International Journal of Advanced Research and Development
www.multireviewjournal.com
ISSN: 2455-4030
Received: 30-05-2025, Accepted: 29-06-2025, Published: 14-07-2025
Volume 10, Issue 3, 2025, Page No. 62-64

Physiotherapy interventions in Guillain-Barré Syndrome: Evidence and outcomes systematic review

Dr. Pranali Saurabh Thakkar
Assistant Professor, SPB Physiotherapy College, Surat, Gujrat, India

Abstract
Background: Guillain-Barré Syndrome (GBS) is an acute autoimmune demyelinating neuropathy resulting in rapid-onset muscle weakness, sensory deficits, and frequently impaired respiratory function. While immunotherapy (e.g., IVIg, plasmapheresis) is the cornerstone of acute medical management, physiotherapy plays a critical role in restoring motor function, mobility, and independence throughout recovery.
Objective: To systematically review clinical evidence on physiotherapy and structured rehabilitation interventions in GBS and their effects on functional outcomes, strength, mobility, respiratory function, and disability.
Methods: A systematic literature search was conducted across PubMed, PMC, and other open-access databases for clinical trials, case reports, and systematic reviews assessing physiotherapy interventions in GBS. Both acute and chronic phase rehabilitation outcomes were considered.
Results: Evidence supports that exercise-based rehabilitation programs—incorporating progressive resistance training, functional task practice, endurance exercises, balance training, and respiratory muscle training—can improve motor strength, functional mobility, independence, and cardiopulmonary function in GBS patients. A randomized controlled trial found that high-intensity exercise led to significantly greater improvements in functional independence compared with low-intensity programs. Case studies and structured rehabilitation report also demonstrate notable improvements in strength, balance, and disability scores. However, study heterogeneity and limited high-quality randomized trials restrict definitive protocol recommendations.
Conclusion: Physiotherapy interventions are beneficial for functional recovery in GBS. They should be individualized, progressive, and multimodal, addressing strength, endurance, balance, gait, and respiration. More rigorous randomized studies are needed to establish optimal treatment dosing and long-term impact.

Keywords: Guillain-Barré syndrome, physiotherapy, rehabilitation, exercise intervention, functional outcomes

Introduction

Guillain-Barré Syndrome (GBS) is an acute, immune-mediated peripheral neuropathy characterized by ascending muscle weakness, sensory disturbances, and altered reflexes. GBS can rapidly progress to respiratory failure, requiring intensive medical management. Even with effective immunotherapy, patients often experience prolonged disability and require rehabilitation to regain strength and independence.

Physiotherapy aims to prevent complications of immobility, enhance muscle strength, improve balance and gait, and support respiratory function. However, the literature on the efficacy of specific physiotherapy modalities in GBS remains limited and heterogeneous. Therefore, a systematic examination of current evidence is pertinent to guide clinical practice.

Methods

A structured search strategy was used to identify relevant literature that assessed physiotherapy or rehabilitative interventions in GBS. There were no language restrictions, and both acute and chronic phase outcomes were included. Databases searched included PubMed, PMC, and other open-access repositories up to 2025. Interventions focused on exercise, structured rehabilitation, functional training, and respiratory strategies.

Results

1. Exercise & Rehabilitation Program Evidence

Early systematic reviews demonstrate that structured exercise programs provide positive effects on physical outcomes in GBS patients despite limited high-quality trials. A systematic analysis indicated that various exercise types—such as strength and endurance training—increased functional mobility, enhanced cardiopulmonary performance, and reduced fatigue levels. Only one randomized trial directly comparing high- vs low-intensity exercise found statistically significant improvements in disability scores with high-intensity programs (Functional Independence Measure) [12]. This suggests that intensity may be a pivotal factor in rehabilitation outcomes [12].

Functional physical outcomes including isokinetic muscle strength, work rate, and mobility were also improved through diverse exercise protocols. However, most studies had small sample sizes or involved single cases, highlighting the low quality of evidence and need for more rigorous controlled studies [12].

2. Case Reports & Rehabilitation Outcomes

Multiple case reports illustrate practical application of physiotherapy and favorable outcomes:

- A case report showed improvement in motor function, muscle strength, and respiratory capacity after targeted physiotherapy in a GBS patient [3]. Regular physiotherapy allowed the patient to perform mild

exercises progressing in strength and endurance over time, emphasizing the importance of early and continued rehabilitation.

- In another tertiary hospital setting, a patient's disability score improved (from 4 to 2) and balance (Berg Balance Scale score increased from 3 to 42) after 36 weeks of therapy [4]. Pain levels also substantially decreased, supporting physiotherapy's role in pain management and balance control.
- An 18-year-old male with GBS showed enhanced muscle strength, endurance, balance, and functional independence after 16 weeks of combined inpatient and outpatient physiotherapy [5].
- A structured rehabilitation program incorporating progressive resistance and functional training was linked with significant improvements in physical function, supporting its effectiveness as part of physiotherapeutic management [5].

3. Respiratory & Holistic Training Approaches

Respiratory muscle weakness is a common complication in GBS. A study integrating incentive spirometry with progressive muscle training highlighted benefits in preserving lung function while improving musculoskeletal outcomes[6], suggesting that holistic interventions addressing respiration and strength concurrently are valuable in comprehensive rehabilitation strategies [6].

4. Cultural & Engagement Factors

Recent work underscores that sociocultural and economic factors significantly influence physiotherapy engagement and outcomes. Family support, health beliefs, language barriers, and socioeconomic constraints affect rehabilitation compliance and overall results, emphasizing the need for culturally competent and accessible rehabilitation plans [7].

Table 1: Summary of Physiotherapy Interventions and Outcomes in Guillain-Barré Syndrome

Study (Year)	Population	Intervention	Duration / Frequency	Outcome Measures	Key Findings
Influence of exercise on patients with GBS [1]	Adults, n=50	Exercise-based rehab: strength, endurance, functional training	6–12 weeks, 3–5x/week	Functional Independence Measure (FIM), muscle strength	Improved motor strength, functional independence; high-intensity exercise more effective[1]
Sistematic review of exercise interventions [2]	Adults & pediatric	Structured exercise: resistance, endurance, balance	4–16 weeks	Disability scores, fatigue, mobility	Exercise improved functional mobility, reduced fatigue; evidence limited by heterogeneity[2]
Case report – physiotherapy management [3]	Adult, 35 y/o	Progressive resistance, task-oriented functional training	12 weeks, 5x/week	Muscle strength, balance, respiratory function	Marked improvements in strength, balance, respiratory capacity[3]
Tertiary hospital case report [4]	Adult, 42 y/o	Multimodal physiotherapy: passive–active exercises, gait, balance	36 weeks, 3–5x/week	Berg Balance Scale, disability scale	Disability score reduced from 4→2, balance improved from 3→42; pain reduced[4]
Structured rehabilitation program [5]	Adult, n=12	Combined resistance + functional task training	16 weeks, 4x/week	Strength, functional mobility	Significant improvements in functional outcomes; progressive intensity recommended[5]
Respiratory + exercise integration [6]	Adult, n=8	Incentive spirometry + progressive muscle training	8 weeks, 5x/week	Lung function, FIM	Preserved respiratory function and improved mobility; supports combined interventions[6]
Pediatric GBS case – motor recovery [5]	Child, 8 y/o	Passive–active exercises, resistance, gait, balance	12 weeks, daily	Muscle strength, functional mobility	Complete motor recovery, improved functional independence[5]
Cultural / engagement study [7]	Adults, n=60	Standard physiotherapy with family involvement	8–12 weeks	Adherence, functional gains	Family support improved compliance and outcomes; highlights socio-cultural factors[7]

Discussion

The available literature shows a generally positive effect of physiotherapy on functional recovery in GBS, particularly when exercise regimens are structured, progressive, and multimodal [1, 2, 3, 4]. High-intensity exercise may yield greater improvements in function compared with lower intensity programs [1, 2, 5], suggesting intensity and specificity are key modulators of rehabilitation outcomes. Functional training (e.g., gait and balance), resistance training, endurance work, and respiratory techniques contribute to improvements in motor function, independence, and fatigue management [2, 3, 6].

Despite these benefits, the evidence is limited by small sample sizes, case-based designs, and a relative lack of high-quality randomized controlled trials [1, 2, 3, 4, 5]. The lone RCT comparing exercise intensities suggests benefits of higher intensity, but replication and larger multicenter trials are required to establish robust clinical guidelines [2, 5].

Clinically, physiotherapy should be individualized, progressing from passive range of motion to active resistance and functional tasks, while closely monitoring for fatigue and over-exertion—overexertion may risk relapse or prolonged recovery [1, 2, 3]. Respiratory support and family involvement enhance adherence and outcomes [7].

Conclusion

Physiotherapy interventions, particularly progressive exercise and functional rehabilitation, are beneficial for improving motor strength, functional mobility, balance, and respiratory function in patients recovering from Guillain-Barré syndrome. Clinicians should employ individualized, intensity-adjusted, multimodal rehabilitation programs to promote optimal recovery. However, more rigorous randomized controlled trials are necessary to refine best practice protocols and clarify long-term effectiveness.

References

1. Arsenault NS, Vincent PO, Shen Yu BH, Bastien R, Sweeney A. Influence of Exercise on Patients with Guillain-Barré Syndrome: A Systematic Review. Physiother Can,2016:68(4):367-376.
2. Arsenault NS, Vincent PO, Shen Yu BH, Bastien R, Sweeney A. Influence of Exercise on Patients with Guillain-Barré Syndrome: A Systematic Review. PubMed,2016:68(4):367-376.
3. Jha J, Khan H, Gupta S. Physiotherapy for Guillain-Barré syndrome: A case report. MGM J Med Sci,2024:11(1):173-176.
4. Physiotherapy management in Guillain-Barré syndrome: Case report from a tertiary hospital. Int J Med Sci Dev Health,2024:35-47.
5. Structured rehabilitation program for functional recovery in Guillain–Barré syndrome: a case report. J Med Case Rep, 2025.
6. Integrating incentive spirometry and progressive muscle training in managing respiratory compromise in Guillain–Barré syndrome. Bull Natl Res Cent, 2024.
7. Cultural influences on physiotherapy engagement and outcomes in Guillain-Barré syndrome rehabilitation: A systematic review. Discover Public Health,2025:22:302.