# INPLASY

## Virtual Reality Technology in Fall Prevention Among Older Adults: A Scoping Review

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## ADMINISTRATIVE INFORMATION

**Support -** No.

**Review Stage at time of this submission -** The review has not yet started.

**Conflicts of interest -** None declared.

**INPLASY registration number:** INPLASY202630071

**Amendments -** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 March 2026 and was last updated on 19 March 2026.

## INTRODUCTION

Review question / Objective Inclusion criteria:
(1) The study subjects are elderly people aged ≥60 years;
(2) The research focuses on the application of immersive or non-immersive virtual reality technology in the field of fall prevention for the elderly, including studies with fall incidence as the primary outcome, as well as literature using fall-related indicators such as balance function, gait, and muscle strength as observation outcomes;
(3) The research settings include hospitals, research institutions, rehabilitation centers, and community/home environments.
Exclusion criteria:
(1) Literature not published in Chinese or English;
(2) Studies with inaccessible full text, duplicate publications, or incomplete data;
(3) Reviews, study protocols, guidelines, expert consensus, and commentary-type literature.

**Background** Falls among the elderly have become one of the major public health challenges of global concern. According to World Health Organization data, approximately 684,000 people are injured due to falls each year. With the acceleration of population aging, statistics show that the incidence of falls among the elderly in China ranges from 13.5% to 34.9%. Falls not only cause physical injuries but also lead to psychological problems such as fear of falling and anxiety, placing a heavy burden on society and families. In recent years, virtual reality (VR) technology, as an emerging intervention method, has shown broad application prospects in the field of fall prevention for the elderly. By providing immersive or interactive training environments, this technology can effectively improve the motor functions of older adults, particularly offering unique advantages in enhancing balance control and gait stability. With the gradual promotion of VR technology in clinical practice, related research has been increasing; however, significant heterogeneity still exists in the design of core intervention programs, specific implementation procedures,

and the evaluation indicators of effectiveness. In view of this, this study is guided by the scoping review framework published in 2020 by the Joanna Briggs Institute (JBI) in Australia, reviewing research on the application of virtual reality technology for fall prevention in the elderly. It focuses on analyzing the types of technologies used, intervention content, evaluation indicators, and practical effectiveness, with the aim of providing reference evidence for future clinical practice and in-depth research in this field.

**Rationale** In recent years, virtual reality technology, as an emerging intervention method, has shown broad application prospects in the field of fall prevention for the elderly. This technology can effectively improve the motor functions of older adults by providing immersive or interactive training environments, especially demonstrating unique advantages in enhancing balance control and gait stability. With the gradual promotion of VR technology in clinical practice, related studies have been increasing, yet there remains significant heterogeneity in terms of the design of core intervention programs, specific implementation processes, and outcome evaluation indicators. In view of this, this study, guided by the scoping review framework published by the Joanna Briggs Institute (JBI) in Australia in 2020, reviews relevant research on the application of virtual reality technology in fall prevention for the elderly.

## METHODS

**Strategy of data synthesis** Computers were used to search PubMed, Web of Science, Cochrane Library, Embase, China National Knowledge Infrastructure (CNKI), Wanfang Medical Journal Database, VIP Chinese Science and Technology Journal Database, and China Biomedical Literature Database, with the search period from the inception of the databases to February 1, 2026. The Chinese search terms included 'elderly,' 'older adults,' 'fall,' 'fall prevention,' 'virtual reality technology,' 'virtual reality,' and 'immersive games.' A combination of subject headings and free-text terms was used for the search.

**Eligibility criteria** (1) The study subjects are older adults aged ≥60 years; (2) The research focuses on the application of immersive or non-immersive virtual reality technology in the field of fall prevention for the elderly, including studies where the primary outcome is the incidence of falls, as well as literature that uses fall-related indicators such as balance function, gait, and muscle strength as observed results; (3) The research settings include various environments such as

hospitals, research institutions, rehabilitation centers, and community or home-based settings.

**Source of evidence screening and selection** Two researchers with a foundation in evidence-based nursing research independently conducted the initial screening of the literature, preliminarily excluding literature that did not meet the requirements by reading the titles and abstracts. For the literature retained after the initial screening, the full text was further reviewed, and a secondary screening was carried out. If there was a disagreement between the two researchers, a third researcher would be involved for discussion and judgment.

**Data management** Import the literature initially retrieved from the database into EndNote 20 software for duplicate checking.

**Language restriction** Chinese and English.

**Country(ies) involved** China.

**Keywords** Virtual reality; Elderly; Fall prevention; Scoping review.

**Contributions of each author**
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Author 3 - Huang Qian.
Author 4 - Xiao Qian.