# INDIAN ASSOCIATION OF PHYSICAL MEDICINE AND REHABILITATION

## FELLOWSHIP IN NEUROREHABILITATION

# Curriculum

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| **Version** | **3.0** |
| **Date** | **28.01.2026** |
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| **Curriculum draft Approved by** | **Dr A K Joy Singh, Chairman Academic Committee, IAPMR** |
| **Final approval by** | **President IAPMR- in concurrence with EC committee** |

# Fellowship in Neuro Rehabilitation

**Duration:** 1 Year (Core)

**Eligibility:** MD / DNB / Diploma in Physical Medicine & Rehabilitation

**Training Model:** Multidisciplinary

**Exit Qualification:** Fellowship in Neuro Rehabilitation

## Vision

To develop nationally and internationally competent neurorehabilitation specialists who deliver ethical, evidence-based, and patient-centred care across the continuum of neurological disability.

## Mission

- To provide structured, outcome-based training in neurorehabilitation
- To align training with international competency frameworks
- To promote research, leadership, and service development in neurorehabilitation

## Benchmarking and Academic Alignment

This fellowship is aligned with:

- WHO – International Classification of Functioning, Disability and Health (ICF)
- WFNR / ISPRM core neurorehabilitation competencies
- ACGME fellowship competency domains (patient care, medical knowledge,

professionalism, communication, practice-based learning, and systems-based practice)

## PROGRAM OBJECTIVES

At the end of training, the fellow should be able to:

- Provide comprehensive evidence-based neurorehabilitation
- Lead multidisciplinary neurorehab teams
- Manage complex neurological disability
- Plan long-term rehabilitation and community reintegration
- Establish and run an independent  neuro rehabilitation unit

# DETAILED SYLLABUS

## MODULE 1: NEUROSCIENCE & FOUNDATIONS

### Neuroanatomy & Neurophysiology

- Motor & sensory systems
- Neuroplasticity & motor learning
- Cortical reorganization after injury
- Spasticity mechanisms
- Autonomic nervous system

### Principles of Neurorehabilitation

- Impairment–activity–participation model (ICF)
- Goal setting & outcome measurement
- Task-oriented training
- Recovery vs compensation

### Learning Outcomes:

- Explain neuroplasticity and motor learning principles
- Apply ICF-based goal setting and outcome measurement
- Differentiate recovery versus compensation strategies

## MODULE 2: STROKE REHABILITATION

- Acute stroke rehabilitation
- Continuity of medical care
- Prevention and management of medical complications

- Recognition and management of medical emergencies
- Decanulation
- Motor recovery after stroke
- Gait rehabilitation
- Upper limb rehabilitation
- Aphasia, dysarthria & dysphagia
- Cognitive & perceptual deficits
- Secondary prevention
- Community-based stroke rehab (Indian context)

**Learning Outcomes:**

- Perform stage-appropriate stroke rehabilitation planning
- Demonstrate evidence-based gait and upper limb rehabilitation
- Independently manage post-stroke medical complications
- Apply secondary prevention strategies in Indian healthcare settings

**MODULE 3: SPINAL CORD INJURY (SCI) REHABILITATION**

- Acute & chronic SCI management
- Decanulation
- ASIA impairment scale
- Neurogenic bowel & bladder
- Spasticity management
- Pressure injury prevention
- Sexual dysfunction in SCI
- Vocational rehabilitation

**Learning Outcomes:**

- Conduct comprehensive SCI assessment using ASIA scale
- Manage neurogenic bowel, bladder, and spasticity
- Prescribe wheelchairs and plan vocational rehabilitation

**MODULE 4: TRAUMATIC BRAIN INJURY (TBI)**

- Evaluation and management of Disorders of consciousness
- Continuity of medical care
- Prevention and management of medical complications
- Recognition and management of medical emergencies
- Decanulation
- Cognitive rehabilitation,
- Behavioral management
- Post-traumatic spasticity
- Return-to-work planning
- Family counseling

**Learning Outcomes:**

- Evaluate disorders of consciousness
- Implement cognitive and behavioural rehabilitation plans
- Plan return-to-work and family counselling

**MODULE 5: NEUROMUSCULAR DISORDERS**

- Motor neuron disease

- Muscular dystrophies
- Peripheral neuropathies
- Myopathies
- Post-polio syndrome
- Assistive devices & orthoses

**MODULE 6: MOVEMENT DISORDERS & PARKINSONISM**

- Parkinson's disease rehabilitation
- Balance & gait training
- Freezing of gait
- Dyskinesia management
- Deep brain stimulation – rehab aspects

**MODULE 7: PEDIATRIC NEUROREHABILITATION**

- Cerebral palsy
- Developmental delay
- Pediatric stroke
- Autism spectrum disorder
- Neurodevelopmental therapy principles
- Family-centered care

**MODULE 8: SPASTICITY & TONE MANAGEMENT**

- Clinical assessment of spasticity
- Oral antispastic drugs
- Botulinum toxin injections

- Phenol neurolysis (basic exposure)
- Intrathecal baclofen therapy (theoretical + exposure)
- Stretching, splinting & serial casting

**MODULE 9: NEUROUROLOGY & DYSAUTONOMIA**

- Neurogenic bladder
- Clean intermittent catheterization
- Autonomic dysreflexia
- Orthostatic hypotension
- Sexual rehabilitation

**MODULE 10: TECHNOLOGY-ASSISTED NEUROREHABILITATION**

- Functional electrical stimulation (FES)
- Robotics in neurorehabilitation
- Virtual reality therapy
- Brain–computer interface (overview)
- Telerehabilitation (India relevance)

**MODULE 11: COGNITIVE, BEHAVIORAL & PSYCHOSOCIAL REHABILITATION**

- Cognitive assessment tools
- Memory, attention & executive function rehab
- Emotional & behavioral disorders
- Caregiver training
- Social reintegration

**MODULE 12: ASSISTIVE DEVICES & ORTHOTICS**

- Mobility aids
- Wheelchair prescription
- Orthoses for neurological conditions
- Environmental modifications
- Low-cost Indian solutions

**MODULE 13: COMMUNITY-BASED & VOCATIONAL REHABILITATION**

- Community-based rehabilitation (CBR)
- Disability certification (India)
- Vocational training
- Government schemes & benefits
- Medico-legal aspects

**MODULE 14: RESEARCH, ETHICS & ADMINISTRATION**

- Research methodology and biostatistics
- Dissertation: original research / audit / systematic review
- Mandatory ethics committee approval
- Disability rights and RPwD Act (India)
- Informed consent in cognitively impaired patients
- End-of-life and medico-legal issues in neurodisability

**MODULE 15**

**NON-INVASIVE VENTILATION (NIV) MANAGEMENT IN MOTOR NEURON DISEASE (MND) AND SPINAL CORD INJURY (SCI)**

- Understand respiratory pathophysiology in MND and SCI.

- Identify indications, contraindications, and timing for NIV initiation.
- Select appropriate NIV modes, interfaces, and ventilator settings.
- Monitor, troubleshoot, and optimize NIV therapy.
- Manage complications and ensure long-term follow-up.
- Counsel patients and caregivers regarding home ventilation.

**MODULE 16**

**PAIN MANAGEMENT IN NEURO REHABILITATION**

**Objectives:**

To develop competence in comprehensive pain assessment and interventional pain management strategies.

**Contents:**

- Neurophysiology of pain
- Assessment of acute and chronic pain in neurological disorders
- Pharmacological management
- Interventional pain procedures:
    - Nerve blocks
    - Trigger point injections
    - Spasticity-related pain interventions
- Neuropathic pain management
- Multidisciplinary and biopsychosocial approach to pain

**MODULE 17**

**SWALLOWING REHABILITATION**

**Objectives:**

To equip fellows with skills for assessment and management of dysphagia.

**Contents:**

- Anatomy and physiology of swallowing
- Swallowing disorders in neurological conditions
- Bedside and instrumental assessment of dysphagia
- Therapeutic swallowing exercises and compensatory strategies
- Dietary modifications and feeding techniques
- Multidisciplinary approach and caregiver education

**MODULE 18**

**BOWEL MANAGEMENT IN NEUROLOGICAL DISORDERS (WITH EMPHASIS ON SCI)**

**Objectives:**

To develop systematic bowel management strategies in patients with neurological impairment.

**Contents:**

- Neurogenic bowel: pathophysiology
- Assessment of bowel dysfunction
- Bowel programs in spinal cord injury
- Pharmacological and non-pharmacological interventions
- Reflex and areflexic bowel management
- Patient and caregiver education

## MODULE 19

## SEXUAL REHABILITATION

**Objectives:**

To address sexual health and quality of life in patients with neurological disorders.

**Contents:**

- Neurophysiology of sexual function
- Sexual dysfunction in SCI, stroke, and other neurological conditions
- Assessment tools and counseling strategies
- Medical and assistive interventions
- Fertility issues and reproductive counseling
- Psychosocial and ethical considerations

## MODULE 20

## SPEECH AND LANGUAGE REHABILITATION

**Objectives:**

To train fellows in assessment and management of speech, language, and communication disorders associated with neurological conditions.

**Contents:**

- Neuroanatomy and neurophysiology of speech and language
- Aphasia: types, assessment, and rehabilitation strategies
- Dysarthria and apraxia of speech
- Cognitive-communication disorders

- Speech rehabilitation following stroke, traumatic brain injury, and neurodegenerative disorders
- Augmentative and Alternative Communication (AAC) systems
- Multidisciplinary approach with speech-language pathologists
- Caregiver training and long-term follow-up

**MODULE 21**

**MOTOR FUNCTION REHABILITATION**

**Objectives:**

To develop advanced clinical skills in restoration, optimization, and compensation of motor functions in neurological disorders.

**Contents:**

- Principles of motor control, motor learning, and neuroplasticity
- Assessment of motor impairment and functional limitation
- Upper and lower limb motor rehabilitation strategies
- Task-oriented training and functional re-education
- Spasticity management and motor recovery
- Balance, coordination, and gait training
- Use of technology in motor rehabilitation:
    - Robotics and exoskeletons
    - Virtual reality and biofeedback
- Outcome measures for motor recovery

**MODULE 22**

**Quality, Clinical Governance, and Outcome Measurement**

**Objectives:**

To introduce fellows to quality improvement and governance in neuro rehabilitation services.

**Contents:**

- Quality indicators in rehabilitation medicine
- Clinical audits: planning and execution
- Key Performance Indicators (KPIs) in neuro rehab services
- Quality Improvement Projects (QIPs)
- Outcome measures and benchmarking
- Documentation, reporting, and continuous quality improvement

**MODULE 23**

**Team Management, Leadership & Financial Aspects of Setting Up and Running a Neuro-Rehabilitation Service**

- Build and manage a multidisciplinary neuro-rehab team.
- Demonstrate leadership and communication skills.
- Design operational workflows for a neuro-rehab service.
- Understand financial planning, budgeting, and sustainability.
- Develop a business model for private or institutional neuro-rehab practice.
- Handle legal, ethical, and administrative responsibilities.

**MINIMUM PROCEDURE / SKILL LOG**

**Procedural competency:**

- Video-fluroscopic Swallow Study
- Urodynamic Study
- USG / EMG guided botulinum toxin injections.
- USG / Fluoroscopy-guided pain interventions relevant in neurorehabilitation.
- NCS / EMG

**Minimum Clinical Exposure Requirements**

| Domain | Minimum Exposure |
|---|---|
| Stroke rehabilitation | ≥100 cases |
| Spinal cord injury | ≥25 cases |
| Traumatic brain injury | ≥20 cases |
| Pediatric neurorehabilitation | ≥20 cases |
| Spasticity interventions | ≥30 procedures |

# ASSESSMENT SYSTEM

**Internal Assessment**

- Monthly evaluations
- Case presentations
- Journal clubs
- Logbook review

**Final Assessment (Blueprinted)**

| Competency | Tool |
|---|---|
| Clinical decision-making | Long & short cases |
| Procedural skills | DOPS + logbook |
| Cognitive & spasticity management | OSCE |
| Professionalism & communication | 360° feedback |
| Research | Dissertation + viva |

**Final Examination**

- Theory (2 papers)
- Long & short cases
- OSCE
- Viva voce

**Exit Competencies**

On completion, the fellow will be able to:

- Independently manage complex neurological disabilities
- Lead multidisciplinary neurorehabilitation teams
- Implement advanced spasticity, gait, and technology-assisted rehabilitation
- Establish and manage neurorehabilitation services in India

**CERTIFICATION**

On successful completion, the candidate shall be awarded:

**"IAPMR Fellowship in Neuro Rehabilitation**

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