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. Uswantun Hasanaah 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 Shaik, 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. Hasatern 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 their 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

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Author/Study</th>
<th>Year of publication</th>
<th>Research Design</th>
<th>No. of participants</th>
<th>Sample Character</th>
<th>Theme</th>
<th>Subtheme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Louise Johnson et al</td>
<td>2023</td>
<td>Observational study</td>
<td>There were fifty - seven patients that involved fifty - five clinicians</td>
<td>The patients who were receiving rehabilitation following post - stroke</td>
<td>To know about principles of motor relearning in stroke rehabilitation</td>
<td>Motor relearning is a complex rehabilitation technique and here the therapist should manipulate their coaching language and practice design</td>
</tr>
<tr>
<td>2.</td>
<td>Syed Ali Behram Subazwari et al International Medical Journal</td>
<td>2022</td>
<td>Randomize controlled trial</td>
<td>Eighty post stroke patients were randomised</td>
<td>Chronic stroke patient that will meet the trial criteria will be enlisted</td>
<td>Effectiveness of Neuro-developmental treatment when compared with motor relearning program for reducing spasticity in chronic stroke patients</td>
<td>Both the techniques were effective in treating spasticity in chronic stroke patients but motor relearning showed a greater improvement</td>
</tr>
<tr>
<td>3.</td>
<td>Sumayya Faiz Shaikh VIMS Journal of physical therapy</td>
<td>2022</td>
<td>Systematic review</td>
<td>Ten systematic reviews were considered</td>
<td>Patient that are post stroke</td>
<td>To know the effectiveness of motor relearning program on upper limb function in post stroke patients</td>
<td>MRP along with other Physiotherapeutic treatment lends beneficial results for improving the upper limb function in post stroke survivors</td>
</tr>
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<td>4.</td>
<td>Suraj B. Kanase Indian Journal of Public Health Research &amp; Development</td>
<td>2020</td>
<td>Experimental study</td>
<td>30 participants with post stroke</td>
<td>It was conducted at Krishna Hospital Karad Taluka in Maharashtra in post stroke patients</td>
<td>Effectiveness of motor relearning techniques when compared with conventional training for improving functional ability in post stroke patients</td>
<td>When compared to conventional training, the motor relearning program is more effective at increasing functional mobility</td>
</tr>
<tr>
<td>5.</td>
<td>Uswatun Hasanah et al International Journal of Medical Science and Dental Research</td>
<td>2019</td>
<td>Observational study</td>
<td>20 respondents with post - stroke</td>
<td>The Tadjuddin Chalid Hospital in Makassar and the Asy - Syifa Clinic Makassar are where this study was carried out</td>
<td>Influence of motor relearning program on post - stroke patients ability to perform ADLs</td>
<td>The motor relearning program has a considerable impact on post - stroke patients’ ability to perform ADLs</td>
</tr>
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<td>6.</td>
<td>Liping Chen MM et al Journal of Stroke and Cerebrovascular Diseases</td>
<td>2019</td>
<td>A randomized controlled trial</td>
<td>478 ischemic stroke patients were randomly assigned to receive therapy.</td>
<td>Post stroke patients</td>
<td>Motor Relearning Program compared with Bobath Approach for Prevention of Poststroke Apathy</td>
<td>When compared to the Bobath technique, the Motor Relearning program for acute rehabilitation was much more successful in preventing the recurrence of apathy.</td>
</tr>
<tr>
<td>7.</td>
<td>Ranjeet Singha International</td>
<td>2017</td>
<td>Comparative study</td>
<td>30 patients were randomly</td>
<td>Chronic stroke patients</td>
<td>To assess the efficacy of a motor</td>
<td>Motor relearning program is more effective for enhancing</td>
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<table>
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<tr>
<th>Journal of Physiotherapy and Research</th>
<th>allocated</th>
<th>relearning program when compared with PNF</th>
<th>fundamental mobility</th>
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</thead>
<tbody>
<tr>
<td>8. Suneel Kumar Imnadi et al</td>
<td>2015</td>
<td>Post stroke patients</td>
<td>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</td>
</tr>
<tr>
<td>9. Gajanan Bhalerao et al</td>
<td>2013</td>
<td>Acute stroke patients</td>
<td>In the early enhancement of Activities of Daily Living ambulation in Acute Stroke Rehabilitation, the Motor Relearning program outperforms the Bobath method.</td>
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<td>11. Dora YL Chan et al</td>
<td>2006</td>
<td>Fifty - two outpatients</td>
<td>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.</td>
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### 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


