Systemic Review; Does Motor Relearning Improve the Functional Activity in Post - Stroke Patients

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Abstract: *Significance of the study: After studying various articles, it was understood that the Motor relearning program is a crucial factor for professionals working in stroke rehabilitation. Post - stroke patients have difficulty performing daily activities (such as using the bathroom, washing their hands, drinking and eating on their own, etc.), which negatively affects their quality of life and leaves them reliant on carers for necessities. Uswatun Hasanah et al (2019) used a Motor relearning program for improving ADLs in post - stroke which gave better results. He would define the Motor relearning program as the re - learning of functional activities that are very beneficial for patients. Louise Johnson et al (2023) did an observational study of post - stroke rehabilitation. He gave attention to the Motor relearning program. He defined it as the process of instructing, motivating, and guiding the patient to facilitate improved performance. As a part of this process, the therapist will use – instructions, feedback, and/or short cues that aim to influence the way a person moves.*

Keywords: Stroke, functional activity, motor relearning, spasticity

1. Introduction

After reviewing various articles on stroke, it was understood that stroke is a very common condition that everyone is facing nowadays, especially in metropolitan settings. Stroke is mainly associated with reduced blood flow to the brain causing cell death. There are two main types of stroke: ischemic, due to lack of blood flow, and hemorrhagic, due to bleeding. Both cause parts of the brain to stop functioning properly. The greatest significant modifiable risk factor for stroke is hypertension. Most people with stroke show muscle weakness or contracture, changes in muscle tone, joint laxity, and impaired motor control. These flaws lead to difficulties with commonly performed functional tasks. Hence, this systemic review was done to find out the effectiveness of the motor relearning program for improvement in functional activities of post - stroke patients.

Incidence of stroke
Stroke is presently the 4th major cause of death and the 5th leading cause of disability in India, where its prevalence is rising. According to earlier studies, the annual incidence of stroke in India is between 105 and 152/100, 000 person (Sumayya Faiz Shaikh, 2022)

The World Health Organization predicts a 30% increase in stroke cases in European Union nations between 2000 - 2025. Hemiparesis of the contralateral upper limb is the most frequent impairment following a stroke, affecting more than 80% of patients acutely and more than 40% of patients chronically. (Samar M. Hsatem et al, 2016)

The estimated adjusted stroke prevalence rate ranges from 84 - 262/100, 000 in rural regions to 334 - 424/100, 000 in urban areas, with an incidence rate of 119 - 145/100, 000 based on current population - based research. (Suraj B. Kanase, 2020)

Motor relearning program in post - stroke patients
It was seen that post - stroke patients exhibit muscle weakness or contracture, changes in muscle tone, joint laxity, and impaired motor control which leads to difficulty in performing common functional activities. Hence, the Motor relearning program a re - learning of functional activities that are very beneficial for patients in improving there day to day activities of daily life.

2. Methods

After reviewing multiple articles, qualitative data was gathered, and accordingly, inclusion and exclusion criteria were designed.

Inclusion criteria
- Patients diagnosed with stroke
- Age: 40 - 70
- Both male and female
- Has hemiplegic condition
- Has restricted functional activities

Exclusion criteria
- Episodes of seizures
- Significant orthopedic conditions
- Spinal cord injuries
- Patient other than stroke, including multiple sclerosis (MS) and Guillain - Barre syndrome.

Data Searching
- Pubmed
- Google scholar
- Research Gate
- Science direct
- Online journals

Data Collection
After being evaluated, articles that met the inclusion criteria were included and those that didn't were excluded. Articles were assessed by two independent reviewers for the review. The data collected included participants, year of publication, study methods, type of interventions, and outcomes. 'PRISMA' flow diagram was also used to select the articles. Included studies were evaluated on the basis of relevance, appropriateness, clarity, and methodology.

Analysis
Steps of analysis: -
- The gathered information was tabulated. They were categorised according to authors, research designs, year of publication, sample size, kind of intervention, intervention components, and outcomes.
- Findings from the studies were identified based on their methodology, sample size, kind of intervention, and interventional components.

- The findings were categorized under the title "Does motor relearning improve functional activity in Post - Stroke Patients."

3. Results

The review study included 150 potentially relevant articles, out of which 100 studies were excluded due to irrelevance, 30 studies were excluded as they didn't meet inclusion and exclusion criteria and 9 studies didn't mention the intervention. So, for the review 11 studies were included.

Characteristics of Articles
The study includes 11 review articles. The majority of the research was carried out in hospitals. These articles published between 2005 to 2022

Sr. No.	Author/Study	Year of publication	Research Design	No. of participants	Sample Character	Theme	Subtheme
1.	Louise Johnson et al	2023	Observational study	There were fifty - seven patients that involved fifty - five clinicians	The patients who were receiving rehabilitation following post - stroke	To know about principles of motor relearning in stroke rehabilitation	Motor relearning is a complex rehabilitation technique and here the therapist should manipulate their coaching language and practice design
2.	Syed Ali Behram Subazwari et al International Medical Journal	2022	Randomize controlled trial	Eighty post stroke patients were randomised	Chronic stroke patient that will meet the trial criteria will be enlisted	Effectiveness of Neuro- developmental treatment when compared with motor relearning program for reducing spasticity in chronic stroke patients	Both the techniques were effective in treating spasticity in chronic stroke patients but motor relearning showed a greater improvement
3.	Sumayya Faiz Shaikh VIMS Journal of physical therapy	2022	Systematic review	Ten systematic reviews were considered	Patient that are post stroke	To know the effectiveness of motor relearning program on upper limb function in post stroke patients	MRP along with other Physiotherapeutic treatment lends beneficial results for improving the upper limb function in post stroke survivours
4.	Suraj B. Kanase Indian Journal of Public Health Research & Development	2020	Experimental study	30 participants with post stroke	It was conducted at Krishna Hospital Karad Taluka in Maharashtra in post stroke patients	Effectiveness of motor relearning techniques when compared with conventional training for improving functional ability in post stroke patients	When compared to conventional training, the motor relearning program is more effective at incrreasing functional mobility
5.	Uswatun Hasanah et al International Journal of Medical Science and Dental Research	2019		20 respondents with post - stroke	The Tadjuddin Chalid Hospital in Makassar and the Asy - Syifa Clinic Makassar are where this study was carried out	Influence of motor relearning program on post - stroke patients ability to perform ADLs	The motor relearning program has a considerable impact on post - stroke patients' ability to perform ADLs
6	Liping Chen MM et al Journal of Stroke and Cerebrovascular Diseases	2019	A randomized controlled trial	478 ischemic stroke patients were randomly assigned to receive therapy.	Post stroke patients	Motor Relearning Program compared with Bobath Approach for Prevention of Poststroke Apathy	When compared to the Bobath technique, the Motor Relearning program for acute stroke rehabilitation was much more successful in preventing the recurrence of apathy.
7.	Ranjeet Singha International	2017	Comparative study	30 patients were randomly	Chronic stroke patients	To assess the efficacy of a motor	motor relearning program is more effective for enhancing

	Author	Year	Study type	Sample	Patient type	Objective	Outcome
	Journal of Physiotherapy and Research			allocated		relearning program when compared with PNF	fundamental mobility.
8.	Suneel Kumar Immadi et al	2015		Regardless of whether they had a hemorrhagic or thrombotic stroke, 60 outpatient post - stroke were identified	Post stroke patients	To Examine Motor Relearning Program compared with conventional physiotherapy for upper extremity function in stroke patients.	The motor relearning approach has been proven to be more successful than the conventional physiotherapy in improving functional recovery of the upper limb in stroke patients
9.	Gajanan Bhalerao et al International Journal of Basic and Applied Medical Sciences	2013	Comparative study	32 patients having their first unilateral stroke and involvement of the middle cerebral artery	Acute stroke patients	efficiency of the Motor Relearning Program compared with the Bobath Approach with regard to ambulation and activities of daily living	In the early enhancement of Activities of Daily Living ambulation in Acute Stroke Rehabilitation, the Motor Relearning programoutperforms the Bobath method.
10.	Fu Qiao et al	2009	randomized controlled trial	39 respondents with hemiplegic stroke	hemiplegic stroke patients	effects of the motor relearning training on the motor function and activities of daily living of the upper limb	A motor relearning approach improves upper limb motor function and ADL in patients with hemiplegic stroke.
11.	Dora YL Chan et al	2006	Experimental study randomized controlled trial	Fifty - two outpatients	thrombotic or haemorrhagic stroke	To know effectiveness of the motor relearning strategy in increasing physical function and task performance in stroke patients.	The motor relearning approach was found to be beneficial for improving functional recovery in stroke patients. Both'sequential' and 'function - based' notions are critical in applying the motor relearning method to stroke therapy.

4. Conclusion

One of the most common diseases that causes disability worldwide is stroke.15 million individuals worldwide get stroke each year, according to the WHO's annual health report. The primary cause is high blood pressure, and additional contributing factors include diabetes, heart disease, and blood vessel disease.

Motor relearning program is emerging intervention with promising outcomes. Through repeated practice of functional activity coupled with task performance, this treatment improves the functional use of the neurologically weaker extremity. As a result many studies have shown significant and lasting improvements in movement function.

In my review, the motor relearning program is shown to be one method for overcoming and enhancing functional usage. Consequently, it might be a part of a therapeutic plan**.**

References

[1] Louise Johnson et al. Principles into Practice: An Observational Study of Physiotherapists use of Motor Learning Principles in Stroke Rehabilitation. Elsevier Ltd on behalf of Chartered Society of Physiotherapy 118 (2023) 20–30.

[2] Syed Ali Behram Subazwari et al. Comparison of Effects of Neurodevelopmental Treatment versus Motor Relearning Program on Upper Limb Spasticity in Chronic Stroke Patients. A Randomized Control Trial. International Medical Journal 2022; 29 (4): ISSN: 13412051.

[3] Sumayya Faiz Shaikh. Effect of motor relearning program on the upper limb function in stroke survivors: A systematic review. VIMS journal of physical therapy 2022; 4 (1): ISSN: 2456 - 4087 (0).

[4] Suraj B. Kanase. Effect of Motor Relearning Programme and Conventional Training on Functional Mobility in Post Stroke Patients. Indian Journal of Public Health Research & Development 2020; 11 (5).

[5] Uswatun Hasanah et al. Effect of motor relearning programme on activity of daily living ability among post stroke patients in Makassar. International Journal of Medical Science and Dental Research 2019; 2 (2); PP 14 - 19.

[6] Liping Chen MM et al. Comparison of Motor Relearning Program versus Bobath Approach for Prevention of Poststroke Apathy: A Randomized Controlled Trial. Journal of Stroke and Cerebrovascular Diseases 2019; 28 (3); 655 - 664.

[7] Ranjeet Singha. Motor relearning program versus proprioceptive neuromuscular fascilitation technique for improving basic mobility in chronic stroke patients - A comparative study. International Journal of Physiotherapy and Research 2017; 5 (6): ISSN 2321 - 1822.

[8] Suneel Kumar Immadi et al. Effectiveness of the Motor relearning approach in promoting physical

function of the upper limb after stroke. Int J Physiotherapy 2015; 2 (1): 386 - 390.

[9] Gajanan Bhalerao et al. Comparison of Motor relearning program versus Bobath approach at every two weeks interval for improving activities of daily living and ambulation in acute stroke rehabilitation. International Journal of Basic and Applied Medical Sciences 2013; 3 (3): PP.70 - 77.

[10] Fu Qiao et al. Effects of motor relearning program on the upper limb motor function in hemiplegic stroke patients. China Tropical Medicine 2009; 9 (7): PP.1293 - 1294.

[11] Dora YL Chan et al. Motor relearning program for stroke patients: a randomized controlled trial. Sage Journal 2006; 20 (3).