ISSN : 2443-4019 | eISSN : 2502-2083
ADI HUSADA Nursing Journal
Jurnal Keperawatan - Sekolah Tinggi Ilmu Kesehatan Adi Husada Surabaya

Evaluation of Self-Control and Resilience as Psychological Predictors of Regular Physical Exercise in the Elderly

Caturia Sasti Sulistyana[1*], Wiwin Sulistyawati[2], Satria Eureka Nurseskasatmata[3], Siska Christianingsih[4] , Abdul Fauzi[5]

[1,2,3,4,5] S1 Nursing Study Program, Faculty of Medicine, Universitas Negeri Surabaya, Surabaya, Indonesia

Correspondent Author:
Caturia Sasti Sulistyana

Email :
ns.sulistyana@unesa.ac.id

Keywords :
Self-control, Resilience, Phsyical exercise, Elderly.

Abstract

Regular physical exercise is crucial for healthy aging, yet many elderly face psychological barriers that prevent consistent participation. This study analyzed self-control and resilience as psychological predictors of regular physical exercise in the elderly, used a quantitative correlational design. Sixty respondents aged 60-70 years with simple random sampling. Data were collected used Brief Self-Control Scale and CD-RISC-10 for resilience instruments, while the level of participation in regular physical exercise was measured based on attendance to the physical exercise four times a week. The data were then analyzed using Pearson correlation and multiple linear regression. The results showed a significant correlation between self-control (r=0.721, p-value 0.002), resilience (r=0.618, p-value 0.003). Regression analysis revelead that self-control (β = 0.55, p-value 0.000) and resilience (β = 0.51, p-value 0.002) significantly predicted exercise behavior, explaining 28% of the variance (R^2 = 0.28). These findings suggest that elderly with higher self-control and resilience are more likely to maintain a regular exercise. The results support the development of health promotion programs that incorporate psychological training to strengthen self-regulation and adaptability in the elderly. Future research should explore the other predictors of physical exercise in elderly. Strengthening psychological resources is a key strategy to well-being in elderly.

INTRODUCTION

Aging is a natural process in the life cycle of every individual. As individuals enter their later years, they experience a decline in physical, psychological, and social function, which affects their ability to remain active and thus reduces their quality of life (Kumaat et al., 2024). One strategy to support healthy and meaningful aging is through physical exercise. Regular physical exercise is a key factor in maintaining health, fitness, improving cardiovascular function, muscle strength, balance, and reducing the risk of degenerative diseases commonly experienced by the elderly. Furthermore, active participation in physical exercise has also been shown to positively impact psychological well-being, such as reducing stress and depression, and enhancing social-emotional health, including self-esteem and social relationships with the surrounding community (Sulistyana dkk, 2025).

Although the benefits of physical exercise are numerous and well-established, participation rates among the elderly remain low, both in developed and developing countries. This phenomenon suggests that psychological ability alone is not enough to influence exercise behavior in elderly (Camp et al., 2024). Psychological factors such as motivation, self-control, and the ability to adapt to physical limitations play a crucial role in determining an individual's behavior to maintain physical activity consistently. An individual's success in continuing to engage in physical activity is the result of a complex psychological regulation process, where the ability to exercise sel-control and mental resilience are key determining factors (Xin & Ma, 2023).

Self-control is an individual's ability to regulate thoughts, emotions, and behaviors to align with long-term goals, even when faced with various distractions. It plays an important role in helping individuals restrain impulses, manage time, and maintain discipline in carrying out activities. Individuals with high self-control tend to be capable of regulating their behavior through feedback mechanisms, in which the outcomes of an action are evaluated and used to adjust subsequent behavior. Self-control is strongly associated with a person's adherence to performing certain activities and must be well-managed to prevent long-term loss of motivation (Y. Zhang et al., 2024).

Self-control in elderly is particularly essential, as they frequently encounter physical and social barriers such as fatigue, pain, or limited environmental support, that affect their ability to adapt and maintain consistency in performing physical exercise. Moreover, self-control is closely related to goal-setting and self-efficacy, both of which encourage individuals to remain committed to practicing healthy behaviors (Camp et al., 2024).

In addition to self-control, resilience also plays an important role in the adoption of healthy behaviors. Resilience refers to an individual’s ability to adapt positively to pressure, difficulties, or challenging changes. In the context of elderly, resilience becomes a crucial factor in coping with declining physical abilities, reduced social interactions, and emotional stress. Resilience helps elderly recover from setbacks or disruptions that may weaken their motivation to maintain a healthy lifestyle (Lima et al., 2023).

Although self-control and resilience serve different functions, they complement each other in sustaining consistent healthy behaviors. Self-control operates through mechanisms of short-term behavioral regulation, whereas resilience functions through long-term adaptive capacity (Dawe et al., 2024). These two factors interact and reinforce one another in behavioral regulation. Individuals with high self-control tend to be more resilient when facing emotional stress because strong self-regulation skills help them maintain a positive perspective on challenges. Conversely, resilient individuals are more capable of sustaining self-control when encountering obstacles, as robust mental endurance minimizes stress that could disrupt behavioral regulation (Ziv et al., 2024).

However, empirical studies comparing the relative influence of self-control and resilience on physical exercise participation in the elderly are still lacking. Therefore, this study aims to analyze the relationship between these two psychological factors self-control and resilience influence on the regularity of physical exercise in the elderly..

RESEARCH METHODS

This study employed a quantitative approach with a descriptive correlational design. This design was chosen to analyze the relationship between self-control and resilience with the level of participation of elderly in performing regular physical exercise. The population of this study consisted of elderly in Tambaksari, Surabaya, and Sambibulu, Sidoarjo, during the period of February to April 2025. A total of 60 elderly were selected using simple random sampling based on the following inclusion criteria: (1) aged between 60 and 70 years, (2) physically capable of performing light to moderate physical exercise, and (3) willing to participate as respondents. The exclusion criteria included: (1) elderly with severe cognitive impairment and (2) those with chronic illnesses that hinder mobility. Approval for this research has been

approved by the Health Research Ethics Committee at the Faculty of Medicine Universitas Negeri Surabaya with ethical permit number 0172/UN38.I0/EC.KEPK/HK.01.02/2025.

The research instruments consisted of: (1) The Brief Self-Control Scale, containing 13 items used to measure individuals' ability to regulate emotions, behaviors, and impulses in relation to long-term goals. Responses were collected using a 5-point Likert scale, with score ranging from 13-65 (Tangney et al., 2004), (2) The Elderly Version of the Connor-Davidson Resilience Scale (CD-RISC-10), consisting of 10 items assessing an individual's capacity to endure and adapt to life stressors, scored using a 5-point Likert scale, with scores ranging from 0-40 (Campbell-sills & Stein, 2007) .

Data collection was conducted during elderly gymnastic session, started with the selection of samples based on criterias, followed by obtaining informed consent. Elderly participants who agreed to be respondents were asked to fill out the questionnaires and their attendance at elderly exercise sessions in the past month. The gymnastic sessions at both research locations are held once a week. Data analysis for this study utilized Pearson's Correlation and Multiple Linear Regression to analize the relationship between self-control, resilience, and participation in regular physical exercise, which was measured based on attendance to the physical exercise four times a week.

RESULT

1. Demographic Characteristic of Elderly

Table 1. Demographic Characteristic of Elderly (N=100)

No	Variable	N	Percentage (%)
1	Aged		
	60-65 years old	32	53.3
	65-70 years old	28	46.7
	Total	60	100
2	Gender		
	Male	8	13.3
	Female	52	86.7
	Total	60	100
3	Education Level		
	Elementary school	9	15
	Junior high school	12	20
	Senior high school	38	63.3
	Bachelor	1	1.7
	Total	100	100

A total of 60 elderly participated in this study. The majority were between 60 and 65 years old, totaling 32 participants (53.3%); most were female, comprising 52 individuals (86.7%); and the largest proportion had completed senior high school education, total 38 participants (63.3%).

2. Normality Test and Correlation Test

The Kolmogorov–Smirnov normality test showed that the data were normally distributed ($p>0.05$). Pearson correlation analysis showed a significant positive relationship between self-control and physical exercise among elderly ($r = 0.721$, p-value 0.002). Similarly, a significant positive relationship was found between resilience and physical exercise ($r = 0.618$, p-value 0.003). These findings indicate that both self-control and resilience exhibit strong positive

correlations with physical exercise in elderly. Higher levels of self-control and resilience tend to predict increased engagement in physical exercise among the elderly.

Table 2. Kolmogorov-Smirnov Normality Test and Pearson's Correlation Test

Variable	Kolmogorov-Smirnov statistic	N	Distribution
Self-control	0.076	60	Normal distribution
Resilience	0.064	60	Normal distribution
Variable	Correlation with physical exercise	p-value	Interpretation
Self-Control	0.721	0.002	Strong positive correlation
Resilience	0.618	0.003	Strong positive correlation

3. Multiple Linear Regression

Table 3. Multiple Linear Regression Test

Variable	**Standard Coeffisien (β)**	p-value	**Interpretation**
Self-control	0.55	0.000	Strong and positive effect
Resilience	0.51	0.002	Strong and positive effect
$R^2 = 0.28$ = (significant efect)			

Regression analysis showed that self-control (β = 0.55, p-value 0.000) and resilience (β = 0.51, p-value 0.002) contributed significantly to predicting the level of physical exercise among elderly. The R^2 value of 0.28 indicates that the model explained 28% of the variance in physical exercise based on these two independent variables. Both self-control and resilience significantly and strongly predicted the level of physical activity in elderly. This model suggests that individuals with higher levels of these psychological traits tend to engage more frequently in regular physical exercise.

DISCUSSION

The findings of this study indicate that self-control and resilience have a significant positive relationship with the regularity of physical exercise among the elderly. Pearson correlation analysis showed that self-control was significantly associated with physical exercise in elderly (r = 0.721, p-value 0.002), meaning that individuals with higher levels of self-control tend to engage more consistently in regular physical exercise. These findings reinforce previous research suggesting that health behaviors in elderly are influenced not only by physiological capacity but also by underlying psychological conditions. As individuals age, they experience declines in physical, cognitive, and social abilities that may hinder their participation in physical exercise (Xin & Ma, 2023) Elderly with high levels of self-control and resilience are better able to maintain their commitment to healthy behaviors, manage stress, and adapt to challenges that arise throughout the aging process (Mijalković et al., 2025).

These findings are in line with previous research that highlighted the critical role of self-control in fostering consistent physical activity, such as the study by Camp et al. (2024), which found that elderly individuals with higher self-control are more likely to adhere to exercise routines over time. These results reinforce the notion that psychological factors, rather than just physical health, are essential in promoting sustained engagement in health behaviors.

The results also showed that self-control has a slightly stronger influence on physical exercise behavior compared to resilience. This is consistent with self-regulation theory, which

posits that an individual's ability to regulate behavior, thoughts, and emotions serves as the foundation for long-term goal-oriented actions, including maintaining physical fitness (Buriticá-Marín et al., 2023). Self-control functions as a regulatory mechanism that enables individuals to delay immediate gratification, such as the desire to rest more when feeling physically weak (Z. Zhang et al., 2023).

Elderly with high self-control tend to demonstrate discipline, personal responsibility, and the ability to develop realistic behavioral plans. These abilities are essential because physical exercise often presents challenges to consistent participation, such as limited energy, joint pain, or difficulties accessing exercise locations (Benlidayi, 2023). Self-control is a psychological resource that can be trained and strengthened through habits and experience. This means that the more frequently individuals exercise self-control in their daily activities, the stronger their capacity becomes to maintain positive behaviors, including physical activity. Elderly who are accustomed to organizing schedules, maintaining discipline, and restraining themselves from passive behaviors are more likely to develop greater behavioral resilience against feelings of laziness or fatigue (Kim et al., 2025).

Although the influence of resilience is slightly lower than that of self-control, it remains an important supporting factor in maintaining healthy lifestyle habits. The significant correlation found (r = 0.618, p-value 0.003) indicates that resilience helps elderly overcome emotional barriers and conditions that may disrupt their healthy behaviors. Resilience is defined as an individual's ability to recover from stress and adapt positively to changes or difficulties. Stressors experienced by elderly may include the loss of a spouse, chronic illness, or physical limitations. Individuals with high resilience are able to cope with these challenges and transform them into motivation to remain active in maintaining their health (Doherty et al., 2024).

The positive emotions that emerge from resilience broaden an individual's cognitive and behavioral capacity, thereby strengthening commitment to healthy behaviors. In this context, resilience functions as a long-term maintenance mechanism for sustaining healthy living (Wu et al., 2024). Self-control helps individuals initiate healthy behaviors, while resilience ensures that these behaviors are maintained even when they encounter setbacks, boredom, or fatigue. Elderly who experience temporary health issues or changes in their exercise environment are more capable of adapting and continuing their physical activity routines (Chen et al., 2020).

Although self-control and resilience differ conceptually, both factors work complementarily in influencing physical exercise behavior. The multiple linear regression analysis showed that the psychological variables of self-control and resilience contributed significantly to predicting the level of physical exercise. The regression coefficients indicated that self-control ($\beta = 0.55$, p-value 0.000) and resilience ($\beta = 0.51$, p-value 0.002) were both strong predictors of exercise behavior. The R^2 value of 0.28 suggests that these two variables explained 28% of the variance in exercise regularity among elderly, while the remaining variance may be influenced by other factors. Individuals with high self-control tend to develop structured behavioral patterns, whereas resilience supports the ability to regulate oneself and fosters a sense of competence and confidence. Those with high resilience are better able to maintain self-control when facing emotional pressure because they possess strong adaptive capacity to manage stress (Caorong, 2022).

This research by combining two factors that can influence the level of elderly participation in physical exercise. These two factors are then analyzed to determine which one has a stronger influence on physical exercise. The others research generally focus on only one factor, with most indicating that the most significant factor influencing elderly participation in physical exercise is motivation. The integration of these two factors results in a healthy lifestyle behavioral that is both consistent and flexible, which consistent in maintaining commitment to regular physical exercise regardless of challenger for health and fitness, and flexible in adjusting the intensity or type of exercise according to physical conditions. The implications of this research highlight that self-control functions as a proactive factor that initiates behavior, while resilience acts as a protective factor that supports the continuity behavioral. The combination of these two factors forms a more comprehensive physical exercise behaviour in the elderly. Despite its empirical contributions, this study has several limitations. The research design was correlational, which prevents the establishing of causality, and the variables analyzed were limited to self-control and resilience in predicting regular physical exercise in the elderly. Future studies should consider additional psychological, social, and environmental factors that may influence exercise behavior in the elderly.

CONCLUSION

The findings of this study indicate that self-control and resilience are two psychological factors that play an essential role in supporting consistent participation in regular physical exercise among elderly. Individuals with higher levels of self-control demonstrate greater consistency and commitment in maintaining their exercise routines, while resilience enables them to adapt and persist when facing age-related challenges and limitations. Although self-control contributes slightly more to physical exercise behavior compared to resilience, both factors complement one another in promoting healthy, active, and independent aging.

Future studies should employ experimental designs to analyze effect to psychological variables and physical exercise behavior, as well as explore additional predictive variables for mediation and moderation, such as intrinsic motivation, social support, or self-efficacy, which may influence the relationship between psychological factors and exercise behavior. Practical recommendations based on these findings include integrating psychological training into health programs, such as self-control training, stress management, and resilience development, as well as encouraging family involvement to strengthen healthy routines and support psychological resilience in elderly.

BIBLIOGRAPHY

Benlidayi, I. C. (2023). THE EFFECTS OF EXERCISING ON PSYCHOLOGICAL WELL-BEING IN OLDER ADULTS Ilke. *Anti-Aging Eastern Europe*, *2*(April), 36–41.

Buriticá-Marín, E. D., Daza-Arana, J. E., Jaramillo-Losada, J., Riascos-Zuñiga, A. R., & Ordoñez-Mora, L. T. (2023). Effects of a Physical Exercise Program on the Physical Capacities of Older Adults: A Quasi-Experimental Study. *Clinical Interventions in Aging*, *18*(February), 273–282. https://doi.org/10.2147/CIA.S388052

Camp, N., Vagnetti, R., Magistro, D., Penner, S., Ramos, C., Hunter, K., & Hough, J. (2024). It Is Not Just a Matter of Motivation : The Role of Self-Control in Promoting Physical Activity in Older Adults — A Bayesian Mediation Model. *Healthcare*, *12*(1663), 1–14. https://doi.org/https://doi.org/10.3390/healthcare12161663

Campbell-sills, L., & Stein, M. B. (2007). *Psychometric Analysis and Refinement of the Connor – Davidson Resilience Scale (CD-RISC): Validation of a 10-Item Measure of Resilience*. *20*(6), 1019–1028. https://doi.org/10.1002/jts.

Caorong, L. A. (2022). View of The association between self-control and satisfaction in life among Filipino older adults.pdf. *Jurnal Ners*, *17*(1), 19–24. https://doi.org/http://dx.doi.org/10.20473/jn.vl7il.34150

Chen, F. T., Etnier, J. L., Chan, K. H., Chiu, P. K., Hung, T. M., & Chang, Y. K. (2020). Effects of Exercise Training Interventions on Executive Function in Older Adults: A Systematic Review and Meta-Analysis. *Sports Medicine*, *50*(8), 1451–1467. https://doi.org/10.1007/s40279-020-01292-x

Dawe, J., Cavicchiolo, E., Palombi, T., Baiocco, R., Antoniucci, C., Pistella, J., Alessandri, G., Filosa, L., Tavolucci, S., Borghi, A. M., Fini, C., Chirico, A., Alivernini, F., & Lucidi, F. (2024). Measuring Self-Efficacy for Exercise among Older Adults : Psychometric Properties and Measurement Invariance of a Brief Version of the Self-Efficacy for Exercise (SEE) Scale. *Healthcare*, *12*(1642), 1–13. https://doi.org/https://doi.org/10.3390/healthcare12161642

Doherty, M. O., Cunningham, C., Neill, R. D., & Tully, M. A. (2024). The association of resilience and physical activity in older adults : cross - sectional analyses from the NICOLA study. *Journal of Public Health*, *0123456789*, 1–7. https://doi.org/10.1007/s10389-024-02274-3

Kim, D., Morikawa, S., Miyawaki, M., Nakagawa, T., Ogawa, S., & Kase, Y. (2025). Sarcopenia prevention in older adults: Effectiveness and limitations of non-pharmacological interventions. *Osteoporosis and Sarcopenia*, *11*(2), 65–72. https://doi.org/10.1016/j.afos.2025.05.005

Kumaat, N. A., Sulistyarto, S., Dewi, R. C., Wahyudi, H., Sulistyana, C. S., Susanto, N., Eken, O., & Purwoto, S. P. (2024). Analyzing the Effect of Dancesport on Reducing Menopausal Symptoms and Increasing Quality of Life. *Physical Education Theory and Methodology*, *7989*, 72–76. https://doi.org/10.17309/tmfv.2025.1.09

Lima, G. S., Laura, A., Figueira, G., Kusumota, L., & Caldeira, S. (2023). Resilience in Older People : A Concept Analysis. *Healthcare*, *11*(2491), 1–16. https://doi.org/https://doi.org/10.3390/healthcare11182491

Mijalković, S., Stojanović, S., Lilić, A., Ilić, T., İlbak, İ., Kasicki, K., Niewczas-Czarny, P., Ambroży, T., & Rydzik, Ł. (2025). The effects of physical activity on self-esteem in older adults: a systematic review. *Frontiers in Public Health*, *13*(June), 1–8. https://doi.org/10.3389/fpubh.2025.1595087

Sulistyana, C. S., & Kumaat, Noortje Anita, Satria Eureka Nurseskasatmata, Wiwin Sulistyawatim Siska Christianingsih, A. F. (2025). *Latihan Keseimbangan dan Koordinasi pada Lanjut Usia (Lansia)* (M. P. Dr. Heri Wahyudi, S.Or. (ed.)). PT. Ganesha Kreasi Semesta.

Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High Self-Control Predicts Good Adjustment , Less Pathology , Better Grades , and Interpersonal Success. *Journal of Personality*, *72*(2), 271–322.

Wu, Y., Shen, S., Chen, L., & Tung, H. (2024). A Web-Based Resilience-Enhancing Program to Improve Resilience , Physical Activity , and Well-being in Geriatric Population : Randomized Controlled Trial Corresponding Author : *Journal of Medical Internet Research*, *26*, 1–24. https://doi.org/10.2196/53450

Xin, S., & Ma, X. (2023). Mechanisms of Physical Exercise Effects on Anxiety in Older Adults during the COVID-19 Lockdown : An Analysis of the Mediating Role of Psychological Resilience and the Moderating Role of Media Exposure. *International Journal of Environmental Research and Public Health*, *20*(3588), 1–15. https://doi.org/https://doi.org/10.3390/ijerph20043588

Zhang, Y., Zhou, M., Yin, Z., Zhuang, W., & Wang, Y. (2024). Relationship between physical activities and mental health in older people : a bibliometric analysis. *Frontiers in Psychiatry*, *October*, 1–14. https://doi.org/10.3389/fpsyt.2024.1424745

Zhang, Z., Wang, J., Ma, B., Wang, J., Jia, Y., & Chen, O. (2023). Positive Self-perceptions of Aging Increase Physical Resilience to Facilitate Social Re- engagement of Older Adults Who Fall : Analysis Based on Health and Retirement Study Data Tag edEn. *American Congress of Rehabilitation Medicine*, *104*(9), 1253–1259. https://doi.org/https://doi.org/10.1016/j.apmr.2023.02.006

Ziv, I., Caspi, D., & Cojocaru, D. (2024). Self-management Elucidates How Practicing Physical Exercises Influences the Health Related Quality of Life of Independently Dwelling Older Adults. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, *61*, 1–13. https://doi.org/10.1177/00469580241271272