

Introduction to Neurological Physiotherapy

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Key concepts, goals, assessment tools, and treatment approaches

1. What Is Neurological Physiotherapy?

Aspect	Description
Definition	A specialty within physiotherapy that focuses on restoring movement, function, and quality of life in individuals with disorders of the nervous system.
Target Conditions	Stroke, traumatic brain injury (TBI), spinal cord injury (SCI), multiple sclerosis (MS), Parkinson's disease, cerebral palsy, peripheral neuropathies, and neurodegenerative disorders.
Core Principle	The nervous system can be retrained (neuroplasticity) through repetitive, task-specific, and progressively challenging activities.

2. Goals of Neurological Physiotherapy

1. **Improve Motor Control** – regain strength, coordination, and balance.
 2. **Enhance Functional Mobility** – walking, transfers, stair negotiation, ADLs (activities of daily living).
 3. **Promote Neuroplasticity** – stimulate the brain/spinal cord to reorganize pathways.
 4. **Prevent Secondary Complications** – contractures, pressure sores, falls, deconditioning.
 5. **Facilitate Participation** – return to work, school, community, and leisure activities.
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3. Principles Guiding Treatment

Principle	Practical Implication
Task-Specific Training	Practice the exact activity the patient needs (e.g., gait, reaching).
Repetition & Intensity	High-frequency, high-dose practice (often >300 repetitions per session).
Progressive Challenge	Gradually increase difficulty (speed, load, dual-task).

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Principle	Practical Implication
Feedback	Use visual, auditory, or proprioceptive cues to reinforce correct movement.
Patient-Centred Goal Setting	Goals are meaningful to the individual, measurable, and time-bound.
Holistic Approach	Address posture, breathing, cognition, and psychosocial factors.

4. Assessment Framework

4.1. Initial Evaluation

Domain	Common Measures	What It Reveals
Motor Impairment	Manual Muscle Testing (MMT), Fugl-Meyer Assessment, Medical Research Council (MRC) scale	Strength, selective motor control
Spasticity	Modified Ashworth Scale (MAS), Tardieu Scale	Tone and velocity-dependent resistance
Sensory Function	Light touch, pinprick, proprioception testing, Semmes-Weinstein monofilaments	Cutaneous and joint position sense
Balance & Postural Control	Berg Balance Scale (BBS), Mini-BEST, Functional Reach Test	Static/dynamic stability
Gait & Mobility	10-Meter Walk Test, Timed Up-and-Go (TUG), Functional Ambulation Categories (FAC)	Speed, endurance, safety
Functional Independence	Functional Independence Measure (FIM), Barthel Index	ADL performance
Cognitive/Perceptual	Montreal Cognitive Assessment (MoCA), STAR (Spatial Awareness Rating)	Attention, executive function, neglect

4.2. Ongoing Monitoring

- Session logs (reps, time, quality)

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- Patient-reported outcome measures (PROMs) – Stroke Impact Scale, MSQoL⁵⁴, PDQ³⁹.
 - Objective re-testing every 4–6 weeks to track progress.
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5. Core Treatment Techniques

| Technique | Indications | Key Elements | |