MUSCLE-STRENGTHENING EXERCISE

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 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 for up to 60 minutes per week as part of your weekly exercise regimen including reducing the risk of early death from any cause as well as cardiovascular disease, cancers, type 2 diabetes and lung cancer.(1, 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 reduce the risk of falls and injury from falls.(1) It is uncertain if only resistance training reduces falls in older people.(3) 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, 4) 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.(5) 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.(6) However muscle mass and strength can be improved through exercise and adequate nutritional protein intake.(6, 7)

Guidelines

The UK Chief Medical Officers' and the World Health Organization guidelines:(1, 8)

- 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.

GOLDSTER Points and Evidence Levels for this Activity

Domain	Impact Strength	Points	Information on Evidence	Evidence Type	Evidence Level
Cognitive	Medium	2	In older people, muscle-strengthening exercise has shown a medium impact on executive function and global cognitive function.(9, 10)	Systematic Review	Moderate
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
Emotional	Medium	2	Evidence on structured exercise programmes has shown medium impact on reductions of symptoms of depression and anxiety in older women.(11, 12)	Systematic Review	Moderate

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