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Complementary Progressive Muscle Relaxation Therapy in Elderly People with Degenerative Diseases: Literature Review

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ABSTRACT

Background & Objective: Older adults often experience various degenerative diseases such as hypertension, diabetes mellitus, and osteoarthritis, which impact physical function and quality of life. Non-pharmacological nursing interventions such as Progressive Muscle Relaxation (PMR) are increasingly being used to improve physical and psychological well-being. This study aims to systematically review the effectiveness of PMR therapy as a complementary nursing intervention. **Method:** A systematic literature review was conducted using the PRISMA approach. Articles were obtained through searches on Google Scholar, PubMed, ScienceDirect, and Publish or Perish using the keywords "progressive muscle relaxation," "elderly," and "degenerative diseases." Inclusion criteria included Indonesian or English journal articles published in the last five years, with full text and clear methodology. A total of 15 articles met the criteria and were analyzed. **Result:** Most studies used a quasi-experimental or pre-posttest design with a sample size of between 20 and 100 elderly respondents. The results of the study showed that PMR was effective in reducing blood pressure, muscle tension, pain, and anxiety. **Conclusion:** Progressive Muscle Relaxation is an effective, simple, and low-cost non-pharmacological nursing intervention to improve the physical and psychological health of elderly people with degenerative diseases.

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Introduction

The aging process is a natural stage of life that brings about various physical, psychological, and social changes in older adults. According to data from the World Health Organization (WHO) in 2030, one in six people are older adults, and the older adult population is expected to increase from 1.4 billion in 2020 to 2.1 billion in 2050 (World Health Organization, 2024). Indonesia is currently entering a phase of population aging, where the proportion of elderly people is increasing. Based on the 2023 Indonesian Population Census, nearly 12 percent or around 29 million Indonesians are classified as elderly (Bachtiar Safarudin, 2025).

The growth of the elderly population is a global phenomenon that is also evident in Indonesia, where the number of elderly people is expected to continue to increase in the coming decades. Based on population census estimates, the number of elderly people in Indonesia in 2020 reached around 33.7 million, and is predicted to increase to 48.2 million in 2035 (Kurniasari, Yuniarti, & Mochyadin, 2024). This increase in the number of elderly people is in line with the increasing prevalence of degenerative diseases, especially non-communicable diseases (NCDs) such as hypertension, diabetes mellitus, heart disease, arthritis, and neurodegenerative disorders. Riskesdas data shows that the prevalence of hypertension among the elderly is very high, exceeding 60% in some regions, and diabetes mellitus continues to be one of the leading causes of morbidity in the elderly. (Suhermi & Asnaniar, 2020)

Degenerative diseases, which are progressive and chronic in nature, often cause a decline in physical function, mobility, and independence among the elderly. This situation then triggers psychological disorders such as anxiety, stress, depression, and decreased sleep quality as well as difficulties in adapting to functional changes in the body. In addition, barriers to accessing health services, low knowledge about degenerative diseases, and poor nutritional status also worsen the condition of the elderly. For example, a study in Surakarta found that around 74.4% of elderly people in the Serengan Community Health Center area had degenerative diseases, and almost half of the elderly also experienced malnutrition, indicating that physical and nutritional factors also influence the burden of degenerative diseases experienced. (Lestari, Palupi, Ghozaly, & Serengan, 2024)

Pharmacological approaches are indeed important and form the foundation for the treatment of degenerative diseases, but non-pharmacological interventions are crucial, especially for managing symptoms that do not fully respond to medication, reducing side effects, and improving quality of life. One non-pharmacological method that has gained attention is Progressive Muscle Relaxation (PMR), which is believed to help reduce muscle tension, decrease sympathetic nervous system activity, and facilitate physical and mental relaxation.

Recent studies in the last five years have tested PMR in older adults with various degenerative conditions. For example, Gökşin and Aşiret (2021) in their RCT found that PMR exercises significantly reduced depression scores and improved adaptation to old age in older women in Turkey (Lestari et al., 2024). Additionally, in Indonesia, community service research and community studies such as Progressive Muscle Relaxation for hypertensive patients have reported that PMR has a positive effect in reducing blood pressure in elderly hypertensive individuals (Arna Abrar, Fauzia, Sabil, & Anisa, 2024). This success shows that PMR is not only relevant in a psychological context but also has real physiological implications.

However, there are challenges in implementing PMR among the elderly, especially in Indonesia. Several studies show that the elderly's knowledge of hypertension or other degenerative diseases is still low, which has implications for awareness of early detection or non-pharmacological interventions. Poor nutritional status has also been found to correlate with the severity of degenerative diseases, suggesting that interventions may need to combine nutritional and lifestyle aspects in addition to relaxation. (Kurniasari et al., 2024)

In the context of nursing, PMR offers the advantage of being an independent and inexpensive intervention that can be taught by nurses and caregivers to the elderly so that it can be carried out routinely at home or in the community. The application of PMR is expected to help reduce anxiety, improve sleep patterns, lower blood pressure, relieve muscle tension, and improve the quality of life of the elderly holistically.

Objective

This study was designed to evaluate the results of recent research on the effectiveness of PMR in elderly people with degenerative diseases, as well as to explore the implications for nursing practice and health policy for the elderly in Indonesia and similar contexts.

Method

This study used a systematic literature review design that referred to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. The purpose of this method was to collect, evaluate, and synthesize relevant scientific evidence regarding the effectiveness of progressive muscle relaxation therapy as a non-pharmacological intervention in elderly people with degenerative diseases.

The literature search was conducted through four electronic databases, namely Google Scholar, PubMed, ScienceDirect, and Publish or Perish, using the keywords: “progressive muscle relaxation,” “elderly,” “degenerative diseases,” and “complementary therapy.”

Inclusion criteria included journal articles published in the last five years (2020–2025), written in Indonesian or English, with clear research methods, and discussing the effects of progressive muscle relaxation therapy on the physiological or psychological conditions of elderly people with degenerative diseases.

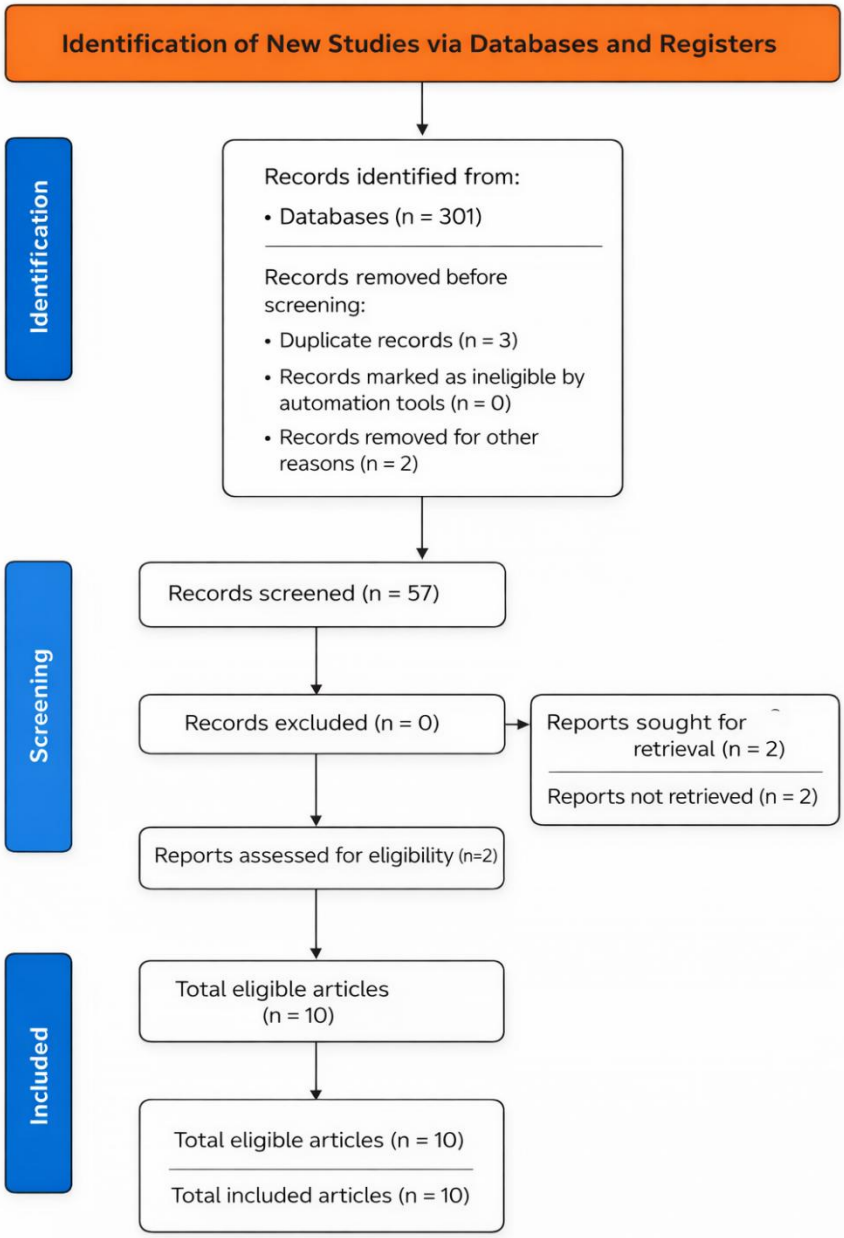
Exclusion criteria included studies that did not involve elderly respondents, irrelevant topics, articles without comparable results, or articles that were not available in full text.

The article selection process followed the PRISMA flow, which included the stages of identification, screening, eligibility, and inclusion. From a total of 301 articles, 56 articles were selected based on their titles and abstracts, and 14 articles met the inclusion criteria and were included in the final review stage.

Each selected article was assessed for methodological quality using the JBI Critical Appraisal Checklist, so that only studies with acceptable quality standards were included in the analysis. The extracted data were analyzed descriptively by reviewing the main findings and grouping the results based on the effects of progressive muscle relaxation therapy on various physiological and psychological aspects of the elderly, such as blood pressure, joint pain, stress, and quality of life.

The articles used were then reviewed thoroughly to ensure their suitability for the research objectives. Articles that did not have comparable results or used irrelevant methods were excluded from the review. Thus, a total of 10 final articles were used as the basis for compiling this literature review.

FIGURE 1. Article selection process



Results

A literature search through four electronic databases (Google Scholar, PubMed, ScienceDirect, and Publish or Perish) yielded a total of 301 articles. After screening based on titles and abstracts, 57 articles were selected for further review. Based on eligibility and inclusion criteria, 10 articles met the criteria and were used in this literature review.

Each article included had different research designs, sample sizes, data collection procedures, and results, but in general showed that progressive muscle relaxation therapy was effective in lowering blood pressure, reducing joint pain, and improving relaxation, sleep quality, and psychological well-being in older adults.

TABLE 1. Research Results

No	Author Name	Article Title	Research Subject Method	Research Results
1.	Maria Theodorin Agnes J Karang, Ahmad Rizal	The Effectiveness of Progressive Muscle Relaxation Therapy on Blood Pressure Reduction in Elderly People with Hypertension	Quasi-experimental design (one group pretest–posttest) on 15 elderly hypertensive patients at the Kebayoran Baru Community Health Center, South Jakarta. Blood pressure measurements were taken before and after progressive muscle relaxation therapy. Analysis was performed using the Paired T-Test.	Research shows that progressive muscle relaxation therapy is effective in lowering blood pressure in elderly people with hypertension. Before the intervention, most respondents had high blood pressure, but after the therapy there was a significant decrease. The results of the *Paired Sample T-Test* showed a p-value of 0.029 ($p < 0.05$), with the average blood pressure decreasing from 1.67 to 1.20. These findings prove that progressive muscle relaxation can be a non-pharmacological therapy that helps lower blood pressure through its relaxing effects and reduction of muscle tension.
2.	Yunita Galih Yudanari, Odilia Puspitasari	The effect of progressive muscle relaxation therapy in lowering blood pressure in patients with hypertension	Quasi-experimental design (two-group pretest–posttest) on 34 respondents (17 intervention, 17 control) in Asinan Village, Bawen, Semarang. Intervention lasted for 6 consecutive days. Analysis used Dependent & Independent T-Test.	The results of the study show a significant decrease in blood pressure after progressive muscle relaxation therapy. Systolic blood pressure decreased from 161.06 to 138.35 mmHg, and diastolic blood pressure decreased from 94.35 to 85.76 mmHg. The T-test results showed $p = 0.001$ ($p < 0.05$), which means there was a significant difference before and after the intervention. Progressive muscle relaxation therapy was proven to be effective in lowering blood pressure in elderly hypertensive patients through increased relaxation and decreased sympathetic nerve activity.
3.	Sri Mulyati Rahayu, Nur Intan Hayati, & Sandra Lantika Asih	The Effect of Progressive Muscle Relaxation Techniques on Blood Pressure in Elderly People with Hypertension	A pre-experimental design (one group pretest–posttest) with 22 elderly hypertensive patients at the Cibungbulang Community Health Center, Bogor. Intervention 3 times a week for 2 weeks,	The results of the study show a significant decrease in blood pressure after progressive muscle relaxation therapy in elderly people with hypertension. Before the intervention, the average blood pressure of respondents was 149/89.5 mmHg, and after therapy it decreased to 137/79 mmHg.

			20 minutes per session. Analysis using the Wilcoxon test.	The Wilcoxon test results showed p = 0.000 (p < 0.05), meaning that there was a significant difference before and after the intervention. Progressive muscle relaxation therapy has been proven effective in lowering blood pressure through muscle relaxation, increased parasympathetic activity, and vasodilation of blood vessels, which help the body become calmer and more relaxed.
4.	M. Ilham, Armina, & Hasyim kadri	The Effectiveness of Progressive Muscle Relaxation Therapy in Reducing Hypertension in Elderly People	Quasi-experimental design (non-equivalent control group pretest–posttest) in 20 elderly hypertensive patients at PSTW Budi Luhur Jambi. The intervention group (10) received progressive muscle relaxation therapy for 6 days, while the control group (10) only received routine medication. Analysis was performed using the T-test.	Investigating the effectiveness of progressive muscle relaxation (PMR) therapy on blood pressure in elderly hypertensive patients at PSTW Budi Luhur Jambi. Using a quasi-experimental design on 20 respondents, the intervention group was given PMR therapy for six days accompanied by routine medication, while the control group only received medication. The results showed a significant decrease in systolic and diastolic blood pressure *(p = 0.031; p = 0.009)*. The researchers concluded that PMR is effective as a non-pharmacological complementary therapy to help lower blood pressure and improve relaxation in the elderly.
5.	Waryantini, Reza Amelia, & Lambang Harisman	The Effect of Progressive Muscle Relaxation on Blood Pressure in Elderly People with Hypertension	A quasi-experimental study with a pre-posttest control one-group design. The sample consisted of 36 elderly hypertensive patients at the Pameumpek Community Health Center, Bandung Regency, comprising 18 treatment groups and 18 control groups, selected by incidental sampling. The study was conducted from March to August 2020 using a	The results showed a significant decrease in blood pressure in elderly hypertensive patients after progressive muscle relaxation therapy. Before the intervention, the average blood pressure of respondents was 152.17/92.22 mmHg, and after therapy it decreased to 150.06/89.83 mmHg. The results of the Paired Sample T-Test showed p = 0.0001 (p < 0.05), which means there was a significant difference before and after the intervention. Progressive muscle relaxation therapy was proven to be effective in lowering blood pressure by

			sphygmomanometer and observation sheets. Data analysis was performed using the Paired Sample T-Test.	helping muscle relaxation, reducing sympathetic nerve activity, and increasing blood vessel vasodilation in elderly people with hypertension.
6.	Muflihah, E., & Sari, R. P.	Progressive Muscle Relaxation Therapy on the Reduction of Low Back Pain (LBP) Scale in Mat Weavers	A pre-experimental study (one group pretest–posttest) was conducted on 20 elderly people with hypertension at the Ingin Jaya Community Health Center, Aceh Besar. The sample was selected using purposive sampling and given progressive muscle relaxation therapy for 3 consecutive days (15–20 minutes per session). Blood pressure data were measured using a sphygmomanometer and analyzed using the Wilcoxon test.	The results showed a significant decrease in blood pressure after progressive muscle relaxation therapy was administered to elderly hypertensive patients. Before the intervention, the average blood pressure of respondents was 161/92.5 mmHg, and after the therapy, it decreased to 152.5/88.5 mmHg. The Wilcoxon test results showed $p = 0.000$ ($p < 0.05$), which means there was a significant difference between before and after the intervention. Progressive muscle relaxation therapy was proven to be effective in lowering blood pressure because it helps reduce muscle tension, improves blood circulation, and reduces sympathetic nerve activity in elderly people with hypertension.
7.	Weny Amelia, Sunesni, Viki Yusri	Joint Pain Management Education for Elderly People in RW 14, Nanggalo District, Padang City	The method used was community service through uric acid level checks and education on progressive muscle relaxation techniques to reduce joint pain. The activities were carried out through lectures, question and answer sessions, and demonstrations. The subjects of the activity were 33 elderly people suffering from gout (arthritis gout) in RW 14, Nanggalo District, Padang City.	This study shows that education on joint pain management using progressive muscle relaxation techniques contributes to improving the knowledge and skills of older adults in managing pain caused by gout. The results of the activity showed a significant improvement, with 90% of participants able to repeat the explanation and demonstrate the relaxation technique correctly. These findings indicate that education and progressive muscle relaxation training can be an effective non-pharmacological therapy alternative to help the elderly reduce joint pain and improve their quality of life.
8.	Indirwan Hasanuddin, Sulkifli, Nurdin,	The Effect of Progressive Muscle Relaxation on	The study used a pre-experimental one group pre-test and post-test design	This study was conducted in the working area of the Tellu Siattinge Community Health Center in Bone Regency with

	Zainab, Hasnah	Blood Pressure in Hypertensive Elderly	at the Tellu Siattinge Community Health Center, Bone Regency. The sample consisted of 29 elderly people with hypertension who were selected using purposive sampling. Blood pressure was measured before and after progressive muscle relaxation therapy for three consecutive days.	29 elderly people with hypertension. After receiving progressive muscle relaxation therapy for three days, there was a decrease in blood pressure from an average of 150/90 mmHg to 130/80 mmHg. The Wilcoxon test results showed $p = 0.000$ ($p < 0.05$), indicating a significant effect of progressive muscle relaxation therapy on blood pressure reduction in the elderly.
9.	Weny Amelia, Sunesni, Viki Yusri	Joint Pain Management Education for the Elderly in RW 14, Nanggalo District, Padang City	The activity was held on December 1, 2022, in RW 14, Nanggalo District, Padang City, involving 33 elderly people. Education was provided through lectures, question and answer sessions, and demonstrations of progressive muscle relaxation techniques to reduce joint pain caused by gout.	This community service activity was carried out smoothly and was attended by elderly people and cadres in RW 14, Nanggalo District. Participants appeared enthusiastic and active throughout the activity. The results showed an increase in the elderly's knowledge of joint pain management. As many as 90% of participants were able to repeat the explanation and demonstrate the progressive muscle relaxation techniques that had been taught. This shows that the education provided was effective in improving the elderly's understanding and skills in overcoming joint pain caused by gout.
10.	Sri Puji Rahayu, Galuh Yulia Asmara Putri, Intan Nahdia Ferdiana	The Effectiveness of Progressive Muscle Relaxation in Reducing Joint Pain Scale in the Elderly at UPT PSTW Jember	The study used a *quasi-experimental* design with a *one-group pre-test* and *post-test* approach at Wisma Melati UPT PSTW Jember on June 13–17, 2022. The sample consisted of nine elderly people experiencing joint pain, selected using *purposive sampling*. Progressive muscle relaxation intervention was performed for 20 minutes, and pain levels were measured using the *Numeric Rating Scale*	The results of the study indicate a decrease in pain levels after progressive muscle relaxation therapy. The average pain scale before therapy was 3.44 and decreased to 2.67 after therapy with a p-value of 0.023 ($p < 0.05$). This indicates that there was a significant difference between before and after the intervention. Progressive muscle relaxation therapy was proven to be effective in reducing joint pain in the elderly at Wisma Melati UPT PSTW Jember and can be used as a simple and safe non-pharmacological therapy alternative for the elderly.

			(NRS) before and after therapy.	

Discussion

Degenerative diseases are a group of diseases that arise due to the natural aging process, which causes a decline in the function of organs such as the musculoskeletal, cardiovascular, and nervous systems. As we age, the body's ability to repair tissue declines, causing various physical complaints such as joint pain, muscle stiffness, fatigue, and balance disorders (Cipta, 2024). Joint pain and stiffness that are not properly treated can reduce the ability of the elderly to engage in activities and have an impact on their quality of life.

In the context of gerontological nursing, non-pharmacological approaches are important because they are safer, easier to implement, and do not cause side effects. One intervention that is widely used is progressive muscle relaxation therapy. This therapy was first introduced by Edmund Jacobson and has been proven effective in reducing pain and stress in patients with chronic disorders (Suhermi & Asnaniar, 2020). The main principle of this therapy is to train individuals to recognize the difference between tense and relaxed muscles. By training the muscles to contract and then release gradually, individuals can reduce muscle tension associated with stress and pain.

The results of the activity showed that most elderly people were able to understand and practice this technique correctly. Elderly people who previously often complained of pain in their knees and shoulders stated that after undergoing therapy several times, the pain decreased and their bodies felt lighter. This is in line with research (Akhriansyah, 2023), which shows a decrease in the intensity of joint pain in the elderly after progressive muscle relaxation therapy was performed over several training sessions. Research (Amalia & Susaldi, 2024) also supports these findings, where progressive muscle relaxation can reduce the level of joint pain in the elderly with osteoarthritis.

In addition to providing physical benefits, this therapy also has a positive impact on the psychological aspects of the elderly. When doing breathing and muscle relaxation exercises, the body releases endorphins, which play a role in creating a sense of calm and comfort. Several participants said that after doing the exercises, they felt more relaxed and were able to sleep more soundly. These findings are in line with the research by Fahrizal & Alfikrie (2021), which shows that progressive muscle relaxation is effective in reducing anxiety levels and improving sleep quality in elderly people with chronic diseases.

Thus, progressive muscle relaxation therapy not only helps reduce joint pain caused by degenerative diseases but also provides significant psychological benefits. This therapy can be used as a form of complementary therapy that is easy to implement at home or at elderly health centers. Additionally, educational activities and guidance from healthcare professionals play an important role in ensuring that the elderly are able to perform this therapy correctly and continuously (Tono & Dinarsi, 2023).

Conclusion

Progressive muscle relaxation therapy has been proven to have significant benefits in helping to overcome physical and psychological complaints in elderly

people with degenerative diseases. Through alternating muscle contraction and relaxation exercises, this therapy can reduce muscle tension, reduce pain, and increase comfort and relaxation. Another benefit is increased independence for the elderly in maintaining their own health, as this technique can be performed independently at home without the need for special equipment.

However, the implementation of progressive muscle relaxation therapy still faces several obstacles, such as limited exercise facilities in elderly health centers, lack of assistance from health workers, and differences in individual responses to therapy. Therefore, further research with an experimental design is needed to objectively assess the long-term effectiveness of this therapy. With stronger results, progressive muscle relaxation therapy is expected to be integrated as one of the standard non-pharmacological care methods for the elderly with degenerative diseases.

Recommendations

In order for progressive muscle relaxation therapy to be widely implemented, support from various parties is needed, including families, health workers, and the government. Elderly health centers and health service institutions are expected to make this therapy part of their routine activities to improve the fitness and well-being of the elderly. In addition, health workers need to provide ongoing education about the benefits and how to perform the therapy correctly so that the elderly and their families can apply it independently at home. Positive and consistent environmental support will help the elderly obtain maximum benefits from this therapy and improve their overall quality of life.

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