



Physical Mobility in the Elderly Community Assisted by the Youth, Sports, and Tourism Office of Sidoarjo Regency

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ABSTRACT

Aging is commonly associated with a decline in balance, muscle strength, and overall physical function, which can negatively affect mobility and increase the risk of falls among older adults. Maintaining functional mobility is therefore essential to support independence and quality of life in the elderly population. This study aimed to analyze the physical mobility of elderly individuals participating in the elderly exercise community assisted by the Youth, Sports, and Tourism Office of Sidoarjo Regency. This research employed a quantitative descriptive design. The study was conducted at the yard of the Youth, Sports, and Tourism Office of Sidoarjo Regency, located on Sultan Agung Street No. 34, Magersari, Sidoarjo District, East Java, in April 2025, while data analysis and interpretation were completed in May 2025. The population consisted of 25 elderly individuals who regularly participated in community-based exercise activities. The sampling technique used was purposive sampling with inclusion criteria of female participants aged over 60 years. Physical mobility was measured using the Timed Up and Go Test (TUGT), a widely used instrument for evaluating functional mobility and balance in older adults. The results showed that most participants completed the test within 9–11 seconds. A total of 11 participants (44%) were categorized as having normal mobility with full functional independence. Meanwhile, one participant (4%) required 15–17 seconds to complete the test, indicating a higher risk of falling. Overall, 13 elderly individuals demonstrated full independence in mobility performance. In conclusion, the majority of elderly individuals participating in the community program demonstrate good physical mobility and independence in daily activities. However, a small proportion of participants still show an increased risk of falls. Therefore, regular physical activity programs are recommended to maintain balance, improve mobility, and reduce fall risk among elderly populations.

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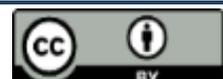
AUTHORS' CONTRIBUTION

- Conception and design of the study;
- Acquisition of data;
- Analysis and interpretation of data;
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INTRODUCTION

Increasing life expectancy is a key indicator of the success of health development in various countries, including Indonesia. Improvements in the economy, environmental



sanitation, public nutrition, and access to health services have significantly contributed to improving the quality of life and reducing mortality rates (Astuti & Triyana, 2024; World Health Organization, 2022). The impact of these developments is an increasing proportion of the elderly population within the national demographic structure. The Central Statistics Agency reports that the number of elderly people in Indonesia has continued to increase over the past decade, posing new challenges in health, social issues, and public welfare (BPS, 2023).

The aging process is an unavoidable biological phenomenon characterized by various physiological, psychological, and social changes. As individuals age, they experience a decline in organ function, including a decrease in muscle mass, tissue elasticity, and the ability of the neuromuscular system to control movement (Fragala et al., 2019; Cadore et al., 2021). This condition directly impacts physical mobility and functional capacity in the elderly. This decline in physical mobility often results in limitations in performing daily living activities (ADLs), such as walking, standing, transferring, and performing other basic activities independently (Rikli & Jones, 2018; Paterson & Warburton, 2019).

Physical mobility in older adults is a key component in maintaining independence, health, and quality of life. Elderly individuals with good mobility tend to have a lower risk of degenerative diseases, physical disability, and dependence on others (Sherrington et al., 2020; Cadore & Izquierdo, 2018). Conversely, decreased mobility can increase the risk of falls, decreased balance, and impaired motor function, all of which can worsen the health of older adults (Ambrose et al., 2015; Rubenstein, 2017).

In Indonesia, various community-based intervention programs have been developed to improve the health of older adults, including through physical activity, recreational sports, and social activities involving the community. These programs aim to maintain physical fitness, improve mobility, and strengthen social interactions in older adults (Suryadinata et al., 2020; Prasetyo et al., 2022). One such program is community activities for older adults facilitated by local government agencies, such as the Department of Youth, Sports, and Tourism. These programs typically include elderly exercise, light physical activity, and various social activities designed to improve the physical and psychosocial health of older adults.

However, although community programs for older adults have been widely implemented, scientific studies on the physical mobility of older adults participating in these programs remain relatively limited. Yet, evaluating physical mobility is crucial for determining the effectiveness of community-based physical activity programs in maintaining mobility and independence in older adults (Giné-Garriga et al., 2019; Bauman et al., 2016). Therefore, analyzing physical mobility in older adults participating in community physical activity programs is crucial for providing an empirical overview of the functional condition of older adults and providing a basis for developing community-based elderly health programs.

Research on physical mobility in older adults has grown rapidly over the past decade, particularly in relation to health, fitness, and quality of life. Various studies have

shown that structured physical activity can improve muscle strength, joint flexibility, balance, and functional ability in older adults (Cadore et al., 2018; Fragala et al., 2019). Physical activities such as strength training, balance training, and light aerobic exercise have been shown to slow the decline in physiological function associated with aging (Izquierdo et al., 2021; Peterson et al., 2021).

Furthermore, several studies have emphasized the importance of community-based approaches in increasing participation in physical activity in older adults. Community-based physical activity programs are considered more effective in increasing motivation, social interaction, and sustained participation in older adults compared to individual programs (Giné-Garriga et al., 2019; Bauman et al., 2016). Through this approach, older adults benefit not only from physical health but also from psychological and social benefits that can improve overall well-being.

In the context of physical mobility, various measurement instruments have been developed to evaluate the movement abilities of older adults, such as the Timed Up and Go Test (TUG), the Short Physical Performance Battery (SPPB), and the Senior Fitness Test (Rikli & Jones, 2018; Studenski et al., 2016). These instruments are used to assess important aspects of mobility such as balance, gait speed, muscle strength, and motor coordination. The results of these measurements can provide insight into the level of independence and health risks in older adults.

Empirical research also shows that participation in community physical activity programs can improve mobility and reduce the risk of falls in older adults (Sherrington et al., 2020). Furthermore, regular physical activity can help maintain muscle mass, increase cardiorespiratory capacity, and improve motor function in older adults (Paterson & Warburton, 2019; Cadore & Izquierdo, 2018). Therefore, community physical activity programs have significant potential to improve the health and quality of life of older adults.

Although extensive research on physical activity and health in older adults has been conducted, most studies still focus on structured physical exercise interventions in clinical or laboratory settings. Research specifically analyzing the physical mobility of older adults in local community contexts, particularly those facilitated by local governments, is still relatively limited (Giné-Garriga et al., 2019; Suryadinata et al., 2020). Yet, community-based programs are a crucial strategy for improving the health of older adults at the community level. Furthermore, most previous research has focused on the effects of exercise interventions on improving physical fitness, while studies describing the physical mobility of older adults within the community are rare, particularly in Indonesia. This situation results in limited empirical data on the level of physical mobility of older adults participating in community exercise or physical activity programs in specific areas. At the local level, research examining the physical mobility of older adults within communities supported by local government agencies, such as the Sidoarjo Regency Youth, Sports, and Tourism Office, is still very limited. In fact, analysis of the physical mobility conditions of the elderly in the community is very important for evaluating the effectiveness of the elderly development program that has been

implemented and for formulating strategies for developing more effective and sustainable physical activity programs.

Based on these research problems and gaps, this study aims to analyze the level of physical mobility among elderly people who are members of a community of elderly people supported by the Sidoarjo Regency Youth, Sports, and Tourism Office. This analysis is expected to provide an empirical overview of the physical mobility of elderly people who actively participate in community sports and physical activity activities. The novelty of this research lies in its approach to analyzing elderly physical mobility within the context of a local government-based community that integrates physical activity, social interaction, and community participation. Unlike previous research, which has largely been conducted in clinical or laboratory settings, this study provides a new perspective on the physical mobility of elderly people in a real community setting (community-based setting). Furthermore, this research also provides an empirical contribution to the development of more effective physical activity programs for elderly people in improving independence, health, and quality of life for elderly people at the community level. Therefore, the results of this study are expected to provide a scientific basis for the development of community-based elderly health policies and programs, particularly those implemented by local governments. The findings of this study can also make important contributions to the development of studies in sports science, public health, and sports gerontology, which focus on improving the quality of life for elderly people through structured and sustainable physical activity.

METHODS

This study employed a quantitative descriptive research design to analyze and describe the level of physical mobility among elderly individuals participating in a community-based physical activity program. Quantitative descriptive research is commonly used to summarize numerical data and provide an objective overview of a particular phenomenon through statistical analysis (Creswell & Creswell, 2018). In the context of gerontology and sports science, this approach is widely utilized to assess functional ability and mobility patterns among older adults based on measurable indicators (Cadore et al., 2019; Fragala et al., 2019). The descriptive quantitative approach in this study aimed to provide empirical evidence regarding the level of physical mobility among elderly participants who actively engaged in exercise programs organized by the Youth, Sports, and Tourism Office of Sidoarjo Regency.

The research was conducted at the Youth, Sports, and Tourism Office of Sidoarjo Regency, located on Sultan Agung Street No. 34, Magersari, Sidoarjo, East Java, Indonesia. This institution regularly organizes community-based elderly exercise programs as part of its public health and recreational sports initiatives. Data collection was carried out in April 2025, while data analysis and interpretation were conducted in May 2025. Community-based physical activity programs have been widely recognized as

effective strategies to promote healthy aging and maintain functional mobility among older adults (Bauman et al., 2016; Giné-Garriga et al., 2019).

The population in this study consisted of elderly individuals who regularly participated in elderly exercise activities organized by the Youth, Sports, and Tourism Office of Sidoarjo Regency, totaling 25 participants. The sampling technique used was purposive sampling, a non-probability sampling method in which participants are selected based on specific characteristics relevant to the research objectives (Etikan & Bala, 2017). The inclusion criteria applied in this study included elderly individuals aged over 60 years, female participants, and individuals who actively participated in the community exercise sessions during the research period. Purposive sampling is often applied in gerontological research to ensure that participants meet the functional and demographic characteristics required for mobility assessment studies (Paterson & Warburton, 2019).

The main variable examined in this study was physical mobility in the elderly, defined as the ability of older adults to move independently and safely while performing daily activities such as standing, walking, turning, and sitting. Physical mobility is an essential indicator of functional independence and quality of life among elderly populations (Rikli & Jones, 2018). Age-related physiological changes such as decreased muscle strength, reduced joint flexibility, and impaired neuromuscular coordination may significantly influence mobility performance in older adults (Izquierdo et al., 2021; Peterson et al., 2021).

To measure physical mobility, this study used the Timed Up and Go Test (TUGT), which is widely recognized as a valid and reliable assessment tool for evaluating functional mobility and fall risk in elderly populations (Jehu et al., 2017; Podsiadlo & Richardson, 2018). In this test procedure, participants were instructed to stand up from a chair, walk a distance of three meters, turn around, walk back to the chair, and sit down again. The total time required to complete the task was recorded using a stopwatch. The TUGT provides a simple yet effective measure of functional mobility and balance, making it one of the most commonly used clinical and field-based mobility assessments for older adults (Sherrington et al., 2020). The results were categorized based on the time taken to complete the activity, ranging from normal mobility to high fall risk categories according to established mobility assessment standards (Nurmalasari, 2018).

Data collection techniques in this study included tests and documentation. The test method was applied through the TUGT procedure to directly measure participants' mobility performance. Meanwhile, documentation techniques were used to collect supporting information such as participant records, attendance lists, photographs, and other activity documentation related to the elderly exercise program. The use of multiple data collection techniques enhances the reliability and completeness of research data in community-based health studies (Thomas et al., 2017).

Data analysis was conducted using quantitative descriptive statistical analysis. The results obtained from the TUGT were analyzed by calculating the mean, standard deviation, and percentage distribution in order to describe the overall mobility level of the participants. Descriptive statistics are commonly applied in mobility assessment research to present clear and interpretable data patterns related to functional

performance among elderly populations (Field, 2018). Data processing was performed using Microsoft Excel to calculate frequency distributions and descriptive statistics, while SPSS version 25 was used to support further statistical analysis and ensure accuracy in data interpretation.

RESULTS AND DISCUSSION

Result

This study involved 25 elderly participants who were members of the elderly community program assisted by the Youth, Sports, and Tourism Office of Sidoarjo Regency. All participants in this study were female (100%), reflecting the demographic characteristics of the community-based elderly exercise program, where female participation tends to be higher than male participation. The participants were categorized based on age intervals to identify the distribution of elderly age groups involved in the program.

Age Distribution of Participants

The distribution of participants' ages is presented in Table 1. The results indicate that the majority of participants were aged 60–63 years, representing 60% of the total sample. This group is commonly categorized as young-old elderly, referring to individuals who are still relatively active and capable of performing daily activities independently. The second largest group consisted of participants aged 68–72 years (24%), followed by those aged 64–67 years (12%). Only one participant (4%) belonged to the 76–79 years age group, while no participants were found in the 73–76 years age interval.

These findings indicate that the majority of respondents in this study were in the early stage of old age, which is often associated with relatively good functional capacity and mobility performance compared to older age groups.

Table 1
Frequency Distribution of Elderly Age

Age Interval	Category	Frequency	Percentage
60–63	Young-old elderly	15	60%
64–67	Young-old elderly	3	12%
68–72	Young-old elderly	6	24%
73–76	Middle-old elderly	0	0%
76–79	Middle-old elderly	1	4%
Total		25	100%

Results of the Timed Up and Go Test (TUGT)

The Timed Up and Go Test (TUGT) was used to assess the functional mobility of elderly participants. The test measures the time required for participants to stand up from a chair, walk three meters, turn around, walk back to the chair, and sit down again. The results of the TUGT provide an indication of mobility performance and fall risk among elderly individuals. The analysis revealed that 13 participants (52%) demonstrated full independence or normal mobility, while 12 participants (48%) were categorized as having a moderate risk of falling. These findings suggest that although most elderly participants

maintained good functional mobility, a considerable proportion still experienced some degree of mobility limitation.

Table 2
 TUGT (Timed Up and Go Test) Result Categories

Participant	Age	Test Result (seconds)	Description	Category
NK	62	6.12	Full independence (normal)	High
LA	62	6.99	Full independence (normal)	High
SI	60	6.57	Full independence (normal)	High
EK	60	8.75	Full independence (normal)	High
AH	69	11.52	Moderate fall risk	Low
SA	70	7.80	Full independence (normal)	High
AI	72	15.78	Moderate fall risk	Low
NY	79	11.63	Moderate fall risk	Low
AK	63	11.84	Moderate fall risk	Low
SH	63	9.76	Full independence (normal)	High
AK	62	6.85	Full independence (normal)	High
KA	70	11.58	Moderate fall risk	Low
ZA	71	9.55	Full independence (normal)	High
SN	63	8.69	Full independence (normal)	High
SM	61	9.35	Full independence (normal)	High
YI	67	10.21	Moderate fall risk	Low
RI	60	8.01	Full independence (normal)	High
MI	63	9.67	Full independence (normal)	High
RA	65	10.60	Moderate fall risk	Low
HI	63	10.96	Moderate fall risk	Low
SD	72	11.59	Moderate fall risk	Low
EA	60	7.08	Full independence (normal)	High
SI	67	13.61	Moderate fall risk	Low
DH	63	10.50	Moderate fall risk	Low
CA	60	11.32	Moderate fall risk	Low

Descriptive Statistics of Participants

Descriptive statistical analysis was conducted to summarize the characteristics of the research participants. The results indicate that the average age of participants was 65.08 ± 4.98 years, with a minimum age of 60 years and a maximum age of 79 years. The average body mass of participants was 62.04 ± 4.95 kg, ranging from 52 kg to 69 kg. In terms of mobility performance, the average TUGT completion time was 9.85 ± 2.32 seconds, with the fastest time recorded at 6.12 seconds and the slowest time at 15.78 seconds.

Table 3
 Descriptive Statistics Based on Age and TUGT Results

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Age (years)	25	60	79	65.08	4.98
Body Mass (kg)	25	52	69	62.04	4.95
TUGT Result (seconds)	25	6.12	15.78	9.85	2.32
Valid N (listwise)	25				

Distribution of TUGT Results

The distribution of TUGT results based on time intervals is presented in Table 4. The majority of participants (44%) completed the test within 9–11 seconds, indicating relatively good functional mobility. Meanwhile, 24% completed the test within 6–8 seconds, representing participants with very good mobility performance.

A total of 28% of participants required 12–14 seconds to complete the test, while only 4% required 15–17 seconds, indicating a higher risk of mobility limitations.

Table 4
 Distribution of TUGT Results Based on Time Interval

Time Interval (seconds)	Frequency	Percentage
6–8	6	24%
9–11	11	44%
12–14	7	28%
15–17	1	4%
Total	25	100%

Interpretation of Mobility Performance

The findings indicate that most elderly participants demonstrated independent functional mobility, as reflected by the highest proportion completing the TUGT within 9–11 seconds. This suggests that the majority of participants maintain relatively good mobility and independence in daily activities.

The average TUGT result of 9.85 seconds falls within the normal functional mobility range for community-dwelling older adults. According to normative data reported by Steffen et al. (2002), individuals aged 60–79 years typically complete the TUG test within 7–11 seconds, indicating normal mobility performance. Regular participation in community-based physical activity programs, such as elderly exercise sessions organized by the Youth, Sports, and Tourism Office, may contribute to maintaining functional mobility among older adults. Previous studies suggest that elderly individuals who regularly engage in physical exercise tend to have better balance, muscle strength, and functional capacity, which can reduce fall risk and improve overall quality of life.

Overall, the results of this study indicate that participation in regular physical activity programs within elderly community groups can help maintain functional mobility and independence among older adults, although continuous monitoring and mobility improvement programs remain necessary to minimize fall risk among elderly individuals.

Discussion

The findings of this study provide an important overview of the physical mobility condition of elderly individuals participating in community-based physical activity programs organized by the Youth, Sports, and Tourism Office of Sidoarjo Regency. Overall, the results indicate that the majority of participants demonstrated good functional mobility and independence, as reflected by the average Timed Up and Go Test (TUGT) score of 9.85 seconds, which falls within the normal mobility range for community-dwelling older adults. This finding suggests that regular participation in elderly exercise programs can play a significant role in maintaining functional mobility among older adults.

The concept of physical mobility in the elderly is closely related to functional independence, which refers to the ability to perform daily activities such as walking, standing, turning, and transferring without assistance. Functional mobility is influenced by several physiological factors, including muscle strength, balance, neuromuscular coordination, and joint flexibility. As individuals age, these physiological functions gradually decline due to biological aging processes, leading to decreased mobility capacity and

increased risk of falls (Cadore & Izquierdo, 2018; Peterson et al., 2021). The results of this study show that most participants were classified as young-old elderly (60–72 years), which may explain the relatively good mobility performance observed in the sample.

The Timed Up and Go Test (TUGT) is widely recognized as a simple and reliable tool for assessing functional mobility, balance, and fall risk among older adults. The test evaluates a sequence of movements involving standing, walking, turning, and sitting, which represent fundamental components of daily physical activity. Because of its practicality and reliability, the TUG test is frequently used in geriatric assessment to identify individuals with mobility impairments and potential fall risk (). The use of the TUG test in this study therefore provides a valid representation of the functional mobility condition of elderly participants in the community program. The mean TUGT score obtained in this study (9.85 seconds) indicates that the majority of participants fall within the normal mobility category. Previous studies have reported that community-dwelling older adults typically complete the TUG test within approximately 7–11 seconds, which is considered the normal range for functional mobility in elderly populations. A score exceeding 12 seconds generally indicates an increased risk of falling (). Therefore, the findings of this study suggest that most participants still maintain adequate mobility and balance capacity, which are essential for maintaining independence in daily living activities.

Although the majority of participants demonstrated good mobility, the results also revealed that 48% of participants were categorized as having a moderate risk of falling. This finding indicates that nearly half of the elderly individuals in the community program still experience certain limitations in mobility performance. Age-related physiological changes, such as sarcopenia, decreased neuromuscular function, and impaired balance control, may contribute to these mobility limitations. Sarcopenia, characterized by progressive loss of skeletal muscle mass and strength, is widely recognized as one of the major factors affecting functional mobility and fall risk in older adults (López-López et al., 2023).

The relationship between aging and mobility decline has been extensively discussed in gerontological research. Aging is associated with structural and functional changes in the musculoskeletal and nervous systems, including reduced muscle fiber size, decreased motor unit recruitment, and slower neuromuscular response times. These physiological changes lead to reduced gait speed, impaired balance, and decreased ability to perform dynamic movements, which ultimately affect functional mobility (Izquierdo et al., 2021). As a result, older adults often experience difficulties performing tasks that require coordinated movements such as standing up from a chair, turning, or walking at a stable speed.

The presence of moderate fall risk among several participants in this study highlights the importance of continuous mobility monitoring and intervention programs for elderly populations. Falls are one of the leading causes of injury, disability, and mortality among older adults worldwide. Studies have shown that mobility assessments such as the TUG test can effectively identify individuals who are at higher risk of falls and functional decline (). Early identification of fall risk is essential for implementing preventive strategies that can reduce the likelihood of injury and improve overall health outcomes among elderly populations.

One of the key factors that may explain the relatively good mobility performance observed in this study is the regular participation of participants in elderly exercise activities

organized by the community program. Physical activity has been widely recognized as one of the most effective strategies for maintaining functional capacity and preventing mobility decline in older adults. Exercise programs that combine aerobic activity, strength training, balance exercises, and flexibility training have been shown to significantly improve mobility, balance, and muscle strength among elderly populations ().

Community-based physical activity programs play an important role in promoting healthy aging by providing accessible and structured opportunities for older adults to remain physically active. Participation in group exercise activities not only improves physical fitness but also enhances social interaction, motivation, and psychological well-being. Studies have shown that elderly individuals who participate in community-based exercise programs tend to demonstrate better functional mobility, improved balance, and reduced risk of falls compared to sedentary individuals (Bauman et al., 2016; Giné-Garriga et al., 2019).

In addition, community-based programs can contribute to maintaining long-term exercise adherence among elderly participants. Social support, group motivation, and structured activities provided by community programs can encourage older adults to maintain an active lifestyle, which is essential for preventing mobility decline. Evidence suggests that exercise interventions focusing on lower-limb strength and balance training can significantly improve mobility performance and reduce fall risk in older adults. Another important implication of this study is the role of government-supported community programs in promoting elderly health and physical activity. The involvement of the Youth, Sports, and Tourism Office of Sidoarjo Regency demonstrates the importance of institutional support in facilitating health promotion initiatives for older adults. Government programs that integrate sports, recreation, and community engagement can provide sustainable platforms for promoting active aging and improving the quality of life of elderly populations. Despite the generally positive mobility outcomes observed in this study, several limitations should be acknowledged. First, the sample size was relatively small and consisted only of female participants, which may limit the generalizability of the findings to broader elderly populations. Second, the study used a descriptive approach without comparing participants with a control group, making it difficult to determine the causal effects of exercise participation on mobility improvement.

Nevertheless, the results of this study provide valuable insights into the mobility status of elderly individuals participating in community-based exercise programs. The findings suggest that regular participation in physical activity can help maintain functional mobility and independence among older adults, although continued monitoring and intervention remain necessary to prevent mobility decline and reduce fall risk. Overall, this study supports the growing body of evidence indicating that community-based physical activity programs are an effective strategy for maintaining mobility and functional independence in the elderly population. By promoting active lifestyles and providing structured physical activity opportunities, such programs can contribute to improving the health, well-being, and quality of life of older adults.

CONCLUSION

Based on the results of the study conducted on April 22, 2025, involving 25 elderly participants from the elderly community assisted by the Youth, Sports, and Tourism Office of Sidoarjo Regency, several important conclusions can be drawn. The findings from the Timed Up and Go Test (TUGT) indicate that 13 elderly participants (52%) demonstrated full functional independence with normal mobility performance, categorized as having high mobility ability. Meanwhile, 12 participants (48%) were classified as having a moderate risk of falling, indicating relatively lower mobility ability according to the mobility classification criteria proposed by Jehu et al. (2017).

Furthermore, the distribution of TUGT performance shows that 6 participants (24%) completed the test within 6–8 seconds, 11 participants (44%) within 9–11 seconds, 7 participants (28%) within 12–14 seconds, and only 1 participant (4%) required 15–17 seconds. These results suggest that the majority of elderly individuals in the community demonstrate relatively good physical mobility and are capable of performing daily activities independently.

Overall, the average TUGT score of 9.85 seconds indicates that the participants' mobility performance remains within the normal functional range for community-dwelling older adults. These findings support previous studies indicating that mobility assessments such as the TUGT are reliable tools for evaluating functional mobility among elderly populations (Steffen et al., 2002). However, the presence of moderate fall risk in nearly half of the participants highlights the importance of continuous physical activity programs and regular mobility monitoring to maintain functional independence and reduce fall risk among elderly individuals.

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