



Understanding Chronic Pain Secondary to Stroke

A Neuro Physical Therapist's Guide for
Patients and Families



What is Chronic Pain?

Very common post-stroke

- Pain lasting > **3 months** after stroke
- Origin
 - Muscular
 - Neuropathic
 - Spasticity Related
- Common: 30-50% of stroke survivors



Why Do You Feel Pain?

The Brain's Role

- Stroke disrupts sensor pathways
- Brain may misinterpret signals as pain
- Protective mode = increased sensitivity



Types of Post-Stroke Pain

The Brain's Role

- **Neuropathic:** burning & tingling
- **Spasticity:** tight & cramping
- **Musculoskeletal:** shoulder, back, hip pain due to compensatory movements

Musculoskeletal Pain

Overuse injury

What It Is:

- Pain from overuse, compensations, or poor posture
- Most common in shoulder, back, hip, as well as limbs of stronger side
- Causes by weakness & limited movement

What to Do:

- Strengthen weak muscles to reduce compensation
- Gentle stretching for stiff areas
- Heat for tight muscles/ice for irritated joints
- Activity pacing to avoid overuse

Spasticity-Related Pain

Muscle Tone

What It Is:

- Pain from muscles with high tone, tightness, stiffness
- Cramping, pulling, joint stress
- Worsened with fatigue, stress, cold, or fast movements

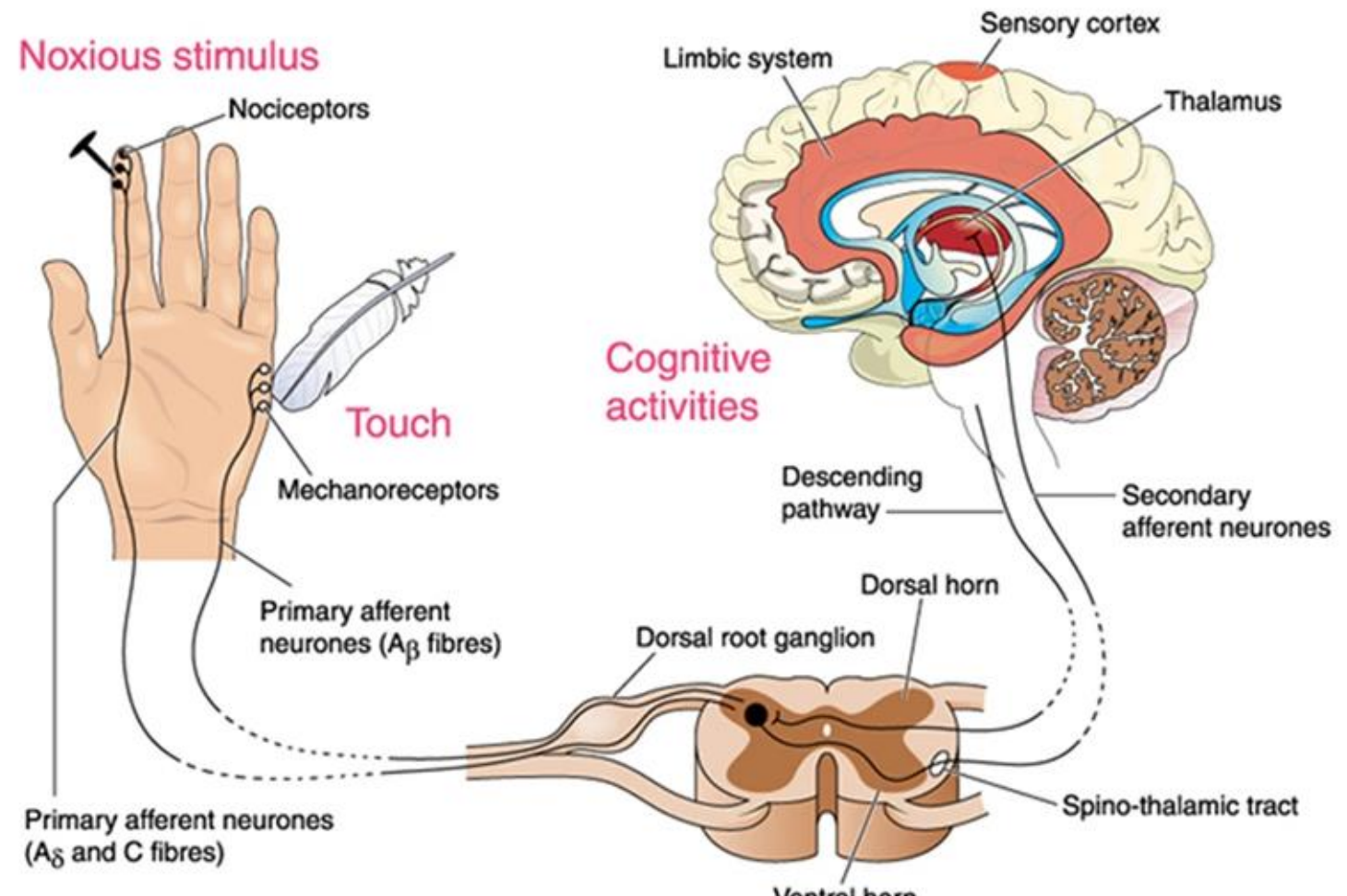
What to Do:

- Slow, prolonged stretching
- Weight-bearing activities
- Rhythmic movements
- Heat

Neuropathic Pain

Nerve pathway injury

- Caused by nerve irritation
- Brain misfiring causes a burning/tingling/pins & needles feeling
- Worse at night



Neuropathic Pain: Treatments

Nerve pathway injury

Often targeted with medications that target the nervous system

- Gabapentin/Pregabalin
- Duloxetine
- Topical agents: lidocaine patches, capsaicin

Physical Therapy

- Desensitization Training
- Sensory Re-education
- Graded Motor Imagery
- Aerobic Exercise

Treatments: Desensitization Training

Reassuring nerves

Helping your brain to calm nerve sensitivity after stroke
Reduces burning, tingling, and hypersensitivity

How to Do It:

- Soft Textures First: Cotton, Tissue, Soft Cloth
- Rub area for 10-20 seconds
- Progress to Rougher Textures: Towel, Velcro, Rice as Tolerated
- Vibration & Tapping Incorporated Afterwards
- 2-3 short sessions per day
- Calm & Predictable

Treatments: Sensory Re-Education

Reassuring nerves

Retrain the brain to correctly feel touch, pressure, movement
Improve hand awareness & coordination

How to Do It:

- Localization: touch the hand and try to identify where
- Texture Discrimination: Smooth vs. Rough
- Temperature discrimination: Warm vs. Cool
- Movement awareness: try to guess finger & wrist position with eyes closed
- Short & Consistent Sessions

Treatments: Aerobic Exercise Training

Reassuring nerves

Improves blood flow to nerves & healing tissues

Reduces central sensitization (over-reactivity of brain & spinal cord)

Boosts endorphins

helps regulate inflammation linked to neuropathic pain

How to Do It:

- Gentle activities: walking, stationary bike, aquatic therapy
- Start small: 5-10 min at a comfortable pace
- Goal: 20-30 minutes, 3-5x/week
- Light to moderate intensity

Treatments: Graded Motor Imagery

Overview

Goal: Reduce pain caused by miscommunication between the brain and the body

Uses imagery to “rebuild” movement maps

How to Do It:

1. Left/Right Discrimination
2. Explicit Motor Imagery
3. Mirror Therapy

Treatments: Graded Motor Imagery

Left & Right Discrimination

Improve body awareness

Helps brain correctly recognize LEFT vs. RIGHT positions

Reduce “error signals”

How to Do It: “Recognize” or “Orient” Apps

- Look at pictures of hands/feet
- Decide if image shows left or right side
- Only use your eyes to determine
- Quick & Accurate Decision Making
- 5 Min, 1-2x a day



Treatments: Graded Motor Imagery

Explicit Motor Imagery

Mentally practice movement without moving the limb
Activates motor areas safely & reduces pain sensitivity

How to Do It:

- imagine affected limb moving smoothly & pain-free
- Picture movement in real time whilst keeping the limb still



Treatments: Graded Motor Imagery

Mirror Therapy

Using a mirror to “trick” the brain into seeing normal movement
Reduce pain & improve motor control

How to Do It:

- Place a mirror beside your stronger limb & move the limb
- Hide affected limb behind mirror
- Brain believes the reflection is the affected limb moving
- 5-10 min, 1-2x a day



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