilities by the Govt.
34. Barrier-free Environment and access related issues
35. Computers in Physical Medicine and Rehabilitation
36. Recent Advances related to Physical Medicine and Rehabilitation

TEACHING AND LEARNING METHODS

Post-Graduate Training:

A. Theoretical training:

The students pursuing post-graduation in Physical Medicine and Rehabilitation would be expected to engage in self-study. However, theoretical knowledge would be also imparted to the candidates through discussions during symposia and seminars etc.

Symposia/Seminars: The post-graduate student would be required to present topics to the combined group of teachers and students. A free discussion would be encouraged in these activities. Able to deliver lectures to undergraduates and held clinical demonstrations for them.

The topics of the symposia/seminars would be given to the residents with the dates for presentation.

The topics for Seminars could include any of the following, such as Gait Analysis, Spasticity, Pressure Sores, Spinal Orthoses, Hand Splints, Assistive Technology, Psycho-Social-Vocational Aspects, Cardiac Rehabilitation, Pulmonary Rehabilitation, Neuro-developmental Techniques, Post-Polio Syndrome, Cognitive Rehabilitation, Prosthetic Feet, PTB Prosthetic, Prosthetic Terminal Devices, CAD-CAM, FES, Spinal Deformities, Rehabilitation after Arthroplasty, Epidemiology of Disability, Barrier-free Environment, Ethical Aspects, Legislation related to Disability and Rehabilitation, Community-Based Rehabilitation, Leprosy Rehabilitation, Sexuality and Disability, Rehabilitation related to HIV/AIDS, Stem Cell Therapy in Rehabilitation, Geriatric Rehabilitation, Sports Injuries

Rehabilitation, Rehabilitation after Organ Transplantation, Pain Management, Analgesics, NSAIDs, DMARDs, Disability Evaluation, Interventions in Physical Medicine and Rehabilitation etc.

Journal Club: This should be a regular/weekly activity. The candidate would be assigned /allowed to chose an article from amongst the recent publications from the list of recommended journals, present, summarise, and discuss the published article critically. The contributions made by the article in furtherance of the scientific knowledge as well as limitations (if any) should be highlighted.

B. Practical and Clinical Training:

Clinical: The student would be attached to a Faculty member to be able to pick up methods of history taking and examination in rehabilitation practice. During this period the student would also be oriented to the common problems that present in the OPD or Wards/ICUs or are encountered in the community. The student would be supervised by Senior Residents and Faculty members.

Bedside: The student would work up cases; learn management of cases by discussion with the senior residents and faculty of the department. He/she would be trained in management of in-patients including performing certain procedures such as debridement, Plaster cast application, traction, catheterization, intubation etc.

Rehabilitative Surgery: The student would be provided with an opportunity, as far as possible, to observe, learn, assist and once proficient, perform rehabilitative surgical operations such as for correction of deformities in polio, cerebral palsy, amputation, clubfoot, pressure sore etc. including post-operative care with the assistance of the Senior Residents and/or under the direct supervision of a Faculty member.

The student would also be oriented to the various sections/units in a comprehensive rehabilitation set up (such as occupational therapy, orthotics-prosthetics, physiotherapy, social works, clinical psychology, vocational guidance/counseling, educational institution and Non-Governmental Organization in the disability sector etc.) and be well informed about and demonstrated the various equipments / materials / methods used there, and the scope, role and responsibilities of different members of a rehabilitation team.

C. Training in Research Methodology

The student would carry out the research project and write a thesis. Thesis topic would be finalized by the student in consultation with the Guide and Co-Guides, as per the norms duly approved by the Ethics Committee of the Institution. He would also be given exposure to partake in the research projects going on to learn their planning, methodology and execution to learn various aspects of research.

Recommended Reading: The list is indicative only, and not exhaustive.

Books:

1. Braddom RL *Physical Medicine & Rehabilitation*, Saunders (latest edition)
2. DeLisa JA. *Rehabilitation Medicine: Principles and Practice*. Lippincott (latest edition)
3. Rusk HA. *Rehabilitation Medicine*. CV Mosby (latest edition)
4. Helander E, Mendis P, Nelson G, Goerdt A, *Training in the Community for People with Disabilities* WHO, Geneva, 1989.
5. Helander E. *Prejudice and Dignity- An Introduction to Community-Based Rehabilitation.* UNDP, 1999.
6. Solomon L. *Apley's System of Orthopaedics and Fractures*. Arnold London (latest edition)
7. Fauci, Braunwald, Kasper, Hauser et al. *Harrison's Principles of Internal Medicine* McGraw-Hill Company (latest edition)
8. Vernon W Lin. *Spinal Cord Medicine- Principles and Practice*. Demos

Journals:

1. Archives of Physical Medicine & Rehabilitation
2. American Journal of Physical Medicine & Rehabilitation
3. Journal of Rehabilitation Research and Development
4. Scandinavian Journal of Rehabilitation Medicine
5. Physical Medicine & Rehabilitation Clinics of North America
6. Orthopaedics Clinics of North America
7. Stroke
8. Spinal Cord
9. Arthritis and Rheumatism
10. Journal of Prosthetics Orthotics International
11. Physical Therapy

12. Physiotherapy
13. American Journal of Occupational Therapy
14. Neurology India
15. Indian Pediatrics
16. Indian Journal of Orthopaedics (IJO)
17. Indian Journal of Physical Medicine & Rehabilitation (IJPMR)
18. National Medical Journal of India (NMJI)