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**Literature search results**

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**Search details**

Falls and dementia – over 65s, assessment, UK, USA, Australia, evidence from the last five years, for production of Falls pathway

**Resources searched**

NHS Evidence; TRIP Database; Cochrane Library; BNI; CINAHL; PsychINFO;

*Database search terms:* Dementia, slips, trips, falls, assessment,

*Evidence search string(s):*

*Google search string(s):*

**Summary**

Very difficult to be selective as there are, for instance, 264 items on dementia and falls in Cochrane.

**Guidelines**

Clinical practice guideline for the assessment and prevention of falls in older people. RCN, 2007

**Evidence-based reviews**

*Stern C, Jayasekara R*
Interventions to reduce the incidence of falls in older adult patients in acute-care hospitals: a systematic review

Published research

1. Increased risk for falling associated with subtle cognitive impairment: Secondary analysis of a randomized clinical trial.

Author(s): Gleason, Carey E, Gangnon, Ronald E, Fischer, Barbara L, Mahoney, Jane E

Citation: Dementia and Geriatric Cognitive Disorders, July 2009, vol./is. 27/6(557-563), 1420-8008;1421-9824 (Jul 2009)

Abstract: Background/Aims: Having dementia increases patients' risk for accidental falls. However, it is unknown if having mild cognitive deficits also elevates a person's risk for falls. This study sought to clarify the relationship between subtle cognitive impairment, measured with a widely-used, clinic-based assessment, the Mini Mental State Exam (MMSE), and risk for falls. Methods: In a secondary analysis of the Kenosha County Falls Prevention Study, a randomized controlled trial targeting older adults at risk for falls, we examined the association between baseline MMSE and prospective rate of falls over 12 months in 172 subjects randomized to control group. Results: Using univariate analysis, the rate of falls increased with each unit decrease in MMSE score down to at least 22 (rate ratio 1.25, 95% confidence interval (CI) 1.09-1.45, p = 0.0026). Using stepwise multivariate regression, controlling for ability to perform activities of daily living, use of assistive device, current exercise, and arthritis, the association between MMSE score and falls rate persisted (rate ratio 1.20, 95% CI 1.03-1.40, p = 0.021). Conclusion: Minimal decrements on the MMSE were associated with elevations in rate of falls, suggesting that subtle cognitive deficits reflected in MMSE scores above a cut-off consistent with a diagnosis of dementia, can influence risk for falls. (PsycINFO Database Record (c) 2010 APA, all rights reserved) (journal abstract)


Author(s): Onen, Fannie, Henry-Feugeas, Marie Cecile, Roy, Carine, Baron, Gabriel, Ravaud, Philippe

Citation: Brain Research, July 2008, vol./is. 1222/(79-86), 0006-8993 (Jul 2008)

Abstract: Mobility dysfunction of unknown origin predicts dementia in the elderly and is associated with periventricular leukoaraiosis (LA), another predictor of dementia of still controversial pathogenesis, in the elderly with mild cognitive impairment (MCI). Thus, this study examined which gait and balance parameters best correlate with periventricular LA to better understand the pathogenesis of mobility decline in MCI. High resolution MRI and detailed mobility assessment were performed in 61 subjects (72 years+or-5) with MCI. Cognitive assessment included Free and Cued Selective Reminding Test (FCSRT) and the Trail Making test part B (TMB). Mobility assessment included reports of falls in the previous 6-
 month period, the walking while talking test, the timed "up and go test" (TUG), measurement of fast gait speed, the standing test and the one-leg standing test. There was an association between marked periventricular LA and slow postural changes, slow gait (TUG and gait speed), altered balance (standing test and one-leg standing test), altered walking while talking test. But after adjusting for age and ventriculomegaly on a logistic multiple regression model, performance on the TUG test was the only clinical predictor of periventricular LA (>10 s, P=0.002). Poorer TUG performances were more frequent with vascular than Alzheimer's disease-like profiles on the FCSRT and TMB tests (P=0.01). In conclusion, the clinical profile of patients demonstrating a main MR brain correlate of mobility dysfunction supports a main pathomechanism of subtle vascular extrapyramidal dysfunction in MCI.

3. **Risk factors for falls in people with and without a diagnose of dementia living in residential care facilities: A prospective study.**

**Author(s):** Eriksson, Staffan, Gustafson, Yngve, Lundin-Olsson, Lillemor

**Citation:** Archives of Gerontology and Geriatrics, May 2008, vol./is. 46/3(293-306), 0167-4943 (May 2008)

**Abstract:** People with dementia are at increased risk of falling. The purpose of this study was to identify predisposing risk factors for falls in older people with and without a diagnose of dementia living in residential care facilities, and to compare the results. Eighty-three residents without dementia (mean age ± S.D.; 83.5 ± 7.1 years) and 103 with dementia (83.6 ± 6.3 years) in Umeå, Sweden, participated. The baseline assessment included probable risk factors like walking ability, diagnoses and treatment with drugs. The follow-up period was 6 months. In people with dementia, the fall rate was higher (crude incidence rate ratio 2.55, 95% CI 1.60-4.08) and a larger proportion experienced falls (62% versus 41%). In the group without dementia 54.8% of the variation in falls was explained by a model including orthostatism, "women walking with aid", and treatment with Angiotensin Converting Enzyme (ACE) inhibitors. In the group with dementia 25.5% of the variation in falls was explained by a model including "man walking with aid". Our results show that with the same set of common risk factors for falls a considerably lower proportion of the variation in falls can be explained in the group of people with dementia.

4. **The relationship between specific cognitive functions and falls in aging.**

**Author(s):** Holtzer, Roee, Friedman, Rachel, Lipton, Richard B, Katz, Mindy, Xue, Xiaonan, Verghese, Joe

**Citation:** Neuropsychology, September 2007, vol./is. 21/5(540-548), 0894-4105;1931-1559 (Sep 2007)

**Abstract:** The current study examined the relationship between cognitive function and falls in older people who did not meet criteria for dementia or mild cognitive impairment (N = 172). To address limitations of previous research, the authors controlled for the confounding effects of gait measures and other risk factors by means of associations between cognitive function and falls. A neuropsychological test battery was submitted to factor analysis, yielding 3 orthogonal factors (Verbal
IQ, Speed/Executive Attention, Memory). Single and recurrent falls within the last 12 months were evaluated. The authors hypothesized that Speed/Executive Attention would be associated with falls. Additionally, the authors assessed whether associations between different cognitive functions and falls varied depending on whether single or recurrent falls were examined. Multivariate logistic regressions showed that lower scores on Speed/Executive Attention were associated with increased risk of single and recurrent falls. Lower scores on Verbal IQ were related only to increased risk of recurrent falls. Memory was not associated with either single or recurrent falls. These findings are relevant to risk assessment and prevention of falls and point to possible shared neural substrates of cognitive and motor function.

5. **Qualitative study on the impact of falling in frail older persons and family caregivers: Foundations for an intervention to prevent falls.**

**Author(s):** Faes, Miriam C, Reelick, Miriam F, Joosten-Weyn Banningh, Liesbeth W, de Gier, Maartje, Esselink, Rianne A, Rikkert, Marcel G. Olde

**Citation:** Aging & Mental Health, September 2010, vol./is. 14/7(834-842), 1360-7863;1364-6915 (Sep 2010)

**Abstract:** Objectives: The primary aim of this study was to explore the impact of falling for frail community-dwelling older persons with and without cognitive impairments who have experienced a recent fall and their primary family caregivers. The secondary aim was to define components for a future fall prevention programme. Methods: Grounded theory interview study, with 10 patients (three cognitively unimpaired, four with mild cognitive impairment and three with dementia) and 10 caregivers. Results: All patients described a fear of falling and social withdrawal. Caregivers reported a fear of their care recipient (CR) falling. Most patients were unable to name a cause for the falls. Patients rejected the ideas that falling is preventable and that the fear of falling can be reduced. Some caregivers rated the consequences of their CRs’ cognitive problems as more burdensome than their falls and believed that a prevention programme would not be useful because of the CRs’ cognitive impairment, physical problems, age and personalities. Conclusion: Falling has major physical and emotional consequences for patients and caregivers. A fall prevention programme should focus on reducing the consequences of falling and on promoting self-efficacy and activity. The causes of falls should be discussed. The programme should include dyads of patients and caregivers because caregivers are highly involved and also suffer from anxiety. Before beginning such a programme, providers should transform negative expectations about the programme into positive ones. Finally, caregivers must learn how to deal with the consequences of their CRs’ falling as well as their cognitive impairment.

Full text at EBSCO

6. **Can cognitive enhancers reduce the risk of falls in older people with mild cognitive impairment? A protocol for a randomised controlled double blind trial.**

**Author(s):** Montero-Odasso, Manuel, Wells, Jennie L, Borrie, Michael J, Speechley,
**Citation:** BMC Neurology, August 2009, vol./is. 9/, 1471-2377 (Aug 12, 2009)

**Abstract:** Background: Older adults with cognitive problems have a higher risk of falls, at least twice that of cognitively normal older adults. The consequences of falls in this population are very serious: fallers with cognitive problems suffer more injuries due to falls and are approximately five times more likely to be admitted to institutional care. Although the mechanisms of increased fall risk in cognitively impaired people are not completely understood, it is known that impaired cognitive abilities can reduce attentional resource allocation while walking. Since cognitive enhancers, such as cholinesterase inhibitors, improve attention and executive function, we hypothesize that cognitive enhancers may reduce fall risk in elderly people in the early stages of cognitive decline by improving their gait and balance performance due to an enhancement in attention and executive function.

Method/Design: Double blinded randomized controlled trial with 6 months follow-up in 140 older individuals with Mild Cognitive Impairment (MCI). Participants will be randomized to the intervention group, receiving donepezil, and to the control group, receiving placebo. A block randomization by four and stratification based on fall history will be performed. Primary outcomes are improvements in gait velocity and reduction in gait variability. Secondary outcomes are changes in the balance confidence, balance sway, attention, executive function, and number of falls.

Discussion: By characterizing and understanding the effects of cognitive enhancers on fall risk in older adults with cognitive impairments, we will be able to pave the way for a new approach to fall prevention in this population. This RCT study will provide, for the first time, information regarding the effect of a medication designed to augment cognitive functioning have on the risk of falls in older adults with Mild Cognitive Impairment. We expect a significant reduction in the risk of falls in this vulnerable population as a function of the reduced gait variability achieved by treatment with cognitive enhancers. This study may contribute to a new approach to prevent and treat fall risk in seniors in early stages of dementia.

Full text at EBSCO

7. **Balancing integrity vs. Risk of falling--Nurses' experiences of caring for elderly people with dementia in nursing homes.**

Author(s): Bridges, Jackie

**Citation:** Journal of Research in Nursing, January 2009, vol./is. 14/1(75-76), 1744-9871 (Jan 2009)

**Abstract:** Reviews the article, Balancing integrity vs. risk of falling--nurses’ experiences of caring for elderly people with dementia in nursing homes by Inger Johansson et al. (see record 2009-01198-010). This paper presents an interesting small-scale study that reports on the dilemmas faced by care home staff in balancing the risk of falling in residents with dementia versus the need to support resident autonomy. The study's focus on tapping into staff experience using qualitative interviews illuminates this dilemma and practical actions taken by staff to respond to it. The findings draw attention to the dilemma that nurses face in protecting residents from harm versus enabling their autonomy. It is also interesting to note the interviewees’ apparent lack of reference to the existing evidence base in spite of falls.
prevention being relatively well researched. This emphasizes both the paucity of research in the care home field and the gap between existing research and practice.

Available in print at Grantham Hospital Staff Library

8. **Validity and sensitivity to change of the Falls Efficacy Scales International to assess fear of falling in older adults with and without cognitive impairment.**

**Author(s):** Hauer, Klaus A, Kempen, Gertrudis I. J. M, Schwenk, Michael, Yardley, Lucy, Beyer, Nina, Todd, Chris, Oster, Peter, Zijlstra, G. A. Rixt

**Citation:** Gerontology, August 2011, vol./is. 57/5(462-472), 0304-324X;1423-0003 (Aug 2011)

**Abstract:** Background: Measures of fear of falling have not yet been validated in patients with dementia, leaving a methodological gap that limits research in a population at high risk of falling and fall-related consequences. Objective: The objectives of this study are to determine: (1) the validity of the 7-item Short Falls Efficacy Scale International (Short FES-I) in geriatric patients with and without cognitive impairment, and (2) the sensitivity to change of the 10-item Falls Efficacy Scale (FES), the 16-item FES-I and the 7-item Short FES-I in geriatric patients with dementia. Methods: Cross-sectional data of community-dwelling older adults and geriatric rehabilitation patients (n = 284) collected during face-to-face interviews were used to determine construct and discriminant validity by testing for differences within variables related to fear of falling. Sensitivity to change was studied in an intervention study including patients with mild to moderate dementia (n = 130) as determined by standard response means (SRMs). Results: The Short FES-I showed excellent construct and discriminant validity in the total group and subsamples according to cognitive status. Sensitivity to change was adequate to good in the FES (range SRM: 0.18-0.77) and FES-I (range SRM: 0.21-0.74), with the Short FES-I showing the highest peak sensitivity to change (range SRM: 0.18-0.91). Conclusions: The Short FES-I is a valid measure to assess fear of falling in frail older adults with and without cognitive impairment, yet it may show floor effects in higher functioning older people. All scales, including the Short FES-I, were sensitive to detecting intervention-induced changes in concerns about falling in geriatric patients with dementia.

9. **Characteristics associated with recurrent falls among the elderly within aged-care wards in a tertiary hospital: The effect of cognitive impairment.**

**Author(s):** Chen, Xueli, Van Nguyen, Huong, Shen, Qing, Chan, Daniel K. Y

**Citation:** Archives of Gerontology and Geriatrics, September 2011, vol./is. 53/2(e183-e186), 0167-4943 (Sep-Oct 2011)

**Abstract:** In this study, we aimed to determine the factors associated with recurrent falls in aged-care inpatients at a tertiary hospital, with a focus on the cognitive domains of recurrent fallers. We retrospectively examined the characteristics of 70 aged-care inpatients who sustained >=2 falls; 269 patients who sustained 1 fall; and 69 non-fallers during their hospital admission. We also analyzed the available Mini-
Mental State Examination (MMSE) scores and sub-scores of 37 recurrent fallers, 163 single fallers, and 37 non-fallers. The independent risk factors for recurrent falls were a history of dementia, stroke, or atrial fibrillation; and patients' hospital length of stay >5 weeks. Protective factors were the patients' ability to speak English and a history of depression. Recurrent fallers had significantly lower MMSE scores than single fallers and non-fallers (17.3 ±or- 6.7, 20.2 ±or- 6.2, 24.0 ±or- 5.1, respectively, p < 0.01); and a larger proportion of recurrent fallers had MMSE <18 than in the other two groups (54.1%, 34.4% and 10.8%, respectively, p < 0.01). In addition, patients with recurrent falls were more likely to have significantly lower scores in the 'registration', 'attention and calculation', 'recall' and 'praxis' domains of the MMSE than single fallers. The findings from this study suggest that cognitive impairment particularly affecting short-term memory, recall and visuospatial perception may contribute to recurrent falls in the inpatient population. Prospective studies to elucidate a causal relationship may be worthwhile.

10. Circumstances surrounding falls in patients with dementia in a psychogeriatric ward.

Author(s): Eriksson, Staffan, Strandberg, Sofie, Gustafson, Yngve, Lundin-Olsson, Lillemor

Citation: Archives of Gerontology and Geriatrics, July 2009, vol./is. 49/1(80-87), 0167-4943 (Jul 2009)

Abstract: People with dementia have an increased risk of falling. Predisposing factors explain only a small part of the variation in falls among people with dementia. The purpose of this study was to explore circumstances that are hazardous regarding falls among people with dementia at a psychogeriatric ward. The study comprised 191 participants of whom seventy-five fell a total of 229 times. Prospective data were collected on falls. Hazardous circumstances were calculated in two ways. Firstly possible differences between day/night falls and women/men falls were calculated based on the 229 falls. Secondly time to first fall was used to estimate hazardous circumstances and was based on 75 falls. This study shows a fall rate that was equally high during the night and the day. The proportion of diurnal rhythm disturbances and activity disturbances was higher for falls at night than for falls during the day. Circumstances associated with an increased risk of falls, as shown by a short time to first fall, were anxiety, darkness, not wearing any shoes and, for women, urinary tract infection. All of these are circumstances that should be considered in future fall-related research among people with dementia.

11. Physical restraint use and falls in nursing homes: A comparison between residents with and without dementia.

Author(s): Luo, Huabin, Lin, Michael, Castle, Nicholas

Citation: American Journal of Alzheimer's Disease and Other Dementias, February 2011, vol./is. 26/1(44-50), 1533-3175 (Feb 2011)

12. Risk factors for falls in community-dwelling patients with Alzheimer's disease and dementia with Lewy bodies: Walking with visuocognitive impairment may cause a fall.
13. Older adults with visual impairments: The role of health dimensions in predicting falls.

Author(s): Steinman, Bernard Alex

Abstract: The purpose of this dissertation was to examine relationships between self-reported vision impairment, health dimensions, and falls among older people; and to describe an indirect pathway through which vision loss may increase risk for falls by way of poor health outcomes in dimensions of health that are believed to lead to disability. Whereas previous research has tended to focus on direct effects of vision loss on fall risk, the primary goal of this research was to examine integrated effects between systems that might lead to increased fall risk via moderated or mediated relationships. First, in order to establish health disparities by self-reported vision status, binary and multinomial logistic regression models were performed using data from the National Health and Nutrition Examination Survey, 1999-2008 (N=6,693) to estimate the probability of negative health outcomes across four dimensions of health, including biological risk, pathological conditions, functional difficulties and disability in daily living activities, by vision status. Results suggest that older adults with poor vision have greater likelihood of experiencing negative health outcomes across the four dimensions. Next, two waves (2004 & 2006) from the Health and Retirement Study (HRS) (N=8,449) were analyzed using binary logistic regression to investigate whether a moderating relationship exists between vision status and upper and lower limb functioning. This relationship was hypothesized to derive, in part, from decreased physical activity that often follows vision loss in late life, to result in poorer functional ability. Little evidence was found for a moderating effect of self-reported vision status on musculoskeletal health and functioning; however, results suggest that declines and/or gains in functioning across short periods of time may supercede self-reported vision as a predictor of falls. Thus, poor self-reported vision status may not be as good an indicator of fall risk in older adults as might otherwise be assumed. In a third study, two waves (2006 & 2008) from HRS (N = 9,143) were used to test whether functional difficulties and disability with daily living activities mediate self-reported vision loss to increase fall risk among older adults. Binary logistic and Poisson regression analyses were conducted to test indirect paths leading from self-reported vision to falls, through declines in indices of functioning and disability. No evidence was found for a mediating effect among women; however, for men, large muscle groups were implicated as partially mediating risk factors for falls among participants with poor vision. Finally, implications of the three studies are discussed, including the need for prioritizing improved muscle strength of older persons with vision impairments as preventive measure against falls. It is...
acknowledged that the most effective fall prevention interventions are likely multifac
torial in structure; therefore, interventions pertaining to education, medical assessment, exercise, and home assessment and modification are discussed with respect to older persons who have vision impairments.

From TRIP database

14. Cross-sectional study: Mental status deficits are identified in 34% of patients who fall while in hospital

EVIDENCE-BASED NURSING (REQUIRES FREE REGISTRATION) 2011

15. Assessment and prevention of falls in older people. NICE, 2004

Cochrane Database has 264 items related to Falls and Dementia. Look at http://onlinelibrary.wiley.com Here are a couple of examples:-


Interventions for preventing falls in older people in nursing care facilities and hospitals

2010

BACKGROUND: Falls in nursing care facilities and hospitals are common events that cause considerable morbidity and mortality for older people. OBJECTIVES: To assess the effectiveness of interventions designed to reduce falls by older people in nursing care facilities and hospitals. SEARCH METHODS: We searched the Cochrane Bone, Joint and Muscle Trauma Group Specialised Register (January 2009); the Cochrane Central Register of Controlled Trials (The Cochrane Library 2008, Issue 2); MEDLINE, EMBASE, and CINAHL (all to November 2008); trial registers and reference lists of articles. SELECTION CRITERIA: Randomised controlled trials of interventions to reduce falls in older people in nursing care facilities or hospitals. Primary outcomes were rate of falls and risk of falling. DATA COLLECTION AND ANALYSIS: Two review authors independently assessed trial quality and extracted data. Data were pooled where appropriate. MAIN RESULTS: We included 41 trials (25,422 participants). In nursing care facilities, the results from seven trials testing supervised exercise interventions were inconsistent. This was the case too for multifactorial interventions, which overall did not significantly reduce the rate of falls (rate ratio (RaR) 0.82, 95% CI 0.62 to 1.08; 7 trials, 2997 participants) or risk of falling (risk ratio (RR) 0.93, 95% CI 0.86 to 1.01; 8 trials, 3271 participants). A post hoc subgroup analysis, however, indicated that where provided by a multidisciplinary team, multifactorial interventions reduced the rate of falls (RaR 0.60, 95% CI 0.51 to 0.72; 4 trials, 1651 participants) and risk of falling (RR 0.85, 95% CI 0.77 to 0.95; 5 trials, 1925 participants). Vitamin D supplementation reduced the rate of falls (RaR 0.72, 95% CI 0.55 to 0.95; 4 trials, 4512 participants), but not risk of falling (RR 0.98, 95% CI
In hospitals, multifactorial interventions reduced the rate of falls (RaR 0.69, 95% CI 0.49 to 0.96; 4 trials, 6478 participants) and risk of falling (RR 0.73, 95% CI 0.56 to 0.96; 3 trials, 4824 participants). Supervised exercise interventions showed a significant reduction in risk of falling (RR 0.44, 95% CI 0.20 to 0.97; 3 trials, 131 participants). AUTHORS’ CONCLUSIONS: There is evidence that multifactorial interventions reduce falls and risk of falling in hospitals and may do so in nursing care facilities. Vitamin D supplementation is effective in reducing the rate of falls in nursing care facilities. Exercise in subacute hospital settings appears effective but its effectiveness in nursing care facilities remains uncertain. INTERVENTIONS FOR PREVENTING FALLS IN OLDER PEOPLE IN NURSING CARE FACILITIES AND HOSPITALS: Falls by older people in nursing care facilities and hospitals are common events that may cause loss of independence, injuries, and sometimes death as a result of injury. Effective interventions are important as they will have significant health benefits. This review includes 41 trials involving 25,422 participants, with about three quarters being women and having an average age of 83 years. Many of the participants had cognitive problems. In nursing care facilities, interventions targeting multiple risk factors were not clearly effective in preventing falls but may be so when these interventions are provided by a co-ordinated team of health workers. The prescription of vitamin D reduces falls, as may a review of medication by a pharmacist. There is no evidence that other interventions targeting single risk factors reduce falls and this includes exercise interventions. For patients who are in hospital for more than a few weeks, interventions targeting multiple risk factors, and supervised exercise, are effective. Limitations of the review included the small number of hospital studies, difficulty isolating effects of individual components of treatments that involved multiple components, and the variability of interventions.

17. Gillespie Lesley D, Robertson M Clare, Gillespie William J, Lamb Sarah E, Gates Simon, Cumming Robert G, Rowe Brian H

Interventions for preventing falls in older people living in the community

2009

BACKGROUND: Approximately 30% of people over 65 years of age living in the community fall each year. OBJECTIVES: To assess the effects of interventions 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, CENTRAL (The Cochrane Library 2008, Issue 2), MEDLINE, EMBASE, CINAHL, and Current Controlled Trials (all to May 2008). SELECTION CRITERIA: Randomised trials of interventions to reduce falls in community-dwelling older people. Primary outcomes were rate of falls and risk of falling. DATA COLLECTION AND ANALYSIS: Two review authors independently assessed trial quality and extracted data. Data were pooled where appropriate. MAIN RESULTS: We included 111 trials (55,303 participants). Multiple-component group exercise reduced rate of falls and risk of falling (rate ratio (RaR) 0.78, 95% CI 0.71 to 0.86; risk ratio (RR) 0.83, 95% CI 0.72 to 0.97), as did Tai Chi (RaR 0.63, 95% CI 0.52 to 0.78; RR 0.65, 95% CI 0.51 to 0.82), and individually prescribed multiple-component home-based exercise (RaR 0.66, 95% CI 0.53 to 0.89; 5 trials, 5095 participants).
Assessment and multifactorial intervention reduced rate of falls (RaR 0.75, 95%CI 0.65 to 0.86), but not risk of falling. Overall, vitamin D did not reduce falls (RaR 0.95, 95%CI 0.80 to 1.14; RR 0.96, 95%CI 0.92 to 1.01), but may do so in people with lower vitamin D levels. Overall, home safety interventions did not reduce falls (RaR 0.90, 95%CI 0.79 to 1.03; RR 0.89, 95%CI 0.80 to 1.00), but were effective in people with severe visual impairment, and in others at higher risk of falling. An anti-slip shoe device reduced rate of falls in icy conditions (RaR 0.42, 95%CI 0.22 to 0.78). Gradual withdrawal of psychotropic medication reduced rate of falls (RaR 0.34, 95%CI 0.16 to 0.73), 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). Pacemakers reduced rate of falls in people with carotid sinus hypersensitivity (RaR 0.42, 95%CI 0.23 to 0.75). First eye cataract surgery reduced rate of falls (RaR 0.66, 95%CI 0.45 to 0.95). There is some evidence that falls prevention strategies can be cost saving.

AUTHORS’ CONCLUSIONS: Exercise interventions reduce risk and rate of falls. Research is needed to confirm the contexts in which multifactorial assessment and intervention, home safety interventions, vitamin D supplementation, and other interventions are effective. INTERVENTIONS FOR PREVENTING FALLS IN OLDER PEOPLE LIVING IN THE COMMUNITY: As people get older, they may fall more often for a variety of reasons including problems with balance, poor vision, and dementia. Up to 30% may fall per year. Although one in five falls may require medical attention, less than one in 10 results in a fracture. Fear of falling can result in self-restricted activity levels. It may not be possible to prevent falls completely, but people who tend to fall frequently may be enabled to fall less often. This review looked at which methods are effective for older people living in the community, and includes 111 randomised controlled trials, with a total of 55,303 participants. Exercise programmes may target strength, balance, flexibility, or endurance. Programmes that contain two or more of these components reduce rate of falls and number of people falling. Exercising in supervised groups, participating in Tai Chi, and carrying out individually prescribed exercise programmes at home are all effective. Multifactorial interventions assess an individual person's risk of falling, and then carry out or arrange referral for treatment to reduce their risk. They have been shown in some studies to be effective, but have been ineffective in others. Overall current evidence shows that they do reduce rate of falls in older people living in the community. These are complex interventions, and their effectiveness may be dependent on factors yet to be determined. Taking vitamin D supplements probably does not reduce falls, except in people who have a low level of vitamin D in the blood. These supplements may be associated with high levels of calcium in the blood, gastrointestinal discomfort, and kidney disorders. Interventions to improve home safety do not seem to be effective, except in people at high risk, for example with severe visual impairment. An anti-slip shoe device worn in icy conditions can reduce falls. Some medications increase the risk of falling. Ensuring that medications are reviewed and adjusted may be effective in reducing falls. Gradual withdrawal from some types of drugs for improving sleep, reducing anxiety and treating depression has been shown to reduce falls. Cataract surgery reduces falls in people having the operation on the first affected eye. Insertion of a pacemaker can reduce falls in people with frequent falls associated with carotid sinus hypersensitivity, a condition which may result in
changes in heart rate and blood pressure.

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