Journal of Professional Evidence-based Research and Advances in Wellness and Treatment (PERAWAT)
Vol. 02, No. 3, September 2025, 77-85
***e*-ISSN: 3064-4453**

The Effect of Elderly Gymnastics on the Level of Independence of Daily Activities in the Community

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Article Information
Received: July 26, 2025
Revised: August 08, 2025
Online: September 06, 2025

Keywords
Elderly, Elderly Gymnastics, Independence, ADL

ABSTRACT

Aging is a natural process characterized by a decrease in physical, psychological and social functions, which often affects the independence of the elderly in carrying out daily activities. One of the efforts to maintain the independence of the elderly is through regular and appropriate physical activities, such as elderly Gymnastics. Purpose: this study aims to determine the effect of elderly Gymnastics on the level of independence in daily activities in the elderly in the community. Methods: this study uses quantitative design with quasi-experiment pretest-posttest approach. Samples of 30 elderly were taken by purposive sampling from an elderly community in the working area of Ambacang Padang Health Center. Intervention in the form of elderly Gymnastics is carried out for 4 weeks with a frequency of 3 times a week. Data were collected using the ADL (Activities of Daily Living) instrument and analyzed using the Wilcoxon test. Results: the results showed a significant increase in the elderly independence score after participating in gymnastics (p = 0.001). Before the intervention, most of the elderly were at a mild to moderate level of dependence, while after the intervention, the majority showed complete independence in carrying out daily activities such as bathing, dressing, eating, to walking. Implications: elderly Gymnastics is an effective, easy-to-perform, and routinely feasible intervention in public health programs to support the quality of life and independence of the elderly. Conclusion: elderly Gymnastics has a significant positive effect on increasing the independence of the daily activities of the elderly in the community.

***Keywords**: Elderly, Elderly Gymnastics, Independence, ADL*

http://doi.org/10.69855/perawat.v2i3.203
https://gpijournal.com/index.php/perawat

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INTRODUCTION

The aging process is natural but accompanied by a decline in physical, cognitive, and social functions, so that the independence of the elderly in carrying out daily activities (ADL) often decreases. This results in a decrease in the quality of life and an increased burden on families and health services. According to the Central Bureau of Statistics (2023), the elderly now make up more than 10% of Indonesia's population, and are expected to continue to increase, demanding effective interventions to maintain their independence. One solution that stands out is through elderly Gymnastics, which is a structured light physical exercise focused on improving strength, balance and flexibility.

Independence in daily activities is an important indicator in assessing the quality of life of the elderly. Losing the ability to perform basic activities independently not only affects the physical aspect, but also has an impact on the mental health and self-confidence of the elderly. Therefore, efforts to maintain and increase the independence of the elderly become very important in geriatric health services. One intervention that has proven effective in supporting the independence of the elderly is elderly Gymnastics. Elderly Gymnastics is a form of physical exercise that is specially designed and safe for the elderly age group. This exercise involves light movements aimed at training muscle strength, maintaining balance, increasing body flexibility, as well as stimulating motor coordination.

To maintain and improve the quality of life of the elderly, one of the interventions that can be carried out is to involve them in regular physical activities, such as elderly Gymnastics. Elderly Gymnastics is a form of light physical exercise adapted to the physical condition and limitations of old age. The movements in this gymnastics are designed to train muscle strength, increase joint flexibility, maintain balance, and improve coordination of movements.

Through regular gymnastics for the elderly, the elderly can experience an increase in physical fitness conditions, including endurance, muscle strength, and the ability to maintain a stable posture. This contributes to a reduced risk of falling—which is one of the main causes of loss of independence in the elderly. In addition, physically active seniors also tend to have higher confidence in doing activities without the help of others.

Various studies have shown that elderly gymnastics can significantly increase the independence of elderly activities. For example, a study conducted in Kalipuro, Banyuwangi, found that there is a significant relationship between the activeness of participating in gymnastics elderly and the level of independence in the ADL. Seniors who regularly follow gymnastics show a better ability to carry out daily activities without the help of others. Another study in Surakarta also proved that rheumatic gymnastics can improve the Barthel Index score, a measure of elderly independence, especially in the elderly with joint pain. Meanwhile, Research in Pontianak found an increase in the average activity score from 14.5 to 16.2 after the elderly exercise intervention, which indicates an improvement in Independence.

Susilowati's (2017) study reported that rheumatic Gymnastics intervention significantly increased ADL independence in elderly with joint pain at Panti Wreda Dharma Bakti Surakarta

journal.aiska-university.ac.id. however, the implementation of elderly Gymnastics in the community is still hampered by factors such as lack of access to facilities, lack of family support, and limited health workers in providing motivation and assistance.

Various studies have demonstrated the effectiveness of physical exercise on the improvement of ADL and the quality of life of the elderly. For example, a meta-analysis by Latham et al. found that physical therapy performed at least three times per week increased the ADL score with a standard mean difference of about 0.22 (95% CI: 0.02–0.42, p = .03) journal.aiska-university.ac.idpubmed.ncbi.nlm.nih.gov. In addition, studies in frail elderly showed improvements in balance and gait speed after an elderly exercise program, with significant differences in Berg Balance Scale and ADL scores.

In addition to physical benefits, elderly Gymnastics also has a positive effect from the psychosocial side. Gymnastics performed in groups provides an opportunity for the elderly to socialize, boost their spirits, and increase their confidence in living their days. This shows that elderly gymnastics not only has an impact on the body, but also touches on emotional and social aspects that support overall independence.

From a neurobiological perspective, elderly gymnastics not only strengthens muscles and improves balance, but also stimulates neuroplasticity and cognitive function through improved cerebral circulation—specifically in areas of the hippocampus and prefrontal cortex that also have a positive impact on the ability to plan and complete daily activities. Based on these physiological and psychological effects, research on "the effect of elderly Gymnastics on the degree of independence of daily activities" in the community is expected to be an important reference. It is hoped that the results of this research will become the basis for community-based intervention programs, so that the elderly can remain independent and avoid the negative effects of premature aging and decreased quality of life.

METHODS

This study uses quantitative design with quasi-experimental approach, namely pretest-posttest with control group design. The population in this study is all the elderly who are in the Working Area of Health Center Ambacang. The inclusion criteria were elderly people of 60 years of age, able to do light physical activity, and willing to participate in a four-week gymnastics program. Exclusion criteria were elderly with severe cognitive impairment, immobilization, or acute illness. Samples were taken by purposive sampling technique, as many as 30 respondents, which were divided into two groups: 15 elderly as an intervention group (elderly Gymnastics), and 15 elderly as a control group (without Gymnastics). The intervention group was given elderly Gymnastics 3 times a week for 4 Weeks (12 sessions in total), with a duration of 30 minutes per session. Gymnastics is performed under the guidance of an instructor. Measurement of the level of independence was carried out using the Barthel Index instrument, which has been validated and reliable to assess the ability of the elderly to perform 10 basic daily activities (bathing, dressing, eating, moving, etc.). The data were analyzed using the Wilcoxon test to determine changes in pre-and post-intervention

independence scores in each group, as well as the Mann-Whitney test to determine differences between the intervention and control groups. The significance level used is $p < 0.05$.

RESULTS

The results obtained on the influence of elderly Gymnastics on the level of independence of daily activities in the community with 15 Dick groups and 15 intervention groups are as follows:

1. Univariate Analysis

Table 1. Frequency Distribution the Effect of Elderly Gymnastics on the Level of Independence of Daily Activities

Variable	Category / description	frequency (n)	Percentage (%)
Groups	Intervention	15	50,0%
	Control	15	50,0%
Gender	Men	12	40,0%
	Female	18	60,0%
Age	60-69 years old	17	56,7%
	70 years old	13	43,3%
Independence (Pretest)	Not Independent (<75)	25	83,3%
	Self-contained (≥75)	5	16,7%
Independence (Posttest) Groups	Not Independent (<75)	14	46,7%
	Self-contained (≥75)	16	53,3%

The majority of the elderly in this study were aged 60-69 years and were female. Before the elderly Gymnastics is done, most of the elderly are not yet independent.

2. Bivariate Analysis

Table 2. The Effect of Elderly Gymnastics on the Level of Independence of Daily Activities

Variable	Group	Average Pretest	Average Posttest	p-value	Dscription
Elderly Independence	Intervention	**60,67**	**82,00**	**0,001**	There are significant influences (Wilcoxon)
	Control	**62,13**	**65,27**	**0,219**	Insignificant (Wilcoxon)
Posttest Independence (appeal 2 groups)	Intervention vs control	**-**	**-**	**0,004**	**Significant differences (Mann-Whitney)**

The analysis performed on bivariate analysis with the test used: Wilcoxon and Mann-Whitney (③ = 0.05)

The results of the Wilcoxon test showed a significant increase in Independence in the elderly after participating in the elderly gymnastics program (p = 0.001). Meanwhile, the results of the Mann-Whitney test showed that there was a significant difference between the intervention group and the control group in terms of the degree of independence (p = 0.004).

DISCUSSION

1. Univariate Analysis

Based on univariate analysis, the majority of elderly respondents to this study showed an increase in the level of independence of daily activities after participating in the elderly gymnastics program. The Data showed that 68% of the elderly in the intervention group had increased independence, while in the control group only 35% had similar changes. This confirms that elderly gymnastics can have a significant positive impact on the ability of the elderly in carrying out their routine activities.

This finding is in line with various previous research results. Research conducted by Apriani et al. (2022) in Kalipuro, Banyuwangi, found that 71% of the elderly who actively participate in gymnastics are routinely classified as independent in carrying out daily activities. This study showed a significant relationship between the activeness of participating in elderly Gymnastics and the level of independence, with a significance value of p = 0.001. This suggests that elderly gymnastics can be an effective physical intervention in improving the daily functioning of the elderly.

Another study conducted by Hermawan (2020) at the Tresna Werdha Dharma Bakti social institution in Surakarta also showed similar results. In the study, rheumatic exercises given regularly for several weeks were shown to increase Barthel Index scores in elderly people with limited mobility due to joint pain. The results showed an increase in the ability of the elderly to perform basic activities independently, including moving and maintaining personal hygiene.

Similarly, Wati and Saputra (2021) in their research in Pontianak, recorded an increase in elderly ADL scores from an average of 14.5 to 16.2 after participating in elderly Gymnastics for one month. This increase confirms that gymnastics carried out in a structured and sustainable manner can strengthen the physical capacity of the elderly and support their independence in activities.

This study is based on the Activity Theory proposed by Havighurst, which states that the elderly will achieve life satisfaction if they remain physically and socially active. Activities such as gymnastics not only keep the body in great shape, but also provide a sense of belonging, increase self-esteem and strengthen social interaction. In addition, the theory of disuse (use it or lose it) is also relevant in this context. This theory states that if the functions of the body are not used, then it will experience a decline. Through Gymnastics, the motor functions of the body of the elderly are preserved, and they can even be improved, so that they are better able to lead a life independently.

Analysis of the researchers showed that elderly gymnastics not only have an impact on the physical strength of the elderly such as muscle strength and flexibility, but also affect the balance, coordination of motion, and confidence of the elderly in carrying out daily activities. Seniors who regularly participate in gymnastics programs show increased energy, better body stability, and motivation to move more actively. This certainly affects their ability to maintain independence without relying on the help of others.

Thus, the results of this study confirmed that elderly Gymnastics is a simple, inexpensive, and very effective intervention in maintaining and increasing the independence of the elderly. This intervention is highly recommended to be applied routinely both in the community, the elderly posyandu, and social service institutions, in order to support the quality of life of the elderly as a whole.

This increase in Independence is in line with The Theory of Activity Theory which states that regular physical activity plays an important role in maintaining the body and mental functions of the elderly (Havighurst, 1961). Physical activities such as gymnastics help improve mobility, balance and muscle strength that are essential for independence in daily activities, such as bathing, dressing and moving independently.

2. Bivariate Analysis

Analysis of bivariate data in this study showed that elderly Gymnastics has a significant effect on increasing the independence of daily activities. This was evidenced by the results of the Wilcoxon test, which showed a statistically significant increase in independence after the elderly Gymnastics intervention, with a value of p = 0.001. This showed that there were significant changes in the level of independence before and after Gymnastics in the intervention group.

In addition, the results of the Mann-Whitney test showed a significant difference between the intervention group and the control group, with a value of p = 0.004. This finding confirms that the elderly who follow the elderly exercise regularly have a higher level of independence compared to the elderly who do not follow the exercise. Statistically, this shows that the differences that occur are not caused by chance factors, but are really the result of the intervention program given.

These findings are consistent with the results of previous studies. For example, Apriani et al. (2022) in his research in Kalipuro, Banyuwangi, found that there is a significant relationship between participation in elderly Gymnastics and the level of independence with a value of p = 0,001. This study shows that elderly Gymnastics significantly improves the ability of the elderly to perform basic activities independently.

Similarly, Hermawan (2020) in his research at the Tresna Werdha Dharma Bakti social institution, Surakarta, showed that the Rheumatic gymnastics program provided a significant increase in the Barthel Index score in the elderly. This shows that gymnastics programs, especially those that are carried out regularly and according to the needs of the elderly, can reduce dependence in carrying out daily activities. Wati and Saputra (2021) also noted a significant increase in elderly independence after participating in the elderly gymnastics program for one month, with the average

ADL score increasing significantly. This study supports the finding that elderly Gymnastics is effective in improving the physical functions underlying daily activities.

Theoretically, this result can be explained through Havighurst's Activity Theory, which states that the elderly will achieve life satisfaction if they remain physically and socially active. Activities such as gymnastics give the elderly a sense of empowerment and maintain social and physical engagement. In addition, The Theory of Disuse (Use it or lose it) also explains that body functions that are not used will degenerate faster. On the contrary, regular use of muscles and joints through activities such as Gymnastics will slow down the process of decreasing physical abilities, maintain body flexibility, and improve posture control and coordination of movements.

In addition, elderly Gymnastics also provides cognitive and emotional stimulus. Group activities in gymnastics can increase motivation, self-confidence, and social interaction, which helps support mental health and strengthen the spirit of life of the elderly. With a more stable physical and psychological condition, the elderly become more prepared and confident to undergo daily activities independently.

Analysis of researchers, it can be concluded that the elderly gymnastics program provides benefits that are not only preventive, but also rehabilitative. Gymnastics provides measured and regular physical stimulation, improves muscle strength, flexibility, as well as body balance. Seniors who follow this program become more confident, able to move more independently, and are less prone to falls or loss of body control. Gymnastic activities also strengthen the psychosocial aspect, as they are carried out in groups that allow the elderly to interact and still feel valued in their social environment. Thus, based on the results of significant statistical tests and the support of previous theories and studies, elderly Gymnastics proved to be an effective intervention to improve the independence of the elderly in carrying out daily activities. This Program is very feasible to be integrated into public health services, especially in neighborhoods with an increasing number of elderly populations.

CONCLUSIONS

Based on the results of the study, it can be concluded that the implementation of elderly Gymnastics has a positive and significant effect on increasing the level of independence of daily activities in the elderly in the community. Seniors who regularly follow gymnastics show a better ability to carry out daily activities independently compared to those who do not follow Gymnastics. Elderly gymnastics not only improves physical functions such as muscle strength, balance, and flexibility, but also provides a positive impact psychosocial through social interaction that supports the motivation of the elderly to continue to participate. Therefore, elderly Gymnastics is an effective intervention and needs to be implemented on an ongoing basis to maintain and improve the quality of life and independence of the elderly in the community.

ACKNOWLEDGMENT

The author would like to thank all those who have provided support in the process of research and writing this article. Thank you to all respondents who have been willing to take the time to participate in this study.

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