

Review: Interventions targeting intrinsic and environmental risk factors reduce falls in older persons

Gillespie LD, Gillespie WJ, Robertson MC, et al. **Interventions for preventing falls in elderly people.** *Cochrane Database Syst Rev.* 2003;CD000340.

QUESTION

In community-dwelling or institutionalized older persons, which interventions are effective for reducing the incidence of falls?

DATA SOURCES

Studies were identified by searching Cochrane Central Register of Controlled Trials, Cochrane Musculoskeletal Injuries Group specialized register (January 2003), MEDLINE (1966 to February 2003), EMBASE/Excerpta Medica (1988 to 2003), CINAHL (1982 to April 2003), National Research Register, Current Controlled Trials; scanning reference lists of articles; and contacting researchers in the field.

STUDY SELECTION AND ASSESSMENT

Studies in any language were selected if they were randomized controlled trials (RCTs) comparing interventions designed to minimize the effect of or exposure to any risk factors for falling with usual care in elderly persons living in the community or in institutional care. Methodological quality of individual studies was assessed by 2 reviewers independently using a predetermined scoring system (11 items).

OUTCOMES

Number of persons who fell, number of falls, and severity of falls (number of falls resulting in injury, medical attention, or fracture).

MAIN RESULTS

62 RCTs met the inclusion criteria. The trials included 21 668 participants, and follow-up

ranged from 3 months to 10 years. Fewer community-dwelling persons who received individually targeted exercise or physical therapy consisting of strength training, balance, and walking fell or sustained injury from falling than did those who received a control intervention (Table). Home safety interventions also reduced the number of falls among community-dwelling fallers (Table). Multidisciplinary, multifactorial, health, or environmental risk-factor screening or intervention programs reduced the number of fallers both in unselected community-dwelling elderly persons (fallers and nonfallers); and in

targeted community-dwelling elderly persons who either had a history of falling or were selected because of known risk factors (Table).

CONCLUSION

In community-dwelling or institutionalized elderly persons, intervention programs that target intrinsic and environmental risk factors reduce the incidence of falls.

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Interventions for preventing falls in unselected community-dwelling elderly persons (fallers and nonfallers) (UCD) or in selected community-dwelling elderly persons (with a history of falling) (SCD) vs usual care (UC) at up to 3 years†

Outcomes	Comparisons	Group	Number of trials	Weighted event rates	RRR (95% CI)	NNT (CI)
Proportion of persons falling	EPT (SBW) vs UC	UCD	3	36% vs 45%	20% (2 to 34)	12 (6 to 100)
	HSI vs UC	SCD	3	42% vs 63%	34% (19 to 46)	5 (4 to 9)
	MMHEIP vs UC	UCD	4	20% vs 33%	27% (15 to 37)	12 (8 to 20)
	MMHEIP vs UC	SCD	5	34% vs 46%	14% (2 to 24)	17 (9 to 100)
Proportion of persons falling with an injury	EPT (SBW) vs UC	UCD	3	15% vs 33%	33% (11 to 49)	10 (6 to 34)
	MMHEIP vs UC	UCD	1	10% vs 15%	32% (7 to 49)	20 (13 to 100)

†MMHEIP = multidisciplinary, multifactorial, health, and environmental risk-factor screening or intervention programs; EPT = exercise or physical therapy; SBW = strength, balance, and walking; HSI = home safety intervention. Other abbreviations defined in Glossary; weighted event rates, RRR, NNT, and CI calculated from data in article using a fixed-effects model.

COMMENTARY

Falls are a serious health concern in older persons. Although most falls are noninjurious, they have a major effect on quality of life (restriction of activities for fear of falling), morbidity (approximately 20% require medical attention and 1% to 2% result in hip fractures), and mortality (unintentional injuries are the 5th most common cause of death in this population) (1).

The relative importance of functional decline and disease and environmental factors, which may contribute to falls, varies according to the population studied: community dwellers, hospitalized patients, or nursing home residents. The heterogeneity of the geriatric population and the difficulty of teasing out the relative contribution of predisposing and precipitating factors in determining an individual fall have complicated the investigation of the effect of risk factor modification.

The meta-analysis by Gillespie and colleagues found that multifactorial risk factor assessment and modification are among the most effective interventions for reducing falls. Interventions of unknown

effectiveness included group-delivered exercise programs and nutritional supplements.

Although the list of interventions that are likely to be beneficial is relatively short, the evaluation of geriatric fallers should be fairly comprehensive. A detailed history of the circumstances surrounding the fall may disclose predisposing and precipitating factors, which may be quite specific to that individual and event.

The identification of fallers, or those at risk for falls, should also immediately prompt the assessment of fracture risk because osteoporotic fractures can be prevented with calcium, vitamin D, and alendronate and possibly the use of hip protectors (1, 2).

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References

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