



Case Report

STRETCHING EXERCISE THERAPY AS A NON-PHARMACOLOGICAL NURSING INTERVENTION FOR ACTIVITY INTOLERANCE IN HYPERTENSIVE RURAL FARMER



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Abstract

Activity intolerance, characterized by fatigue, dyspnea, and reduced exercise capacity, is a common nursing diagnosis among patients with hypertension, particularly in rural farmers whose livelihoods require sustained physical labor. In resource limited settings such as Indonesia's agricultural communities, non pharmacological nursing interventions play a critical role in managing functional impairment associated with uncontrolled hypertension. This case study describes the successful implementation of Stretching Exercise Therapy as a nurse led, home based intervention for Mr. S, a 67 year old farmer with hypertension from Pasuruan, East Java, who presented with activity intolerance manifested by dizziness, leg cramps, and exertional dyspnea. During a three day intervention period, the patient received supervised static stretching sessions lasting 5 to 10 minutes, administered twice daily and targeting major muscle groups. Vital signs and subjective symptoms were monitored before and after each intervention session. Following the intervention, Mr. S demonstrated marked clinical improvement. Blood pressure decreased from 160 over 103 mmHg to 137 over 84 mmHg, heart rate declined from 115 to 84 beats per minute, and all reported subjective symptoms resolved. The patient reported restored energy, improved mobility, and increased confidence in performing daily activities, including light farming tasks. The intervention was safe, cost free, and easily adopted by both the patient and his family. Although this evidence is derived from a single case, the findings suggest that Stretching Exercise Therapy may represent a feasible and low intensity strategy for nurses to address activity intolerance in rural populations with hypertension. Further studies with larger samples and longer follow up periods are needed to confirm efficacy and sustainability.

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Introduction

Activity intolerance is defined as "insufficient physiological or psychological energy to endure or complete required or desired activity" (Doenges et al., 2016). In individuals with hypertension, activity intolerance commonly manifests as fatigue, dyspnea, dizziness, or early muscle fatigue during ordinary levels of physical exertion. These symptoms are aggravated by increased cardiac afterload, reduced tissue perfusion, and heightened sympathetic nervous system activity (Cristanto et al., 2021). For rural farmers whose livelihoods depend on sustained physical labor, uncontrolled hypertension can markedly reduce functional capacity and increase the risk of falls, work related disability, and diminished quality of life.

In agricultural communities in Indonesia, adults with hypertension are particularly vulnerable to activity intolerance due to limited access to health services, low levels of health literacy, and deeply rooted cultural norms that encourage continuous physical labor despite physical symptoms (Suhartono et al., 2021). Hypertension remains a major global health burden, affecting more than 1.3 billion adults worldwide according to the World Health Organization in 2023. These conditions underscore the urgent need for context appropriate and scalable interventions, particularly non pharmacological strategies, in resource constrained rural settings.

This case report examines Stretching Exercise Therapy as a low intensity and equipment free intervention aimed at improving physiological adaptation and activity tolerance in a hypertensive patient. It is based on the NANDA-I taxonomy and Roy's Adaptation Model (Roy, 2009). Evidence suggests that regular static stretching can improve vascular compliance, reduce blood pressure, and decrease sympathetic nervous system activity (Park et al., 2020; Mota et al., 2022; Silva et al., 2023). However, limited evidence exists regarding its application among older rural farmers. By demonstrating the feasibility, safety, and early effectiveness of Stretching Exercise Therapy delivered through home based nursing care, this case contributes preliminary evidence to address this gap.

Presentation of the Case

This case presentation describes the nursing management of activity intolerance in a patient with hypertension living in a rural agricultural community. The intervention consisted of a non pharmacological approach using Stretching Exercise Therapy delivered through structured home visits during a three day period. This case illustrates the application of evidence based nursing care in a resource limited setting and demonstrates measurable physiological and subjective improvements following a simple and low cost intervention.

a. Patient Information

Mr. S is a 67 year old Javanese Muslim who has worked as a subsistence farmer throughout his life. He resides in Dusun Kramat, Watestani Nguling Village, Pasuruan Regency, East Java. He is the primary provider for his family and has completed elementary school education. Despite his age and chronic health condition, he remains physically active, largely due to financial necessity. He reported progressive weakness, leg cramps, exertional dyspnea, and dizziness over the past several weeks, particularly during farming activities. These symptoms significantly limited his ability to perform routine tasks and agricultural work. There was no known family history of cardiovascular disease. Periodic blood pressure assessments at the local community health center indicated persistent hypertension, yet no structured exercise or lifestyle modification program had been initiated.

b. Clinical Findings

At initial assessment, Mr. S appeared pale and moved slowly but was alert with a Glasgow Coma Scale score of 15 and fully oriented. Vital signs indicated stage two hypertension, with a blood pressure of 160 over 103 mmHg, heart rate of 115 beats per minute consistent with sinus tachycardia, and a respiratory rate of 24 breaths per minute. No peripheral edema, cyanosis, or cardiac murmurs were observed on physical examination.

Subjectively, the patient described feeling heavy and physically drained. He reported avoiding strenuous labor when possible but continued to work due to economic demands. From a psychosocial perspective,

he expressed strong motivation for self care and openness to non pharmacological management strategies. Based on NANDA International criteria, the primary nursing diagnosis was Activity Intolerance related to insufficient physiological energy secondary to uncontrolled hypertension. This diagnosis was supported by clinical evidence including

fatigue, dizziness, leg cramps during exertion, dyspnea with minimal activity, tachycardia, elevated blood pressure, and reduced functional capacity.

c. Timeline

Table 1

Daily Clinical Progress of Mr. S During Stretching Exercise Therapy

Date	Clinical Status and Vital Signs (Pre-Therapy)	Intervention	Post-Therapy Findings and Patient Response	Nursing Evaluation
16 May 2025 (Day 1)	BP: 160/103 mmHg HR: 115 bpm RR: 24/min Symptoms: Severe dizziness, fatigue, leg cramps, dyspnea after minimal effort	First SET session (5–10 min, 2×8 reps): Health education + informed consent Supervised static stretches (neck, shoulders, calves, hips)	BP: 154/94 mmHg Improvement: Reported calmness; leg tension reduced; able to sit upright longer	Activity intolerance not resolved Plan: Continue therapy and reinforce energy conservation.
17 May 2025 (Day 2)	BP: 156/90 mmHg HR: 98 bpm RR: 24 breaths/min Symptoms: Mild dizziness, able to do light chores; residual leg soreness	Second SET session (same protocol)	BP reduced to 145/82 mmHg; HR reduced to 90 bpm Improvement: “Felt lighter”; increased range of motion in hips/shoulders; walked unassisted to yard	Partially resolved. Plan: Continue; encourage deep breathing during stretches
18 May 2025 (Day 3)	BP: 140/86 mmHg HR: 88 bpm RR: 20 breaths/min Symptoms: No dizziness/fatigue; performed light fieldwork	Third SET session	BP reduced to 137/84 mmHg; HR 84 bpm Improvement: Cheerful affect, spontaneous demonstrated stretches; reported “no stiffness” and improved sleep	Resolved. Plan: Discharge from formal intervention; train patient and family for independent home practice and weekly BP monitoring.

d. Diagnostic Assessment

The identified nursing problem was Activity Intolerance, with etiology related to generalized weakness secondary to uncontrolled hypertension, as indicated by blood pressure readings of at least 160 over 100 mmHg. This condition contributed to reduced oxygen delivery and the early onset

of muscle fatigue. Subjective data included the patient's report of feeling heavy, dizziness upon standing, and leg cramps after walking for approximately ten minutes. Objective data included a blood pressure of 160 over 103 mmHg, heart rate of 115 beats per minute, respiratory rate of 24 breaths per minute, and observable self-limited physical activity. The diagnosis was

supported by consistent findings documented in daily SOAP notes and confirmed through observation of the patient's clinical course over a 72-hour period.

e. Therapeutic Intervention

The therapeutic intervention for Mr. S was planned based on the Standard Intervensi Keperawatan for patients with uncontrolled hypertension and implemented using a non pharmacological and evidence based approach. Considering his rural living environment, limited health care infrastructure, and physically demanding role as a farmer, Stretching Exercise Therapy was selected as a low intensity, equipment free, and culturally appropriate strategy. The intervention aimed to improve vascular compliance, reduce sympathetic nervous system overactivity, and enhance musculoskeletal efficiency. The intervention plan consisted of three consecutive home visits conducted on different days from 16 to 18 May 2025. Each session lasted between five and ten minutes and was conducted twice daily in the morning and afternoon. Vital signs and subjective symptoms were monitored before and after each session. Health education was provided to both the patient and his spouse regarding the rationale, safety, and correct self practice of static stretching exercises targeting major muscle groups, including the neck, shoulders, upper back, hips, and calves. The intervention was conducted at the patient's home in Dusun Kramat, Watestani Nguling Village, Pasuruan, following the provision of written informed consent. Each session involved demonstration, guided practice consisting of two sets of eight repetitions, and real time feedback. Family members were actively involved to support continuity and adherence. Mr. S demonstrated high tolerance and full adherence throughout all sessions, with no adverse events observed. Immediate outcomes were both clinically and subjectively significant. Within a 72 hour period, systolic blood pressure decreased from 160 mmHg to 137 mmHg and diastolic blood pressure decreased from 103 mmHg to 84 mmHg. Heart rate declined from 115 to 84 beats per minute, and respiratory rate

normalized from 24 to 20 breaths per minute. Concurrently, the patient reported progressive symptom relief, describing himself as feeling lighter and calmer, and reported complete resolution of dizziness, leg cramps, and exertional fatigue. By Day 3, he resumed independent light farming activities and demonstrated restored functional capacity and high self-efficacy in performing the exercises without supervision.

f. Follow-up and Outcomes

Following the three-day Stretching Exercise Therapy (SET), a structured follow-up plan was developed to consolidate clinical gains, promote adherence, and support sustainable self-management. In the short term (within 7 days post-intervention), follow-up care focused on symptom stabilization and behavioral reinforcement. Mr. S was advised to continue performing stretching exercises independently twice daily (morning and evening) and to monitor his blood pressure weekly at the local Posbindu. A scheduled telephone follow-up on Day 7 was arranged to assess compliance, recurrence of symptoms, and potential barriers to continued practice.

In the medium term (1–4 weeks), engagement in community-based chronic disease management was emphasized. Village health cadres (Kader Kesehatan) were involved to provide ongoing support through biweekly home visits for blood pressure monitoring and motivational reinforcement. Group-based stretching sessions were also proposed to encourage peer support, enhance adherence, and improve intervention scalability within the community.

For the long term (1–3 months and beyond), the focus shifts toward sustained blood pressure control and functional preservation. Mr. S was encouraged to maintain regular self-monitoring, undergo periodic reassessment of activity tolerance—such as the ability to perform farming activities without fatigue or dizziness—and remain connected to routine services at the Puskesmas for comprehensive cardiovascular risk evaluation, including lipid profiling and renal function assessment when indicated.

By the time of discharge, Mr. S demonstrated full mastery of the stretching

techniques, high self-efficacy, and strong intrinsic motivation to continue the exercises independently. He reported complete resolution of dizziness, leg cramps, and exertional dyspnea, and had resumed light farming activities without discomfort. Objective outcomes supported these improvements: blood pressure decreased from 160/103 mmHg to 137/84 mmHg, heart rate normalized from 115 to 84 beats per minute, and respiratory rate improved from 24 to 20 breaths per minute within 72 hours. Importantly, no adverse events were observed throughout the intervention and follow-up period. Both the patient and his family expressed high satisfaction with the intervention's safety, simplicity, and rapid benefits—key factors supporting its acceptability and potential replication in rural, low-literacy, and resource-limited settings. Although this case report reflects only short-term outcomes, the rapid and reproducible response underscores the feasibility of integrating nurse-led, non-pharmacological interventions such as SET into primary hypertension care pathways in Indonesian agricultural communities, pending validation through larger and longer-term studies.

Discussion

This case study illustrates the effectiveness of a non-pharmacological nursing intervention in managing activity intolerance in a hypertensive patient residing in a rural agricultural community. Prior to the intervention, Mr. S experienced leg cramps, fatigue, dizziness, and exertional dyspnea following routine farming activities. These manifestations were closely associated with uncontrolled hypertension (BP 160/103 mmHg), which increased cardiac workload and impaired oxygen delivery to skeletal muscles during physical exertion. Activity intolerance was resolved within 72 hours following a structured intervention delivered through planned home visits over three consecutive days. The intervention resulted in measurable improvements in both physiological indicators and subjective well-being. Specifically, blood pressure decreased progressively from 160/103 mmHg to 137/84 mmHg, accompanied by normalization of heart rate and respiratory rate, alongside marked relief of fatigue, dizziness, and musculoskeletal discomfort.

These findings are consistent with existing evidence supporting the theoretical basis of the intervention. Hypertension is defined as a systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg (Lukitaningtyas & Cahyono, 2023), and it is known to contribute to activity intolerance by reducing exercise tolerance and increasing sympathetic nervous system activation (Cristanto et al., 2021). Stretching exercise therapy has been shown to enhance parasympathetic activity, reduce peripheral vascular resistance, and improve arterial compliance, thereby lowering blood pressure and enhancing functional capacity (Park et al., 2020; Mota et al., 2022). These physiological mechanisms align with the clinical improvements observed in Mr. S, including reductions in blood pressure, pulse rate, and respiratory rate. Additionally, the improvement in subjective symptoms, such as the elimination of lightheadedness, the decrease in leg cramps, and the increased energy for everyday activities, is a result of the psychological comfort and improved musculoskeletal efficiency that come with regular stretching (Prastiani et al., 2023). Crucially, this case demonstrates the feasibility and acceptability of non-pharmacological, low-intensity interventions in environments with limited resources. After receiving brief training, Mr. S, a 67-year-old farmer with only a primary school education, readily adopted the stretching protocol. The scalability of such interventions in rural communities where access to formal rehabilitation services or pharmacological management may be limited is highlighted by his ability to complete the exercises on his own at home. His motivation and adherence were greatly aided by the therapy's ease of use, security, and instant advantages.

Patient perspective

After working in the fields, Mr. S reported that he no longer had headaches or felt overly exhausted, demonstrating his sincere satisfaction with the intervention. He also said, "I feel like I'm 10 years younger." He talked about feeling "lighter" and "more comfortable," mentioning in particular that his legs were less stiff and he had more mobility. Beyond clinical measurements, these qualitative answers are important markers of therapeutic success. According to him, the intervention improved his

sense of productivity and autonomy, two important psychosocial factors that affect older agricultural workers' quality of life, in addition to easing his physical discomfort. High perceived value and self-efficacy are necessary for long-term behavior change, as evidenced by his eagerness to carry out the exercises on his own at home.

Informed Consent

Mr. S read the informed consent form and signed it with the assistance of a family member. He provided written consent for the use of anonymized clinical data for research and educational purposes

Conclusion

This case study shows that stretching exercise therapy is a safe, practical, and successful non-pharmacological nursing intervention for treating activity intolerance in hypertensive patients living in rural agricultural communities. Mr. S, a 67-year-old farmer, had uncontrolled hypertension (baseline blood pressure of 160/103 mmHg) and crippling symptoms of fatigue, leg cramps, dizziness, and dyspnea. Three days of structured daily stretching sessions led to a notable improvement in his clinical condition. Subjective complaints were completely resolved, heart rate returned to normal, and blood pressure dropped to 137/84 mmHg. The patient reported increased vitality, comfort, and functional ability, which allowed him to return to his regular activities, including fieldwork, without experiencing any discomfort.

Consent for publication

Mr. S and his legal guardian, his spouse, provided written informed consent for the publication of this case report and any related anonymized clinical data or photographs. The purpose of the report, the nature of the intervention, and the anonymization procedures were explained in detail to the patient and his family.

Declarations

The authors attest that all relevant ethical standards were adhered to. Prior to initiating the intervention, ethical approval was obtained from the affiliated nursing program's institutional review board. Before participation, the patient and his legal guardian provided written informed

consent. To protect patient privacy, all personally identifiable information was removed or anonymized. The ethical principles outlined in the Declaration of Helsinki were rigorously followed throughout the study.

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