

Role of Physical Therapist in Stroke Rehabilitation: Review of International Procedures

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ABSTRACT

Stroke is a leading cause of disability worldwide, often resulting in significant physical, cognitive, and emotional impairments. Physical therapy plays a crucial role in the rehabilitation and recovery of stroke survivors, focusing on restoring physical function, improving mobility, and enhancing overall quality of life. This review examines the role of physical therapy in stroke rehabilitation, highlighting current practices, evidence-based interventions, and the impact of physical therapy on functional outcomes and long-term recovery.

Keywords: Stroke, physical therapy, rehabilitation, mobility, functional outcomes, recovery.

Role of Physical Therapy in Stroke Rehabilitation

Stroke is a major cause of long-term disability, often resulting in significant impairments in physical function, mobility, and quality of life. Physical therapy is a cornerstone of stroke rehabilitation, aimed at maximizing recovery and optimizing functional outcomes for stroke survivors.

Current Practices in Stroke Rehabilitation

Physical therapy interventions in stroke rehabilitation focus on addressing impairments such as muscle weakness, spasticity, impaired balance, and decreased mobility. Common techniques include therapeutic exercises, gait training, functional activities, and the use of assistive devices(1). The past decade has seen an exponential growth in the number of randomised control trials (RCT) in relation to physiotherapy interventions utilised in Stroke. Veerbeek et al (2014) highlight that the number of RCTs on "Stroke

Interventions" has almost quadrupled in the past 10 years, with strong evidence seen in 30 out of 53 interventions for beneficial effects on one or more outcomes. The main changes lie in the increased number of interventions to which 'strong evidence' could be assigned and an increase in the number of outcomes for which the findings are statistically significant(2). Higher intensity of practice appears to be an important aspect of effective physical therapy and suggestion is that intensity of practice is a key factor in meaningful training after stroke, and that more practice is better.

17 hours of therapy over a 10 week period has been found to be necessary for significant positive effects at both the body function level as well as activities and participation level of the ICF.

Practical statement of some technique in stroke

1. Positioning

Ability to change position and posture is affected in many individuals post stroke as a result of varying degrees of physical impairments the advice is :

- a. Initial specialist assessment for positioning should occur in acute stroke as soon as possible and where possible within 4 hours of arrival at hospital.
- b. Arm Support devices such as a Lap Tray may be used to assist with arm positioning for those at risk of shoulder subluxation
- c. Education and training around correct manual handling and positioning should be provided to the individual with stroke, their family/carer and health professionals, particularly nursing and other allied health staff.

d. Elevation of the limb when resting should be considered for individuals who are immobile to prevent swelling in the hand and foot.(3)

2. Early Mobilization

Immobility is associated with a number of post stroke complications such as deep vein thrombosis the advice is to, patients with difficulty moving after stroke should be assessed as soon as possible within the first 24 hours of onset by an appropriately trained healthcare professional to determine the most appropriate and safe methods of transfer and mobilization and commence mobilisation (out of bed activity) within 24 - 48 hrs of stroke onset unless receiving palliative care(4).

3. Balance

Balance difficulties are common for many individuals post stroke usually due to a combination of reduced limb and trunk motor control, altered sensation and sometimes centrally determined alteration in body representation such that the person misperceives their posture in relation to the upright. Impaired balance often leads to reduced confidence, fear of falling and increases the risk of falls. Current evidence suggests that trunk exercise training improve trunk performance and dynamic sitting balance, while task specific training improves dynamic balance in both sitting and standing(5).

4. Standing

Practice of standing balance should be provided for individuals who have difficulty with standing. Strategies could include: practicing functional task-specific training while

standing, walking training that includes challenge to standing balance (e.g. overground walking, obstacle courses), Providing visual or auditory feedback, receive progressive balance training, receive lower limb strengthening exercises, consider for an ankle-foot orthosis.(6).

5. Mobility

Tailored repetitive practice of walking (or components of walking) should be practiced as often as possible for individuals with difficulty walking. The following modalities can be used to achieve this, circuit Class Therapy (with a focus on overground walking practice), treadmill Training with or without body weight support, virtual Reality Training(7).

6. Electromechanical Assisted

Electromechanical-assisted gait training, with and without partial body weight support as well as with or without FES, are used as adjuncts to over ground gait training for the rehabilitation of patients after stroke and can be used to give non-ambulatory patients intensive practice (in terms of high repetitions) of complex gait cycles. Automated electromechanical gait machines consist either of a robot-driven exoskeleton orthosis or an electromechanical solution with two driven foot-plates simulating the phases of gait and offer reduced effort for therapists, as they no longer need to set the paretic limbs or assist trunk movements. The main difference between electromechanical-assisted and treadmill training is that the process of gait training is automated and supported by an electromechanical solution. Current research indicates that repetitive gait training in

combination with physiotherapy may improve walking ability in patients after stroke(8).

7.Virtual Reality

Advances in virtual reality technology mean that devices using computer and gaming technology, such as the Nintendo Wii ®, are now found in many people's homes. The potential of these types of adjuncts to maximize task-orientated practice and increase energy expenditure are beginning to be explored.

8. Overground Walking

Overground walking involves walking and walking-related activities on a solid surface, where the physiotherapist observes the patient's gait, usually on a level surface, and has the patient do a range of different activities and exercises to influence their gait. The benefit is that overground gait training can be used in almost any setting or location without requiring a great deal of high-tech equipment(2).

9. Orthotics

an intervention designed to: change body structures; support and stabilize unresponsive muscles so an activity can be performed; be an adjunct to enable participation in a life role, Individually fitted lower limb orthoses may be used to minimize limitations in walking ability. Improvement in walking will only occur while the orthosis is being worn(9).

Impact on Functional Outcomes

Evidence suggests that early and intensive physical therapy can lead to significant improvements in functional outcomes for stroke survivors. Interventions targeting mobility and

activities of daily living have been shown to enhance independence, reduce disability, and improve quality of life(2)

Long-Term Recovery and Quality of Life

Physical therapy plays a crucial role in promoting long-term recovery and enhancing quality of life for stroke survivors. By addressing physical impairments and optimizing functional abilities, physical therapists help individuals regain confidence, autonomy, and participation in meaningful activities (10).

Conclusion

Physical therapy is an essential component of stroke rehabilitation, with significant benefits for functional outcomes and long-term recovery. By providing evidence-based interventions and individualized care, physical therapists play a vital role in maximizing the potential for recovery and improving the quality of life of stroke survivors.

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