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Multimodal Physiotherapy for Functional Improvement in Spastic Diplegic Cerebral Palsy: A Case Report

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Abstract

Background: Spastic diplegic cerebral palsy is characterized by motor impairment, spasticity, and limitations in functional activities. Evidence regarding the effectiveness of combining multiple physiotherapy modalities remains limited.

Objective: To evaluate the clinical outcomes of a multimodal physiotherapy program consisting of myofascial release, stretching exercise, strengthening exercise, and functional exercise in a child with spastic diplegic cerebral palsy.

Methods: This case report involved a 16-year-old male with spastic diplegic cerebral palsy classified as Gross Motor Function Classification System (GMFCS) level III. The patient underwent six physiotherapy sessions over three weeks at YPAC Prof. Dr. Soeharso Surakarta. Outcomes were assessed using the Gross Motor Function Measure-88 (GMFM-88), Modified Ashworth Scale (MAS), Barthel Index (BI), and GMFCS.

Results: Gross motor function improved, with the GMFM-88 score increasing from 66.0% at baseline to 70.0% after intervention. Improvement was primarily observed in standing ability, with Dimension D increasing from 33% to 38%, whereas walking, running, and jumping performance remained unchanged (Dimension E = 13.8%). Spasticity showed minimal change, while functional independence remained stable with a BI score of 90. GMFCS classification remained at level III.

Conclusion: Multimodal physiotherapy was associated with improved gross motor function and maintenance of functional independence in a child with spastic diplegic cerebral palsy. However, changes in spasticity were limited, and the findings cannot be generalized beyond this single case.

Keywords
Cerebral Palsy; Exercise Therapy; Muscle Spasticity; Activities of Daily Living; Myofascial Release

Introduction

Cerebral palsy (CP) is a group of permanent disorders affecting the development of movement and posture that result in activity limitations and are attributed to nonprogressive disturbances occurring in the developing fetal or infant brain.[1] Although the primary neurological lesion is nonprogressive, the clinical manifestations often evolve throughout life due to growth, musculoskeletal adaptation, and environmental demands.[1] In addition to motor impairment, individuals with CP may experience disturbances in sensation, cognition, communication, behavior, and musculoskeletal function, all of which can substantially affect participation and quality of life.[1,2] Spastic CP is the most common subtype, accounting for approximately 70–80% of cases, with spastic diplegia predominantly affecting the lower extremities and resulting in limitations in mobility, balance, gait performance, and functional independence.[3]

CP remains one of the leading causes of physical disability in children worldwide.[3] Recent epidemiological studies reported a prevalence of approximately 1.5–1.6 cases per 1,000 live births in high-income countries, whereas higher rates have been observed in low- and middle-income countries.[4] The condition is associated with multiple prenatal, perinatal, and postnatal risk factors, including prematurity, low birth weight, perinatal hypoxia, neonatal infection, and maternal health complications.[5] These factors may contribute to impaired neurological development, leading to long-term motor dysfunction and activity limitations that often require lifelong rehabilitation.[5,6] Consequently, improving functional ability and independence remains one of the primary goals of rehabilitation in children with CP.[6]

Functional limitations in children with spastic diplegic CP are influenced by several interrelated impairments, including muscle weakness, impaired selective motor control, abnormal muscle tone, reduced flexibility, postural instability, and gait dysfunction.[3] These impairments frequently interfere with activities of daily living (ADL), mobility, and participation in social and educational activities appropriate for the child's age.[6] Therefore, rehabilitation should not focus solely on reducing impairments but also on enhancing functional performance and participation.[6] Contemporary rehabilitation models emphasize activity-oriented and participation-focused interventions that combine impairment management with task-specific functional training.[6]

Physiotherapy plays a central role in the multidisciplinary management of CP by addressing motor dysfunction, preventing secondary musculoskeletal complications, and promoting functional independence.[6] Various physiotherapy approaches, including stretching, strengthening exercise, gait training, task-oriented exercise, and manual therapy, have demonstrated beneficial effects on motor performance and functional outcomes.[7,8] However, despite the growing body of evidence supporting individual interventions, the effectiveness of combining multiple therapeutic modalities into a comprehensive rehabilitation program remains insufficiently explored.[9] Most previous studies have evaluated stretching, strengthening, or functional training as isolated interventions, making it difficult to determine the potential synergistic effects of multimodal physiotherapy in children with spastic diplegic CP.[9] This limitation represents an important gap in the current evidence base and highlights the need for further investigation of integrated rehabilitation approaches.[9]

The combination of myofascial release, stretching exercise, strengthening exercise, and functional exercise may provide complementary therapeutic benefits. Myofascial release is intended to improve soft-tissue mobility and reduce fascial restrictions, while stretching exercise helps maintain muscle extensibility and joint mobility.[10] Strengthening exercise contributes to improved muscle performance, postural stability, and movement efficiency, whereas functional exercise promotes motor learning through repetitive practice of meaningful daily activities.[11,12,13] Furthermore, contemporary neuroplasticity theories suggest that combining impairment-based interventions with task-specific practice may facilitate motor adaptation and optimize functional outcomes in children with neurological disorders.[14] Therefore, these interventions may act synergistically to address the multifactorial impairments commonly observed in children with spastic diplegic CP.[9]

Although previous studies have reported positive effects of strengthening exercise, stretching, and functional training in children with CP, evidence specifically examining the combined application of myofascial release, stretching exercise, strengthening exercise, and functional exercise remains limited.[9] Furthermore, relatively few reports have documented longitudinal changes using standardized outcome measures such as the Gross Motor Function Measure-88 (GMFM-88), Modified Ashworth Scale (MAS), Barthel Index (BI), and Gross Motor Function Classification System (GMFCS).[15] Such evidence may provide clinically relevant insights into the practical implementation of multimodal physiotherapy programs in routine pediatric rehabilitation settings. Therefore, this case report aimed to evaluate the clinical outcomes of a multimodal physiotherapy program consisting of myofascial release, stretching exercise, strengthening exercise, and functional exercise in a 16-year-old male with spastic diplegic cerebral palsy. It was hypothesized that the intervention would improve gross motor function and maintain functional independence while contributing to the management of spasticity.

Methods

This study was conducted as a single-case report following the CARE (CAse REport) Guideline to ensure comprehensive and transparent reporting of clinical findings, therapeutic interventions, and patient outcomes.[16] A descriptive longitudinal case-report design was employed to evaluate the clinical effects of a multimodal physiotherapy intervention in a patient with spastic diplegic cerebral palsy over six treatment sessions.

The study was carried out at YPAC Prof. Dr. Soeharso Surakarta from 18 September to 9 October 2025. The participant was a 16-year-old male diagnosed with spastic diplegic cerebral palsy by a pediatric neurologist based on clinical neurological examination and developmental history. The patient was selected using a single-case selection approach because the clinical presentation corresponded to the objectives of the study and the patient routinely attended physiotherapy services during the observation period.

Based on prenatal and perinatal history, the patient was born from a twin pregnancy complicated by premature rupture of membranes at approximately 35 weeks of gestation. Birth weight was 1.5 kg, and neonatal jaundice required incubator treatment for approximately two weeks. Prematurity, low birth weight, and neonatal complications were considered contributing risk factors to the development of cerebral palsy. At the initial assessment, the patient was classified as Gross Motor Function Classification System (GMFCS) level III, indicating the ability to walk with mobility aids while requiring a wheelchair for more efficient community mobility. The patient had previously undergone physiotherapy at Dr. Soeharso Orthopaedic Hospital, Surakarta, at the age of nine years. Information regarding height, current body weight, developmental milestones, and adherence to a structured home exercise program was unavailable in the medical records and therefore could not be reported.

Written informed consent for physiotherapy management, clinical evaluation, and publication of anonymized clinical information was obtained from the patient's parent or legal guardian before participation. This case report was derived from routine clinical physiotherapy practice and did not involve experimental procedures or modifications to standard care. Therefore, formal ethical approval was not required. Patient confidentiality and privacy were maintained throughout the study and reporting process.
Baseline assessment included observation of motor function, muscle tone, mobility, and functional independence. Outcome evaluations were conducted at baseline and repeated during six consecutive treatment sessions (T1–T6) using standardized clinical instruments.

The GMFCS was used to classify gross motor function according to age-specific mobility performance.[17] The GMFCS categorizes functional mobility into five levels ranging from independent ambulation (Level I) to severe mobility limitations requiring extensive assistance (Level V). The GMFCS demonstrates excellent reliability and validity in children and adolescents with CP.[18] The Gross Motor Function Measure-88 (GMFM-88) was used to evaluate gross motor performance across five dimensions: lying and rolling, sitting, crawling and kneeling, standing, and walking/running/jumping.[19] Scores were converted into percentages, with higher scores indicating better motor performance. The GMFM-88 is considered one of the most valid and reliable instruments for evaluating changes in gross motor function in children with CP.[19]

The Modified Ashworth Scale (MAS) was used to assess muscle spasticity by measuring resistance during passive movement.[20] Scores range from 0 to 4, with higher scores indicating greater spasticity.[20] The MAS remains one of the most commonly used clinical tools for assessing muscle tone abnormalities in neurological populations.[20]
Functional independence was assessed using the Barthel Index (BI), which evaluates performance in activities of daily living, including feeding, bathing, dressing, toileting, transfers, mobility, and stair climbing.[21] Total scores range from 0 to 100, with higher scores indicating greater independence.[22] To improve measurement consistency, all assessments were performed by the same physiotherapist using standardized testing procedures and identical assessment conditions throughout the intervention period.

The physiotherapy intervention consisted of myofascial release, stretching exercise, strengthening exercise, and functional exercise. Each treatment session lasted approximately 40–60 minutes and was administered over six treatment visits.
Myofascial release was performed for approximately 10–15 minutes using gentle sustained manual pressure applied to restricted soft-tissue structures of the lower extremities according to patient tolerance. The intervention aimed to improve fascial mobility, reduce soft-tissue restrictions, and facilitate movement efficiency.

Stretching exercise was conducted using active-assisted range-of-motion techniques targeting muscle groups commonly affected by spasticity, including the hamstrings, gastrocnemius, soleus, hip adductors, and hip flexors. Each stretching exercise was performed in 2–3 sets of 8–10 repetitions with the objective of maintaining muscle extensibility, improving joint mobility, and reducing the risk of contracture formation.

Strengthening exercise focused on improving lower-extremity muscle performance and postural stability through quadriceps setting, straight-leg raise, hamstring setting, and hip strengthening exercises. Each exercise was performed in 2–3 sets of 8–10 repetitions. Progression was based on patient tolerance, movement quality, fatigue level, and the ability to complete the prescribed repetitions without compensatory movement.

Functional exercise emphasized task-oriented activities directly related to daily mobility and functional performance. Training activities included sit-to-stand practice, standing balance training, transfer training, and gait initiation exercises. Progression was achieved by gradually reducing therapist assistance, increasing task repetitions, and encouraging greater independence during task execution. The primary objectives were to improve postural control, transitional movements, mobility, and participation in daily activities.

In addition to supervised physiotherapy sessions, caregivers received education regarding home-based exercise implementation. The home program included stretching, active movement practice, and functional mobility exercises designed to reinforce therapeutic goals outside the clinical setting. However, adherence to the home exercise program was not formally monitored and therefore could not be quantified.

The clinical workflow consisted of patient assessment and eligibility determination, confirmation of spastic diplegic cerebral palsy, and acquisition of written informed consent from the parent or legal guardian. Baseline functional and clinical outcomes were then assessed using the Gross Motor Function Classification System (GMFCS), Gross Motor Function Measure-88 (GMFM-88), Modified Ashworth Scale (MAS), and Barthel Index (BI). Participants subsequently underwent a multimodal physiotherapy intervention across six sequential sessions (T1-T6), followed by repeated outcome assessments and longitudinal analysis of clinical outcomes.

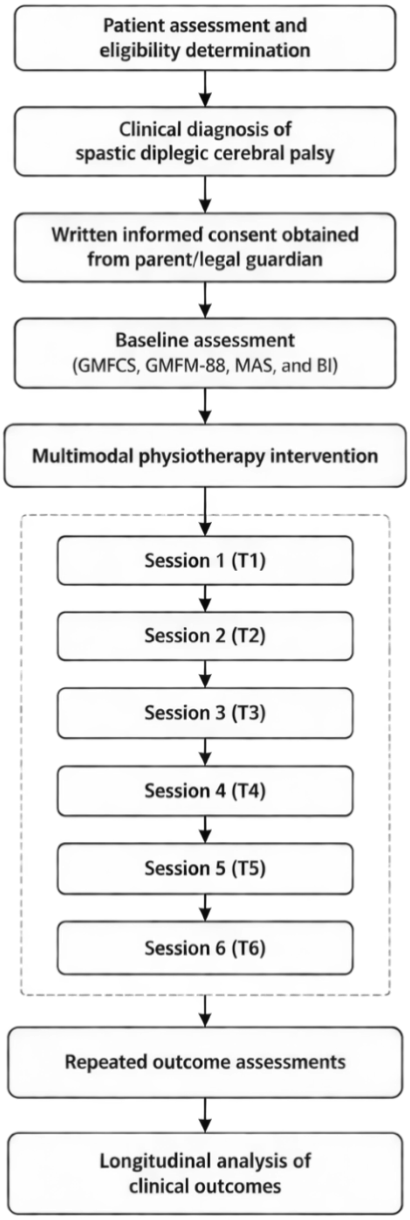

Figure 1. Clinical assessment and multimodal physiotherapy intervention flow

Data analysis was performed descriptively by comparing outcome measurements obtained from T1 through T6. Changes in GMFM-88, MAS, BI, and GMFCS scores were evaluated longitudinally to identify trends in gross motor function, spasticity, and functional independence throughout the intervention period. Because the study involved a single participant, no inferential statistical analysis was performed. Interpretation focused on the magnitude and direction of observed clinical changes across the treatment period.

Results

The patient completed all six physiotherapy sessions consisting of myofascial release, stretching exercise, strengthening exercise, and functional exercise. Outcome evaluations were performed longitudinally at six assessment points (T1–T6) using the

GMFM-88, MAS, BI, and GMFCS. No adverse events were reported during the intervention period, and the patient was able to participate in all treatment sessions as planned.

To evaluate changes in gross motor performance throughout the intervention period, the GMFM-88 was administered at each assessment point. The instrument provides both dimensional and total scores, allowing the identification of specific motor domains that contributed to overall functional improvement. Table 1 presents the longitudinal changes in GMFM-88 scores from baseline to the final evaluation.

Table 1. Longitudinal Changes in Gross Motor Function Based on GMFM-88

Dimension	T1	T2	T3	T4	T5	T6
A (Lying and Rolling)	92%	92%	100%	100%	100%	100%
B (Sitting)	93%	93%	100%	100%	100%	100%
C (Crawling and Kneeling)	100%	100%	100%	100%	100%	100%
D (Standing)	33%	33%	35%	35%	38%	38%
E (Walking, Running, and Jumping)	13.8%	13.8%	13.8%	13.8%	13.8%	13.8%
Total Score	66.0%	66.0%	69.7%	69.7%	70.0%	70.0%

As shown in Table 1, gross motor function improved gradually during the intervention period. The total GMFM-88 score increased from 66.0% at baseline to 70.0% at the final evaluation, representing an overall improvement of four percentage points. Basic motor functions, including lying and rolling, sitting, and crawling or kneeling, were already relatively well developed at baseline and therefore demonstrated limited room for improvement. Dimensions A and B reached 100% during follow-up, whereas Dimension C remained stable at 100% throughout all evaluations.

The most notable improvement was observed in Dimension D (Standing), which increased from 33% at baseline to 38% at the final evaluation. This finding indicates enhanced standing ability, postural control, and weight-bearing performance. In contrast, Dimension E (Walking, Running, and Jumping) remained unchanged at 13.8%, suggesting persistent limitations in higher-level locomotor activities. Overall, the increase in total GMFM-88 score was primarily attributable to improvements in standing performance rather than advanced ambulatory function.

Muscle spasticity was assessed using the MAS to determine changes in muscle tone throughout the intervention period. The results are presented in Table 2.

Table 2. Longitudinal Changes in Spasticity Based on the Modified Ashworth Scale

Region	Movement	Baseline (T1)	Final Evaluation (T6)
Hip	Flexion, Extension, Abduction, Adduction	0	0
Knee	Flexion	1 / 1+	1 / 1+
Knee	Extension	1+ / 1+	1+ / 1+
Ankle	Plantar Flexion	1+ / 1+	1 / 1
Ankle	Dorsiflexion	2 / 2	1 / 1
Ankle	Inversion	2 / 2	1+ / 1+
Ankle	Eversion	2 / 2	1+ / 1+

The MAS results demonstrated relatively stable spasticity levels throughout the intervention period. No meaningful changes were observed in the hip or knee musculature. However, slight reductions in spasticity were observed at the ankle, particularly in dorsiflexion, inversion, and eversion movements. Dorsiflexion improved from a MAS score of 2 to 1, while inversion and eversion improved from 2 to 1+. These findings indicate localized improvement in ankle muscle tone rather than a generalized reduction in lower-extremity spasticity.

Functional independence was assessed using the BI to determine whether changes in motor performance translated into improvements in daily activities. Table 3 summarizes the BI results obtained during follow-up.

Table 3. Longitudinal Changes in Functional Independence Based on the Barthel Index

Assessment	T1	T2	T3	T4	T5	T6
Barthel Index	90	90	90	90	90	90
Interpretation	Independent	Independent	Independent	Independent	Independent	Independent

As presented in Table 3, the patient maintained a BI score of 90 throughout all evaluation sessions. The findings indicate that the patient remained functionally independent during the intervention period. Although no measurable improvement was observed using this instrument, the stable score suggests preservation of functional capacity and independence in activities of daily living.

To further evaluate overall gross motor classification, the GMFCS level was monitored throughout the intervention period. The findings are presented in Table 4.

Table 4. Gross Motor Function Classification System During Follow-up

Assessment	T1	T2	T3	T4	T5	T6
GMFCS Level	III	III	III	III	III	III

The patient's GMFCS classification remained unchanged at Level III throughout all evaluations. Although improvements in gross motor performance were observed through GMFM-88 scores, the duration of intervention was not sufficient to alter the patient's overall functional mobility classification.

In addition to standardized outcome measures, clinical observation revealed qualitative improvements in movement performance during functional activities. Toward the final treatment sessions, the patient demonstrated improved movement control during sit-to-stand transitions, better standing stability, and greater confidence during gait initiation tasks. Although these observations were not quantified using a separate assessment tool, they were consistent with the improvements observed in Dimension D of the GMFM-88.

Overall, the findings indicate that the multimodal physiotherapy program was associated with improvements in gross motor function, particularly standing ability, while maintaining functional independence. Changes in spasticity were limited and primarily observed at the ankle region, whereas GMFCS classification remained stable throughout the intervention period.

Discussion

This case report evaluated the clinical effects of a multimodal physiotherapy program consisting of myofascial release, stretching exercise, strengthening exercise, and functional exercise in a 16-year-old male with spastic diplegic cerebral palsy. Following six treatment sessions, improvements were observed in gross motor function as demonstrated by an increase in the GMFM-88 score from 66.0% to 70.0%. Functional independence, measured using the BI, remained stable throughout the intervention period, whereas spasticity demonstrated only limited improvement and was primarily confined to the ankle region. Collectively, these findings suggest that the multimodal intervention contributed to improved motor performance while maintaining existing functional abilities.

The improvement observed in the GMFM-88 score indicates a positive change in gross motor function following the intervention period. Although the absolute increase of four percentage points may appear modest, interpretation of motor outcomes in individuals with CP should consider the complexity of motor impairments and the relatively short duration of treatment.[23] Children and adolescents with spastic diplegic CP frequently present with persistent deficits in muscle strength, postural control, balance, selective motor control, and movement coordination that often require prolonged rehabilitation to achieve substantial functional gains.[6] Therefore, even small improvements may represent clinically meaningful progress in daily motor performance.[23]

A more detailed examination of the GMFM-88 dimensions demonstrated that the improvement was primarily attributable to gains in standing ability. Dimension D (Standing) increased from 33% at baseline to 38% at the final evaluation, whereas Dimension E (Walking, Running, and Jumping) remained unchanged. Improvement was observed primarily in standing-related items (postural stability, weight-bearing capacity, and standing control), with comparatively smaller gains in higher-level locomotor activities. Because advanced ambulatory functions require more complex neuromuscular coordination and often longer rehabilitation periods, the absence of measurable improvement in Dimension E after only six sessions was not unexpected.[24] Similar findings have been reported in previous studies in which standing performance improved earlier than advanced gait-related activities during rehabilitation.[25]

The observed improvement may be explained by the complementary mechanisms of the four intervention components. Strengthening exercises likely contributed to improved force-generating capacity and postural stability, both of which are essential for standing and transitional movements. Previous evidence suggests that muscle weakness is one of the major contributors to activity limitations in individuals with CP, and strengthening programs can improve motor performance without exacerbating spasticity.[26] Functional exercises may have further enhanced motor learning through repetitive task-specific practice, allowing the patient to apply newly acquired motor skills during meaningful activities.[27] Contemporary neuroplasticity theories suggest that repetitive functional training promotes adaptive neural reorganization and improves movement efficiency.[28]

Myofascial release and stretching exercises were incorporated to address soft-tissue restrictions and mobility limitations frequently associated with spastic diplegic CP. Although the exact mechanisms underlying myofascial release remain under investigation, current evidence suggests that this intervention may influence both mechanical and neurophysiological processes.[29] Mechanical effects include improved fascial glide, reduced tissue stiffness, and enhanced soft-tissue extensibility, whereas neurophysiological effects may involve modulation of mechanoreceptor activity and neuromuscular tension.[29] Stretching exercises may further contribute to maintaining muscle length and joint mobility while reducing the risk of contracture development.[30] Consequently, the combination of manual therapy and exercise-based rehabilitation may have created favorable conditions for improved motor performance.

Despite improvements in gross motor function, changes in spasticity were relatively limited. The MAS results demonstrated minor reductions in ankle dorsiflexion, inversion, and eversion spasticity, whereas hip and knee spasticity remained unchanged. These findings are consistent with previous reports indicating that spasticity in CP is a chronic manifestation of upper motor neuron dysfunction and may be relatively resistant to short-term intervention.[11] Reduction of spasticity often requires prolonged rehabilitation, intensive stretching programs, pharmacological management, or multidisciplinary interventions.[31] Therefore, the limited reduction in spasticity observed in this case may be attributable to the relatively short intervention duration of six treatment sessions.

Another important consideration is that improvements in functional performance are not always directly associated with reductions in spasticity.[32] Contemporary evidence indicates that factors such as muscle weakness, impaired selective motor control, reduced balance, and biomechanical inefficiencies may contribute more substantially to activity limitations than spasticity alone.[33] Consequently, improvements in motor performance may occur despite minimal changes in muscle tone. This interpretation is supported by the present findings, where improvements in GMFM-88 scores occurred despite largely stable MAS values.

The BI remained unchanged at 90 throughout the intervention period. Although this finding may initially suggest a lack of improvement in functional independence, a ceiling effect should be considered when interpreting the results. The patient already demonstrated a relatively high level of independence at baseline, leaving limited opportunity for measurable improvement within the scoring range of the instrument.[34] Therefore, the stable BI score likely reflects maintenance of functional independence rather than the absence of therapeutic benefit.

Several factors should be considered when interpreting the findings. First, natural developmental progression may have contributed to some of the observed improvements. Adolescents with CP continue to experience changes in motor performance over time, and developmental maturation may influence functional outcomes independently of intervention.[25] Although the relatively short duration of this study reduces the likelihood that maturation alone explains the observed changes, it remains a potential confounding factor. Second, because this study involved a single participant and lacked a control condition, the relative contribution of each intervention component cannot be determined. The observed outcomes should therefore be interpreted as the cumulative effect of the multimodal physiotherapy program rather than any single intervention.

Several limitations should be acknowledged. First, this study involved only a single participant, limiting the generalizability of the findings to the broader population of individuals with CP. Second, the intervention period consisted of only six treatment sessions, which may have restricted the magnitude of observable changes, particularly regarding spasticity and advanced locomotor function. Third, information regarding developmental milestones, detailed gait characteristics, postural alignment, and adherence to the home exercise program was unavailable and therefore could not be analyzed. Fourth, outcome assessment relied primarily on clinical measures and did not include instrumented gait analysis, objective balance assessment, or long-term follow-up. Finally, because the evaluator was not blinded to the intervention, observer bias cannot be completely excluded.

Despite these limitations, the present case provides clinical information and experience regarding the implementation of multimodal physiotherapy in adolescents with spastic diplegic CP. The findings suggest that combining myofascial release, stretching exercise, strengthening exercise, and functional exercise may contribute to improvements in standing ability and overall gross motor

performance while maintaining functional independence. These interventions may be considered as part of an integrated rehabilitation program aimed at optimizing functional outcomes in pediatric neurological rehabilitation settings.

Conclusion

The multimodal physiotherapy program consisting of myofascial release, stretching exercise, strengthening exercise, and functional exercise was associated with improvements in gross motor function in a 16-year-old male with spastic diplegic cerebral palsy, as demonstrated by an increase in the GMFM-88 score from 66.0% to 70.0%. The most notable improvement was observed in standing ability, while functional independence was maintained throughout the intervention period. Changes in spasticity were limited and primarily occurred at the ankle region.

From a clinical perspective, the integration of manual therapy and exercise-based rehabilitation may support motor function development and maintenance of independence in individuals with spastic diplegic CP. However, because this report represents a single-case study with a short intervention period, the findings should be interpreted cautiously and cannot be generalized to the broader CP population.

Future studies involving larger sample sizes, longer intervention durations, controlled study designs, and objective functional assessments are recommended to further investigate the effectiveness and long-term clinical benefits of multimodal physiotherapy interventions in individuals with spastic diplegic cerebral palsy.

Author Contributions

Husna Ayu Amalia: Conceptualization, Investigation, Data Curation, Formal Analysis, Writing – Original Draft Preparation.
Adnan Faris Naufal: Supervision, Methodology, Validation, Writing – Review and Editing, Project Administration.

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Conflict of Interest Statement

The authors declare that there are no conflicts of interest related to this study.

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Ethics Statement

Written informed consent for participation and publication of anonymized clinical information was obtained from the patient's parent or legal guardian prior to the study. This case report was based on routine clinical physiotherapy practice and did not involve experimental procedures or modifications to standard care. Therefore, formal ethical approval was not required in accordance with applicable institutional policies.

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