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Interventions for Fall Prevention: An Evidence-Based Practice Project

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Interventions for Fall Prevention: An Evidence-Based Practice Project

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Keywords: fall prevention, occupational therapy, interventions, older adults, community dwelling

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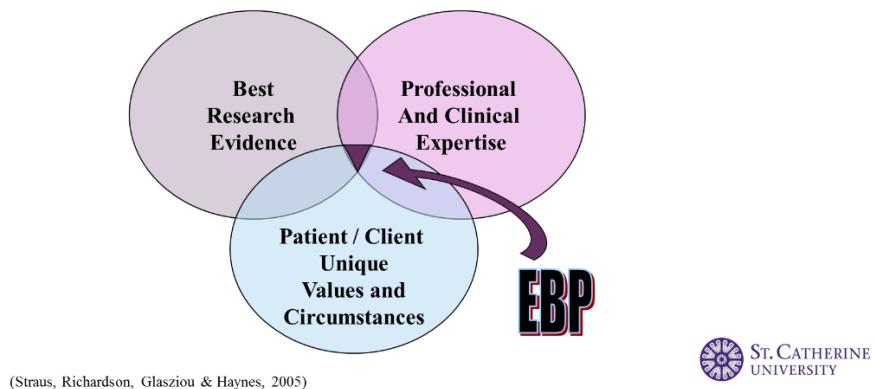
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Introduction

Evidence Based Practice

Evidence based practice is defined as the integration of knowledge from professional and clinical expertise, patient/client unique values and circumstances, and best research evidence (Straus, Richardson, Glasziou, & Haynes, 2005). The EBP courses in the St. Catherine University occupational therapy programs emphasizes skill building in finding, analyzing, and synthesizing research.

A definition of Evidence-Based Practice (EBP)



The EBP Project

Occupational therapy graduate students at St. Catherine University complete an EBP project in partial fulfillment of the requirements for a course on Evidence-Based Practice.

The EBP Process

- Begins with a practice dilemma
- Dilemma is framed as an EBP question and PICO
P (population/problem) I (intervention) C (comparison group) O (outcome(s) of interest)
- Background learning
- Search for the best evidence
- Initial appraisal and critical appraisal of the evidence
- Summary of themes from the evidence
- Recommendations for practice
- Next steps – implementation in practice

Four EBP Projects: Fall Prevention for Community-Dwelling Older Adults

1. Risk factors
2. Older Adults' Perspectives and Experiences
3. Screening and Assessment
4. Interventions and Programs

Practice Dilemma: Fall Prevention for Community-Dwelling Older Adults

Fall prevention for community-dwelling older adults is a priority area in:

- Healthy People 2020, the government's national objectives for improving the health of all Americans (Bergen, Stevens, & Burns, 2016)
- Minnesota Department of Health: Division of Health Promotion and Chronic Disease (Minnesota Department of Health, Division of Health Promotion and Chronic Disease., 2012)

Fall prevention for community-dwelling older adults is a national practice dilemma:

- It is the leading cause of fatal and nonfatal injuries for older adults Americans (Bergen, et al., 2016).
- Approximately 29% of older adults reported a fall in the last year (Bergen, et al., 2016).
- Approximately 38% of fallers had treatment or restricted activity for injury (Bergen, et al., 2016).
- Approximately 25% of independent living adults require alternative living environment after hip fracture (Minnesota Department of Health, Division of Health Promotion and Chronic Disease., 2012).
- In 2014, there were 29 million falls resulting in 7 million injuries (Bergen, et al., 2016).
- The annual Medicare costs related to falls is estimated as \$ 31.3 billion (Bergen, et al., 2016).

Fall prevention for community-dwelling older adults is a Minnesota practice dilemma:

- Minnesota has the 5th highest fall death rate in the United States (Bergen, et al., 2016; Minnesota Department of Health, Division of Health Promotion and Chronic Disease., 2012).
- Minnesota has more annual deaths from falls than from motor vehicle accidents (Minnesota Department of Health, Division of Health Promotion and Chronic Disease., 2012).
- There is no seasonal variation in Minnesota falls (Minnesota Department of Health, Division of Health Promotion and Chronic Disease., 2012).
- In 2009, Minnesota had an estimated 29,000 falls, 639 fatalities, and \$255 million medical costs associated with falls (Minnesota Department of Health, Division of Health Promotion and Chronic Disease., 2012).

What is the occupational therapy lens on fall prevention programs?

- Falls happen when we are ‘doing’ our everyday activities, don’t maintain active involvement in everyday activities, and have personal characteristics or environmental conditions that put us at risk for falls.
- Fall prevention is possible when we strengthen the personal characteristics and environmental conditions that support safe ‘doing’ of everyday activities, and address the factors that put us at risk for falls.

What is the interprofessional lens on fall prevention programs?

- Fall prevention is a major public health challenge because the reasons for falls are multi-dimensional and complex, it requires a team effort, and it is a priority in both medical and community settings.

Fall prevention for community-dwelling older adults is an occupational therapy practice opportunity. There are growing needs in practice and research and recent initiatives outline available resources and opportunities (Leland, Elliott, O’Malley, & Murphy, 2012; Peterson, Finlayson, Elliott, Painter, & Clemson, 2012).

- 2010 Clinical Practice Guideline (AGS, BGS)
- CDC Promotion of Fall Prevention Programs
- State Fall Prevention Coalitions

There are a growing number of state-specific and national resources for practitioners. A sample of Minnesota and national resources related to fall prevention for community-dwelling older adults include:

- Minnesota Falls Prevention <http://www.mnfallsprevention.org/index.html>
- Minnesota Board on Aging
<http://mnaging.org/Administrator/HealthyAging/PreventFalls.aspx>
- Leading Age Minnesota <https://www.leadingagemn.org/providers/clinical-excellence/fall-prevention-toolkit>
- Minnesota Safety Council
 - 1) <https://www.minnesotasafetycouncil.org/2020Plan/UnintentionalInjuryOnline.pdf>
 - 2) <https://www.minnesotasafetycouncil.org/family/falls.cfm>
- Centers for Disease Control and Prevention
<https://www.cdc.gov/homeandrecreationsafety/falls/index.html>

There are growing opportunities for occupational therapy professionals and other health professionals who want to work. There might also be an opportunity for MOTA to become more visible in fall prevention. A few local examples of fall prevention include:

- Regions Hospital and the St. Paul Fire Department teamed up to provide St. Paul seniors with fire and fall prevention information from the National Fire Protection Association’s Remembering When program. Thanks to a strong partnership with Merrick Community Services that’s been in place since January, Shonette and Jeremy were able to visit and educate nearly 50 seniors on the east side of St. Paul by doubling as Meals on Wheels volunteers. (Health Partners, the St. Paul Fire Department, and St. Paul’s Merrick Community Services: Meals on Wheels, <https://www.healthpartners.com/hp/about/about-blog/fire-and-fall-prevention-education.html>)

- Stand Up & Be Strong! is co-sponsored by MNPTA and the Minnesota Department of Human Services. Stand Up & Be Strong! consists of an easy-to-replicate model for assessing the risk of falls in older adults. After participating in a 30-second screening test, elderly participants learn their risk of falling and leave with a few simple exercises that can easily be performed in their home or long-term care facility. These exercises help reduce their risk of falls by improving lower extremity strength. Most notably, Stand Up & Be Strong! uses a "train the trainer" model, which allows physical therapists to train other health care professionals and community members to assess falls risk in their own communities and facilities, rather than relying on health care providers to provide assessments. (MNPTA and MN Department of Human Services: Stand Up & Be Strong!, <https://www.mnpta.org/page/30>)
- In 2007, the Minnesota Hospital Association initiated the Call to Action framework around falls prevention, resulting in SAFE from FALLS. Since SAFE from FALLS began, falls resulting in serious harm to patients have decreased by 25 percent in Minnesota hospitals. (Minnesota Hospital Association: SAFE from FALLS, <https://www.mnhospitals.org/quality-patient-safety/quality-patient-safety-improvement-topics/falls#/videos/list>)
- In the early 2000s, the Hennepin County Community Health Department launched a Senior Fall Prevention Task Force. Members of the task force represented professional and community organizations interested in preventing falls among seniors. The Senior Fall Prevention Task Force developed a Senior Fall Prevention Screening Kit to help organizations carry out fall prevention activities in their respective communities. (Minnesota Safety Council: Fall Prevention Checklist, <https://www.minnesotasafetycouncil.org/SeniorSafe/fallcheck.pdf>)

Appraisal of Best Research

After searching and finding evidence available from library databases and alternative sources, students conducted an initial appraisal to evaluate the quality and relevance of the evidence and select the best research for further review. Then they conducted critical appraisals of the best formal reviews of primary research (e.g., systematic reviews, meta-analyses) and/or primary/original research studies using the AOTA CAP form (American Occupational Therapy Association, 2016). One of the steps in the CAP process is to evaluate the strength or level of the research design and the types of conclusions that are possible from each design.

Initial Appraisal

- Quality of the evidence
 - type of evidence
 - research design
 - investigator qualifications
 - journal/publication/website
- Relevance of the evidence
 - PICO

Critical Appraisal

- Reviews of primary research
 - systematic reviews, meta-analysis
 - review process and approach
 - consistent and inconsistent findings
 - Primary research studies AOTA CAP
 - Level 1: randomized controlled trials
 - Level 2: two groups, nonrandomized/cohort
 - Level 3: nonrandomized, pretest/posttest and
 - Level 4: single subject
 - Level 5: case report
- and case control
cross-sectional

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All EBP Projects are available at <http://sophia.stkate.edu/>.

EBP Question

What occupational therapy and multidisciplinary/interprofessional interventions are most effective for preventing falls, decreasing fear of falling, improving safety in performing ADLs, and increasing quality of life in community-dwelling older adults?

Executive Summary

Minnesota Occupational Therapy Association Continuing Education Presentation

Interventions for Fall Prevention

Allyson Daines, Emily Delaney, Siri Dusek,
 Kristin Garland, Christina Gillard, Megan Gustafson,
 Megan Hana, Emily Hohenshell, and Megan Holmgren

EBP Question

What occupational therapy and multidisciplinary/interprofessional interventions are most effective for preventing falls, decreasing fear of falling, improving safety in performing ADLs, and increasing quality of life?

Background Learning

- There are many factors that influence quality of life with older adults, such as fall risk.
(American Occupational Therapy Association, 2017; Fall Prevention Center for Excellence, 2017)
- As individuals age, their risk of falling increases, but there are several intervention strategies that can help reduce the negative consequences of falls.
(Kaiser Permanente, 2015; McClure et al., 2007)



Background Learning

- Fall prevention programs are designed to achieve two common goals: to increase public education on falls and to implement programs to prevent and reduce falls among the older population
(Administration for Community Living, 2017)
- Multi-component interventions have been shown to be effective in fall prevention programs
(Center for Disease Control and Prevention, 2017; Chase, Mann, Wasik, & Arbesman, 2012; Gillespie et al., 2012; Gillin et al., 2006; Horowitz, Nochajski, & Schweitzer, 2013; National Safety Council, 2017).

Examples of Evidence Resources

- Governmental/Major Foundations:** CDC, National Council on Aging (NCOA)
- OT Specific Resources:** AJOT, OT Seeker, OT Search
- Interprofessional Journals, Databases, Professional Associations:** Cochrane Library, PubMed



Examples of Search Process

- Databases used:** PubMed, CINAHL, Cochrane Library, AJOT
- Helpful search strategies:** using MeSH terms
- Helpful keywords:** Accidental falls, aged, quality of life, treatment outcome, interventions, fear, community-dwelling



https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3700433/figure/F1/

Initial Appraisal of Best Evidence

- Primary Research Studies
 - # articles: 36
- Reviews of Primary Research
 - # articles: 7
- Conceptual/Theoretical Articles
 - # articles: 2



<https://www.flckr.com/photos/galaxy07/326833275a>

Overview of Critical Appraisals of Best Evidence

Primary Research

- 6 randomized controlled trials
- Interventions: cognitive-behavioral, Tai Chi, multimedia-based education, community-based, home-based, multifactorial and interdisciplinary, multicomponent home
- Outcomes: fear of falling, functional difficulties, incidence of falls, costs

Overview of Critical Appraisals of Best Evidence

Reviews of Research

- 2 systematic reviews, 1 literature review
- Interventions: general fall prevention programs, occupational therapy, home modification
- Outcomes: incidence of falls, performance

Critical Appraisal 1:

Reducing the fear of falling among community-dwelling elderly adults through cognitive-behavioral strategies and intense Tai Chi exercise: a randomized controlled trial (Huang et al., 2011).

- **Focused question:** Does Cognitive Behavioral Therapy and/or Tai Chi decrease the fear of falling in community-dwelling older adults as compared to other exercise interventions?
- **Clinical bottom line:** Cognitive Behavioral Therapy and Tai Chi when used together can decrease fear of falling which can lead to better mobility, falls efficacy, social support, and quality of life.



https://docs.google.com/presentation/d/1WzJ4U7YjB-S10DP59a7-AwqDgkXfIw/edit#slide=id.g2d39c1wfed_3_30

Clinical Appraisal 2:

Research Scholars Initiative-Randomized controlled trial comparing tailoring methods of multimedia-based fall prevention education for community-dwelling older adults (Schepers, Ponter, & Goldberg, 2011).

- **Focused question:** Does multimedia falls prevention education increase older adults' knowledge of fall threats and preventative behaviors?
- **Clinical bottom line:** The findings suggest multimedia falls prevention education is an effective intervention for older adults to improve knowledge of fall threats and engagement in fall prevention behaviors.



https://docs.google.com/presentation/d/1WzJ4U7YjB-S10DP59a7-AwqDgkXfIw/edit#slide=id.g2d39c1wfed_3_40

Critical Appraisal 3:

The effectiveness of a community-based program for reducing the incidence of falls in the elderly: A randomized trial (Clemson et al., 2004).

- **Focused question:** What are the most effective interventions for fall prevention?
- **Clinical bottom line:** The Stepping On Program reduces the number of falls in community dwelling older adults by 31%.



https://docs.google.com/presentation/d/1WzJ4U7YjB-S10DP59a7-AwqDgkXfIw/edit#slide=id.g2d39c1wfed_3_40

Critical Appraisal 4:

Fear of falling reduced by a lay led home-based program in frail community-dwelling older adults: A randomized controlled trial (Kopan et al., 2017).

- **Focused question:** Which interventions reduce fear of falling in community-dwelling older adults?
- **Clinical bottom line:** The physical training and nutrition group resulted in a 10% decrease in fear of falling.

Critical Appraisal 5:

The effects and costs of a multifactorial and interdisciplinary team approach to falls prevention for older home care clients 'at risk' for falling: A randomized controlled trial (Markie-Reid et al., 2010).

- **Focused question:** Are multifactorial and interdisciplinary fall prevention interventions effective in preventing falls and are they cost-effective?
- **Clinical bottom line:** The findings suggest that multifactorial and interdisciplinary interventions are cost-effective in reducing fall-related risk factors, improving quality of life, and decreasing fear of falling in men.

Critical Appraisal 6:

A randomized trial of a multicomponent home intervention to reduce functional difficulties in older adults (Gillen et al., 2006).

- **Focused question:** Within the population of older adults, do multicomponent home based intervention programs reduce functional difficulties and enhance self-efficacy?
- **Clinical bottom line:** Multicomponent home interventions involving therapists who recognize problem areas, measure performance, and teach modification techniques in older adults led to reduced functional difficulty in ADLs and IADLs.

**Critical Appraisal 7:**

Occupational therapy in fall prevention: Current evidence and future directions (Leland et al., 2012).

- **Focused question:** What are OT fall risk interventions?
- **Clinical bottom line:** 15 studies with three categories: Environmental Modifications, Exercise, and Multifactorial and Multicomponent Interventions

Critical Appraisal 8:

Interventions for preventing falls in older people living in the community (Gillespie et al., 2012).

- **Focused question:** What are the effects of interventions designed to reduce the incidence of falls in older people living in the community?
- **Clinical bottom line:** Group and home-based exercise programs, home safety interventions, multifactorial interventions, and Tai Chi have been shown to be effective in fall prevention programs.

**Critical Appraisal 9:**

Systematic Review of the Effect of Home Modification and Fall Prevention Programs on Falls and the Performance of Community-Dwelling Older Adults (Chase et al., 2012).

- **Focused question:** What evidence supports home modification and fall prevention?
- **Clinical Bottom Line:** It is important for therapists to incorporate a multidisciplinary approach to interventions. Home modification along with exercise programs can increase independence in ADLs and IADLs.



Theme 1: Fear of Falling

Fear of falling should be addressed in fall prevention programs for community-dwelling older adults.

- May reduce quality of life and independence (Borod, DeChaire, & Thomas, 2007).
- May be associated with an increase in falls (Jouannini et al., 2009).
- Multifactorial interventions may reduce fear of falling as well as improve balance, and overall quality of life (Huang et al., 2011).

Theme 2: Education

Multifactorial education is an effective method to introduce the basis for falls prevention.

Providing education can be effective to improve knowledge (Sheehan, Panzer, & Goldberg, 2011).

Two effective programs:

- The STEADI program: Screen, Assess, Intervene (Centers for Disease Control and Prevention, 2017).
- Stepping On Program: 7 weeks aims; each week focuses on a different aspect of falls prevention (Clemson et al., 2004).



https://docs.google.com/presentation/d/1WqAS7t8-S1C0PmNWyMAtL_0wGz_Au9HmHvadw/edit#slide=id.g2d33fc1e17c2_40

Theme 3: Exercise as an Intervention

Exercise has been shown to be an effective intervention to reduce the number of falls and the fall risk in community-dwelling, older adults.

- Characteristics of exercise interventions vary among studies (Codore et al., 2013; Gillespie et al., 2012; Huang et al., 2011; Kovacs et al., 2013).
- Exercise programs often include multiple components (Codore et al., 2013; Gillespie et al., 2012; Huang et al., 2011; McClure et al., 2007).
- The CDC and NCOA promote programs like *Stepping On* and *Otago Exercise Program* for fall prevention (CDC, 2015; NCOA, 2017).



https://commons.wikimedia.org/wiki/File:Overhead_press_CDC_Otago_exercise_for_older_adults.gif

Theme 4: Multidisciplinary Interventions

Multidisciplinary interventions have been shown to reduce the prevalence of falls in older adults.

- Physical environment challenges (Horowitz, Nachigli, & Schweitzer, 2013).
- Effective home modifications (Gill et al., 2006).
- Medical interventions that reduce vision issues and hypersensitivity (Gillespie et al., 2012).
- Adjusting medications and incorporation of nutritional supplements (CDC, 2017).



<https://playabay.com/en/vitamin-ds-medicine-healthcare-125007>

Recommendations for OT & Interprofessional Programs

- Acknowledge there is a psychological component when planning fall prevention
- Multi-component forms of intervention are recommended when possible
- Client-centered approaches ensure understanding and promote follow through of recommendations
- Cultural characteristics of individuals and groups may be important in selecting intervention programs



https://docs.google.com/presentation/d/1WqAS7t8-S1C0PmNWyMAtL_0wGz_Au9HmHvadw/edit#slide=id.g2d33fc1e17c2_40

Summary and Reflection

General Conclusions

- Falling is prevalent among community-dwelling, older adults
- OT interventions are important in reducing the risk of falls and for promoting quality of life

Reflection of EBP Project

- Learned about the research process and about the importance of research
- Gained a better understanding of group dynamics and the benefits of working as a team



<https://playabay.com/en/research-project-42687.html?redir>

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Interventions for Fall Prevention: Themes and Summary

Introduction

According to Administration for Community Living (ACL), falls prevention programs are implemented to achieve two common goals: to increase public education and knowledge on falls and to support the implementation of programs and strategies to prevent and reduce falls among the older population (ACL, 2017). The National Council on Aging (NCOA, 2017) explains six easy steps to prevent falls in older adults, including participation in a balance and exercise program, discussion of health questions with primary care physician, management of medication, screenings of vision and hearing, modification for home safety, and encouragement from family members. Our four themes related to interventions include fear of falling, education, exercise and multidisciplinary interventions.

Fear of Falling

Fear of falling can reduce quality of life and independence in elderly adults living in the community. Adults who fear falling tend to engage in fewer activities which decreases independence, strength, and mobility (Soriano, Decherrie, and Thomas, 2007). Mental health also impacts falling and fear of falling through feelings of anxiety, nervousness, and depression (Lianttiniemi et al., 2009). The psychological and physical issues involved in fear of falling may be associated with an increase in falls (Lianttiniemi et al., 2009). There is hope to reduce fear of falling and falling through interventions. In a randomized control trial comparing a 12 week physical training and nutrition treatment group to a social support control group, the treatment group resulted in a 10% decrease in fear of falling (Kapan et al., 2017). Huang, Yang & Liu (2011) report that a multifactorial intervention using Cognitive Behavioral Therapy (CBT) and

Tai Chi exercise was effective in reducing one's fear of falling as well as improving balance, and overall quality of life.

Education

Education is a common intervention approach for older adults in the community setting. A randomized control trial comparing tailored educational programs to a control group found that both authenticity and motivation educational programs were effective in improving knowledge of fall threats; educational programs that were focused on motivation also increased engagement in fall prevention behaviors (Schepens, Panzer, & Goldberg, 2011). Haastregt et al., (2000) proposed educational intervention topics should include medication management, safety precautions, psychosocial awareness including fear of falling, and improvements in physical strength.

Several evidence-based education programs are promoted by the Centers for Disease Control and Prevention (CDC, 2017). The Stopping Elderly Accidents, Deaths, and Injuries (STEADI) program is an evidence based intervention that helps identify and modify risk factors to offer effective screening and support for older adults (CDC, 2017). The STEADI program first assesses the fall risk of older adults via tests such as the Time Up and Go, 30-Second Chair Stand, and 4-Stage Balance Test. Then clients are categorized as low fall risk, moderate fall risk, and high fall risk; educational interventions are provided in each category for all risk levels. Education focuses on the implementation of vitamin D and calcium, medication management, proper footwear, and use of mobility aids. Recommended referrals are specific to the risk level of the client. Referrals include community exercise programs, maintenance exercise programs, and physical therapy (CDC, 2017).

The *Stepping On* Program aims to educate older adults on strength and balance, home safety, medication management, and regular vision screenings (CDC, 2017; Clemson et al., 2004). The *Stepping On* Program is a seven week program that provides highly interactive classes with mutual support given to individuals to increase their confidence to reduce the risk of falls and to maintain an active lifestyle (National Council on Aging (NCOA), 2016). The NCOA reports the goals of the *Stepping On* Program is to provide education to facilitate adult group learning, increase fall risk awareness, and offer a structured environment to apply knowledge regarding safety precautions. One intervention group that participated in the *Stepping On* Program experienced 31% reduction in falls (Clemson et al., 2004). According to the *Stepping On* website, it is important to note that the *Stepping On* Program is not an optimal intervention for patients with Parkinson's disease (Clemson & Swan, 2008).

While education-based interventions have been found to reduce the likelihood of falls, Gillespie et al., (2012) report that “The evidence relating to the provision of educational material alone for preventing falls is inconclusive.” (p. 19). Therefore, additional interventions such as exercise programs should be implemented to help prevent the risk of falls.

Exercise

Exercise has been shown to be an effective intervention to reduce the number of falls in community-dwelling, older adults. Across studies, there are several different types of exercises used in interventions, and many of these exercises are used in multi-component programs.

The characteristics of exercise interventions vary among studies. For example, Tai Chi has been examined in systematic reviews and randomized control trials and shown to be effective in reducing the risk of falls (Gillespie et al. 2012; Huang et al., 2011). In two systematic reviews, balance training and muscle strengthening within exercise interventions were helpful in reducing

falls (Cadore, Rodríguez-Mañas, Sinclair, & Izquierdo, 2013; Gillespie et al., 2012). Exercise programs that focused on improving static balance and functional mobility decreased the amount of falls among older women enrolled in a randomized single-blinded controlled trial (Kovacs, Prokai, Meszaros, and Gondos, 2013). In current practice, there are many specific exercise programs aimed at reducing falls in older adults that are available for public use. These include programs such as *Stepping On* and *Otago Exercise Program* (CDC, 2015; NCOA, 2017).

Exercise programs often include multiple components. A Cochrane systematic review and a randomized control trial found that mult-component exercise programs administered in group classes or in individuals' homes have been shown to decrease rate of falls and risk of falling (Gillepsie et al, 2012;Huang et al, 2011)). Single exercise programs, except for Tai Chi, were not shown to be effective on their own (Gillespie et al., 2012). A randomized controlled study done by Huang et al. (2011) concluded that cognitive behavioral therapy in addition to Tai Chi diminished the fear of falling in older adults which in turn was related to increased mobility, social support, and quality of life. One systematic review concluded that “the most effective fall prevention strategy to improve falls in older adults were multicomponent exercise interventions consisting of gait ability, balance, and strength” (Cadore et al., 2013, p. 105). A Cochrane systematic review concluded that effective strategies targeted at fall prevention include education, environmental change in addition to increased physical activity (McClure et al., 2007).

Multidisciplinary Interventions

There are many multidisciplinary interventions that can be implemented in order to reduce the prevalence of falls in older adults. These include home modifications, medical interventions, and medications.

Home modifications may lower the risk of falls in community dwelling adults (Chase, Mann, Wasek, & Arbesman, 2012). A multidisciplinary home modification intervention that included occupational and physical therapists and identified environmental barriers, prioritized problem areas, observed performance, assessed safety, and taught adaptations was effective in reducing functional difficulties in older adults (Gitlin et al., 2006). The physical environment in the home may affect how older adults participate in their ADLs (Horowitz, Nochajski, & Schweitzer, 2013). After evaluating ADLs and IADLs performance, recommended home modifications may include rearranging furniture, moving trip hazards like rugs, and increasing lighting (National Safety Council [NSC], 2017).

Medical interventions may also help reduce the frequency of falls in community dwelling adults. Vision problems can lead to an increased risk of falls (CDC, 2017). For people who wore the correct glasses, falls in general were reduced (CDC, 2017). Women who had cataract surgery in one eye had a reduced rate of falls, but there was no change if they had a second surgery (Gillespie et al., 2012). Also, the insertion of a pacemaker reduced the number of falls in people who have hypersensitivity. This is because it helps regulate blood pressure. However, this does not eliminate the risk of falling (Gillespie et al., 2012).

When designing intervention programs it is critical to assess medications being taken by older adults. According to Gillespie et al., (2012), medications contribute to an increased risk of falls. Gradually adjusting and reducing medications that improve sleep, reduce anxiety, and treat depression have shown to reduce falls (CDC, 2017). Appropriate nutritional supplements may also be effective in reducing falls (CDC, 2017). A possible modifiable fall risk factor is a Vitamin D insufficiency, which can be avoided with supplementation (CDC, 2017).

Conclusion

This EBP project examined the interventions that may be effective in fall prevention programs for community dwelling older adults. Fear of falling may have an impact on fall risk and should be addressed in fall prevention programs. Education is a significant component that may contribute to the older adults' awareness, safety, and independence. Exercises and home modifications should also be addressed within fall prevention programs. Multidisciplinary interventions that include home modifications, medical interventions, medication management, and exercise training may lead to a reduced risk of falls.

Summary and Implications for Practice

In the evidence-based research, we found various interventions that support fall reduction, a decrease in fear of falling, and improvements in quality of life by increasing independence of ADL in community-dwelling older adults. Several studies have demonstrated that adults who fear falling are likely to engage in less mobile activities which can result in adverse health impacts. Educational programs may be an effective intervention for occupational therapists (OT) to incorporate into their practice to address the fear of falling and fall risk. Educational fall programs have illustrated authenticity and motivation to support older adult's knowledge and involvement in falls prevention. Educational intervention topics should include medication management, safety precautions, psychosocial awareness and physical strength improvements.

The research illustrated that exercise was an effective intervention for reducing the risk of falls. Exercise programs delivered in groups or in individual homes were both effective for fall prevention. In addition, group exercise interventions promote socialization, which can, in turn, lead to a higher quality of life. Occupational therapists may refer older adults to exercise programs that incorporate multiple forms of activity, for example, cardio with strength and balance.

The evidence also supported multidisciplinary interventions. Home modifications such as moving furniture, rugs, and rearranging materials helped reduce the number of falls. An OT can propose simple adjustments in an individual's home. Also, low vision may increase the number of falls so assessing vision in community-dwelling adults is essential. Lastly, OT's may collaborate with other professionals to support medication management strategies that improve

sleep, reduce anxiety, and treat depression may lead to reduced falls. Supplements, such as vitamin D, can also contribute to fall reduction.

Exercise, education, decreasing fear of falling, and multidisciplinary interventions all have important implications for occupational therapy practice. Promote, modify, prevent, and maintain are approaches to intervention in the occupational therapy practice framework that can provide an integrative way to address the themes found throughout the literature. To promote and maintain a client's health, programs such as *Stepping On* and exercise routines that enhance strength and reduce fear of falling can be used to educate older adults on fall prevention. Multidisciplinary interventions can be used to purpose modifications to a client's home environment by taking into account client factors such as vision loss. Exercise, education, decreasing fear of falling, and multidisciplinary interventions are essential components to interventions that are designed to prevent falls in older adults.

Upon reviewing the research, a recommendation we have is to use a client centered approach. When selecting fall prevention programs to implement, client centeredness is essential to promote health and participation for clients. Upon choosing an intervention the OT should consider the resources, settings and interests of the client. The client's body functions and structures should be taken into account when choosing exercise, and when educating the client to ensure understanding and follow-through. If an intervention is chosen without the client in mind it is likely the client factors, performance patterns and performance skills will interfere with one's ability to learn and carry out an intervention. A client centered approach will be necessary when considering cognitive, psychological and physical abilities required for multidisciplinary, exercise and education interventions.

Within our themes there are both strengths and limitations that a practitioner must consider before implementing this evidence into practice. Multiple studies produced similarities in strengths evidenced by their inclusion in systematic reviews and randomized controlled trials. Strong evidence is illustrated through education-based programs which increased both older adults awareness of the risk of falls and of the lifestyle modifications that can be made. Although education is important, evidence found education alone to be less effective than education combined with other prevention strategies. For example, multi-component exercise and Tai Chi programs may be the most effective. Evidence was also provided concerning the influence of psychological factors, such as fear of falling. These fears were addressed with recommendations to address anxiety and nervousness. Furthermore, studies demonstrate that programs that combine physical training with Cognitive Behavioral Training (CBT) or nutritional training have been found to decrease the fear of falling. Consequently this highlights the significance of multifactorial interventions as the most effective approach.

Although there were many strengths in each of the studies, there were also limitations that could hinder the quality of the results. First, many studies that focused on exercise and fear of falling included a majority of female participants, so the interventions may yield different results with males. Further, several studies excluded participants who had secondary conditions such as Parkinson's or dementia, so fall prevention interventions may not be effective among this population. Studies that addressed fear of falling often had small sample sizes, which could limit the generalizability of the results to all community-dwelling, older adults. Research on the impact of the fear of falling is limited. Finally, many studies were conducted outside of the United States, so interventions conducted with this culture may not necessarily be effective for older adults across all cultures. These limitations must be taken into consideration when

implementing a fall prevention intervention. These factors suggest the need for further studies to be conducted not only within the United States but among all demographics to increase our knowledge regarding older adult fall prevention.

Overall, the evidence based research for fall prevention interventions has made it clear that there are many factors that need to be considered when choosing an intervention for a client. A client centered approach, that takes into account the client's cognitive, psychological, physical and environmental factors is imperative to ensure understanding and promote follow through. Multi-component interventions have illustrated the most effective results for reduction in falls and improvement in quality of life. With these factors in mind, an OT can suggest interventions that are more likely to provide the maximum benefits for community dwelling older adults.

Table of EBP Resources

Table 1.

Governmental and Foundation Resources that Address Falls Prevention

Title/Name	Brief Description	Source
CDC Home and Recreational Safety	Describes how to prevent injuries to ensure individuals are safe in their homes and environments	Center for Disease Control and Prevention (CDC) www.cdc.gov
NCOA Home and Recreational Safety	Provides news, resources, and tips to help prevent falls in older adults Includes information on falls prevention programs	National Council on Aging (NCOA) www.ncoa.org
Kaiser Permanente Health and Wellness	Described as one of the “leading health care providers” in the United States Provides information on conditions, diseases, and health and wellness programs	Kaiser Permanente www.kaiserpermanente.org
ACL Health and Wellness	Describes evidence-based falls prevention programs that focus on reducing falls in older adults Focuses on building relationships with healthcare facilities to identify funding to sustain fall prevention programs	Administration for Community Living (ACL) www.acl.gov
Osteoporosis and related Bone Diseases National Resource Center	Comprehensive source for information on bone-related diseases Includes information on the prevention, early detection, and treatment of osteoporosis and related conditions	National Institutes of Health www.bones.nih.gov

Table 2.
Occupational Therapy Resources for Fall Prevention

Title/Name	Brief Description	Source
AOTA Productive Aging	Fall prevention resources such as AOTA CDC falls prevention project, community presence, national fall prevention and public awareness	American Occupational Therapy Association AOTA.org
American Journal of Occupational Therapy	Many articles on fall prevention and home modification for older adults in the community	American Journal of Occupational Therapy ajot.aota.org
Scandinavian Journal of Occupational Therapy	Focus on many different areas of risk for different disabilities	Scandinavian Journal of Occupational Therapy http://www.tandfonline.com/toc/iocc20/current
Occupational Therapy International	Discusses the relationship between falls and physical impairments such as hip fractures and spinal cord injuries	Occupational Therapy International http://onlinelibrary.wiley.com/advanced/search/results
Australian Occupational Therapy Journal	Described as containing empirical studies that support OT roles in fall prevention Also includes information on dwelling in community	Australian Occupational Therapy Journal www.otaus.com.au

Table 3.
Interdisciplinary Journals, Databases, and Professional Associations for Fall Prevention

Title/Name	Brief Description	Source
Fall Prevention Center for Excellence	Provides information on fall prevention and additional external resources	Fall Prevention Center http://stopfalls.org/resources/organizational-resources/
American Physical Therapy Association	Information about physical therapy practice, education and research on causes and prevention of falls Includes consumer education for specific conditions	American Physical Therapy Association http://www.apta.org/BalanceFalls/
Cochrane Database of Systemic Reviews	Systemic reviews in health care, including articles on fall prevention	Cochrane Database http://www.cocharanelibrary.com
American Geriatrics Society	Interdisciplinary professional organization and Journal of the American Geriatrics Society (JAGS)	American Geriatrics Society https://www.americangeriatrics.org/
The Online Journal of Issues in Nursing	Peer reviewed journal articles on nursing practice, education, and research for health care including articles on fall prevention programs	The online Journal of Issues in Nursing http://www.nursingworld.org/

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Appendix A: Initial Appraisals

Type of article	Overall Type: Primary research study Specific Type: Case study
APA Reference	Horowitz B, Nochajski S, & Schweitzer J. (2013). Occupational therapy community practice and home assessments: use of the home self-assessment tool (HSSAT) to support aging in place. <i>Occup Ther Health Care.</i> 27(3), 216-227. doi: 10.3109/07380577.2013.807450.
Abstract	More than 70 million Americans are expected to be 65 years or older by 2030, with 8.7 million 85 or older. Occupational therapists can provide client and population-centered interventions to promote home safety, functional abilities, and quality of life to support older adults' desires for independence and to age in place. This includes the use of assistive technology, home modifications, and rehabilitation principles, to design real life solutions to support the needs of older adults. Using case study methodology this paper focuses on the development and pilot-testing of the Home Safety Self-Assessment Tool (HSSAT), a new home assessment, designed for use by older individuals to promote home safety and aging in place. The results suggest the tool may assist older adults in identifying environmental factors that are related to falls and facilitate their ability to age in place.
Author	Credentials: PhD. In gerontology, OT and Social Worker Position and Institution: Associate professor in OT at York College Publication History in Peer-Reviewed Journals: Average amount of peer-reviewed articles
Publication	Type of publication: Scholarly-Peer reviewed Journal Publisher: Occupational Therapy in Health Care Journal Other: Taylor and Francis Online
Date and Citation History	Date of publication: October 2012 Cited By: Google Scholar: 8
Stated Purpose or Research Question	"Although home safety is not discussed in either model, it is implicit as a characteristic of the physical environment that impacts person-environment- t and can affect older adults' ability to perform everyday life activities, socialize, and engage in recreation"(219).
Author's Conclusion	"This paper summarizes the development of the HSSAT and how it can be used within occupational therapy practice at the community and individual level to promote home safety and support older adults' goals to age in place. It is a promising tool to help older adults self-identify home hazards and develop individualized solutions to solve environmental problems to support community living" (225).
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: moderate Rationale: This article has information about the community dwelling population. It looks at interventions for reducing fall risks and states the outcome of the study.
Overall Quality of Article	Overall Quality of Article: <i>Moderate</i> Rationale: The author and the sources is reliable. The intervention that is discussed is important for our paper because it discusses the importance of aging in place. This intervention can support our point of staying in home and home modifications for ADLs.

Type of article	Overall Type: Primary research study Specific Type: Retrospective study
APA Reference	Mamikonian-Zarpas A, & Laganá L. (2015). The relationship between older adults' risk for a future fall and difficulty performing activities of daily living. <i>Journal of aging gerontol.</i> 3(1), 8-16. doi: 10.12974/2309-6128.2015.03.01.2
Abstract	Functional status is often defined by cumulative scores across indices of independence in performing basic and instrumental activities of daily living (ADL/IADL), but little is known about the unique relationship of each daily activity item with the fall outcome. The purpose of this retrospective study was to examine the level of relative risk for a future fall associated with difficulty with performing various tasks of normal daily functioning among older adults who had fallen at least once in the past 12 months. The sample was comprised of community-dwelling individuals 70 years and older from the 1984–1990 Longitudinal Study of Aging by Kovar, Fitti, and Chyba (1992). Risk analysis was performed on individual items quantifying 6 ADLs and 7 IADLs, as well as 10 items related to mobility limitations. Within a subsample of 1,675 older adults with a history of at least one fall within the past year, the responses of individuals who reported multiple falls were compared to the responses of participants who had a single fall and reported 1) difficulty with walking and/or balance (FRAIL group, $n = 413$) vs. 2) no difficulty with walking or dizziness (NDW+ND group, $n = 415$). The items that had the strongest relationships and highest risk ratios for the FRAIL group (which had the highest probabilities for a future fall) included difficulty with: eating (73%); managing money (70%); biting or chewing food (66%); walking a quarter of a mile (65%); using fingers to grasp (65%); and dressing without help (65%). For the NDW+ND group, the most noteworthy items included difficulty with: bathing or showering (79%); managing money (77%); shopping for personal items (75%); walking up 10 steps without rest (72%); difficulty with walking a quarter of a mile (72%); and stooping/crouching/kneeling (70%). These findings suggest that individual items quantifying specific ADLs and IADLs have substantive relationships with the fall outcome among older adults who have difficulty with walking and balance, as well as among older individuals without dizziness or difficulty with walking. Furthermore, the examination of the relationships between items that are related to more challenging activities and the fall outcome revealed that higher functioning older adults who reported difficulty with the 6 items that yielded the highest risk ratios may also be at elevated risk for a fall.
Author	Credentials: Doctorate in psychology Position and Institution: Works in the department of psychology at California State University Publication History in Peer-Reviewed Journals: very minimal published article
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: Journal of aging gerontology Other: PubMed database
Date and Citation History	Date of publication: December 2015 Cited By: 2
Stated Purpose or Research Question	"The primary goal of this retrospective comparative study was to identify the degree of relative risk for a future fall that is associated with reported difficulty with performing activities of daily living (ADL/IADL) and other mobility limitations in community-dwelling older adults who fell within the past 12 months" (2).
Author's Conclusion	"The results of this retrospective study, although in need of being replicated in future research, suggest that health care providers could efficiently screen their patients for risk of a future fall by using information that is often already available to them in their patients' charts" (10).
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: This study focuses on the elderly population and ADLs. It discusses the intervention/assessment that should be used and then gives information about how health care providers can use the screening to look at fall risk.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: This article has a few points that support ADL testing for community-dwelling adults. After evaluating ADLs, interventions can be implemented. Risk factors are also evaluated.

Type of article	Overall Type: Primary research study Specific Type: Cross-sectional study
APA Reference	Okamura T, Tanabe N, Shinoda K, Seki N, Konishi I, Takeshita A, & Suzuki H. (2009). Evaluation of performance status of daily living activities and of the future risk of falls in the non-handicapped, community-dwelling elderly. Environ Health Prev Med. 14(2), 111-117. doi: 10.1007/s12199-008-0066-5.
Abstract	<p>Objectives There is a growing need to evaluate the performance status of the activities of daily living (ADL) of the elderly in the rapidly aging Japanese society. The purpose of this study was to verify the usefulness of our new scoring sheet for assessing present ADL status and to clarify whether or not the assessed ADL status can predict the future risk of adverse conditions related to falls.</p> <p>Methods The validation study was performed using 116 non-handicapped community-dwelling Japanese elderly at least 60 years of age. Of those subjects, 44 were also analyzed for the relationship between baseline ADL status and subsequent risk of adverse conditions related to falls.</p> <p>Results The daily living performance score sheet had good internal consistency, with a Cronbach's alpha of 0.82 and a sequential hierarchical structure that reflected the difficulty of the activities. The total score was significantly and positively associated with six of eight subscale scores on the Short-Form 36-Item Health Survey ($P < 0.01$). In the follow-up study, every one-point decrease in total score was significantly associated with a 39% elevated risk of a stumble or fall ($P = 0.022$) and also borderline significantly associated with higher risks of a fall, anxiety while walking indoors, and anxiety while walking outdoors ($P < 0.10$).</p> <p>Conclusion Our new scoring sheet can reliably and comprehensively assess present ADL status. The assessed ADL could predict the future risk of adverse conditions related to falls.</p>
Author	Credentials: Professor in the Division of Occupational therapy Position and Institution: School of Health Sciences Niigata University of Health and Welfare Niigata, Japan Publication History in Peer-Reviewed Journals: Minimal peer reviewed articles
Publication	Type of publication: scholarly peer reviewed article Publisher: Journal of environmental health and preventative medicine Other: NA
Date and Citation History	Date of publication: March 2009 Cited By: 4
Stated Purpose or Research Question	"The purpose of this study was to verify our new scoring sheet as a useful tool for assessing present ADL status and to determine if ADL status assessed by this questionnaire predicted the future risk of adverse conditions related to physical weakness" (112).
Author's Conclusion	"Although these limitations should be addressed in further studies, we conclude that our daily living performance score sheet questionnaire could become a reliable tool for evaluating present ADL status of the Japanese elderly in a community and that ADL measured by this scoring sheet is useful for evaluating future risk of a stumble or fall" (115).
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: This article does focus on the elderly population, but it focuses on the assessment that should be given. It has some information about the intervention and the outcome, but only gives background information for our paper.
Overall Quality of Article	Overall Quality of Article: Good Rationale: This study reviewed ADLs and was aimed to see if problems with ADLs could lead to falls. They created a score sheet to be able to measure effectiveness.

Type of article	Overall type: Primary research study Specific Type: Randomized clinical trial
APA Reference	Stark S, Somerville E, Keglovits M, Conte J, Li M, Hu YL, & Yan Y. (2017). Protocol for the home hazards removal program (HARP) study: a pragmatic, randomized clinical trial and implementation study. <i>BMC Geriatr.</i> 17(1). doi:10.1186/s12877-017-0478-4.
Abstract	<p>Background Falls remain the leading cause of injury, long-term disability, premature institutionalization, and injury-related mortality in the older adult population. Home modifications, when delivered by occupational therapists, can reduce falls among high-risk community-dwelling older adults by 39%. However, home-modification implementation is not standard practice in the United States. The goal of the <i>Home Hazard Removal Program</i> (HARP) study is to implement an evidence-based home modification intervention for older adults designed to reduce the incidence of falls through an aging services network.</p> <p>Methods We will conduct a hybrid effectiveness/implementation trial of 300 older adults at risk for a fall who are randomized and followed for 12 months. Participants who are randomized to treatment will receive the home modification intervention provided by an occupational therapist in addition to usual care, defined as continued services from the area agency on aging. We will compare the effectiveness of the program and usual care using survival analysis with the time to the first fall over 12 months as the primary outcome of interest. Secondary outcomes include daily activity performance, fall self-efficacy, and health-related quality of life. Fidelity, dose, adherence, safety, cost, and health care utilization will also be examined in the implementation component of this study.</p> <p>Discussion This intervention targets an underserved, difficult to reach population of older adults. The tailored approach of the study intervention is a strength in improving adherence, as each recommendation is individualized to be acceptable to the participant. The effectiveness/implementation design of the study allows for rapid dissemination of results and implementation of the intervention in a United States social services agency.</p>
Author	Credentials: PhD, serves on AOTA Position and Institution: Assistant professor of Occupational Therapy, Neurology, and Social Work at Washington University Publication History in Peer-Reviewed Journals: Moderate amount of peer reviewed journals
Publication	Type of publication: Scholarly peer reviewed Publisher: BMC Geriatrics Other: NA
Date and Citation History	Date of publication: 2017 Cited By: 1
Stated Purpose or Research Question	“We hypothesize that older adults who receive the program will have a lower rate and risk of falls and improved self-efficacy, daily activity performance, and quality of life compared with the usual care group” (2).
Author’s Conclusion	This study has not been completed yet. This paper just gives a general overview about the study.
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Limited Rationale: This article has good information about the population and the planned intervention. However, it has not been completed yet so we do not know the outcomes and the effectiveness of it.
Overall Quality of Article	Overall Quality of Article: Good Rationale: This article supports an intervention for elderly people who live in their homes. We can use this article to help support home modifications. However, we will not be able to talk about the results of the study since it has not been completed.

Type of articles	Overall Type: Primary research study Specific Type: Descriptive study
APA Reference	Tanner, E. K. (2003). Assessing home safety in homebound older adults. <i>Geriatric Nursing</i> , 24(4), 250-256. doi:10.1016/s0197-4572(03)00219-2
Abstract	Maintaining independent living is a high priority among community-dwelling older adults. Most older adults live alone or with spouses in their own homes; in fact, 47% of those 85 or older live alone. Physical and mental impairments associated with advancing age can threaten independent living. Increased symptoms from chronic illnesses and concomitant treatments, decreased vision and mobility, weakened balance and strength, and increased environmental risk factors within the home setting all result in added risks for unintentional injury. These risks too often lead unnecessarily to falls. Approximately one-third of older adults experience at least one fall each year, with serious injury reported in 45%, and those who have fallen previously are likely to sustain subsequent falls. Falls represent the leading cause of unintentional injury in older adults and often result in mortality, diminished functional ability, and institutionalization or permanent loss of independent living. Consequently, it is imperative to assess risks to home safety and implement prevention programs among community-dwelling older adults to prevent falls, avoid injury, and facilitate independence as long as possible.
Author	Credentials: PhD, RN, FAAN Position and Institution: Professor in the Department of Community-Public Health at John Hopkins School of Nursing. Areas of Expertise: Gerontology and health promotion; volunteerism in older adults; the relationship between social factors and health outcomes Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: scholarly peer-reviewed journal Publisher: Geriatric Nursing Other: PubMed
Date and Citation History	2003 Google Scholar Cited By: 29
Stated Purpose or Research Question	“It is imperative to assess risks to home safety and implement prevention programs among community-dwelling older adults to prevent falls, avoid injury, and facilitate independence as long as possible.” (Pg 250)
Author’s Conclusion	“Assessing home safety is essential, but data collection in itself is not adequate. As with any nursing assessment, the data collected must be analyzed and a specific plan formulated and implemented to minimize the areas of identified risks. Programs based on multifaceted assessment of home safety are highly effective in preventing falls and injury, as well as promoting safety and preserving independent living and quality of life in older adults.” (Pg 254)
Overall Relevance to PICO	Overall Relevance to PICO: Moderate Rationale: This study focuses on the assessment of risk factors within the population of older adults. Risk factors are compared and analyzed. Information from these risk factors does not incorporate much information on intervention strategies.
Overall Quality	Overall Quality of Article: Good Established author. Reputable journal and publisher. We could use the risks assessed in this study and related them to intervention strategies in our paper. We could include information about the importance of home assessments in reducing fall risks in older adults from this study. Publish date is not within the last 10 years.

Type of article	Overall Type: Primary research study Specific Type: Prospective cohort
APA Reference	Stenhamn M, Ekström H, Nordell E, & Elmståhl S. (2014). Both deterioration and improvement in activities of daily living are related to falls: a 6-year follow-up of the general elderly population study good aging in skåne. <i>Clin interv aging</i> , 9, 1839-1846. doi:10.2147/CIA.S70075
Abstract	<p>Objectives To determine the relationship between long-term change in activities of daily living (ADL) and falls in the elderly and to identify characteristics of groups at risk for falls.</p> <p>Methods This was a 6-year, prospective cohort study using data from the Good Aging in Skåne study in southern Sweden, involving 1,540 elderly subjects, including the oldest-old (age, 60–93 years). The subjects were recruited from the general population. ADL was measured at a baseline and follow-up assessment, using Sonn and Åsberg's revised scale and the ADL staircase. Falls were recorded in a period of 6 months before the follow-up assessment. The association between falls and change in ADL was calculated using adjusted, multiple logistic regression analysis and presented in odds ratios (ORs).</p> <p>Results Thirteen percent of the study population reported one or several falls in the measured period. Over the course of 6 years, one in four participants changed their ADL status, and parts of this category had an increased risk for falls compared with those who stayed independent in ADL or who had no change in the ADL staircase. Groups with different characteristics had a prominent risk for falls: those with a reduction of two to eight steps in the ADL staircase (OR, 4.05; 95% confidence interval [CI], 1.62–10.11) and those becoming independent from dependency in instrumental ADL (OR, 4.13; 95% CI, 1.89–9.00). The former group had advanced age with a greater burden of cognitive impairment, gait disability, arrhythmia, and fall risk medications. The latter group had a higher prevalence of ischemic heart disease and low walking speed.</p> <p>Conclusion Both deterioration and improvement in ADL over the course of 6 years increased the risk for falls in a general elderly population. Interventional efforts may require different strategies, as groups with different characteristics were at risk. Those at risk with improved ADL function may have a history of sufficient burden of comorbidity combined with obtained mobility for exposure to a fall event.</p>
Author	Credentials: Works in the Department of Health Sciences Position and Institution: Works in the Department of Health Sciences at Lund University Publication History in Peer-Reviewed Journals: average amount of publications
Publication	Type of publication: scholarly peer-reviewed Publisher: Journal of clinical interventions in aging Other: Find full text on PubMed
Date and Citation History	Date of publication: 2014 Cited By: 11
Stated Purpose or Research Question	"The aim of this study was to determine the relation between change in ADL and falls over the course of 6 years in a general elderly population and to identify characteristics of groups at risk for falls" (1840).
Author's Conclusion	"According to results of this study, 17% of the study population became dependent in ADL and 16% had a functional decline in the ADL staircase over 6 years"(1842).
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong Rationale: This article talks about community dwelling elders and provides the outcomes. It does not state the intervention that was conducted, but does have strong information about how ADL independence can increase the chance of falls.
Overall Quality of Article	Overall Quality of Article: Good Rationale: This study gives good information on the decline in ADLs that can happen as a patient gets older. It is important for us to support that people can do ADLs but their fall risk can increase.

Type of article	Overall Type: Conceptual Specific Type: Intervention Development and Guidelines
APA Reference	Haastregt, J. C., Rossum, E. V., Diederiks, J. P., Voorhoeve, P. M., Witte, L. P., & Crebolder, H. F. (2000). Preventing falls and mobility problems in community-dwelling elders: The process of creating a new intervention. <i>Geriatric Nursing</i> , 21(6), 309-314. doi:10.1067/mgn.2000.112144
Abstract	Mobility impairments and the consequences of falls can have a considerable impact on community-dwelling elders' autonomy and quality of life. This article describes the development and implementation of a falls and mobility intervention that features preventive home visits by public health nurses; the study accompanying the intervention also is presented. This article offers practical guidelines to health professionals who are considering, developing, implementing, and testing new interventions aimed at the prevention of falls and mobility problems in this population.
Author	Credentials: Assistant Professor Position and Institution: Assistant Professor at Maastricht University, Maastricht, Netherlands Department of Health Services Research Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: scholarly peer-reviewed journal Publisher: Geriatric Nursing Other: PubMed
Date and Citation History	2000 Google Scholar Cited By: 16
Stated Purpose or Research Question	"Because of the close relationship between falls and mobility impairments and because both problems have overlapping and interrelated causes, we decided to develop a multifactorial intervention consisting of home visits by public health nurses aimed at reducing both falls and mobility problems." (Pg 310)
Author's Conclusion	"The number of falls and the level of mobility impairment are the primary outcome measures of the effect study. However, because the intervention is multidimensional and includes assessment of a large variety of factors potentially influencing falls and mobility, we also expect some secondary effects of the intervention in terms of fear of falling, subjective health, physical complaints, gait disorders, activities of daily living, mental health, loneliness, social functioning, and mortality." (Pg 313)
Overall Relevance to PICO	Overall Relevance to PICO: Limited Rationale: Population is community-dwelling older adults. This article contains good information about basic guidelines for preventative home visits and home safety checklists and has a few points that support possible intervention strategies.
Overall Quality	Overall Quality of Article: Poor Reputable journal and publisher. This article focuses more on limitations and evaluations of the study, and lacks information regarding conclusions and outcomes of findings. Publish date is not within the last 10 years.

Type of article	Overall Type: Primary Research Study Specific Type: Quantitative, Uncontrolled pre-post intervention design
APA Reference	Britten, L., Addington, C., Astill, S. (2017). Dancing in time: feasibility and acceptability of a contemporary dance program to modify risk factors for falling in community dwelling older adults. <i>BMC Geriatrics</i> 17, 83-90. doi: doi.org/10.1186/s12877-017-0476-6
Abstract	Abstract Background: Falls are a common cause of injury in older adults, with the prevention of falls being a priority for public health departments around the world. This study investigated the feasibility, and impact of an 8 week contemporary dance programme on modifiable physical (physical activity status, mobility, sedentary behaviour patterns) and psychosocial (depressive state, fear of falling) risk factors for falls. Methods: An uncontrolled 'pre-post' intervention design was used. Three groups of older (60 yrs.+) adults were recruited from local community groups to participate in a 3 separate, 8 week dance programmes. Each programme comprised two, 90 min dance classes per week. Quantitative measures of physical activity, sedentary behaviour, depression, mobility and fear of falling were measured at baseline (T1) and after 8 weeks of dance (T2). Weekly attendance was noted, and post-study qualitative work was conducted with participants in 3 separate focus groups. A combined thematic analysis of these data was conducted. Results: Of the 38 (Mean Age = 77.3 ± 8.4 yrs., 37 females) who attended the dance sessions, 22 (21 females; 1 male; mean age = 74.8, ±8.44) consented to be part of the study. Mean attendance was 14.6 (±2.6) sessions, and mean adherence was 84.3% (±17). Significant increases in moderate and vigorous physical activity were noted, with a significant decrease in sitting time over the weekdays ($p < 0.05$). Statistically significant decreases in the mean Geriatric Depression Scale ($p < 0.05$) and fear of falling ($p < 0.005$) score were noted, and the time taken to complete the TUG test decreased significantly from 10.1 s to 7.7 s over the 8 weeks ($p < 0.005$). Themes from the focus groups included the dance programme as a means of being active, health Benefits, and dance-related barriers and facilitators. Conclusions: The recruitment of older adults, good adherence and favourability across all three sites indicate that a dance programme is feasible as an intervention, but this may be limited to females only. Contemporary dance has the potential to positively affect the physical activity, sitting behaviour, falls related efficacy, mobility and incidence of depression in older females which could reduce their incidence.
Author	Credentials: BSc PhD Position and Institution: Teaching Fellow in Exercise Psychology School of Biomedical Sciences , University of Leeds Publication History in Peer-Reviewed Journals: Average
Publication	Type of publication: Scholarly Publisher: <i>BMC Geriatrics</i> , <i>BMC open</i> Other: Article accessed 1293
Date and Citation History	Date of publication: April 11 th , 2017 Cited By: 17
Stated Purpose or Research Question	"In this study we developed a small scale pilot study to examine the effect of an 8 week contemporary dance programme on both physical (e.g. physical activity, balance, mobility) and psychosocial (fear of falling, depression) risk factors for falls" (p.2, Intro)
Author's Conclusion	"The dance programme also had a positive effect on both mood and fear of falling; two psychosocial risk factors for falls (see Table 2). In the present study only 5 participants would be considered as potentially 'depressed' at T1, with only 1 being so at T2. Given the baseline scores of the participants, is it not surprising that 11 people did not change on this measure, and only 6 noted mood improvements" (Discussion)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: <i>P</i> - population refers to community dwelling adults, <i>I</i> - Intervention: Dancing, <i>C</i> - Comparison, <i>Dance as an intervention compared to a fall prevention program</i> , <i>O</i> -Outcome it improves mood and fear of falling (This article appears to have all aspects of PICO and could be source that would be beneficial to explore when looking at a potential intervention)
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: I feel that this information comes from a reliable source as by the credentials of the author but that it could have been tested on a larger population. The information has both a control and experimental group to evaluate the effectiveness of the dance intervention.

Type of article	Overall Type: Primary research study Specific Type: grounded theory study
APA Reference	Eriksson, J. K., Hildingh, C., Buer, N., & Thulesius, H. (2016). Seniors' self-preservation by maintaining established self and defying deterioration – A grounded theory. International Journal of Qualitative Studies on Health and Well-Being, 11. doi: doi.org/10.3402/qhw.v11.30265
Abstract	The purpose of this classic grounded theory study was to understand how seniors who are living independently resolve issues influenced by visual impairment and high fall risk. We interviewed and observed 13 seniors with visual impairment in their homes. We also interviewed six visual instructors with experience from many hundreds of relevant incidents from the same group of seniors. We found that the seniors are resolving their main concern of "remaining themselves as who they used to be" by self-preservation. Within this category, the strategies maintaining the established self and defying deterioration emerged as the most prominent in our data. The theme maintaining the established self is mostly guided by change inertia and includes living the past (retaining past activities, reminiscing, and keeping the home intact) and facading (hiding impairment, leading to avoidance of becoming a burden and to risk juggling). Defying deterioration is a proactive scheme and involves moving (by exercising, adapting activities, using walking aids, driving), adapting (by finding new ways), and networking by sustaining old support networks or finding new networks. Self-preservation is generic human behavior and modifying this theory to other fields may therefore be worthwhile. In addition, health care providers may have use for the theory in fall preventive planning.
Author	Credentials: PhD - Nursing Position and Institution: Halmstrand University in Sweden Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: scholarly peer-reviewed journal Publisher: Qualitative Studies on Health and Well-being
Date and Citation History	2016 Google Scholar Cited By: 9
Stated Purpose or Research Question	"The purpose of this study was to generate a grounded theory to explain how seniors living independently in the community resolve issues influenced by visual impairment and risk of falling. The research question according to grounded theory was, what is going on in the lives of the studied group of people " p. 2
Author's Conclusion	"The seniors we met were risk-indifferent, meaning that they were not very concerned about risks such as falling. They expressed awareness of their aging bodies and the accompanying risks, but did not take much action or change their conduct to reduce risks. "p. 6
Overall Relevance to PICO	Overall Relevance to PICO: Moderate Relevance PICO: Related indirectly to Population of community dwelling, The intervention wasn't all that clear, it compared how vision and high fall risk, I think this would be important to consider. The outcomes section in this article clearly articulates how vision affects the risk of falling.
Overall Quality	Overall Quality of Article: Moderate Established author. Peer reviewed journal, and clearly laid out study.

Type of article	Overall Type: Primary Research Study Specific Type: Randomized Control Study
APA Reference	Huang, T.T., Yang, L.H., & Liu, C.Y. (2011). Reducing the fear of falling among community-dwelling elderly adults through cognitive-behavioral strategies and intense Tai Chi exercise: a randomized controlled trial. <i>Journal of Advanced Nursing</i> 67, 961-971. doi: 10.1111/j.1365-2648.2010.05553.x
Abstract	Aim. To examine the effectiveness of cognitive-behavioural strategies with/without intense Tai Chi exercise in reducing fear of falling among community-dwelling elderly adults. Background. Fear of falling is a major health problem among community-dwelling older persons. The prevalence of this fear ranges from 29% to 77%, indicating the importance of developing effective strategies to reduce fear of falling among elderly adults. Methods. Data were collected from January to December 2007. A randomized controlled trial with three groups (control, cognitive-behavioural and cognitive-behavioural with Tai Chi). Participants were assessed at baseline for demographic data, falls-related history, and fear of falling. Data on these variables plus falls, mobility, social support behaviour and satisfaction, and quality of life were also collected at 2 and 5 months after interventions. Results. Participants in the three groups differed significantly in both measures of fear of falling ($F = 20.89, P < 0.001$; $F = 6.09, P < 0.001$) and mobility ($F = 30.33, P < 0.001$), social support behaviour and satisfaction ($F = 3.32, P < 0.05$ and $F = 6.35, P < 0.001$, respectively), and quality of life ($F = 16.66, P < 0.001$). In addition, participants who received the cognitive-behavioural intervention with Tai Chi had significantly lower fear of falling scores ($P < 0.001$) and higher mobility ($P < 0.001$), social support satisfaction ($P < 0.01$) and quality of life ($P < 0.001$) than the cognitive-behavioural alone and control groups at 5 months. The three groups did not differ significantly in falls. Conclusion. The results of this trial suggest that the cognitive-behavioural intervention with Tai Chi exercise helped community-dwelling elderly adults to enhance their mobility, to manage their fear of falling and to increase their quality of life.
Author	Credentials: Huang Tzu-Tng is a PhD and RN Position and Institution: Professor at Chang-Gung University in Taiwan Publication History in Peer-Reviewed Journals: Extensive
Publication	Type of publication: Scholarly Publisher: <i>Journal of Advanced Nursing</i>
Date and Citation History	Date: November 2010 Google Scholar Cited By: 51
Stated Purpose or Research Question	"The aim of the study was to compare the effectiveness of three interventions (control, CB alone and CB with Tai Chi) on primary outcomes (fear of falling and falls), and secondary outcomes [mobility (gait and balance), social support and quality of life] of community-dwelling elderly adults over 5 month" (962)
Author's Conclusion	"The findings of this study indicate that the CB with Tai Chi intervention is effective for reducing FOF among community-dwelling older adults. These findings can be used by community health professionals to play an important role in decreasing older adults' FOF, and promoting their mobility, social support and QOL. Furthermore, implementing this intervention with a sample of older community-dwelling adults or those with admitted FOF may empower them to deal with FOF." (970)
Overall Relevance to PICO	Overall Relevance to PICO: Person – Community Dwelling Older Adults, I – Tai Chi, C – Tai Chi vs. other fall prevention program, O- Successful program in decreasing falls with Tai Chi. This research refers to all aspects of PICO and focuses specifically on Tai Chi, which could be one of the interventions that our group covers when addressing the most effective interventions.
Overall Quality	Overall Quality of Article: This article provides plenty of information about the benefits of Tai Chi and the study backs up this research. This article also appears to be cited frequently which gives me confidence in the article content and the authors' credibility.

Type of article	Overall Type: Primary Research Study Specific Type: A randomized single blinded controlled trial
APA Reference	Kovacs,E., Prokai, L., Meszaros, L., & Gondos, T. (2013). Adapted physical activity is beneficial on balance, functional mobility, quality of life and fall risk in community-dwelling older women: a randomized single-blinded controlled trial. European Journal of Rehabilitation Medicine 49, 301-310. doi:10.1097/JGP.0b013e31820ee9ef
Abstract	Background: Exercise programmes have important role in prevention of falls, but to date, we have little knowledge about the effects of Adapted Physical Activity programme on balance of older women. Aim: The aim of this study was to investigate the effects of an Adapted Physical Activity programme on balance, risk of falls and quality of life in community-dwelling older women. Design: This was a randomized controlled study. Setting: Community, in a local sport centre. Population: Older women aged over 60 years. Methods: Seventy-six women were randomized to an exercise group providing Adapted Physical Activity programme for 25 weeks or a control group (in which they did not participate in any exercise programme). The one-leg stance test, Timed Up and Go test, incidence of fall and the quality of life (SF-36V2) were measured at baseline and after 25 weeks. Results: The one-leg stance test and the Timed Up and Go test in the exercise group was significantly better than in the control group after the intervention period ($P=0.005$; $P=0.001$, respectively). The Physical Functioning, Vitality and General Health subdomains of quality of life were also significantly better in the exercise group compared to the control group ($P=0.004$; $P=0.005$; $P=0.038$, respectively). Relative risk was 0.40 (90% CI 0.174 to 0.920) and the number needed to treat was 5 (95% CI 2.3 to 23.3). Conclusion: This 25-week Adapted Physical Activity programme improves static balance, functional mobility, as well as Physical Functioning, Vitality and General Health subdomains of quality of life. Clinical Rehabilitation Impact: Based on our results, the Adapted Physical Activity programme may be a promising fall prevention exercise programme improving static balance and functional mobility for community-dwelling older women.
Author	Credentials: Professor in the movement and physical rehabilitation department Position and Institution: Semmelweis University in Budapest Publication History in Peer-Reviewed Journals: 6 (Moderate)
Publication	Type of publication: Scholarly Publisher: European Journal of Physical Rehabilitation Medicine
Date and Citation History	Date: March, 2013 Google Scholar Cited By: 16
Stated Purpose or Research Question	"The aim of our study was to investigate the effects and the feasibility of a 25-week Adapted Physical Activity programme that addressed postural control, functional mobility, quality of life, and incidence of falls in community-dwelling women aged 60 years or over." (2)
Author's Conclusion	"Based on our results, the APA programme may be a promising type of fall prevention exercise programme improving static balance and functional mobility for community-dwelling older women. We hope that our results may stimulate further researches on fall prevention exercise programmes with two or three-blinded, three-armed design and extended outcome measures" (9)
Overall Relevance to PICO	Overall Relevance to PICO: Person – Community Dwelling older women, Intervention – Static balance and functional mobility Comparison: Fall prevention program vs. APA program O- Outcome: The APA program was successful with the women in fall prevention
Overall Quality	Overall Quality of Article: This article appears to have a PICO format with the types of interventions and clients we are looking at. In this study 76 people were randomly chosen and randomly assigned to groups, this would eliminate some of the potential bias. The study was also blinded which helps to eliminate additional bias that could have affected the research.

Type of article	Overall Type: Primary Research Study Specific Type: Randomized Control Study (Study Protocol)
APA Reference	Liu-Ambrose, T., Davis, J. C., Hsu, C. L., Gomez, C., Vertes, K., Marra, C., & Dian, L. (2015). Action seniors! secondary falls prevention in community-dwelling senior fallers: study protocol for a randomized controlled trial. <i>Trials</i> , 16, 144-150. doi: doi.org/10.1186/s13063-015-0648-7
Abstract	<p>Background Falls are a ‘geriatric giant’ and are the third leading cause of chronic disability worldwide. About 30% of community-dwellers over the age of 65 experience one or more falls every year leading to significant risk for hospitalization, institutionalization, and even death. As the proportion of older adults increases, falls will place an increasing demand and cost on the health care system. Exercise can effectively and efficiently reduce falls. Specifically, the Otago Exercise Program has demonstrated benefit and cost-effectiveness for the primary prevention of falls in four randomized trials of community-dwelling seniors. Although evidence is mounting, few studies have evaluated exercise for secondary falls prevention (that is, preventing falls among those with a significant history of falls). Hence, we propose a randomized controlled trial powered for falls that will, for the first time, assess the efficacy and efficiency of the Otago Exercise Program for secondary falls prevention.</p> <p>Methods/Design A randomized controlled trial among 344 community-dwelling seniors aged 70 years and older who attend a falls prevention clinic to assess the efficacy and the cost-effectiveness of a 12-month Otago Exercise Program intervention as a secondary falls prevention strategy. Participants randomized to the control group will continue to behave as they did prior to study enrolment. The economic evaluation will examine the incremental costs and benefits generated by using the Otago Exercise Program intervention versus the control.</p> <p>Discussion The burden of falls is significant. The challenge is to make a difference – to discover effective, ideally cost-effective, interventions that prevent injurious falls that can be readily translated to the population. Our proposal is very practical – the exercise program requires minimal equipment, the physical therapist expertise is widely available, and seniors in Canada and elsewhere have adopted the program and complied with it. Our innovation includes applying the intervention to a targeted high-risk population, aiming to provide the best value for money. Given society’s limited financial resources and the known and increasing burden of falls, there is an urgent need to test this feasible intervention which would be eminently ready for roll out.</p>
Author	Credentials: PT PhD Position and Institution: Aging, Mobility, and Cognitive Neuroscience Laboratory, Djavad Mowafaghian Centre for Brain Health, University of British Columbia <u>Publication History in Peer-Reviewed Journals:</u> Extensive
Publication	Type of publication: Scholarly Publisher: Trials (BioMed Central)
Date and Citation History	Date:2015 Google Scholar Cited By: 8
Stated Purpose or Research Question	“Given the association between executive functions, exercise, and falls, we hypothesize that improved executive functions may be an important mechanism by which exercise reduces falls. However, this hypothesis is yet to be tested. Furthermore, our proof-of-concept study did not have the sample size to explore whether the observed change in cognitive function was a mediator of the benefit of the OEP.” (3)
Author’s Conclusion	Because this was a study protocol the study hasn’t been carried out, the following statement reflects where the study sits currently. “As of 1 December 2014 we have obtained ethical approval, have registered the trial and we have successfully recruited 227 participants. We will aim to complete recruitment by 2017.”
Overall Relevance to PICO	Overall Relevance to PICO: Persons: Older Adults, Intervention: Executive Functions, Comparison: Fall prevention program vs. executive functioning intervention, Outcome: There is no outcome because the study has yet to be carried out.
Overall Quality	Overall Quality of Article: Because this articles hasn’t yet been carried out yet, I would be hesitant to carry out the research that is in the introduction because it doesn’t yield much support. The authors however have extensive publication history which gives me confidence in their information.

Type of article	Overall Type: Review of Research Studies Specific Type: Systematic Review
APA Reference	Chase, C. A., Mann, K., Wasek, S., & Arbesman, M. (2012). Systematic review of the effect of home modification and fall prevention programs on falls and the performance of community-dwelling older adults. <i>American Journal of Occupational Therapy</i> , 66(3), 284-291. doi:10.5014/ajot.2012.005017
Abstract	This systematic review explored the impact of fall prevention programs and home modifications on falls and the performance of community-dwelling older adults. It was conducted as part of the American Occupational Therapy Association's Evidence-Based Practice Project. Thirty-three articles were analyzed and synthesized. The strongest results were found for multifactorial programs that included home evaluations and home modifications, physical activity or exercise, education, vision and medication checks, or assistive technology to prevent falls. Positive outcomes included a decreased rate of functional decline, a decrease in fear of falling, and an increase in physical factors such as balance and strength. The strength of the evidence for physical activity and home modification programs provided individually was moderate. <u>Implications for practice, education, and research are also discussed.</u>
Author	Credentials: EdD, OTR/L Position and Institution: Associate Professor, Western Michigan University Publication History in Peer-Reviewed Journals: minimal
Publication	Type of publication: scholarly peer-reviewed journal Publisher: American Journal of Occupational Therapy Other: PubMed
Date and Citation History	2012 Google Scholar Cited By: 80
Stated Purpose or Research Question	“Synthesize existing literature to answer the following focused question: “What is the evidence for the effect of home modification and fall prevention programs on the performance of community-dwelling older adults?” (Pg 284) “Reviewing the most recent evidence for various fall prevention and home modification strategies can provide guidance for occupational therapy practice decisions and can have implications for education and research.” (Pg 285)
Author’s Conclusion	“The results of this systematic review contribute to evidence-based practice for occupational therapy practitioners working with older adults in community-based settings and re-inforce the importance of the role of occupational therapy in the home and community.” (Pg 289) “The results are divided into themes on the basis of the intervention studied (Multifactorial, physical activity, home assessment and home modification interventions) and include multifactorial studies, studies of physical activity alone, and studies assessing the effectiveness of home assessment and home modifications.” (Pg 285)
Overall Relevance to PICO	Overall Relevance to PICO: Strong PICO: This article directly relates to PICO in the P (community dwelling older adults), I and C (directly compares various home modification and fall prevention interventions). States results and implications for Occupational Therapy Practice.
Overall Quality	Overall Quality of Article: Strong Rationale: Established author. Reputable journal and publisher. Publication within last 10 years. Focuses on the effect of home modification and fall prevention intervention strategies in community-dwelling older adults.

Type of article	Overall Type: Review of Research Studies Specific Type: Systematic Review
APA Reference	Lord, S. R., Menz, H. B., & Sherrington, C. (2006). Home environment risk factors for falls in older people and the efficacy of home modifications. <i>Age and Ageing</i> , 35(2), 55-59. doi:10.1093/ageing/afl088
Abstract	Most homes contain potential hazards, and many older people attribute their falls to trips or slips inside the home or immediate home surroundings. However, the existence of home hazards alone is insufficient to cause falls, and the interaction between an older person's physical abilities and their exposure to environmental stressors appears to be more important. Taking risks or impulsivity may further elevate falls risk. Some studies have found that environmental hazards contribute to falls to a greater extent in older vigorous people than in older frail people. This appears to be due to increased exposure to falls hazards with an increase in the proportion of such falls occurring outside the home. There may also be a non-linear pattern between mobility and falls associated with hazards. Household environmental hazards may pose the greatest risk for older people with fair balance, whereas those with poor balance are less exposed to hazards and those with good mobility are more able to withstand them. Reducing hazards in the home appears not to be an effective falls-prevention strategy in the general older population and those at low risk of falls. Home hazard reduction is effective if targeted at older people with a history of falls and mobility limitations. The effectiveness may depend on the provision of concomitant training for improving transfer abilities and other strategies for effecting behavior change.
Author	Credentials: Research Fellow and Professor Senior Principal Research Fellow, NHMRC. Conjoint Professor, UNSW Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: scholarly peer-reviewed journal Publisher: Age and Ageing Other: Journal of Clinical Gerontology and Geriatrics
Date and Citation History	2006 Google Scholar Cited By: 248
Stated Purpose or Research Question	"This review examines the role that environmental hazards play in increasing the risk of falls and evaluates the efficacy of environmental interventions to reduce falls. For risk-factor studies, we assessed case-control and prospective studies, and for intervention studies, randomized controlled trials were considered." (Pg ii55)
Author's Conclusion	"(1) Falls in the home result from an interaction between environmental stressors and physical abilities or risk-taking. (2) Older people with fair, rather than poor or excellent, balance may be at greatest risk from household environmental hazards. (3) Evidence for the effectiveness of home hazard modification varies, depending on interacting factors, as well as on the intervention methods used. (4) Home hazard reduction is best targeted at those with a history of falls and limited mobility, and may require concomitant training." (Pg ii58)
Overall Relevance to PICO	Overall Relevance to PICO: Strong Rationale: This study compares home environment risk factors and intervention strategies to reduce falls in the population of older adults. Outcomes are based on key points that represent common findings between the compared studies (environmental risk factors and home hazards).
Overall Quality	Overall Quality of Article: Good Established author. Reputable journal and publisher. This article provides significant information on the comparison of intervention strategies that could be utilized in our paper. We could incorporate the information on environmental risk factors, home assessments, and home hazards from this study. Publish date is not within the last 10 years.

Type of article	Overall Type: Primary Research Study Specific Type: Repeated-measures design
APA Reference	Beauvais, A. & Beauvais, J. E. (2014). Reducing the fear of falling through a community evidence-based intervention. <i>Home Healthcare Nurse</i> , 32(2), 98-105. doi: 10.1097/NHH.0000000000000017
Abstract	“Falls and the fear of falling are major health concerns among older adults. The purpose of this study was to assess the effects of an evidence-based fall prevention program on the fear of falling and health-related quality of life among community-dwelling elders. The program consisted of 6 classes that covered topics such as risk factors for falls, balance exercises, medications, safe footwear, and home safety. Of those elders who were most fearful at baseline, the fall prevention program decreased their fear of falling and improved 1 dimension of their health-related quality of life.” (p. 98)
Author	Credentials: DNP, MSN, MBA, RN, CNL Position and Institution: Director of Undergraduate Nursing Program at Sacred Heart University, Connecticut Publication History in Peer-Reviewed Journals: average
Publication	Type of publication: Scholarly Article Publisher: <i>Home Healthcare Nurse</i> Other: provides free online continuing education to health care professionals
Date and Citation History	Date of publication: 2014 Cited By: 6
Stated Purpose or Research Question	“The aim of this study was to assess the effects of an evidence-based fall prevention program on the fear of falling, and health-related quality of life among community-dwelling elders.” (p. 99)
Author's Conclusion	“Community-dwelling elders who attended a local senior citizen center benefited from the above evidence-based fall prevention program.” (p. 104)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: Includes information on the population included (older, community-dwelling adults), and intervention (explains the classes of the intervention). However, comparison with a control group was not present because there was not a control group included.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: The sample size was small (56 were included), and a convenience sample was used from 4 senior centers. This could decrease the generalizability of the results.

Type of article	Overall Type: Primary research study Specific Type: descriptive study
APA Reference	Browne, C., Kingston, C., & Keane, C. (2014). Falls prevention focused medication review by a pharmacist in an acute hospital: implication for future practice. <i>International Journal of Clinical Pharmacy</i> , 38(5), 969-975. doi: 10.1007/s11096-014-9980-3
Abstract	<p><i>Background</i> Patients at risk of falling are regularly prescribed medicines which increase falls risk. Medication review is a widely advocated risk reduction strategy.</p> <p><i>Objective</i> The objectives of this descriptive study were to determine the number and types of falls risk medicines suitable for intervention, and to develop guidance to optimise the effectiveness of future medication related falls prevention initiatives.</p> <p><i>Setting</i> An Irish acute teaching hospital and tertiary referral center.</p> <p><i>Method</i> 50 hospital in-patients at risk of falls underwent medication review focused on falls prevention by a pharmacist. Falls risk medicines were identified, and reviewed. If scope to discontinue, dose reduce or switch to a safer alternative was identified by the pharmacist, the suggested medication changes were communicated to the patient's care team.</p> <p><i>Main outcome measure</i> Identification of the classes of falls risk medicines and types of prescriptions with greatest potential for intervention.</p> <p><i>Results</i> The mean number of falls risk medicines prescribed to each patient was 4.8 (± 2.8) and the total number prescribed to the 50 patients was 238. Following medication review, the pharmacist identified 48 (20 %) as suitable for intervention. Consequently, 34 medication changes (70.8 %) were implemented. Four medication classes accounted for over 80 % of medication changes. These were anti-emetics, opioid analgesics, anti-cholinergic agents acting on the bladder and benzodiazepines/hypnotics.</p> <p><i>Conclusion</i> Intervention was statistically significantly more likely to be possible in the case of p.r.n. medicines compared to regular medicines ($p < 0.001$, Chi square test).</p> <p>Medication reviews focused on falls prevention involve striking a balance between minimizing medicines associated with falls and effectively treating medical conditions. We found only 20 % of falls risk medicines were suitable for change, and reviews were time consuming and resource intensive. However, targeting four medication classes, and being particularly alert to the potential to discontinue 'as required' medicines, has the potential to achieve most of the benefits of more comprehensive reviews. This information will guide the development of future falls risk medicine review initiatives in our hospital, increasing their feasibility in the acute hospital setting." (p. 969)</p>
Author	Credentials: Pharmacy Department, M.D. Position and Institution: St. Vincent's University Hospital Publication History in Peer-Reviewed Journals: no other publications
Publication	Type of publication: Scholarly Journal Publisher: International Journal of Clinical Pharmacy Other: N/A
Date/Citation History	Date of publication: 2014 Cited By: 7
Purpose or Research Question	Identification of the classes of falls risk medicines and types of prescriptions with greatest potential for intervention.
Author's Conclusion	Full Text not available
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Poor Rationale: The full text is not available any more but the article would have been beneficial to understand which medications increase the risk for falls. This information could have helped because the intervention would have been to switch medications but this does not relate well to our PICO question or OT.
Overall Quality of Article	Overall Quality of Article: Poor Rationale: The full text is not available and the content does not relate very well to our PICO question. The author and the journal do not seem very reliable. The publication is recent.

Type of article	Overall Type: Primary research: Specific Type: Randomized control trial
APA Reference	Dorresteijn, T., Zijlstra, G., Amberg, A., Delbaere, K., Vlaeyen, J., & Kempen, G. (2016). Effectiveness of a home-based cognitive behavioral program to manage concerns about falls in community-dwelling, frail older people: results of a randomized controlled trial. <i>BMC Geriatrics</i> , 16, 2. doi 10.1186/s12877-015-0177-y
Abstract	<p>“Background</p> <p>Concerns about falls are common among older people. These concerns, also referred to as fear of falling, can have serious physical and psychosocial consequences, such as functional decline, increased risk of falls, activity restriction, and lower social participation. Although cognitive behavioral group programs to reduce concerns about falls are available, no home-based approaches for older people with health problems, who may not be able to attend such group programs are available yet. The aim of this study was to assess the effectiveness of a home-based cognitive behavioral program on concerns about falls, in frail, older people living in the community.</p> <p>Methods</p> <p>In a randomized controlled trial in the Netherlands, 389 people aged 70 years and older, in fair or poor perceived health, who reported at least some concerns about falls and related activity avoidance were allocated to a control (n = 195) or intervention group (n = 194). The intervention was a home-based, cognitive behavioral program consisting of seven sessions including three home visits and four telephone contacts. The program aims to instill adaptive and realistic views about fall risks via cognitive restructuring and to increase activity and safe behavior using goal setting and action planning and was facilitated by community nurses. Control group participants received usual care. Outcomes at 5 and 12 months follow-up were concerns about falls, activity avoidance due to concerns about falls, disability and falls.</p> <p>Results</p> <p>At 12 months, the intervention group showed significant lower levels of concerns about falls compared to the control group. Furthermore, significant reductions in activity avoidance, disability and indoor falls were identified in the intervention group compared with the control group. Effect sizes were small to medium. No significant difference in total number of falls was noted between the groups.</p> <p>Conclusions</p> <p>The home-based, cognitive behavioral program significantly reduces concerns about falls, related activity avoidance, disability and indoor falls in community-living, frail older people. The program may prolong independent living and provides an alternative for those people who are not able or willing to attend group programs.” (p. 1)</p>
Author	Credentials: PhD Position and Institution: Maastricht University, Professor Publication History in Peer-Reviewed Journals: Moderate
Publication	Type of publication: Scholarly Article Publisher: BMC Geriatrics Other: Department of Health Services Research – Focusing on Chronic Care and Ageing, CAPHRI School for Public Health and Primary Care, Maastricht University
Date and Citation History	Date of publication: 2016 Cited By: 10
Stated Purpose or Research Question	“The current paper reports on the results of a randomized controlled trial to evaluate the effects of AMB-Home compared with usual care on concerns about falls in community-dwelling, frail older people. Secondary outcomes of the trial were avoidance of activity due to concerns about falls, disability, and indoor and outdoor falls.” (p. 2)
Author’s Conclusion	“In summary, AMB-Home reduced concerns about falls and associated avoidance of activity, as well as more downstream outcomes, such as disability and indoor falls in frail older people. The observed effects were small to medium, yet, present in a frail population and over a timeframe of 12-months.” (p. 9)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong Rationale: Discusses an intervention: AMB, and how this study reduced concerns of falls in a specific population of older adults. It also discussed and compared quality of life associated with avoidance. This relates to EBP research question.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: Observed effects were small to medium in this study so more research needs to be completed. Reputable author per research so moderate level and limited amount of other citations.

Type of article	Overall Type: Primary research Specific Type: Control study
APA Reference	Fletcher, C., Guthrie, M., Berg, P., & Hirdes, P. (2010). Risk factors for restriction in activity associated with fear of falling among seniors within the community. <i>Journal of Patient Safety</i> , 6(3), 187-191. doi: 10.1097/PTS.0b013e3181f1251c
Abstract	<p>“BACKGROUND: Despite the significance of falling, fear of falling may represent a greater pervasive concern to the health of seniors. Activity restriction, resulting from fear of falling, which may or may not develop after a fall, may lead to balance deterioration, functional decline, anxiety or reductions in social/leisure/physical activity opportunities, and, consequently, compromised quality of life and health.</p> <p>METHODS: The purpose of this research was to determine the risk factors for activity restriction resulting from fear of falling among community-based seniors using an early version of the interRAI Community Health Assessment (interRAI CHA). All participants ($n = 560$) were enrolled in 1 of 5 different fall intervention programs in Ontario funded through the Falls Prevention Initiative sponsored by Health Canada and Veterans Affairs Canada. All participants (or a predetermined number of seniors if the subject pool was extensive) were assessed both before and after intervention. Subjects were assessed using the interRAI CHA. RESULTS: Thirty-five percent of seniors reported restricting their activity as a result of fear of falling. Risk factors predictive of activity restriction included previous history of falling, compromised instrumental activities of daily living, compromised cognitive performance, presence of pain, female sex, and impaired gait.</p> <p>CONCLUSIONS: Fear of falling is a prevalent issue among seniors, which has the potential to alter their quality of life and morbidity, and as such, including fear of falling in public health programs, health policies, and screening efforts seems imperative. The present findings add to the present research on risk factors for activity restriction because of fear of falling. These findings do not advocate for restriction of activity to prevent falls because restriction is not a good solution to fall prevention. Using a standardized and comprehensive tool such as the interRAI CHA would assist researchers in making comparisons between different research groups as well as assessing fear of falling from a multidisciplinary perspective.” (p. 187)</p>
Author	Credentials: PhD Position and Institution: Department of Kinesiology and Physical Education, Wilfrid Laurier University, Waterloo, Ontario, Canada Publication History: Extensive
Publication	Type of publication: Scholarly Publisher: Journal of Patient Safety
Date / Citation History	Date of publication: 2010 Cited By: 50
Stated Purpose or Research Question	“The goal of our project was to develop and implement a strategy in which common data elements were collected in all of the funded fall prevention projects in Ontario so that comparisons could be drawn between the various sites’ intervention programs. In total, 5 project sites ($n = 559$) funded in Ontario conducted independent fall intervention programs.” (p. 188)
Author’s Conclusion	“Regardless, these findings add to present research on risk factors for activity restriction because of fear of falling through the use of a comprehensive multidisciplinary tool, which is gaining international acceptance. These findings do not advocate for the restriction of activity to prevent falls because restriction is not a good solution to fall prevention.” (p. 191)
Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Good Rationale: This study focused on a specific population, older adults in the community and related directly to the research question. This article addressed specific interventions and tools used to prevent falls
Overall Quality of Article	Overall Quality of Article: Good Rationale: Author has multiple sources and seems reputable. Displays the findings do not advocate for restriction of activity to prevent falls and is published in Pubmed

Type of article	Overall Type: Primary Research Specific Type: Analysis of cross-sectional and longitudinal data
APA Reference	Gell, N., Wallace, R., LaCroix, A., Mroz, T., & Patel, K. (2015). Mobility device use among older adults and incidence of falls and worry about falling: findings from the 2011–2012 National Health and Aging Trends Study. <i>Journal of the American Geriatric Society</i> , 63(5), 853–859. doi 10.1111/jgs.13393
Abstract	“OBJECTIVES To examine mobility device use prevalence among community-dwelling older adults in the U.S. and to investigate the incidence of falls and worry about falling by the type and number of mobility devices used. DESIGN Analysis of cross-sectional and longitudinal data from the 2011–2012 National Health and Aging Trends Study SETTING In-person interviews in the homes of study participants PARTICIPANTS Nationally representative sample of Medicare beneficiaries(N=7609). MEASUREMENTS Participants were asked about mobility device use (e.g., canes, walkers, wheelchairs and scooters) in the last month, one-year fall history and worry about falling. RESULTS Twenty-four percent of adults age ≥ 65 reported mobility device use in 2011 and 9.3% reported using multiple devices within the last month. Mobility device use increased with advancing age and was associated with non-White race/ethnicity, female sex, lower education level, greater multi-morbidity, and obesity (all P-values < 0.001). Adjusting for demographic, health characteristics, and physical function, the incidence of falls and recurrent falls were not associated with the use of multiple devices or any one particular type of mobility device. Activity-limiting worry about falling was significantly higher in cane-only users, compared with non-users. CONCLUSION The percentage of older adults reporting mobility device use is higher compared to results from previous national surveys and multiple device use is common among those who use any device. Mobility device use is not associated with increased incidence of falls compared to non-device users. Cane-only users may compensate for worry about falling by limiting activity.” (p. 853)
Author	Credentials: PhD, MPH Position and Institution: University of Vermont, Department of Rehabilitation and Movement Science, Burlington, VT Publication History in Peer-Reviewed Journals: Extensive
Publication	Type of publication: Scholarly peer reviewed Publisher: HHS Public Access Other: National Institute on Aging
Date and Citation History	Date of publication: May, 2015 Cited By: 24
Stated Purpose or Research Question	“The aims of the current study were to: 1) examine mobility device use prevalence in a nationally representative sample of community-dwelling older adults in the U.S. by demographic and health characteristics; and 2) describe the incidence of falls and worry about falling by the type and number of mobility devices used.” (p. 854).
Author’s Conclusion	“The percentage of older adults reporting mobility device use is higher compared to results from previous national surveys and multiple device use is common among those who use any device. Mobility device use is not associated with increased incidence of falls compared to non-device users. Cane-only users may compensate for worry about falling by limiting activity.” (p. 853).
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: This article provided interventions and the use of mobility devices and concluded not associated with decreased falling compared to those who do not use mobility devices. It provided an outcome that cane users may have decrease fear of falling by limiting their occupations.
Overall Quality of Article	Overall Quality of Article: Good Rationale: This article was published in a scholarly source and was cited over 800 times. It compared data from the National Health and Aging Trends Study which is accredited and reputable.

Type of article	Overall Type: Primary Research Study Specific Type: A mixed-methods evaluation, and a prospective longitudinal design
APA Reference	Haas, R., Mason, W., & Haines, T. P. (2014). Difficulties experienced in setting and achieving goals by participants of a falls prevention programme: A mixed-methods evaluation. <i>Physiotherapy Canada</i> , 66(4), 413-422. doi: 10.3138/ptc.2013-30BC
Abstract	<p>Purpose: To evaluate the ability of participants of a falls prevention programme to set and achieve goals. Methods: The study used a prospective longitudinal design and a mixed-methods approach to data collection. Study participants were (1) 220 older adults participating in a 15-week combined exercise and education falls prevention programme and (2) 9 practitioners (3 home-care nurses, 5 community workers, and an exercise physiologist) involved in delivering the programme. Data from goal-setting forms were analyzed, and descriptive statistics were used to determine the number of appropriate goals set and achieved. Data were analyzed according to programme setting (home- or group-based) and whether or not participants were classified as being from a Culturally and Linguistically Diverse (CALD) background in the Australian context. Semi-structured interviews with programme practitioners were thematically analyzed. Results: A total of 144 respondents (n=75 CALD group, n=41 non-CALD group, n=6 CALD home, n=22 non-CALD home) set 178 goals. Only 101 (57%) goals could be evaluated according to achievement, because participants set goals that focused on health state instead of behaviour, set goals not relevant to falls prevention, used inappropriate constructs to measure goal achievement, and either did not review their goals or dropped out of the programme before goal review. Of these 101 goals, 64 were achieved. Practitioners described their own difficulties in understanding the process of setting health behaviour goals along with communication, cultural, and logistic difficulties. Conclusions: Both CALD and non-CALD participants and those participating in both group- and home-based programmes experienced difficulty in setting and achieving goals to facilitate behaviour change for falls prevention. Data suggest that home-based participants had more difficulty in setting goals than their group-based counterparts and, to a lesser extent, that CALD participants experienced more difficulty in setting goals than their non-CALD counterparts. The use of a guided approach to goal setting and the need for more specific practitioner training and follow-up support regarding goal setting in the context of a falls prevention programme should be considered.” (p. 413)</p>
Author	Credentials: BPhys, MPH Position and Institution: Researcher at Monash Health In Melbourne, Australia Publication History in Peer-Reviewed Journals: <i>moderate</i>
Publication	Type of publication: <i>Scholarly</i> Publisher: <i>Physiotherapy Canada, from University of Toronto Press</i> Other: <i>open access journal</i>
Date and Citation History	Date of publication: 2014 Cited By: 2
Stated Purpose or Research Question	“Our purpose in this study was to apply and evaluate a client-directed goal-setting approach with participants of a combined exercise and education falls prevention programme, the SEHCP Inc. Making a Move programme (2011 iteration), in Victoria, Australia.” (p. 414)
Author’s Conclusion	“Data suggest home-based participants experienced more difficulty setting goals than their group-based counterparts and that, to a lesser extent, CALD participants experienced more difficulty setting and achieving goals than their non-CALD counterparts, despite the culturally specific manner in which the programme was delivered. Notwithstanding these challenges, the SEHCP Inc. Making a Move programme was effective in facilitating the achievement of most of the exerciser elated goals that participants set.” (p. 421)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: The article explains the population involved (144 older adult), the intervention (goal-setting approach), and the outcome (the intervention was not completely successful in achieving goals). No comparison was included.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: The study was relevant to the topic of interventions for falls prevention. However, there was not a control group, and although the article was published in 2014, it has only been cited 2 times.

Type of article	Overall Type: Primary research Specific Type: <i>Randomized control trial</i>
APA Reference	Kapan, A., Luger, E., Haider, S., Titze, S., Schindler, K., Lackinger, C., & Dorner, T. (2017). Fear of falling reduced by a lay led home-based program in frail community-dwelling older adults: A randomised controlled trial. <i>Archives of Gerontology and Geriatrics</i> , 68, 25-32. doi:10.1016/j.archger.2016.08.009
Abstract	<p>“BACKGROUND: In older adults, fear of falling (FOF) leads to a decline in daily physical activity quality of life and an increased risk of falling. The aim of this randomised controlled trial was to assess the effects of a 12-week home-based intervention program carried out by lay volunteers on FOF in frail older adults.</p> <p>METHODS: Thirty-nine participants were randomised to a physical training and nutrition (PTN) group and 41 participants to a social support (SOSU) group. In the PTN group, strength training and conversation about optimising nutrition were performed twice weekly, and the SOSU group received home visits without intervention. FOF and change of FOF were assessed using the Falls Efficacy Scale - International (FES-I). The Short Physical Performance Battery (SPPB), the Physical Activity Scale for the Elderly (PASE) and maximum handgrip strength and their changes were also assessed.</p> <p>RESULTS: The mean FES-I score at baseline was 42.7 points and was significantly associated with the SPPB and PASE scores. The FES-I score significantly changed in the PTN group from 44.1 to 39.9 points over the course of the intervention. Twenty-seven percent of the participants showed a decreased FES-I score of at least 4 points. This decrease was associated with an increase in the SPPB score and an increase in handgrip strength</p> <p>CONCLUSION: A 12-week structured physical training and nutrition intervention carried out by lay volunteers, which leads to an increase in physical activity and improved physical performance, can reduce FOF by about 10%.”</p>
Author	Credentials: PHD Position and Institution: Institute of Social Medicine, Centre for Public Health, Medical University of Vienna, Vienna, Austria Publication History in Peer-Reviewed Journals: Moderate
Publication	Type of publication: Scholarly Publisher: Archives of Gerontology and Geriatrics Other: supported by grants from the Vienna Science and Technology Fund
Date /Citation History	Date of publication: 2017 Cited By: 4
Stated Purpose or Research Question	“The aim of this study was to assess the association between physical parameters and FOF and the effects of a 12-week homebased program carried out by lay volunteers on FOF in frail older adults residing in the community” (p. 26).
Author’s Conclusion	“The aim of this study was to assess the association between physical parameters and FOF and the effects of a 12-week homebased program carried out by lay volunteers on FOF in frail older adults residing in the community” (p. 26).
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: Focused on frail adult in the community. Related to fear of falling and possible interventions to improve strength and decreasing this fear in older adults
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: There were several limitations in this article including selection bias and lack of observer blinding.

Type of article	Overall Type: <i>Primary research study</i> Specific Type: <i>Cohort Study</i>
APA Reference	Mohler, M., J., Wendel, C. S., Taylor-Piliae, R. E., Toosizadeh, N., Najafi, B. (2016). Motor performance and physical activity as predictors of prospective falls in community-dwelling older adults by frailty level: Application of wearable technology. <i>Gerontology</i> , 62(6), 654-664. doi: 10.1159/000445889
Abstract	“Background—Few studies of the association between prospective falls and sensor-based measures of motor performance and physical activity have evaluated subgroups of frailty status separately. Objective—To evaluate wearable sensor-based measures of gait, balance, and physical activity (PA) that are predictive of future falls in community-dwelling older adults. Methods—The Arizona Frailty Cohort Study in Tucson, Arizona followed community-dwelling adults aged 65 years and over (without baseline cognitive deficit, severe movement disorders, or recent stroke) for falls over six months. Baseline measures included Fried frailty criteria; in-home, and sensor-based gait (normal and fast walk), balance (bipedal eyes open and eyes closed), and spontaneous daily PA over 48 hours, measured using validated wearable technologies. Results—Of the 119 participants (36% non-frail, 48% pre-frail, and 16% frail), 48 reported one or more fall (47% of non-frail, 33% of pre-frail, and 47% of frail). Although balance deficit and PA were independent fall predictors in pre-frail and frail groups, they were not sensitive to predict prospective falls in the non-frail group. Even though gait performance deteriorated as frailty increased, gait was not a predictor of prospective falls when participants were stratified based on frailty status. In pre-frail and frail participants combined, center of mass sway (OR= 5.9, 95% CI 2.6 – 13.7), PA mean walking bout duration (OR = 1.1, 95% CI 1.0 – 1.2), PA mean standing bout duration (OR = .94, 95% CI .91 – .99), and a fall in previous 6 months (OR = 7.3, 95% CI 1.5 – 36.4) were independent predictors for prospective falls (AUC: 0.882). Conclusion—This study suggests that independent predictors of falls are dependent on frailty status. Among sensor-derived parameters, balance deficit, longer typical walking episodes, and shorter typical standing episodes were the most sensitive predictors of prospective falls in the combined pre-frail and frail sample. Gait deficit was not a sensitive fall predictor in the context of frailty status.” (p. 654)
Author	Credentials: NP-C, MPH, PhD Position and Institution: University of Arizona College of Medicine, Section of Geriatrics and Gerontology, Interdisciplinary Consortium on Advanced Motion Performance Publication History in Peer-Reviewed Journals: <i>20 other publications</i>
Publication	Type of publication: <i>Scholarly Journal</i> Publisher: <i>Gerontology</i>
Date / Citation History	Date of publication: 2016 Cited By: 11
Stated Purpose or Research Question	“The aim of this report was to evaluate sensor-based measures of gait, balance, and PA that are predictive of prospective falls in a cohort of community dwelling adults aged 65 and older that is stratified based on frailty status.” (p. 655)
Author’s Conclusion	“Our results suggest that among frail and pre-frail older adults, balance and PA parameters are predictive of fall risk, but gait parameters are not” (p. 661)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong Rationale: This article is directly about fall interventions in older people living in the community and it relate to our PICO question.
Overall Quality of Article	Overall Quality of Article: Good Rationale: This article offers great and through information on falls risks of older community living adults. If it does not end up fitting in the intervention section, maybe the assessment group can use it. The author and the publisher are reliable sources. The publication is recent.

Type of article	Overall Type: <i>Primary research study</i> Specific Type: <i>randomized control trial</i>
APA Reference	Oude Voshaar, R. C., Banerjee, S., Horan, M., Baldwin, R., Pendleton, N., Proctor, R., Tarrier, N., Woodward, Y., & Burns, A. (2006). Fear of falling more important than pain and depression for functional recovery after surgery for hip fracture in older people. <i>Psychological Medicine</i> , 36(11), 1635-1645. doi:10.1017/S0033291706008270
Abstract	“BACKGROUND: Depression and cognitive functioning have a negative impact on functional recovery after hip fracture surgery in older people, and the same has been suggested for pain and fear of falling. These variables, however, have never been studied together, nor has the timing of psychiatric assessment been taken into account. METHOD: Two parallel, randomized controlled trials were undertaken aiming to prevent and treat depression after hip fracture surgery in older people. Multiple logistic regression analyses corrected for age and pre-morbid level of functioning were performed to evaluate the effect of depressive symptoms (15-item Geriatric Depression Scale, GDS), pain (Wong-Baker pain scale), cognitive functioning (Mini-mental State Examination, MMSE) and fear of falling (Modified Falls Efficacy Scale, MFES) within 2 weeks after surgery and 6 weeks later on functional recovery at 6 months. Main outcome measures were performance-based measures (up-and-go test, gait test, functional reach) and the self-report Sickness Impact Profile (SIP) questionnaire to assess the impact of the hip fracture on activities of daily living (ADL). RESULTS: Two hundred and ninety-one patients participated and outcome measures for 187 (64%) patients were available at 6 months. All mental health variables interfered with functional recovery. However, in the final multivariate model, cognitive functioning and fear of falling assessed 6 weeks after surgery consistently predicted functional recovery, whereas pain and depressive symptoms were no longer significant. CONCLUSION: Fear of falling and cognitive functioning may be more important than pain and depression to predict functional recovery after hip fracture surgery. Rehabilitation strategies should take this into account.” (p. 1635)
Author	Credentials: Professor, Ph.D Position and Institution: University of Groningen, Faculty of Medical Sciences, Professor of Old Age Psychiatry Publication History in Peer-Reviewed Journals: involved in 130 other publications
Publication	Type of publication: <i>Scholarly Journal</i> Publisher: <i>Psychological Medicine</i> Other: <i>provide any other specific information that helps you evaluate the source of information</i>
Date /Citation History	Date of publication: 2006 Cited By: 74
Purpose or Research Question	Full text not currently available
Author's Conclusion	Full text not currently available
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Limited Rationale: Because the full text is not available, it will not be able to be applicable to the PICO question. However, it seems to show good insight into the quality of life of people who are at fall risk.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: It seems like a good article that many others have used for further research, however it is useless to me because I cannot access the full text. The author and publisher are reliable sources. The publication is a little old.

Type of article	Overall Type: <i>Primary Research Article</i> Specific Type: <i>Randomized Controlled Trial</i>
APA Reference	Schepens, S., Panzer, V., & Goldberg, A. (2011). Randomized controlled trial comparing tailoring methods of multimedia-based fall prevention education for community dwelling older adults. <i>The American Journal of Occupational Therapy</i> , 65, 702-709. doi: 10.5014/ajot.2011.001180
Abstract	“OBJECTIVE. We attempted to determine whether multimedia fall prevention education using different instructional strategies increases older adults’ knowledge of fall threats and their fall prevention behaviors. METHOD. Fifty-three community-dwelling older adults were randomized to two educational groups or a control group. Multimedia-based educational interventions to increase fall threats knowledge and encourage fall prevention behaviors had two tailoring strategies: (1) improve content realism for individual learners (authenticity group) and (2) highlight program goals and benefits while using participants’ content selections (motivation group). Knowledge was measured at baseline and 1-mo follow-up. Participants recorded prevention behaviors for 1 mo. RESULTS. Intervention group participants showed greater knowledge gains and posttest knowledge than did control group participants. The motivation group engaged in more prevention behaviors over 1 mo than did the other groups. CONCLUSION. Tailoring fall prevention education by addressing authenticity and motivation successfully improved fall threats knowledge. Combining motivational strategies with multimedia education increased the effectiveness of the intervention in encouraging fall prevention behaviors.” (p. 702)
Author	Credentials: PhD, OTR Position and Institution: Postdoctoral Fellow in the Department of Physical Medicine and Rehabilitation at the University of Michigan Publication History in Peer-Reviewed Journals: <i>moderate</i>
Publication	Type of publication: Scholarly, peer reviewed Publisher: American Journal of OT in AOTA Other: credible journal, national OT organization
Date and Citation History	Date of publication: 2011 Cited By: 21
Stated Purpose or Research Question	“The purpose of this study was to compare the effectiveness of two tailored multimedia fall prevention educational interventions in improving fall threats knowledge and engagement in fall prevention behaviors in community-dwelling older adults.” (p. 703)
Author’s Conclusion	“Fall prevention education has been proposed as a means of addressing the problem of falls in older adults. This study supports multimedia-based, tailored fall prevention education as an effective intervention for improving fall threats knowledge and engagement in fall prevention behaviors.” (p. 707)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong Rationale: The researchers studied the population of older adults in the community, they used 2 different education interventions, they compared both interventions to a control group, and they explained that the interventions did help to reduce fall risk.

Type of article	Overall Type: Primary Research Study Specific Type: Nonrandomized control
APA Reference	Smee, D. J., Berry, H. L., Waddington, G. S., & Anson, J. M. (2014). A balance-specific exercise intervention improves falls risk but not total physical functionality in community-dwelling older adults. <i>Physical & Occupational Therapy in Geriatrics</i> , 32(4), 301-320. doi: 10.3109/02703181.2014.934945
Abstract	“ABSTRACT. Aims: The aim of this research was to investigate whether a simple balance-specific exercise simultaneously improves physical functionality and falls. Methods: Thirty-two community-dwelling individuals aged 65–92 years were assigned to either the control or wobble-board group. Participants were assessed pre- and postintervention using the Physiological Profile Assessment (a measure of falls risk) and the Continuous-Scale Physical Functional Performance-10 (a measure of physical functionality). Results: Participants in the intervention group, wobble-board training, had a decrease in their risk of falling by 36% ($p = 0.009$, $\eta^2 = 0.396$), while the control group recorded a slight but nonsignificant increase (6%). No change was seen in their total Continuous-Scale Physical Functional Performance-10 score. Conclusion: A balance specific intervention decreased falls-risk and improved balance but not sufficiently to affect total physical functionality.” (p. 301)
Author	Credentials: PhD Position and Institution: Faculty of Health at University of Canberra Publication History in Peer-Reviewed Journals: average
Publication	Type of publication: Scholarly Publisher: Physical and Occupational Therapy in Geriatrics in Research Gate Other: peer-reviewed medical journal
Date and Citation History	Date of publication: 2014 Cited By: 2
Stated Purpose or Research Question	“This study aims to investigate whether a simple balance-specific exercise program can simultaneously improve physical function and reduce falls risk.” (p. 312)
Author’s Conclusion	“The findings from this study demonstrated that, among these participants, a single balance specific intervention is sufficient to reduce falls risk and improve balance but not overall physical functionality. We have shown that the balance-specific intervention gave rise to a significantly lower risk of falling after the 16-week intervention period.” (p. 316)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong Rationale: The study explained the population (adults living in the community over the age of 65), intervention (wobble-board exercises), control group (participated in their normal activities), and outcomes (wobble-board helped balance to reduce falls).
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: Good intervention design and implementation but the sample size was small.

Type of article	Overall Type: <i>Primary research study</i> Specific Type: <i>comparison study</i>
APA Reference	Stahl, S. T., & Albert, S. M. (2014). Gender differences in physical activity patterns among older adults who fall. <i>Preventive Medicine</i> , 71, 94-100. Retrieved from: http://www.sciencedirect.com/science/article/pii/S0091743514004988?via%3Dihub
Abstract	"Objective. This study describes gender differences in the level and pattern of physical activity in groups of older adults who were frequent fallers, intermittent fallers, or non-fallers. Methods. Interviews were conducted with adults aged 50 years and older (N = 1834) at senior centers across Pennsylvania from 2010 to 2011. Self-reported falls and validated measures of physical activity were collected at baseline and at 6- and 12-month follow-up assessments. Results. Complete follow-up data were available for 1487 participants. Men who fell frequently decreased in recreational/leisure activity and household/yard work compared to the intermittent fallers and non-fallers. This association remained even when controlling for baseline health status. All women—regardless of fall group—engaged in similar levels of recreational/leisure activity and household/yard work over time. For both men and women, frequent fallers also showed a greater decrease in walking activities compared to intermittent fallers and non-fallers. Discussion. Frequent falling among older adults is associated with declines in common leisure, household, and walking activities. The effect of falling frequency on physical activity appears to affect men and women differently, generating the hypothesis that interventions to promote physical activity among fallers need to be gender specific." (p. 94)
Author	Credentials: PhD, Assistant Professor Position and Institution: Department of Psychiatry, University of Pittsburgh Publication History in Peer-Reviewed Journals: 14 other publications
Publication	Type of publication: Scholarly Journal Publisher: Preventive Medicine
Date and Citation History	Date of publication: 2015 Cited By: 17
Stated Purpose or Research Question	"We also hypothesized that older adults who frequently fall will increase their engagement in non-mobility activities, compared to older adults who fall less often or not at all." (N.A.)
Author's Conclusion	"The present study demonstrated that older adults who fall frequently had a steeper decrease in the trajectory of recreational/leisure activity and household/yard work than those who fall intermittently or not at all, but among men only." (N.A.)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Limited Rationale: This article not relevant to the PICO question because there is nothing on interventions just a comparison of genders.
Overall Quality of Article	Overall Quality of Article: Good Rationale: The date is within the past five years and the author and publishers are reliable.

Type of article	Overall Type: Primary research study Specific Type: Psychometric study
APA Reference	Warnke, A., Meyer, G., Bott, U., Mühlhauser, I. (2004). Validation of quality of life questionnaire measuring the subjective fear of falling in nursing home residents. <i>Journal of Gerontology and Geriatrics</i> , 37(6), 459-466. doi: 10.1007/s00391-004-0214-5
Abstract	"A quality of life scale was developed to measure the subjective fear of falling in nursing home residents. We assessed the dimensions fear of falling, daily living and social life within a randomized controlled trial of hip protector use. The Nottingham Health Profile (NHP) was used for validation. Statistical analysis covered factor analysis, internal consistency of subscales, construct and discriminant validity. Factor analysis revealed three reliable components (Cronbach's Alpha): fear of falling (0.92), social restriction due to limited mobility (0.74) and restriction by clothes due to the hip protector (0.72). The subscales fear of falling and social restriction were significantly intercorrelated with all subscales of the NHP. The new tool is a reliable and valid measure of fear of falling in nursing home residents. However, generalizability and applicability are limited by the small proportion of subjects able to complete the tests." (p. 459)
Author	Credentials: Professor, Dr. of Medicine Position and Institution: University of Hamburg, Gerontology, evidence-based Medicine Publication History in Peer-Reviewed Journals: 223 other published works
Publication	Type of publication: Scholarly Journal Publisher: Journal of Gerontology
Date and Citation History	Date of publication: 2004 Cited By: 18
Stated Purpose or Research Question	"We hypothesized that wearing the hip protector is instrumental to reduce fear of falling... Therefore, we have developed and validated a health-related quality of life measure regarding fear of falling" (p. 460)
Author's Conclusion	"The present study describes the validation of a disease-specific quality of life measure comprising 15 items on fear of falling, social restriction due to limited mobility and restriction by clothes due to the hip protector" (p. 463)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: The quality of life measure is related to our PICO question.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: The article is older than five years, but the author and the journal are reliable.

Type of article	Overall Type: Primary research Specific Type: control study
APA Reference	Yamada, M., Arai, H., Uemura, K., Mori, S., Nagai, K., Tanaka, B., . . . Aoyama, T. (2011). Effect of resistance training on physical performance and fear of falling in elderly with different levels of physical well-being. <i>Age and Ageing</i> , 40(5), 637-641.doi:10.1093/ageing/afr068
Abstract	<p>“SIR—Several factors are involved in the maintenance of activities of daily living (ADL) in older adults. Skeletal muscle mass and strength are important factors for maintaining independence and quality of life in elderly. Several recent cross-sectional studies have shown the associations of muscle strength with physical fitness and disability [1, 2]. Loss of muscle mass (sarcopenia) is prevalent in older adults [3] and represents an impaired state of health with mobility disorders, increased risk of falls and fractures, impaired ability to perform ADL, disabilities and loss of independence [4–6].</p> <p>Fear of falling is common in older adults. The prevalence varies from 21 to 85%, is higher in women than in men, and increases with age [7]. The risk factors of fear of falling are shown to be physical frailty [8], perception of poor health [9], obesity, cognitive impairment, depression, poor balance [10] and history of at least one fall [7].</p> <p>Resistance training is an effective intervention to improve the physical function in older adults by increasing strength and physical performance [11]. However, it is still controversial whether resistance training is effective for all levels of elderly people. For example, we reported that decreased muscle power is a reliable predictor of falls only in frail elderly [12]. We hypothesised, therefore, that there is a differential effect of resistance training on physical performance according to the level of physical well-being. The aim of this study was to compare the effects of resistance training on skeletal muscle mass, physical performance and fear of falling in robust and frail elderly.” (p. 637)</p>
Author	Credentials: PHD Position and Institution: Department of Human Health Sciences, Graduate School of Medicine Kyoto University Publication History in Peer-Reviewed Journals: Extensive
Publication	Type of publication: Scholarly Publisher: Age and Ageing Other: Nippon-Shoeter Co. Ltd, for their contribution to data collection
Date and Citation History	Date of publication: 2011 Cited By: 19
Stated Purpose or Research Question	“The aim of this study was to compare the effects of resistance training on skeletal muscle mass, physical performance and fear of falling in robust and frail elderly” (p. 637).
Author’s Conclusion	“In this study, we showed that LLM was improved by the resistance training programme in both groups. However, the effect on physical function was limited to frail elderly defined by TUG” (p. 640).
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong Rationale: Focused of frail elderly in the community and fear of falling. This directly relates to the EBP research question and possible interventions that can be used. This study focused on resistance training.
Overall Quality of Article	Overall Quality of Article: Moderate Rationale: This article has not been cited by many others in scholarly journals. They also listed several limitations to the study such as they did not measure muscle force and did not complete a follow up.

Type of article	Overall Type: Review of Research Studies Specific Type: Cochrane review
APA Reference	Gillespie, L. D., Robertson, M. C., Gillespie, W. J., Sherrington, C., Gates, S., Clemson, L. M., & Lamb, S. E. (2012). Interventions for preventing falls in older people living in the community. <i>The Cochrane Library</i> , 9, 1-420. doi: 10.1002/14651858.CD007146.pub3
Abstract	<p>Background Approximately 30% of people over 65 years of age living in the community fall each year. This is an update of a Cochrane review first published in 2009.</p> <p>Objectives To assess the effects of interventions designed to reduce the incidence of falls in older people living in the community. Search methods We searched the Cochrane Bone, Joint and Muscle Trauma Group Specialised Register (February 2012), CENTRAL (<i>The Cochrane Library</i> 2012, Issue 3), MEDLINE (1946 to March 2012), EMBASE (1947 to March 2012), CINAHL (1982 to February 2012), and online trial registers. Selection criteria Randomised trials of interventions to reduce falls in community-dwelling older people. Data collection and analysis Two review authors independently assessed risk of bias and extracted data. We used a rate ratio (RaR) and 95% confidence interval (CI) to compare the rate of falls (e.g. falls per person year) between intervention and control groups. For risk of falling, we used a risk ratio (RR) and 95% CI based on the number of people falling (fallers) in each group. We pooled data where appropriate. Main results We included 159 trials with 79,193 participants. Most trials compared a fall prevention intervention with no intervention or an intervention not expected to reduce falls. The most common interventions tested were exercise as a single intervention (59 trials) and multifactorial programmes (40 trials). Sixty-two per cent (99/159) of trials were at low risk of bias for sequence generation, 60% for attrition bias for falls (66/110), 73% for attrition bias for fallers (96/131), and only 38% (60/159) for allocation concealment. Multiple-component group exercise significantly reduced rate of falls (RaR 0.71, 95% CI 0.63 to 0.82; 16 trials; 3622 participants) and risk of falling (RR 0.85, 95% CI 0.76 to 0.96; 22 trials; 5333 participants), as did multiple-component home-based exercise (RaR 0.68, 95% CI 0.58 to 0.80; 7 trials; 951 participants and RR 0.78, 95% CI 0.64 to 0.94; 6 trials; 714 participants). For Tai Chi, the reduction in rate of falls bordered on statistical significance (RaR 0.72, 95% CI 0.52 to 1.00; 5 trials; 1563 participants) but Tai Chi did significantly reduce risk of falling (RR 0.71, 95% CI 0.57 to 0.87; 6 trials; 1625 participants). Overall, exercise interventions significantly reduced the risk of sustaining a fall-related fracture (RR 0.34, 95% CI 0.18 to 0.63; 6 trials; 810 participants).</p> <p>Multifactorial interventions, which include individual risk assessment, reduced rate of falls (RaR 0.76, 95% CI 0.67 to 0.86; 19 trials; 9503 participants), but not risk of falling (RR 0.93, 95% CI 0.86 to 1.02; 34 trials; 13,617 participants). Overall, vitamin D did not reduce rate of falls (RaR 1.00, 95% CI 0.90 to 1.11; 7 trials; 9324 participants) or risk of falling (RR 0.96, 95% CI 0.89 to 1.03; 13 trials; 26,747 participants), but may do so in people with lower vitamin D levels before treatment. Home safety assessment and modification interventions were effective in reducing rate of falls (RaR 0.81, 95% CI 0.68 to 0.97; 6 trials; 4208 participants) and risk of falling (RR 0.88, 95% CI 0.80 to 0.96; 7 trials; 4051 participants). These interventions were more effective in people at higher risk of falling, including those with severe visual impairment. Home safety interventions appear to be more effective when delivered by an occupational therapist. An intervention to treat vision problems (616 participants) resulted in a significant increase in the rate of falls (RaR 1.57, 95% CI 1.19 to 2.06) and risk of falling (RR 1.54, 95% CI 1.24 to 1.91). When regular wearers of multifocal glasses (597 participants) were given single lens glasses, all falls and outside falls were significantly reduced in the subgroup that regularly took part in outside activities. Conversely, there was a significant increase in outside falls in intervention group participants who took part in little outside activity.</p> <p>Pacemakers reduced rate of falls in people with carotid sinus hypersensitivity (RaR 0.73, 95% CI 0.57 to 0.93; 3 trials; 349 participants) but not risk of falling. First eye cataract surgery in women reduced rate of falls (RaR 0.66, 95% CI 0.45 to 0.95; 1 trial; 306 participants), but second eye cataract surgery did not. Gradual withdrawal of psychotropic medication reduced rate of falls (RaR 0.34, 95% CI 0.16 to 0.73; 1 trial; 93 participants), but not risk of falling. A prescribing modification programme for primary care physicians significantly reduced risk of falling (RR 0.61, 95% CI 0.41 to 0.91; 1 trial; 659 participants). An anti-slip shoe device reduced rate of falls in icy conditions (RaR 0.42, 95% CI 0.22 to 0.78; 1 trial; 109 participants). One trial (305 participants) comparing multifaceted podiatry including foot and ankle exercises with standard podiatry in people with disabling foot pain significantly reduced the rate of falls (RaR 0.64, 95% CI 0.45 to 0.91) but not the risk of falling. There is no evidence of effect for cognitive behavioural interventions on rate of falls (RaR 1.00, 95% CI 0.37 to 2.72; 1 trial; 120 participants) or risk of falling (RR 1.11, 95% CI 0.80 to 1.54; 2 trials; 350 participants). Trials testing interventions to increase knowledge/educate about fall prevention alone did not significantly reduce the rate of falls (RaR 0.33, 95% CI 0.09 to 1.20; 1 trial; 45 participants) or risk of falling (RR 0.88, 95% CI 0.75 to 1.03; 4 trials; 2555 participants).</p> <p>Thirteen trials provided a comprehensive economic evaluation. Three of these indicated cost savings for their interventions during the trial period: home-based exercise in over 80-year-olds, home safety assessment and modification in those with a previous fall, and one multifactorial programme targeting eight specific risk factors. Authors' conclusions Group and home-based exercise programmes, and home safety interventions reduce rate of falls and risk of falling. Multifactorial assessment and intervention programmes reduce rate of falls but not risk of falling; Tai Chi reduces risk of falling. Overall, vitamin D supplementation does not appear to reduce falls but may be effective in people who have lower vitamin D levels before treatment.” (p. 1)</p>
Author	Credentials: MMSc Position and Institution: Center for Musculoskeletal Research at the Institute of Inflammation and Repair at the University of Manchester, and an author of the Cochrane Bone, Joint, and Muscle Trauma Group Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: Scholarly Publisher: Cochrane Database Other: database is updated regularly and the reviews are in-depth

Date and Citation History	Date of publication: 2012 Cited By: 1,598
Stated Purpose or Research Question	"The best evidence for the efficacy of interventions to prevent falling should emerge from large, well-conducted randomised controlled trials, or from meta-analysis of smaller trials. A systematic review is required to identify the large number of trials in this area and summarise the evidence for healthcare professionals, researchers, policy makers, and others with an interest in this topic." (p. 4)
Author's Conclusion	"We found evidence of effectiveness for a number of different approaches to fall prevention, some in all older people living in the community and others in particular subgroups." (p. 22)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: Included studies that used older adults living in the community and discussed multiple interventions that have been used in studies. This review also discussed the main outcomes of various interventions. No C was included.
Overall Quality of Article	Overall Quality of Article: Good Rationale: This review is an updated version, it included many studies, and it was published by a reputable source.

Type of article	Overall Type: Review of Research Studies Specific Type: Randomized Controlled Trial
APA Reference	Irvine, L., Conroy, S. P., Sach, T., Gladman, J. R., Harwood, R. H., Kendrick, D., & Masud, T. (2010). Cost-effectiveness of a day hospital falls prevention programme for screened community-dwelling older people at high risk of falls. <i>Age and Ageing</i> , 39(6), 710-716. doi:10.1093/ageing/afq108
Abstract	<p>Background: multifactorial falls prevention programmes for older people have been provided to reduce falls. However, evidence of their cost-effectiveness is mixed.</p> <p>Design: economic evaluation alongside pragmatic randomised controlled trial.</p> <p>Intervention: randomised trial of 364 people aged ≥ 70, living in the community, recruited via GP and identified as high risk of falling. Both arms received a falls prevention information leaflet. The intervention arm were also offered a (day hospital) multidisciplinary falls prevention programme, including physiotherapy, occupational therapy, nurse, medical review and referral to other specialists.</p> <p>Measurements: self-reported falls, as collected in 12 monthly diaries. Levels of health resource use associated with the falls prevention programme, screening (both attributed to intervention arm only) and other health-care contacts were monitored. Mean NHS costs and falls per person per year were estimated for both arms, along with the incremental cost-effectiveness ratio (ICER) and cost effectiveness acceptability curve.</p> <p>Results: in the base-case analysis, the mean falls programme cost was £349 per person. This, coupled with higher screening and other health-care costs, resulted in a mean incremental cost of £578 for the intervention arm. The mean falls rate was lower in the intervention arm (2.07 per person/year), compared with the control arm (2.24). The estimated ICER was £3,320 per fall averted.</p> <p>Conclusions: the estimated ICER was £3,320 per fall averted. Future research should focus on adherence to the intervention and an assessment of impact on quality of life." (p. 710)</p>
Author	Credentials: MSc in Health Economics Position and Institution: Senior Research Associate, Norwich Medical School, East Anglia University, Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: scholarly peer reviewed journal Publisher: Age and Ageing Other: This journal is published by Oxford University
Date and Citation History	Date of publication: 9/10/2010 Cited By: 41
Stated Purpose or Research Question	"Evidence of the cost implications and cost-effectiveness of such programmes is mixed [2]. The aim of the present report is to provide a cost-effectiveness analysis of this approach." (p. 711).
Author's Conclusion	"Overall, we conclude there is a lack of evidence to suggest targeted screening in primary care and multifactorial falls prevention programmes in a day hospital setting is cost-effective. Although a reduction in the rate of falls occurred costs were higher." (p. 715).
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong Rationale: This study has a strong relevance to PICO. Specifically, the participants in this study are older adults that live in the community. Additionally, the study addressed a multifactorial intervention addressing fall prevention. As a result, this article directly relates to the research question for EBP.
Overall Quality of Article	Overall Quality of Article: Good Rationale: The overall quality of this article is good. Specifically, the research study was a randomized control trial that examined the cost-effectiveness of interdisciplinary fall prevention programs. The study was published in a reputable journal and author. The study was also conducted within the last ten years.

Type of article	Overall Type: Primary Research Study Specific Type: Randomized Control Trial
APA Reference	Logan, P. A., Coupland, C. A., Gladman, J. R., Sahota, O., Stoner-Hobbs, V., Robertson, K., & Avery, A. J. (2010). Community falls prevention for people who call an emergency ambulance after a fall: Randomised controlled trial. <i>BMJ</i> , 340, c2102, 1-7. doi: 10.1136/bmj.c2102
Abstract	<p>“Objective To evaluate whether a service to prevent falls in the community would help reduce the rate of falls in older people who call an emergency ambulance when they fall but are not taken to hospital.</p> <p>Design Randomised controlled trial.</p> <p>Setting Community covered by four primary care trusts, England.</p> <p>Participants 204 adults aged more than 60 living at home or in residential care who had fallen and called an emergency ambulance but were not taken to hospital.</p> <p>Interventions Referral to community fall prevention services or standard medical and social care.</p> <p>Main outcome measures The primary outcome was the rate of falls over 12 months, ascertained from monthly diaries. Secondary outcomes were scores on the Barthel index, Nottingham extended activities of daily living scale, and falls efficacy scale at baseline and by postal questionnaire at 12 months. Analysis was by intention to treat.</p> <p>Results 102 people were allocated to each group. 99 (97%) participants in the intervention group received the intervention. Falls diaries were analysed for 88.6 person years in the intervention group and 84.5 person years in the control group. The incidence rates of falls per year were 3.46 in the intervention group and 7.68 in the control group (incidence rate ratio 0.45, 95% confidence interval 0.35 to 0.58, $P<0.001$). The intervention group achieved higher scores on the Barthel index and Nottingham extended activities of daily living and lower scores on the falls efficacy scale (all $P<0.05$) at the 12-month follow-up. The number of times an emergency ambulance was called because of a fall was significantly different during follow-up (incidence rate ratio 0.60, 95% confidence interval 0.40 to 0.92, $P=0.018$).</p> <p>Conclusion A service to prevent falls in the community reduced the fall rate and improved clinical outcome in the high risk group of older people who call an emergency ambulance after a fall but are not taken to hospital.” (p. 1)</p>
Author	Credentials: PhD, OTR Position and Institution: Postdoctoral Researcher and Occupational Therapist, School of Community Health Services, University of Nottingham Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: Scholarly peer-reviewed journal Publisher: <i>The British Medical Journal (BMJ)</i> Other: The British Medical Journal is described as a “leading general medical journal.”
Date and Citation History	Date of publication: 5/11/10 Cited By: 85
Stated Purpose or Research Question	“We evaluated the use of a rehabilitation service to prevent falls in the community for older people who had called an ambulance because of a fall but had not been taken to hospital.” (p. 1).
Author’s Conclusion	“People who have fallen and called an emergency ambulance but are not taken to hospital are at high risk of falling again. This group are unlikely in usual clinical practice to receive formal falls prevention interventions. Immediate referral of such people to a falls prevention rehabilitation service may reduce the number of further falls and improve other indicators of health.” (p. 6).
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: This study has a moderate relevance to PICO. Specifically, the participant's in this study are older adults that live both at home and in a residence care community. Therefore, while some of the participants are community-dwellers, some lived within a residential care facility. As a result, some of the results may not directly apply to the EBP research question.
Overall Quality of Article	Overall Quality of Article: Good Rationale: The overall quality of this article is good. Specifically, the research study was a randomized control trial that examined the use of a multifactorial community fall prevention program for older adults. Both the journal and author are reputable journal. Additionally, the study was also conducted within the last ten years.

Type of article	Overall Type: Primary research study Specific Type: Randomized Controlled Trial
APA Reference	Markle-Reid, M., Browne, G., Gafni, A., Roberts, J., Weir, R., Thabane, L., ... & Henderson, S. (2010). The effects and costs of a multifactorial and interdisciplinary team approach to falls prevention for older home care clients 'at risk' for falling: A randomized controlled trial. <i>Canadian Journal on Aging</i> , 29(1), 139-161. doi:10.1017/S0714980809990377
Abstract	"This study determined the effects and costs of a multifactorial, interdisciplinary team approach to falls prevention. Randomized controlled trial of 109 older adults who are at risk for falls. This was a six-month multifactorial and evidence-based prevention strategy involving an interdisciplinary team. The primary outcome was number of falls during the six-month follow-up. At six months, no difference in the mean number of falls between groups. Subgroup analyses showed that the intervention effectively reduced falls in men (75-84 years old) with a fear of falling or negative fall history. Number of slips and trips was greatly reduced; and emotional health had a greater improvement in role functioning related to emotional health in the intervention group. Quality of life was improved, slips and trips were reduced, as were falls among males (75-84 years old) with a fear of falling or negative fall history." (p. 139)
Author	Credentials: PhD, MSc, Health Policy Services Position and Institution: Associate Professor and Assistant Acting Dean and Associate Member, Department of Health Research Methods, Evidence, and Impact Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: Scholarly peer reviewed journal Publisher: Canadian Journal of Aging Other: This is a national journal on Aging in Canada
Date and Citation History	Date of publication: 3/2010 Cited By: 53
Stated Purpose or Research Question	Our primary hypothesis was that older people receiving the multifactorial and interdisciplinary team approach versus usual home care would show a reduction in fall risk factors and number of falls at six months. Further, we hypothesized that the intervention would pay for itself by reducing the use of expensive health care resources." (p. 142).
Author's Conclusion	"Our study shows that a multifactorial, interdisciplinary team approach is more effective and no more expensive than usual home care in improving quality of life, reducing the incidence of slips and trips, and reducing falls among males (≥ 75 -84 years), with a fear of falling and a negative history of falls. " (p. 158)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong Rationale: This study has a strong relevance to PICO. Specifically, the participants in this study are older adults that live in the community. The intervention is the use of an interdisciplinary fall prevention program and the comparison is that of a non-interdisciplinary home care fall prevention program. As a result, this article directly relates to the research question for EBP.
Overall Quality of Article	Overall Quality of Article: Good Rationale: The overall quality of this article is good. Specifically, the research study was a randomized control trial that examined the use of an interdisciplinary fall prevention program for older adults who live within the community. Both the journal and author are reputable journal. Additionally, the study was conducted within the last ten years.

Type of article	Overall Type: Review of Research Studies Specific Type: Scoping Review
APA Reference	Rose, D. J., & Hernandez, D. (2010). The role of exercise in fall prevention for older adults. <i>Clinics in Geriatric Medicine</i> , 26(4), 607-631. doi:10.1016/j.cger.2010.07.003
Abstract	"This article reviews the evidence for the effectiveness of stand-alone exercise interventions and multifactorial intervention strategies that include exercise in lowering fall incidence rates and/or fall risk among older adults residing in the community, acute, subacute, and long-term care settings. Stand-alone exercise programs that emphasize multiple exercise categories are effective in reducing fall rates and fall risk in community-residing older adults, and may also be effective when conducted for a sufficient duration with older adult patients in subacute settings. In contrast, multifactorial fall risk reduction programs that include exercise as a component and are delivered by a multidisciplinary team are more effective in lowering fall rates in long-term care settings." (p. 607)
Author	Credentials: PhD Position and Institution Professor, Co-Director, Center of Successful Aging at California State University, Fullerton Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: Scholarly peer-reviewed journals Publisher: Clinics in Geriatric Medicine Other: This journal provides peer-reviewed articles relating to Geriatric Medicine.
Date and Citation History	Date of publication Cited By: 59
Stated Purpose or Research Question	"Physical activity or exercise may serve a primary, secondary, or tertiary role in the prevention of falls" (p. 607).
Author's Conclusion	"In conclusion, a review of the existing research demonstrates that carefully designed and progressive exercise programs play an important role in preventing falls and/or lowering an older adult's risk for falling." (p. 626).
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: This study has a moderate relevance to PICO. Specifically, the participant's in this study are older adults that live in the community. However, this article discusses data from residents that also live in long-term care and subacute settings. This article is a review of research studies, detailing the role that exercise has on preventing falls. As this was a review of research studies, there is not one particular intervention or comparison group discussed. Therefore, while this article may be beneficial to answering part of our EBP question, I do not believe that it completely answers our question.
Overall Quality of Article	Overall Quality of Article: Good Rationale: The overall quality of this article is good. Both the journal and author are reputable. Additionally, the study was conducted within the last ten years

Type of article	Overall Type: Review of Research Study Specific Type: Systematic Review
APA Reference	Stubbs, B., Binnekade, T., Eggermont, L., Sepehry, A. A., Patchay, S., & Schofield, P. (2014). Pain and the risk for falls in community-dwelling older adults: Systematic review and meta-analysis. <i>Archives of Physical Medicine and Rehabilitation</i> , 95(1), 175-187. doi: 10.1016/j.apmr.2013.08.241
Abstract Conclusions	<p>“Objective To conduct a systematic review and meta-analysis to establish the association between pain and falls in community-dwelling older adults.</p> <p>Data Sources: Electronic databases from inception until March 1, 2013, including Cochrane Library, CINAHL, EBSCO, EMBASE, PubMed, and PsycINFO.</p> <p>Study Selection: Two reviewers independently conducted the searches and completed methodological assessment of all included studies. Studies were included that (1) focused on adults older than 60 years; (2) recorded falls over 6 or more months; and (3) identified a group with and without pain. Studies were excluded that included (1) participants with dementia or a neurologic condition (eg, stroke); (2) participants whose pain was caused by a previous fall; or (3) individuals with surgery/fractures in the past 6 months.</p> <p>Data Extraction: One author extracted all data, and this was independently validated by another author.</p> <p>Data Synthesis: A total of 1334 articles were screened, and 21 studies met the eligibility criteria. Over 12 months, 50.5% of older adults with pain reported 1 or more falls compared with 25.7% of controls ($P<.001$). A global meta-analysis with 14 studies ($n=17,926$) demonstrated that pain was associated with an increased odds of falling (odds ratio [OR]=1.56; 95% confidence interval [CI], 1.36-1.79; I²=53%). A subgroup meta-analysis incorporating studies that monitored falls prospectively established that the odds of falling were significantly higher in those with pain ($n=4674$; OR=1.71; 95% CI, 1.48-1.98; I²=0%). Foot pain was strongly associated with falls ($n=691$; OR=2.38; 95% CI, 1.62-3.48; I²=8%) as was chronic pain ($n=5367$; OR=1.80; 95% CI, 1.56-2.09; I²=0%).</p> <p>Conclusions: Community-dwelling older adults with pain were more likely to have fallen in the past 12 months and to fall again in the future. Foot and chronic pain were particularly strong risk factors for falls, and clinicians should routinely inquire about these when completing falls risk assessments.” (p. 175)</p>
Author	Credentials: MSc Position and Institution: Physiotherapist, Clinical Research and Training Fellow, King's College London Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: Scholarly peer-reviewed article Publisher: Archives of Physical Medicine and Rehabilitation Other: This publication is provided by the American Congress of Rehabilitation Medicine
Date and Citation History	Date of publication 01/2014 Cited By: 84
Stated Purpose or Research Question	“To conduct a systematic review and meta-analysis to establish the association between pain and falls in community-dwelling older adults.” (p. 175).
Author’s Conclusion	“Community-dwelling older adults with pain were more likely to have fallen in the past 12 months and to fall again in the future. Foot and chronic pain were particularly strong risk factors for falls, and clinicians should routinely inquire about these when completing falls risk assessments.” (p. 175).
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Moderate Rationale: This study has a moderate relevance to PICO. Specifically, the participant's in this study are older adults that live in the community. However, this article discusses the relationship between pain and falls, but does not discuss intervention strategies. As a result, this article doesn't address the EBP research question in its entirety.
Overall Quality of Article	Overall Quality of Article: Good Rationale: The overall quality of this article is good. Specifically, the article is a systematic review of the relationship between pain and fall risk. However, it doesn't fully address the EBP question as it lacks information on interventions to be used. Both the journal and author are reputable. Additionally, the study was conducted within the last ten years.

Type of article	Overall Type: Review of Research Studies Specific Type: systematic review and meta-analysis
APA Reference	Burton, E., Cavalheri, V., Adams, R., Oakley Browne, C., Bovery-Spencer, P., Fenton, A. M., ... Hill, K. D. (2015). Effectiveness of exercise programs to reduce falls in older people with dementia living in the community: a systematic review and meta-analysis. <i>Clinical Interventions in Aging</i> , 10, 421–434. doi: 10.2147/CIA.S71691
Abstract	“Objective: The objective of this systematic review and meta-analysis is to evaluate the effectiveness of exercise programs to reduce falls in older people with dementia who are living in the community. Method: Peer-reviewed articles (randomized controlled trials [RCTs] and quasi-experimental trials) published in English between January 2000 and February 2014, retrieved from six electronic databases – Medline (ProQuest), CINAHL, PubMed, PsycInfo, EMBASE and Scopus – according to predefined inclusion criteria were included. Where possible, results were pooled and meta-analysis was conducted. Results: Four articles (three RCT and one single-group pre- and post-test pilot study) were included. The study quality of the three RCTs was high; however, measurement outcomes, interventions, and follow-up time periods differed across studies. On completion of the intervention period, the mean number of falls was lower in the exercise group compared to the control group (mean difference [MD] [95% confidence interval {CI}] =-1.06 [-1.67 to -0.46] falls). Importantly, the exercise intervention reduced the risk of being a faller by 32% (risk ratio [95% CI] =0.68 [0.55–0.85]). Only two other outcomes were reported in two or more of the studies (step test and physiological profile assessment). No between-group differences were observed in the results of the step test (number of steps) (MD [95% CI] =0.51 [-1.77 to 2.78]) or the physiological profile assessment (MD [95% CI] =-0.10 [-0.62 to 0.42]). Conclusion: Findings from this review suggest that an exercise program may potentially assist in preventing falls of older people with dementia living in the community. However, further research is needed with studies using larger sample sizes, standardized measurement outcomes, and longer follow-up periods, to inform evidence-based recommendations. Keywords: cognitive impairment, older people, physical activity, fallers, community dwelling” (p. 421)
Author	Credentials: PhD Position and Institution: Research fellow School of Physiotherapy and Exercise Science, Curtin University, Perth, WA, Australia; Research Department, Silver Chain, Perth, WA, Australia Publication History in Peer-Reviewed Journals: 26
Publication	Type of publication: scholarly peer-reviewed journal Publisher: Dove Press journal
Date and Citation History	2015 Google Scholar Cited By: 34
Stated Purpose or Research Question	“The objective of this systematic review and meta-analysis is to evaluate the effectiveness of exercise programs to reduce falls in older people with dementia who are living in the community.” (p. 421)
Author’s Conclusion	“Findings from this review suggest that an exercise program may potentially assist in preventing falls of older people with dementia living in the community. However, further research is needed with studies using larger sample sizes, standardized measurement outcomes, and longer follow-up periods, to inform evidence-based recommendations.” (p.421)
Overall Relevance to PICO	Overall Relevance to PICO: Moderate Relevance PICO: Targets P (older adults with dementia who are at high risk for falls) Directly states I, C (compares control group to intervention group), and O (although both groups illustrated deterioration, the exercise group illustrated fewer falls in comparison to the control group and in comparison to their pretest scores).
Overall Quality	Overall Quality of Article: Good Quality Established author. Reputable journal and publisher. Publication within last 10 years

Type of article	Overall Type: Review of research studies Specific Type: Systematic review
APA Reference	De Labra, C., Pinheiro, G. C., Maseda, A., Lorenzo, T., & Calenti, C. J. (2015). Effects of physical exercise interventions in frail older adults: a systematic review of randomized controlled trials. <i>BMC Geriatrics</i> . doi: 10.1186/s12877-015-0155-4.
Abstract	“Background: Low physical activity has been shown to be one of the most common components of frailty, and interventions have been considered to prevent or reverse this syndrome. The purpose of this systematic review of randomized, controlled trials is to examine the exercise interventions to manage frailty in older people. Methods: The PubMed, Web of Science, and Cochrane Central Register of Controlled Trials databases were searched using specific keywords and Medical Subject Headings for randomized, controlled trials published during the period of 2003–2015, which enrolled frail older adults in an exercise intervention program. Studies where frailty had been defined were included in the review. A narrative synthesis approach was performed to examine the results. The Physiotherapy Evidence Database (PEDro scale) was used to assess the methodological quality of the selected studies. Results: Of 507 articles, nine papers met the inclusion criteria. Of these, six included multi-component exercise interventions (aerobic and resistance training not coexisting in the intervention), one included physical comprehensive training, and two included exercises based on strength training. All nine of these trials included a control group receiving no treatment, maintaining their habitual lifestyle or using a home-based low level exercise program. Five investigated the effects of exercise on falls, and among them, three found a positive impact of exercise interventions on this parameter. Six trials reported the effects of exercise training on several aspects of mobility, and among them, four showed enhancements in several measurements of this outcome. Three trials focused on the effects of exercise intervention on balance performance, and one demonstrated enhanced balance. Four trials investigated functional ability, and two showed positive results after the intervention. Seven trials investigated the effects of exercise intervention on muscle strength, and five of them reported increases; three trials investigated the effects of exercise training on body composition, finding improvements in this parameter in two of them; finally, one trial investigated the effects of exercise on frailty using Fried's criteria and found an improvement in this measurement. Exercise interventions have demonstrated improvement in different outcome measurements in frail older adults, however, there were large differences between studies with regard to effect sizes. Conclusions: This systematic review suggested that frail older adults seemed to benefit from exercise interventions, although the optimal program remains unclear. More studies of this topic and with frail populations are needed to select the most favorable exercise program. Keywords: Exercise, Frail elderly, Physical activity, Functional capacity, Systematic review, Randomized controlled trial” (p. 1)
Author	Credentials: No titles, it only states she is a researcher Position and Institution: Researcher at University of A Coruña UDC Research, Development and Innovation Department, Gerontological Complex La Milagrosa, Provincial Association of Pensioners and Retired People (UDP) from A Coruña Publication History in Peer-Reviewed Journals: Minimal
Publication	Type of publication: scholarly peer-reviewed journal Publisher: BMC Other: PubMed
Date and Citation History	2015 Google Scholar Cited By: 72
Stated Purpose or Research Question	“The purpose of this systematic review of randomized, controlled trials is to examine the exercise interventions to manage frailty in older people.” (p.1)
Author’s Conclusion	“This systematic review suggested that frail older adults seemed to benefit from exercise interventions, although the optimal program remains unclear. More studies of this topic and with frail populations are needed to select the most favorable exercise program.” (p.1)
Overall Relevance to PICO	Overall Relevance to PICO: Moderate Relevance PICO: Not fully related to the O (Effectiveness on fall risk), P targeted to mostly women (78.1%) and included community dwelling, residential care facilities, and acute care and rehabilitation teaching hospital. I focused on physical exercise. C compared the different settings and intervention characteristics.
Overall Quality	Overall Quality of Article: Fair Quality Established author. Results are not as clear as I would prefer. Publication within last 10 years

Type of article	Overall Type: Review of research studies Specific Type: Systematic review and meta-analysis
APA Reference	El-Khoury, F., Cassou, B., Charles, M.-A., & Dargent-Molina, P. (2013). The effect of fall prevention exercise programmes on fall induced injuries in community dwelling older adults: systematic review and meta-analysis of randomised controlled trials. <i>The BMJ</i> , 347, f6234. doi: 10.1136/bmj.f6234
Abstract	“Objective To determine whether, and to what extent, fall prevention exercise interventions for older community dwelling people are effective in preventing different types of fall related injuries. Data sources Electronic databases (PubMed, the Cochrane Library, Embase, and CINAHL) and reference lists of included studies and relevant reviews from inception to July 2013. Study selection Randomised controlled trials of fall prevention exercise interventions, targeting older (>60 years) community dwelling people and providing quantitative data on injurious falls, serious falls, or fall related fractures. Data synthesis Based on a systematic review of the case definitions used in the selected studies, we grouped the definitions of injurious falls into more homogeneous categories to allow comparisons of results across studies and the pooling of data. For each study we extracted or calculated the rate ratio of injurious falls. Depending on the available data, a given study could contribute data relevant to one or more categories of injurious falls. A pooled rate ratio was estimated for each category of injurious falls based on random effects models. Results 17 trials involving 4305 participants were eligible for meta-analysis. Four categories of falls were identified: all injurious falls, falls resulting in medical care, severe injurious falls, and falls resulting in fractures. Exercise had a significant effect in all categories, with pooled estimates of the rate ratios of 0.63 (95% confidence interval 0.51 to 0.77, 10 trials) for all injurious falls, 0.70 (0.54 to 0.92, 8 trials) for falls resulting in medical care, 0.57 (0.36 to 0.90, 7 trials) for severe injurious falls, and 0.39 (0.22 to 0.66, 6 trials) for falls resulting in fractures, but significant heterogeneity was observed between studies of all injurious falls ($I^2 = 50\%$, $P=0.04$). Conclusions Exercise programmes designed to prevent falls in older adults also seem to prevent injuries caused by falls, including the most severe ones. Such programmes also reduce the rate of falls leading to medical care.” (p. 347)
Author	Credentials: PhD Position and Institution: Researcher in Epidemiology at the French Institute of Health and Medical Research. Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: scholarly peer-reviewed journal Publisher: BMJ Publishing Group Ltd Other: PubMed
Date and Citation History	2013 Google Scholar Cited By: 205
Stated Purpose or Research Question	“To determine whether, and to what extent, fall prevention exercise interventions for older community dwelling people are effective in preventing different types of fall related injuries.” (p.1)
Author’s Conclusion	“Exercise programmes designed to prevent falls in older adults also seem to prevent injuries caused by falls, including the most severe ones. Such programmes also reduce the rate of falls leading to medical care.” (p.1)
Overall Relevance to PICO	Overall Relevance to PICO: Moderate Relevance PICO: Not directly related to the O (instead, focused on effects of intervention on reducing injuries caused by falls), targeted P (community dwelling older adults). Targeted C, but no I.
Overall Quality	Overall Quality of Article: Fair Quality Established author. Reputable journal and publisher. Publication within last 10 years. However, no intervention.

Type of article	Overall Type: Primary Research Study Specific Type: Program Implementation with Pre and Post-Test
APA Reference	Gallant, M. P., Tartaglia, M., Hardman, S., & Burke, K. (2017). Using tai chi to reduce fall risk factors among older adults: An evaluation of a community-based implementation. <i>J Appl Gerontol</i> , 0733464817703004. doi: 10.1177/0733464817703004
Abstract	"This study aimed to evaluate a community-based implementation of an evidence-based fall prevention program, in which 131 individuals participated in <i>Tai Chi: Moving for Better Balance</i> . Self-report and functional performance assessments included demographics, health and fall history, the Activities-Specific Balance Scale, the Timed Up and Go test, and the Functional Reach test. Pre-post scores were compared with the Wilcoxon signed rank test. The mostly female participants were 73 years old, on average. At baseline, 18% reported being afraid or very afraid of falling, and 18% had fallen in the past 6 months. At follow-up, there was significant improvement in Timed Up and Go ($p < .001$), Functional Reach ($p < .01$), and Activities-Specific Balance Scale scores ($p < .01$). These results demonstrate that a 12-week evidence-based Tai Chi program can be feasibly implemented by novice instructors, is well-received by older adults, and can effectively reduce fall risk when implemented in community settings." (p. 1)
Author	Credentials: PhD, MPH Position and Institution: Associate Professor at School of Public Health, University at Albany, State University of New York Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: scholarly peer-reviewed journal Publisher: Southern Gerontology Association Other: Journal of Applied Gerontology
Date and Citation History	2017 Google Scholar Cited By: 2
Stated Purpose or Research Question	"This study aimed to evaluate a community-based implementation of an evidence-based fall prevention program, in which 131 individuals participated in <i>Tai Chi: Moving for Better Balance</i> ." (p. 1)
Author's Conclusion	"These results demonstrate that a 12-week evidence-based Tai Chi program can be feasibly implemented by novice instructors, is well-received by older adults, and can effectively reduce fall risk when implemented in community settings."(p.1-2)
Overall Relevance to PICO	Overall Relevance to PICO: Moderate Relevance PICO: Directly related to the O (reduced fall risk for older adults), targeted P (community dwelling older adults), I (Tai Chi), and C (pretest-posttest).
Overall Quality	Overall Quality of Article: Good Quality Established author. Reputable journal and publisher. However, article not cited many times. Publication within last 2 years.

Type of article	Overall Type: Primary research study Specific Type: Randomized trial
APA Reference	Clemson, L., Cumming, R. G., Kendig, H., Swann, M., Heard, R., & Taylor, K. (2004). The effectiveness of a community-based program for reducing the incidence of falls in the elderly: A randomized trial. <i>Journal of the American Geriatrics Society</i> , 52(9), 1487-1494. doi:10.1111/j.1532-5415.2004.52411.x
Abstract	“OBJECTIVES: To test whether Stepping On, a multifaceted community-based program using a small-group learning environment, is effective in reducing falls in at-risk people living at home. DESIGN: A randomized trial with subjects followed for 14 months. SETTING: The interventions were conducted in community venues, with a follow-up home visit. PARTICIPANTS: Three hundred ten community residents aged 70 and older who had had a fall in the previous 12 months or were concerned about falling. INTERVENTION: The Stepping On program aims to improve fall self-efficacy, encourage behavioral change, and reduce falls. Key aspects of the program are improving lower-limb balance and strength, improving home and community environmental and behavioral safety, encouraging regular visual screening, making adaptations to low vision, and encouraging medication review. Two-hour sessions were conducted weekly for 7 weeks, with a follow-up occupational therapy home visit. MEASUREMENTS: The primary outcome measure was falls, ascertained using a monthly calendar mailed by each participant. RESULTS: The intervention group experienced a 31% reduction in falls (relative risk (RR)=0.69, 95% confidence interval (CI)=0.50-0.96; P=.025). This was a clinically meaningful result demonstrating that the Stepping On program was effective for community-residing elderly people. Secondary analysis of subgroups showed that it was particularly effective for men (n=80; RR=0.32, 95% CI=0.17-0.59). CONCLUSION: The results of this study renew attention to the idea that cognitive-behavioral learning in a small-group environment can reduce falls. Stepping On offers a successful fall-prevention option.” (p. 1487)
Author	Credentials: BAppSc(OT), PhD Position and Institution: Professor, School of Occupation and Leisure Sciences, Faculty of Health Sciences, University of Sydney Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: clinical trial Publisher: Journal of the American Geriatrics Society Other: N/A
Date and Citation History	Date of publication: 2004 Cited By: 434
Stated Purpose or Research Question	“To test whether Stepping On, a multifaceted community-based program using a small-group learning environment, is effective in reducing falls in at-risk people living at home.” (p.1487)
Author’s Conclusion	“The intervention group experienced a 31% reduction in falls (relative risk (RR) 5 0.69, 95% confidence interval (CI) 5 0.50–0.96; P 5.025). This was a clinically meaningful result demonstrating that the Stepping On program was effective for community-residing elderly people.” (p.1487)
Overall Relevance to PICO or EBP Research Question	Overall Relevance to PICO: Strong Rationale: Targeted P (Community dwelling older adults), stated I (The Stepping On program), demonstrated C (control group and intervention group), and O is directly related to the EBP question (effective interventions for decreasing risk of falls among community dwelling older adults).
Overall Quality of Article	Overall Quality of Article: Good Rationale: Directly relates to the EBP question. Only downfall is that the publication is over 10 years ago.

Type of article	Overall Type: Review of Research Studies Specific Type: Systematic Review
APA Reference	Cadore, E.L., Rodríguez-Mañas, L., Sinclair, A., & Izquierdo, M. (2013). Effects of different exercise interventions on risk of falls, gait ability, and balance in physically frail older adults: A systematic review. <i>Rejuvenation Research</i> , 16(2), 105-114. doi: 10.1089/rej.2012.1397.
Abstract	“The aim of this review was to recommend training strategies that improve the functional capacity in physically frail older adults based on scientific literature, focusing specially in supervised exercise programs that improved muscle strength, fall risk, balance, and gait ability. Scielo, Science Citation Index, MEDLINE, Scopus, Sport Discus, and ScienceDirect databases were searched from 1990 to 2012. Studies must have mentioned the effects of exercise training on at least one of the following four parameters: Incidence of falls, gait, balance, and lower-body strength. Twenty studies that investigated the effects of multi-component exercise training (10), resistance training (6), endurance training (1), and balance training (3) were included in the present revision. Ten trials investigated the effects of exercise on the incidence of falls in elderly with physical frailty. Seven of them have found a fewer falls incidence after physical training when compared with the control group. Eleven trials investigated the effects of exercise intervention on the gait ability. Six of them showed enhancements in the gait ability. Ten trials investigated the effects of exercise intervention on the balance performance and seven of them demonstrated enhanced balance. Thirteen trials investigated the effects of exercise intervention on the muscle strength and nine of them showed increases in the muscle strength. The multi-component exercise intervention composed by strength, endurance and balance training seems to be the best strategy to improve rate of falls, gait ability, balance, and strength performance in physically frail older adults” (p. 105)
Author	Credentials: PhD Department of Health Sciences Public University of Navarre, Tudela, Navarre, Spain Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: scholarly peer-reviewed journal Publisher: Rejuvenation Research Other: PubMed
Date and Citation History	2013 Google Scholar Cited By:233
Stated Purpose or Research Question	“The aim of this review was to recommend training strategies that improve the functional capacity in physically frail older adults based on scientific literature, focusing specially in supervised exercise programs that improved muscle strength, fall risk, balance, and gait ability” (p. 105).
Author’s Conclusion	“The multi-component exercise intervention composed by strength, endurance and balance training seems to be the best strategy to improve rate of falls, gait ability, balance, and strength performance in physically frail older adults” (p. 105).
Overall Relevance to PICO	Overall Relevance to PICO: Moderate Relevance PICO: Targeted to P (physically frail older adults), Directly related to the I (different exercise interventions on risks of falls, gait ability, muscle tone, and balance), C (compares control group to intervention groups), and O (the best strategy to prevent frail older adults from falling was to incorporate a multi- component exercise intervention plan)
Overall Quality	Overall Quality of Article: Fair Quality Established author, difficult to find credentials. Reputable journal and publisher. Publication within last 5 years

Type of article	Overall Type: Review of Research Studies Specific Type: Randomized Controlled Trial
APA Reference	Fairhall, N., Kirkham, C., Clemson, L., Howard, K., Vogler, C., Close, J. CT., Moseley, A. M., Cameron, I. D., Mak, J., Sonnabend, D., & Lord, S. R. (2016). Exercise and fall prevention self-management to reduce mobility-related disability and falls after fall-related lower limb fracture in older people: Protocol for the RESTORE (Recovery Exercises and STEpping On afteR fracturE) randomized controlled trial. <i>BMC Geriatrics</i> , 16(34). https://doi.org/10.1186/s12877-016-0206-5
Abstract	"Lasting disability and further falls are common and costly problems in older people following fall-related lower limb and pelvic fractures. Exercise interventions can improve mobility after fracture and reduce falls in older people, however the optimal approach to rehabilitation after fall-related lower limb and pelvic fracture is unclear. This randomized controlled trial aims to evaluate the effects of an exercise and fall prevention self-management intervention on mobility-related disability and falls in older people following fall-related lower limb or pelvic fracture. Cost-effectiveness of the intervention will also be investigated." (p. 1)
Author	Credentials: PhD. The George Institute for Global Health, Sydney Medical School The University of Sydney, Australia Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: scholarly open access peer-reviewed journal Publisher: BMC Other: BMC Geriatrics
Date and Citation History	2016 Google Scholar Cited By: 7
Stated Purpose or Research Question	"This randomized controlled trial aims to evaluate the effects of an exercise and fall prevention self-management intervention on mobility-related disability and falls in older people following fall-related lower limb or pelvic fracture" (p. 1).
Author's Conclusion	"The findings will be disseminated in peer-reviewed journals and via professional and scientific conferences" (p. 9).
Overall Relevance to PICO	Overall Relevance to PICO: Moderate Relevance PICO: Targeted to P (Older adults who have experienced fall-related lower limb fracture), Directly related to the I (personalized exercise program and fall-prevention education), C (participants randomized to receive 12-month intervention or usual care), and no O (study in progress).
Overall Quality	Overall Quality of Article: Fair Quality Established author. Questionable journal and publisher. Publication within the last year.

Type of article	Overall Type: Review of Research Studies Specific Type: Scoping Review
APA Reference	Leland, N. E., Elliott, S. J., O'Malley, L., & Murphy, S. L. (2012). Occupational therapy in fall prevention: Current evidence and future directions. <i>American Journal of Occupational Therapy</i> , 66, 149–160. http://dx.doi.org/10.5014/ajot.2012.002733
Abstract	“Falls are a serious public health concern among older adults in the United States. Although many fall prevention recommendations exist, such as those published by the American Geriatrics Society (AGS) and the British Geriatrics Society (BGS) in 2010, the specific role of occupational therapy in these efforts is unclear. This article presents a scoping review of current published research documenting the role of occupational therapy in fall prevention interventions among community-dwelling older adults, structured by the AGS and BGS guidelines. We identified evidence for occupational therapy practitioner involvement in fall prevention in environmental modifications, exercise, and multifactorial and multicomponent interventions. Although research documenting the efficacy of occupational therapy interventions is identified as part of the <i>Occupational Therapy Practice Framework: Domain and Process</i> (2nd ed.; American Occupational Therapy Association, 2008), we identified little or no such research examining interventions to modify behaviors (e.g., fear of falling), manage postural hypotension, recommend appropriate footwear, and manage medications. Although occupational therapy is represented in the fall prevention research, the evidence for the profession’s role in many areas is still lacking.” (p. 149)
Author	Credentials: PhD, OTR/L, BCG Assistant Professor, Division of Occupational Science and Occupational Therapy, Herman Ostrow School of Dentistry, and Davis School of Gerontology University of Southern California Publication History in Peer-Reviewed Journals: extensive
Publication	Type of publication: scholarly peer-reviewed journal Publisher: The American Journal of Occupational Therapy
Date and Citation History	2012 Google Scholar Cited By: 28
Stated Purpose or Research Question	“This article presents a scoping review of current published research documenting the role of occupational therapy in fall prevention interventions among community-dwelling older adults, structured by the AGS and BGS guidelines” (p.149).
Author’s Conclusion	“This scoping review highlights seven fall intervention areas in which further research is needed to provide evidence supporting occupational therapy interventions to decrease falls among community-living older adults. Specifically, there is a dearth of research documenting interventions focusing on modifying fall risk behaviors (e.g., reducing fear of falling), managing postural hypotension, managing medications, and recommending appropriate footwear to decrease fall risk among community-dwelling older adults” (p. 157).
Overall Relevance to PICO	Overall Relevance to PICO: High Relevance PICO: Targeted to P (Older adults in the United States), Directly related to O (Fall intervention areas). No I or C (Non-experimental study).
Overall Quality	Overall Quality of Article: High Quality Established author. Reputable journal and publisher. Publication within the last 5 years.

Type of article	Overall Type: Review of Research Studies Specific Type: Systematic Review
APA Reference	McClure, R. J., Turner, C., Peel, N., Spinks, A., Eakin, E., & Hughes, K. (2007). Population-based interventions for the prevention of fall-related injuries in older people. <i>Cochrane Database of Systematic Reviews</i> , 1, 1- 23. DOI: 10.1002/14651858.CD004441.pub2
Abstract	“Fall-related injuries are a significant cause of morbidity and mortality in older populations. Summary information about countermeasures that successfully address the risk factors for fall-related injuries in research settings has been widely disseminated. However, less available is evidence-based information about successful roll out of these countermeasures in public health programmes in the wider community. Population-based interventions in the form of multi-strategy, multi-focused programmes are hypothesized to result in a reduction in population-wide injury rates. This review tests this hypothesis with regard to fall-related injuries among older people.” (p. 1)
Author	Credentials: PhD Dean of Faculty of Medicine and Health at University of New England, Australia University of New England, New South Wales, Australia Publication History in Peer-Reviewed Journals: moderate
Publication	Type of publication: scholarly peer- reviewed journal Publisher: Cochrane Database of Systematic Reviews Other: Cochrane Library
Date and Citation History	2007 Google Scholar Cited By: 304
Stated Purpose or Research Question	“To assess the effectiveness of population-based interventions, defined as coordinated, community-wide, multi-strategy initiatives, for reducing fall-related injuries among older people” (p.1).
Author’s Conclusion	“Out of 35 identified studies, six met the criteria for inclusion. There were no randomized controlled trials. Significant decreases or downward trends in fall-related injuries were reported in each of the included studies, with the relative reduction in fall-related injuries ranging from 6% to 33%” (p. 1).
Overall Relevance to PICO	Overall Relevance to PICO: Moderate Relevance PICO: Targeted to P (Older adults), Directly related to O (inclusion studies supported reduction in fall- related injuries after implication of population- based interventions), and no I or C (Non- experimental study).
Overall Quality	Overall Quality of Article: Good Quality Established author. Reputable journal and publisher. Publication within the last 10 years.

Type of article	Overall Type: Conceptual Article Specific Type: Unknown
APA Reference	Taylor-Piliae, R.E., Peterson, R., & Mohler, M. J. (2017). Clinical and community strategies to prevent falls and fall-related injuries among community-dwelling older adults. <i>Nursing Clinics of North America</i> , 52(3), 489- 497. doi: 10.1016/j.cnur.2017.04.004
Abstract	“Falls in older adults are the result of several risk factors across biological and behavioral aspects of the person, along with environmental factors. Falls can trigger a downward spiral in activities of daily living, independence, and overall health outcomes. Clinicians who care for older adults should screen them annually for falls. A multifactorial comprehensive clinical fall assessment coupled with tailored interventions can result in a dramatic public health impact, while improving older adult quality of life. For community-dwelling older adults, effective fall prevention has the potential to reduce serious fall-related injuries, emergency room visits, hospitalizations, institutionalization, and functional decline.” (p. 489)
Author	Credentials: PhD, RN, FAHA Associate Professor, Biobehavioral Health Science Division, College of Nursing University of Arizona Publication History in Peer-Reviewed Journals: Moderate
Publication	Type of publication: scholarly peer- reviewed journal Publisher: Nursing Clinics North America Other: PubMed
Date and Citation History	2017 Google Scholar Cited By: 0
Stated Purpose or Research Question	“The purpose of this article is to provide current evidence- based information on community- based fall screening, and comprehensive...” (p. 1).
Author’s Conclusion	“For community-dwelling older adults, effective fall prevention has the potential to reduce serious fall-related injuries, emergency room visits, hospitalizations, institutionalization, and functional decline” (p. 1).
Overall Relevance to PICO	Overall Relevance to PICO: Moderate Relevance PICO: Targeted to P (Community- dwelling older adults), Directly related to O (effective fall prevention potential to reduce serious fall- related injuries, emergency room visits, hospitalizations, institutionalism, and functional decline), and no I or C (unavailable).
Overall Quality	Overall Quality of Article: Good Quality Established author. Reputable journal and publisher. Publication within the last year, but unable to retrieve the whole study.