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Editorial

The measurement and reporting of falls: Recommendations for research and practice on defining faller types

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The purpose of this editorial is to provide a necessary and timely update to the guidelines on the measurement of falls for researchers and healthcare providers.

A falls prevention working group convened in 2005 and detailed recommendations for falls definitions and falls outcome standardization for those living in the community[1] (Table 1). Since 2005, there has been an increase in research uptake on fall prevention, given the world's aging population and falls being recognized as a global healthcare priority[2]. There are now recommendations within the World Falls Guidelines to guide clinicians in evidence-based falls prevention interventions[3]. The World Falls Guidelines support harmonisation of definitions for falls and recurrent falls and give definitions of unexplained falls and falls with injury for clinicians and clinical data gathering (Table 1). However, additional research indicates that different risk profiles are evident within faller types[4,5], that documenting near falls may be useful for informing interventions[6,7], and that applying a universal injury scale[8] would afford consistency in reporting within research. A lack of standardization of the measurement of falls and types of fallers across research studies and settings continues to be a major barrier to advancements in knowledge[5].

The 2005 consensus recommended that falls data be summarized by the number of non-fallers, fallers, and recurrent fallers[1]. Interestingly, the consensus mentioned that fall injuries should be documented, but did not mention whether injurious fallers should be separately classified. Furthermore, the consensus did not comment on single fallers or near fallers. A unified implementation of faller type definitions, irrespective of setting, along with the rationale would improve standardization and comparison across studies. We recommend that researchers document non-fallers, fallers, single fallers, recurrent fallers, injurious fallers, and near fallers given that they each exhibit distinct differences in their fall-risk profile (Table 2). Interventions to support different faller types could be better targeted.

Considerations for defining a fall

Both the 2005 ProFaNE recommendations[1] and the World Falls Guidelines[3] give a definition of a fall (Table 1), and both include syncopal (i.e., fall due to loss of consciousness) and non-syncopal falls. Prior to the ProFaNE definition[1], the Kellogg definition[9] had been adopted for non-syncopal falls (Table 1). Syncopal falls typically have a cardiovascular etiology, such as angina and abnormal heart rhythm, and require immediate medical attention[10]. Older adults with syncopal falls benefit most by interventions specifically prescribed by a cardiovascular specialist (e.g., medication adjustment, surgery, aerobic and strength training)[11]. Should researchers be interested in examining any falls, or exclusively syncopal falls or non-syncopal falls, the rationale should be clearly defined.

Considerations for different 'faller' types

We recommend that researchers compare all faller types separately due to differences in fall-risk profiles[5,12], rather than combining them, and report falls over a 12-month prospective period irrespective of the setting (Table 2).

Single fall – definition

The falls prevention working group did not comment on reporting single falls separately from other fall types[1]. As a result, researchers have examined different time frames for single falls (e.g., falling once in 6 months to 36 months), and combined single fallers with non-fallers, leading to inconsistencies in the literature.

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Definition	Measurement	Recommended by
Fall (clinical)		
A fall as an unexpected event in which an individual comes to rest on the ground, floor, or lower level	*Fall* *Recurrent fall* (2 or more falls in previous 12 months) *Unexplained fall* (no apparent cause found in multifactorial assessment) *Severe fall* (require a consultation with a physician, long-lie, visit to emergency department, loss of consciousness) *Fall related injury* (resulting in medical attention including hospitalization for a fall such as fractures, joint dislocation, head injury, sprain or strain, bruising, swelling, laceration, or other serious injury following a fall	World Falls Guidelines (2022)
Fall (research)		
A fall as an unexpected event in which the participants come to rest on the ground, floor, or lower level	*Faller* (fall in previous 12 months) *Non faller* (no falls in previous 12 months) *Frequent faller* (no definition) *Fall injuries* should be documented, but did not recommend injurious fallers should be separately classified from other faller types; classify injuries according to ICD-10; peripheral fractures as a minimum	ProFaNE (2005)
A fall is unintentionally coming to the ground or some lower level and other than as a consequence of sustaining a violent blow, loss of consciousness, sudden onset of paralysis as in stroke or an epileptic seizure	*Fall*	Kellogg (1987)

Table 1. Current recommendations for defining fall types for research and clinical practice.

Faller type	Definition	Guidance
Non-faller	No falls	Measured over a 12-month prospective period
Faller	*All reasons for falls* – an unexpected event in which an individual comes to rest on the ground, floor, or lower level	Justify rationale for use of definition (all/syncopal/non-syncopal fall)
	Non-syncopal - unintentionally coming to the ground or some lower level and other than as a consequence of sustaining a violent blow, loss of consciousness, sudden onset of paralysis as in stroke or an epileptic seizure	Measured over a 12-month prospective period
	Syncopal falls - an unexpected event in which an individual comes to rest on the ground, floor, or lower level due to a loss of consciousness	Measured over a 12-month prospective period
Single faller	Falling once	Dependent on definition (all/syncopal/non-syncopal fall) Measured over a 12-month prospective period
Recurrent faller	Falling two or more times	Dependent on definition (all/syncopal/non-syncopal fall) Measured over a 12-month prospective period
Injurious faller	Falls as injury resulting in medical attention including a hospitalization, fracture, joint dislocation, head injury, sprain or strain, bruising, swelling, laceration, or other serious injuries	Classified according to Abbreviated Injury Scale Consider psychological harm Measured over a 12-month prospective period
Near faller	A loss of balance that would result in a fall if sufficient balance recovery manoeuvres are not executed	Not reliant on the help of another person Measured over a 12-month prospective period

Table 2. Summary of research recommendations for defining types of falls and fallers irrespective of setting.

Recurrent falls - definition

Although the ProFaNE recommended that frequent falls (i.e., recurrent falls) are reported over a 12-month period, they did not provide a definition[1]. Recurrent falls have been most commonly defined as 'falling two or more times within a 12-month prospective period'[5]. However, some studies have adopted other definitions, such as falling at least twice within 6 months, ≥3 falls in 12 months, ≥2 falls in past 2 years. Variations in the definition of recurrent fallers have made it difficult for systematic reviews with meta-analyses to collate and compare data across studies[5].

Injurious falls - definition

The ProFaNE consensus did not mention a definition of injurious falls, but did recommend that injuries should be classified according to the International Classification of Diseases, 10th Revision, (ICD-10) classification system[1] (Table 1). However, the ICD-10 does not incorporate an explicit severity of injury scale. The Abbreviated Injury Scale defines injurious falls as 'the need to seek medical attention after a fall, including both moderate injurious falls (e.g., head injuries, vertebral, wrist or ankle fractures) and serious injurious falls (e.g., hip fractures and other femoral fractures'[8]. This definition seems to exclude injuries that may not require medical attention, such as bruising, sprains, and cuts. The World Falls Guidelines definition of a fall related injury does include such injuries[3] (Table 1). Due to the lack of recommendation to employ a specific injurious fall definition, there has been a multitude of definitions utilized, spanning varying degrees of injury, that have made comparisons across studies difficult. Notably, all of the injurious fall definitions reported in the literature only consider physical harm as a result of an injurious fall, and not the psychological harm that could arise after a fall, such as fear of falling, depression, activity avoidance, post-fall syndrome, and social isolation[13], which can be difficult to fully capture and may occur sometime after the fall. We call for future research to consider creating an injurious fall definition that could include psychological and physical harm. In the interim, it is important that the same definition of injurious falls is universally applied so that there is uniform understanding. We recommend that researchers use the injurious fall definition suggested by the World Fall Guidelines because this definition was reviewed by a large panel of international experts, and it includes a wide range of injury severity[3] (Table 2).

Near falls - definition

While near falls were not discussed in the 2005 consensus[1], reporting them can be helpful in identifying older adults at risk for future falls before a fall occurs. Near falls were originally defined as 'a loss of balance in which the person starts to fall but is able to catch himself or herself before landing'[14]. Slightly different definitions have been employed that also infer that the near faller is able to prevent the fall on their own, rather than with the help of another person, such as 'a loss of balance that would result in a fall if sufficient balance recovery manoeuvres are not executed'[6]. We believe the a near fall should be avoided by the near faller alone, and if another person is involved in helping to keep the faller upright, this would have led to a fall (Table 2). Future studies should investigate near falls because they may be an important predictor for future falls and could potentially guide fall prevention interventions.

Conclusion

Given distinct differences in fall-risk profiles across faller groups, we suggest that future studies provide the number of fallers and the number of falls by non-faller, faller, single faller, recurrent faller, injurious faller, and near faller groups over a 12-month prospective period irrespective of setting to aid in collating information, especially for meta-analyses. A better understanding of the number of falls and fallers by faller type may inform targeted treatment and monitoring strategies[5,11,15].

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