

**APPLICATION OF RANGE OF MOTION (ROM) THERAPY TO
OVERCOME PHYSICAL MOBILITY DISORDERS IN STROKE
PATIENTS IN THE KRISAN ROOM OF ARIFIN ACHMAD
REGIONAL HOSPITAL, RIAU PROVINCE**

Nur Halisha Arrahmah^{1*}, Angga Arfina¹, Yurea Nita¹, Cindy Febriyeni¹

¹Nursing Professional Study Program, Faculty of Nursing, Payung Negeri Health Institute,
Pekanbaru, Indonesia.

Corresponding author: anggaarfina05@gmail.com

Abstract

Stroke is a neurological disorder that causes decreased nerve function due to impaired blood flow to the brain. This condition can cause muscle weakness and impaired physical mobility, which affects the patient's ability to perform daily activities. One non-pharmacological nursing intervention that can be applied to improve muscle strength and physical mobility is Range of Motion (ROM) therapy. This study aims to determine the effect of ROM therapy on increasing muscle strength in stroke patients. The method used is a case study involving two stroke patients who experienced impaired physical mobility. ROM intervention was carried out for three consecutive days, twice a day (morning and afternoon), for 10-15 minutes per session. Muscle strength was measured before and after the intervention using a Manual Muscle Testing (MMT) observation sheet. The results showed an increase in muscle strength in both patients, from 2/5 to 3/5 in the first patient and from 1/5 to 2/5 in the second patient. In addition, both patients showed an increase in the ability to perform some movements independently. The conclusion of this study is that Range of Motion (ROM) therapy is effective as a non-pharmacological nursing intervention to increase muscle strength and improve physical mobility in stroke patients.

Keywords: Stroke, Physical Mobility Impairment, Range of Motion (ROM)

INTRODUCTION

Stroke is one of the most deadly non-communicable diseases worldwide. This disease is caused by a sudden disruption of nervous system function and is caused by impaired cerebral blood flow. Circulatory disorders can occur in the form of blocked or ruptured blood vessels in the brain. The brain, which should receive a supply of oxygen and nutrients, is disrupted. Lack of oxygen to the brain leads to the death of nerve cells (neurons), which causes stroke symptoms. (Safariah et al, 2025).

Factors that can contribute to stroke include high blood pressure, a history of atrial fibrillation, high cholesterol, diabetes, and so on. Currently, stroke treatment is still performed manually. Patients undergo an examination by a neurologist, who then makes a diagnosis by asking questions about their symptoms and identifying factors that may trigger a stroke. (Adilla, 2022).

According to the World Health Organization (2022) Stroke remains the third leading cause of death in developing countries after coronary heart disease and cancer. Furthermore, there are 12,224,551 cases of stroke worldwide, with 51% of deaths due to stroke. According to the 2023 Riau Province Health Profile, stroke is the most common disease at Pekanbaru Regional Hospital, Riau. According to medical records at the Arifin Achmad Pekanbaru Regional Hospital in 2020, regarding the 15 most common diseases, stroke was 1.27% and increased to 1.38% in 2021. According to data recorded at the Arifin Achmad Regional

Hospital's neurology clinic, stroke was the most common disease, accounting for 64%.(Ministry of Health, 2023).

Stroke can have impacts that disrupt a person's activities, such as paralysis or disability, communication problems, emotional disturbances, pain, sleep disturbances, depression, and dysphagia, among others. For the patient, this dysfunction can have psychological and social consequences, such as feelings of low self-esteem, feelings of unluckiness, a desire to regain lost abilities, grief, fear, and hopelessness. This indicates a lack of self-efficacy.(Andriani & Agustriyani, 2021). In addition, stroke patients with limited mobility are at high risk of complications from prolonged immobilization, such as decreased muscle mass and strength, joint stiffness, contractures, and impaired blood circulation. This immobilization can slow the recovery process and increase the patient's level of dependence in performing daily activities.(Janwaryani et al., 2025).

One of the nursing problems frequently encountered in stroke patients is impaired mobility, which is limited independent physical movement or movement of more than one extremity. The resulting weakness or paralysis will lead to impaired physical mobility in carrying out daily activities. The main interventions performed on stroke patients experiencing impaired physical mobility are ambulation and mobilization support. Ambulation support facilitates increased physical movement activities.(Saksono Tejo, Siwi Sekar Adiratna, 2022). Therefore, one of the interventions carried out on stroke patients to increase the range of joint motion and muscle strength is by providing Range of Motion (ROM) therapy.(Hasanah et al., 2024)Range of Motion (ROM) exercises are performed to maintain and improve the level of perfection of the ability to move joints normally and completely to increase muscle mass and muscle tone. ROM exercises are joint movement exercises that allow for muscle contraction and stretching, where the client moves each joint according to its normal movement.(Daulay & Hidayah, 2021).

Based on a case study conducted byAlfinasari & Susanti, (2020)shows that by doing Range of Motion (ROM) it can increase muscle strength, maintain or preserve muscle flexibility and strength, maintain joint mobility, stimulate blood circulation, prevent deformities, stiffness, and contractures, and maintain heart and respiratory function in stroke patients.

Based on the background description, nursing actions in the form of providing Range of Motion (ROM) techniques are considered important to overcome nursing problems in physical mobility disorders in stroke patients.

RESEARCH METHODS

This study used a case study design with the implementation of Range of Motion (ROM) therapy interventions on two stroke patients with impaired physical mobility. The study was conducted in the Krisan Room of Arifin Achmad Regional Hospital, Riau Province for three consecutive days. The intervention was carried out twice daily, in the morning and afternoon, with a duration of 10–15 minutes per session. ROM exercises included flexion, extension, abduction, adduction, and rotation of the upper and lower extremities. Muscle strength measurements were carried out before and after the intervention using Manual Muscle Testing (MMT) with a rating scale of 0–5, where a value of 0 indicates no muscle contraction and a value of 5 indicates normal muscle strength. Data were collected using a muscle strength observation sheet based on MMT and patient progress notes. Indicators of intervention success were based on the Indonesian Nursing Outcome Standards (SLKI) – Muscle Strength, namely increased muscle tone, active movement ability, and increased strength of weak extremities.

RESEARCH RESULTS

Based on the results of the evaluation with two stroke patients who experienced physical mobility disorders, the following results were obtained:

In the first patient (Mr. F) The patient is a 56-year-old male, Muslim, and married. The patient was admitted through the Emergency Department (ER) on June 7, 2025 with a chief complaint of sudden weakness in the left limb. The patient was brought to the hospital by his family after experiencing weakness in the left half of his body, lips slanted to the left, slurred speech, and slow responses. During the assessment on June 8, 2025, the patient's family said that the entire left side of his body could not be moved. The patient appeared weak, somnolent, had anemic conjunctiva, and was unable to perform independent activities. Physical examination showed: BP: 165/90 mmHg, N: 80 x / minute, RR: 20 x / minute, S: 36°C, GDS: 160 mg / dL, Muscle strength scale (MMT) of the left extremity: 1/5 (muscle contractions occur, but there is no movement).

Subjective data: the patient's family reported weakness in the left arm and leg, inability to lift the left hand and foot, and fatigue. Objective data: the patient appeared weak, only able to move the fingers of his left hand slightly, eating and personal hygiene activities were still assisted by the family. After undergoing Range of Motion (ROM) therapy for three consecutive days (twice a day, morning and evening), observation results showed an increase in muscle strength from a value of 1 to 2, where the patient began to be able to perform simple movements of the left fingers and toes. The patient appeared more active, had improved motor coordination, and was able to follow instructions during ROM exercises.

DISCUSSION

In the second patient (Mrs. E) The patient is a 54-year-old female, Muslim, married, and domiciled in Pekanbaru. The patient entered the Emergency Department on June 6, 2025 with the main complaint of weakness of the right limb since waking up, accompanied by a tongue that is turned to the left and a headache on the left side. The results of the assessment showed that the patient appeared weak, had difficulty moving on the right side of the body, but was conscious and able to communicate clearly. Physical examination: BP: 166/98 mmHg, N: 90 x / minute, RR: 19 x / minute, S: 36.7°C and Muscle strength scale (MMT) of the right extremity: 1/5. Subjective data: the patient said the right limb felt weak and often had tingling. Objective data: appeared unable to lift the right hand, limited movement, and was not yet able to resist gravity. After doing ROM exercises for three consecutive days, an increase in muscle strength was found from 1 to 3, meaning that the patient was able to perform active movements and resist gravity although not fully. Patients also appear more enthusiastic, and there is increased joint flexibility and movement coordination.

Overall, the results of the Range of Motion (ROM) intervention given to both patients showed an increase in muscle strength and physical mobility after three days of therapy, although the rate of progress varied among patients. This demonstrates that ROM therapy is effective in maintaining muscle function, improving circulation, and enhancing mobility in post-stroke patients.

The results of this study are in line with the findings Permatasari et al (2024), which explains that ROM exercises are effective in increasing muscle strength and preventing joint stiffness in stroke patients. These exercises help maintain muscle tissue elasticity, improve blood circulation, and prevent complications of immobilization. Furthermore, nurses play a

crucial role in educating and motivating patients and their families to perform ROM exercises independently at home.

StudyChornellya et al (2023)also showed that ROM exercises performed twice daily for three consecutive days resulted in significant increases in muscle strength. Consistent with these findings, the results of this study indicate that providing ROM exercises twice daily for three days has a positive impact on increasing muscle strength and range of motion in the extremities of stroke patients. Thus, ROM exercises are an effective, easy-to-perform non-pharmacological intervention that plays a significant role in supporting the recovery of stroke patients and preventing permanent disability.

The results of this study are also supported by researchMuseva, (2024)which states that Range of Motion (ROM) exercises in stroke patients with impaired physical mobility can significantly improve extremity muscle strength. The study explains that regular ROM exercises can stimulate neuromuscular activity, increase blood flow to muscle tissue, and prevent muscle atrophy from prolonged immobilization.

In addition, research byJannah et al., (2025)showed that providing passive and active ROM exercises to stroke patients for several consecutive days resulted in significant improvements in muscle strength and joint range of motion. The results of this study confirm that ROM exercises are an effective and safe nursing intervention, especially in the early phase of stroke patient recovery, to maintain motor function and increase patient independence in daily activities.Merdiyanti et al., (2021)In their research, they revealed that regular ROM exercises can improve motor coordination, joint flexibility, and prevent stiffness and contractures in stroke patients. The study also emphasized the importance of nurse and family involvement in ROM exercises to ensure ongoing therapy, both in the hospital and after the patient returns home.

CONCLUSION

Based on the results of the application of Range of Motion (ROM) therapy for three days in two stroke patients with impaired physical mobility, the results obtained were effective in increasing muscle strength and motor ability. In the first patient, muscle strength increased from 2/5 to 3/5, while in the second patient it increased from 1/5 to 2/5. In addition, patients showed increased joint flexibility and motor coordination after routine exercise twice a day. Thus, it can be concluded that ROM therapy is an effective nursing intervention to improve physical mobility, maintain muscle strength, and support the rehabilitation process in stroke patients.

REFERENCES

1. Adilla Laela Tusifaiyah, NAYS (2022). Application of the Forward Chaining Method for Diagnosing Diseases Causing Stroke. *Infos Journal*, 14(1), 97. www.nusamandiri.ac.id
2. Alfinasari, R., & Susanti, BAD (2020). ... The Effect of Passive Range of Motion (ROM) on Muscle Strength in Stroke Patients (Literature Review Effect of Passive Range of Motion (ROM) on Muscle Strength Volume 2 Number ..., 2, 58–63. <http://eprints.stikes-notokusumo.ac.id/51/>
3. Andriani, M., & Agustriyani, F. (2021). The Relationship Between Family Support and the Motivation of Post-Stroke Patients to Perform Active ROM at Dr. A. Dadi Tjokrodipo Regional Hospital. *Journal of Current Health Sciences*, 1(1), 7–12. <https://doi.org/10.47679/jchs.v1i1.2>

4. Chornellya, S., Utami, IT, Fitri, N., Dharma, A., Metro, W., & Motion, R. (2023). Records at the Regional General Hospital of stroke patients who were treated at Tugurejo Semarang Regional General Hospital showed that the action. 3, 576–583.
5. Daulay, NM, & Hidayah, A. (2021). The Effect of Passive Range of Motion (ROM) Exercises on Muscle Strength and Range of Motion of Extremity Joints in Post-Stroke Patients. *Indonesian Health Scientific Journal*, 6(1), 22. <https://doi.org/10.51933/health.v6i1.395>
6. Hasanah, H., Harun, H., & Rahayu, U. (2024). Passive Range of Motion (ROM) Therapy for Knee Joint Elasticity in Hemorrhagic Stroke Patients with Decreased Consciousness: Case Report Providing Passive Range of Motion (ROM) Therapy on the Elasticity of the Knee Joint in Hemorrhage. *Journal of Nursing Care & Biomolecular*, 9(2), 22–30.
7. Jannah, AS, Azhari, A., H, SSA, & A, ARA (2025). The Effect of Passive ROM Exercises on Patients with Non-Hemorrhagic Stroke. 6, 5474–5483.
8. Janwaryani Kadek Dwi, Astriani Yunica Dwi Made Ni, Widiartana Budi Gede. (2025). Effectiveness of Providing Range of Motion (ROM) Therapy to Stroke Patients with Nursing Problems of Physical Mobility Disorders in the Antareja Room of the Jaya Marapati Social Werda Home. *Tambusai Health Journal*, 6(September), 10139–10143.
9. Ministry of Health. (2023). Indonesian Health Survey (SKI).
10. Merdiyanti, D., Ayubbana, S., & Sari HS, Senja Atika, P. (2021). Application of Passive Range of Motion (ROM) to Increase Muscle Strength in Non-Hemorrhagic Stroke Patients. *Jurnal Cendikia Muda*, 1, 98–102. <http://jurnal.akperdharmawacana.ac.id/index.php/JWC/article/viewFile/187/98>
11. Museva, A. (2024). Application of Range of Motion (ROM) to Increase Muscle Strength in Non-Hemorrhagic Stroke Cases in the Elderly at UPT PSTW Jember Introduction. 5(September), 476–483. <https://doi.org/10.33650/trilogi.v5i3.9036>
12. Permatasari, I., Tri Utami, I., & DIII Nursing Akper Dharma Wacana Metro, P. (2024). Application of Range of Motion (ROM) Therapy to Increasing Muscle Strength in Patients With Stroke. *Jurnal Cendikia Muda*, 4(2), 255–261.
13. Safariah dewi Triana, Kusmawati Dessi, SND (2025). Swallowing Training in Stroke Patients with Swallowing Disorders in the Kenanga Ward, Dustira Class II Hospital, Cimahi. *An-Nuur Health Journal*, 2, 25–32.
14. Saksono Tejo, Siwi Sekar Adiratna, PPD (2022). Nursing Care for Physical Mobility Impairments in Patients with Ischemic Stroke. *Journal of Research Innovation*, 8(3), 278–289.
15. World Health Organization. (2022). Global Stroke Fact Sheet. WHO. https://www.worldstroke.org/assets/downloads/WSO_Global_Stroke_Fact_Sheet.pdf