

**Competency Based Training**  
**in**  
**Physical Medicine & Rehabilitation**



## Content Index

| <b>S.No.</b> | <b>Topic</b>                               | <b>Page No.</b> |
|--------------|--|-----------------|
| 1            | Introduction                               | 3               |
| 2            | Programme Goals                            | 4               |
| 3            | Programme Objectives                       | 4               |
| 4            | Student Eligibility and Selection Method   | 12              |
| 5            | Duration of the course                     | 12              |
| 6            | Structure of the course                    | 12              |
| 7            | Clinical Postings                          | 13              |
| 8            | Thesis/Dissertation                        | 13              |
| 9            | Directly Observed Procedural Skills (DOPS) | 13              |
| 10           | Case Based Discussion (CBD)                | 14              |
| 11           | Log Book                                   | 15              |
| 12           | Final Examination                          | 16              |
| 13           | Methods of Teaching and Training           | 20              |
| 14           | Competencies/ Skills                       | 25              |
| 15           | Syllabus/ Curriculum                       | 32              |
| 16           | Year wise distribution of Syllabus         | 48              |
| 17           | Competency-based Training                  | 66              |
| 18           | Suggested Books and Journals               | 103             |

## **1. Introduction**

Competence means among other things expertise, mastery, ability and proficiency. It includes essential knowledge, values and skills vital to the successful performance of effective practice of medical care. The emphasis in training is on ‘how to learn’ rather than “how to be taught” and Teacher directed learning of the art and science of helping trainees to learn.

Physical Medicine and Rehabilitation, also called *Physiatry* or Rehabilitation Medicine, is an independent clinical branch of medical science emphasizing the prevention, diagnosis, evaluation and treatment of disorders, particularly those of the neuro-musculo-skeletal, cardiovascular, and pulmonary systems, at any age, acquired or congenital, that may produce temporary or permanent activity limitation, disability, or participation restriction in society including loss of Quality of Life.

The WHO definition of rehabilitation, approved by the World Health Assembly, (WHA May 2001) is 'The use of all means aimed at reducing the impact of disabling and handicapping conditions and at enabling disabled people to achieve optimal social integration'. Physical Medicine and Rehabilitation follows the WHO International Classification of Functioning, Disability and Health (ICF). This framework recognizes the underlying pathology, the level of organ functioning and the potential for restoring/optimizing personal function or preventing further limitation of activity. It also recognizes that the ability to participate depends not only on activities or personal functioning but also on a corresponding number of contextual factors affecting personal life and the individual's environment.

The specialty is involved with the prevention and reduction of the disability and handicap arising out of physical impairments and with the medical management of disability from a physical, psychological and vocational point of view. It 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.

The curriculum addresses the knowledge, skills, attitudes and competencies required to do this.

## **2. Programme Goals**

To make the student pass out with this DNB degree to practice Physical Medicine and Rehabilitation independently and to train teachers and specialists in Physical Medicine and Rehabilitation.

## **3. Programme Objectives**

The objective of post graduate PMR programme is to equip the medical graduate with adequate quality knowledge and skills to adopt the principles and practice of Physical Medicine and Rehabilitation (PMR) so as to provide Medical Rehabilitation interventions of high standard in an ethical manner as expected under different clinical settings, 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 persons with disability (PWD), understanding their problems in totality. Also, the trained Physiatrist (PMR specialist) will have to exhibit exemplary leadership skills in pooling and harnessing the skills of other rehabilitation professionals namely, physiotherapists, occupational therapists, prosthetists and orthotists , medico-social workers, rehabilitation nurses, audiologists and speech language pathologists, clinical psychologists, vocational counselors 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.

The person trained 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.

The clinical postgraduate training program is intended at developing in a student a blend of qualities of a clinical specialist, a teacher, a rehabilitation administrator and a researcher. They are organized in such a manner that a postgraduate should possess the following qualities and knowledge on qualification.

### **EXPECTED OUTCOMES AT THE COMPLETION OF TRAINING**

Graduates from this training program will be equipped to function effectively within the current and emerging professional, medical and societal contexts. At the completion of the Physical Medicine and Rehabilitation DNB Training Program, as defined by this curriculum, it is expected that he/she will have developed the clinical skills and acquired the theoretical knowledge for competent rehabilitation medicine practice. It is expected that a new trainee will have acquired and will continue to develop competencies that ensure the highest standard of patient care.

These competencies are described as learning objectives with specific knowledge and skills.

Professional competence also demands that a Physiatrist/ PMR specialist/ rehabilitation physician holds attitudes congruent with their responsibilities towards patients, families, other health professionals and the community.

These attitudes are:

#### **Persons with Disability Focus**

A Physiatrist:

- has a positive and constructive attitude to the development of strategies to enable the person with disability and activity limitation or participation restriction to realise their full potential
- recognises the perspective and beliefs of the patient, and endeavours to incorporate the patient's needs and expectations into the plan of care
- is aware of and sensitive to issues of ethnicity, culture, gender and sexuality
- recognises the importance of the family and other carers in supporting the patient, as well as the potential difficulties the family may experience in the care of a family member with a disability.

### **Professional Role**

A Psychiatrist:

- behaves with empathy, courtesy, responsibility and accountability towards patients and their families, and towards other health professionals
- understands the extent of their competence and how their role extends the traditional medical role
- recognises and respects the contributions and roles of other medical practitioners in the process of care
- is prepared and willing to promote rehabilitation medicine actively to the medical profession.

### **Continuing Professional Development**

A Psychiatrist:

- views competence as a continuing process of education and learning by which he/she ensures that clinical practice is of the highest standard
- is willing to review personal competence openly and regularly, and to improve clinical skills as necessary.

### **Interdisciplinary Management**

While a Psychiatrist accepts full and ultimate responsibility for the rehabilitation care of the patient, he/she:

- recognises the appropriateness of interdisciplinary team management, especially in the care of persons with permanent and complex disability
- understands the specific skills of each team member, and develops a close professional relationship with these allied disciplines
- appreciates the synergistic effect of cohesive team management, and strives to support the team in achieving holistic and expert care.

### **Advocacy**

A Psychiatrist is:

- prepared at all times and to the best of his/her ability to represent and support persons with disability in the achievement and defense of their rights to receive optimal medical and rehabilitation care, and to pursue their chosen lifestyle with independence and dignity
- aware of the full extent of potential disadvantage arising from disability, and is willing to assist persons with disability in achieving their full rights in society, especially with regard to medical care, accommodation, community support, community access, safety, transport, and appropriate political and legal representation.

### **3.1 Care of Patients/ Persons with Disabilities**

The candidates need to be trained in the following:

- (i) Basic Sciences: He/ she should possess basic knowledge of (1) the structure, function and development of human body as related to Physical Medicine and Rehabilitation, (2) Knowledge of the factors which may disturb these mechanisms and the resulting disorders of structure, function and psycho social aspects related to Physical Medicine and Rehabilitation.

(ii) Clinical Knowledge: He/ she should attain understanding of and develop competence in executing common general laboratory procedures employed in diagnosis and research in Physical Medicine and Rehabilitation. He/ she should be able to practice and handle independently most day to day problems as encountered in Physical Medicine and Rehabilitation. He/ she should also be able to recognize the need to seek further help, when required. Given adequate opportunity to work on the basis of graded responsibilities in out-patients, in-patients and operation theatre on a rotational basis in the Department from the day of entry to the completion of the training program the students should be able to:

- a) Acquire scientific and rational approach to the diagnosis of cases presenting
- b) Acquire understanding of and develop inquisitiveness to investigate to establish the cause and effect of disease, disability and activity limitation as well as participation restrictions
- c) Prescribe all routine and special investigations pertaining to the specialty and interpret the results of these and other investigations in the light of clinical presentation
- d) Manage and treat all types of cases in Physical Medicine and Rehabilitation that occur commonly
- e) Demonstrate knowledge of the pharmacological aspects of drugs/ medicines used in various forms and through various routes, in Physical Medicine and Rehabilitation
- f) Competently handle and execute safely all the routine/ essential rehabilitative surgical procedures
- g) Demonstrate understanding of the fabrication and competence in prescription and check out of orthoses and prostheses as well as various assistive devices and mobility aids

h) Understand the principles, prescription and supervision of physiotherapy, occupational therapy, speech therapy and medico-socio-vocational-psychological counseling

(iii)Environment and Health: He/ she should understand the effects of environment on health and be familiar with the epidemiology of common diseases presenting in the field of Physical Medicine and Rehabilitation. He/ she should be able to integrate the preventive and promotive methods along with the curative and rehabilitative measures in the treatment of diseases.

(iv)Community Physical Medicine and Rehabilitation: He/ she should be able to practice Physical Medicine and Rehabilitation at the door step of community. He/ she should be familiar with the Public Health implications of common problems occurring in Urban and rural areas and deal with them effectively.

Given an opportunity to participate in surveys and camps, the medical students should be able to:-

- a) Organize and conduct surveys in rural, urban and industrial communities and in specified groups of population
- b) Organize and conduct camps for disability prevention and rehabilitation.
- c) Guide rehabilitation workers at the peripheral level for rehabilitation of persons with disability.

(v) Current Developments: He/ she should be familiar with the current developments and recent advances in Physical Medicine and Rehabilitation.

### **3.2 Research**

The candidate should be able to

- a) Recognize a research topic/ area.
- b) State the objectives in terms of what is expected to be achieved in the end
- c) Plan a rational approach with full awareness of the statistical validity
- d) Spell out the methodology and carry out most of the technical procedures required for the study
- e) Be familiar with the ethical aspects of research
- f) Accurately and objectively record on systematic lines the results and observations made
- g) Analyze the data using appropriate statistical approach
- h) 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
- i) 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
- j) Write a thesis/dissertation in accordance with the above guidelines

### **3.3 Teaching-Training**

He/ she should be able to plan educational programs in Physical Medicine and Rehabilitation in association with his/ her senior colleagues/ faculty members and be familiar with the modern methods of teaching and evaluation.

The candidate should be able:-

- a) To teach and train medical students, junior doctors, and other health/ rehab professionals and patients/ persons with disability etc. and hold clinical demonstrations of various procedures/ skills for them
- b) To present topics and critically discuss them in a seminar or a symposium with colleagues and juniors.

- c) To methodically summarize scientific articles published in national and international journals according to prescribed instructions and critically evaluate and discuss each selected article.
- d) To present cases at clinical conferences, discuss them with colleagues/ faculty members and guide juniors in groups in evaluation and discussion of these cases.

### **3.4 Leadership Role**

- a) Demonstrate the leadership role in Rehabilitation Team activities and accept responsibility for the outcomes
- b) Develop congenial interaction with other specialists, staff, students, faculty and patients
- c) Demonstrate leadership in crisis
- d) Understand the healthcare delivery system sufficiently to effectively solve any problems that may arise in Physical Medicine and Rehabilitation
- e) Understand and participate in advocacy for the rights of the persons with disability.

## **4. Students Eligibility and Selection Method**

This would be made on the basis of the following criteria through a Common Entrance Test (CET), modified by NBE from time to time:

- a) Candidates who are in possession of MBBS degree/Provisional Pass Certificate recognized as per the provisions of the Indian Medical Council Act 1956 and possess permanent / provisional registration certificate of MBBS qualification issued by the Medical Council of India or State Medical Council and have completed one year of internship/likely to complete on or before the due date may apply for CET through online application.

- b) After admission, the candidate shall have to work as a full time post graduate student in the Department of Physical Medicine and Rehabilitation or a rehabilitation institute authorized by NBE for a period of 3 years.

**5. Duration of the Course:** Three years

**6. Structure of the Course:** There will be no division of the course into sections/ semesters.

**7. Clinical Postings:**

During the whole period of training in PMR ward(s) and OPDs and in other specialities/ institutions as per details given ahead.

**Special Clinics:** Since the special clinics vary from institution to institution, no fixed schedule can be advised. Details are given under the methods of teaching and training.

**8. Thesis/Dissertation:**

The student would carry out the research project and write a thesis/dissertation on an area/theme pertaining to the subject under supervision of a “recognized PG teacher” and at a “NBE accredited hospital/institution” carried during the period of registration.

**Evaluation of Dissertation/Thesis**

DNB candidates are required to submit their thesis before the cut off date as decided by the NBE (which presently is 30<sup>th</sup> June of same year for candidates appearing for their scheduled December final theory examination. Similarly candidates who shall be appearing in their scheduled June DNB final examination shall be required to submit their thesis by 31<sup>st</sup> of preceding December).

One assessor shall evaluate the thesis. However, if the same assessor, has twice rejected the thesis or suggested modification in it, the thesis shall be sent to another assessor for evaluation.

**9. Directly Observed Procedural Skills (DOPS)**

Directly Observed Procedural Skills (DOPS) is a method that has been designed specifically for the assessment of practical skills. DOPS assesses the capabilities of a trainee while he/she performs a procedure. DOPS is a structured assessment of actual performance.

Competencies assessed:

- . Understanding of procedure - relevant anatomy; purpose, indications, contra-indications; outcomes, risks, complications; choice of methods available, technique of procedure
- . Consideration for the patient – Giving reassurance, minimising discomfort, explaining procedure fully; confirming informed consent obtained
- . Preparation – first re-checking that all relevant details are correct. Performing safety check; instrumentation, equipment (drugs); positioning; cleansing/aseptic technique; analgesia.
- . Professional/technical ability – dexterity, accuracy, efficiency; obtains, interprets diagnostic material/information; informs, directs staff courteously; recognises own limitations; seeks help where appropriate; manages risk.
- . Post-procedure – completion of documentation; regulating recovery phase, observations; anticipating/dealing with complications and informing/counselling patient and/or relatives.
- . Overall ability to perform procedures - ability to complete/undertake procedure; technical abilities as demonstrated; appropriately confident, team/ leadership skills.

While supervising, assisting, observing actual performance in appropriate setting (out-patient, ward, operation theatre, day care procedure, ICU etc.).

#### **10. Case Based Discussion (CBD)**

Case-based discussion (CBD) is used to enable the documenting of conversations about, and presentations of, cases by trainees. This activity happens throughout training, and provides systematic assessment and structured feedback. CBD is used to evaluate core skills that can be demonstrated during an interactive discussion based on a single case in which the trainee has been actively involved.

CBD is designed to assess clinical decision-making and the application or use of medical knowledge in relation to patient care for which the trainee has been directly responsible. It

also enables the discussion of the ethical and legal framework of practice, and in all instances, it allows trainees to discuss why they acted as they did. Although the primary purpose is not to assess medical record keeping, as the actual record is the focus for the discussion, the assessor can also evaluate the record keeping in that instance. The case for discussion can either be selected by the trainee or chosen by the assessor. The assessment will be based on oral discussion and written information available. It includes a bilateral (trainees and trainers) critical appraisal of the reasoning and judgements made, and of the management of the case. Whenever possible the assessment should include issues such as disease notification, health promotion and screening.

This method of assessment is a very useful method and can be easily incorporated into journal clubs, post-graduate teaching sessions etc.

#### Competencies assessed

- . Problem definition - all relevant facts established, from current/previous history, investigations, interventions; reports, correspondence reviewed.

- . Record keeping - legible, tidy, legally defensible records seen.

- . Reasoning – appropriately selected, sequenced investigations/procedures planned.

Evidence-based, logical judgements made; (differential) diagnosis established; action plan made with realistic goals.

- . Case management – effective, safe (responsible) prescribing; aware of protocols/guidelines, best practice; monitoring progress, handling complications/mistakes; timely, appropriate referrals, case closure.

- . Reflective practice - showing analytical, constructive approach to case, willingness to learn; acknowledges and prepared to consider other management options; aware of change, possible advances, when to seek help.

The presentation should take place in a suitable environment, with due consideration given to the patient's sensitivities, to confidentiality e.g. in any ward or clinical setting; an office, side- or seminar-room may be found convenient. Case presentations and discussions, e.g. at handover, ward-rounds (inter-) departmental meetings can also be utilised.

## **11. Logbook**

. Up-to-date training records and a portfolio of achievements will be maintained by the trainee throughout the training period. The training records will be countersigned as appropriate by the trainers to confirm the satisfactory fulfillment of the required training experience and the acquisition of the competencies set out in the curriculum. They must be produced at the final examination.

. Each trainee is responsible for maintaining an up-to-date record of progress through training and compiling a list of achievements for presentation at annual assessment. The trainee also has a duty to maximise opportunities to learn, supplementing the training offered with additional self-directed learning in order to fulfill all the educational goals of the curriculum.

. The assessment grade will be awarded on the basis of direct observation in the workplace by consultant supervisors. Time will be set aside for appraisal following the assessment e.g. of clinical presentations, case management, observation of procedures. As progress is being made, the lower levels of competence will be replaced progressively by those that are higher.

Where the grade for an item is judged to be deficient for the stage of training, the assessment should be supported by a detailed note which can later be referred to at annual review.

. The assessment of training may utilise the DOPS and Case Based Discussions (CBD) methods adapted for the purpose.

Assessment will also be supported by the trainee's list/portfolio of achievements and performance at relevant meetings, presentations, attendance at educational events.

The competencies will be assessed on a regular basis during training programme and must be documented in the Training Record (Logbook). Progress through training is confirmed by entries which must be authenticated/ countersigned by the educational supervisors.

Every training institute will work out the appropriate no. of cases for entry into log book as basic minimum no. for acquiring the respective skill.

## 12. Final Examination

### 12.1 Theory:

- The theory examination comprises of four papers, maximum marks 100 each.
- There are 10 short notes of 10 marks each, in each of the papers. The number of short notes and their respective marks weightage may vary in some subjects/some papers.
- Maximum time permitted is 3 hours for each paper.
- Candidate must score at least 50% in the aggregate of 4 papers to qualify the theory examination.
- Candidates who have qualified the theory examination are permitted to take up the practical examination.

**Paper I:** Basic Health Sciences as applied to Physical Medicine and Rehabilitation (Anatomy, Physiology, Pharmacology, Pathology, Public Health, Nutrition, Therapeutic Exercises, Basic concepts of Disability, ICF, CBR, Biomechanics and Kinesiology, Applied Physics, Electrodiagnostics and therapeutics, Aids and Appliances, Assistive Technology, and Basics of medical and surgical practice etc.)

**Paper II:** Principles and Practice of Physical Medicine and Rehabilitation Management in Surgical conditions (Musculoskeletal, Spinal Cord Injury, Sports Medicine, Bone and Joint injuries, Amputations, Rheumatological, Geriatric, Gynaecological and Obstetric, Speech and Hearing, Visual disorders, Organ Transplantation etc.)

**Paper III:** Principles and Practice of Physical Medicine and Rehabilitation Management in Medical conditions (Non-Communicable Diseases, Neurological, Cardio-pulmonary, Cancer, Pain, Mental illnesses, Developmental disorders, Osteoporosis, etc.)

**Paper IV:** Recent Advances, Disability Research, Legislation, and Rehabilitation

Administration (various schemes, programmes, concessions, disability evaluation and certifications, Research Methodology, Public Health Research etc.)

In Papers II and III, at least 25 % of questions should be problem-oriented. There may be some overlap of topics between the papers.

### **12.2 Practical:**

- Maximum Marks: 300
- Comprises of Clinical Examination and Viva-Voce.
- Candidate must obtain a minimum of 50 % marks in the Clinical Examination (including Viva-Voce) to be declared qualified in the Practical Examination.
- There are a maximum of three attempts that can be availed by a candidate for Practical Examination.
- First attempt is the practical examination following immediately after the declaration of theory results.
- Second and Third attempt in practical examination shall be permitted out of the next three sessions of practical examinations placed along with the next three successive theory examination sessions, after payment of full examination fees as may be prescribed by the Board.

A total of four examiners from the specialty of Physical Medicine and Rehabilitation, who are or had been involved in teaching-training at Post-Graduate level in PMR, shall conduct the practical examination.

Long Case – One (100 marks)

Short Cases – Three (40 marks each)

Viva-Voce involving (80 marks)

- i. PMR Diagnostic/ Exercise/ Therapeutic Instruments/Equipments/ Modalities
- ii. Rehabilitation Surgery Instruments

- iii. X-Ray/CT Scan/MRI/Bone Scan Films etc.
- iv. Orthotic-Prosthetic Appliances including footwear modifications and mobility aids, Hearing aids, low-vision aids, Braille charts etc.
- v. Spots related to common ECG/ Electrodiagnostic (e.g. EMG, NCV) patterns and Impairment Rating/ Disability Evaluation related exercises
- vi. Pathology Specimens related to conditions managed in PMR

The emphasis would be laid on the Objective Structured Clinical Examination (OSCE) where feasible. There will be four examiners and 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.**

|      | <b>Item</b>  | <b>Maximum Marks</b> |
|------|--|----------------------|
| i)   | Written Work<br>(Including history, examination,<br>Summary & provisional diagnosis) | 10                   |
| ii)  | Presentation   | 10                   |
| iii) | Demonstration<br>Elicitation of signs<br>or maneuvers (two)                          | 20                   |
| iv)  | Discussion<br>Differential Diagnosis<br>Investigations<br>Management                 | 15<br>10<br>25       |
| v)   | Attitude   | 10                   |

**Short Cases, Three Cases, 40 marks each case (Total = 120 marks)**

|      | <b>Item</b>  | <b>Maximum Marks</b> |
|------|--|----------------------|
| i)   | Written Work<br>(Including General Physical Examination,<br>Systemic/Regional Examination & diagnosis) | 5                    |
| ii)  | Diagnosis (including Differential Diagnosis)   | 5                    |
| iii) | Demonstration / Elicitation of signs   | 10                   |
| iv)  | Discussion including rehab management  | 15                   |
| v)   | Attitude   | 5                    |

**Viva-Voce**, comprising of 80 Marks, shall be in the following areas:

|      | <b>Item</b>  | <b>Maximum Marks</b> |
|------|--|----------------------|
| i.   | PMR Diagnostic/ Exercise/ Therapeutic Instruments/<br>Equipments/Modalities etc.   | 15                   |
| ii.  | Rehabilitation Surgery Instruments   | 15                   |
| iii. | X-Ray/CT Scan/MRI/Bone Scan Films etc.   | 15                   |
| iv.  | Orthotic-Prosthetic Appliances including footwear modifications<br>and mobility aids, Hearing aids, low-vision aids, Braille charts etc.     | 15                   |
| v.   | Spots related to common ECG/ Electrodiagnostic<br>(e.g. EMG, NCV) patterns and Impairment Rating/ Disability<br>Evaluation related exercises | 10                   |
| vi.  | Pathology Specimens related to conditions managed in PMR   | 10                   |

### **13. Methods of Training and Teaching**

The training program would focus on knowledge, skills and attitudes (behavior), all essential components of education. It is being divided into theoretical, clinical and practical in all aspects of the delivery of the rehabilitative care, including methodology of research and teaching.

- i) **Theoretical:** The theoretical knowledge would be imparted to the candidates through discussions, journal clubs, symposia and seminars. The students are exposed to recent advances through discussions in journal clubs. These are considered necessary in view of an inadequate exposure to rehabilitation medicine in the undergraduate curriculum. Knowledge in applied basic and para-clinical and clinical subjects would be imparted during clinical case discussion in the OPD, specialty clinics and bedside.
- ii) **Symposia:** Trainees would be required to present a minimum of 20 topics based on the curriculum in a period of three years to the combined class of teachers and students. A free discussion would be encouraged in these symposia. The topics of the symposia would be given to the trainees with the dates for presentation. A suggestive, not exhaustive, list of topics is given below:
1. Analgesics and NSAIDs
  2. Disease Modifying Anti-Rheumatic Drugs
  3. Medicines to reduce spasticity
  4. Newer medicines including Biological agents used in Rheumatoid Arthritis and Ankylosing Spondylitis
  5. Human walking- normal and deviations
  6. Biomechanics of hip, knee, shoulder, hand, foot and spine
  7. Calcium and Vitamin D Metabolism in relation to rickets/ osteomalacia, Osteoporosis
  8. Neuro-muscular junction and conduction
  9. Rheumatoid Arthritis and other types of arthritis
  10. Spinal Orthoses
  11. Hand Splints and Wrist-Hand Orthoses
  12. P.T.B. Prosthesis
  13. Above-Knee Prosthesis
  14. Pressure Sores
  15. Spasticity
  16. Bell's Palsy/ Peripheral Nerve Injuries
  17. Back Pain including pain due to Disc Prolapse

18. Muscular Dystrophy
19. Neuro developmental Techniques
20. Cardiac Rehabilitation
21. Pulmonary Rehabilitation
22. Stroke Rehabilitation
23. Post head injury Rehabilitation
24. Poliomyelitis and Post-polio syndrome
25. Rehabilitation in Parkinsonism and other movement disorders
26. Scoliosis and other spinal deformities
27. Osteoarthritis- e.g. of Knee joints
28. Rehabilitation after arthroplasty
29. Extent and causes of Disability problem in India (Epidemiology)
30. Rehabilitation of persons affected with Leprosy (Hansen's Disease)
31. Rehabilitation of a patient with HIV infection/ AIDS
32. Sports Injury Rehabilitation
33. Diabetic/ Anaesthetic Foot
34. Disability Concepts
35. Community-Based Rehabilitation (CBR)
36. Legislation in Disability Sector
37. Autism Spectrum Disorders
38. Cancer Rehabilitation
39. Cerebral Palsy
40. Rehabilitation after burns injury
41. Speech and language pathology
42. Cochlear implants
43. Hearing Aids
44. Neurogenic Bladder-Bowel
45. Geriatric Rehabilitation
46. Sexuality and Disability
47. Spinal cord injury rehabilitation
48. Amputee rehabilitation

- 49. ICF (International Classification of Functioning, Disability and Health)
- 50. Research in Rehabilitation
- 51. Ethics in Rehabilitation
- 52. Chronic Pain
- 53. Rehab management of patients with lymphoedema
- 54. Rehabilitation in Trauma care etc.

**iii) Clinical:** The trainee would be attached to a faculty member to be able to pick up methods of history taking, examination, prescription writing and management in rehabilitation practice.

**iv) Bedside:** The trainee would work up cases, learn management of cases by discussion with faculty of the department.

**v) Surgical and other procedures:** The trainee would be provided with an opportunity *to learn, assist and perform* operations commonly required for rehabilitation of persons with disability, including post-operative care under the direct supervision of a PMR faculty member. Departments of PMR/ institution should be encouraged and supported to build capacity for this training in-house, if required, as far and as soon as possible.

An indicative list of common rehabilitative surgical procedures and other techniques/ interventions/ procedures is given here. Please also see sub-section 11 below.

- a) Plaster of Paris techniques
- b) Joint aspirations
- c) Intra-articular injections
- d) Nerve Blocks and Chemodenervation
- e) Botulinum toxin injection
- f) Peripheral and Neuraxial blocks including Epidural Injections etc.
- g) Rehabilitative surgery in Post Polio residual Paralysis and other paralytic disorders
- h) Club Foot correction

- i) Corrective surgeries in acquired and congenital common musculoskeletal disorders seen in PMR practice with deformities/ contractures
- j) Surgical Procedures in Spinal Injuries and Spinal Cord Lesions
- k) Surgical procedures required in rehabilitation of persons with Cerebral Palsy, Hemiplegia
- l) Cystoscopy, cystolitholapaxy etc. in Neurogenic bladders
- m) Amputations- revisions
- n) Skin grafting and Pressure sore surgery
- o) Neuro-prosthetic implants etc.

**vi) Journal Clubs:** This would be a weekly academic exercise. A list of suggested Journals is given towards the end of this document.

The candidate would summarize and discuss the scientific article critically. A faculty member will suggest the article and moderate the discussion, with participation by other faculty members and resident doctors. The contributions made by the article in furtherance of the scientific knowledge and limitations, if any, will be highlighted.

**vii) Impairment Rating, Disability evaluation and certification-** candidates will learn about background, need, existing laws, guidelines and methods of impairment rating, disability evaluation and certification etc. Candidates will be trained to practice this after having learnt during seminars/ postings.

**viii)** Training shall also include preparation of study materials for medical and paramedical undergraduate students, for other rehabilitation team members, and for patients, caregivers or community groups.

**ix) Research:** The student would carry out the research project and write a thesis/ dissertation in accordance with NBE guidelines. He/ she would also be given exposure to partake in the research projects going on in the departments to learn their planning, methodology and execution so as to learn various aspects of research.

- x) **Rotation Posting:** During the tenure of 3 years training, the candidate should be posted on rotation in Orthopedics, Internal Medicine, Pediatrics, Neurology, Neurosurgery, Cardiology and Cardiothoracic Surgery, Pulmonary/ Respiratory Medicine, Burns and Plastic Surgery, Psychiatry, Urology, Accident & Emergency, Intensive Care Unit, HDU (High Dependency Unit), ENT, Ophthalmology departments in the same institution or other institutions, for a total period of 6 months, including one elective posting, for a period of 15 days, should be done in the field as per the choice of the candidate. The duration of posting in different departments will be 15 days to 1 month, as per availability of different services and mutual agreement between heads of the departments/ institutions. During this rotation posting the trainee should be posted to High Dependency Unit for at least 30 days in order to acquire skills necessary for managing patients in sub-acute stage.

#### 14. Competencies/ Skills

##### 14.1 An indicative List of Competencies/ Basic and Advanced Skills:

| S. No.    | Therapeutic Interventions (Competencies)    | Level & Year<br>B= Basic<br>A= Advanced<br>Number is year of proficiency |
|-----------|---|--|
| <b>A.</b> | <b>External/ Non-invasive Interventions</b> |  |
| 1.        | CPR, ABLS                                   | B1   |
| 2.        | Nebulization, Inhaler administration        | B1   |
| 3.        | Manipulation, Ponsetti technique            | B1   |
| 4.        | Massage, Crede's maneuvers                  | B1   |
| 5.        | Postural drainage                           | B1   |
| 6.        | Manual lymphatic drainage                   | B1   |
| 7.        | Skin Traction                               | B1   |
| 8.        | Dressing                                    | B1   |
| 9.        | Bandaging                                   | B1   |

|            |  |             |
|------------|--|-------------|
| 10.        | Transfer activities  | B2          |
| 11.        | Self-help basic ADLs   | B2          |
| 12.        | Gait training  | B3          |
| 13.        | Crutch gait training   | B2          |
| 14.        | Wheelchair activities/ manoeuvres  | B2          |
| 15.        | POP casting  | B1          |
| 16.        | Therapeutic exercises  | B1          |
| 17.        | Neuro Developmental Therapy, Proprioceptive Neuromuscular Facilitation                               | B2          |
| 18.        | Counseling   | B3          |
| 19.        | Behaviour therapy  | B3          |
| 20.        | Aquatic therapy  | B3          |
| 21.        | Electrical stimulation, FES  | B2          |
| 22.        | Strapping  | B1          |
| 23.        | Splinting  | B1          |
| 24.        | Orthoses   | B1, B2 & B3 |
| 25.        | Immediate Post Op Prosthesis   | B3          |
| 26.        | Physical Agents and Electrotherapeutic Equipments like Cold, Heat, Diathermy, Ultrasound, LASER etc. | B1          |
| <b>B.</b>  | <b>Invasive Interventions</b>  |             |
| B1.        | Skull traction   | B2          |
| <b>B2.</b> | <b>Injections:</b>   |             |
| 1.         | Peri-articular injections  | B2          |
| 2.         | Tendon-sheath injections   | B2          |
| 3.         | Intra-articular injections including visco-supplementation   | B3          |
| 4.         | Joint aspiration/ injections   | B2          |
| 5.         | Bursa aspiration/ injections   | B3          |
| 6.         | Ganglion decompression   | B3          |

|            |  |    |
|------------|--|----|
| 7.         | Trigger point injections   | B2 |
| 8.         | Spinal injections e.g. Epidural injection                                  | B3 |
| 9.         | Botulinum toxin injections   | B3 |
| 10.        | Platelet rich plasma injections  | A  |
| 11.        | Prolotherapy   | A  |
| 12.        | Ultrasound/ image guided injections  | A  |
| 13.        | Penile injections  | B3 |
| 14.        | Facet joint injections   | B3 |
| 15.        | SI joint injections  | B3 |
| 16.        | TM joint injections  | B3 |
| 17.        | Nascent Nitrogen, Ozone or CO2 intra-particular/ intra-discal instillation | A  |
| <b>B3.</b> | <b>Blocks</b>  |    |
| 1.         | Nerve Blocks e.g. Phenol, Lignocaine                                       | B2 |
| 2.         | Motor point blocks   | B2 |
| 3.         | Regional nerve blocks  | B3 |
| 4.         | Stellate ganglion blocks   | B3 |
| 5.         | Coeliac plexus nerve blocks  | B3 |
| <b>B4.</b> | <b>Instillations:</b>  |    |
|            | Intravesical instillation of anti-cholinergics                             | B2 |
| <b>C.</b>  | <b>Surgical Interventions:</b>   |    |
| 1.         | Debridement of pressure sores  | B1 |
| 2.         | Release of compressive neuropathies, repositioning of nerves               | B3 |
| 3.         | Tenotomy- subcutaneous, open   | B3 |
| 4.         | Soft tissue release  | B3 |
| 5.         | Tendon lengthening   | B3 |
| 6.         | Tendon transfers   | B3 |
| 7.         | Release of pulleys in hand   | B3 |
| 8.         | Joint stabilization/ Arthrodesis   | B3 |

|           |  |    |
|-----------|--|----|
| 9.        | Excision arthroplasty  | A  |
| 10.       | Insertion of wires, K wire, pins and rods  | B1 |
| 11.       | External fixator – Ilizarov, JESS  | B3 |
| 12.       | Osteotomies e.g. for Genu valgum / varum, hip related problems etc.                  | B3 |
| 13.       | Amputation/ Revision amputation  | B3 |
| 14.       | Anaesthetic foot surgeries e.g. TA lengthening, ulcer management                     | B3 |
| 15.       | CTEV -STR, bony correction   | B3 |
| 16.       | Synovectomy, capsuloplasty, repositioning/ repair of tendons etc. in rheumatoid hand | B3 |
| 17.       | Excision of ganglion   | B1 |
| 18.       | Skin grafting  | B2 |
| 19.       | Skin flaps rotation  | B3 |
| 20.       | Contracture release like at hip, knee, elbow, neck (sternomastoid tumor), hand       | B3 |
| 21.       | Congenital anomalies correction  | B3 |
| 22.       | Urethral Dilatation  | B2 |
| 23.       | Urethral Repair  | A  |
| 24.       | Sphincterotomy   | A  |
| 25.       | Sphincter Stent Prosthesis   | A  |
| 26.       | Baloon Dilation  | A  |
| 27.       | Penoscrotal Fistula repair   | A  |
| 28.       | Sacral Anterior Root Stimulation   | A  |
| 29.       | Spinal Cord Stimulation  | A  |
|           |  |    |
| <b>D.</b> | <b>Scopies</b>   |    |
| 1.        | Arthroscopy- diagnostic and therapeutic  | B3 |
| 2.        | Cystoscopy in neurogenic bladder   | B3 |
| 3.        | Proctoscopy  | B2 |

|           |   |    |
|-----------|---|----|
| <b>E.</b> | <b>Advanced Interventions</b>                         |    |
| 1.        | Intra-thecal pump                                     | A  |
| 2.        | Neuro-prosthetic implants                             | A  |
| 3.        | Osseointegration                                      | A  |
| 4.        | Stem cells therapy                                    | A  |
| <b>F.</b> | <b>Miscellaneous:</b>                                 |    |
| 1.        | Endotracheal suction                                  | B1 |
| 2.        | Endo-Tracheal Intubation                              | B1 |
| 3.        | Nasogastric tube insertion                            | B1 |
| 4.        | Flatus tube insertion                                 | B1 |
| 5.        | Catheterization including Supra Pubic Catheterization | B1 |
| 6.        | Digital evacuation                                    | B1 |
| 7.        | Stoma care  | B1 |
| 8.        | Central venous line insertion and care                | B1 |
| 9.        | Insertion of intercostals drainage tube               | B1 |
| 10.       | Venti mask/ nasal prong                               | B1 |
| 11.       | Arterial blood sample                                 | B1 |
| 12.       | Monitoring of vital signs                             | B1 |
| 13.       | Venesection   | B1 |
| 14.       | Incision and drainage of abscess                      | B1 |
| 15.       | Pulse oxymetry  | B1 |
| 16.       | Vital stim for dysphagia management                   | B3 |
| 17.       | Tourniquet application                                | B1 |
| 18.       | Brain death identification                            | B1 |

| S. No. | Diagnostic Interventions                   | Level & Year |
|--------|--|--------------|
| 1.     | EMG, NCV and other electrodiagnostic tests | B2           |
| 2.     | Musculoskeletal Ultrasound                 | B2           |
| 3.     | Urodynamic Evaluations                     | B2           |

|     |   |    |
|-----|---|----|
| 4.  | Instrumental Gait Analysis                                    | B2 |
| 5.  | Foot pressure analysis  | B1 |
| 6.  | Dynamic posturography   | B1 |
| 7.  | Trans cutaneous oxymetry                                      | B2 |
| 8.  | Tests for autonomic dysfunction                               | B2 |
| 9.  | Cutaneous Thermography  | B2 |
| 10. | Spondylometry   | B2 |
| 11. | Body composition analysis                                     | B1 |
| 12. | Instrumental ADL assessment                                   | B1 |
| 13. | Dynamometry   | B1 |
| 14. | Goniometry  | B1 |
| 15. | Doppler test  | B2 |
| 16. | Exercise Testing  | B1 |
| 17. | Pulmonary Function Testing                                    | B1 |
| 18. | Isokinetic Exercise Testing                                   | B2 |
| 19. | Driving and work simulation                                   | B2 |
| 20. | Body weight supported treadmill testing/<br>training          | B2 |
| 21. | Robotics- testing/ training                                   | B2 |
| 22. | Audiometry  | B1 |
| 23. | Biofeedback   | B2 |
| 24. | Video fluoroscopic evaluation of swallowing                   | A  |
| 25. | Modified barrium swallow                                      | A  |
| 26. | Cine esophagogram   | A  |
| 27. | Palato pharangeal analysis (image guided<br>swallow analysis) | B3 |
| 28. | Fiber optic endoscopy examination of swallow                  | A  |
| 29. | Instrumental Swallowing assesment                             | B3 |
| 30. | Ultrasound Evaluation of Swallowing                           | B3 |
| 31. | Intraluminal pharyngeal manometry                             | A  |

|     |                                   |    |
|-----|-----------------------------------|----|
| 32. | Electro magnetic articulography   | A  |
| 33. | Esophageal manometry              | A  |
| 34. | Hyperbaric oxygen therapy         | B2 |
| 35. | Vaccum Assisted Closure (VAC)     | B2 |
| 36. | Robotic Interactive Therapy       | B2 |
| 37. | Virtual Reality                   | B2 |
| 38. | Ambient Intelligence              | B1 |
| 39. | Transcranial Magnetic Stimulation | B3 |
| 40. | Optokinetic Stimulation           | A  |

## 14.2 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, urogenital, etc.
- Clinical Gait Analysis
- 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. Impairment Rating, Disability Assessment and Certification

- Skills for prescription and assessment of effectivity of Physical Modalities
  - a. Heat – Superficial, Deep
  - b. Cold
  - c. Electricity
  - d. LASER
  - e. Magnetic fields, etc.
- Skills for assessment, check-out and effectivity relating to Orthotic, Prosthetic and Mobility aids prescriptions
  - a. Prostheses – Upper and Lower Extremities
  - b. Orthoses - Upper and Lower Extremities, Spinal
  - c. Assistive devices and mobility aids
  - d. Orthotic prescription for Sports Injuries
- Biomechanical Studies
  - a. Instrumented Gait Analysis
  - b. Foot-Pressure Studies
  - c. Dynamic Posturography (Balance Assessment)
- Skills for manipulations and casting for prevention and correction of deformities causing disability

- Skills for pharmacotherapy of osteoporosis, arthritic conditions, etc.

## 15. Syllabus/ Curriculum

### a) The course content would include the following:

#### 1. Basic Sciences as Applicable to PMR

- Functional and applied anatomy of Musculo-skeletal system, Nervous system, Cardio-vascular system, Respiratory system and Uro-genital system.
- Kinesiology and Biomechanics
- Physiology of exercise, and other basics of physiology as applied to PMR
- Metabolism of important nutrients & micronutrients
- Basics of electrical and thermal properties of tissues (electrothermy), electromagnetic waves spectrum used in pain management, neuromuscular stimulation for diagnosis and management, etc.
- Basics of Pathology and microbiology as applied to common clinical conditions seen in the practice of Physical Medicine and Rehabilitation
- Knowledge of Pharmacology of drugs used in Physical Medicine and Rehabilitation.
- Understanding of human immune response and its applied aspects in disease and diagnostics
- Basic surgical techniques and basics of skin grafting

#### 2. History and Scope of PMR, Definitions and Terminology

- Understanding PMR, Philosophy
- Definition
- Team Approach
- Department 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
  - FIC including ICIDH and ICF classifications
  - Socio-economic Impact
  - Causes of Disability / chronic disorders
  - Changing Disability profiles
  - Disability Services
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. They would be trained accessibility audits.

5. Legislations, Acts and Policies related to disability
  - Govt. of India Initiatives
  - International Policies; Initiatives by WHO, United Nations etc.
6. Impairment Rating, 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
- Echocardiography and Doppler studies

## II. Utility, Performance and Interpretation of

- Musculo-skeletal and work-related tests
- Exercise tolerance testing
- Functional assessment instruments
- Psychological assessment tests
- Musculoskeletal ultrasonography
- Urodynamics

### 11. Therapeutic Exercises (including PNF & NDT)

- Principles
- Types
- Indications
- Contraindications
- Precautions
- Prescription
- Evaluation of exercise Program

### 12. Electro Therapy and Physical Modalities

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

- Principles
- Types
- Indications
- Contraindications
- Precautions
- Prescription and evaluation of Program

- Manipulation, traction and Massage

13. Electro diagnostic Medicine – EMG/NCV/Evoked potential studies/Audiometry

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
- Design and fabrication
- Precautions
- Prescription
- Check-out / evaluation
- Advanced in orthotics

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 Ambulatory Devices

- Types and indications for ambulatory aids
- Prescription, check-out of wheel chairs and seating systems

- Prescription of ambulatory aids, evaluation
- Training in the use of ambulatory aids, wheelchair & crutch gaits

#### 19. Principles and scope of Occupational Therapy

- Assessment and Training in Activities of Daily Living (ADL)
- Prescription of self-help devices / Assistive devices
- Supervision and execution of Occupational therapy interventions
- Assistive Technology related to PMR
- Environmental control devices and technology

#### 20. Principles and scope of Physical therapy

- Assessment, planning, prescription, execution, supervision and follow up of exercise programs and physical modalities

#### 21. Vocational and Psycho Social evaluation and Rehabilitation

#### 22. 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

### 23. Spasticity Management

- Pathophysiology
- Evaluation
- Medical Management
- Corrective and Surgical Management
- Prescription of orthoses/devices

### 24. Holistic Rehabilitation of Children/ Persons with Cerebral Palsy

- Normal Growth and Development
- Neonatal Reflexes
- Definition, magnitude of the problem, epidemiology, Pathophysiology
- Physical examination
- Investigations
- Rehabilitation therapy approaches including Neuro-Developmental Therapies (NDT)
- Special devices, educational and recreational counseling, parent/caretaker counseling
- Comprehensive management of primary symptoms of Cerebral Palsy
- Surgical decision making and performance of surgical correction
- Management of associated problems with cerebral palsy
- Follow Up
- Adults with CP

### 25. Pediatric Rehabilitation including children with Autism Spectrum Disorders, learning disabilities and multiple disabilities, etc.

26. 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.

27. 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 of Back Schools
- Failed back syndrome

28. 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. Osteoarthritis (OA)
  - ii. Rheumatoid arthritis (RA)
  - iii. Ankylosing spondylitis (AS)
  - iv. Psoriatic arthropathy
  - v. Crystal arthropathies (gout, pseudogout)
  - vi. Other inflammatory 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

## 29. Rehabilitation of Patients with Pain

- Definition, Pathophysiology, Comprehensive assessment, Management and Rehabilitation of painful conditions including Neuropathic and psychosomatic pain
- Chronic pain- definition, pathophysiology, assessment, management
- Chronic Pain
- Recall basic knowledge of chronic pain
- Complete a comprehensive assessment of a patient presenting with chronic pain and
- determine the potential for rehabilitation
- Formulate a rehabilitation management plan specifying appropriate modalities of assessment and treatment
- Coordinate and review team based interdisciplinary patient management, including the integration of appropriate physical and psychological interventions
- recall basic information about current concepts of the anatomy and physiology of acute and chronic pain, including the influence of psychological and cultural factors
- describe epidemiology of chronic pain: incidence, prevalence, morbidity, common causes, natural history
- describe the biopsychosocial model of chronic pain and illness.
- define pain assessment and the use of pain descriptors
- compare pain assessment tools, including pain quality: Visual Analogue Scale (VAS), McGill Pain Questionnaire, pain perception - personal beliefs and perceptions inventory, Fear-Avoidance Behaviour Questionnaire (FABQ), psychological consequences: Illness Behaviour Questionnaire, Minnesota Multiphasic Personality Inventory (MMPI), Beck Depression Scale (BDS), Coping Strategies Questionnaire (CSQ), quality of life: Sickness Impact

Profile (SIP), short form health survey 36 (SF 36), functional capacity:  
Rowland and Morris Pain Questionnaire, Oswestry Low Back Pain  
Questionnaire, Spinal Function Sort (SFS), West and Valpar assessments.

- recall the nature and effectiveness of rehabilitation
- **Interventions**
- describe physical modalities in pain management
- differentiate the role of the following in pain management: ultrasound, short wave diathermy, microwave diathermy, interferential therapy, therapeutic heat and cold, acupuncture, transcutaneous electrical nerve stimulation (TENS), exercise therapy
- explain functional restoration through: general fitness training, ADL retraining, energy conservation, work hardening and vocational resettlement, leisure, sport and domestic activities
- define the indications, contraindications and effectiveness of the following drug interventions for chronic & benign pain: drug rationalisation and detoxification, placebo response, non-narcotic analgesics, opioid analgesics, psychotropic drugs: antidepressants, antineuritics, major tranquillisers, local anaesthetic and regional blockade, including fluoroscopic procedures, epidural and intrathecal anaesthetics and narcotics, sympathetic blocks, corticosteroids
- describe past and present techniques of surgical management, including: surgical management of chronic pain, past and present techniques including cordotomy, neurectomy and stereotactic procedures dorsal column stimulation and implanted nerve stimulators implanted spinal pumps
- describe social contexts of chronic pain, including the role of the family.
- describe the role of the pain management team, including: roles of individual disciplines importance of timely interdisciplinary management in appropriate treatment venues

30. Essentials of Occupational Health as related to PMR practice

31. 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
32. Other Musculoskeletal Conditions of Upper and Lower Limbs and spine including infections and its sequelae, etc.
- Comprehensive management and rehabilitation of Skeletal Tuberculosis and its sequelae.
  - This would include the ability to recognize appropriate referral needs
33. 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
34. Stroke Rehabilitation
- Introduction, Pathophysiology and Risk Factors
  - Clinical Stroke Syndromes
  - Comprehensive Rehabilitation in the acute, sub-acute and chronic phases
  - Medical and therapeutic management of complications and Special Problems
  - Recent advances in stroke management and rehabilitation
35. Rehabilitation of Patients with Traumatic Brain Injury

- Epidemiology, Prevention, Pathophysiology, Prognosis
- Comprehensive Rehabilitation in the acute, sub-acute and chronic phases
- Medical and therapeutic management of complications and Special Problems
- Recent advances in Traumatic Brain Injury management and rehabilitation

### 36. 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. Surgical correction of deformity and ulcers
  - v. Interaction with prominent NGOs in the field of leprosy
  - vi. 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 Parkinsonism, other Movement Disorders and neurodegenerative conditions
- Rehabilitation of patients with ataxia
- Multiple Sclerosis

- Other Infective and Inflammatory disorders causing chronic/ long term neurologic impairments necessitating rehabilitation

### 37. Rehabilitation of Patients with Neural Tube Defects

- Meningomyelocele and other spinal dysraphisms
- Clinical Presentations
- Rehabilitation
- Long Term Complications
- Rehabilitation management of Hydrocephalus

### 38. Neurogenic Bladder and Bowel Dysfunction- pathophysiology, assessment & Management

### 39. Prevention and Management of Chronic Wounds

- Pressure Ulcers- definition, causes, pathophysiology, assessment, staging, Management
- Diabetic & Insensate Foot- pathophysiology, assessment, investigations, prevention, Management

### 40. 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

### 41. Rehabilitation of Swallowing Disorders

### 42. Rehabilitation of persons with vision impairment

- Common causes of blindness and low vision in India and their prevention
- Assistive devices / technology for the visually impaired

- Basic knowledge of Braille system
43. Assessment, counseling and interventions for Sexual Dysfunctions in persons with disabilities
  44. Rehabilitation of patients with HIV/AIDS
  45. Principles of rehabilitation of persons with mental retardation
  46. Principles of rehabilitation of persons with mental illness
  47. Management of sports injury
    - Principles of sports training
    - Complete assessment of sports performance
    - Evaluation of common sports injuries around shoulder, elbow, wrist, hip, knee, ankle and foot and such injuries in non-athletic persons
    - Treatment and medical rehabilitation of persons with such injuries
  48. Principles and practice of Rehabilitation after burns injuries
  49. Pulmonary Rehabilitation
    - General principles of assessment
    - Conditions like COPD, bronchial asthma, bronchiectasis, etc.
  50. Cardiac Rehabilitation
    - General principles
    - Rehabilitation of Common cardiac conditions like coronary artery diseases, Myocardial Infarction, Congenital Heart Diseases, Cardio-Myopathy, Congestive Cardiac Failure, Rheumatic Heart Disease, Hypertension, Cardiac Transplantation.
  51. Vestibular Rehabilitation
  52. Rehabilitation of patients with Peripheral Vascular Diseases
  53. Geriatric Rehabilitation
  54. Cancer Rehabilitation
    - Principles of rehabilitation of cancer patients
    - Rehabilitation of persons with long-term complications associated with cancer therapy and surgery

55. Rehabilitation protocol of Joint Replacements and other orthopaedic surgeries.
56. Rehabilitation of Patients with Congenital Deformities of upper and lower extremities like radial club hand, CTEV, Congenital Dislocation of Hip, Arthrogryposis Multiplex Congenita etc. and Spinal Deformities
57. Health Promotion and principles of lifestyle disorder management
- Lifestyle related diseases - Prevention and management
  - Nutrition and health
  - Assessment of underweight, over-weight and obese persons
  - Management of obesity and its complications
  - Importance and ways to promote physical activity
  - Tobacco cessation & alcohol limitation
  - Diet and stress management, role of Yoga
  - Issues related to obesity and disability
58. Women's Health and Rehabilitation
- Pre- and post partum rehabilitation programs
  - Post menopausal issues in rehabilitation and management of osteoporosis
59. Architectural Barriers, Environmental Modification
- Identification of barriers, accessibility of persons with disabilities and barrier free environment
60. Organ Transplantation and Rehabilitation
61. Rehabilitation in ICU, HDU and CCU setting
62. Medical emergencies in PMR
- Autonomic dysreflexia
  - Aspiration pneumonitis
  - Deep Vein Thrombosis / Pulmonary Embolism
  - Urinary retention / obstruction, etc.
63. Palliative care / long-term care of terminally ill

64. Complementary and alternative medicine

65. Ethical practices in Rehabilitation

- Role and how to take informed consent

66. Evidence Based Rehabilitation

67. Research Methodology

- Basic understanding of research methodology
- Ability to identify research needs, formulate null hypothesis and interpret statistical analysis

68. Role of rehabilitation in Disaster Management

69. Quality assurance in PMR

70. Information & Communication Technology (ICT) and rehabilitation

71. Current Developments / Recent Advances in PMR

72. Teaching Training

- To understand the methods of teaching and training
- To apply the appropriate method of teaching
- To impart teaching training to students

73. Public health programme

- Awareness of various National programmes in relation to disability prevention and early detection of disability
- Stakeholders in National Control Programmes
- Violence & Injury Prevention

## **16. Year-wise distribution of curriculum**

This is the tentative year-viz. breakup where full flexibility is granted to the Institution running the Course to realign it according to their infrastructure and resources.

### **1<sup>st</sup> Year**

1. Basic Sciences as Applicable to P M R

- Functional and applied anatomy of Musculo-skeletal system, Nervous system, Cardio-vascular system, Respiratory system and Uro-genital system.
- Kinesiology and Biomechanics
- Physiology of exercise, and other basics of physiology as applied to PMR
- Metabolism of important nutrients & micronutrients
- Basics of electrical and thermal properties of tissues (electrotherapy), electromagnetic waves spectrum used in pain management, neuromuscular stimulation for diagnosis and management, etc.
- Basics of Pathology and microbiology as applied to common clinical conditions seen in the practice of Physical Medicine and Rehabilitation
- Knowledge of Pharmacology of drugs used in Physical Medicine and Rehabilitation.
- Understanding of human immune response and its applied aspects in disease and diagnostics
- Basic surgical techniques and basics of skin grafting

## 2. History and Scope of PMR, Definitions and Terminology

- Understanding PMR, Philosophy
- Definition
- Team Approach
- Department 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
- World Report on Disability, 2011
- Statistics – Census and NSSO
- Epidemiology / Natural history of chronic disability and disorders
- Disability Prevention – levels and examples
- FIC including ICIDH and ICF classifications
- Socio-economic Impact
- Causes of Disability / chronic disorders
- Changing Disability profiles
- Disability Services

#### 4. Legislations, Acts and Policies related to disability

- Govt. of India Initiatives
- International Policies; Initiatives by WHO, UN

#### 5. Schemes and Benefits for persons with disabilities (PWDs)

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

#### 6. 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, urogenital, etc.
- Any other relevant clinical examination as applied to PMR

## 7. Diagnostic Tests

### I. Utility and Interpretation of

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

### II. Utility and Interpretation of

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

## 8. Therapeutic Exercises

- Principles
- Types
- Indications
- Contraindications
- Precautions
- Prescription
- Evaluation of exercise Program

## 9. Electro Therapy and Physical Modalities

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

- Principles

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

10. Interpretation of Electro diagnostic Medicine – EMG/NCV/Evoked potential studies/Audiometry

11. Pharmacotherapy in PMR

12. Gait and its Deviations

13. Orthotics

- Principles of orthotic prescription, biomechanics
- Types of orthoses, specific joints, for upper and lower limbs, spine,
- Precautions
- Prescription

14. Prosthetics

- Principles of prosthetic prescription, biomechanics
- Types of prostheses for upper and lower limbs
- Precautions in prosthetic use

15. Wheel chairs, Seating Systems and Ambulatory Devices

- Types and indications for ambulatory aids
- Prescription, check-out of wheel chairs and seating systems
- Prescription of ambulatory aids, evaluation

16. Principles and scope of Occupational Therapy

- Assessment and Training in Activities of Daily Living (ADL)
- Prescription of self-help devices / Assistive devices

17. Vocational and Psycho Social evaluation and Rehabilitation

18. Rehabilitation of Patients with Amputations

- General Considerations

19. Spasticity Management

- Pathophysiology
- Medical Management

20. Holistic Rehabilitation of Cerebral Palsy

- Normal Growth and Development
- Neonatal Reflexes
- Definition, Pathophysiology

21. 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

22. Rehabilitation of Patients with Arthritic & Rheumatological conditions

- Review of Classifications
- Clinical evaluation, assessment of disability, impairment and functional limitation

23. Rehabilitation of Patients with Pain

- Pathophysiology of painful conditions including Neuropathic and psychosomatic pain

24. Rehabilitation of Patients with Spinal Cord Injury (SCI)

- Introductions, Epidemiology and need; Models of Care
- Anatomy, Mechanics and Syndromes of Traumatic Injury

25. Stroke Rehabilitation

- Introduction, Pathophysiology and Risk Factors
- Clinical Stroke Syndromes

26. Rehabilitation of Patients with Traumatic Brain Injury

- Epidemiology, Prevention, Pathophysiology, Prognosis

27. Rehabilitation of Patients with other Neurologic Disorders

- Rehabilitation of Patients with Hansen's Disease
  - i. Special emphasis on prevention of deformities
  - ii. Protective footwear
  - iii. Interaction with prominent NGOs in the field of leprosy
  - iv. Rehabilitation measures and National programs
- Rehabilitation of Patients with Poliomyelitis
  - i. Aetiopathogenesis, Prevention, Acute Flaccid Paralysis (AFP) Surveillance

28. Rehabilitation of Patients with Neural Tube Defects

- Meningomyelocele and other spinal dysraphisms
- Clinical Presentations

29. Prevention of Chronic Wounds

- Pressure Ulcer
- Diabetic & Insensate Foot care

30. Health Promotion and principles of lifestyle disorder management

- Lifestyle disease Prevention and management
- Nutrition and health
- Assessment of underweight, over-weight and obese persons
- Management of obesity and its complications
- Importance and ways to promote physical activity
- Tobacco cessation & alcohol limitation

- Diet and stress management, role of Yoga
- Issues related to obesity and disability

### 31. Women's Health and Rehabilitation

- Pre- and post partum rehabilitation programs
- Post menopausal issues in rehabilitation and management of osteoporosis

### 32. Architectural Barriers, Environmental Modification

- Identification of barriers, accessibility of persons with disabilities and barrier free environment

### 33. Medical emergencies in PMR

- Autonomic dysreflexia
- Aspiration pneumonitis
- Deep Vein Thrombosis / Pulmonary Embolism,
- Urinary retention / obstruction, etc.

### 34. Ethical practices in Rehabilitation

- Role and how to take informed consent

### 35. Evidence Based Rehabilitation

### 36. Research Methodology

- Basic understanding of research methodology

### 37. Quality assurance in PMR

### 38. Public health programme

- Awareness of various National programmes in relation to disability prevention and early detection of disability
- Stakeholders in National Control Programmes
- Violence & Injury Prevention

## 2<sup>nd</sup> Year

### 39. 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. They would be trained in accessibility audits.

### 40. Impairment Rating, Disability Assessment and Certification

### 41. 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.

### 42. Diagnostic Tests

Performance of:

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

43. Proprioceptive Neuromuscular Facilitation (PNF) & Neuro-Developmental Therapy (NDT)

- Principles
- Types
- Indications
- Contraindications
- Precautions
- Prescription
- Evaluation of exercise Program

44. Performance of Electro diagnostic Medicine – EMG/NCV/Evoked potential studies/Audiometry

45. Gait Analysis

46. Orthotics

- Materials used in orthotics
- Indications – condition-specific
- Design and fabrication
- Check-out / evaluation

47. Prosthetics

- Materials used in prosthetics, components, joints
- Level specific prosthetic prescriptions and indications for different types of prosthetic components
- Prosthetic gait training, deviations

48. Wheel chairs, Seating Systems and Ambulatory Devices

- Types, Parts, Uses, Prescription, Training in the use of ambulatory aids, wheelchair & crutch gaits

49. Principles and scope of Occupational Therapy

- Prescription, Supervision and execution of Occupational therapy interventions

#### 50. Principles and scope of Physical therapy

- Prescription, Supervision and execution of therapeutic exercises and physical modalities

#### 51. Rehabilitation of Patients with Amputations

- Pre Amputation Counseling and Therapy
- Immediate Post Operative Phase
  - i. Residual limb management, rigid dressings, exercises, temporary / pylon prosthetic fitment
- Definitive prosthetic considerations
  - i) Prosthetic prescription
  - ii) Supervision of Training

#### 52. Spasticity Management

- Prescription of orthoses/devices

#### 53. Holistic Rehabilitation of Cerebral Palsy

- Rehabilitation therapy approaches including Neuro-Developmental Therapies (NDT)
- Special devices, educational and recreational counseling, parent/caretaker counseling
- Comprehensive management of primary symptoms of Cerebral Palsy

#### 54. 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.

#### 55. Rehabilitation of Patients with Neck and Back Pain

- Rehabilitation: General Principles, Disease-specific
- Concepts of Back Schools

56. Rehabilitation of Patients with Arthritic & Rheumatological conditions

- Impact of disorder on person, family members, vocational, educational, recreational aspects and on society
- Diagnosis

57. Rehabilitation of Cumulative Trauma Disorders including common occupational disorders

- Disease-specific Management

58. Other Musculoskeletal Conditions of Upper and Lower Limbs and spine including infections and its sequelae, etc.

- Comprehensive management and rehabilitation of Skeletal Tuberculosis and its sequelae.
- This would include the ability to recognize appropriate referral needs

59. Rehabilitation of Patients with Spinal Cord Injury (SCI)

- Non-Traumatic SCI; Outcomes
- Acute Phase Management: Conservative vs. Surgical
- Chronic Phase
- Testing, suitability, trial and training for suitable wheelchairs and other ambulatory devices / orthoses for functional / ADL independence

60. Stroke Rehabilitation

- Comprehensive Rehabilitation in the acute, sub-acute and chronic phases

61. Rehabilitation of Patients with Traumatic Brain Injury

Comprehensive Rehabilitation in the acute, sub-acute and chronic phases

62. Rehabilitation of Patients with other Neurologic Disorders

- Rehabilitation of Patients with Peripheral Neuropathies, nerve injuries
- Rehabilitation of Patients with Hansen's Disease
- Foot and hand care
- Rehabilitation of Patients with Poliomyelitis
- Post Polio Residual Paralysis (PPRP) (conservative/ orthotic/ surgical management of deformities around each joint)
- Other Infective and Inflammatory disorders causing neurologic impairments necessitating rehabilitation

63. Rehabilitation of Patients with Neural Tube Defects

- Rehabilitation
- Rehabilitation management of Hydrocephalus

64. Neurogenic Bladder and Bowel Dysfunction & Management

65. Assessment, counseling and interventions for Sexual Dysfunctions in persons with disabilities

66. Management of sports injury

- Principles of sports training
- Complete assessment of sports performance

67. Principles in Burn Rehabilitation

68. Pulmonary Rehabilitation

- General principles

69. Cardiac Rehabilitation

- General principles

70. Cancer Rehabilitation

- Principles of rehabilitation of skeletal neoplasms

71. Rehabilitation protocol of Joint Replacements and other orthopaedic surgeries.

72. Health Promotion and principles of lifestyle disorder management

- Lifestyle disease Prevention and management
- Nutrition and health
- Assessment of underweight, over-weight and obese persons
- Management of obesity and its complications
- Importance and ways to promote physical activity
- Tobacco cessation & alcohol limitation
- Diet and stress management, role of Yoga
- Issues related to obesity and disability

73. Women's Health and Rehabilitation

- Pre- and post partum rehabilitation programs
- Post menopausal issues in rehabilitation and management of osteoporosis

74. Evidence Based Rehabilitation

75. Quality assurance in PMR

76. Introduction to Teaching Training

- To understand the methods of teaching and training
- To apply the appropriate method of teaching
- To impart teaching training to students

### **3<sup>rd</sup> Year**

77. Diagnostic Tests

Utility, Performance and Interpretation of:

- Musculoskeletal ultrasonography

78. Orthotics

- Advances in Orthotics

79. Prosthetics

- Check-out / evaluation
- Advances in prosthetics

#### 80. Principles and scope of Occupational Therapy

- Assistive Technology related to PMR
- Environmental control devices and technology

#### 81. Rehabilitation of Patients with Amputations

- Surgical Techniques, Level of amputations
- Definitive prosthetic considerations

##### iii) Testing

##### iv) Trial

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

#### 82. Spasticity Management

- Corrective and Surgical Management

#### 83. Holistic Rehabilitation of Cerebral Palsy

- Surgical decision making and performance of surgical correction
- Management of associated problems with cerebral palsy
- Follow Up
- Adults with CP

#### 84. Pediatric Rehabilitation including children with Autism Spectrum Disorders, learning disabilities and multiple disabilities, etc.

85. Rehabilitation of Patients with Neck and Back Pain

- Failed back syndrome

86. Rehabilitation of Patients with Arthritic & Rheumatological conditions

- Comprehensive management including monitoring of disease control
- Disease-specific Rehabilitation
  - i) Osteoarthritis (OA)
  - ii) Rheumatoid arthritis (RA)
  - iii) Ankylosing spondylitis (AS)
  - iv) Psoriatic arthropathy
  - v) Crystal arthropathies (gout, pseudogout)
  - vi) Other inflammatory 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

87. Rehabilitation of Patients with Pain – Acute and Chronic Pain

- Comprehensive Management and Rehabilitation of painful conditions including Neuropathic and psychosomatic pain

88. Essentials of Occupational Health

89. Rehabilitation of Cumulative Trauma Disorders including common occupational disorders

- Study of job environment and Ergonomic considerations
- Work studies, Work simulation and work hardening programs for industrial workers for increasing the output and reducing absenteeism

90. Rehabilitation of Patients with Spinal Cord Injury (SCI)

- Comprehensive Rehabilitation
- Secondary Conditions, Complications and their management

#### 91. Stroke Rehabilitation

- Medical and therapeutic management of complications and Special Problems
- Recent advances in stroke management and rehabilitation

#### 92. Rehabilitation of Patients with Traumatic Brain Injury

- Medical and therapeutic management of complications and Special Problems
- Recent advances in Traumatic Brain Injury management and rehabilitation

#### 93. Rehabilitation of Patients with other Neurologic Disorders

- Rehabilitation of Patients with Hansen's Disease
  - Surgical correction of deformity and ulcers
- Rehabilitation of plexopathies
- Motor Neuron Diseases (MND)
- Rehabilitation of Patients with Poliomyelitis
  - Post Polio Residual Paralysis (PPRP) (surgical management of deformities around each joint)
  - 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

#### 94. Rehabilitation of Patients with Neural Tube Defects

- Long Term Complications

#### 95. Management of Chronic Wounds

- Pressure Ulcer Management

- Diabetic & Insensate Foot Management

#### 96. 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

#### 97. Rehabilitation of Swallowing Disorders

#### 98. Visual Rehabilitation

- Common causes of blindness and low vision in India and their prevention
- Assistive devices / technology for the visually impaired
- Basic knowledge of Braille system

#### 99. Rehabilitation of patients with HIV/AIDS

#### 100. Principles of rehabilitation of persons with mental retardation

#### 101. Principles of rehabilitation of persons with mental illness

#### 102. Management of sports injury

- Evaluation of common sports injuries around shoulder, elbow, wrist, hip, knee, ankle and foot and such injuries in non-athletic persons
- Treatment and medical rehabilitation of persons with such injuries

#### 103. Procedures in Burn Rehabilitation

#### 104. Pulmonary Rehabilitation

- Conditions like COPD, bronchial asthma, bronchiectasis, etc.

#### 105. Cardiac Rehabilitation

- Rehabilitation of Common cardiac conditions like Coronary Artery Disease, post-Myocardial Infarction, post-CABG Surgery, post-Coronary Angioplasty, post-Cardiac Transplantation, Cardiac Failure, Hypertension, Rheumatic Heart Disease

106. Vestibular Rehabilitation
107. Rehabilitation of patients with Peripheral Vascular Diseases
108. Geriatric Rehabilitation
109. Cancer Rehabilitation
  - Rehabilitation of persons with long-term complications associated cancer therapy and surgery
110. Rehabilitation of Patients with Congenital Deformities of upper and lower extremities like radial clubhand, CTEV, CDH, AGMC etc. and Spinal Deformities
111. Health Promotion and principles of lifestyle disorder management
  - Lifestyle related diseases- causes, Prevention and management
  - Nutrition and health
  - Assessment of underweight, over-weight and obese persons
  - Management of obesity and its complications
  - Importance and ways to promote physical activity
  - Tobacco cessation & alcohol limitation
  - Diet and stress management, role of Yoga
  - Issues related to obesity and disability
112. Women's Health and Rehabilitation
  - Pre- and post partum rehabilitation programs
  - Post menopausal issues in rehabilitation and management of osteoporosis
113. Organ Transplantation and Rehabilitation
114. Rehabilitation in ICU and CCU setting
115. Palliative care / long-term care of terminally ill
116. Complementary and alternative medicine
117. Evidence Based Rehabilitation
118. Research Methodology
  - Ability to identify research needs, formulate null hypothesis and interpret statistical analysis
119. Role of rehabilitation in Disaster Management

- 120. Quality assurance in PMR
- 121. Information & communication technology (ICT) and rehabilitation
- 122. Current Developments / Recent Advances in PMR
- 123. Teaching Training
  - To understand the methods of teaching and training
  - To apply the appropriate method of teaching
  - To impart teaching training to students

## **17. Competency-Based Training related to Good Rehab Practice**

### **17.1 Good Rehab Practice**

#### **17.1.1 History taking, examination and record keeping skills**

The assessment for this section of the curriculum will be through the observation by the trainer, multisource feedback and examination of the medical records including note keeping and letters.

##### **17.1.1a History taking**

The trainee is able to take a history from individuals with disabling conditions, with particular reference to long term neurological conditions, spinal injury, musculoskeletal disorders and amputation & limb deficiencies

##### **Knowledge**

The trainee consistent demonstrates a knowledge of the

a). Epidemiology of the range of disabling disorders including those related to

- the nervous system including head injury, stroke, Parkinson's disease and other movement disorders, multiple sclerosis and other demyelinating disease, motor neurone disease, traumatic and non-traumatic spinal cord injury, Guillain-Barre syndrome, neuropathies, cerebral palsy,
- the spinal cord including both traumatic and non-traumatic disorders of the spine
- the musculoskeletal system including rheumatoid disease, the spondyloarthritides, osteoarthritis, soft tissue rheumatism, spinal disorders, osteoporosis, and congenital & acquired disorders of muscle
- the vascular system that determine the development of peripheral vascular disease
- common psychological disorders particular those frequent in disabling disorders
- developmental disorders

- survivors of multiple trauma
- b). Aetiology of the range of disabling disorders

### **Skills**

The trainee consistently takes a history and examines effectively by:

- a). Respecting the individuals privacy, dignity, wishes and beliefs and obtaining informed consent wherever appropriate
- b). Providing support and information to the individual throughout the assessment
- c). Identifying the most appropriate assessment to use, including when to take a psychiatric history
- d). Ensuring that the symptoms being presented by the individual have been fully addressed

### **Attitude**

The trainee

- a). Fully addresses patients concerns, expectations and ideas
- b). Respects patient confidentiality
- c). Maintains cultural awareness and identity
- d). Values patient comprehension
- e) Works to minimise the perceived stigma associated with mental health problems
- f) The trainee consistently reflects on his/her personal response to unusual behaviours and recognises the need to reflect on the framework by which one makes judgements

#### **17.1.1b Examination**

The trainee is able to examine individuals with disabling conditions, with particular reference to long term neurological conditions, spinal injury, musculoskeletal disorders and amputation & limb deficiencies

### **Knowledge**

The trainee consistent demonstrates a knowledge of the

- a). Pathophysiology of various specific impairments including cardiac dysfunction, respiratory failure, spasticity, ataxia, LMN weakness, dysphagia, disorders of speech and language, cognitive dysfunction including perception, memory, attention, concentration, sequencing, planning and executive functions, sensory impairment due to visual and hearing loss, neuropsychological dysfunction, bladder and bowel dysfunction, sexual dysfunction and infertility,

b) Pathophysiology features of diseases bones, joints and the spine including and understanding of normal and abnormal movement

### **Skills**

The trainee consistently takes a history and examines effectively by:

- a). Respecting the individuals privacy, dignity, wishes and beliefs and obtaining informed consent wherever appropriate
- b). Examining the patient comprehensively and accurately exercising good judgement in the selection of examination techniques

### **Attitude**

The trainee

- a). respects a patients dignity, cultural background and other beliefs
- b). recognizes the importance of patient consent in the context of an examination

#### **17.1.1c Principles of diagnosis**

The trainee is able to make a diagnosis and provide prognostic information for individuals with disabling conditions, with particular reference to long term neurological conditions, spinal injury, musculoskeletal disorders and amputation & limb deficiencies

### **Knowledge**

The trainee consistent demonstrates a knowledge of the

- a). Diagnostic features of the range of disabling disorders including the clinical features of common cognitive deficits, including attention, executive function, memory, language, and spatial disorders, including the common patterns of these disorders and the behavioural consequences of these deficits
- b). A knowledge of the anatomy and surface landmarks of major joints and soft tissue structures
- c). Range of behaviours seen in patients with brain injury both in the acute, post acute and long term
- d). Prognosis and prognostic features of the range of disabling disorders
- e) Mechanisms of recovery, neural plasticity, learning and skill acquisition
- f) Influence of psychological factors

### **Skills**

The trainee consistently takes a history and examines effectively by:

- a). Identifying the factors that contribute to the patients symptoms
- b). Proposing a differential diagnosis and most likely diagnosis
- c). Discussing the diagnosis with the individual
- d). Arranging further investigation and assessment as appropriate
- e). Providing information about the nature of investigations and further assessment to the patient.

### **Attitude**

The trainee works to adapt their communication style to the needs of the patient

#### **17.1.1d Therapeutics and safe prescribing**

The trainee is able to prescribe appropriately and safely a range of interventions for individuals with disabling conditions, with particular reference to long term neurological conditions, spinal injury, musculoskeletal disorders and amputation & limb deficiencies

### **Knowledge**

The trainee consistently demonstrates a knowledge of

- a). Management of acute spinal cord injury
- b). Both pharmacological and non-pharmacological treatment options for the range of disabling disorders including
  - neurological disorders such as head injury, stroke, Parkinson's disease and other movement disorders, multiple sclerosis and other demyelinating disease, motor neurone disease, traumatic and non-traumatic spinal cord injury, Guillain-Barre syndrome, neuropathies, cerebral palsy
  - musculoskeletal disorders including inflammatory and non-inflammatory connective tissue disorders, diseases of bone (particularly osteoporosis), muscle (congenital and acquired) and tendon.

Non-pharmacological treatment options for disabling disorders include role of surgery, education, self management, occupational therapy, physiotherapy, exercise and rest, safe injection techniques, biomechanical modalities such as prosthetics, orthotics and splinting, assistive devices and environmental adaptation

- c). Management approaches for specific impairments including spasticity, ataxia, LMN weakness, sensory impairment due to visual and hearing loss, neuropsychological dysfunction including behavioural disturbance, bladder and bowel dysfunction, sexual dysfunction and

infertility, dysphagia, disorders of speech and language, feeding difficulties, neurogenically disturbed respiratory function, cognitive dysfunction including perception, memory, attention, concentration, sequencing, planning and executive functions

- d). Long term management approaches for specific impairments including spasticity, , respiratory failure and need for long term ventilation, pain, pressure sores
- e). Different treatment options and resources; both drug and non-drug, available for such psychiatric disorders, and cognitive deficits (including post traumatic amnesia)
- f). Benefits and limitations of counselling approaches
- g) Common approaches used to manage abnormal behaviours
- h) Provisions of the Mental Health Act

### **Skills**

The trainee is able to

- a). identify the therapeutic interventions that are available and explain those to the individual and, if appropriate, those involved in their care
- b). prescribe medication appropriately, informing the patient about risks and benefits accurately
- c). agree the delivery of therapeutic interventions, including if appropriate operative treatment, that takes account of the needs of the individual and all other relevant factors
- d). schedule the delivery of therapeutic interventions as agreed with the individual
- e). confirm the delivery of therapeutic interventions with all relevant practitioners and agencies
- f). establish when the effect of the therapeutic intervention will be reviewed
- g) identify patients who pose a threat to themselves and take appropriate action
- h) refer on to appropriately both to psychiatrists and to others who provide psychological support such as psychotherapists, clinical psychologists, counsellors, or other professionals such as social workers or community psychiatric nurses
- i) choose the most appropriate approach to managing a person with a cognitive disorder or a behavioural disorder
- j) work with the multidisciplinary team to identify and implement the most appropriate intervention for an individual with a cognitive disorder

### **Attitude**

The trainee

- a) recognizes the benefit of minimizing the number of medications taken by a patient
- b) recognizes the importance of communicating complex multidisciplinary treatment plans clearly to all concerned.
- c) promote the expert patient programme
- d) recognizes the importance of providing enough information to the patient to allow them to make an informed choice regarding treatment options

#### 17.1.1e **Information management**

The trainee is able to collate and manage information relevant to individuals with disabling conditions, with particular reference to long term neurological conditions, spinal injury, musculoskeletal disorders and amputation & limb deficiencies

#### **Knowledge**

The trainee consistently demonstrates a knowledge of the

- a) performance and interpretation of a range of common neuro-physiological, neuro-radiological and neuropsychological tests,
- b) common laboratory, imaging and other diagnostic tests in the diagnosis of bones, joints and other connective tissues.
- c) the range of tests available to evaluate cognitive disorders
- d) Right to Information Act

#### **Skills**

The trainee consistently collates and manages information effectively by:

- a). Reviewing all available and relevant information about the individual
- b). Arranging further investigation and assessment as appropriate
- c). Providing information about the nature of investigations and further assessment to the patient
- e). Reviews the results of investigations, interprets and records the results, acts upon and imparts them to the individual in a timely fashion including interpreting cognitive assessments and explaining their implications for the rehabilitation process, the patients and their family
- f) Keeps accurate, legible and complete records and comply with all the relevant legal, professional and organisational requirements and guidelines

### **Attitude**

The trainee

- a). takes responsibility for note keeping, referrals, letters and discharge summaries
- b). recognizes the patient safety and medico-legal aspects of poor note keeping
- c). recognizes the importance of confidentiality
- d). takes responsibility for offering the patient to share written information about themselves

### **17.1.2 Decision making and clinical reasoning**

The trainee will be able to co-ordinate the care of individuals with disabling condition

### **Knowledge**

The trainee consistently demonstrates a knowledge of

- a) differing concepts about disability including the WHO ICIDH, the ICF as well as though advocated by the disability movement
- b) relevant legislation including the disability discrimination act, and the mental capacity bill
- c) roles and expertise of the different members of the multidisciplinary team, including the role of the doctor, both professionally and personally defined
- d) the standards for specialist in-patient and community rehabilitation services
- e) the differing needs of patients with acute, chronic and progressive disability at differing stages in their lives

### **Skills**

The trainee is able to consistently and safely

- a) construct a list of impairments, activity and participation issues following assessment
- b) work with the MDT and the patient to select the most appropriate form on management
- c) lead the Multi-Disciplinary Team in a range of settings
- d) work as an advocate on behalf of people with a disability including working across administrative barriers between different service providers to achieve continuity of care
- e) contribute to the appropriate negotiation of goals, application of resources and review of achievements in different settings
- f) communicate effectively with patients and relatives

### **Attitude**

The trainee consistently

- a) respects the wishes and needs of the patients,

- b) recognizes the role of the multidisciplinary team
- c) values the contribution and expertise of the multidisciplinary team, working with them to develop consistent, fair approaches to management
- d) negotiates the best outcome for the patient
- e) is aware of need to search for evidence to support clinical decision making

### **17.1.3 Good clinical care and safety**

The assessment of this section of the curriculum will be through trainer observation of the trainee and multisource feedback

#### **17.1.3a The patient/ person with disability as a central focus of care**

The trainee is able to plan and agree the delivery of a multidisciplinary goal-centred rehabilitation programmes

#### **Knowledge**

The trainee consistently demonstrates a knowledge of

- a). the rationale, benefits and limitations of goal setting
- b). different approaches to goal setting
- c). the evaluation of goal setting

#### **Skills**

The trainee consistently

- a). works with the individuals and, if appropriate, their families or carers to identify treatment priorities
- b). identifies and uses all sources of information about the health, and functional abilities of individuals
- c). clearly identifies the options for addressing ill-health and functional limitations of individuals, including both benefits and risks of each option
- d). works in partnership with other practitioners and agencies to agree roles and responsibilities for meeting the health needs and functional goals of individuals
- e). plans the delivery of health care according to the resources available and the impact it will have on the individual
- f). identify any problems with achieving these plans and resolve them effectively

#### **Attitude**

The trainee consistently

- a).works with the individuals to support self management
- b). recognizes that individuals may make choices that conflict with the physicians value system, reflects on his/her personal response to these choices and recognises the need to reflect on the framework by which one makes judgements

The trainee will understand the social and cultural factors which influence the impact of disability, and their impact on the rehabilitation process

### **Knowledge**

The trainee consistently demonstrates a knowledge of

- a) causes and effect of societal attitudes to disability and methods of assessing negative attitudes to disability.
- b) influence of the culture and ethnicity on the impact of disability
- c) the impact of disability on social functioning including housing employment, financial leisure transport and interpersonal relationship

### **Skills**

The trainee is able to consistently and safely

- a) perform a home based assessment of the impact of disease and disability within the home setting.
- b) liaise with other members of community based professions and provide a joint home based assessment

### **Attitude**

The trainee consistently

- a) appreciates the factors in the community setting which are relevant to pre discharge planning and effective evaluation of long term outcomes of hospital admissions
- b) appreciates the roles of stigmatisation and psychosocial factors on the individual's coping skills
- c) appreciates the social and cultural factors which influence individual's coping skills

The trainee can recognise the psychological mechanisms which cause or exacerbate disability

### **Knowledge**

The trainee consistently demonstrates a knowledge of

- a) how illness, disease, pain and disability can influence ‘personality’
- b) how ‘personality’ and experience are important contextual factors and can influence the response to illness, disease, pain and disability
- c) the somatic presentation of emotional distress
- d) the impact of both intrinsic and extrinsic factors on mood
- e) approaches to the management of disability not apparently associated with an identifiable organic process

### **Skills**

The trainee is able to consistently and safely

- a) recognise the presence of psychological influences in the presentation and rehabilitation management of a person with physical impairments
- b) choose the most appropriate approach to managing a person with psychologically induced disability
- c) contribute effectively to the multidisciplinary management of patients where there is a discrepancy between subjective and objective assessment of disability
- d) refer appropriately to psychologists, psychiatrists and other mental health specialists as appropriate

### **Attitude**

The trainee consistently reflects on his/her personal response to unusual behaviours and recognises the need to reflect on the framework by which one makes judgements

#### **17.1.3b Prioritisation of safety in clinical practice**

The trainee will be able to identify the risks of developing complications secondary to a disabling illness

### **Knowledge**

The trainee consistently demonstrates a knowledge of

- a) the prevention of medical complications of people with musculoskeletal and neurological impairment including falls, tissue viability (pressure sores) , nutrition and feeding, continence, physical function, tone and posture (contracture), pain management, mood disturbance and behavioural disturbance
- b) the management of the complications of people with musculoskeletal and neurological impairment listed in (a)

- c) nutritional and energy needs of severely disabled people, including nutritional supplementation
- d) techniques used for the modulation tone and posture

### **Skills**

The trainee is able to

- a).undertake rapid screening assessments of the impact of disease and disability on everyday life
- b) identify the risks and potential complications associated with disability
- c). work with the multidisciplinary team to prevent the development of those complications
- d). identify the needs of carers

### **Attitude**

The trainee consistently

- a) is aware of the impact of assessment processes on the patient and their family and deal with issues sensitively
- b) values the contribution and perspectives of formal and informal carers
- c) negotiates the best outcome for the patient, and carer
- d) communicates clearly with patient, family and carers about care needs

#### **17.1.3c Team working and patient safety**

The trainee will be able to work across organizational barriers

### **Knowledge**

The trainee consistently demonstrates broad knowledge of available services for the delivery of care in different settings including

- a).organization of services locally including linkage with paediatric and older peoples services
- b). practice across the interface between rehabilitation medicine, learning disabilities, psychiatry, neuropsychiatry, and neuropsychology
- c). practice across the interface between primary and secondary care, health and social services, vocational and voluntary services

### **Skills**

The trainee consistently

- a) exercises good judgement in formulating a management plan appropriate to available services.

b). can judge risks versus patient wishes.

### **Attitude**

The trainee consistently shows

- a). willingness to work with what is available.
- b). adaptability and flexibility.
- c). sensitivity to patient wishes
- d). recognizes the importance of sharing information with primary care and community teams

### **17.1.4 Health Promotion and Public Health**

The assessment of this section of the curriculum will be through trainer observation of the trainee

The trainee will be able to promote the health and well-being of people with disability

### **Knowledge**

The trainee consistently demonstrates a knowledge of

- a) basic exercise physiology
- b) the expert patient programme

### **Skills**

The trainee is able to

- a). identify the health promotion needs of people with disability
- b). institute appropriate management to promote long term health and well being in people with disability
- c). advice individuals about the risks and benefits of specific exercise programmes

### **Attitude**

The trainee consistently

- a) is aware of the impact difficulties with access and communication have on individuals abilities to use screening programmes
- b) is aware of the risk of mood disorders in people with significant disability

### **17.1.5 Legal framework for practice**

The assessment of this section of the curriculum will be through trainer observation of the trainee

The trainee can work within the frameworks offered by law

### **Knowledge**

The trainee consistently demonstrates a knowledge of the legislation required to practice safely and effectively including

- a) provision of services through the Constitution of India, Persons with Disabilities Act, 1995, National Trust for Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities Act 1999, Ministries of Social Justice & Empowerment, transport, housing and other departments relevant to the lives with people with disability
- b) aspects of disability including the PWD Act and its relevance to employment, driving legislation, court of protection, living will, minimal awareness states and medico-legal reports.
- c) international laws, conventions such as UNCRPD etc.

### **Skills**

The trainee is able to consistently and safely

- a) provide accurate advice to patients and colleagues about their rights and responsibilities with regard to person with a disability and their carers

### **Attitude**

The trainee consistently

- a) shows respect for the law
- b) acts within the law at all times
- c) demonstrates a positive attitude to decision making within a legal framework and is prepared to seek advice when necessary

### **17.1.6 Ethical research**

The assessment of this section of the curriculum will be through a). copies of research study/ thesis/ dissertation protocols b) copies of ethics and R&D forms c) copies of signed consent forms d) copies of written reports e) presentation at local or national meetings f) attendance at appropriate research awareness and training meetings

The trainee is able to complete a research or clinical audit study from the planning to final report stage

### **Knowledge**

The trainee consistently demonstrates a knowledge of

- a) quantitative research including design of randomised control trials
- b) qualitative research including an understanding of theoretical approaches and data analysis

- c) principles of statistics, both parametric and non parametric
- d) psychometric principles of measurement
- e) the principles and practice of research governance including data protection
- f) importance of informed consent in accordance with ICMR Guidelines and Declaration of Helsinki etc.
- h) Good Clinical Practice guidelines etc.

### **Skills**

The trainee is able to consistently and safely

- a) design and write a comprehensive study protocol using standard headings
- b) complete ethics and trust R&D forms if necessary
- c) recruit, and consent study subjects
- d) collect data and store it appropriately
- e) analyse data appropriately
- f) prepare written and verbal reports
- g) explain implications for practice and steps required to incorporate any changes deemed necessary as a result of the study

### **Attitude**

The trainee consistently

- a) recognises the importance of, and displays enthusiasm towards, the advancement of research within rehabilitation
- b) is supportive of the research efforts of others
- c) is realistic about the benefits and challenges of rehabilitation research and is usually supportive of research within his/her area of work

The trainee is able to present research/audit study results orally and in written form

### **Knowledge**

The trainee consistently demonstrates a knowledge of

- a) use of word processing packages
- b) use of PowerPoint to produce slides and posters

### **Skills**

The trainee is able to consistently and safely

- a). design a presentation using power point or similar package,

- b). prepare a poster using PowerPoint or similar package
- c).write a paper using standard formats including an awareness of the role of structured abstracts, methodological headings, and structured discussion
- d). present research findings in a formal setting.

### **Attitude**

The trainee consistently

- a) is aware of the importance of reporting audit and research findings and is committed to doing so
- b) is supportive of others who are reporting audit and research findings

### **17.2 Managing long term conditions**

The assessment of this section of the curriculum will be through

- a). Observation by trainer
- b) multisource feedback
- c) Inspection of notes, letters, summaries and treatment plans.

17.2.1 The trainee will be able to co-ordinate the delivery of health care needs of individuals with disabling condition.

### **Knowledge**

The trainee consistently demonstrates a knowledge of

- a) differing concepts about disability including the WHO ICIDH, the ICF as well as though advocated by the disability movement
- b) relevant legislation including the disability discrimination act, and the mental capacity bill
- c) roles and expertise of the different members of the multidisciplinary team, including the role of the doctor, both professionally and personally defined
- d) the standards for specialist in-patient and community rehabilitation services and the evidence base and rationale for these
- e) the differing needs of patients with acute, chronic and progressive disability at differing stages in their lives
- e) methods of measurement and their application

### **Skills**

The trainee is able to consistently and safely

- a) work with the Multi-Disciplinary Team (MDT) and the patient to select the most appropriate form on management
- b) lead the MDT in range of settings
- c) organise and chair a multidisciplinary case conference
- d) organise and chair a family meeting
- e) work as an advocate on behalf of people with a disability including breaking down administrative barriers between different service providers
- f) contribute to the appropriate negotiation of goals, application of resources and review of achievements in different settings
- g) communicate effectively with relatives
- h) establish monitoring of health care needs

### **Attitude**

The trainee consistently

- a) respects the wishes and needs of the patients,
- b) values the contribution and expertise of the multidisciplinary team
- c) negotiates the best outcome for the patient
- d) is confident of their ability to lead multi multidisciplinary case conference
- e) is confident of their ability to organise and chair a family meeting

17.2.2 The trainee will be able communicate effectively with patients professionals and agencies in planning packages of community based care and rehabilitation

### **Knowledge**

The trainee consistently demonstrates a knowledge of

- a) those factors relevant to the planning of discharge from hospital of individuals with complex disabilities.
- b) services provided by statutory bodies voluntary agencies and charities and the regulations and legislation under which they operate
- c) community care plans, the planning of services and the process of multi agency assessments
- d) the interface between specialist community services and hospital based rehabilitation services and incorporation of shared guidelines

- e) the interface of specialist community rehabilitation services with primary care and generic community rehabilitation services including community therapy and nursing services
- f) the work of voluntary and self help groups and their inclusion in the planning and rehabilitation of disabled people and their carers.

### **Skills**

The trainee is able to consistently and safely

- a) Assess an individual's long term needs and establish a management plan
- b) provide a written report of these assessments and plans
- c) co-ordinate and participate in multi agency case conferences
- d) chair multi agency case conferences
- e) establish monitoring processes for the care packages of individual patients
- f) identify carers needs and ensure that these are reflected in the patient's management plan, including the provision of respite care

### **Attitude**

The trainee consistently

- a) contributes to the planning of complex discharges acknowledging the importance of their commitment to the process
- b) respects the individuals employed by and services provided by other agencies, acknowledging their areas of expertise and the constraints under which they work
- c) acknowledges the nature and importance of the work provided by informal carers,
- d) negotiates the best outcome for the patient
- e) is confident of their ability to work with agencies

17.2.3 The trainee can make an effective contribution to the planning of community services for specific groups of disabled people

### **Knowledge**

The trainee consistently demonstrates a knowledge of

- a) the available services for short-term, intermittent and longer term rehabilitation and services for people in institutional care, as well as respite care services
- b) the work of voluntary and self-help groups and their inclusion in the planning and rehabilitation of people with disabilities and their carers

c) the physical, psychological and social impact of living in residential care and of shared care arrangements

### **Skills**

The trainee is able to consistently and safely

a) participate in the planning of services when requested by voluntary and statutory bodies

### **Attitude**

The trainee consistently

a) respects individuals decision about their place of residence

b) is aware of the need to involve service users and carers when planning services

b) is aware of their personal limitations and authority for planning services

## **17.2.4 Rehabilitation of People with Amputations and Limb Deficiencies**

The assessment of this section of the curriculum will be through

a). Observation by trainer

b) Case based discussion

c) Inspection of notes, summaries and treatment plans.

### **Knowledge**

The trainee consistently demonstrates a knowledge of

a). The aetiology and epidemiology of upper and lower limb amputation congenital and acquired.

b). The epidemiology, aetiology and clinical significance of peripheral vascular disease and available methods of investigation and management.

c). Principles of amputation surgery, and post-operative management.

d). Biomechanical principles of artificial limbs, their components and methods of fabrication.

e). Knowledge of gait analysis.

f). Indications and contraindications for prosthetic and on prosthetic management of amputation.

g). Psychosocial aspects of amputee care.

### **Skills**

The trainee is able to consistently and safely

a). able to assess and prescribe appropriate prostheses.

b). able to work in conjunction with engineering and technical staff and other members of the multi-professional team involved in assessing equipment for disabled people.

### **Attitude**

The trainee consistently

- a). Appreciates the patient's right to dignity and privacy.
- b). Adopts a sympathetic and empathetic attitude towards parents with a child with limb deficiencies.

### **17.2.5 Spinal Cord Injury**

The assessment of this section of the curriculum will be through

- a). Observation by trainer
- b) Case based discussion
- c) Inspection of notes, summaries and treatment plans.

### **Knowledge**

The trainee consistently demonstrates a knowledge of

- a). The pathomechanisms of injury to the spine.
- b). The pathophysiology of spinal cord injury.
- c). Presentation of illness and treatment of complications in spinal cord injury
- d). The total early management following injury (including an understanding of physiotherapeutic modalities in respiratory care)
- e). Bladder management and care of the acutely paralysed bladder and long term care of the urinary tract.
- f). Management of high level lesions and people with long term ventilation needs.
- g). Medical complications of spinal cord injury
- h). Knowledge of importance of bladder and bowel management
- i). Management of the following aspects of general rehabilitation and neurological rehabilitation with particular reference to spinal injury:
  - o Pressure management and tissue viability assessment;
  - o Sexual function and male fertility
  - o Pain management techniques
  - o Wheelchair assessment, specialised seating and orthotics prescription
  - o The technique and application of psychometric testing.

- o Upper limb preservation and tendon transfer
- o Functional electrical stimulation
- o Use of appropriate outcome measures
- o Awareness of the physical and psychological benefits of sport, and its role in community re-integration

### **Skills**

The trainee is able to consistently and safely

- a). make assessment of acute spinal injured person and associated injuries.
- b). make assessment for operative treatment in collaboration with Spinal Surgeons
- c). use ASIA System of assessment and the determination of prognosis based on this.
- d). Manage the seriously ill, including people with cardiac dysfunction or respiratory failure requiring assisted ventilation.
- e). manage Bladder and bowel
- f). manage Pain
- g). Manage autonomic dysreflexia and orthostatic hypo/hypertension

### **Attitude**

The trainee consistently

- a). Works as part of a multi-disciplinary team.
- b). Has realistic expectations of tasks to be completed by self and others.
- c). shows flexibility and willingness to change in the light of changing conditions.
- d). willing to ask for help.
- e). Acts with empathy, honesty and sensitivity.
- f). Adopts a non-discriminatory attitude to all patients and recognise their needs as individuals.
- g). Seeks to identify the health care belief of the patient.
- h). Acknowledges patient rights to accept or reject advice.
- i). Secures equity of access to health care resources for minority groups.

## **17.2.6 Acquired Brain Injury Rehabilitation Including Stroke**

### **Objective:**

Formulate a rehabilitation management plan that specifies necessary medical, physical and functional rehabilitation goals and treatments in inpatient, outpatient and community settings

## **Knowledge**

- summarise the issues that affect outpatient care, inpatient care, independence and community re-entry after Traumatic Brain Injury (TBI)
- summarise acute management of TBI, including:
  - principles of early retrieval and the difficulty of retrieval from rural areas
  - acute monitoring in emergency, intensive care and acute neurosurgical care
  - role of rehabilitation physician in intensive care unit/acute neurosurgical unit
  - role of diagnostic investigations in management and prognosis, e.g. CT, MRI, electroencephalography (EEG), positron emission tomography (PET) and single photon emission computed tomography (SPECT), plus other imaging techniques
  - ventilatory support
  - intracranial pressure monitoring
  - role of pharmacotherapy, including prophylactic anticonvulsant medication
  - surgical interventions, including indications for intracranial pressure (ICP) monitoring and craniotomy
- describe mechanisms of functional recovery:
  - resolution of temporary factors, e.g. cerebral oedema, focal haematoma, hypoxia, raised intracranial pressure
  - modification of neural connection and synaptic function, redundancy and functional substitution
- summarise management of common medical complications associated with TBI, including:
  - autonomic dysfunction syndrome
  - post traumatic epilepsy
  - hypertonicity and movement disorders
  - post traumatic hydrocephalus and V-P shunting
  - heterotopic ossification
  - visual disturbances
  - syndrome of inappropriate antidiuretic hormone hypersecretion (SIADH)/diabetes insipidus/pituitary dysfunction
  - aspiration pneumonia

- deep vein thrombosis
- psychiatric disorders, e.g. psychosis, mood disorder and post traumatic stress disorder for intracranial pressure (ICP) monitoring and craniotomy
- describe management of disability resulting from TBI, including:
  - consistent team approach and roles of allied health professionals
  - comatose and minimally responsive patients:
    - tracheostomy care
    - swallowing and nutrition, including parenteral feeding and gastrostomy care
    - bowel and bladder function
    - maintenance of skin, muscle length and range of motion at joints
  - cognitive remediation
  - principles of behavioural management
  - use of drugs in the management of:
    - dysautonomia
    - coma
    - cognitive impairment
    - emotional and behavioural disturbance
    - spasticity.
  - prescription of orthotics and walking aids
  - psychiatric and psychological disorders, including mood/emotional disturbances
  - communication disorders
  - family functioning and adjustment
  - interpersonal relationships
  - substance and alcohol abuse
- explain ways to achieve community reintegration, including:
  - interdisciplinary discharge planning
  - case management
  - retraining domestic and community activities of daily living
  - leisure activities
  - fitness for driving and driver re-training

- vocational rehabilitation
- family/social education and adjustment
- practical issues pertaining to:
  - accommodation
  - guardianship and financial management
  - attendant care
  - community support services
  - compensation schemes and their impact on patients' rehabilitation
  - other community services that can assist with sport, recreation, etc.

### **Skills**

- write a rehabilitation management plan specifying necessary modalities of assessment and treatment in consultation with the patient, family, interdisciplinary team and others such as community service providers, vocational rehabilitation providers etc.
- review and coordinate patient management, involving the patient and family
- communicate effectively with team members, patient, family and other medical practitioners and agencies involved in the patient's care
- counsel and educate the patient, family and other relevant stakeholders with regard to the effects and consequences of TBI
- organise medico-legal assessments and reporting that provide appropriate information detailing the nature and degree of disability resulting from TBI, including the patient's future needs with regard to:
  - medical and rehabilitation management
  - attendant care
  - housing
  - assistive devices
  - life expectancy

### **Assessment & Learning Methods**

- . Case Based Discussion
- . Lead Goal setting conference

#### **17.2.7 Orthopaedic Rehabilitation**

## **Objectives:**

To demonstrate that the trainee has the necessary knowledge and skills, for:

- o Assessment and management of patients after severe musculoskeletal trauma and/or orthopaedic intervention.
- o Management of patients following brachial plexus and peripheral nerve injury.
- o Management of chronic pain in the context of musculoskeletal disease (in conjunction with an attachment to pain management attachment).

## **Knowledge**

- . Epidemiology, aetiology and pathology of diseases of bones and joints including trauma.
- . Orthopaedic management of people who have sustained fractures, including those with multiple trauma and non-orthopaedic injuries.
- . The role of orthopaedic surgery in children and adults in the areas of scoliosis and cerebral palsy management.
- . The principles of surgical management of degenerative joint disease with particular reference to arthroplasty.
- . Musculoskeletal pain associated with changes in bones, joints, ligamentous and other soft tissues.
- . Brachial plexus and peripheral nerve injury.
- . Disability arising as a result of other pathology of the connective tissues, including deformities and contractures.
- . Diagnosis and management of post-traumatic stress.
- . Indications for medical, surgical, orthotic, paramedical, behavioural and other forms of therapy for this group of people.
- . Paediatric orthopaedic and particularly scoliosis and cerebral palsy management.
- . Orthogeriatric rehabilitation.

## **Skills**

- . Appropriate use of paramedical, orthotic and other therapies in this group of conditions.
- . Appropriate pain management techniques complementary to those learnt in a pain management attachment and relevant to orthopaedic practice.
- . Assessment and management of disability resulting from trauma and musculoskeletal

disease, congenital and acquired.

- . Assessment and appropriate management of people with brachial plexus and peripheral nerve lesions.
- . Recognition of non-organic presentations of musculoskeletal disorders.
- . Diagnosis and management of musculoskeletal disease, including back and neck pain, soft tissue rheumatism and multiple trauma.
- . Appreciation of patients discomfort during examination and ability to take remedial action.

### **Assessment & Learning Methods**

- . Case Based Discussion

### **17.2.8 Pain Management**

#### **Objective:**

To demonstrate that the trainee has the knowledge and skills to:

- o Assess the contributing factors and their relative importance in the development of chronic pain disability.
- o Assess the relative merits of interventions for the management of chronic pain, recognise their limitations and relate accordingly with patients, family and colleagues.
- o Manage the individual with chronic pain so as to minimise associated distress and maintain activities and social participation.

#### **Knowledge**

- . Anatomy and physiology of pain.
- . Distinction between acute and chronic pain.
- . Clinical pain patterns and their diagnostic associations including neurogenic, mechanical, inflammatory as well as common pain syndromes.
- . Psychosocial and cultural influences on the pain experience.
- . Relationship between chronic pain, impairment and disability.
- . Techniques for measuring pain and its impact on the lives of people with manifest disability.
- . The assessment of the relative importance of organic and non-organic factors in the expression of pain.
- . The social consequences of chronic pain for the individual and his/her family and carers, including the impact on employment and education, social security benefits, finance and demands on health and social service.

- . Psychological consequences of pain and trauma (e.g. depression, phobias and post traumatic stress disorders).
- . The appropriate investigation of people with chronic pain utilising clinical, radiological psychological, and questionnaire techniques.
- . Pain self management & Chronic back pain programmes: patient assessments & selection, goal planning, outcome measures.

### **Skills**

- . Appreciate the range of psychological reactions to chronic pain, including the way in which secondary gain may be influenced by personal, family and societal factors e.g. perverse incentives built into the legal and social security systems.
- . Identifying the presence of illness behaviour and other maladaptive phenomena within the constellation of symptoms associated with chronic pain.
- . Identifying modifiable cognitive and behavioural factors influencing disability e.g. misconceptions about the cause and meaning of pain, fear-avoidance patterns and the rest/over activity cycle.
- . Ability to treat pathological and non-pathological pain the same.
- . Non-judgemental when dealing with functional disorders.
- . Appreciation of the biopsychosocial impact of pain.

### **Assessment & Learning Methods**

- . Case Based Discussion

## **17.2.9 Cardiac Rehabilitation**

### **Objective:**

To demonstrate that the trainee has the knowledge and skills necessary for:

- o The assessment for rehabilitation of a patient with cardiac disease.
- o The planning and implementation of a rehabilitation programme of a patient with cardiac disease taking into account the psychological as well as physical difficulties faced by a patient with cardiovascular disease.

### **Knowledge**

- . Epidemiology, aetiology and pathology of the various types of heart disease.
- . Management of acute cardiac events as well as ongoing medical management.
- . Exercise physiology and changes in cardiovascular disease.
- . Psychosocial aspects of cardiac disease
- . Vocational aspects of cardiac rehabilitation.
- . Assessing the severity of symptomatology in the light of investigations of cardiac, psychological and social status.
- . Application of medical, surgical, behavioural, dietary and family therapy in the management of a person with heart disease.
- . Recognition of non-organic symptomatology and behaviour in people who have cardiac disease or present with cardiac symptomatology.
- . Secondary prevention of heart disease.

### **Skills**

- . The assessment and rehabilitation of people with heart disease, including people who have had cardiac surgery.

## **17.2.10 Respiratory Rehabilitation Medicine (Pulmonary Rehabilitation)**

### **Objective:**

To demonstrate that the trainee has the knowledge and skills necessary for running an efficient respiratory rehabilitation programme.

### **Knowledge**

- . The epidemiology and pathophysiology of the most common lung diseases in particular chronic obstructive pulmonary disease and asthma.
- . The use of lung function tests and basic exercise physiology.
- . The epidemiology of cigarette smoking and the role of smoking cessation therapy.
- . The actions of drugs used in COPD and asthma.
- . Rational use of oxygen and methods of administration (cylinders, concentrators, liquid oxygen).
- . The natural history of severe smoking related lung diseases, and the role of palliative treatment.

### **Skills**

- . Clinical recognition of severe pulmonary disease and any reversible features.

- . Chest x-ray examination as an integral part of patient assessment.
- . Pulmonary function tests – ability to recognise classical chronic obstructive pulmonary disease or other severe impairments.
- . Objective and subjective grading of impairments i.e. dyspnoea scoring scales, shuttled walking tests etc.
- . Sensitive handling of smoking cessation issues.
- . Appreciation of the right of the patient to disregard advice given.
- . Non-judgemental attitude

### **Assessment & Learning Methods**

- . Case Based Discussion

#### **17.2.11 Paediatric Rehabilitation**

##### **Objective:**

To demonstrate that the trainee has the knowledge and skills necessary for:

- o Treatment and management of clinical aspects of disability in childhood.
- o Liaising with statutory services (health, education and social services).
- o Supporting both the child and family.
- o Securing smooth transfer of care at 16 to 19 years to adult services.

##### **Knowledge**

- . Normal and abnormal child development, including growth, puberty, vision, hearing, gross and fine motor skills, language and communication skills, social behaviour and emotional development and response to pain, illness and disability.
- . Epidemiology, natural history and various methods of management for disabling conditions of childhood, including cerebral palsy, neural tube defects, neuromuscular and musculoskeletal disorders, severe learning difficulties, juvenile rheumatoid arthritis and head injury.
- . Plasticity of the child's brain at various ages and the degree of neurological recovery that can be anticipated in comparison with the adult brain.
- . Orthopaedic complications of neurodisability and their management, particularly scoliosis, hip dislocation and joint contractures.
- . Vision and hearing impairment and their management.
- . Communication, speech and language disorders and their management.

- . General and specific learning difficulties.
- . Physical illness, including epilepsy.
- . Psychological aspects of childhood and adolescence, including problems relating to sexual development, non-compliance with treatment and medication, bereavement.
- . The legal and practical framework of education, including special provisions for children with disabilities.
- . Relationships between children, their families their social, cultural and educational environments.

### **Skills**

- . Neurological and basic orthopaedic examination of children of all ages.
- . Effective communication skills with parents and children of all ages.
- . Indications for use of orthoses and other assistive devices for mobility and communication in children and their relation to growth and development.
- . Prescribing and use of medication in children.
- . Basic assessment of developmental abilities and functional skills.
- . Empathic and sympathetic attitude to children and their families/carers.
- . Ability to work well within paediatric team.

### **Assessment & Learning Methods**

- . Case Based Discussion

## **17.2.12 Neurogenic Bladder (Continence Services/Urodynamics)**

### **Objective:**

To demonstrate that the trainee has the knowledge and skills necessary for:

- o Effective counselling to disabled persons and their families on aspects of incontinence.
- o Participating with the multidisciplinary team in the management/containment of incontinence.
- o Referring for urological assessment in appropriate cases.

### **Knowledge**

- . Anatomy of the upper and lower urinary tract.
- . Innervation of the lower urinary tract.

- . Central control of micturition.
- . Physiology of micturition.
- . Causes of urinary incontinence.
- . Effects of malfunction of the lower urinary tract.
- . Effects of urinary incontinence.
- . Investigation of urinary incontinence in general.
- . General principles of management of neurogenic urinary incontinence.
- . Effects of different lesions of the central nervous system on the functioning of the lower urinary tract.
- . The influence of physical disability in the management of incontinence.
- . Potential complications affecting the neurogenic bladder.
- . General effects of complications in the neurogenic bladder.
- . Benefits and costs of various methods of drainage of the neurogenic bladder.
- . Surgical and non-surgical methods of containment of urinary incontinence.
- . Effects of pharmaceutical agent on the neurogenic bladder.
- . Correlation between neurological and urological dysfunction.
- . Clean intermittent catheterisation.
- . Participating during urodynamic studies.
- . Communication and the community incontinence services.
- . Appreciate the need for a chaperone.
- . Acknowledge cultural issues.

### **Skills**

- . History taking and examination of the urinary system.
- . Insertion of supra pubic catheter.
- . Replacement of suprapubic and indwelling catheters.

### **Assessment & Learning Methods**

- . Time spent with urologist
- . Case based discussion (Interpretation of urodynamics)

### **17.2.13 Sexual Aspects of Disability**

#### **Objective:**

To demonstrate that the trainee has the knowledge and skills necessary to assess the

sexual aspects of disability in relevant individuals and to be able to discuss all aspects of sex and sexuality both with the disabled person and the relevant family members.

### **Knowledge**

- . Understand the biological and social factors relating to normal emotional and sexual development.
- . Awareness of the range of problems of human sexuality, among able bodied as well as People with disabilities.
- . Understand the physiology of sexual arousal and performance, and how this may be affected by disease processes.
- . Understand the principles of assessment and rehabilitative management of sexual disorders.
- . The range of psychological, physiological, drug, appliance and other therapeutic options.
- . Awareness of the contraceptive needs of people with disabilities.

### **Skills**

- . Being confident in discussing issues of sexuality, sexual techniques and counselling with disabled people and their partners.
- . The assessment of the factors which may contribute to a disabled person presenting with sexual problems.
- . Managing the impact which a person's disability may have on their sexual performance.
- . Confident attitude when discussing issues of a sexual nature.

### **Assessment & Learning Methods**

- . Attendance at a few sessions with sexual health nurse
- . Case Based Discussion

### **17.2.14 Sports Medicine**

#### **Objective:**

To demonstrate that the trainee has the knowledge and skills necessary for:

- o The assessment of acute and chronic bone, joint and soft tissue injuries related to sport.
- o The application of fitness testing and its implications for exercise prescription.

A multidisciplinary team approach to treatment of sports injury including the coach,

psychologist, therapist and nutritionist.

o Advising patients with disabilities or medical problems in relation to sporting activities including appropriate advice on medication.

### **Knowledge**

- . The physical and psychological attributes of sportsmen/women.
- . The mechanisms of injuries in different sports, and their relevance to prevention.
- . Clinical presentation, assessment and management of acute sporting injuries.
- . Exercise physiology, the positive and negative effects of exercise, and the importance of retraining in the management of people who have sustained sporting injuries.
- . The employment, domestic and the social consequences of sports injuries for the athlete and society.
- . The problems of children and adolescents involved in sport, particularly those subject to over-training, fatigue and other negative influences.
- . Drugs and sports.
- . Sports and sporting activity among disabled people, including any special equipment that they may require.
- . The extent of the Health Service provision of sports medicine services and the role of the private health sector.
- . Benefits of exercise in the non sportsman/woman and its value in rehabilitation programmes.

### **Skills**

- . Assessment and rehabilitation of people injured while undertaking sporting activities.
- . Measurement of physical fitness.
- . Assessing the physical and psychological consequences of failure of the acute injury to resolve to the satisfaction of the athlete.
- . Understanding the motivation of athletes and how this can help, or occasionally hinder, rehabilitation after injury.
- . Dealing with disabled people who have been injured while undertaking a sporting activity.
- . Positive mental attitude.

### **Assessment & Learning Methods**

- . Case Based Discussion

## **17.2.15 Sensory Deficits Rehabilitation**

### **Objective:**

To demonstrate that the trainee has the knowledge and skills necessary for:

- o Recognition of the needs arising from sensory deficits.
- o Communicating and collaborating effectively with specialist multi-professional teams providing services to people with sensory deficits.

### **Knowledge**

#### **17.2.15a Auditory Impairment**

- . Prevalence, aetiology and natural history of hearing impairments in children with congenital and acquired disorders.
- . Aetiology, pathology and natural history of hearing loss in adults, especially due to sensorineural loss.
- . Effects of ageing and hearing.
- . Prevalence and natural history of tinnitus in adults.
- . Hearing aids – the range of aids and equipment available, both on the CGHS and commercially, including accessory aids e.g. alerting and amplification devices for telephone, television etc.
- . The types of cochlear implants available.
- . Speech reading (lip reading), sign language and other forms of alternative communication for people with deafness.
- . Social services support for people with deafness.

#### **17.2.15b Visual impairment**

- . Aetiology and pathology of causes of visual impairment.
- . Methods of compensation for: impaired vision and; blindness (including mobility issues).
- . Psychosocial consequences of visual impairment at different ages.
- . Services for people with blindness, including education, training and eligibility for benefits.
- . Role of opticians and orthoptists and the identification and management of visual problems.
- . Legal consequences if impaired vision e.g. for driving or operating machinery.
- . Difference in presentation and consequences of central and peripheral visual loss.

## **Skills**

- . Recognition of the behavioural, language, speech and cognitive consequences of prolonged hearing impairment in children.
- . Methods of fitting and assessing the benefits of hearing aids.
- . Appreciation of the impact of hearing impairment.
- . Tests and techniques for assessing visual impairment.
- . Accessing services for people with blindness.
- . Appreciation of the impact of visual impairment.

## **Assessment & Learning Methods**

- . Case Based Discussion

### **17.3 Relationships with patients/ persons with disability and Communication**

The assessment for this section of the curriculum will be through the performance of mini CEX, observation by the trainer, multisource feedback and examination of the medical records including note keeping and letters.

The trainee is able to communicate effectively with people with disabling conditions, and those involved in their care

## **Knowledge**

The trainee consistently demonstrates a knowledge of

- a). a knowledge of the pathophysiological basis of dysphasia, articulatory dyspraxia and dysarthria
- b). an understanding of the impact of a range of communication differences and can identify strategies for compensating for and managing these
- c). an understanding of the conditions required for the communication of complex information and bad news

## **Skills**

The trainee is able to consistently communicate effectively by:

- a). Respecting the individuals privacy, dignity, wishes and beliefs and obtaining informed consent wherever appropriate
- b). Ensuring that the environment is appropriate to the communication
- c). Establishing any communication differences with the individual such as language or speech impairment, cognitive impairment, sensory impairment, cultural differences

- d). Confirming with the individual who they wish to be involved in the communication process
- e). Clarifying the purpose of the communication with the individual and those involved in their care, and identify their preferred ways of communicating
- f). Using a range of structures & styles to
  - elicit concerns across physical, psychological and social domains
  - establish extent of awareness about illness and prognosis
  - impart information sensitively according to wishes and needs of individual
  - facilitate decision making and promote autonomy in individuals
  - identify obstacles to communication and strategies to overcome them
- g). Answering correctly any questions raised by the individual and identify the means of answering any questions that cannot be answered immediately

### **Attitude**

The trainee consistently demonstrates the recognition of the need for a range of communication skills and reflects on his or her practice to ensure his/her skills are maintained

## **17.4 Teaching and Training**

The assessment of this section of the curriculum will be through (a) peer review (b) evidence of feedback following teaching.

The trainee can teach in a multidisciplinary setting including when patients are present

### **Knowledge**

The trainee consistently demonstrates a knowledge of

- a) the principles of effective teaching in a range of settings, lecture theatre, small group, bedside

### **Skills**

The trainee is able to

- a). teach undergraduate and postgraduate doctors and allied health professionals
- b). develop teaching plans with appropriate learning objectives
- c) supplies supporting materials
- d) encourages formal feedback

### **Attitude**

The trainee consistently

- a) recognizes and fulfils their obligation to teach and train others
- b) recognises the benefits of peer review

### **17.5 Working with Colleagues**

The assessment for this section of the curriculum will be through observation by the trainer.

The trainee will be able communicate effectively with patients, professionals and agencies in planning packages of rehabilitation

The trainee can lead and manage the clinical service and rehabilitation team

#### **Knowledge**

The trainee consistently demonstrates a knowledge of

- a) the principles of clinical governance including the role of audit, health and safety and risk management, and the use of information technology to support these processes
- b) management principles including different styles of leadership, team dynamics, change management, decision making, conflict management, delegation and time management
- c) the process necessary to appoint staff including equal opportunities legislation
- d) staff development, including personal career plans, appraisal and in service education opportunities and the issues surrounding the introduction of agenda for change

#### **Skills**

The trainee is able to consistently and safely

- a) participate in clinical governance processes including day to day management issues such as organising medical cover rotas, or teaching programmes as well as audit and is able to document such processes
- b) apply the management principles listed above within the MDT and deal with issues such as change, and conflict positively
- c) able to participate in appointments panels
- d) co-operate with colleagues in producing a personal development plan appropriate

#### **Attitude**

The trainee consistently

- a) values the professional and personal values of staff and their contribution to the MDT

- b) recognises when an individual within the team needs support
- c) is aware of the tensions that can exist in MDT
- d) has insight into his or her own role and interactions within the team
- e) is willing to address areas of difficulty in working with an MDT
- f) demonstrates a positive attitude to equal opportunities legislation

## 18. Suggested Books and Journals

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. *Essentials of Physical Medicine and Rehabilitation: Musculoskeletal disorders, Pain and Rehabilitation*. Edited by Walter R Fontera, Julie K Silver, Thomas D Rizzo Jr. Philadelphia, PA: Saunders/Elsevier 2008 2nd edition
4. Solomon L. *Apley's System of Orthopaedics and Fractures*. Arnold London (latest edition)
5. Fauci, Braunwald, Kasper, Hauser et al. *Harrison's Principles of Internal Medicine* McGraw-Hill Company (latest edition)
6. *Spinal Cord Medicine* by Steven Kirshblum, Denise Campagnolo, Joel A. De Lisa Lippincott Williams and Wilkins. (latest edition)
7. Rusk HA. *Rehabilitation Medicine*. CV Mosby (4<sup>th</sup> Edition)
8. *World Report on Disability*, 2011 (WHO, Geneva)
9. *Campbell's Operative Orthopaedics* Eds. S Terry Canale & James S Beaty, Elsevier Inc. (latest edition)
10. Helen M. Horstmann and Eugene E. Bleck. *Orthopaedic Management in Cerebral Palsy*. Mac Keith Press Distributed by Blackwell Publishing. (latest edition)
11. Kaplan. *Physical Medicine & Rehabilitation Review* McGraw Hill Medical (latest edition)
12. Downey and Darling's *Physiological basic of Rehabilitation Medicine* Eds. Erwin G Gonzalez, Stanley J Myers, Joan E Edelstein Butterworth-Heinemann (latest edition)

13. *Orthotics and Prosthetics in Rehabilitation* by Lusardi and Nielsen (Butterworth Publication) Latest edition
14. *Handbook of Orthopaedic Rehabilitation* Brent Brotzman, Kevin E Wilk. Philadelphia, PA: Mosby 2007 2nd edition
15. John P Patten. *Neurological Differential Diagnoses* Springer (latest edition)
16. Vernon W Lin. *Spinal Cord Medicine- Principles and Practice*. Demos
17. Helander E, Mendis P, Nelson G, Goerdts A, *Training in the Community for People with Disabilities* WHO, Geneva, 1989.
18. Helander E. *Prejudice and Dignity- An Introduction to Community-Based Rehabilitation*. UNDP, 1999.
19. W Humm. *Rehabilitation of the Lower Limb Amputee* Harcourt Publishers (latest edition)
20. Harry T Zankel. *Stroke Rehabilitation: A Guide to the Rehabilitation of an Adult Patient Following a Stroke* Charles C Thomas (latest edition)
21. AAOS Atlas of Orthoses and Assistive Devices/Lewis, Richard J Sr. Missouri: Elsevier Mosby (latest edition)
22. *Atlas of Amputations and Limb Deficiencies: Surgical, Prosthetic and Rehabilitation Principles*. Rosemont, IL: American Academy of Orthopedic Surgeons (latest edition)
23. John B Redford. *Orthotics Etcetera* Williams & Wilkins Co. (latest edition)
24. Moberg. *The upper limb in Tetraplegia* Thieme Medical Publishers, Inc. (latest edition)
25. V James Sammarco. *Rehabilitation of the Foot & Ankle* CRC Press (latest edition)
26. Craig Liebenson. *Rehabilitation of the Spine- A Practical Manual* Lippincott Williams & Wilkins (latest edition)
27. James R Andrews, Kevin E Wilk, Garry L Harrelson *Physical Rehabilitation of the Injured Athlete* Saunders (latest edition)
28. Anita Simonds, JF Muir, David J Pierson. *Pulmonary Rehabilitation* Wiley-Blackwell (latest edition)
29. K Konig. *Cardiac Rehabilitation* S Kargur Pub (latest edition)
30. O'Sullivan. *Physical Rehabilitation Assessment & Treatment* FA Davis Company (latest edition)

31. Jun Kimura *Electrodiagnosis in Diseases of Nerves and Muscles* Oxford University Press (Latest Edition)
32. *Textbook of Pain* edited by P. Wall and R. Melzack. Churchill Livingstone (Latest Edition)
33. *Therapeutic Exercise* by John V Basmajian. Baltimore: Williams & Wilkins 1990 5th edition
34. Srivastava RK. *Training in Community for People with Spinal Cord Injuries*, WHO, New Delhi, 1993.
35. *Neurological Rehabilitation* edited by Darcy Ann Umphred. St Louis: Mosby 2007 5th edition
36. Agarwal A.K *Essentials of Prosthetics and Orthotics with MCQ and Disability Guidelines*, Jaypee Brothers, New Delhi, 2012.
37. *Clayton's Electrotherapy* Eds. Sheila Kitchen, Sarah Bazin, Saunders (Latest Edition)
38. Carolyn Kisner, Lynn Allen Colby, Lynn Colby *Therapeutic Exercises- Foundation and Techniques* Davis Company, FA (Latest Edition)
39. *Occupational Therapy- Practice Skills for Physical Dysfunction* by Pedretti's, Elsevier Publication (Latest Edition)
40. *Stroke Recovery and Rehabilitation* edited by Joel Stein et al. New York: Demos Medical 2009
41. *Vestibular Rehabilitation*, Susan J Herdman. Philadelphia: F A Davis 2007 3rd edition
42. Alan D McGregor *Fundamental Techniques of Plastic Surgery* Churchill Livingstone
43. Sureshwar Pandey, Anil Kumar Pandey *Clinical Orthopaedic Diagnosis* Alpha Science International (Latest Edition)
44. *Intra-Articular Injections* by Sureshwar Pandey, Anil Kumar Pandey McGraw-Hill Medical (Latest Edition)
45. S. Das *A Manual on Clinical Surgery* S Das's Publications (Latest Edition)
46. *Huchison's Clinical Methods* Elsevier (Latest Edition)
47. *Clinical Orthopaedic Examination* by Ronald McRae. Edinburgh: Churchill Livingston (Latest Edition)
48. *Interventional Pain Management*. Ed. Steven D Waldman. Philadelphia: W B Saunders Latest Edition

49. *Pain Medicine: A Comprehensive Review*. Ed. P Prithvi Raj. St Louis, Mo: Mosby (Latest Edition)
50. *Orthopaedic Management in Cerebral Palsy* by Eugene Bleck (Clinics in Developmental Medicine) London: Mac Keith Press 2007 2nd edition
51. *Pediatric Rehabilitation* edited by Gabriella Molnar, Michael A Alexander. Philadelphia: Hanley & Belfus (Latest Edition)
52. *Fundamentals of Pediatric Orthopedics*, Lynn T Staheli. Philadelphia, PA: Lippincott Williams & Wilkins (Latest Edition)
53. *Rehabilitation of the Older Person: A Handbook for the Interdisciplinary Team*, edited by Amanda J Squires, Margaret B Hastings. Cheltenham: Nelson Thornes (Latest Edition)
54. *Trauma Rehabilitation* edited by Lawrence R Robinson Philadelphia, PA: Lippincott Williams & Wilkins (Latest Edition)
55. *Spinal Cord Injury Rehabilitation*. Ed Edelle C.Feld-Fote. Philadelphia, PA: FA Davis 2009
56. *Disability Evaluation*. Stephen L Demeter Gunnar BJ Andersson, Editors. Mosby (Latest Edition)

### **Journals:**

1. Archives of Physical Medicine & Rehabilitation
2. American Journal of Physical Medicine & Rehabilitation
3. Physical Medicine & Rehabilitation Clinics of North America
4. Journal of Rehabilitation Medicine
5. Spinal Cord
6. Indian Journal of Physical Medicine & Rehabilitation (IJPMR)
7. Journal of Prosthetics and Orthotics International
8. Indian Journal of Orthopedics
9. Stroke
10. Arthritis and Rheumatism
11. Indian Pediatrics
12. Neurology India

13. Sports Medicine, Training and Rehabilitation
14. Journal of Rehabilitation Research and Development
15. National Medical Journal of India
16. European Journal of Physical Medicine and Rehabilitation
17. Indian Journal of Rheumatology etc.
18. American Journal of Physical therapy
19. American Journal of Occupational Therapy
20. Arthritis and Rheumatism
21. American Journal of Sports Medicine
22. British Journal of Bone and Joint Surgery
23. British Medical Journal
24. Development Medicine & Child Neurology
25. Indian Journal of Pediatrics
26. Journal of Bio-Mechanics
27. Journal of Hand Therapy
28. Journal of Paediatric Orthopaedics
29. Journal of Post Graduate Medical Education, Training and Research (NBE)
30. Journal of Rheumatology
31. Leprosy in India
32. The Lancet
33. Articles related to PMR published in any other Journal