

# The short version of the Indonesian falls efficacy scale for older adults



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## ABSTRACT

**Introduction:** The short version of the falls efficacy scale—international (FES-I), consisting of seven items, has not yet been adapted for use in Indonesia, although the long version has been validated in Bahasa Indonesia. This study aimed to adapt and validate the Indonesian short version of the FES-I for use in time-limited settings or with frail older adults.

**Methods:** This cross-sectional study validated the Indonesian Falls Efficacy Scale for older adults through translation, cultural adaptation, expert review, and reliability testing. Content validity was assessed by seven experts, and a field test was conducted with 135 older adults. Data were analyzed using *Cronbach's Alpha* in IBM SPSS Statistics 26.

**Results:** Among the 135 respondents, the majority (82%) were aged between 60 and 74 years, with females comprising 60% of the sample. The shortened questionnaire demonstrated good reliability (*Cronbach's Alpha* = 0.8) and excellent validity (item content validity index = 0.857–1; scale-level content validity index = 0.938).

**Conclusion:** The findings support the reliability and validity of the short Indonesian version of the FES. This version is especially effective and practical for quickly screening older adults with a fear of falling during daily activities and social interactions.

**Keywords:** falls efficacy scale, fear of falling, Indonesian, older adults, short version.

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## INTRODUCTION

Fear is a fundamental emotion, identified by psychologist Paul Ekman, that arises in response to real or perceived threats and plays a key role in survival and adaptive behavior, including among older adults.<sup>1</sup> In Indonesia, the rapidly growing older adult population has highlighted the need for tools to assess and manage fall risk, as fear of falling is a major concern during daily activities. Previous studies report that the prevalence of fear of falling in older adults ranges from 3% to 85% and increases with age.<sup>2,3</sup> Recent Indonesian data show that 36% to 49.7% of older adults experience high levels of this fear, which is associated with reduced physical activity, poorer quality of life,<sup>4,5</sup> and functional decline.<sup>6,7</sup>

Fear of falling is a major concern among older adults, as falls are the leading cause of both fatal and non-fatal injuries, with their incidence increasing yearly.<sup>7,8</sup> The Centers for Disease Control and Prevention report that approximately 14 million older adults

in the U.S.—or 1 in 4—experience falls annually. Of these, 37% require medical treatment and face limitations in daily activities.<sup>9</sup> In Indonesia, a recent study showed that 58% of older adults had experienced at least one fall.<sup>5</sup>

Fear of falling refers to anxiety about falling while standing or walking, leading to restricted movement during daily activities.<sup>10,11</sup> This condition may result from a decline in bodily systems responsible for posture and mobility.<sup>12</sup> Also known as post-fall syndrome, it reflects heightened anxiety during walking or movement tasks.<sup>13</sup> Fear of falling can reduce functional independence, even in individuals without a history of falls, and affects over 60% of adults aged 60 to 79.<sup>14</sup>

In recent decades, various tools have been developed to assess the psychological aspects of falling, particularly fear of falling. The Falls Efficacy Scale (FES), created by Tinetti et al., measures an individual's confidence in performing daily activities without falling.<sup>15</sup> To provide a

more comprehensive assessment, the Falls Efficacy Scale-International (FES-I) was later introduced by the Prevention of Falls Network Europe (ProFaNE). The FES-I includes 16 items and has been validated across multiple cultures and languages, demonstrating strong psychometric properties.<sup>16</sup> It has been translated into 14 languages, including Bahasa Indonesia, using a standardized protocol. Previous studies have confirmed the validity and reliability of the Indonesian version of the FES-I for assessing fear of falling in older adults.<sup>17</sup> However, the seven-item short version of the FES-I developed by ProFaNE has not yet been adapted or validated for use in Indonesia. This version maintains strong psychometric properties and is especially useful in time-limited settings or with frail older adults who may have reduced stamina.<sup>16</sup>

A shortened version of the Indonesian FES is desirable for several reasons. First, the original scale demonstrated very high internal reliability, suggesting

item redundancy and indicating that a shorter version could maintain strong psychometric properties. Second, a brief scale is more practical in time-limited settings such as large screenings or clinical environments where older adults may have limited attention or cognitive capacity. Third, reducing the number of items lessens participant burden, especially for older adults who may find lengthy questionnaires tiring or confusing.<sup>18</sup> While the full version offers comprehensive assessment for clinicians, researchers often prefer shorter tools for quick screening or when used alongside other instruments. Previous studies have shown that short-form scales can preserve validity and reliability while improving feasibility in routine practice.<sup>19</sup> Translating and validating the brief FES-I in Bahasa Indonesia is essential to support evidence-based fall prevention programs and ensure the availability of standardized tools aligned with global best practices. In physiotherapy services, early screening for fear of falling before therapeutic activities is crucial to tailor interventions safely and effectively.<sup>20</sup>

The short-form FES-I, consisting of 7 items derived from the long-form version, is recognized internationally as an independent tool with separate validations across languages and cultures. However, simply adopting these items does not ensure equivalent meaning, cultural relevance, or psychometric properties without a dedicated translation and validation process for the short form. Developing an Indonesian version is essential to meet the specific cultural and linguistic needs of Indonesian older adults. This process requires not only translation but also content adaptation to reflect local activities, environments, and social contexts. Therefore, this study aimed to develop and validate a short-form Indonesian FES-I.

## METHODS

This study employed a cross-sectional design with a linguistic validation process consisting of translation, cultural adaptation, content validity, and reliability testing of the Indonesian version of the Falls Efficacy Scale for older adults.

The research method involved expert evaluations, back-translation procedures, and a field test among older adults in the community. Data collection was conducted from July to August 2024 with 135 participants selected through proportional random sampling.

The Indonesian translation process was presented in Table 1. The linguistic validation process involved five steps. Step 1 was the conceptual definition, which aimed to clarify the concepts being studied, ensuring that each item in the original tool was correctly interpreted and assessed in the target language. Step 2 was the initial adaptation of the tool to align with the cultural and linguistic context of the target country. This step was carried out in cooperation with certified linguists. Adaptation was important because terms, meanings, and social contexts could differ significantly between countries. These adjustments ensured that the tool measured the same variables without distortion of meaning or differing interpretations, making the results more valid and reliable in the local context. At this stage, the first Indonesian translation was produced.

Step 3 was the backward translation of the Indonesian version of the tool into the original language (English). This step was also conducted in cooperation with a different certified linguist. The involvement of two independent linguists ensured the accuracy of the meaning from the source language into Indonesian. Step 4 was the assessment of meaning consistency by a geriatrics expert proficient in both Indonesian and English. The expert assessed the similarity of meaning between the original, the translated, and the back-translated versions to confirm that each word and sentence retained the same meaning as in the original instrument.

Step 5 assessed content validity using the item content validity index (I-CVI) and Scale-level Content Validity Index (S-CVI).<sup>21,22</sup> In this final stage, seven experts in geriatrics with diverse academic and practical backgrounds participated. They evaluated each question for its relevance when asked to older adults to measure fear of falling. The expert team included one sports medicine physician, two nursing lecturers from different

institutions, one physical therapy lecturer, one psychologist, one practicing nurse, and one practicing physical therapist. Each expert rated items on a scale of 1 (“not relevant”) to 4 (“highly relevant”). They also provided suggestions to improve item content based on their expertise. The experts ensured that the questionnaire content remained valid. For seven experts, an I-CVI score > 0.78 and an S-CVI score > 0.90 indicated excellent content validity. After completing the content validity assessment, internal consistency reliability was tested using *Cronbach's Alpha* coefficient. A high *Cronbach's Alpha* value indicated that the items were interrelated and consistently measured the same concept. A value greater than 0.7 was considered acceptable.<sup>23,24</sup>

During data collection, five trained research assistants supported the process. They received orientation and training to ensure their understanding of the questionnaire and data collection procedures. The inclusion criteria were community-dwelling older adults aged over 60 years, with no cognitive impairments, able to communicate effectively, and free from physical disabilities. Exclusion criteria included uncorrected visual or hearing impairments, severe mobility limitations, dependence on assistive devices, and acute medical conditions such as recent stroke, severe infections, or acute mental disorders.

The questionnaire consisted of seven statements that assessed participants' fear or concern when performing various activities: dressing/undressing, bathing, transferring in/out of a chair, using stairs, reaching for objects, walking on slopes, and attending social events. Concern levels ranged from 1 (not worried) to 4 (very worried), with higher scores indicating greater fear of falling. After all data were collected, internal consistency reliability was calculated using *Cronbach's Alpha* with IBM SPSS Statistics 26, with statistical significance set at  $p < 0.05$ . Ethical approval was obtained from STIKES Katolik St. Vincentius a Paulo (Ethical Clearance No. 009/Stikes Vinc/KEPK/III/2024). All participants signed written informed consent forms before participation.

## RESULTS

Among the 135 respondents, the majority (82%) were aged between 60 and 74 years, with females comprising 60% of the sample. Most participants (78%) had completed senior high school education. All respondents were independently ambulatory without the use of assistive walking devices. Furthermore, 28% reported having experienced at least one fall within the previous year. At the time

of data collection, 15% of participants were undergoing regular pharmacological treatment for diabetes and hypertension.

The results are presented in Table 2. Based on the content validation performed by seven experts, the Item Content Validity Index (I-CVI) ranged from 0.857 to 1.00 (acceptable value > 0.78), while the Scale Content Validity Index (S-CVI) was 0.93 (acceptable value > 0.90). No items were rejected, as shown in Table 1. The reliability of this measurement tool was

confirmed by calculating *Cronbach's Alpha* coefficient, which yielded a value of 0.80 (> 0.70), indicating that the Indonesian Short FES-I is a reliable instrument.

## DISCUSSION

The findings of this study are consistent with previous research. In Poland, the instrument demonstrated high reliability with a *Cronbach's Alpha* of 0.932, exceeding the acceptable threshold of 0.7

**Table 1. The linguistic and content validation process of the short version of the Indonesian falls efficacy scale**

Steps	Activity
1	Conceptual analysis Clarify the study concepts to ensure each item in the original tool is accurately interpreted and assessed in the target language.
2	Initial adaptation of the tool The tool was adapted to fit the cultural and linguistic context of the target country in collaboration with certified linguists.
3	Backward translation The Indonesian version of the tool was back-translated into English by a different certified linguist.
4	Assessment of meaning A geriatrics expert fluent in both Indonesian and English assessed the equivalence of meaning between the original, translated, and back-translated versions of the instrument.
5	Validity content by expert Seven geriatrics experts with diverse academic and clinical backgrounds evaluated each item for its relevance in assessing fear of falling among older adults and provided suggestions for improvement.

**Table 2. Result of validity and suggestion of the short version of the Indonesian falls efficacy scale**

No	Original content	Result of validity and suggestion	I-CVI	Final content
1	Getting dressed or undressed	All experts considered the item relevant, but one expert suggested revising it to: 'Getting dressed or undressed and wearing pants.'	7/7= 1	Dressing or undressing (upper and lower garments) "Berpakaian atau menanggalkan pakaian (atasan dan bawahan)"
2	Taking a bath or shower	One expert rated it as somewhat relevant with no suggestions provided.	6/7= 0.857	Taking a bath or shower "Mandi dalam posisi berdiri"
3	Getting in or out of a chair	All experts considered the content relevant.	7/7= 1	Getting in or out of a chair "Saat duduk ke kursi atau beranjak dari kursi"
4	Going up or down stairs	All experts considered the content relevant.	7/7= 1	Going up or down stairs "Naik atau turun tangga"
5	Reaching for something above your head or on the ground	One expert rated this item as not relevant and suggested rephrasing it to: 'Reaching for objects above the head or picking up items from the floor.'	6/7= 0.857	Reaching for something higher above the head and picking up something from below. "Mengambil sesuatu yang tinggi atau di permukaan tanah"
6	Walking up or down a slope	One expert rated the item as not relevant and suggested rephrasing it to: 'Walking on a gently sloping surface (up or down).'	6/7= 0.857	Walking on a flat area that is sloping up or down "Berjalan pada permukaan/dataran yang rata, akan tetapi kondisi jalan menanjak atau menurun"
7	Going out to a social event (e.g. religious service, family gathering or club meeting)	All experts deemed the item relevant, with one expert suggesting: 'Attending social events without accompaniment (e.g., worship services, family gatherings, or socializing with friends).'	7/7= 1	Attending social events without accompaniment (e.g. Worshipping together, family gatherings, spending time with friends). Pergi ke acara sosial tanpa pendampingan (misalnya ibadah keagamaan, pertemuan keluarga, atau pertemuan yang lain)

Scale-level content validity index

0.938

I-CVI, item content validity index

for psychometric evaluations.<sup>25</sup> Similarly, studies in the United Kingdom (n=193)<sup>18</sup>, Italy (n=157)<sup>26</sup>, and Brazil reported strong internal consistency for the short version of the FES-I, with *Cronbach's Alpha* values of 0.92, 0.94, and 0.87, respectively.<sup>27</sup>

Similar findings have been reported in other Asian studies. In Taiwan, a study of 751 older adults reported a *Cronbach's Alpha* of 0.918 for the short FES-I, with a strong correlation (Spearman's rho = 0.963; 95% CI [0.956, 0.969]) between the 16-item and 7-item versions.<sup>28</sup> In Malaysia, research involving 402 older adults across three language groups (English, Mandarin, and Bahasa Malaysia) demonstrated good internal consistency and test-retest reliability for the 7-item FES-I.<sup>29</sup> In Pakistan, the Urdu version of the short FES-I showed excellent content validity (I-CVI = 0.92–1) and high reliability (*Cronbach's Alpha* = 0.93).<sup>30</sup>

The Falls Efficacy Scale (FES) incorporates key recommendations for assessing fear of falling, such as clearly defined activities, varying levels of difficulty for indoor and outdoor tasks, consideration of social factors, an easy-to-understand response format, and comparability across studies. The Short FES differs from the long version by offering a quicker, less detailed assessment, making it more suitable for clinical screenings or large-scale surveys where time is limited.<sup>25</sup>

The Indonesian version of the Short FES was developed to provide a simple, efficient tool for measuring fear of falling in daily activities among older adults. This instrument identifies how fear affects their mobility and physical activity, which can influence quality of life. It enables healthcare providers in Indonesia to quickly assess, monitor, and address fear of falling, ultimately promoting confidence and safe movement in the elderly population.<sup>17</sup>

This study involved seven experts who validated the questionnaire by evaluating each item and providing suggestions. The content validity results were excellent, with I-CVI scores ranging from 0.857 to 1.0 (acceptable > 0.78) and an S-CVI of 0.93 (acceptable > 0.90), consistent with previous studies, confirming the tool's effectiveness in assessing fear of falling among older adults. For item 1 (“Getting

dressed or undressed”), the I-CVI was 1.0. Experts recommended clarifying this item by explicitly mentioning both “shirts” and “pants,” as Indonesian culture often interprets “dressing” as referring only to upper garments.<sup>31</sup> Moreover, wearing pants is considered more challenging for older adults due to the required balance, coordination, and flexibility.<sup>32</sup>

Age-related physiological changes, such as reduced muscle mass, decreased type II muscle fibers, and diminished connective tissue, impair rapid muscle contraction and balance. Flexibility decline can shift the center of mass posteriorly, increasing fall risk, particularly during complex movements like dressing.<sup>33</sup> Cultural factors, such as traditional loose clothing choices, also influence dressing practices and balance demands in Indonesian older adults. Reduced flexibility leads to compromised balance and functional independence, making activities like dressing a potential fall risk.<sup>34</sup>

For statement number 5, ‘Reaching for something above your head or on the ground,’ the I-CVI score was 0.857. Experts suggested revising the wording to ‘reaching for something higher above the head and picking up something from below’ to improve clarity. The term ‘picking something up from the ground’ could be misinterpreted as retrieving an object buried in the ground, whereas ‘picking something up from below’ better reflects the intended activity for older adults.<sup>35</sup> Reaching above or below requires strength, balance, and proper posture—functions often affected by age-related changes in biomechanics. Older adults typically avoid bending their knees due to reduced thigh strength and limited knee flexibility, opting instead to bend at the waist, which increases the risk of lower back strain and imbalance. This improper movement pattern can lead to lumbar spine stress and back pain over time.<sup>5</sup> Similarly, reaching overhead without support engages the shoulder, upper back, and balance muscles. This action frequently results in instability, especially in older adults with poor posture or visual impairments, increasing the risk of falls. Both activities—reaching high or low—pose a significant balance challenge and elevate the risk of injury among the

elderly.<sup>36</sup>

For statement number 6, ‘Walking up or down a slope,’ the I-CVI score was 0.857. Experts suggested clarifying this item as ‘walking on a flat path that slopes up or down’ to ensure older adults interpret it as general outdoor walking—not stair climbing or mountain trekking. In Indonesia, neighborhood roads often serve as key access points between homes and main streets. These roads are typically narrow, uneven, and feature inclines or declines, making them common walking environments for older adults. Such terrain increases fall risk due to age-related declines in muscle strength, balance, and coordination. Walking on slopes alters body biomechanics, shifting the center of gravity and requiring greater muscle activation and stability, which may raise both the actual risk and fear of falling, especially among older individuals with impaired physical function.<sup>37,38</sup> This consideration is crucial in Indonesia, where older adults frequently navigate pedestrian-unfriendly, uneven surfaces.<sup>5</sup>

For statement number 7, ‘going out to a social event’ (e.g., religious service, family gathering, or club meeting), the I-CVI value was 1. The experts suggested revising the wording to ‘attending social events without accompaniment’ (e.g., worshiping, family gatherings, or spending time with friends) to better reflect typical social activities of older adults in Indonesia.<sup>39</sup> In Indonesian culture, family plays a vital role as the primary caregiver, fulfilling physical, emotional, and financial needs. Older adults often feel healthier and more secure when accompanied by family during social and daily activities.<sup>40</sup> Therefore, this wording adjustment clarifies the intention of the item, as most Indonesian older adults prefer company when attending social events, and the revised phrasing helps assess their fear of falling when alone in such situations.<sup>41</sup>

The internal consistency reliability of the instrument, as measured by *Cronbach's Alpha* (0.80), indicated good reliability, reflecting the tool's consistency and stability under similar conditions over time. This result aligns with previous FES-I studies. Reliable instruments are essential in research to ensure consistent and trustworthy measurements.<sup>16,19,26,42</sup> In

clinical practice, fear of falling is a key risk factor for actual falls among older adults. The short version of the FES-I can serve as an effective screening tool to assess fear of falling and inform fall prevention strategies, such as exercise programs (e.g., Tai Chi) and environmental modifications. However, this study's sample lacked diversity in terms of geographic and demographic backgrounds, limiting generalizability. Additionally, some terms in the instrument may not be fully understood by all Indonesian older adults across various regions and educational levels.

This study has several limitations. First, internal consistency was assessed using *Cronbach's Alpha* from cross-sectional data; future research should explore test-retest and inter-rater reliability using repeated measures. Second, the sample was limited to older adults in Surabaya City, which may affect generalizability. However, participants were recruited from various community settings to enhance external validity. Further studies are needed to confirm these findings in rural populations.

## CONCLUSIONS

The study findings indicate that the short version of the Indonesian FES questionnaire was valid and reliable. It was simple to administer, making it suitable for quick screening of older adults with a fear of falling during daily and social activities. The tool was also easy for community healthcare workers and trained health cadres to use. Validity scores were high (I-CVI: 0.857–1; S-CVI: 0.938), with a *Cronbach's Alpha* of 0.8 indicating good reliability.

## ETHICAL CLEARANCE

Ethical approval for this study was obtained from the Ethics Committee of STIKES Katolik St. Vincentius a Paulo (009/Stikes Vinc/KEPK/III/2024).

## CONFLICT OF INTEREST

The authors declare no conflicts of interest. All co-authors have reviewed and approved the manuscript, with no financial interests to disclose.

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## AUTHOR CONTRIBUTIONS

All authors contributed to the study's design and conceptualization. RKD developed the original draft, methodology, and writing. APMA assisted with data collection and formal analysis. RI and WH reviewed, edited the manuscript, and contributed to data interpretation. All authors read and approved the final version.

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