



## Implementation of Brandt Daroff Exercise in Vertigo Patients at Sawah Lebar Community Health Center, Bengkulu City, 2025

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**Abstract.** Cases of vertigo at Sawah Lebar Community Health Center increased from 68 in 2022 to 84 in 2024, with pharmacological therapy as the main treatment. *Brandt Daroff Exercise* is a simple and safe technique proven to reduce headache intensity in vertigo patients. This study aimed to determine its effectiveness in lowering headache pain scales among vertigo patients in the Sawah Lebar Community Health Center, Bengkulu City. The research used a descriptive case study on one 38-year-old patient. The intervention was conducted for 10 consecutive days, three times daily, lasting 20–30 minutes per session. Pain intensity was assessed using the Numeric Rating Scale before and after each session. Results showed a consistent reduction in pain scale from 6 on the first day to 1 on the tenth day, with gradual improvement observed in all daily measurements. The findings indicate that *Brandt Daroff Exercise* effectively decreases headache levels and supports non-pharmacological management of vertigo. This exercise is easy to perform, cost-effective, and suitable for use in primary healthcare settings. It can also be taught as a home-based self-therapy for patients to improve symptom control and enhance their quality of life.

**Keywords:** *Vertigo, Headache, Brandt Daroff Exercise.*

### INTRODUCTION

Vertigo is a balance disorder characterized by a spinning sensation, either in oneself or in the surrounding environment, causing dizziness, nausea, and instability during activities. This condition can reduce the sufferer's quality of life by impairing mobility and concentration, and even increasing the risk of falls. Globally, according to the World Health Organization (WHO, 2019), approximately 7.4% of the world's population experiences vertigo, with an annual incidence rate of 1.4%. In Indonesia, the prevalence of vertigo is also quite high, especially among productive age groups and the elderly.

Data from the Bengkulu City Health Office (2024) shows that vertigo cases at the Sawah Lebar Community Health Center increased from 68 patients in 2022 to 84 patients in 2024. Treatment provided to date has been largely pharmacological, using medications such as benzodiazepines and vertigo medications. Although effective in the short term, the use of these medications can cause side effects such as drowsiness, dependence, and liver dysfunction if used continuously (D. Aprianti & R. Ramlis, 2025). This situation requires a non-pharmacological approach that is safer, easier to perform, and can be applied independently by patients.

One non-pharmacological therapy that has proven beneficial is the Brandt Daroff Exercise, a simple physical exercise aimed at stimulating the vestibular system to adapt more quickly to changes in head and body position. This therapy can increase blood flow to the brain, improve balance function, and help reposition disturbing particles in the inner ear. Several

previous studies (Herlina & Ibrahim, 2018; Avuah et al., 2024; Banowo et al., 2023) have shown that the Brandt Daroff Exercise is effective in reducing vertigo symptoms and lowering headache pain levels in patients, with minimal risks compared to pharmacological treatments.

This study was conducted because the Brandt Daroff Exercise therapy had not yet been implemented in vertigo patients at the Sawah Lebar Community Health Center in Bengkulu City, where treatment still focused on medication administration. With the increasing number of cases and the need for safe therapy, researchers felt the need to implement this exercise as an alternative intervention (D. Arprianti & R. Ramlis, 2025).

The purpose of this study was to determine the effectiveness of the Brandt Daroff Exercise in reducing headache intensity in vertigo patients in the Sawah Lebar Community Health Center in Bengkulu City in 2025. This study used a descriptive case study approach, with the intervention administered for 10 consecutive days, three times per day. Pain was measured using the Numeric Rating Scale (NRS) before and after the exercise.

It is hoped that the results of this study will make a significant contribution to the development of non-pharmacological therapies for vertigo sufferers at the primary care level. In addition, this research is also expected to provide a scientific basis for health workers in teaching Brandt Daroff exercises to patients as a form of self-therapy at home, so that it can help speed up recovery, prevent relapse, and improve the quality of life of patients.

## **LITERATURE REVIEW**

### **The Concept of Vertigo**

Vertigo is a disorder of the body's balance system characterized by a sensation of spinning, either in the sufferer's body or the surrounding environment. The term comes from the Latin word "vertere," meaning to turn. This condition falls under the category of dizziness or illusion of movement, which occurs due to disorders of the vestibular system in the inner ear or central nervous system (Hastuti et al., 2017; Kurniati, 2017). Vertigo is often accompanied by additional symptoms such as nausea, vomiting, cold sweats, pallor, and difficulty standing. This disorder can interfere with daily activities and reduce the sufferer's quality of life. The causes of vertigo are divided into several categories: vestibular (peripheral), neurological, cardiovascular, psychiatric, and physiological (Sunarti, 2016). Peripheral vertigo, such as Benign Paroxysmal Positional Vertigo (BPPV), is the most common form and occurs due to calcium crystal deposits in the semicircular canals. Additionally, risk factors such as advanced age, stress, unstable blood pressure, and metabolic disorders can also exacerbate vertigo (Chayati, 2017; Willy, 2018). Anatomically and physiologically, body balance is regulated by the vestibular, visual, and proprioceptive systems, which coordinate with the brain. An imbalance of information from these three systems causes a false sensation of movement or spinning (Johan & Rafsanjani, 2018). In general, vertigo is divided into two types: vestibular and nonvestibular vertigo (Sutarni, 2016). Vestibular vertigo typically causes a strong spinning sensation accompanied by nausea, while nonvestibular vertigo tends to cause a feeling of floating without nausea. If left untreated, vertigo can lead to permanent hearing loss, the risk of falls, and even serious neurological complications (Kevaladandra & Nurmala, 2019). Therefore, appropriate medical intervention and physical rehabilitation are necessary to address this disorder.

### **The Concept of Pain**

Pain is the body's physiological response to stimuli that damage tissue. Pain receptors, or nociceptors, are distributed throughout the body and can be stimulated by mechanical, chemical, or thermal stimuli (SDKI, 2017). In the context of vertigo, headaches are often the dominant symptom caused by vascular disorders and muscle tension resulting from vestibular

system dysfunction. Pain can be acute, which appears suddenly and lasts a short time, or chronic if it lasts for more than six months (Hidayat, 2014).

Various factors influence a person's perception of pain, including age, gender, previous experiences, and psychological conditions such as anxiety or stress (Setiawati & Susianti, 2016). In nursing research, pain is measured using tools such as the Visual Analog Scale (VAS) and the Numeric Rating Scale (NRS) to determine pain intensity from 0 to 10 (Potter, 2016; Siagian, 2022). This assessment is important as a basis for determining the effectiveness of interventions, including physical therapy such as the Brandt-Daroff Exercise.

### **The Concept of Brandt Daroff Exercise Therapy**

Brandt Daroff Exercise is a form of vestibular training aimed at helping the body adapt to balance disorders. This exercise was first developed as a non-pharmacological rehabilitation method for vertigo patients by enhancing vestibular compensation and improving blood flow to the brain (Mayasari et al., 2023). The therapy is performed with the patient sitting on the edge of the bed, then lying alternately to the right and left, rotating the head 45°, each held for 30 seconds. The exercise is performed three times daily for ten consecutive days (Banowo et al., 2023). According to Herlina and Ibrahim (2018), Brandt Daroff Exercise is effective in reducing the sensation of spinning and improving sensory and balance function. This exercise also helps reposition loose calcium crystals (otoconia) in the semicircular canals, which are the primary cause of vertigo. The main advantages of this therapy compared to pharmacological treatment are that it has no side effects, can be performed independently at home, and has the potential to prevent long-term recurrence (Indarwati, 2018).

### **METHODS**

This study employed a descriptive design with a case study approach, chosen because it was appropriate for in-depth descriptions of the implementation of the Brandt Daroff Exercise in reducing headache pain levels in vertigo patients at the Sawah Lebar Community Health Center in Bengkulu City in 2025. This approach allowed researchers to examine the changes that occurred in individuals during the intervention process contextually and systematically, and the results could be replicated by other researchers under similar conditions.

The study population was all patients diagnosed with vertigo seeking treatment within the Sawah Lebar Community Health Center's work area. The sample was determined using purposive sampling, selecting subjects based on specific criteria to align with the study's objectives. Inclusion criteria included patients who were willing to respond and able to communicate well. Exclusion criteria included patients who were pregnant or had complications such as obesity and limited range of motion in the cervical spine. Based on these criteria, two patients met the requirements for study subjects. The unit of analysis for this study was the individual vertigo patients who received the Brandt Daroff Exercise intervention.

Data collection was conducted using primary and secondary data. Primary data was obtained through interviews to elicit medical history and headache complaints, observations of changes in patient condition during therapy, and physical examinations using inspection, palpation, and auscultation. Meanwhile, secondary data was obtained through a documentary study of patient medical records and a literature review to strengthen the theoretical basis of the study. The Brandt Daroff Exercise intervention was conducted for ten consecutive days, three times daily (morning, noon, and evening) for 20–30 minutes each session. Pain levels were measured before and after the intervention to assess the effectiveness of the exercises in reducing symptoms.

The primary variable measured in this study was the level of headache in vertigo patients, which was assessed using a Numeric Rating Scale (NRS) ranging from 0–10, where 0 indicates no pain and 10 indicates very severe pain. Measurements were taken daily before and

after the intervention to monitor gradual changes in pain intensity. Additionally, an observation sheet for the Brandt Daroff Exercise implementation was used to record the regularity of the exercises and the patient's response. The NRS instrument was chosen because it has good validity and reliability in nursing research and is easy to apply in primary care facilities such as community health centers.

This method is considered appropriate because it can describe the process of change that occurs in patients after the intervention is administered. The descriptive case study approach provides an empirical overview of the effectiveness of Brandt Daroff exercises as a non-pharmacological therapy for reducing vertigo headaches. With a clear and systematic procedure, this study is expected to be able to evaluate its reliability and be replicated by other researchers to test the consistency of the results across various healthcare contexts.

## RESULTS

This research is part of an effort to develop an applicable and affordable non-pharmacological method for managing vertigo-related headaches. The study was conducted over 10 consecutive days, from July 7 to July 16, 2025. Brandt Daroff Exercise therapy was administered three times daily: morning, afternoon, and evening. Each session lasted 20 to 30 minutes, following standard exercise procedures. During the session, the researcher directly assisted the patients to ensure the exercises were performed correctly and safely, and to record each procedure.

### Reporting Research Results

The characteristics of the study subjects among vertigo patients at the Sawah Lebar Community Health Center in Bengkulu City in July 2025 showed that one respondent, a 38-year-old female, experienced vertigo. Observations before and after the Brandt Daroff Exercise therapy intervention yielded the following data:

**Table 1. Observations Before and After the Brandt Daroff Exercise Intervention**

Day/Date	Meeting	Pain Scale Before Intervention	Pain Scale After Intervention
Monday, July 7, 2025	Morning, 8:00 AM	6	6
	Noon, 12.00	6	5
	Afternoon, 4:00 PM	6	5
Tuesday, July 8, 2025	Morning, 8:00 AM	5	5
	Noon, 12.00	5	5
	Afternoon, 4:00 PM	5	4
Wednesday, July 9, 2025	Morning, 8:00 AM	5	4
	Noon, 12.00	4	4
	Afternoon, 4:00 PM	4	4
Thursday, July 10, 2025	Morning, 8:00 AM	4	4
	Noon, 12.00	4	3
	Afternoon, 4:00 PM	4	3
Friday, July 11, 2025	Morning, 8:00 AM	4	3
	Noon, 12.00	4	3
	Afternoon, 4:00 PM	4	3
Saturday, July 12, 2025	Morning, 8:00 AM	3	3
	Noon, 12.00	3	3
	Afternoon, 4:00 PM	3	3
Sunday, July 13, 2025	Morning, 8:00 AM	3	3

	Noon, 12.00	3	2
	Afternoon, 4:00 PM	3	2
Monday, July 14, 2025	Morning, 8:00 AM	3	2
	Noon, 12.00	3	2
	Afternoon, 4:00 PM	2	2
Tuesday, July 15, 2025	Morning, 8:00 AM	2	2
	Noon, 12.00	2	2
	Afternoon, 4:00 PM	2	2
Wednesday, July 16, 2025	Morning, 8:00 AM	2	2
	Noon, 12.00	2	2
	Afternoon, 4:00 PM	2	1

Source: Processed secondary data, 2025

Based on Table 1, the results of the Brandt Daroff Exercise intervention can be described as follows:

On the first day (Monday, July 7, 2025), the headache scale remained quite high, at 6 in the morning both before and after the intervention. However, a slight decrease was seen in the afternoon and evening, from 6 to 5 after the exercise, indicating an initial response from the body to the intervention.

The second day (Tuesday, July 8, 2025) showed a gradual decrease in pain. The pain scale remained stable at 5 in the morning and afternoon, while in the afternoon it decreased from 5 to 4. This indicates the cumulative effect of the exercise is beginning to be felt.

On the third day (Wednesday, July 9, 2025), the decrease in pain became more pronounced. The morning pain scale decreased from 5 to 4, while the afternoon and evening pain scale remained stable at 4 both before and after the intervention, indicating a consistent downward trend. The fourth day (Thursday, July 10, 2025) showed a continued positive response. The pain score remained at 4 in the morning, but decreased from 4 to 3 after the exercise, indicating a broader impact of the exercise on pain reduction throughout the day.

On the fifth day (Friday, July 11, 2025), the pain score before the intervention remained stable at 4, but after the exercise, it decreased to 3 throughout the observation period. This strengthens the evidence that the intervention had a significant impact on pain control. The sixth day (Saturday, July 12, 2025) showed a milder decrease in pain, with the pain score at 3 both before and after the intervention. This indicates that the patient is beginning to experience steady improvement. On the seventh day (Sunday, July 13, 2025), the pain score before the intervention remained at 3, but decreased to 2 after the intervention in the afternoon and evening, indicating the effectiveness of the exercise in maintaining the patient's condition.

The eighth day (Monday, July 14, 2025) showed a decrease from 3 to 2 in the morning and afternoon, while the afternoon score remained stable at 2, indicating that the headache had reached a mild and controlled level. On the ninth day (Tuesday, July 15, 2025), all observation times (morning, afternoon, and evening) showed a stable pain scale of 2, both before and after the intervention. This reflects the patient's improving condition with regular exercise. Finally, on the tenth day (Wednesday, July 16, 2025), the best results were achieved. Morning and afternoon scores remained stable at 2, while afternoon scores decreased to 1 after the intervention. These findings indicate that the Brandt Daroff Exercise significantly reduced headache intensity in vertigo patients.

## DISCUSSION

### Respondent Characteristics

Based on the research results, age and gender did not significantly influence the incidence of vertigo. This finding aligns with research by Yuni Retno Sekarwangi, Dwi Marliyati,

and Yunika Kusumawardani (2021) in *Medica Hospitalia*, which showed a p-value of 0.187 for age and 0.378 for gender ( $p > 0.05$ ), indicating no significant association between these two factors and peripheral vertigo. This means that age and gender are not dominant factors influencing the onset of vertigo, so consideration of other factors such as hypertension or diabetes mellitus is necessary.

Similar results were also supported by an international meta-analysis of over 14,000 participants (2006–2019), which showed no significant difference between age groups in the incidence of Benign Paroxysmal Positional Vertigo (BPPV) (MD = 0.56; 95% CI:  $-0.17-1.29$ ;  $p = 0.13$ ). Although there was a trend toward a higher risk in women (OR = 1.18;  $p = 0.004$ ), the effect was not strong enough to be a primary factor. Therefore, age and gender cannot be considered dominant predictors of vertigo.

### **Prior to the Brandt Daroff Exercise Intervention**

Before the intervention, the vertigo patient experienced a headache with a score of 6 on the Numeric Rating Scale (NRS), classified as moderate to severe pain. This symptom is common in peripheral vertigo, such as BPPV, which is caused by vestibular disorders in the inner ear (Indarwati, 2018). Treatment at the Sawah Lebar Community Health Center still focuses on pharmacological therapy in the form of benzodiazepines and anti-vertigo medications. However, according to the WHO (2019), drug therapy has limitations such as long-term side effects and the risk of dependence. Therefore, non-pharmacological therapies such as the Brandt Daroff Exercise are needed, which have been shown to help normalize vestibular function by repositioning crystals in the semicircular canals (Aman & Keselamatan, 2020). Before this intervention is carried out, patients generally experience disruption of daily activities due to headaches and feelings of instability, so that an assessment of the initial condition is important as a basis for evaluating the effectiveness of the therapy.

### **After Brandt Daroff Exercise Intervention**

After ten consecutive days of Brandt Daroff Exercise training, the patient showed a significant reduction in headache pain. On the first day, the pain remained at a 6, but it began to gradually decrease from the second to the fifth day. These results indicate vestibular adaptation to the exercises. Research by Susanti Monoarfa et al. (2024) supports these findings, where Brandt Daroff Exercise therapy for 1–2 weeks was shown to significantly reduce pain intensity in vertigo patients. These exercises help improve the inner ear balance system, increase blood flow to the brain, and reduce the sensation of spinning through habituation to changes in head position. On the tenth day (July 16, 2025), the patient's pain scale decreased to a 2 in the morning and afternoon, and a 1 in the evening. These results align with research by Banowo et al. (2023), which found that 10–14 days of Brandt Daroff Exercise training effectively accelerated the recovery of vestibular balance and reduced symptoms of headache, nausea, and dizziness. Thus, this exercise has been proven to be effective as a non-pharmacological nursing intervention in vertigo management at the primary care level such as community health centers.

### **CONCLUSION**

Based on the research results, a 38-year-old respondent, Mrs. Y, presented for treatment at the Sawah Lebar Community Health Center in Bengkulu City with a primary complaint of vertigo. Prior to the intervention, observations indicated that the patient experienced headaches with a pain scale of 6 (moderate pain) due to vertigo. These pain complaints recurred, causing discomfort, impaired balance, and impacting the patient's daily

activities. Prior to the Brandt Daroff Exercise, no significant reduction in pain was observed, necessitating a non-pharmacological intervention to help alleviate the symptoms.

After ten consecutive days of Brandt Daroff Exercise, the study showed significant improvement in the patient's condition. The headache intensity, which initially measured 6 (moderate pain), gradually decreased to 1 (mild pain) at the end of the session. In addition to the reduction in pain, the patient also reported increased comfort, a reduced sensation of dizziness, and an improved ability to perform activities. These results indicate that the Brandt Daroff Exercise is effective as a non-pharmacological therapy to help reduce headaches in patients with vertigo, as well as having a positive impact on the patient's quality of life and body balance.

## LIMITATION

This study has several limitations, including a lack of control for external variables such as patient activity outside of exercise sessions, medication use, and daily stress and fatigue levels, which can influence pain perception. Furthermore, pain measurement using the NRS scale is subjective, so results are highly dependent on the patient's individual perception of their pain.

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