



Integrated care for older people (ICOPE) Guidelines on community-level interventions

to manage declines in intrinsic capacity

Evidence profile: mobility loss

Scoping question:

Does physical exercise training (progressive resistance training or multimodal exercise) produce any benefit or harm for older people with limitations in activities of daily living (ADLs)?

The full ICOPE guidelines and complete set of evidence profiles are available at:

who.int/publications/i/item/9789241550109

Painting: "Wet in Wet" by Gusta van der Meer. At 75 years of age, Gusta has an artistic style that is fresh, distinctive and vibrant. A long-time lover of art, she finds that dementia is no barrier to her artistic expression. Appreciated not just for her art but also for the support and encouragement she gives to other artists with dementia, Gusta participates in a weekly art class. Copyright by Gusta van der Meer. All rights reserved

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Background

A recent meta-analysis of 54 studies reported that the prevalence of limitations in activities of daily living (ADL) was 39% among older people over 65 years of age, three times the proportion in working age groups (1). With increasing age, the ability of older people to perform basic activities declines. The rate of decline is not homogeneous, however, and is largely determined by the environments people inhabit. Population studies have shown that up to 20% of older people improve their ability with exercise interventions (2), and many frequently transit between high and low capacity within the same age group (3). This dynamic nature provides room for restoration and maintenance of optimal physical capacity even in the oldest age group.

A growing body of evidence suggests strong associations between a reduced ability to perform basic activities and adverse outcomes, such as premature mortality (4), institutionalization (5, 6), risk of falls (7), depression (8), cognitive impairment (9) and decreased quality of life (10). Intervention trials of multimodal physical exercise training targeting modifiable risk factors such as strength and balance have shown significant benefits for older people with reduced physical capacity, even in the very old and severely impaired (11). Simple physical exercise, such as walking, has shown significant reductions in the levels of need for assistance in daily activities (12). There is also empirical support from earlier reviews for the benefit of exercise on behaviour, cognition, communication and functioning in older people with cognitive impairments.

In this context, understanding the effect of physical exercise on older people with limitations in physical and cognitive function is extremely important. To assess its benefits, we reviewed the evidence of the effects of physical exercise on muscle strength, balance, gait speed, chair stand, timed up and go, ADL and physical functioning measured by the Short Physical Performance Battery *(13)*. Although evidence from developed countries has shown potential benefit of physical-activity programmes for older people, it is still unclear whether such evidence and recommendations could be relevant for older people in low-resource health care settings, where the majority of older people in the world reside.

Part 1: Evidence review

Scoping question in PICO format (population, intervention, comparison, outcome)

Population

• Noninstitutionalized older people with limitations in activities of daily living (ADLs)

Interventions

• Progressive resistance exercise (PRE)

• Multimodal exercise (combining two or more types of exercise: PRE or strength, balance, stretching, and endurance or aerobic exercise)

Comparison

- No exercise
- Attention-control
- Usual care or waiting list

Outcomes

- *Critical*: Muscle strength, balance, chair stand, timed up and go, physical functioning, ADLs, cognition
- Important: Gait speed

ICOPE guidelines – World Health Organization

Search strategy

The following electronic databases were used to identify studies for this review: Ovid MEDLINE, 1966 to April 2011; EMBASE, 1960 to April 2011; and the Cochrane Database of Systematic Reviews and Cochrane Central Register of Controlled Trials (CENTRAL), till April 2011. A recent search was conducted in October 2015 to update the sources of literature. Details of the search strategy are in Annex 1.

List of systematic reviews identified by the search process

Included in GRADE¹ tables or footnotes

Older adults with limitations in physical function

— Cadore EL, Rodríguez-Mañas L, Sinclair A, Izquierdo M. Effects of different exercise interventions on risk of falls, gait ability, and balance in physically frail older adults: a systematic review. *Rejuvenation Res.* 2013;16:105–14. doi:10.1089/rej.2012.1397.

— Chou C-H, Hwang C-L, Wu Y-T. Effect of exercise on physical function, daily living activities, and quality of life in the frail older adults: a meta-analysis. *Arch Phys Med Rehabil.* 2012;93:237–44. doi:10.1016/j.apmr.2011.08.042.

— Daniels R, van Rossum E, de Witte L, Kempen GIJM, van den Heuvel W. Interventions to prevent disability in frail communitydwelling elderly: a systematic review. *BMC Health Serv Res*. 2008;8:278. doi:10.1186/1472-6963-8-278.

— de Vries N, van Ravensberg C, Hobbelen J, Olde Rikkert MGM, Staal JB, Nijhuis-van der Sanden MWG. Effects of physical exercise therapy on mobility, physical functioning, physical activity and quality of life in community-dwelling older adults with impaired mobility, physical disability and/or multi-morbidity: a meta-analysis. *Ageing Res Rev.* 2012;11(1):136–49. doi:10.1016/j.arr.2011.11.002.

— Giné-Garriga M, Roqué-Fíguls M, Coll-Planas L, Sitjà-Rabert M, Salvà A. Physical exercise interventions for improving performancebased measures of physical function in community-dwelling, frail older adults: a systematic review and meta-analysis. *Arch Phys Med Rehabil.* 2014;95:753–69.e3. doi:10.1016/j.apmr.2013.11.007.

Gillespie LD, Robertson MC, Gillespie WJ, Sherrington C, Gates S, Clemson LM, Lamb SE. Interventions for preventing falls in older people living in the community. *Cochrane Database Syst Rev.* 2012;(9):CD007146. doi:10.1002/14651858.CD007146.pub3.

 Howe T, Rochester L, Neil F, Skelton D, Ballinger C. Exercise for improving balance in older people. *Cochrane Database Syst Rev.* 2011;(11):CD004963. doi:10.1002/14651858.CD004963.pub3.

— Liu C, Latham N. Progressive resistance strength training for improving physical function in older adults. *Cochrane*

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¹ GRADE: Grading of Recommendations Assessment, Development and Evaluation. More information: http://gradeworkinggroup.org

Database Syst Rev. 2009;(3):CD002759. doi:10.1002/14651858.CD002759.pub2.

— van Abbema R, De Greef M, Crajé C, Krijnen W, Hobbelen H, Van Der Schans C. What type or combination of exercise can improve preferred gait speed in older adults? A meta-analysis. *BMC Geriatr.* 2015;15:72. doi:10.1186/s12877-015-0061-9.

Older adults with limitations in cognitive function

— Burton E, Cavalheri V, Adams R, et al. Effectiveness of exercise programs to reduce falls in older people with dementia living in the

community: a systematic review and meta-analysis. *Clin Interv Aging*. 2015;10:421–34. doi:10.2147/CIA.S71691.

 Forbes D, Forbes SC, Blake CM, Thiessen EJ, Forbes S.
 Exercise programs for people with dementia. *Cochrane Database Syst Rev.* 2015;(4):CD006489.
 doi:10.1002/14651858.CD006489.pub4.

— Pitkälä K, Savikko N, Poysti M, Strandberg T, Laakkonen M-L. Efficacy of physical exercise intervention on mobility and physical functioning in older people with dementia: a systematic review. *Exp Gerontol.* 2013;48(1):85-93. doi:10.1016/j.exger.2012.08.008.

PICO Table

	Intervention/ comparison	Outcomes	Systematic reviews used for GRADE	Explanation
Older people with limitations in physical function	Multimodal exercise, progressive resistance exercise, or t'ai chi vs no exercise, attention control, or waiting list	 Muscle strength Balance Gait speed Chair stand Timed up and go Overall physical 	Cadore EL, Rodríguez-Mañas L, Sinclair A, Izquierdo M. Effects of different exercise interventions on risk of falls, gait ability, and balance in physically frail older adults: a systematic review. <i>Rejuvenation Res.</i> 2013;16:105–14. doi:10.1089/rej.2012.1397.	Systematic review relevant to the area
		functioningActivities of daily living (ADL)Falls	Chou C-H, Hwang C-L, Wu Y-T. Effect of exercise on physical function, daily living activities, and quality of life in the frail older adults: a meta- analysis. <i>Arch Phys Med Rehabil</i> . 2012;93:237–44. doi:10.1016/j.apmr.2011.08.042.	
			Daniels R, van Rossum E, de Witte L, Kempen GIJM, van den Heuvel W. Interventions to prevent disability in frail community-dwelling elderly: a systematic review. <i>BMC Health Serv Res</i> . 2008;8:278. doi:10.1186/1472-6963-8-278.	
			de Vries N, van Ravensberg C, Hobbelen J, Olde Rikkert MGM, Staal JB, Nijhuis-van der Sanden MWG. Effects of physical exercise therapy on mobility, physical functioning, physical activity and quality of life in community-dwelling older adults with impaired mobility, physical disability and/or multi- morbidity: a meta-analysis. <i>Ageing Res Rev</i> . 2012;11(1):136–49. doi:10.1016/j.arr.2011.11.002.	(continued next page)
			Giné-Garriga M, Roqué-Fíguls M, Coll-Planas L,	(continued next page)

		Sitjà-Rabert M, Salvà A. Physical exercise interventions for improving performance-based measures of physical function in community- dwelling, frail older adults: a systematic review and meta-analysis. <i>Arch Phys Med Rehabil.</i> 2014;95:753–69.e3. doi:10.1016/j.apmr.2013.11.007.	
		Howe T, Rochester L, Neil F, Skelton D, Ballinger C. Exercise for improving balance in older people. <i>Cochrane Database Syst Rev.</i> 2011;(11):CD004963. doi:10.1002/14651858.CD004963.pub3.	
		van Abbema R, De Greef M, Crajé C, Krijnen W, Hobbelen H, Van Der Schans C. What type or combination of exercise can improve preferred gait speed in older adults? A meta-analysis. <i>BMC</i> <i>Geriatr.</i> 2015;15:72. doi:10.1186/s12877-015-0061-9.	
Progressive resistance exercise vs no exercise or attention control	 Muscle strength Balance Gait speed Chair stand 	Liu C, Latham N. Progressive resistance strength training for improving physical function in older adults. <i>Cochrane Database Syst Rev.</i> 2009;(3):CD002759. doi:10.1002/14651858.CD002759.pub2	Systematic review relevant to the area

预览已结束, 完整报告链接和二维码如下:

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