



Review Article

Toward An Improved Reporting of Fall Circumstances Among Community-Dwelling Older Adults: A Systematic Review and Reporting Guide for the 6 W's of Falls

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Abstract

While much attention has been given to fall risk factors and outcomes among community-dwelling older adults, the specific circumstances of falls have been comparatively underexplored. This systematic review aimed to characterize data collection and reporting practices of fall circumstances. A systematic search of Medline, Embase, Scopus, ClinicalTrials.gov, and Cochrane Library from database inception-2026 identified studies reporting on the prevalence of specific fall circumstances. From 9,872 articles screened, 75 studies met the inclusion criteria and underwent data extraction. Circumstances were not consistently reported across studies; among the 11 domains that were evaluated, reporting of each circumstance ranged from 7 to 95% of studies. Concerns for study quality emerged due to failure to clearly define falls, use of long time periods between experiencing and reporting details of a fall, and only reporting circumstances of falls for a subset of falls that were collected without justification. To address issues with heterogeneity in reporting of fall circumstances, we propose a standardized interview and reporting guide based on these findings using the 6 W's framework: Who?, Where?, What?, When?, Why?, and How?. Use of this guide can lead researchers to greater consistency in reporting fall circumstances, ultimately enhancing the quality of future research and better informing fall prevention strategies.

Keywords: Falls, Circumstances, Reporting, Community-dwelling, Older adults

Introduction

Falls are the leading cause of injury, disability, and injury-related mortality in the older adult population¹. The Centers for Disease Control and Prevention estimates that nearly 25% of community-dwelling older adults in the United States (US) experience one or more falls every year^{1,2}. A recent report calculated the combined annual healthcare costs associated with treating falls as \$50 billion in the US³. Older adults who experience a fall are more likely to experience subsequent falls⁴. As the number of older adults in the US is expected to double by 2050⁵, the cost and consequences of falls will continue to increase exponentially².

The authors have no conflict of interest.

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Edited by: Dawn Skelton

Accepted 10 July 2026

Extensive evidence exists for fall risk factors in older adults^{6,7}, such as gait and balance dysfunction, cognitive impairment, and fear of falling, and outcomes or consequences of falls, such as fractures, increased anxiety, and limited activity participation⁸⁻¹⁴. Much less is known about the circumstances of falls, such as the location of the fall, environmental hazards such as low lighting or clutter, and activity at the time of the fall^{8,15}. Fall risk is often contextually dependent, with certain environments and situations being inherently riskier for some individuals compared to others¹⁶. It is insufficient to know only where or when someone fell, as this approach excludes key information that may suggest underlying mechanisms of the fall or contribute to fall injuries^{15,17}. Most falls arise due to the complex interaction between several fall circumstances, such as carrying an object with both hands while climbing stairs in a poorly lit stairwell. Therefore, it is essential to understand the comprehensive circumstances surrounding older adult falls to inform tailored fall prevention guidelines and interventions.

One potential barrier to understanding the circumstances of older adult falls may be the lack of a universal interview and reporting guide for fall circumstances. Currently, there remains no standardized method for ascertaining the details about older adult falls^{18,19}. A lack of agreement regarding what constitutes a fall circumstance as well as what level of detail should be used when collecting and reporting this information may lead to a lack of reliable data that could facilitate identification of patterns among falls to guide fall prevention strategies¹⁹. This understanding is further limited by sub-optimal data collection and reporting methods, including retrospective reporting with long intervals since falls occurred, selective reporting of circumstances for only certain falls (i.e., the most injurious), and failing to provide a clear definition of a fall as an outcome^{18,19}. A comprehensive and standardized approach for examining fall circumstances is needed to support the translation of research findings to improving real-world fall prevention approaches. One existing framework that is of particular relevance to fall circumstances is the “6 W’s”. The 6 W’s is a common framework that consists of six one-word questions to guide the comprehensive collection of information about a situation: “Who?”, “Where?”, “What?”, “When?”, “Why?”, and “How?”²⁰. Taken together, these six questions could offer a comprehensive framework for evaluating fall circumstances.

To our knowledge, there has not been a comprehensive systematic review examining fall circumstances among community-dwelling older adults. Understanding how, where, when, and why older adults fall can inform targeted fall prevention research efforts. The original purpose of this systematic review was to determine the most prevalent circumstances of falls in community-dwelling older adults with the goal of guiding recommendations for fall prevention approaches. However, heterogeneity in the

data collection and reporting of fall circumstances across studies, discussed further below, precluded meaningful synthesis and evaluation of prevalence. Accordingly, we completed a review and synthesis of the data collection and reporting procedures for studies that report on the circumstances of falls among community-dwelling older adults. Based on the synthesis of included studies, we also provide a recommended interview and reporting guide to capture information on the circumstances of falls among community-dwelling older adults. The purpose of this systematic review and interview/reporting guide is to characterize current collection and reporting procedures of fall circumstances and provide a standardized framework for researchers examining fall circumstances in future studies based on the 6 W’s framework.

Methods

The protocol for this review was registered with PROSPERO (CRD42023448326) prior to beginning full-text article screening.

Eligibility criteria

In this review, circumstances of falls were defined as any event immediately preceding the fall and any characteristic of the fall event. In advance of data extraction, the following circumstances were identified based on existing clinical knowledge: location, preceding activity, reason or cause, time of day, direction, height, and surface of the fall. All study-provided fall definitions were included, as well as falls with any outcome (e.g., injury, fatality). Based on the purpose of the review, the following inclusion criteria were utilized: (1) original research published in peer-reviewed journals; (2) Levels I-III evidence based on guidelines for evidence-based medicine²¹, described further in data extraction; and (3) reported results of community-dwelling older adults aged 65+ (mean age or stratified by age range). Articles were excluded if they exclusively reported on circumstances of falls for participants with musculoskeletal or neurological diagnoses associated with elevated fall risk, focused on older adults not residing in the community (e.g., hospitalized, residential care facility), or reported only risk factors and/or outcomes of falls rather than circumstances of fall events.

Study selection

The medical librarians (EG and AH) searched published literature for records pertaining to the circumstances of falls in community-dwelling older adults. The librarian (EG) created search strategies using a combination of keywords and controlled vocabulary in Ovid Medline 1946- , Embase.com 1947-, Scopus 1823-, Cochrane Database of Systematic Reviews, and clinicaltrials.gov 1997. Key search terms included “circumstances”, “falls”, “community-dwelling”, and “older adults”. All database searches were originally conducted from February 24-27,

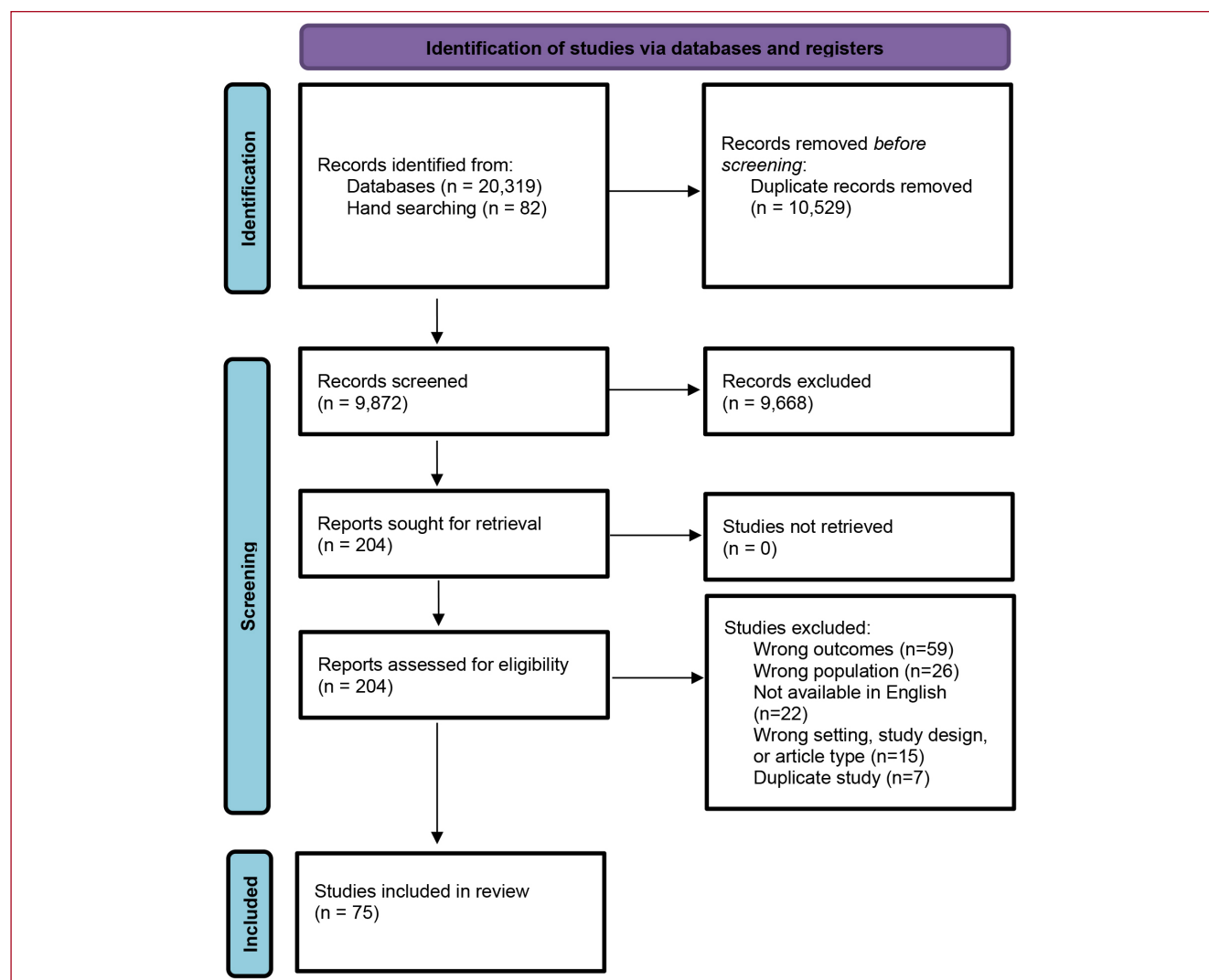


Figure 1. PRISMA Flow Diagram of Study Identification. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram of study screening, inclusion/exclusion, and extraction. A total of 9,872 unique records were screened for titles and abstracts matching the review criteria. 204 articles underwent full-text screening, and 129 were excluded for reasons including focusing on the wrong outcomes, wrong population, not being available in English language, wrong setting, study design, or article type, or being a duplicate study of another paper that was screened. A total of 75 articles met inclusion criteria and were evaluated for study quality and data extraction.

2023. The librarian (AH) conducted an updated search of the literature on April 4, 2026 to capture articles published from 2023-2026. Fully reproducible search strategies for each database are listed in Supplementary Tables 1-5.

A total of 20,401 results were found between database searches and hand searching included articles. 10,529 duplicate records were deleted, resulting in a total of 9,872 unique citations included in the project library. Articles were uploaded to Covidence²², a web-based software

platform, for screening and management. 9,668 records were excluded during title and abstract screening, resulting in 204 studies undergoing full-text review. In total, 75 articles satisfied inclusion criteria and were included in this review. Figure 1 provides the study flow diagram based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

All titles and abstracts were screened by two independent reviewers (AK, SP, SL, MS, RB, CP, KA, KB,

LC, EC, and EF). A third independent reviewer screened titles and abstracts to resolve any discrepancies between the initial two reviewers. Full-text articles were retrieved and screened by two independent reviewers (AK, MS, SL, RB, SP, CP, SR). A third reviewer resolved discrepancies between the initial reviewers, with majority consensus guiding inclusion versus exclusion. After all full-text articles were screened, included articles were hand-searched to identify additional relevant citations which did not appear in our original search. Any additional articles identified through hand searching underwent the same screening and data extraction processes as articles identified through our original search strategies.

Data Extraction

Full-text articles were assessed for data reporting circumstances of falls. A custom form was built in Covidence to guide and standardize data extraction. Articles reporting data for at least one fall circumstance category (location, preceding activity, reason or cause, time of day, direction, height, and surface of the fall) underwent full data extraction. One reviewer completed primary extraction (AK, SR, MS, RB), while a second reviewer checked all extracted data for accuracy and completeness; any instances of disagreement between the two reviewers were resolved via discussion until consensus was reached. The 6 W's approach was applied to guide data extraction, and extracted data included the following circumstances of fall events: location, reason, activity at the time, time of day, direction, height, surface, and an "other" category to individually document any additional categories of circumstances that were included beyond this list. Other data elements extracted included select participant demographic information (age and gender), total number of reported falls, method(s) of fall ascertainment, and the duration and frequency of fall monitoring. In three instances where multiple articles reported results from the same study, data were first extracted from each individual article²³⁻³¹. Extracted data were reviewed, and the article that reported the most complete circumstances of falls from each study was retained^{26,29,30}.

Level of evidence of each article was assessed based on guidelines for evidence-based medicine²¹: Level I articles included randomized controlled trials (RCTs), Level II articles included multi-group non-randomized studies (e.g., case control studies), Level III studies included single-group non-randomized studies (e.g., cohort studies), Level IV studies included single-subject designs and case series, and Level V studies included expert opinion and case reports. Articles of Levels I-III evidence were eligible for inclusion in this review.

A customized assessment for risk of bias and study quality was adapted based on two existing tools: the NIH Quality Assessment of Observational and Cross-Sectional Studies³² and the Cochrane Risk of Bias in Non-Randomized

Studies – of Exposures (ROBINS-E) tool³³. This assessment was modified to include information about fall monitoring and collection methods which have been shown to introduce bias in reported fall events, such as the definition used to classify fall events, time intervals between fall reporting, methods of collecting information about the fall, and reporting of fall data available from the sample^{34,35}. A total of 11 domains were evaluated: study objective ("Objective"), population ("Population"), inclusion/exclusion ("Inclusion"), definition of a fall ("Falls"), fall ascertainment method ("Ascertainment"), reporting interval ("Interval"), reporting of circumstances ("Circumstance"), length of follow-up ("Follow-up"), comparison of participants who did versus did not complete the study ("Baseline"), availability of complete outcome data ("Data"), and reporting for all falls versus a selective sample ("Reporting"). Guiding questions for each domain are shown in Figure 3. Each guiding question was evaluated by two independent reviewers for each included study and rated as "Yes", "No", or "Unclear". Any discrepancies were resolved through discussion until consensus was reached.

Development of Fall Circumstances Interview and Reporting Guide

An interview and reporting guide was developed based on the findings from this review. Due to the high variability among reporting of fall circumstances across the different studies, data were tabulated to examine the frequency of categories used to report various fall circumstances. An initial list of circumstances and categories used for reporting was compiled (Supplementary Table 8). Studies were weighed equally to most comprehensively capture the full range of categories used to report fall circumstances. Specific categories for data collection of each fall circumstance were recommended based on synthesis of frequently reported categories across included studies. Due to differences in categorization of the same factor across studies (e.g., "dizziness" categorized as a fall reason versus a warning sign or physical symptom of the fall), some items were recategorized based on which was reported at a higher frequency or what made the most sense in terms of grouping. Categories which were less informative (for example, "carrying out dual tasks" or "lavatory visit") were dropped in favor of categories which provided more discrete information, such as the specific information about what an individual was doing (e.g., "climbing stairs" or "transfer from sit to stand").

Results

Seventy-five studies from 29 countries met inclusion criteria and are included in this review. Studies were published between the years 1985 to 2026 and included cohort studies (n=40; 53%), cross-sectional studies (n=32; 43%), randomized controlled trials (n=2; 3%), and a non-randomized pilot study (n=1; 1%). A total of

142,611 participants were included across all studies (median sample size = 419). 66 studies reported gender for their participants; among 125,532 participants, 59% were female. Reported ages ranged from 60 to 103. Among the 46 studies that reported an average age of the sample, the median average age was 75.2 years. A total of 72 studies described 71,099 total falls; three studies did not report the total number of falls. Characteristics of included studies are presented in Supplementary Table 6.

Fall Monitoring

Table 1 displays the types, frequencies, and methods of fall monitoring used by included studies. Less than half of studies (47%) used prospective fall monitoring, while 52% used retrospective recall of falls. One study utilized a combined approach of retrospective recall of falls in the 12 months preceding study enrollment and prospective monitoring for the 12 weeks of study enrollment.

The frequency of fall monitoring was coded into one of four categories: 1) monthly or more frequent, 2) less than annually but more than monthly, 3) annually or less frequent, or 4) event-contingent reporting. Annually or less frequently was utilized in 27 (36%) studies, indicating participants were asked to recall the details of falls that occurred at least within the last year, up to 9 years. Monthly or more frequent monitoring (up to daily) was utilized by 23 (31%) studies. Fifteen studies (20%) utilized frequencies ranging from every 6 weeks to 6-month intervals. The 10 (13%) studies utilizing event-contingent reporting included as soon as a fall occurred, upon admission or discharge, and upon record of a fatal fall.

Fall monitoring duration was coded into one of five categories: 1) 12 months, 2) greater than 12 months, 3) less than 12 months, 4) variable, or 5) other. The most frequent duration was 12 months, followed by less than 12 months and greater than 12 months. Seven studies (9%) utilized variable monitoring durations for participants ranging from 1 month to 9 years in total. A final 6 studies (8%) utilized other approaches including surveying once upon hospital admission or discharge, a two-pronged approach of 12 months before the study began and 12 weeks as the study progressed, or upon reviewing death certificates.

Methods of fall monitoring included interviews, fall calendars or journals, self-report questionnaires, medical records or notes, or hybrid approaches (including two or more of these categories). An interview was the most common method of collecting details of falls. The gold standard method, a hybrid approach to fall monitoring, typically including an interview and the use of a calendar or journal, was implemented by approximately one-third of included studies. Less commonly used approaches included a fall calendar or journal alone, self-report questionnaires, or medical records or notes. One study did not specify the method used for fall monitoring.

	N (%)
Type of fall monitoring	
Prospective	35 (47)
Retrospective	39 (52)
Other	1 (1)
Frequency of fall monitoring	
Daily to monthly	23 (31)
Monthly to annually	15 (20)
Annually or longer	27 (36)
Event-contingent	10 (13)
Duration of fall monitoring	
Less than 12 months	12 (16)
12 months	40 (54)
Greater than 12 months	10 (13)
Variable	7 (9)
Other	6 (8)
Method of fall monitoring	
Interview	34 (46)
Fall calendar or journal	4 (5)
Self-report questionnaire	10 (13)
Medical record or notes	3 (4)
Hybrid approach	23 (31)
Not specified	1 (1)

Table 1. Characteristics of fall monitoring across included studies.

Circumstances of Falls

Reported fall circumstances were grouped into 8 discrete categories: location, reason, activity, time of day, direction, height, surface, and other. Regarding comprehensiveness of reporting, 9 articles (12%) reported on a single category of circumstance³⁶⁻⁴⁴, 24 (32%) reported two categories^{29,45-67}, 19 (25%) reported three categories^{26,68-85}, 14 (19%) reported four categories^{15,30,86-97}, 4 (5%) reported five categories⁹⁸⁻¹⁰¹, 4 (5%) reported six categories¹⁰²⁻¹⁰⁵, and 1 (1%) reported seven categories¹⁰⁶. Figure 2 shows the frequency of reporting for each fall circumstance category.

Location

Location was the most frequently reported fall circumstance; 71 (95%) studies reported fall location. Studies used broader categorization of fall location, such as “indoor” versus “outdoor” or “at home” versus “away from home”. Of these studies, only 26 (35%) reported specific

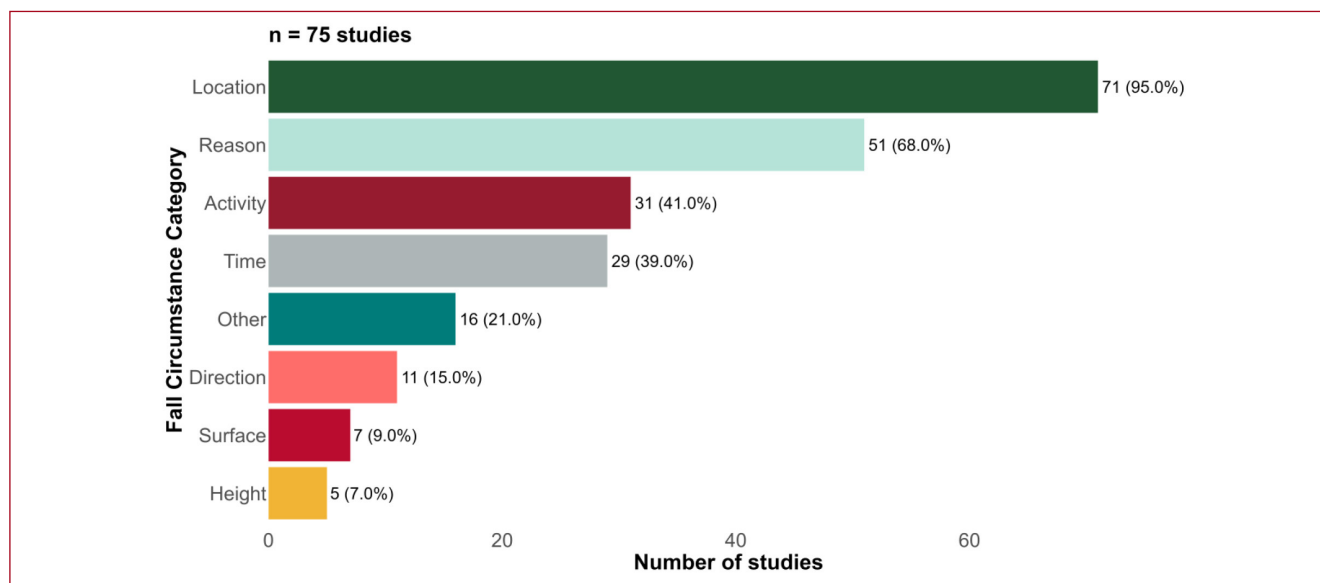


Figure 2. Frequency of Reporting for Fall Circumstance Categories. Reported fall circumstances were classified into 8 discrete categories: location, reason, activity, time, direction, surface, height, or “other”. Location was the most reported circumstance by 95% of included studies, followed by reason reported by 68% of studies. Fall height was the least reported circumstance by 7% of studies.

locations, with 14 (19%) reporting specific locations only for indoors, 2 (3%) reporting only for outdoors, and 10 (13%) reporting both indoor and outdoor specific locations. No articles reported on the same categorization of specific locations.

Reason

Fall reason was reported by 51 (68%) of studies. Categorization of fall reason included general groupings such as “intrinsic” versus “extrinsic” (n=3 studies) as well as more specific reasons (n=43 studies) such loss of balance, tripping, slipping, legs gave out, drop attack, dizziness, cognitive impairment, muscle weakness, inattentiveness, or distracted. No articles reported on the same categorization of specific reasons, though common ones were tripping/stumbling (n=38), slipping (n=35), loss of balance (n=20), dizziness, giddiness, or vertigo (n=30), and legs giving out or lower extremity weakness (n=20).

Activity

Activity at the time of the fall was reported by 31 (41%) articles. No articles reported the same categorization of activities; “walking” was the most frequently reported activity by 27 of these studies (87%) and climbing up or down stairs/steps was reported by 21 (67%). There was considerable heterogeneity among other reported activities, though turning, reaching, bending, transition movement (e.g., sit to stand, stand to sit), carrying an

object, and exercise or vigorous activities were each reported by multiple articles.

Time of day

Time of day was reported by 29 (39%) of studies. 13 studies reported only time categories, such as “morning”, “afternoon”, and “night”, while another 15 studies reported specific time ranges by the hour. 7 of these studies (24%) reported specific time ranges and grouped the ranges into categories, but no two studies used the same categorization for this approach. The most frequently used categorization was used by 6 (21%) studies: morning, afternoon, evening, and night/dawn.

Direction

11 (15%) studies reported the direction of the fall. Seven of these studies (63%) reported “forward”, “backward”, “sideways” and “straight down”. The remaining four studies did not include a “straight down” category.

Surface

Fall surface was reported by 7 (9%) studies. No articles reported on the same categorization of fall surfaces. Two of these studies (29%) categorized fall surface as whether the older adult fell onto a hard surface (yes/no). Three of these studies (43%) categorized the specific type or conditions of the flooring or ground surface, including smooth, slippery, dry, wood, carpet, tile, snow, and sloping.

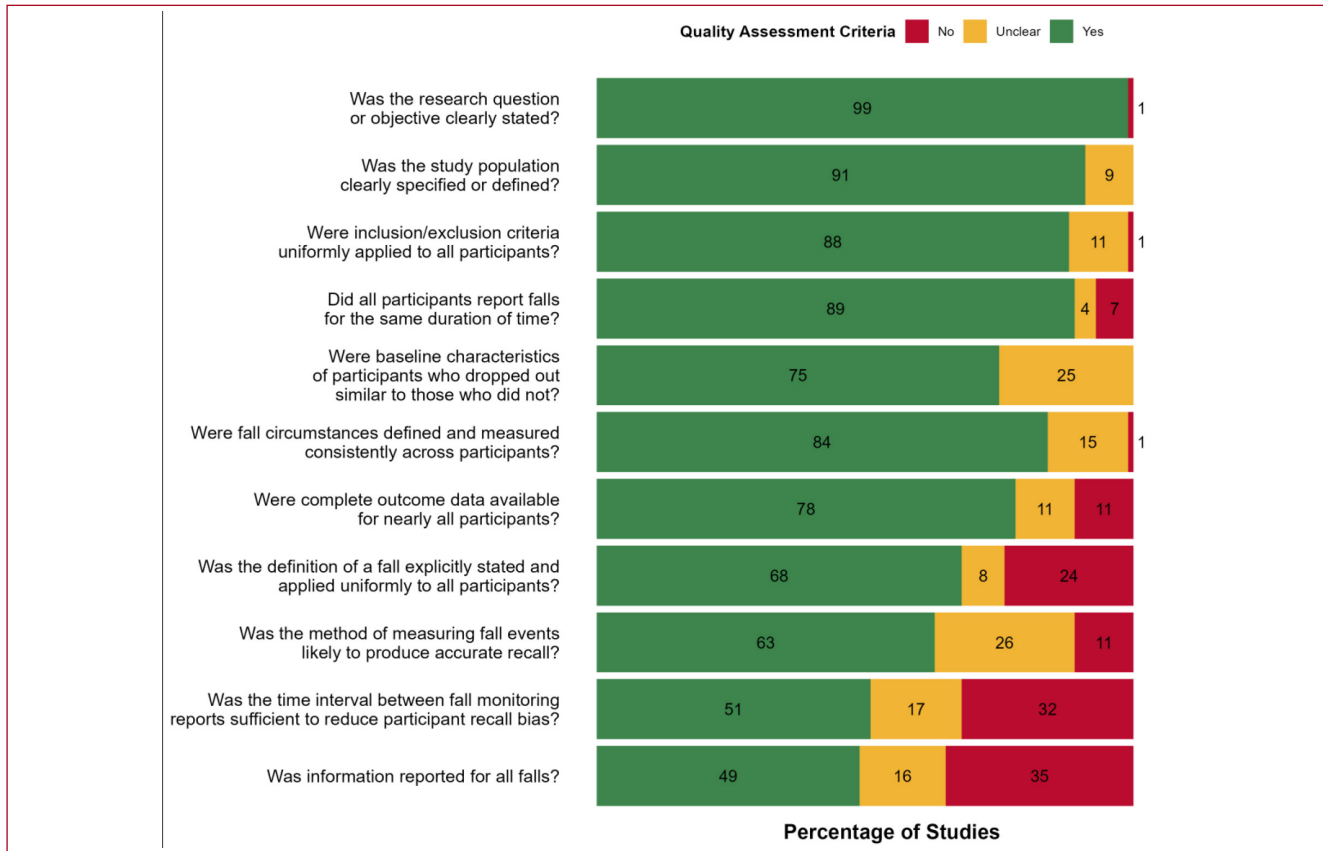


Figure 3. Study Quality Assessment Grading. Quality assessment was evaluated over 11 domains, with guiding questions included on the left-hand column. The right-hand column reflects the percentage of studies rated as “yes” (green), “unclear” (yellow), or “no” (red). Numbers within each bar reflect the percentage of studies.

The remaining two studies reported on the type of object the individual fell onto, including the floor or ground, hard surface, soft surface, or against a wall or railing.

Height

Fall height was reported by 5 (7%) studies. Three studies evaluated the fall height relative to standing height (at, above, or below). One study categorized as a fall onto the same level or from a higher to lower level, while another study classified height as “from sitting”, “from standing”, or “stairs”.

Other

Circumstances reported by fewer than 5% of included articles were classified as “other circumstances”. A total of 16 (21%) studies reported one or more “other” circumstance. This category includes lighting at the fall site, type of footwear, pre-fall warning signs or physical symptoms, presence of environmental hazards, or season/weather conditions (e.g., winter, icy, rainy).

Quality assessment and risk of bias

Quality and risk of bias of each included article were evaluated over eleven domains: (1) clearly stating the research objective, (2) clearly defining the study population, (3) pre-specifying and uniformly applying inclusion/exclusion criteria, (4) explicitly providing the definition of falls used, (5) likelihood of fall ascertainment method in facilitating accurate reporting, (6) likelihood of interval between experiencing and reporting fall to affect recall accuracy, (7) defining and uniformly measuring fall circumstances, (8) following participants for the same length of time, (9) similarity of participants who did versus did not complete a study, (10) completeness of outcome data for all participants, and (11) reporting circumstances of all falls included in the study.

Most studies ($\geq 90\%$) clearly stated their objectives, clearly defined the study population, and followed participants for the same duration of time for fall monitoring. Concern regarding study quality was noted particularly

in providing no or unclear definition of falls (32% of studies), utilizing long time periods between experiencing and reporting details of a fall which may impact accuracy of recall (49% of studies), and provided unclear or not justification for only reporting circumstances of falls for a subset of falls that were collected (51% of studies).

Figure 3 displays quality assessment signaling questions and grading across all included studies. A complete assessment of study quality is shown in Supplementary Table 7.

Discussion

This comprehensive systematic review assessed the various reporting approaches for the circumstances of falls among older adults and developed guidance for collecting and reporting these data. Information regarding circumstances of falls was extracted from 75 studies with Levels I-III evidence. Inconsistencies were noted among which circumstances were reported, the level of detail used to categorize and report circumstances, and whether circumstances were reported for all or only a select subset of all falls. The majority of studies reported location (95%) and reason (68%), while fewer reported direction (15%), surface (9%), and height (7%).

Despite existing guidance for evaluating falls risk and determining fall outcomes, there are no uniform guidelines for evaluating fall circumstances. Due to the considerable heterogeneity among reported fall circumstances, synthesis of data across studies to draw conclusions about the prevalence of fall circumstances was significantly limited. To improve the reporting of fall circumstances and provide a framework to support future research, we propose a comprehensive interview and reporting guide for fall circumstances based on these findings (see Table 2). This recommendation is based on a comprehensive examination of reported fall circumstance categories across included studies (see Supplementary Table 8). Standardized methods for interviewing and reporting on fall circumstances will facilitate comparison of findings across studies and are important for guiding fall prevention approaches.

Our interview and reporting guide is intended to inform best practices for collecting information about fall circumstances. We have classified fall circumstances into groups using a simple acronym, the 6 W's, for ease of administration and recommend evaluating the following fall circumstances: Where? (fall location, familiarity, and lighting conditions), What? (activity at the time of the fall), When? (time of day), Why? (fall reason, attentional status, floor/ground conditions, and footwear), and How? (direction, height, and surface). While "Who?" refers to the individual who experienced the fall and is not considered a fall circumstance, this information is nonetheless important to consider in the context of a fall as personal abilities and factors influence the amount of risk that contextual

factors present to an individual. We recommend this guide be accompanied by a multifactorial falls risk assessment, as recommended by the World Falls Guidelines^{19,107}, and evaluation of fall outcomes, such as injury severity and healthcare utilization^{108,109}. There was no consensus across studies on whether or for which circumstances options of "do not remember" or "not sure" should be included. While all attempts should be made to ascertain a complete fall report, a partial report can still provide important information about the fall. Therefore, we recommend including a "Does not recall" option for each circumstance and reporting the frequency of events in which details were not recalled.

The findings of this review should be interpreted considering limitations in the included studies. Participants tended to be older than 70 (mean ages 73-81 years), so studies examining circumstances in the youngest older adults were lacking which may limit generalizability of the results from this review. Quality assessment revealed several areas of concern, including failure to provide a clear definition of falls (32%), utilizing long periods of recall for information about falls (49%), and reporting fall circumstances for only a subset of falls, such as the most recent or most injurious, without a clear justification for exclusion of other events (51%). It is possible that these factors could have led to details of falls being misremembered or excluded, and thus the list of fall circumstances may not be exhaustive. The 68% of studies that provided the definition used to characterize falls utilized variable definitions for what constituted falls. This variability may impact reported fall circumstances, such as whether falls were only counted to the ground, a lower level, included mechanical or external forces, or near falls. We recommend that future studies utilize the standard definition of a fall, as defined by the World Falls Guidelines: "A fall is an unexpected event in which an individual comes to rest on the ground, floor, or lower level"¹⁰⁷. Reporting on only a subset of all falls might bias the synthesized circumstances toward more severe or recent events; therefore, we also recommend that the circumstances for all falls be included when reporting falls in future studies. Additionally, over half of the included studies asked participants to recall details of falls retrospectively, with approximately 70% of these studies asking participants to recall details of falls that occurred 12 months ago or longer (up to 9 years ago). These areas of concern are prevalent across the falls literature, particularly as individuals may be more likely to recall the details of negative or salient events (e.g., injurious falls)¹¹⁰. To facilitate accurate recall of fall circumstances in future studies, we recommend that our interview and reporting guide be utilized with the current gold standard approach for fall monitoring, including prospective monitoring with standardized interviews, calendar journals, and monthly or more frequent surveillance¹⁰⁷.

This review has several strengths. The search strategy

Table 2. The 6 W's Fall Circumstances Interview and Reporting Guide.

A fall is defined as an unexpected event in which an individual comes to rest on the ground, floor, or lower level.	
It is recommended to report the circumstances of <i>all</i> falls whenever possible.	
Fall Circumstances and Interview Questions	Reporting Categories
Where?	
Location Where did you fall?	- Indoors, at home - Bathroom - Bedroom - Dining room - Entryway or threshold - Hallway - Living room or den - Kitchen - Steps or stairwell - Utility or storage area - Garage - Outdoors, at home - Yard - Exterior pathway - Garden - Porch, deck, or terrace - Entryway or threshold - Steps or stairwell - Indoors, away from home - Someone else's home - Public shopping center - Church or place of worship - Restaurant or bar - Steps or stairwell - Outdoors, away from home - Sidewalk - Parking lot - Street - Curb - Leisure or recreational space - Park, nature area, or forest - Steps or stairwell - Does not recall
Familiarity Were you familiar with the location in which you fell?	- Familiar - Unfamiliar - Does not recall
Lighting conditions How was the lighting when you fell?	- Sufficient lighting - Dark or not enough lighting - Too much lighting or excessive brightness - Does not recall
Flooring/ground conditions What were the conditions of the floor or ground where you fell?	- Smooth - Slippery - Sloping or inclined - Uneven or irregular - Rough - Does not recall
What?	
Activity at the time of the fall What were you doing when you fell?	- Walking - Exercise, running, vigorous activity - Bending over

	- Turning around or changing directions - Reaching - Climbing up or down (stairs, curb, incline) - Transferring onto/out of a chair, bed, toilet, vehicle - Carrying an object - Static (standing still, sitting still, lying down) - Does not recall
When?	
Time of day At what time did you fall?	- Morning (5:00 am to 10:59 am) - Afternoon (11:00 am to 3:59 pm) - Evening (4:00 pm to 8:59 pm) - Night (9:00 pm to 4:59 am) - Does not recall
Why?	
Reason What was the reason for the fall?	- Intrinsic - Loss of balance, bodily imbalance - Legs or hips gave out, lower limb weakness - Dizziness, vertigo - Loss of consciousness - Extrinsic - Trip, caught foot, tangled feet - Slipped - Does not recall
Attentional status Was an attentional issue present?	- Distracted or looking elsewhere - Divided attention - Carelessness, lack of caution - No attentional issue - Does not recall
Footwear What type of footwear were you wearing when you fell?	- Barefoot - Sock - Slippers - Closed-toed shoes - Open-toed shoes - Open-back shoes - Does not recall
How?	
Direction In which direction did you fall?	- Forward - Sideways - Backward - Straight down - Does not recall
Height From what height did you fall?	- Standing height - Above standing height - Below standing height - Does not recall
Surface Onto what kind of surface did you fall?	- Hard surface - Soft surface - Does not recall

was developed in collaboration with an experienced medical librarian to capture relevant articles across five databases. We did not impose a publication date restriction which allowed us to capture a comprehensive range of fall circumstances reporting over time. To minimize bias, multiple independent reviewers were involved for all steps of screening, data extraction, and quality assessment. Our quality assessment utilized signaling questions adapted from two existing quality assessment instruments, allowing us to thoroughly examine the characteristics of fall reporting across included studies.

Our review is not without limitations. We restricted included studies to those published in English due to the language skills of our team, potentially excluding relevant non-English articles evaluating fall circumstances. Our review only focused on community-dwelling older adults and excluded articles that focused on specific patient or diagnostic populations. It is likely that additional fall circumstances beyond what was reported in these studies may be relevant to specific groups, such as people with Parkinson's disease or dementia. Lastly, as we were unable to accomplish our original goal of summarizing findings across studies to meaningfully determine the prevalence of fall circumstances in older adults, we recommend that future work includes the use of standardized fall interviews to collect consistent information and make comparing results between studies easier. We suggest that a future review attempt to re-examine the prevalence of fall circumstances among community-dwelling older adults after this new interview and reporting guide has been implemented to standardize data collection across falls research. Knowledge of where, when, why, and how older adults fall can inform more efficient fall prevention interventions.

Conclusion

This review provides clinicians and researchers with the most up-to-date evidence regarding circumstances of falls in community-dwelling older adults. This evidence supports the need for more detailed evaluation and assessment of circumstances surrounding falls to gain a more robust understanding of these events in community-dwelling older adults. Knowledge of the 6 W's of fall circumstances among community-dwelling older adults can inform targeted service delivery for preventing falls in this population, such as tailoring home modifications based on common fall locations and providing safety adaptations for activities that commonly lead to falls. Future work should aim to examine circumstances of falls in studies with strong evidence to support the development of fall prevention interventions.

Authors' Contributions

Abigail L. Kehrer-Dunlap: *Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Project Administration, Visualization, Writing – original*

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Funding

This project was supported by the National Center for Advancing Translational Sciences of the National Institutes of Health Award Number TL1TR002344 and the National Institutes of Health Award Number 5R01AG057680-05.

Acknowledgments

We thank Carrie Stoll, Graham Colditz, and Susan Stark for their feedback in developing the initial search strategy and data extraction procedures for this review. We thank Emily Gallaher for developing and executing the original database searches and Angela Hardi for executing the updated database searches. We thank Saffron Patel, Katherine Aylmer, Kathleen Best, Lisa Carson, and Emily Curtis for their assistance on title and abstract screening.

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Term	Search strategy
Older adults	Exp Aged, 80 and over/ OR exp aged/ OR exp geriatrics/ OR exp aging/ OR exp frail elderly/ OR aged.ti,ab. OR geriatric*.ti,ab. OR elder*.ti,ab. OR old.ti,ab. OR ageing.ti,ab. OR aging.ti,ab. OR "aged adult*".ti,ab. OR "older adult*".ti,ab. OR "Oldest Old".ti,ab. OR centenarian*.ti,ab. OR nonagenarian*.ti,ab. OR octogenarian*.ti,ab. OR "Biological Aging".ti,ab. OR "Frail Elder*".ti,ab. OR "Functionally Impaired Elderly".ti,ab. OR "Functionally Impaired Elderly".ti,ab. OR "Frail Older Adult*".ti,ab. OR "senior citizen*".ti,ab. OR senior*.ti,ab.
AND	
Fall circumstances	Exp Accidental Falls/ OR "cause of fall*".ti,ab. OR circumstance*.ti,ab. OR fall*.ti,ab. OR falling.ti,ab. OR "slip and fall".ti,ab. OR "fall and slip".ti,ab. OR trip*.ti,ab. OR tripping.ti,ab. OR "trip and fall".ti,ab. OR "fall down".ti,ab. OR "fall* down".ti,ab. OR drop*.ti,ab. OR "drop* down".ti,ab. OR "fall over".ti,ab. OR stumble*.ti,ab. OR collapses*.ti,ab.
AND	
Community-dwelling	Exp Home Environment/ OR "community dwelling".ti,ab. OR "community living".ti,ab. OR "Home Environment*".ti,ab. OR "Living Alone".ti,ab. OR "aging in place".ti,ab. OR "ageing in place".ti,ab. OR "age in place".ti,ab. OR "living at home".ti,ab. OR "live at home".ti,ab. OR "own home".ti,ab.
<i>Date of Initial Search: 2/24/2023. Date of Updated Search: 4/6/2026. Applied Database Supplied Limits: n/a. Number of Results in Initial Search: 5470. Number of Results in Updated Search: 1537; Results limited to 2023-present.</i>	

Supplementary Table 1. Search strategy in Ovid Medline.

Term	Search strategy
Older adults	'aged'/exp OR 'frail elderly'/exp OR 'very elderly'/exp OR 'geriatrics'/exp OR 'aged':ti,ab OR 'aged people':ti,ab OR 'aged person':ti,ab OR 'elderly':ti,ab OR 'elderly people':ti,ab OR 'elderly person':ti,ab OR 'centenarian':ti,ab OR 'centenarians':ti,ab OR 'nonagenarian':ti,ab OR 'nonagenarians':ti,ab OR 'octogenarian':ti,ab OR 'octogenarians':ti,ab OR 'very elderly':ti,ab OR 'very old':ti,ab OR 'geriatrics':ti,ab OR 'frail elderly':ti,ab OR senior*:ti,ab OR 'senior citizen':ti,ab
AND	
Fall circumstances	'falling'/exp OR 'collapse'/exp OR 'tripping'/exp OR 'accidental falls':ti,ab OR 'fall':ti,ab OR 'falling':ti,ab OR 'fall over':ti,ab OR 'cause* of fall*':ti,ab OR circumstance*:ti,ab OR 'slip and fall':ti,ab OR 'fall and slip':ti,ab OR trip*:ti,ab OR stumble*:ti,ab OR 'collaps':ti,ab OR 'collapse*':ti,ab OR 'fall down':ti,ab OR 'drop down':ti,ab OR 'fell':ti,ab
AND	
Community-dwelling	'home environment'/exp OR 'independent living'/exp OR 'community dwelling person'/exp OR 'home environment*':ti,ab OR 'community dwelling people':ti,ab OR 'community dwelling person':ti,ab OR 'community dwelling persons':ti,ab OR 'aging in place':ti,ab OR 'living at home':ti,ab OR 'live at home':ti,ab OR 'own home':ti,ab OR 'age in place':ti,ab OR 'ageing in place':ti,ab
<i>Date of Initial Search: 2/24/2023. Date of Updated Search: 4/6/2026. Applied Database Supplied Limits: n/a. Number of Results in Initial Search: 2593. Number of Results in Updated Search: 957; Results limited to 2023-2026.</i>	

Supplementary Table 2. Search strategy in Embase.

Term	Search strategy
Older adults	"older adult"
AND	
Fall circumstances	"accidental fall"
AND	
Community-dwelling	"community dwelling"
Date of Initial Search: 2/27/2023. Date of Updated Search: 4/6/2026. Number of Results in Initial Search: 52. Number of Results in Updated Search: 20; limited results to studies "with results".	

Supplementary Table 3. Search strategy in ClinicalTrials.gov.

Term	Search strategy
Older adults	TITLE-ABS-KEY (aged) OR TITLE-ABS-KEY (geriatric*) OR TITLE-ABS-KEY (elder*) OR TITLE-ABS-KEY (old) OR TITLE-ABS-KEY (ageing) OR TITLE-ABS-KEY (aging) OR TITLE-ABS-KEY ("aged adult*") OR TITLE-ABS-KEY ("older adult*") OR TITLE-ABS-KEY ("Oldest Old") OR TITLE-ABS-KEY (centenarian*) OR TITLE-ABS-KEY (nonagenarian*) OR TITLE-ABS-KEY (octogenarian*) OR TITLE-ABS-KEY ("Biological Aging") OR TITLE-ABS-KEY ("Frail Elder*") OR TITLE-ABS-KEY ("Functionally Impaired Elderly") OR TITLE-ABS-KEY ("Frail Older Adult*") OR TITLE-ABS-KEY (senior*) OR TITLE-ABS-KEY ("senior citizen*")
AND	
Fall circumstances	TITLE-ABS-KEY ("cause of fall*") OR TITLE-ABS-KEY (circumstance*) OR TITLE-ABS-KEY (fall*) OR TITLE-ABS-KEY (falling) OR TITLE-ABS-KEY ("slip and fall") OR TITLE-ABS-KEY ("fall and slip") OR TITLE-ABS-KEY (trip*) OR TITLE-ABS-KEY (tripping) OR TITLE-ABS-KEY ("trip and fall") OR TITLE-ABS-KEY ("fall down") OR TITLE-ABS-KEY ("fall* down") OR TITLE-ABS-KEY (drop*) OR TITLE-ABS-KEY ("drop* down") OR TITLE-ABS-KEY ("fall over") OR TITLE-ABS-KEY (stumble*) OR TITLE-ABS-KEY (collaps*)
AND	
Community-dwelling	TITLE-ABS-KEY ("community dwelling") OR TITLE-ABS-KEY ("community living") OR TITLE-ABS-KEY ("Home Environment*") OR TITLE-ABS-KEY ("Living Alone") OR TITLE-ABS-KEY ("aging in place") OR TITLE-ABS-KEY ("ageing in place") OR TITLE-ABS-KEY ("age in place") OR TITLE-ABS-KEY ("living at home") OR TITLE-ABS-KEY ("live at home") OR TITLE-ABS-KEY ("own home")
Date of Initial Search: 2/27/2023. Date of Updated Search: 4/6/2026. Applied Database Supplied Limits: n/a. Number of Results in Initial Search: 7525. Number of Results in Updated Search: 2133; Results limited to 2023-2026.	

Supplementary Table 4. Search strategy in Scopus.

Term	Search strategy
Older adults	[mh aged] OR [mh geriatrics] OR [mh aging] OR [mh "frail elderly"] OR aged:ti,ab OR geriatric*:ti,ab OR elder*:ti,ab OR old:ti,ab OR ageing:ti,ab OR aging:ti,ab OR "aged adult*":ti,ab OR "older adult*":ti,ab OR "Oldest Old":ti,ab OR centenarian*:ti,ab OR nonagenarian*:ti,ab OR octogenarian*:ti,ab OR "Biological Aging":ti,ab OR "Frail Elder*":ti,ab OR "Functionally Impaired Elderly":ti,ab OR "Functionally Impaired Elderly":ti,ab OR "Frail Older Adult*":ti,ab OR "senior citizen*":ti,ab OR senior*:ti,ab
AND	
Fall circumstances	[mh "Accidental Falls"] OR "cause of fall*":ti,ab OR circumstance*:ti,ab OR fall*:ti,ab OR falling:ti,ab OR "slip and fall":ti,ab OR "fall and slip":ti,ab OR trip*:ti,ab OR tripping:ti,ab OR "trip and fall":ti,ab OR "fall down":ti,ab OR "fall* down":ti,ab OR drop*:ti,ab OR "drop* down":ti,ab OR "fall over":ti,ab OR stumble*:ti,ab OR collapse*:ti,ab
AND	
Community-dwelling	[mh "Home Environment"] OR "community dwelling":ti,ab OR "community living":ti,ab OR "Home Environment*":ti,ab OR "Living Alone":ti,ab OR "aging in place":ti,ab OR "ageing in place":ti,ab OR "age in place":ti,ab OR "living at home":ti,ab OR "live at home":ti,ab OR "own home":ti,ab
Date of Initial Search: 2/27/2023. Date of Updated Search: 4/6/2026. Number of Cochrane Reviews in Initial Search: 24. Number of Cochrane Reviews in Updated Search: 3; Results limited 2023-2026.	

Supplementary Table 5. Search strategy in Cochrane Database of Systematic Reviews.

Supplementary Table 6. Characteristics of Included Studies.

Study	Publication year	Participant country of residence	Study design	Participant inclusion criteria	Sample size (n)	Fall monitoring: prospective or retrospective	Fall monitoring duration & frequency	Fall circumstances reported
Al-Najjar et al. ⁸⁶	2026	Jordan	Cross-sectional	• Age ≥ 60 • Attended outpatient clinics at the University of Jordan	406	Retrospective	<u>Duration:</u> 12 months <u>Frequency:</u> Annually	• Location • Time of day • Reason • Direction
Alves et al. ⁴⁵	2025	Portugal	Cross-sectional	• Age ≥ 65 • Presented for hospital emergency episodes in 2023	35,312	Retrospective	<u>Duration:</u> Upon presenting to the hospital <u>Frequency:</u> Once	• Location • Time of day
Bath & Morgan ⁴⁶	1999	United Kingdom	Cohort	• Age ≥ 65 • Non-institutionalized • Living within survey areas of Nottingham, UK	444	Retrospective	<u>Duration:</u> 12 months <u>Frequency:</u> Annually	• Location • Reason
Berg et al. ⁹⁸	1997	United States	Cohort	• Age ≥ 60 • Living independently in the community • Able to walk unaided	96	Prospective	<u>Duration:</u> 12 months <u>Frequency:</u> Every 2 weeks	• Location • Time of day • Activity • Reason • Season
Bergland, Pettersen, & Laake ⁶⁸	1998	Norway	Cross-sectional	• Age ≥ 67 • Residing in Norwegian municipalities • Completed a previous cross-sectional study of health and social activities	431	Retrospective	<u>Duration:</u> 6 months <u>Frequency:</u> Once	• Location • Activity • Reason
Bergland, Jarnio, & Laake ⁶⁹	2003	Norway	Cohort	• Age ≥ 75 • Women • Could reach research office independently • Ability to stand for at least 60 seconds • No major cognitive impairment (short MMSE scores > 8)	307	Prospective	<u>Duration:</u> 12 months <u>Frequency:</u> Every 3 months	• Location • Activity • Reason

Supplementary Table 6. (Cont. from previous page).

Study	Publication year	Participant country of residence	Study design	Participant inclusion criteria	Sample size (n)	Fall monitoring: prospective or retrospective	Fall monitoring duration & frequency	Fall circumstances reported
Blake et al. ⁴⁷	1988	United Kingdom	Cross-sectional	• Age ≥ 65 • I/O ≥ 8 • Completed the Activity and Ageing Survey • Listed in the Nottinghamshire Family Practitioner Committee's records	1,042	Retrospective	<u>Duration:</u> 12 months <u>Frequency:</u> Annually	• Location • Reason
Bleijlevens et al. ⁷⁰	2010	The Netherlands	Cross-sectional	• Age ≥ 65 • Living in Maastricht or its surrounding area • Visited A&E department at the University Hospital Maastricht because of a fall	333	Retrospective	<u>Duration:</u> One time <u>Frequency:</u> Once; following hospital discharge	• Location • Activity • Reason
Boonkhao et al. ⁴⁸	2024	Thailand	Cross-sectional	• Age ≥ 60 • Living in the Ubon Ratchathani Province, Thailand	264	Retrospective	<u>Duration:</u> 6 months <u>Frequency:</u> Once	• Location • Reason
Carter et al. ³⁶	2000	Australia	Cohort	• Age ≥ 70 • Community-dwelling • Ability to speak English • Not suffering from cognitive impairment of psychiatric illness	657	Retrospective	<u>Duration:</u> 4 weeks <u>Frequency:</u> Once	• Location
Chan et al. ⁷¹	1997	Singapore	Cross-sectional	• Age ≥ 60 • Living in the community • Residing in Singapore	401	Retrospective	<u>Duration:</u> 12 months <u>Frequency:</u> Annually	• Location • Reason • Time of day
Connell & Wolf ³⁷	1997	United States	Cohort	• Reported having a fall or near-fall over a 13-month period within the larger FICSIT project	39	Prospective	<u>Duration:</u> 13 months <u>Frequency:</u> "Immediate" contact with project coordinator after a fall occurred	• Location

Supplementary Table 6. (Cont. from previous page).

Study	Publication year	Participant country of residence	Study design	Participant inclusion criteria	Sample size (n)	Fall monitoring: prospective or retrospective	Fall monitoring duration & frequency	Fall circumstances reported
Crenshaw et al. ¹⁰⁶	2017	United States	Cohort	• Age $\geq$ 65 • Women • Community-dwelling • Ambulatory	125	Prospective	Duration: 12 months Frequency: Twice monthly	• Location • Time of day • Activity • Reason • Direction • Surface • Season
Demura, Yamada, & Kasuga ⁴⁹	2012	Japan	Cohort	• Elderly • Community-dwelling • Living independently • Complete data recorded	1,995	Retrospective	Duration: 12 months Frequency: Annually	• Reason • Direction
De Roza et al. ⁵⁰	2022	Singapore	Cross-sectional	• Age $\geq$ 65 • Ability to communicate in English, Mandarin, Malay, or Tamil • Received chronic disease management follow-up at primary care clinic	360	Retrospective	Duration: 6 months Frequency: Once	• Location • Reason
Downton & Andrews ⁷²	1991	United Kingdom	Cross-sectional	• Age $\geq$ 75 • Living at home • Listed in age-sex registers of five General Practitioners within Salford District Health Authority	203	Retrospective	Duration: 12 months Frequency: Annually	• Location • Time of day • Reason
Duckham et al. ²⁶	2013	United States	Cohort	• Age $\geq$ 70 • Ability to read & speak English • MMSE $\geq$ 18 • Walk 20 feet without assistance • Residing in Boston, MA for $\geq$ 2 years	743	Prospective	Duration: 0.04 to 4.3 years Frequency: Monthly	• Location • Activity • Floor/ground conditions • Lighting conditions

Supplementary Table 6. (Cont. from previous page).

Study	Publication year	Participant country of residence	Study design	Participant inclusion criteria	Sample size (n)	Fall monitoring: prospective or retrospective	Fall monitoring duration & frequency	Fall circumstances reported
Faulkner et al. ¹⁰²	2005	United States	Cohort	• Age ≥ 65 • Community-dwelling • Ambulatory • No history of bilateral hip replacement	1,821	Prospective	<u>Duration:</u> 3.8 to 5.4 years (average) <u>Frequency:</u> Every 4 months	• Location • Reason • Activity • Time of day • Direction • Height • Surface • Height
Fong et al. ⁸⁷	2011	Hong Kong	Cross-sectional	• Age ≥ 65 • Community-dwelling • Living independently in Hong Kong	554	Retrospective	<u>Duration:</u> 12 months <u>Frequency:</u> Annually	• Location • Reason • Activity • Time of day
Freiberger & Menz ⁸⁸	2006	Germany	Cohort	• Age ≥ 70 • Community-dwelling • Residing in Erlangen	293	Prospective	<u>Duration:</u> 12 months <u>Frequency:</u> Monthly	• Location • Reason • Time of day • Footwear
Gabell, Simons, & Nayak ⁷³	1985	United Kingdom	Cohort	• Age ≥ 65 • Attended a regional general practice facility	100	Prospective	<u>Duration:</u> 12 months <u>Frequency:</u> As falls occurred	• Location • Reason • Floor/ground conditions • Footwear • Weather • Physical symptoms
Gill, Williams, & Tinetti ³⁸	2000	United States	Cohort	• Age ≥ 72 • Community-dwelling • Residing in New Haven in 1989 • Ability to speak English, Spanish, or Italian • Ability to follow simple commands • Ability to walk across room without assistance	1,088	Prospective	<u>Duration:</u> 36 months <u>Frequency:</u> Monthly	• Location

Supplementary Table 6. (Cont. from previous page).

Study	Publication year	Participant country of residence	Study design	Participant inclusion criteria	Sample size (n)	Fall monitoring: prospective or retrospective	Fall monitoring duration & frequency	Fall circumstances reported
Gratza et al. ¹⁰³	2019	Switzerland	Cohort	• Age $\geq$ 70 • History of falls in past 12 months • Enrolled in previous RCT	200	Prospective	Duration: 12 months Frequency: Monthly	• Location • Activity • Time of day • Direction • Height • Season
Hale, Delaney, & McGaghie ⁵¹	1992	United States	Cohort	• Age $\geq$ 65 • Ambulatory • Visited family practice office • Mentally competent • Not acutely ill	102	Prospective	Duration: 12 months Frequency: Weekly	• Location • Reason
Hill et al. ⁵²	1999	Australia	Cohort	• Age $\geq$ 70 • Living in the community • Regularly going outdoors • Able to walk independently	96	Prospective	Duration: 12 months Frequency: Monthly	• Location • Reason
Hill, Hoffman, & Haines ⁷⁴	2013	Australia	Cohort	• Age $\geq$ 60 • Participated in an ongoing RCT	110	Prospective	Duration: 6 months Frequency: Monthly	• Location • Reason • Time of day
Hu et al. ⁵³	2015	China	Cohort	• Age $\geq$ 60 • Residing in Shanghai	3,043	Prospective	Duration: 12 months Frequency: Every 3 months	• Location • Time of day
Kamel, Abdulmajeed, & Ismail ⁵⁴	2013	Egypt	Cross-sectional	• Age $\geq$ 60 • Attended primary health centers in Suez City during the study period	340	Retrospective	Duration: 12 months Frequency: Annually	• Location • Reason
Khongboon & Kespichayawatt ³⁹	2022	Thailand	Cross-sectional	• Age $\geq$ 60 • In good health and without any disabilities	48,663	Retrospective	Duration: 6 months Frequency: Once	• Location
Kim & Portillo ⁵⁵	2018	United States	Cohort	• Residents of two independent living buildings in North Central Florida • Had historical fall data on record	284	Prospective	Duration: 3 years Frequency: As falls occurred	• Location • Time of day

Supplementary Table 6. (Cont. from previous page).

Study	Publication year	Participant country of residence	Study design	Participant inclusion criteria	Sample size (n)	Fall monitoring: prospective or retrospective	Fall monitoring duration & frequency	Fall circumstances reported
Kojima et al. ⁷⁵	2008	Japan	Cross-sectional	• Age ≥ 65 • Living in private homes in Hokkaido • Ability to answer questions over the phone without assistance	849	Retrospective	Duration: 12 months Frequency: Annually	• Location • Reason • Season
Kojima et al. ⁴⁰	2021	Japan	Cross-sectional	• Age ≥ 65 • Community-dwelling • Not eligible for long-term care	461	Retrospective	Duration: 12 months Frequency: Annually	• Location
Lage et al. ⁷⁶	2022	Portugal	Cohort	• Age ≥ 65 • Community-dwelling • Living alone in Braga District • No cognitive impairment • Able to communicate	186	Retrospective	Duration: 12 months Frequency: Annually	• Location • Reason • Time of day
Landy et al. ⁵⁶	2012	United States	Cross-sectional	• Age ≥ 65 • Recorded accidental fall deaths in Miami-Dade County that occurred between 2005 and 2007	328	Retrospective	Duration: Upon report of fatal falls Frequency: As falls were recorded	• Location • Activity
Lehtola, Koistinen, & Luukinen ⁷⁷	2006	Finland	Cohort	• Age ≥ 85 • Home-dwelling • Residing in Oulu	555	Prospective	Duration: 24 months Frequency: Bimonthly	• Reason • Activity • Time of day
Li et al. ¹⁰⁴	2006	United States	Cross-sectional	• Age ≥ 65 • Presented to one of five Kaiser Medical Centers	1,023	Retrospective	Duration: 12 months Frequency: Annually	• Location • Reason • Activity • Direction • Surface • Height
Lord et al. ⁵⁷	1993	Australia	Cross-sectional	• Age ≥ 65 • Women • Residing in districts in the Randwick Local Government Area	704	Retrospective	Duration: 12 months Frequency: Annually	• Location • Reason

Supplementary Table 6. (Cont. from previous page).

Study	Publication year	Participant country of residence	Study design	Participant inclusion criteria	Sample size (n)	Fall monitoring: prospective or retrospective	Fall monitoring duration & frequency	Fall circumstances reported
Luukinen et al. ²⁹	2000	Finland	Cohort	• Age $\geq$ 70 • Home-dwelling • Residing in one of five rural Northern Finnish municipalities	980	Prospective	<u>Duration:</u> 7 years <u>Frequency:</u> Every 3 months	• Location • Reason
Mackenzie, Byles, & Higginbotham ⁵⁸	2002	Australia	Cohort	• Age $\geq$ 70 • Receiving preventative care from the DVA	309	Prospective	<u>Duration:</u> 6 months <u>Frequency:</u> Monthly	• Location • Activity
Mänty et al. ⁴¹	2009	Finland	Cohort	• Women • Ability to walk 2 km without major difficulties • Had complete fall surveillance data on record	376	Prospective	<u>Duration:</u> 12 months <u>Frequency:</u> Monthly	• Location
McKiernan ⁴²	2005	United States	RCT	• Age $\geq$ 65 • Community-dwelling • Independently ambulatory • Sustained a fall within the preceding year	109	Prospective	<u>Duration:</u> 3-4 months <u>Frequency:</u> Once	• Location
Melzer et al. ⁷⁸	2025	Austria, Germany, Israel, Italy, the Netherlands, Poland, and Spain	Cohort	• Age $\geq$ 75 • Community-dwelling • Living independently	1,754	Prospective	<u>Duration:</u> 24 months <u>Frequency:</u> Annually	• Location • Activity • Reason
Milat et al. ⁵⁹	2011	Australia	Cross-sectional	• Age $\geq$ 65 • Residing in households in NSW • Owned private telephone	5,681	Retrospective	<u>Duration:</u> 12 months <u>Frequency:</u> Annually	• Activity • Reason
Mitchell-Fearon et al. ⁴³	2014	Jamaica	Cross-sectional	• Age $\geq$ 60 • Residing in Jamaica	2,929	Retrospective	<u>Duration:</u> 6 months <u>Frequency:</u> Once	• Location

Supplementary Table 6. (Cont. from previous page).

Study	Publication year	Participant country of residence	Study design	Participant inclusion criteria	Sample size (n)	Fall monitoring: prospective or retrospective	Fall monitoring duration & frequency	Fall circumstances reported
Molés Julio et al. ⁹⁹	2020	Spain	Cross-sectional	• Age ≥ 75 • Community-dwelling • Residing in cities of Lleida and Castellón de la Plana • Possession of a health care card	966	Retrospective	Duration: 12 months Frequency: Annually	• Location • Reason • Time of day • Surface • Season • Familiarity with the location • Lighting • Weather conditions • Presence of object • Type of footwear
Morris et al. ⁶⁰	2004	Australia	Cross-sectional	• Age ≥ 65 • Community-dwelling • Residing in private dwellings in metropolitan Melbourne • Completed the Health Status of Older People survey • Ability to speak basic English • No cognitive impairment, severe illness, or deafness	984	Retrospective	Duration: 12 months Frequency: Annually	• Location • Reason

Supplementary Table 6. (Cont. from previous page).

Study	Publication year	Participant country of residence	Study design	Participant inclusion criteria	Sample size (n)	Fall monitoring: prospective or retrospective	Fall monitoring duration & frequency	Fall circumstances reported
Nachreiner et al. ¹⁰⁰	2007	United States	Cohort	• Age $\geq$ 70 • Women • MMSE > 23 • Living independently in community • Ability to walk 30 feet without stopping • Presence of balance instability and at least one additional fall risk factor • Near visual acuity < 20/70 • Not involved in regular exercise • Free of health conditions that would have prohibited safe exercise • Not terminally ill • Not wearing a leg prosthesis • Ability to read and understand English • Touch-tone telephone service • Available for in-home telephone appointments	263	Prospective	Duration: 1 to 27 months Frequency: Monthly	• Location • Reason • Activity • Warning signs or physical symptoms • New medication or medication dosage change • Season
Nevitt, Cummings, & Hudes ⁸⁹	1991	United States	Cohort	• Age $\geq$ 60 • Ambulatory • Had fallen at least once in the previous 12 months	325	Prospective	Duration: 12 months Frequency: Weekly	• Location • Activity • Surface • Presence of hazard
Nevitt et al. ¹⁰¹	1993	United States	Cohort	• Age $\geq$ 65 • Residing in Portland, Minneapolis, Baltimore County, or the Monongahela Valley	891	Retrospective	Duration: 3 months Frequency: Once	• Location • Activity • Direction • Surface • Height

Supplementary Table 6. (Cont. from previous page).

Study	Publication year	Participant country of residence	Study design	Participant inclusion criteria	Sample size (n)	Fall monitoring: prospective or retrospective	Fall monitoring duration & frequency	Fall circumstances reported
Niino et al. ⁹⁰	2000	Japan	Cross-sectional	• Age ≥ 60 • Participated in NILS-LSA	510	Retrospective	<u>Duration:</u> 12 months <u>Frequency:</u> Annually	• Location • Reason • Activity • Time of day
Piau et al. ⁹¹	2020	United States	Cohort	• Age ≥ 60 • Living independently without a formal caregiver • Clinical Dementia Rating ≤ 0.5 • MMSE > 24 • Average health for age with relatively stable chronic conditions	158	Prospective	<u>Duration:</u> 48 months <u>Frequency:</u> Weekly	• Location • Reason • Time of day • Lighting
Pitchai et al. ⁹²	2019	India	Cross-sectional	• Age ≥ 60 • Community-dwelling or old age home residents	2,049	Retrospective	<u>Duration:</u> 12 months <u>Frequency:</u> Annually	• Location • Reason • Activity • Time of day
Reinsch et al. ⁶¹	1993	United States	Cohort	• Elderly • Presented to regional senior centers	222	Prospective	<u>Duration:</u> 24 months <u>Frequency:</u> Weekly or monthly	• Location • Activity
Rizawati & Ayu ⁷⁹	2008	Malaysia	Cross-sectional	• Age ≥ 60 • Non-institutionalized • Residing in the community of Masjid Tanah Province	516	Retrospective	<u>Duration:</u> 12 months <u>Frequency:</u> Annually	• Location • Reason • Time of day

Supplementary Table 6. (Cont. from previous page).

Study	Publication year	Participant country of residence	Study design	Participant inclusion criteria	Sample size (n)	Fall monitoring: prospective or retrospective	Fall monitoring duration & frequency	Fall circumstances reported
Rodrigues et al. ⁶²	2018	Brazil	Non-randomized pilot study	• Age ≥ 65 • Community-dwelling • Women • Independent in ADLs and IADLs • AAS < 74 on the HAP • MMSE > 13 (illiterates), > 18 (1-7 years of schooling) and > 26 (8+ years of schooling) • LAQ score 0-7 • No cardiac, respiratory, kidney, liver, osteoporosis, hypertension, diabetes I and II, endocrine or neurological diseases; and/or orthopedic fixation or prosthesis, or metallic/nonmetallic implants • No use of benzodiazepines or neuroleptics • Visual acuity $< 20/70$	52	Retrospective (12 months preceding study) Prospective (12 weeks during study)	<u>Duration:</u> 15 months (12 months preceding study; 12 weeks during study) <u>Frequency:</u> Twice (once at baseline & once at the end of 12 weeks)	• Location • Reason
Sanders et al. ¹⁰⁵	2017	Australia	Cohort	• Age ≥ 70 • Residing in southern Victoria • Identified as being at a higher risk of fracture	887	Prospective	<u>Duration:</u> 546 to 607 days <u>Frequency:</u> Monthly	• Location • Reason • Activity • Time of day • Direction • Lighting • Immediate fall impact
Sawa et al. ⁸⁰	2025	Japan	Cohort	• Age ≥ 75 • Attended an outpatient day long-term care facility • Able to walk independently within the home	96	Prospective	<u>Duration:</u> 6 months <u>Frequency:</u> Every 2 weeks	• Location • Activity • Reason

Supplementary Table 6. (Cont. from previous page).

Study	Publication year	Participant country of residence	Study design	Participant inclusion criteria	Sample size (n)	Fall monitoring: prospective or retrospective	Fall monitoring duration & frequency	Fall circumstances reported
Shin et al. ⁶³	2009	Korea	Cross-sectional	• Age $\geq$ 60 • Korean • Community-dwelling • MMSE-KC > 24 • Ability to walk independently	335	Retrospective	<u>Duration:</u> 12 months <u>Frequency:</u> Annually	• Location • Reason
Sjorgen & Bjornstig ⁸¹	1991	Sweden	Cross-sectional	• Age $\geq$ 60 • Injured in the home environment • Received medical attention at the Regional Hospital in Umea	600	Retrospective	<u>Duration:</u> Upon admission <u>Frequency:</u> Once	• Location • Reason • Height
Sotoudeh et al. ⁹³	2018	Iran	Cross-sectional	• Age $\geq$ 65 • Community-dwelling • Residing in private households in 22 different districts of Tehran	653	Retrospective	<u>Duration:</u> 12 months <u>Frequency:</u> Annually	• Location • Reason • Time of day • Direction
Speechley & Tinetti ⁸²	1991	United States	Cohort	• Age $\geq$ 75 • Living in a private residence or a designated elderly housing unit • Able to follow simple commands • Able to walk within their homes	336	Prospective	<u>Duration:</u> 12 months <u>Frequency:</u> Every 2 months	• Location • Activity • Presence of environmental hazard
Stalenhoef et al. ⁴⁴	1998	Netherlands	Cohort	• Age $\geq$ 70 • Community-dwelling • Attending one of four health facilities	303	Prospective	<u>Duration:</u> 36 weeks <u>Frequency:</u> Every 6 weeks	• Location
Stevens, Mahoney, & Ehrenreich ¹⁵	2014	United States	Cohort	• Age $\geq$ 65 • Community-dwelling • independent • High risk of falls	465	Prospective	<u>Duration:</u> 12 months <u>Frequency:</u> Monthly	• Location • Reason • Activity • Direction

Supplementary Table 6. (Cont. from previous page).

Study	Publication year	Participant country of residence	Study design	Participant inclusion criteria	Sample size (n)	Fall monitoring: prospective or retrospective	Fall monitoring duration & frequency	Fall circumstances reported
Talbot et al. ⁸³	2005	United States	Cohort	• Age ≥ 65 • Community-dwelling • Enrolled in the BLSA	589	Retrospective	Duration: 24 months Frequency: Once	• Reason • Activity • Environmental factors
Thaweewannakij et al. ⁹⁴	2016	Thailand	Cross-sectional	• Age ≥ 75 • BMI 18.5-29.9 • MMSE (Thai) >21 • Good communication • Ability to understand simple commands	90	Retrospective	Duration: 6 months Frequency: Once	• Location • Reason • Activity • Period of fall
Tripathy et al. ⁹⁵	2015	India	Cross-sectional	• Age ≥ 60 • Residing in Chandigarh for at least a year	300	Retrospective	Duration: 12 months Frequency: Annually	• Location • Reason • Activity • Time of day
Tuvemo Johnson et al. ⁹⁶	2022	Sweden	RCT	• Age ≥ 75 • Living in their own homes • Ability to walk independently indoors • Ability to understand written and oral information in Swedish	175	Prospective	Duration: 12 months Frequency: Monthly	• Location • Reason • Activity • Time of day
Ubonsutvanich et al. ⁶⁴	2025	Thailand	Cross-sectional	• Age ≥ 60 • Functionally independent in basic activities of daily living	5,694	Retrospective	Duration: 12 months Frequency: Annually	• Location • Reason
Wijlhuizen et al. ⁶⁵	2008	Netherlands	Cohort	• Age ≥ 65 • Registered in a database of the Dutch National Time-Budget Survey • Fell inside the home	436	Prospective	Duration: 10 to 15 months Frequency: Monthly	• Location • Time of day
Worapanwisit, Prabpai, & Risenberg ⁶⁶	2018	Thailand	Cross-sectional	• Age 60 to 69 • No current or history of a psychiatric diagnosis • Sufficiently literate to complete a questionnaire with minimal assistance	406	Retrospective	Duration: All falls experienced since age 60 Frequency: Once	• Location • Reason

Supplementary Table 6. (Cont. from previous page).

Study	Publication year	Participant country of residence	Study design	Participant inclusion criteria	Sample size (n)	Fall monitoring: prospective or retrospective	Fall monitoring duration & frequency	Fall circumstances reported
Wurzer, Waters, & Hale ⁶⁷	2016	New Zealand	Cohort	- Community-dwelling - Current participants in a peer-led SAYGO exercise class in the Otago region	207	Prospective	<u>Duration:</u> 12 months <u>Frequency:</u> Monthly	- Location - Activity
Yamada et al. ³⁰	2024	Japan	Cross-sectional	- Age ≥ 65 - Community-dwelling - Living independently and not requiring long-term care	3,663	Retrospective	<u>Duration:</u> 3 years <u>Frequency:</u> Once	- Location - Time of day - Reason - Direction
Yasumura, Haga, & Niino ⁹⁷	1996	Japan	Cohort	- Age ≥ 65 - Residing in the Nakazato Village	1,317	Prospective	<u>Duration:</u> 12 months <u>Frequency:</u> Every 3 months	- Location - Reason - Activity - Time of day
Yeung et al. ⁸⁴	2011	Hong Kong	Cohort	- Age ≥ 60 - Experienced a fall - Presented to the A&E Department in a regional hospital in the Shatin district	2,608	Retrospective	<u>Duration:</u> As events occurred <u>Frequency:</u> Once	- Location - Reason - Season
Zou et al. ⁸⁵	2023	China	Cross-sectional	- Age ≥ 60 - Experienced a fall - Presented to the ED and were hospitalized	419	Retrospective	<u>Duration:</u> Upon ED presentation <u>Frequency:</u> Once	- Location - Time of day - Season

AAS = Adjusted Activity Score; ADL = Activity of Daily Living; A&E = accident and emergency; BLSA = Baltimore Longitudinal Study of Aging ; BMI = Body Mass Index; DVA = Department of Veteran's Affairs; FICSIT = ; HAP = Human Activity Profile; IADL = Instrumental Activity of Daily Living; I/O = 12-item Information/Orientation scale; MMSE = Mini Mental State Examination; NILS-LSA = National Institute for Longevity Sciences, Longitudinal Study of Aging; NSW = New South Wales; RCT = Randomized Controlled Trial; SAYGO = Steady As You Go

Supplementary Table 7. Assessment of Study Quality and Risk of Bias

Study	Objective	Population	Inclusion	Falls	Ascertainment	Interval	Circumstance	Follow-up	Baseline	Data	Reporting
Al-Najjar et al. ⁸⁶	Y	Y	Y	Y	Y	Y	Y	Y	U	N	Y
Alves et al. ⁴⁵	Y	Y	Y	Y	Y	Y	Y	U	U	U	U
Bath & Morgan ⁴⁶	Y	Y	Y	Y	N	N	Y	Y	U	Y	N
Berg et al. ⁹⁸	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bergland, Pettersen, & Laake ⁶⁸	Y	Y	U	N	N	U	Y	Y	Y	N	N
Bergland, Jarmlo, & Laake ⁶⁹	Y	U	Y	Y	Y	Y	U	Y	U	Y	Y
Blake et al. ⁴⁷	Y	Y	U	Y	Y	N	U	Y	U	N	N
Bleijlevens et al. ⁶⁵	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Boonkhao et al. ⁴⁸	Y	Y	U	Y	Y	Y	Y	N	U	U	Y
Carter et al. ³⁶	Y	U	Y	N	Y	Y	Y	Y	U	Y	U
Chan et al. ⁷¹	Y	U	Y	Y	Y	N	U	Y	Y	Y	N
Connell & Wolf ³⁷	Y	Y	U	Y	Y	Y	Y	Y	U	Y	Y
Crenshaw et al. ¹⁰⁶	Y	Y	Y	Y	U	U	Y	Y	U	Y	Y
Demura, Yamada, & Kasuga ⁴⁹	Y	U	N	N	N	N	Y	Y	U	Y	U
DeRoza et al. ⁵⁰	Y	U	Y	Y	U	U	Y	Y	Y	Y	N
Downton & Andrews ⁷²	Y	Y	Y	Y	Y	U	U	Y	Y	Y	N
Duckham et al. ²⁶	Y	Y	Y	Y	Y	Y	Y	N	U	Y	Y
Faulkner et al. ¹⁰²	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N
Fong et al. ⁸⁷	Y	Y	Y	Y	U	N	Y	Y	Y	Y	N
Freiberger & Menz ⁸⁸	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Gabell, Simons, & Nayak ⁷³	Y	Y	Y	N	Y	Y	U	Y	Y	Y	Y
Gill, Williams, & Tinetti ³⁸	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Gratza et al. ¹⁰³	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	U

Supplementary Table 7. (Cont. from previous page).

Study	Objective	Population	Inclusion	Falls	Ascertainment	Interval	Circumstance	Follow-up	Baseline	Data	Reporting
Hale, Delaney, & McGaghie ⁵¹	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	Y
Hill et al. ⁵²	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N
Hill, Hoffman, & Haines ⁷⁴	Y	Y	U	Y	Y	Y	Y	Y	Y	U	Y
Hu et al. ⁵³	Y	Y	Y	Y	Y	Y	U	Y	Y	Y	N
Kamel, Abdulmajeed, & Ismail ⁵⁴	N	Y	Y	N	N	N	U	Y	Y	N	N
Khongboon & Kespichayawatt ³⁹	Y	Y	Y	Y	U	U	Y	Y	U	Y	Y
Kim & Portillo ⁵⁵	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Kojima et al. ⁷⁵	Y	Y	Y	N	U	N	Y	Y	Y	Y	N
Kojima et al. ⁴⁰	Y	Y	Y	N	N	N	Y	Y	Y	Y	U
Lage et al. ⁷⁶	Y	Y	Y	N	U	U	N	Y	U	N	N
Landy et al. ⁵⁶	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	Y
Lehtola, Koistinen, & Luukinen ⁷⁷	Y	U	Y	Y	Y	Y	Y	Y	U	Y	Y
Li et al. ¹⁰⁴	Y	Y	Y	N	U	N	Y	Y	Y	Y	N
Lord et al. ⁵⁷	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
Luukinen et al. ²⁹	Y	Y	Y	U	Y	Y	Y	U	U	U	U
Mackenzie, Byles, & Higginbotham ⁵⁸	Y	Y	U	Y	Y	Y	Y	Y	U	N	N
Mänty et al. ⁴¹	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
McKiernan ⁴²	Y	Y	Y	Y	Y	U	Y	U	Y	Y	Y
Melzer et al. ⁷⁸	Y	Y	Y	Y	Y	Y	U	Y	N	N	Y
Milat et al. ⁵⁹	Y	Y	Y	Y	U	U	U	Y	U	U	N
Mitchell-Fearon et al. ⁴³	Y	Y	Y	Y	Y	U	Y	Y	Y	Y	N
Molés Julio et al. ⁹⁹	Y	Y	Y	Y	U	N	Y	Y	Y	Y	U

Supplementary Table 7. (Cont. from previous page).

Study	Objective	Population	Inclusion	Falls	Ascertainment	Interval	Circumstance	Follow-up	Baseline	Data	Reporting
Morris et al. ⁶⁰	Y	Y	Y	U	U	N	Y	Y	Y	Y	Y
Nachreiner et al. ¹⁰⁰	Y	Y	Y	Y	Y	Y	Y	N	U	Y	Y
Nevitt, Cummings, & Hudes ⁸⁹	Y	Y	Y	Y	Y	Y	Y	Y	Y	U	Y
Nevitt et al. ¹⁰¹	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Niino et al. ⁹⁰	Y	Y	U	Y	U	N	Y	Y	Y	N	N
Piau et al. ⁹¹	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Pitchai et al. ⁹²	Y	Y	Y	Y	U	N	Y	Y	Y	U	U
Reinsch et al. ⁶¹	Y	Y	U	Y	Y	Y	Y	Y	Y	Y	Y
Rizawati & Ayu ⁷⁹	Y	Y	Y	Y	U	N	U	Y	Y	N	U
Rodrigues et al. ⁶²	Y	U	Y	N	Y	U	Y	Y	U	Y	Y
Sanders et al. ¹⁰⁵	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	Y
Sawa et al. ⁸⁰	Y	Y	Y	U	Y	Y	U	Y	Y	Y	Y
Shin et al. ⁶³	Y	Y	Y	Y	U	N	Y	Y	Y	Y	N
Sjorgen & Bjornstig ⁸¹	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Sotoudeh et al. ⁹³	Y	Y	Y	Y	U	N	Y	Y	Y	Y	U
Speechley & Tinetti ⁸²	Y	Y	Y	U	Y	Y	U	Y	Y	U	Y
Stalenhoef et al. ⁴⁴	Y	Y	Y	Y	Y	Y	Y	Y	U	Y	Y
Stevens, Mahoney, & Ehrenreich ¹⁵	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Talbot et al. ⁸³	Y	Y	Y	N	N	N	Y	Y	Y	Y	N
Thaweewannakij et al. ⁹⁴	Y	Y	Y	Y	U	U	Y	Y	Y	Y	U
Tripathy et al. ⁹⁵	Y	Y	Y	N	U	N	Y	Y	Y	Y	N
Tuvemo Johnson et al. ⁹⁶	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ubonsutvanich et al. ⁶⁴	Y	Y	Y	Y	U	Y	Y	Y	Y	N	Y

Supplementary Table 7. (Cont. from previous page).

Study	Objective	Population	Inclusion	Falls	Ascertainment	Interval	Circumstance	Follow-up	Baseline	Data	Reporting
Wijlhuizen et al. ⁶⁵	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N
Worapanwisit, Prabpai, & Risenberg ⁶⁶	Y	Y	Y	Y	Y	N	Y	N	Y	Y	N
Wurzer, Waters, & Hale ⁶⁷	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Yamada et al. ³⁰	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y
Yasumura, Haga, & Niino ⁹⁷	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N
Yeung et al. ⁸⁴	Y	Y	Y	U	Y	Y	Y	Y	Y	Y	U
Zou et al. ⁸⁵	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N

Note: Y = yes; U = unclear; N = no

Supplementary Table 8. Fall Circumstances Reported Across Included Studies.

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Al-Najjar et al. ⁸⁶	• Inside home • Outside home • Community	• Alcohol or meds • Fainted • Feeling dizzy or giddy • Fell out of bed • Knees gave away • Loss of balance • Slip • Trip • Couldn't remember	X	• AM • PM	• Forward • Backward • Right • Left • Couldn't remember • Other	X	X	X
Alves et al. ⁴⁵	• Home • Outdoor • Transport area • Trade area • Institutional area • Country area	X	X	• 00:00-08:59 • 09:00-16:59 • 17:00-24:59	X	X	X	X
Bath & Morgan ⁴⁶	• Indoors • Outdoors	• Tripped • Accident • Dizziness • Blackout • Other • Do not know	X	X	X	X	X	X
Berg et al. ⁹⁸	• At home: outside • At home: inside • Away from home: in a familiar place • Away from home: in a strange place	• Trip • Slip • Misplace step • Loss of balance • Legs giving way • Knocked over • Loss of support surface/structure • other	• Walking on level ground or floor • Walking on uneven, bumpy ground or floor • Hurrying to get work done • Working in the yard or garden • Carrying something heavy or bulky • Stair ascent • Stair descent • Looking or turning around while standing • Playing sports or exercising • Other	• Morning • Afternoon • Evening • Night	X	X	X	Season • Winter • Spring • Summer • Fall
Bergland, Pettersen, & Laake ⁶⁸	• Indoor • Outdoor	• Intrinsic • External	• Walking • Carrying out 'dual tasks' • Climbing the stairs • Other	X	X	X	X	X
Bergland, Jamlo, & Laake ⁶⁹	• Indoor • Outdoor	• Environment • Trips or slips • Other	• Walking • Climbing stairs • Transfer from bed or chair • Other	X	X	X	X	X
Blake et al. ⁴⁷	• Indoors • Outdoors	• Tripped • Accident • Dizziness • Blackout • Legs giving way • Other • Don't know	X	X	X	X	X	X

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Bleijlevens et al. ⁷⁰	Indoor locations (own home) • Stairs • Living room and studio at home • Bedroom • Hallway • Bathroom • Kitchen and cellar Indoor locations (away from home) • Shop, post office, church, bar, etc. Outdoor locations (around one's home) • Access path, garden, other (balcony, terrace) Outdoor locations (away from home) • Street or sidewalk, park, forest, pasture, playground, etc.	• Intrinsic • Extrinsic	• Instrumental activities of daily living • Walking • Catching or moving things • Activities of daily living • Lavatory visit • Cycling • Social activities • Climbing stairs • Other	X	X	X	X	X
Boonkao et al. ⁴⁸	• Bedroom • Bathroom • Living room • Parking garage • Area around the house	• Tripping • Slipping • Misstepping • Falling or falling from a height	X	X	X	X	X	X
Carter et al. ³⁶	• Outside • Kitchen • Bedroom • Loungeroom • Bathroom • Other	X	X	X	X	X	X	X
Chan et al. ⁷¹	• Inside house • Outside house	• Accidental • Non-accidental	X	• Day • Night	X	X	X	X
Connell & Wolf ³⁷	Inside the home • Bedroom • Stairs • Threshold at door to exterior • Kitchen • Bathroom • Den or study • Living room • Hall • Utility room	X	X	X	X	X	X	X

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Crenshaw et al. ¹⁰⁶	- Indoors, at home - Outdoors, at home - Indoors, away from home - Outdoors, away from home	Slip • Trip • Dizziness • Loss of consciousness • Alcohol/medication • Sudden decline in health • Injury before fall	- Walking (level surface) • Walking (uneven surface) • Standing - Sitting • Transitioning from sit to stand • Transitioning from stand to sit • Stepping up (e.g., stairs) • Stepping down (e.g., stairs) - Stepping over something • On a step-stool or ladder • Hurrying - Lying down • Reaching - Exercising or playing sports - Riding something (e.g., bicycle) - Pushing or pulling something - Pushed or pulled by something - Turning or changing directions - Sudden decline in health • Injury before falling • I don't know - None of these	- Morning - Afternoon - Evening • Night	- Forward - Backward - Sideways - Straight down	- On the floor, ground, or lower level - On an object - Against a wall or railing	X	Season • Spring • Summer • Fall • Winter
Demura, Yamada, & Kasuga ⁴⁹	X	- Leg backlash • Tripping - Slipping • Dizziness and staggering • Other	X	X	- Forward - Backward - Sideways - Other	X	X	X
DeRoza et al. ⁵⁰	- Outdoors - Bathroom - Bedroom • Living room - Kitchen	Trip or slip • Lower limb weakness • Giddiness • Lost balance • Others	X	X	X	X	X	X
Downton & Andrews ⁷²	Outside the house Inside the house • Bathroom • Stairs • Bedroom • Living room • Other	- Definite trip/slip • Blackout - Other specific • Dizziness - Non-specific • Don't know	X	06.00-12.00 12.00-18.00 18.00-00.00 00.00-06.00 - Don't know	X	X	X	X

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Duckham et al. ²⁶	- Outdoor • In own neighborhood (6 blocks) • Out of neighborhood (>6 blocks) • Sidewalk • Street curb • Just outside private home - Recreational • Parking place - Public transit Indoor - In own home - Living/family room - Bedroom • Stairs in home • In home, other/don't know - Kitchen/dining room • Hall/lobby/doorway • Bathroom - In another home - Inside another building	X	- Outdoor • Walking • Vigorous activity • Going up or down stairs - Single step/curb • Gardening/lawn care • Getting in/out of something • Not moving - Bending • Other - Indoor • Walking • Vigorous activity • Going up or down stairs - Single step/curb • Gardening/lawn care • Getting in/out of something • Not moving - Bending • Other	X	X	- Dry • Wet - Slipped or tripped • Poor lighting	X	X
Faulkner et al. ¹⁰²	- Indoors • Outdoors - At home • Away from home	- Intrinsic • Dizziness • Alcohol use • Sleep aid/anti-anxiety medication - Other • Slip or trip	Walking • Low-level • Vigorous	- Off-peak (9 p.m. to 7 a.m.) - Peak (7 a.m. to 9 p.m.)	- Forward - Straight down - Laterally - Posteriorly	- Wood, linoleum, carpet - Ceramic tile, cement - Snow, ice, dirt - Intermediary object	Higher than standing height • At or lower than standing height	X
Fong et al. ⁶⁷	- Indoor • Dining area - Bedroom • Kitchen - Bathroom/toilet - Main flat entrance - Public area (within apartment) • Public area (within housing estate) • Others - Outdoor	- Environmental factor - Personal/behavioural factor - Both environmental & behavioral factors - Unlucky or no specific reason	- Toileting • Dressing • Bathing - Changing position/transfer - Food preparation • Household tasks (other than food preparation) • Going in/out - Sleep • Cannot identify • Cannot recall	- Daytime (6:01 AM to 6:00 PM) - Evening (6:01-12:00 PM) - Midnight (12:01-6:00 AM)	X	X		X

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Freiberger & Menz ⁸⁸	- Bathroom or toilet - Bedroom • Kitchen - Hallway • Steps inside house • Other places inside house - Outdoors during leisure activities - Garden • Public places • Steps away from house • Other places away from house	During activities of daily living • During leisure time activities • During sport • Loss of consciousness • Contact by other person or animal • Unsure	X	- Morning - Midday - Afternoon - Evening • During the night - Following a meal - Other	X	X	X	- Shoes worn • Open house-shoes • Closed house-shoes • Flat street-shoes • Street-shoes with heels • Sports shoes • Other shoes - No shoes
Gabell, Simons, & Nayak ⁷³	Indoors • Outdoors	- Trip • Slip (snow/ice) - Collapse ('found myself on the floor') • Fell up steps • Slipped downstairs • Turned suddenly - Ankle gave way	X	X	X	X	X	Difficult floor conditions • Unhelpful footwear • Poor weather conditions • Hunger, tiredness • Carelessness, illness • Turning/bending
Gill, Williams, & Tinetti ³⁸	- In the home • Kitchen - Living room - Hallway • Bedroom - Bathroom • Other, inside home - Outside home - Unknown	X	X	X	X	X	X	X
Gratza et al. ¹⁰³	- Indoors home - Outdoors • Indoors public space	X	Sitting • Standing • Movement	- Morning - Afternoon - Evening • Night	- Forward - Backward - Sideways	X	- From sitting - From standing - Stairs	- Season • Spring - Summer • Autumn - Winter
Hale, Delaney, & McGaghie ⁵¹	- In subject's residence - Elsewhere on subject's property - Off subject's property	- Extrinsic • Intrinsic - Unclassifiable	X	X	X	X	X	X

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Hill et al. ⁵²	- In home - Streets/parks - Around home - Steps - Public transit - Kerbs - Shops	Trip over obstacles • Uneven footpaths • Walking in the dark • Walking in the wet and hurrying • Walking outdoors with no shoes • Running after a baby • Other trips Trip on steps • Reading while walking • Running • Stepping on or off the steps of a bus • Stepping off a tram step which was wet • Other trips on steps Trips on kerbs Slips on wet ground • Kitchen • Living room Slips on obstacle on the ground • Food materials on floor • Dog droppings • Other slips on obstacles High risk activity • Standing on a footstool, watering plants with a watering can Other circumstances	X	X	X	X	X	X
Hill, Hoffman, & Haines ⁷⁴	- Bedroom - Bathroom/toilet - Kitchen - Living - External home environment - Outside in community - Missing	Tripped • Environmental hazard directly implicated (yes/no) Lost balance • Environmental hazard directly implicated (yes/no) Legs gave way Dizziness Slipped • Environmental hazard directly implicated (yes/no) No information	X	6-10 am 10-2 pm 2-6 pm 6-10 pm 10-2 am 2-6 am - Missing	X	X	X	X
Hu et al. ⁵³	Indoor	X	X	- Morning - Afternoon - Evening - Dawn	X	X	X	X
Kamel, Abdulmajeed, & Ismail ⁵⁴	Indoors • On stairs • In bathrooms • Other, not specified by authors Outdoors/outside their houses	• Dizziness • Legs giving way • Tripping • Other, not specified by authors • Could not find a reason	X	X	X	X	X	X
Khongboon & Kespichayawatt ³⁹	- Inside house - Outside house	X	X	X	X	X	X	X

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Kim & Portillo ⁵⁵	• Living/kitchen • Bedroom • Bathroom • Common area	X	X	• 08:01-16:00 • 16:01-24:00 • 24:01-08:00	X	X	X	X
Kojima et al. ⁷⁵	• At home – inside • At home – outside • Road/sidewalk • Away from home – inside • Other • No response	Extrinsic • Tripping • Slipping • Knocked down • Misstep Intrinsic • Dizziness • Loss of balance Others No response	X	X	X	X	X	Season • Winter • Spring to Autumn • Unknown • No response
Kojima et al. ⁴⁰	• Frozen road • Unfrozen road • Indoors	X	X	X	X	X	X	X
Lage et al. ⁷⁶	• At home (inside) • At home (outside) • In the street • Public place (inside) • Public place (outside)	• Dizziness Apparently accidental • Totally surprise • Provoked by third parties (animal/person) • Do not know • Other	X	• Morning • Afternoon • Night	X	X	X	X
Landy et al. ⁵⁶	Indoors Outdoors Home • Bathroom • Bedroom • Stairs • Kitchen • Unknown Hospital or nursing facility Public location Unknown	X	Vigorous • Work • Recreation • Stairs Active • Walking • Getting up • Standing Resting • Sitting • Sleeping • Dropped Unknown	X	X	X	X	X
Lehtola, Koistinen, & Luukinen ⁷⁷	X	• Slip • Trip • Other extrinsic fall on level ground • Intrinsic fall • Stair fall • From an upper level • Non-defined	• Standing up • Standing • Walking • Undertaking a risky task • Sitting down • Something else defined • Non-defined	• 2300-0459 • 0500-1059 • 1100-1659 • 1700-2259	X	X	X	X

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Li et al. ¹⁰⁴	Outdoor • Sidewalk, curb, street • Garden, patio, porch, deck • Outdoor park, recreation area • Parking garage, parking lots • Outdoor stairs • Other outdoor place	• Uneven surface • Wet surface • Tripped on something • Slipped on something • Any of the above	• Walking • Vigorous activity (jogging, running, bicycling, dancing, and other activities) • Walking up or down stairs • Other outside activity (turning around, reaching up or down, getting into or out of a chair, sitting or lying down, bending over, getting into or out of a motor vehicle, gardening or house repair, climbing up or down a ladder or a stool or getting over a large object, other)	X	• Forward • Sideways • Backward • Straight down	On a hard surface (Y/N)	From standing height or higher (Y/N)	X
Lord et al. ⁵⁷	In the home • On a level surface • In the shower/bath • Getting out of bed • On stairs • From a chair or ladder • Outside the home	• Trip • Slip • Faint • Dizzy or giddy • Lost balance • Legs gave way • Medication or alcohol • Not sure	X	X	X	X	X	X
Luukinen et al. ²⁹	• Indoors • Outdoors	• Slipping • Tripping • Other extrinsic • Intrinsic • On stairs • From an upper level • Nondefined	X	X	X	X	X	X
Mackenzie, Byles, & Higginbotham ⁵⁸	• Garden • Public area • Living room • Steps • Bedroom • Kitchen • Garage • Bathroom • Entrance	X	• Mobility • Housework • Gardening • Transfers • Cooking • Bathing • Recreation • Dressing • Pets • Transport	X	X	X	X	X
Mänty et al. ⁴¹	• Indoors • Outdoors	X	X	X	X	X	X	X
McKiernan ⁴²	• Indoor • Outdoor	X	X	X	X	X	X	X
Melzer et al. ⁷⁸	• Inside the home • Outside the home • Inside a building but not at home	• Accidental fall/environmental reason • Balance/gait impairment • Collapse episode • Dizziness/vertigo • Other	• Ambulation • Running • Sport activity • Stairs/curb • Running • Other	X	X	X	X	X

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Milat et al. ⁵⁹	X	• Tripped or slipped • Surrounding hazards (wet or uneven floor) • Misjudged, overbalanced, or overreached • Fainting, dizziness, illness, or legs gave way	• Hurrying • Steps, stairs, kerb or gutter • Carrying or bending activities • Walking • Physical work or chores • Bathing, dressing or on the toilet • Activity off the ground • Sports, exercise or physical activity • Effects of medication, dizziness, sleeping or fainting • Other	X	X	X	X	X
Mitchell-Fearon et al. ⁴³	• In the home • While "out"	X	X	X	X	X	X	X
Molés Julio et al. ⁹⁹	In the home: • Kitchen • Bathroom • Terrace • Stairs • Bedroom • Other In a public place: In the street	• Dizziness • Accident • Third parties • Don't remember • Other	X	• Morning • Afternoon • Night	X	Floor conditions: • Smooth • Slippery • Irregular • Sloping • Stairs • None of the above	X	Season: • Spring • Summer • Autumn • Winter Familiarity with the location: • Familiar • Unfamiliar • Don't remember Lighting: • Good lighting • Inadequate lighting • Don't remember Weather conditions: • Rain • Snow • Wind • Ice • Very sunny • None of the above Was there an object present, which possibly favored the fall? • Yes • No • Don't know Type of footwear: • Barefoot • Slippers • Shoes • Other • Don't remember

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Morris et al. ⁶⁰	• Inside home • Outside home • Away from home	• Loss of balance • Not paying attention • Poor eyesight or use of bifocals • Dizziness • Hazardous environment • Weakness • Rips/stumbles • Slower reflexes • Legs giving way • Fractures • General poor health • Other specific conditions • Blood pressure • Ageing • Psychological/disorientation • Blackouts • Incorrect footwear • Inactivity • Foot and leg problems • Overweight • Poor diet • Other • Don't know	X	X	X	X	X	X
Nachreiner et al. ¹⁰⁰	• Inside • Outside	Fall caused by actions or feelings • Inattentiveness • Loss of balance • Rushing or hurrying • Distraction • Sleepiness • Standing up quickly • Trip • Uneven surface • Object in path • Rug • Electrical or telephone cords/wires Slip • Slippery and/or wet surface • Inclining surface	Moving at the time of fall • Walking • Turning • Ascending stairs • Descending stairs • Running • Carrying an object • Changing position • Reaching or leaning • Waking from sleep • Rushing to bathroom • Climbing ladder or step stool	X	X	X	X	Warning signs or physical symptoms • Dizziness New medications/ medication dosage change Foot pain Sick with fever, vomiting, or diarrhea Season: • Winter • Spring • Summer • Autumn
Nevitt, Cummings, & Hudes ⁸⁹	At home (yes/no)	X	• Walking • Up or down stairs, steps, curbs, etc. • Turning, reaching • "High risk" activity • "Other" activities	X	X	On "hard" surface (Y/N)	X	Hazard present (yes/no)
Nevitt et al. ¹⁰¹	• At home • Away from home • Indoors • Outdoors	X	Little/no forward motion • Standing still • Sitting or lying down • Turning around, backing up • Changing position, transfer • Reaching or bending Forward motion • Walking • Jogging Stairs • Descending stairs/steps/curb • Ascending stairs/steps/curb • On ladder or stepstool Other vigorous exercise Other Doesn't recall	X	• Forward • Sideways • Backward • Straight down • Doesn't recall	• Hard surface • Softer surface • Other • Doesn't recall	• <Standing height • Standing height • >Standing height (includes falls down stairs)	X

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Niino et al. ⁹⁰	• Indoors • Outdoors	Extrinsic • Tripping • Slipping • Colliding with obstacles • Loss of footing on a staircase Intrinsic • Vertigo • Dizziness Others/unknown	• Walking • Running • Ascending stairs • Descending stairs • Standing still • Getting up • Sitting down • Others/unknown	• 00:00-6:00 • 6:00-12:00 • 12:00-18:00 • 18:00-24:00	X	X	X	X
Piau et al. ⁹¹	At home • Bedroom • Living room • Bathroom • Kitchen • Hallway • Dining room • Office • Garage Outdoor Away from home (indoors)	• Lost balance • Slip or trip • Uneven surface • Stairs or step • Light-headed or faint • Distracted • Vertigo or spinning • Overexertion or exercise • Uncertain	X	• Morning (6AM-12PM) • Afternoon-early evening (12PM-6PM) • Late evening (6PM-12AM) • Night-early morning (12AM-6AM)	X	X	X	Lighting • Well lit • Dark or low
Pitchai et al. ⁹²	Indoors • Bathroom • Hall • Kitchen • Bedroom Outdoors • Public places • Streets • Outside the house	• Slip • Imbalance • Trip • Other, not specified	• Walking • Turning • Standing • Other, not specified	• Morning • Afternoon • Evening • Night	X	X	X	X

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Reinsch et al. ⁶¹	Own home • Bathroom • Kitchen • Living room • Bedroom • Staircase • Unspecified area Transition area • Entrance or back door • Garage • Patio • Garden Outside • Street or sidewalk (including car or bus) • Public buildings (such as senior centers, restaurants, or church) • Other people's homes	X	Activities involved in daily living • Turning (including trying to sit down) • Reaching • Stooping • Getting up from a chair or bed • Sleeping and rolling out of bed • Stepping up or down a curb • Walking the dog • Climbing up or down stairs • Getting out of the car • Riding the bus Activities associated with inattention • Walking on uneven ground. • Tripping over sizeable objects • Looking somewhere else, including falling for "no reason" Hazardous (imprudent) activities • Slipping on wet surface or gravel • Running or rushing • Tripping or slipping on loose carpet • Carrying or lifting heavy items • Balancing on unstable support • Wearing inadequate shoes • Getting up while feeling ill	X	X	X	X	X
Rizawati & Ayu ⁷⁹	Inside the home • Living room/hallway • Bathroom/toilet • Dining room/kitchen • Bedroom Outdoors Away from their homes and surroundings	• Sipped • Tripped • Bodily imbalance • Giddiness • Weakness of lower limbs	X	• Morning • Evening • Night • Dawn	X	X	X	X
Rodrigues et al. ⁶²	• Inside the house • Public places • Outside the house	• Tripping • Slipping • Crashing into another person or object • Dizziness • Lack of attention • Domestic violence • Ankle sprain	X	X	X	X	X	X

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Sanders et al. ¹⁰⁵	• Own home • Away from home • Indoors • Outdoors	• Loss of balance • Tripping • Slipping on obstacle/surface • High risk activity (down stairs or missing a step, falling in a hole, falling from ladder or chair, falling from bicycle) • Low level fall (from bed/chair) • Pushed/ knocked over	- Walking - Gardening - Displacement from quiet position • Getting in/out of bed or chair • Rushing (e.g., chasing something, answering phone) • Sitting • Standing - Housework - Bending down or reaching up for object	• Day time • Night time	• Forwards • Sideways • Backwards	X	X	- Lighting of night time falls • Lights on • Lights off - Immediate fall impact • Blacked out • Could not get up on own
Sawa et al. ⁸⁰	• Shared spaced • Living or dining room • Kitchen • Bedroom • Non-shared spaces • Entrance • Toilet • Lavatory • Bathroom • Balcony • Internal circulation spaces • Hallways • Stairs • Outside residential areas • Approach • Garden • Other/unspecified	• Loss of balance • Tripping • Slipping	• Walking • Weight shifting • Turning • Putting on/off footwear • Stepping stairs	X	X	X	X	X
Shin et al. ⁶³	• Stairs within the home • Room within the home • Living room within the home • Hallway within the home • Bathroom within the home • Street of outdoors • Subway • Front door • Others • No answer	• Slipped • Tripped when walking • Lost balance • Getting up from chair/wheelchair • Dizziness • Fell stepping up to curb • Fell when walking • Others • No answer	X	X	X	X	X	X

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Sjorgen & Bjornstig ⁸¹	Indoors • Kitchen • Wet rooms • Bedroom • Stairs • Other living area • Garage/hobby Outdoors • Garden/ drive • Porch/patio • Balcony/roof • Steps	• Intrinsic • Stepped wrong • Tripped • Slipped • Other • Unspecified	X	X	X	X	• Level surface (same level) • Higher to lower level • Other, not specified	X
Sotoudeh et al. ⁹³	• Inside home • Outside home • Community • Other	• Trip • Slip • Loss of balance • Knees gave way • Feeling dizzy • Other • Unknown	X	• AM • PM • Other	• Left • Right • Forward • Backward • Down • Can't remember	X	X	X
Speechley & Tinetti ⁸²	• At home • Away from home	X	Displacement of the center of gravity • Mild • Moderate • Marked	X	X	X	X	Environmental hazard present (yes/no)
Stalenhoef et al. ⁴⁴	Indoor • Entrance • Stairway • Kitchen • Bathroom • Toilet • Bedroom • Living room • Loft and cellar Outdoor	X	X	X	X	X	X	X
Stevens, Mahoney, & Ehrenreich ¹⁵	• Outside • In a public building • Inside the home	• Lost balance, unsteady or wobbly • Trip, caught foot, clumsy or tangled feet • Legs or hip gave out, rubbery legs or leg weakness • Other specified • Not specified	• Walking • Standing up • Stepping up or down (stairs, step, curb, ladder, stepstool) • Reaching or leaning • Turning or changing direction • Bending or pushing • Other specified • Not specified	X	• Forward • Sideways • Backward to sitting • Backward and landing flat • Straight down • Other specified • Not specified	X	X	X
Talbot et al. ⁸³	X	• Accident/environment • Collapse episode • Dizziness/ vertigo/weakness • Balance/ gait impairment • Other/ uncertain	• Ambulation • Transferring • Running • Sports/exercise/ dancing/bicycling • Stairs/curb • Other	X	X	X	X	Environmental factors • Wet surface/slippery footwear • Uneven surface/steps • Objects on surface/rug • External forces • Icy surface • Other

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Thaweewannakij et al. ⁹⁴	• In the community • Around the house • Within the house	• Environmental hazard • Loss of balance • Less attention during movement • Dizziness • Lower limb muscle weakness • Moving too fast	• While walking • Changing posture • Tripping • While running	X	X	X	X	Period of fall • Rainy season • Summer • Winter
Tripathy et al. ⁹⁵	• Home • Work place • Road/street • Public building	• Wet/slippery surface • Loss of balance • Dizziness • Weakness • Uneven surfaces • Inadequate lighting	• Walking • Working • Sports • Activities of daily living • Others	• Morning (6am-11am) • Afternoon (12pm-4pm) • Evening (5pm-8pm) • Night (9pm-5am)	X	X	X	X
Tuvemo Johnson et al. ⁹⁶	Indoors at home • Bedroom • Living room • Bathroom • Hall • Other rooms or garage • Kitchen • Undefined Stairwell or garbage room Another persons' home Shop or bus Outdoors Can't remember Not specified	• Stumbled (on an object or just stumbled) • Hurrying/inattention/stress • Impaired/lost balance • Vertigo/hypotension • Leg problems • Moving/uneven ground • Medical conditions • Slipped in socks/slippers • Environment disturbance/affection • Head/body turning • Reduced vision/light • Tiredness • Slipped on icy/wet surface outside home • Medication • Heat/fluid loss • Don't know • Not specified	To change a body position • Lying down • Sitting • Standing (rising from sitting to standing) • Bending • Shifting the body's center of gravity Maintaining a body position • Lying position • Sitting position • Standing position Transferring oneself • While sitting • While lying • Lifting or carrying objects • Lifting • Carrying Hand or arm use • Pulling • Pushing • Reaching • Turning or twisting the hands or arms • Unspecified Walking • Walking short distances, <1 km • Walking long distances, >1 km • Walking on different surfaces • Moving around • Climbing (stairs) • Moving around in different locations • Moving around within the home • Moving around using equipment • Using a walker • Driving • Riding a bike • Dressing • Putting on clothes • Taking off clothes • Doing housework • Hanging clothes • Not specified	• Morning • Daytime • Evening • At night	X	X	X	X

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Ubonsutvanich et al. ⁶⁴	• Home • Outdoors	• Slippery floor • Uneven surface/steps • Improper footwear • Poor lighting • Loose clothing • Visual impairment	X	X	X	X	X	X
Wijlhuizen et al. ⁶⁵	• In the home	X	X	• 1-2 a.m. • 3-4 a.m. • 5-6 a.m. • 7-8 a.m. • 9-10 a.m. • 11-12 a.m. • 1-2 p.m. • 3-4 p.m. • 5-6 p.m. • 7-8 p.m. • 9-10 p.m. • 11-12 p.m.	X	X	X	X
Worapanwisit, Prabpai, & Rosenberg ⁶⁶	Indoor • Kitchen • Bedroom • Living room • Terraces • Bathroom • Stairs • Roof Outdoor • House surroundings • Footpath/sidewalk • Street/road • Hospital/clinic • Sky walk/overpass • Mall/supermarket • Theatre • Temple	Attributed general causes of falls • Muscle weakness • Medication side effect • Medical condition/lack of assistive devices • Hazardous home environment Specific causes of falls • Slippery shoes • Contact with other person/object • Slippery floor • Fatigue • Headache • Blurry vision • Muscle pain • Muscle weakness • Presbyopia • Dizziness • Slope/uneven ground • Cramp • Numb leg • Hard heeled shoes • Flushing toilet • Slippery bathroom • Foot abnormality • Long dress or sarong • Stumbling • Cesspool • Drowsiness • In a hurry to void • Foot numbness • Poor lighting • Stairs • Muscle tension • High-heeled shoes • Skewness	X	X	X	X	X	X

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Wurzer, Waters, & Hale ⁶⁷	• Indoors • Outdoors	X	Indoors • Walking/tripping • On ladder/steps • Reaching/picking something up/turning around/lifting • Getting out of bed/standing up/sitting down • Housework/personal hygiene • Playing indoor sports Outdoors • Walking/tripping • On ladder/step • Gardening • Walking on wet/icy/uneven surface/slope • Carrying/lifting/pulling • Losing balance/bending over	X	X	X	X	X
Yamada et al. ³⁰	Indoor • Living room • Bedroom • Entrance • Stairs • Hallway • Bathroom • Toilet • Dressing room • Other • Cannot recall Outdoor: inside one's own property Outdoor: outside one's own property	• Trip • Loss of balance • Slip • Tangled legs • Misplace step • Dizziness • Leg giving away • Other	X	• 12:00 a.m. • 1:00 a.m. • 2:00 a.m. • 3:00 a.m. • 4:00 a.m. • 5:00 a.m. • 6:00 a.m. • 7:00 a.m. • 8:00 a.m. • 9:00 a.m. • 10:00 a.m. • 11:00 a.m. • 12:00 p.m. • 1:00 p.m. • 2:00 p.m. • 3:00 p.m. • 4:00 p.m. • 5:00 p.m. • 6:00 p.m. • 7:00 p.m. • 8:00 p.m. • 9:00 p.m. • 10:00 p.m. • 11:00 p.m. • Cannot recall	• Forward • Sideways • Backward • Straight-down • Cannot recall	X	X	X

Supplementary Table 8. (Cont. from previous page).

Study	Location categories	Reason categories	Activity categories	Time of day categories	Direction categories	Surface categories	Height categories	Other
Yasumura, Haga, & Niino ⁹⁷	Indoors • Vestibule • Bedroom • Toilet • Bathroom • Washing room • Kitchen and dining room • Corridor • Stairs • Other/unknown Outdoors • Vestibule • Garden • Road • Slope • Step • Farm • Other (woods, etc.)	Extrinsic • Tripping • Slipping • Colliding with obstacles • Loss of footing on a staircase Intrinsic • Vertigo • Dizziness Other/unclassified	• Walking • Running • Using stairs • Standing still • Getting up • Sitting down • Other/unknown	• Before breakfast (00:00-6:00) • In the morning (6:00-12:00) • In the afternoon (12:00-18:00) • At night (18:00-24:00)	X	X	X	X
Yeung et al. ⁸⁴	• Indoor • Other, not specified	• Lower limbs weakness • Trip • Unsteady gait • Slip • Risky behavior • Dizziness • Footwear problem • Knocked down • Syncope • Drowsiness • Palpitation	X	X	X	X	X	Season • Spring • Summer • Autumn • Winter
Zou et al. ⁸⁵	• Indoors • Outdoors	X	X	• 6:00-11:59 • 12:00-17:59 • 18:00-24:00 • 00:00-05:59	X	X	X	Season • Spring • Summer • Autumn • Winter