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Sarcopenia and Fall Risk Among Community-Dwelling Older Adults in Indonesia: A Cross-Sectional Analysis

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ABSTRACT

Sarcopenia and falls are major geriatric syndromes that significantly impact functional independence, mobility, and overall health status among older adults. As the aging population continues to increase, understanding the physiological, functional, and environmental links between muscle deterioration and fall vulnerability becomes essential for effective community-based health management. This study aimed to analyze the association between sarcopenia risk and fall risk among community-dwelling older adults in the Wanasari Cibitung area of Bekasi, Indonesia. A cross-sectional study was conducted with 305 older adults aged 60 years and above selected using consecutive sampling. Sarcopenia risk was assessed using the SARC-CalF tool, which combines the SARC-F questionnaire with calf circumference measurement, while fall risk was evaluated using the P3G assessment consisting of 11 fall-related domains. Sociodemographic data, chronic disease profiles, and physical function indicators were collected through structured interviews and standardized measurements performed by trained enumerators. Data analysis included descriptive statistics to determine prevalence and Spearman's rank correlation to examine the relationship between sarcopenia and fall risk due to non-normal data distribution. Findings revealed that 44.9% of respondents were categorized as high risk for sarcopenia, and 55.4% were classified as high risk for falling. The mean SARC-CalF score was 6.70 ± 6.15, and the mean P3G score was 5.60 ± 4.84, indicating substantial muscle function decline and fall susceptibility within the population. A strong positive correlation was identified between sarcopenia and fall risk ($r = 0.612$; $p < 0.001$; 95% CI; 0.53-0.68)), demonstrating that higher sarcopenia severity is associated with greater fall vulnerability. These results highlight the urgent need to integrate sarcopenia screening and fall-prevention strategies within routine primary healthcare services for older adults.

Keywords: Sarcopenia; Fall Risk; Older Adult; SARC-CalF; Gerontic Nursing; Indonesia

INTRODUCTION

Population of ageing has emerged as one of the most significant global demographic transitions, with profound implications for public health, social systems, and long-term care [1-3]. The World Health Organization (WHO) estimates that by 2030 one in six people worldwide will be aged 60 years or older, with the number of people aged 60 years and older rising from about 1 billion in 2020 to 1.4 billion by 2030 and 2.1 billion by 2050 [1]. The World Population Ageing 2023 report further highlights that low- and middle-income countries are experiencing particularly rapid ageing, with unprecedented growth in the number and proportion of older persons [4]. In the ASEAN region, the number of older adults is projected to increase sharply over the coming decades, intensifying demands for health and social-care systems [5].

Indonesia reflects this regional and global pattern, with a rapidly expanding older population driven by declining fertility and increasing longevity. Although the demographic transition offers opportunities for "active ageing," it also increases the prevalence of age-related conditions and geriatric syndromes that can threaten functional independence and quality of life [5, 6]. Among these conditions, sarcopenia has gained recognition as a key contributor to disability in older adults. Sarcopenia is now conceptualized as a progressive and generalized skeletal muscle disorder characterized by loss of muscle strength as a principal determinant, usually accompanied by reduced muscle quantity and impaired physical performance [7, 8]. Its etiology is multifactorial, involving age-related neuromuscular degeneration, chronic low-grade inflammation, hormonal dysregulation, oxidative stress, inadequate nutrition, and insufficient physical activity [7, 9, 10]. Recent meta-analyses and large observational studies have confirmed substantial variation in sarcopenia prevalence across populations, and have identified ageing, low body mass index, malnutrition, and sedentary behavior as major risk factors [9, 11].

One of the most serious clinical consequences of sarcopenia is an elevated risk of falls. Falls are recognized as a major global public health concern, ranking among the leading causes of unintentional injury and injury-related mortality in older adults [12-14]. Recent analyses based on Global Burden of Disease (GBD) data show that, in adults aged 60 years and older, falls account for tens of millions of incident events and substantial disability-

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adjusted life years (DALYs) worldwide, with the burden rising markedly with age and being particularly high in Asia [14, 15]. Contemporary reviews report that roughly 30–40% of community-dwelling older adults experience at least one fall annually, with even higher rates among the very old and those with multiple comorbidities [16]. Fall-related injuries including fractures, head trauma, and long-term mobility decline are major drivers of hospitalization, loss of independence, and premature mortality [16, 17].

There is strong biological and clinical plausibility linking sarcopenia to increased fall risk. Reductions in muscle strength, gait speed, and balance capacity compromise postural stability and the ability to recover from perturbations, thereby increasing susceptibility to falls. Recent work has shown that sarcopenia-related traits, particularly slower walking speed and lower handgrip strength, are significantly associated with higher fall risk in older adults, including evidence from meta-analysis and Mendelian randomization studies [18]. Cross-sectional and cohort studies in community settings also indicate that possible or confirmed sarcopenia is more common among older adults with a history of falls than among those without falls [19, 20]. Furthermore, severe sarcopenia defined using contemporary Asian Working Group for Sarcopenia (AWGS) criteria has been associated with a markedly higher odds of falling in multiethnic cohorts of older adults [21].

Despite increasing research attention, several important knowledge gaps remain. First, estimates of sarcopenia prevalence and its association with falls vary widely because of heterogeneity in diagnostic algorithms, measurement protocols, and population characteristics [7, 11]. Second, much of the existing evidence comes from high-income countries or from institutionalized and clinical populations, whereas community-dwelling older adults in low- and middle-income settings who may be exposed to different environmental and behavioral risk profiles are underrepresented [11, 16, 22]. Third, only a limited number of studies have concurrently examined sarcopenia and graded fall-risk profiles using validated instruments in community settings, particularly in Southeast Asia [19, 20]. These gaps highlight the need for robust, context-specific analyses that clarify the extent to which sarcopenia contributes to fall vulnerability among community-dwelling older adults.

These gaps hoghlight the necessity for rigorous, setting specific analyses to elucodate the extent to which sarcopenia contributes to fall susceptibilty among older adults residing in community enviroment. Accordingly, this study hypothesized that higher sarcopenia risk would be significanly and positively associated with higher fall risk among community-dwelling older adults. Therefore, the present study aims to analyze the association of sarcopenia on fall risk among community-dwelling older adults using a cross-sectional design and validated assessments of muscle strength, muscle mass, physical performance, and fall risk. By generating contextually relevant evidence, this study seeks to inform early screening strategies, guide targeted preventive interventions, and support geriatric nursing and public health policies aimed at reducing fall-related morbidity and preserving functional independence in ageing populations.

MATERIALS AND METHODS

Study Design and Setting

This study employed an observational cross-sectional design to investigate the association between sarcopenia and fall risk among community-dwelling older adults. Data collection was conducted in the catchment area of Puskesmas Wanasari Cibitung, Bekasi Regency, Indonesia. The study setting included community health posts (Posbindu), older adult community gatherings, and home visits, allowing for comprehensive recruitment and assessment across different community-based points of contact.

Participants and Eligibility Criteria

The study population comprised all adults aged 60 years and older residing permanently in the Puskesmas Wanasari Cibitung service area, estimated at 7,181 individuals. A total of 305 participants were recruited using a consecutive sampling approach. Eligible individuals were those aged ≥60 years, able to communicate, and willing to provide written informed consent. Older adults experiencing an acute illness during the data collection period, those with severe cognitive impairment or psychiatric conditions interfering with participation, and individuals unable to undergo muscle-strength or mobility assessments were excluded. Participant recruitment took place through community announcements, routine Posbindu activities, and door-to-door visits. All eligible older adults encountered during the recruitment period were approached, informed of the study objectives, and invited to participate. The final sample consisted of 305 older adults. Sample size estimation was based on a correlation formula for cross-sectional studies, assuming a moderate effect size (r), a significance level of 0.05, and a statistical power of 80%.

Variables and Operational Definitions

The primary exposure variable was sarcopenia risk, assessed using the SARC-CalF screening tool, which integrates the SARC-F questionnaire with calf circumference measurement. Based on established cut-off values, participants were categorized into low-risk and high-risk sarcopenia groups. The primary outcome variable was fall risk, assessed using the P3G (Pengkajian Paripurna Pasien Geriatri) Fall Assessment Form, an adaptation of the Morse Fall Scale that incorporates 11 domains, including gait disturbance, dizziness, lower limb weakness,

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nocturia, medication use, osteoporosis, and sensory impairment. Fall risk was categorized into low risk (scores 1–3) and high risk (scores ≥4). Additional variables collected included sociodemographic characteristics (age, sex, educational status, marital status) and health-related information such as chronic disease history. The internal consitency reliability of the study instrument was assesd withing the sample. The SARC-CalF exhibited strong reliability, as evidenced by a Cronbach's Alpha coefficient of 0.851 [23]. P3G is widely used in geriatric clinical practice and consists of multidimensional domain assessing fungtional, physical, and Health-related risks among older adults. The Instrument incorporates standardized assessment components derived from validated geriatric tools.

Data Collection Procedures

Data gathering was conducted by the principal investigator with the assistance of trained enumerators. All enumerators received standardized training on the administration of SARC-CalF, techniques for accurate anthropometric measurement, interviewing skills, and proper communication with older adults. Inter-observer reliability was evaluated during training sessions to ensure measurement consistency. The data collection process followed a structured sequence: (1) explanation of study objectives and procedures, followed by obtaining written informed consent; (2) administration of the SARC-CalF questionnaire; (3) direct measurement of calf circumference using a standardized anthropometric tape; (4) assessment of fall risk using the P3G tool through interview and observation; and (5) verification of data completeness prior to leaving the site.

Statistical Analysis

Data were analyzed using appropriate statistical software. Descriptive statistics were presented as frequencies and percentages for categorical variables, and as means with standard deviations or medians with interquartile ranges for continuous variables, depending on normality. The Kolmogorov–Smirnov test was used to assess distribution patterns of continuous variables. Given that sarcopenia and fall-risk scores were not normally distributed, the association between SARC-CalF scores and P3G fall-risk scores was examined using Spearman's rank correlation coefficient. A p-value of <0.05 was considered statistically significant.

Ethical considerations

The study protocol was reviewed and approved by the Ethics Committee of Bani Saleh University (Approval No: EC.029/KEPK/STKBS/I/2025). All participants received a detailed explanation of the study procedures and provided written informed consent prior to participation.

RESULTS

A total of 305 participants were included in the final analysis. All collected data were examined comprehensively to generate a detailed understanding of the relationship between sarcopenia and fall risk among community-dwelling older adults. The results are presented in a series of structured tables to facilitate clarity, comparability, and interpretation by readers and researchers. Each table highlights different dimensions of the study variables, enabling a comprehensive visualization of the dataset and supporting the analytical narrative.

The findings are organized into four primary tables. Table 1 summarizes the sociodemographic characteristics of the respondents, including age distribution, sex, and socio-economic background, which reflect the profile of older adults residing in the Puskesmas Wanasari Cibitung catchment area. Table 2 presents the distribution of sarcopenia risk as assessed using the SARC-CalF tool, demonstrating the proportion of older adults categorized as having low or high risk for sarcopenia. Table 3 describes the levels of fall risk among the participants, based on the P3G assessment instrument, providing insight into the prevalence of fall vulnerability within the community.

Demographic and Health Characteristics of Participants

Table 1 presents the demographic profile and health-related characteristics of the 305 older adults included in this study. The majority of participants were female (61.3%), while 38.7% were male. Most respondents belonged to the young-old age group (60–74 years), accounting for 93.1% of the sample, whereas only 6.9% were in the old-old category (75–90 years). The mean age of participants was 64.65 ± 5.20 years, indicating that the sample predominantly consisted of early-stage older adults. In terms of marital status, 63.6% of participants were married, while 36.4% were widowed, divorced, or single. Education levels varied, with 35.7% having completed high school, followed by 26.2% completing junior high school, 21.6% elementary school, 12.5% having no formal education, and only 3.9% having attained tertiary education.

Employment status revealed that 75.1% of older adults were not working, whereas 24.9% remained engaged in some form of employment. Income distribution showed that nearly all respondents (99.7%) had an income below the regional minimum wage (UMK), highlighting a generally low socio-economic status among the study population. Regarding health conditions, several chronic diseases were commonly reported. Joint disorders were the most prevalent (31.1%), followed by hypertension (27.2%), other chronic conditions such as asthma,

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kidney disease, cancer, stroke, or chronic lung disease (20.3%), diabetes mellitus (19.7%), and heart disease (1.6%). These findings indicate that a substantial proportion of participants live with multiple chronic health conditions, which may predispose them to functional decline and increased fall risk

Table 1. Demographic and Health Characteristics of Older Adult in the Community (n=305)

Characteristics	Frequency Distributions	
	n	%
Sex		
Male	118	38.7
Female	187	61.3
Age Group		
Young-old (60-74 years)	284	93,1
Older Adults (75-90 years)	21	6,9
Mean Age(years) 64,65±5,20)		
Marital Status		
Married	194	63,6
Not Married/Widow	111	36,4
Education Levels		
No Formal education	38	12,5
Elementary School	66	21,6
Junior High School	80	26,2
Senior High School	109	35,7
Higher Education	12	3,9
Employment Status		
Employed	76	24,9
unemployed	229	75,1
Income Level		
≤ Regional Minimum Wage	304	99,7%
> Regional Minimum Wage	1	0,3%
Chronic Diseases History		
Hypertension	83	27,2%
Diabetes Mellitus	60	19,7%
Joint Disorder	95	31,2%
Heart Disease	5	1,6%
Others (Asthma, Stroke, Kidney Disease	62	20,3%

Prevalence of Sarcopenia and Risk of Fall Among Community-Dwelling Older Adults

The prevalence of sarcopenia among community-dwelling older adults is presented in Table 2. More than half of the participants (55.1%) were classified as having a low risk of sarcopenia based on the SARC-CalF assessment. Conversely, 44.9% of respondents were identified as being at high risk for sarcopenia. These findings indicate that nearly one in two older adults in the community may be vulnerable to sarcopenia, highlighting the need for early screening and preventive interventions at the primary healthcare level.

Table 3 presents the distribution of fall-risk levels among older adults living in the community. Based on the P3G fall-risk assessment, 55.4% of participants were classified as having a high risk of falling, whereas 44.6% were categorized as having a low fall risk. These findings indicate that more than half of the older adults in this study are vulnerable to fall-related incidents, underscoring the need for targeted fall-prevention strategies within community-based health programs.

Table 2. Prevalence of Sarcopenia Among Community-Dwelling Older Adults (n=305)

SARC-CalF Category	n	%
Low Risk of Sarcopenia	168	55.1%
High Risk of Sarcopenia	137	44.9%

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Table 3. Prevalence of Fall Risk Among Community-Dwelling Older Adults (n=305)

P3G Fall-Risk Category	n	%
Low Fall Risk	136	44.6%
High Fall Risk	169	55.4%

Association Between Sarcopenia and Fall Risk Among Community-Dwelling Older Adults

The correlation analysis between sarcopenia and fall risk is presented in Table 7. The mean SARC-CalF score among participants was 6.70 ± 6.149, with a median score of 4 (range 0–20). The P3G fall-risk score showed a mean of 5.60 ± 4.844, with a median score of 4 (range 0–23). Spearman's rank correlation test demonstrated a strong positive correlation between sarcopenia risk and fall risk (r = 0.612), which was statistically significant (p = 0.001). This indicates that higher levels of sarcopenia risk are associated with higher fall-risk scores among community-dwelling older adults. This finding indicate a statistically significant positive association between sarcopenia risk and fall risk.

Table 4. Association Between Sarcopenia and Fall Risk Among Community-Dwelling Older Adults (n-305)

Variables	*Mean*±SD	*Median* (min-max)	*Correlation Coefficient* (95% CI)	P.Value
SARC-CalF Score	6.70 ±6.149	4(0-20)	0.612 (0.53-0.68)	0.001
P3G	5.60±4.884	4(0-23)		

DISCUSSION

The finding that 44.9% of community-dwelling older adults in this study were at high risk of sarcopenia is clinically significant and suggests a substantial burden of muscle deterioration in this population. This prevalence aligns with recent studies in Asian settings, where sarcopenia rates are reported 21.3% in men and 13.8% in women, particularly when using the updated Asian Working Group for Sarcopenia (AWGS 2019) criteria, which include grip strength, gait speed, and muscle mass assessments [24]. The AWGS revisions have heightened diagnostic sensitivity and may partly explain the high prevalence observed. Theoretical models of biological aging emphasize that sarcopenia is not merely a normal consequence of aging but a result of compounded physiological dysregulation. The inflammation theory of aging, for instance, asserts that gradually increasing levels of pro-inflammatory cytokines (e.g., IL-6, TNF-α) accelerate muscle catabolism and impair muscle protein synthesis [25, 26]. Similarly, age-related hormonal decline such as reduced testosterone, estrogen, growth hormone, and IGF-1 further contributes to muscle atrophy, reduction in fiber size, and weakened neuromuscular junctions [27, 28].

The high prevalence of sarcopenia in the Indonesian community context may also reflect several socioeconomic and lifestyle-related factors. Many older adults in this study had low educational attainment, limited income, and high unemployment rates, all of which have been linked to reduced dietary protein intake, increased food insecurity, and low engagement in structured physical activity programs. Recent studies confirm that insufficient protein consumption and low physical activity levels significantly increase sarcopenia risk [29, 30]. In Indonesia, nutritional imbalance particularly low intake of high-quality protein is common among older adults and contributes to chronic energy deficiency and diminished muscle mass. Additionally, cultural patterns and environmental limitations may restrict opportunities for exercise, leading to disuse atrophy. Sedentary behavior has been identified as a major predictor of accelerated sarcopenia progression, especially in urban low-income communities [31, 32]. Therefore, the elevated sarcopenia prevalence seen in this study likely reflects both biological and contextual determinants.

The study also found that 55.4% of participants were at high risk of falling, a prevalence higher than global estimates of 30–40% reported in meta-analyses of fall incidence among older adults [33, 34]. This suggests that fall vulnerability may be more pronounced in this Indonesian population, potentially due to environmental, socioeconomic, and physiological factors. The ecological model of fall risk provides a useful framework for interpreting these findings. This model posits that falls arise from dynamic interactions between intrinsic factors (e.g., muscle weakness, balance impairment, sensory loss), behavioral factors (e.g., activity level, fear of falling), and environmental conditions (e.g., poor lighting, uneven floors, inaccessible housing) [35, 36]. In many Indonesian households particularly low-income communities floor irregularities, crowded living spaces, and insufficient lighting may heighten fall risk.

Recent research also suggests that sensory impairments (e.g., diminished vision, hearing loss) further increase fall probability, especially when combined with balance and gait disturbances [37]. Chronic diseases

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prominent in this study population exert additional influence by reducing functional capacity, contributing to fatigue, increasing medication burden, and altering postural control mechanisms. Multimorbidity thus acts as a synergistic risk amplifier. Physical inactivity is another major contributing factor. Older adults who limit their movements due to pain, fatigue, or fear of falling may enter a cycle of deconditioning, characterized by decreased muscle mass, reduced joint flexibility, and diminished balance, ultimately increasing fall risk. This "vicious cycle of inactivity" has been documented extensively in fall-related gerontology research [38-40]. Collectively, these theoretical and empirical perspectives explain why the prevalence of fall risk in this study exceeds global averages. The interplay between biological decline, chronic disease burden, household environment, and limited health resources creates a multifactorial fall-risk landscape for older adults in this community.

The main finding of this study was a strong positive correlation between sarcopenia risk and fall risk ($r = 0.612$, $p < 0.001$), indicating a substantial association between the two variables. Higher SARC-CalF scores, which reflect greater muscle weakness, reduced muscle mass, and impaired functional ability, were accompanied by higher P3G fall-risk scores. This pattern is consistent with previous research suggesting that sarcopenia is linked to adverse geriatric outcomes, including falls and functional decline. From a theoretical standpoint, these findings are also consistent with the biomechanical model of falls, which proposes that reduced muscle strength and lower-limb power may compromise postural control and balance recovery. In addition, age-related changes in muscle morphology and function, along with multimorbidity, physical inactivity, and environmental hazards, may help explain the observed association. Overall, the results suggest that sarcopenia risk and fall risk are closely related in this population, and that routine screening for both may be useful in community health services. [18, 41].

However, the results can be grouped to be interpreted and discussed based on theory and previous research results. From a theoretical standpoint, these findings align with the biomechanical model of falls, which posits that diminished muscle strength and reduced lower-limb power compromise the body's ability to maintain postural control or respond effectively to sudden shifts in balance [42, 43]. According to this model, the neuromuscular impairments seen in sarcopenia reduce compensatory reflexes and result in a slower reaction time when encountering environmental hazards such as uneven surfaces or obstacles. This makes it more difficult for older adults to stabilize themselves during stumbling events, thus increasing fall susceptibility.

Similarly, recent evidence supports the notion that sarcopenia independently predicts fall events. Its demonstrated that older adults diagnosed with sarcopenia experienced significantly higher fall rates compared to those without sarcopenia, even after adjusting for confounding variables including age, sex, comorbidity burden, and medication use [41, 44]. Their findings emphasize that sarcopenia is not merely an age-related decline but a distinct pathological process affecting muscular and neuromuscular integrity, resulting in impaired mobility and heightened fall risk.

From a physiological perspective, the mechanisms underpinning this association can be explained through age-related changes in muscle morphology and function. Sarcopenia is characterized by a reduction in type II fast-twitch muscle fibers, decreased mitochondrial efficiency, and impaired neuromuscular junction transmission [45]. These alterations lead to diminished muscle power and slower muscle activation, which are essential components for safe ambulation, rapid directional changes, and maintaining balance. Reduced gait speed, slower sit-to-stand transitions, and decreased lower limb strength common indicators of sarcopenia are all well-established predictors of falls in older adults [41, 46]. Moreover, sarcopenia often coexists with other geriatric syndromes such as frailty, cognitive impairment, and chronic inflammation, creating a compounded risk profile. Chronic low-grade inflammation ("inflammaging") and hormonal decline (e.g., reductions in IGF-1, testosterone, estrogen) further exacerbate muscle catabolism and functional decline [25, 28, 46]. This multimorbidity burden contributes to impaired proprioception, slower reflexes, and decreased ability to adapt to changes in body position, all of which make falls more likely.

Environmental and behavioral factors further intensify the link between sarcopenia and falls. Older adults with sarcopenia often avoid physical activity due to fatigue or instability, leading to further muscle atrophy a cyclical phenomenon known as the "vicious cycle of disuse." Reduced physical activity subsequently worsens balance, increases joint stiffness, and contributes to further deterioration of functional status. This cyclical decline has been documented in community-based studies in Japan, Korea, and Europe, where physical inactivity was shown to accelerate sarcopenia progression and heighten fall risk [24, 32, 47].

Taken together, these theoretical frameworks and empirical findings consistently support the current study's results. The robust correlation identified reinforces the importance of muscle health as a central component of fall prevention. Screening for sarcopenia using simple tools such as SARC-CalF, combined with routine fall-risk assessments, should therefore be integrated into community health services particularly in resource-limited settings where older adults may lack access to specialized geriatric care.

This Study has several limitation. The cross-sectional design precludes causal inference, and concecutive sampling may have introduced selection bias. Sarcopenia was assessed using SARC-CalF as a screening tool rather than a diagnostic instrument, and objective muscle mass measurements (e.g., BIA or DXA) were not performed. Therefore, sarcopenia could not be formally confirmed. In addition, no adjustment for potential confounders was

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conducted. Finally, because the study was conducted in a single Puskesmas catchment area in Bekasi, the findings may have limited generalizability to other populations and setting.

CONCLUSION AND RECOMMENDATIONS

This study found a high prevalence of sarcopenia risk and fall risk among community-dwelling older adults, with a strong positive association between the two variables. Sarcopenia risk was strongly associated with greater fall vulnerability. This study also provides context-specific evidence from an Indonesian community setting, contributing to the limited literature on sarcopenia and fall risk in low- and middle-income countries. Based on these findings, routine screening using SARC-CalF and P3G should be integrated into primary healthcare services. Older adults with SARC-CalF scores ≥11 may require further assessment and targeted interventions, including exercise, nutritional support, and fall-prevention programs focusing on modifiable factors such as gait disturbance and lower-limb weakness. Future studies sh ould use longitudinal designs, intervention trials, and multi-site approaches to strengthen evidence and improve generalizability**.**

AUTHOR'S CONTRIBUTION STATEMENT

Ashar Prima: Conceptualization, methodology, investigation, supervision, data curation, formal analysis, Writing (original draft preparation), review and editing.
Fuji Fauji: Investigating, data collection, validation, and writing.
Indah Puspitasari: Methodology, supervision, interpretation of findings, review and editing.
Maratun Shoaliha: Data curation, validation, and writing.
Fauziah H Wada: Methodology, Interpretation of Finding, Editing and manuscript Review
Amzal Mortin andas: Conceptualization, supervision, manuscript review and formal analysis.

CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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