

Physiotherapy Management of Right Hemiparesis Following Nonhemorrhagic Stroke: A Case Report

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Abstract

Background: Stroke may cause hemiparesis, impaired balance, restricted movement, and dependence in activities of daily living. Early physiotherapy requires multidomain assessment and careful documentation of treatment and outcomes.

Objective: To describe the clinical assessment, documented physiotherapy management, and immediate post-session findings in a patient with right hemiparesis following nonhemorrhagic stroke.

Methods: This case report involved a 59-year-old woman receiving inpatient physiotherapy. Baseline assessment included vital signs, range of motion, Manual Muscle Testing, Modified Ashworth Scale, Berg Balance Scale, Barthel Index, coordination, sensory examination, and Hamilton Rating Scale for Anxiety. The documented physiotherapy episode included therapeutic communication, infrared, deep breathing, Manual Muscle Belly Tonus Stimulation, active-assisted and active movement, ball squeezing, straight leg raising, bridging, passive range of motion, stretching, Proprioceptive Neuromuscular Facilitation, and transfer training.

Results: Baseline muscle strength was grade 4 in the right shoulder, elbow, and knee and grade 3 in the right wrist and ankle. The Modified Ashworth Scale score was 0, Berg Balance Scale score was 19, Barthel Index score was 10, and Hamilton Rating Scale for Anxiety score was 18. Immediate post-session Manual Muscle Testing showed no documented change. Post-session measurements of balance, independence, anxiety, and range of motion were unavailable.

Conclusion: This case describes multidomain physiotherapy assessment and a documented multimodal treatment episode. The available findings do not support conclusions regarding treatment effectiveness or clinical recovery because functional outcomes were not reassessed and serial follow-up was unavailable.

Keywords

Stroke; Hemiparesis; Physical Therapy Modalities; Activities of Daily Living; Postural Balance

Introduction

Stroke is a major cause of mortality and long term disability worldwide. The global burden of stroke remains substantial, with population growth and ageing contributing to an increasing absolute number of individuals affected.^{1,2} Nonhemorrhagic stroke may result in neurological impairments involving motor, sensory, cognitive, and functional domains. Among these impairments, hemiparesis is frequently associated with reduced mobility, impaired balance, difficulty performing activities of daily living, and reduced independence.³

The clinical consequences of hemiparesis extend beyond reduced muscle strength. Motor impairment may involve altered selective movement, restricted joint mobility, impaired postural control, reduced coordination, and difficulty performing functional tasks. These impairments can interact and contribute to limitations in transfers, walking, self care, and participation. Consequently, physiotherapy assessment after stroke should consider multiple domains of functioning rather than relying on a single impairment measure to describe the patient's clinical status.⁴

Early physiotherapy management should be individualized according to the patient's neurological presentation, functional limitations, medical condition, and tolerance to activity. Rehabilitation may include movement practice, range of motion exercises, motor facilitation, strengthening, postural control, balance training, and task oriented activities. The selection and progression of these interventions should be based on the patient's clinical needs and the treatment that can be safely performed within the available rehabilitation context.^{4,5}

Upper limb dysfunction is particularly relevant when weakness and movement limitations interfere with grasping, eating, dressing, and other activities of daily living. Evidence from stroke rehabilitation research indicates that repetitive and task related motor practice may contribute to recovery, although outcomes are influenced by baseline severity, intervention characteristics, timing, and treatment dose.^{6,7} In addition, approaches such as Proprioceptive Neuromuscular Facilitation may be incorporated to facilitate movement and postural control. However, evidence from broader stroke populations should not be interpreted as demonstrating effectiveness in an individual patient without appropriate outcome evaluation.⁸

Balance impairment is another important rehabilitation concern following stroke because reduced postural control may limit mobility and increase fall risk. Balance and gait training have been associated with improvements in selected post stroke outcomes, but intervention selection and progression should remain individualized according to baseline function and safety.⁹ In a case report, the presence of a particular impairment or the inclusion of an intervention does not establish treatment effectiveness. Careful documentation of which interventions were actually performed and which outcomes were reassessed is therefore essential.

The present case describes a patient with right hemiparesis following a clinically documented nonhemorrhagic stroke. The available physiotherapy record identified impairments in muscle strength and active wrist movement, together with limitations in balance and activities of daily living. A multimodal physiotherapy program was documented; however, not all planned interventions

were performed, and only muscle strength was reassessed immediately after the documented treatment episode. Therefore, changes in balance, independence, anxiety, and range of motion could not be determined.

Accordingly, this case report aimed to describe the clinical assessment, documented physiotherapy management, and immediate post session findings in a patient with right hemiparesis following nonhemorrhagic stroke. The report does not aim to establish treatment effectiveness or causal relationships between the interventions and clinical outcomes.

Methods

This case report describes the physiotherapy assessment and management of a single inpatient with right hemiparesis following a clinically documented nonhemorrhagic stroke. The report was prepared using the available clinical and physiotherapy documentation and was structured according to the general principles of the CARE guideline for case reporting.¹⁰ No control group or comparator was included, and no inferential statistical analysis was performed. The available findings were therefore presented descriptively.

The patient was a 59 year old woman and a housewife residing in Barru. According to the clinical history documented during the physiotherapy assessment on 30 May 2026, the initial symptoms occurred on 23 May 2026 at approximately 09:00 WITA. The patient experienced dizziness, nausea, vomiting, and subsequent weakness affecting the right side of the body, accompanied by difficulty walking. She initially received treatment at a regional hospital in Barru from 23 to 26 May 2026. After discharge, the right sided weakness persisted. On 28 May 2026, she presented to the emergency department of RSKD Dadi Makassar, where the documented blood pressure was 169/90 mmHg and blood glucose was approximately 200 mg/dL.

The available clinical documentation identified the patient's condition as nonhemorrhagic stroke. However, the source materials available for this case report did not include imaging findings, such as computed tomography or magnetic resonance imaging, or a detailed neurological diagnostic report that could independently verify the stroke classification. Therefore, the diagnosis is reported according to the available clinical documentation without adding or inferring diagnostic findings that were not recorded.

The physiotherapy assessment was conducted on 30 May 2026. Vital signs included a blood pressure of 130/80 mmHg, pulse rate of 72 beats per minute, respiratory rate of 20 breaths per minute, and peripheral oxygen saturation of 97%. The assessment included observation, palpation, active and passive range of motion examination, Manual Muscle Testing (MMT), Modified Ashworth Scale (MAS), coordination and sensory examination, Berg Balance Scale (BBS), Barthel Index, and Hamilton Rating Scale for Anxiety (HRS A). The Mini Mental State Examination was not performed.

Active and passive movements of the shoulder, elbow, hip, knee, and ankle were generally possible without pain. Active movement of the right wrist was restricted in flexion, extension, ulnar deviation, and radial deviation, whereas passive wrist movement was possible without pain. Muscle strength was assessed using MMT. The right shoulder, elbow, and knee were graded 4, while the right wrist and ankle were graded 3. Muscle tone was assessed using the MAS, with a recorded score of 0. In this report, a score of 0 indicates that no increase in muscle tone was detected using the MAS and is not interpreted as independent evidence of hypotonia or flaccidity.

Functional status was assessed using the BBS and Barthel Index. The BBS score was 19, whereas the Barthel Index score was 10. Coordination was assessed using finger to finger, finger to nose, and heel to knee tests, all of which could be performed according to the available documentation. Sensory examination included temperature, texture, and sharp versus blunt discrimination, which were documented as normal. Anxiety was assessed using the HRS A, with a recorded score of 18.

The physiotherapy diagnosis focused on limitations in walking, dressing, eating, toileting, and self care associated with muscle weakness, impaired balance, and restricted movement of the right extremities. The documented short term goals were to improve muscle strength and range of motion and reduce anxiety, whereas the long term goal was to improve physical capacity and activities of daily living to facilitate a return to usual activities.

The intervention was reconstructed from the available physiotherapy documentation. To prevent planned treatment from being interpreted as actual treatment exposure, interventions were classified according to their documented delivery status. Therapeutic communication, infrared, deep breathing, Manual Muscle Belly Tonus Stimulation, active assisted movement, active movement, ball squeezing, straight leg raising, bridging, passive range of motion, stretching, Proprioceptive Neuromuscular Facilitation, and transfer training were documented as performed. Functional training, static and dynamic balance exercises, and sitting and standing postural control were documented as planned but were not performed during the reported physiotherapy episode.

Baseline assessment was conducted before the documented physiotherapy intervention. Immediate post session assessment referred specifically to MMT performed directly after the documented treatment episode and did not represent short term or long term follow up. Post intervention BBS, Barthel Index, HRS A, and quantitative range of motion measurements were not available. Consequently, changes in balance, functional independence, anxiety, and range of motion could not be evaluated. The available outcome data were therefore limited to comparison of the documented pre session and immediate post session MMT findings.

As this was a single case report, the findings were analyzed descriptively. No statistical hypothesis testing, p values, confidence intervals, or effect estimates were calculated. No attempt was made to infer treatment effectiveness from the immediate post session findings because the available outcome assessment was limited and no serial follow up was documented.

Written informed consent for publication was confirmed as having been provided by the patient's family during the initial examination on 30 May 2026. Institutional ethical approval or exemption documentation was not available for this case report. Accordingly, no ethical approval number or exemption status is claimed.

Results

The clinical course from symptom onset to the documented physiotherapy episode is presented in Table 1. This chronology provides the temporal context for interpreting the baseline assessment and the immediate post session findings, which were obtained during a single documented inpatient physiotherapy episode rather than through serial follow up.

Table 1. Clinical timeline of symptom onset, hospital presentation, and the documented physiotherapy episode

Date or period	Clinical event
23 May 2026	Symptom onset with dizziness, nausea, vomiting, subsequent right sided weakness, and difficulty walking
23 to 26 May 2026	Received treatment at a regional hospital in Barru
26 May 2026	Discharged from the regional hospital with persistent right sided weakness
28 May 2026	Presented to the emergency department of RSKD Dadi Makassar; documented blood pressure was 169/90 mmHg and blood glucose was approximately 200 mg/dL
30 May 2026	Physiotherapy history taking and baseline assessment
Documented inpatient episode	Physiotherapy treatment followed by immediate post session MMT assessment

The available chronology indicates that the physiotherapy assessment was conducted approximately one week after the reported onset of symptoms. The case documentation captured the patient's baseline status and a single treatment episode; therefore, the findings do not provide information regarding the progression of recovery over multiple treatment sessions. Baseline assessment demonstrated impairments across several domains, including muscle strength, active wrist movement, balance, independence in activities of daily living, and anxiety. The principal findings are summarized in Table 2 to provide an integrated description of the patient's clinical and functional status before the documented physiotherapy intervention.

Table 2. Baseline clinical and functional assessment findings

Parameter	Finding
Vital signs	Blood pressure 130/80 mmHg; pulse 72 beats/min; respiratory rate 20 breaths/min; SpO ₂ 97%
Main complaint	Right sided body weakness
Active range of motion	Restricted right wrist flexion, extension, ulnar deviation, and radial deviation
Right shoulder MMT	Grade 4
Right elbow MMT	Grade 4
Right wrist MMT	Grade 3
Right knee MMT	Grade 4
Right ankle MMT	Grade 3
MAS	Score 0, indicating no increase in muscle tone detected by the scale
BBS	Score 19
Barthel Index	Score 10
Coordination	Finger to finger, finger to nose, and heel to knee tests could be performed
Sensory examination	Temperature, texture, and sharp versus blunt discrimination documented as normal
HRS A	Score 18

Note: MMT, Manual Muscle Testing; MAS, Modified Ashworth Scale; BBS, Berg Balance Scale; HRS A, Hamilton Rating Scale for Anxiety; SpO₂, peripheral oxygen saturation.

The baseline findings showed that the most pronounced documented muscle weakness involved the right wrist and ankle, both graded 3, whereas the shoulder, elbow, and knee were graded 4. Restricted active movement was also documented at the right wrist. In addition to these impairment level findings, the patient had a BBS score of 19 and a Barthel Index score of 10, indicating substantial limitations in balance and independence according to the interpretation used in the source documentation. The HRS A score of 18 was categorized in the source documentation as mild anxiety.

The documented physiotherapy program addressed anxiety, muscle weakness, joint mobility, motor facilitation, and functional mobility. Because the treatment record included both interventions that were performed and interventions that were only planned, Table 3 explicitly distinguishes the two categories to avoid overstating the patient's actual treatment exposure.

Table 3. Documented physiotherapy interventions and delivery status during the inpatient episode

Clinical purpose	Intervention	Documented dose or procedure	Delivery status
Anxiety	Therapeutic communication	Interpersonal approach throughout the session	Performed
Preparation	Infrared	Distance 20 to 30 cm; local application; 5 minutes per extremity	Performed
Preparation	Deep breathing	3 repetitions; approximately 2 minutes	Performed
Muscle weakness	Manual Muscle Belly Tonus Stimulation	3 to 5 repetitions; approximately 3 minutes	Performed
Muscle weakness	Active assisted movement	3 to 5 repetitions; approximately 3 minutes	Performed
Muscle weakness	Active movement and ball squeezing	3 to 5 repetitions	Performed
Muscle weakness	Straight leg raising	3 to 5 repetitions; approximately 3 minutes	Performed
Muscle weakness	Bridging	3 to 5 repetitions; approximately 3 minutes	Performed
Contracture prevention	Passive range of motion and stretching	8 counts; 3 repetitions; approximately 5 minutes	Performed
Motor facilitation and activities of daily living	Proprioceptive Neuromuscular Facilitation	3 repetitions; approximately 2 minutes	Performed
Activities of daily living	Transfer training	Progressive according to functional capacity; approximately 10 minutes	Performed
Functional activity	Functional training	No treatment dose documented	Planned, not performed
Balance	Static and dynamic balance exercises	No treatment dose documented	Planned, not performed
Postural control	Sitting and standing postural control	No treatment dose documented	Planned, not performed

Note: Delivery status indicates whether an intervention was documented as performed during the reported physiotherapy episode. Planned components were retained to distinguish the intended program from the treatment actually delivered. Treatment frequency across multiple sessions, total intervention duration, detailed patient positioning, intensity, and progression criteria were not consistently documented and were therefore not inferred.

The documented treatment exposure consisted of therapeutic communication, preparatory procedures, movement exercises, motor facilitation, and transfer training. Functional training, static and dynamic balance exercises, and postural control training were not performed during the reported episode. Consequently, these planned components cannot be interpreted as interventions received by the patient.

Immediate post session outcome assessment was limited to MMT. Table 4 presents the available comparison between pre session and immediate post session muscle strength findings. No values were assigned to movements for which post session documentation was unavailable.

Table 4. Pre session and immediate post session Manual Muscle Testing findings

Muscle movement	Pre session	Immediate post session	Interpretation
Shoulder flexion	4	4	No documented change
Shoulder extension	4	4	No documented change
Shoulder abduction	4	4	No documented change
Shoulder internal rotation	4	4	No documented change
Shoulder external rotation	4	4	No documented change
Elbow flexion	4	4	No documented change
Elbow extension	4	4	No documented change
Elbow supination	4	4	No documented change
Elbow pronation	4	4	No documented change
Wrist flexion	3	3	No documented change
Wrist extension	Not separately documented	Not documented	Not available
Wrist ulnar deviation	3	3	No documented change
Wrist radial deviation	3	3	No documented change
Knee flexion	4	4	No documented change
Knee extension	4	4	No documented change
Ankle dorsiflexion	3	3	No documented change
Ankle plantarflexion	3	3	No documented change
Ankle inversion	3	3	No documented change
Ankle eversion	3	3	No documented change

Note: MMT, Manual Muscle Testing. Immediate post session refers to assessment performed directly after the documented physiotherapy episode and does not represent follow up. Wrist extension was not separately documented in the available movement specific assessment; therefore, no value was assigned.

The available MMT findings showed no documented change immediately after the physiotherapy episode. However, post intervention BBS, Barthel Index, HRS A, and quantitative range of motion measurements were not available. Therefore, changes in balance, functional independence, anxiety, and joint mobility could not be determined.

No adverse events were reported during the documented physiotherapy episode.

Discussion

This case describes a patient with right hemiparesis following a clinically documented nonhemorrhagic stroke who presented with impairments across multiple domains. Although MMT findings indicated grade 4 strength in the right shoulder, elbow, and knee, grade 3 strength was documented in the right wrist and ankle. Restricted active wrist movement was also identified. These impairment level findings occurred alongside substantial limitations in balance and activities of daily living, as reflected by a BBS score of 19 and a Barthel Index score of 10. The case therefore demonstrates the importance of interpreting post stroke function through a multidomain assessment rather than relying on muscle strength alone.⁴

The functional limitations observed in this case were consistent with the clinical presentation of hemiparesis after stroke. The patient experienced difficulty with mobility, self care, eating, dressing, toileting, and changing position. These limitations may arise from the interaction between muscle weakness, impaired motor control, restricted movement, and reduced postural control. Consequently, the physiotherapy assessment appropriately incorporated impairment, balance, functional independence, coordination, sensation, and anxiety rather than focusing on a single physical outcome. However, because this was a single case and several diagnostic and follow up data were unavailable, the findings should be interpreted as a clinical description rather than evidence of a typical recovery pattern.⁴

The documented physiotherapy episode involved multiple treatment components addressing different clinical problems. Therapeutic communication and deep breathing were used in relation to anxiety, whereas active assisted movement, active movement, ball squeezing, straight leg raising, bridging, passive range of motion, stretching, and Manual Muscle Belly Tonus Stimulation were directed toward movement and muscle performance. Proprioceptive Neuromuscular Facilitation and transfer training were also documented as performed. This multimodal approach is broadly consistent with the principle that stroke rehabilitation should be individualized according to the patient's impairments and functional limitations.^{4,5} Nevertheless, the present report does not permit the effect of any individual intervention to be separated from the overall treatment episode.

The distinction between planned and performed interventions is particularly important when interpreting this case. Functional training, static and dynamic balance exercises, and sitting and standing postural control were documented as planned but were not performed during the reported physiotherapy episode. Therefore, these components should not be considered part of the actual treatment exposure. This distinction also limits interpretation of the patient's balance status because the baseline BBS score identified a clinically relevant problem, whereas a documented post intervention BBS assessment was unavailable. Although balance and gait training have been associated with improvements in selected post stroke outcomes,⁹ the available information from this case cannot demonstrate whether balance changed after the reported intervention.

The inclusion of Proprioceptive Neuromuscular Facilitation is supported by its use as a neuromuscular facilitation approach in stroke rehabilitation. Previous evidence has suggested potential benefits for balance and gait in some stroke populations.⁸ However, findings from controlled studies and systematic reviews cannot be directly transferred to a single patient without adequate outcome assessment. In the present case, the intervention was documented as performed, but the available data did not include repeated balance or functional assessments. Therefore, the literature provides clinical context for the intervention rather than evidence that Proprioceptive Neuromuscular Facilitation produced a measurable benefit in this patient.

The immediate post session evaluation was limited to MMT, and no documented change was observed in the assessed movements. This finding should be interpreted cautiously because immediate post session MMT does not provide information regarding longer term motor recovery. Furthermore, post intervention measurements of balance, functional independence, anxiety, and range of motion were not available. The absence of these repeated assessments prevents evaluation of whether the documented treatment episode was associated with changes in these clinically relevant domains.

The MAS score of 0 indicated that no increase in muscle tone was detected during the baseline assessment. This finding should not be interpreted as evidence of hypotonia or flaccidity because the MAS is designed to assess resistance associated with

increased muscle tone.¹¹ The score therefore provides information regarding the absence of detectable hypertonia at the documented assessment time but does not independently characterize all aspects of muscle tone. This distinction is important because neurological impairments following stroke may change over time, and a single assessment cannot establish the subsequent development of spasticity or other changes in tone.

The patient had an HRS A score of 18, which was categorized in the source documentation as mild anxiety. Therapeutic communication and deep breathing were performed during the physiotherapy episode and may have supported patient comfort and engagement. However, anxiety was not reassessed after treatment. Consequently, no conclusion can be drawn regarding whether the intervention was associated with a reduction in anxiety. This limitation illustrates the importance of aligning intervention targets with repeated outcome measurements when treatment effects are intended to be evaluated.

The available findings also have several methodological limitations. The report describes one patient and therefore does not provide a basis for generalization to other individuals with stroke. The classification of nonhemorrhagic stroke was obtained from the available clinical documentation, while imaging findings and a detailed neurological diagnostic report were not available for independent verification. In addition, the treatment record did not consistently provide information regarding intervention frequency across multiple sessions, total rehabilitation duration, intensity, progression criteria, or complete follow up. The absence of repeated measurements for several outcomes further limits interpretation of clinical change.

Despite these limitations, the case provides a detailed description of multidomain physiotherapy assessment and a documented multimodal treatment episode in a patient with right hemiparesis. The report also emphasizes the importance of distinguishing planned interventions from those actually delivered and avoiding conclusions that exceed the available outcome data. Future case reports should include clearer intervention parameters, serial assessment at predefined time points, comprehensive outcome measurement, and follow up information to improve reproducibility and interpretation.¹²

Conclusion

This case report describes the physiotherapy assessment and documented management of a patient with right hemiparesis following a clinically documented nonhemorrhagic stroke. The baseline assessment identified impairments in muscle strength and active wrist movement, accompanied by limitations in balance, functional independence, and anxiety. The documented physiotherapy episode involved multiple interventions targeting these clinical problems, while several planned components were not performed.

Immediate post session assessment was limited to MMT and showed no documented change in the assessed muscle groups. Because balance, functional independence, anxiety, and range of motion were not reassessed, and no serial follow up was available, the findings do not support conclusions regarding treatment effectiveness, clinical recovery, or causal relationships between the interventions and outcomes. This case highlights the importance of multidomain assessment, clear documentation of interventions actually delivered, and repeated outcome measurement when evaluating physiotherapy management after stroke.

Author Contribution

Muthmainnah: Conceptualization, Methodology, Investigation, Data Curation, Writing Original Draft, Visualization.

Andi Besse Ahsaniyah: Conceptualization, Methodology, Validation, Writing Review and Editing, Supervision.

Sri Wahyuni N: Investigation, Data Curation, Validation, Writing Review and Editing.

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Conflict of Interest Statement

The authors declare that they have no conflicts of interest related to this case report.

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Ethics Statement

This case report was prepared using available clinical and physiotherapy documentation. Written informed consent for publication was obtained from the patient's family.

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