

### GO FOR GOLD

***Get your muscle-strengthening exercise at least twice a week in addition to other exercise; if you can combine it with other types of exercise for balance, flexibility and fitness then even better.***

#### **Muscle-Strengthening Exercise**

Muscle-strengthening physical activity and exercise increases skeletal muscle strength, power, endurance, and muscle mass.(1) It may include strength training, resistance training, or muscular strength and endurance exercises.(1) There are additional health benefits to be gained by getting muscle-strengthening physical activity as part of your weekly exercise regimen.(1) In older people over the age of 65, higher levels of multicomponent physical activity that combine balance, strength, gait, and functional training are shown to reduce the risk of falls and injury from falls.(1) It is uncertain if only resistance training reduces falls in older people.(2) Multimodal exercise that may include progressive strength resistance training along with balance, flexibility and aerobic activity has been associated with significant effects on bone health and prevention of osteoporosis. (1, 3) In women after the menopause, progressive resistance strength training for the legs has been shown to improve the bone mineral density in the upper leg bone (femur) while combination exercise seems to be the most effective for improving bone mineral density in the spine.(4) Sarcopenia can occur resulting in loss of muscle mass as we age and this can contribute to reduced mobility and loss of physical functioning resulting in physical frailty.(5) However muscle mass and strength can be improved through exercise and nutrition.(5)

#### **Guidelines**

The UK Chief Medical Officers' and the World Health Organization guidelines:(1, 6)

- In addition to cardiovascular physical activity, all adults should also do muscle-strengthening physical activity:
  - On at least 2 days each week
  - At moderate or greater intensity
  - Involving all major muscle groups
- New to exercise? Start by doing small amounts and gradually, over time, increase how often, how intensely and for how long you exercise.
- For those age 65 years and over, be as physically active as your abilities allow and adjust how much effort you put into physical activity based on your fitness and strength levels.

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**GOLDSTER**★ **Points and Evidence Levels for this Activity**

Domain	Impact Strength	Points	Information	Evidence Type	Evidence Level
Physical	Medium	2	In older people over the age of 65, higher levels of multicomponent physical activity that combine balance, strength, gait, and functional training are shown to have a medium impact on reducing the risk of falls and injury from falls and significant effects on bone health and osteoporosis prevention.(1)	Guideline, Systematic Review	High, Moderate
Cognitive	Medium	2	In older people, muscle-strengthening exercise has shown a medium impact on executive function and global cognitive function.(7, 8)	Systematic Review	Moderate
Emotional	Medium	2	Evidence on structured exercise programmes has shown medium impact on reductions of symptoms of depression and anxiety in older women.(9, 10)	Systematic Review	Moderate

**References**

- World Health Organization. WHO guidelines on physical activity and sedentary behaviour.2020. Available from: <https://www.who.int/publications/i/item/9789240015128>.
- Sherrington C, Fairhall NJ, Wallbank GK, Tiedemann A, Michaleff ZA, Howard K, et al. Exercise for preventing falls in older people living in the community. Cochrane Database Syst Rev. 2019;1(1):Cd012424.
- World Health Organization. Integrated care for older people: guidelines on community-level interventions to manage declines in intrinsic capacity.2017. Available from: <https://www.who.int/nutrition/publications/guidelines/integrated-care-older-people/en/>.
- Howe TE, Shea B, Dawson LJ, Downie F, Murray A, Ross C, et al. Exercise for preventing and treating osteoporosis in postmenopausal women. Cochrane Database of Systematic Reviews. 2011(7).
- Lozano-Montoya I, Correa-Pérez A, Abraha I, Soiza RL, Cherubini A, O'Mahony D, et al. Nonpharmacological interventions to treat physical frailty and sarcopenia in older patients: a systematic overview - the SENATOR Project ONTOP Series. Clinical interventions in aging. 2017;12:721-40.
- Department of Health and Social Care LCWG, Department of Health Northern Ireland, and the Scottish Government,. UK Chief Medical Officers' Physical Activity Guidelines. 2019. Available from: <https://www.gov.uk/government/publications/physical-activity-guidelines-uk-chief-medical-officers-report>.
- Li Z, Peng X, Xiang W, Han J, Li K. The effect of resistance training on cognitive function in the older adults: a systematic review of randomized clinical trials. Aging Clin Exp Res. 2018;30(11):1259-73.
- Chen FT, Etnier JL, Chan KH, Chiu PK, Hung TM, Chang YK. Effects of Exercise Training Interventions on Executive Function in Older Adults: A Systematic Review and Meta-Analysis. Sports Med. 2020;50(8):1451-67.
- Pérez-López FR, Martínez-Domínguez SJ, Lajusticia H, Chedraui P. Effects of programmed exercise on depressive symptoms in midlife and older women: A meta-analysis of randomized controlled trials. Maturitas. 2017;106:38-47.
- Martínez-Domínguez SJ, Lajusticia H, Chedraui P, Pérez-López FR. The effect of programmed exercise over anxiety symptoms in midlife and older women: a meta-analysis of randomized controlled trials. Climacteric. 2018;21(2):123-31.