

Exercise and Physical Activity for Older Adults

By Ed Brucia

Current evidence clearly indicates that participation in a regular exercise program is an effective way to reduce and/or prevent a number of the functional declines associated with aging. Risk factors associated with many disease states are reduced when individuals participate in appropriate exercise programs and physical activity. Health benefits associated with cardiovascular disease risk factors include favorable changes in lipid profile, blood pressure, and body composition. Endurance training can help to maintain and improve various aspects of cardiovascular function as measured by VO₂ max, cardiac output and AVO₂ difference. Regular exercise will also create an increase in insulin sensitivity in older adults. As insulin resistance increases with age, the positive effects of regular aerobic exercise in older individuals on improving insulin sensitivity and increasing glucose transporters in muscle are of clinical importance for the treatment and prevention of adult-onset diabetes.

Evidence also suggests that participation in regular exercise improves bone health and thus reduces the risk for developing osteoporosis, leading to a reduction in the incidence of breaks and fractures associated with falls. Weight-bearing exercises, in conjunction with dietary changes and supplement usage, can help to improve bone density. Strength training can also help to offset the loss in muscle mass and strength typically associated with normal aging.

Appropriate core strengthening and balance training can improve postural stability, reduce the risk of falling, and increase functional ability to perform activities of daily living. This is one of the most important components to an exercise program for the older adult, as it will contribute to a greater functional capacity, greatly improving independence and quality of life for the participant.

Older adults can safely participate in regular exercise programs consisting of aerobic, strength and flexibility components. The trainability of older individuals continues to be evident from continued research and the observation of their ability to adapt and respond to these types of programs. Older adults often have orthopedic issues that contraindicate resistance and aerobic training involving the related limitation. Because of the high risk of cardiovascular disease among this population, it is critical that the older adult receive prior approval from their physician before participation in such a program. Proper supervision of the individual participating in an exercise program is highly recommended. Also, any sub-maximal testing procedures should be performed by an appropriately trained exercise professional, and maximal testing should be avoided.

Because cardiovascular (CV) disease is the major cause of death in older men and women, the effect of endurance exercise training on CV disease risk factors is of paramount importance. Studies have shown that light- to moderate-intensity cardiovascular training (40-60% VO₂ max) is effective in improving body composition, plasma lipoprotein lipid profiles, and lowering blood pressure in older hypertensive adults. CV exercises should be performed 2-5 days per week, for 20-45 minutes per session. Walking, swimming, and cycling are all excellent forms of large muscle rhythmic aerobic exercise that can and should be added to the individual's exercise routine and lifestyle. While the recent CDC/ACSM guidelines recommend light- to moderate-intensity lifestyle physical activities to optimize health, moderate or high-intensity exercise may be required to elicit adaptations in the CV system and in CV disease risk factors.

Resistance-training studies with the elderly regarding exercise frequency (the number of exercise sessions per week) have indicated a range of two to four days per week to be effective and adequate in improving strength. Also, the frequency of exercise should be structured so that there is at least 48 hours between training sessions. The duration of each of these sessions should range between approximately 20-45 minutes. Older adults should avoid lengthy training sessions, because they may increase the risk of injury, manifested by extreme fatigue.

Resistance exercise may be categorized as either multi-joint (meaning more than one joint is dynamically involved to perform the exercise) or uni-joint (only one joint is involved.) In the older adult, the resistance-training program should focus primarily on multi-joint exercises. Uni-joint exercises are not discouraged entirely but should not make up the majority of the program. Additionally, machines are recommended over free weights due to skill-related and safety factors. It has been recommended that one to two exercises per muscle group is normally adequate. As the participant progresses, they can use free-weight exercises appropriate for their level of skill, training status and functional capacity. Each exercise should be performed at approximately 65%-75% of the maximum amount of weight that can be lifted for a given exercise. This should be done for one to three sets, with 10-15 repetitions per set. These guidelines have been shown to significantly increase muscle strength.

Flexibility is a general term that encompasses the range of motion of single or multiple joints and the ability to perform specific tasks. Surprisingly, there has been little research in the area of interventions to increase flexibility in the older adult. Although it is likely that flexibility exercises could be a useful component of an exercise program for persons with reduced mobility, the literature does not provide evidence at the present time for the design of systematic and cost effective exercise programs to improve flexibility. The exact dose-response relationship remains to be determined, but exercises such as walking, aerobic dance, and stretching have been shown to increase joint motion.

References:

ACSM Position Stand: Exercise and Physical Activity for the Older Adult
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Peak Performance Fitness
Lynbrook and New Hyde Park
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