

Strength Training: Not Only for Body Builders

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When people think of strength training, an image that often comes to mind is a muscle man lifting dumbbells twice his weight. However, strength training is used by all age groups and genders because of its health benefits. This type of exercise increases muscle fiber size and strength, and also improves tendon and ligament strength. It may maximize bone mass in children and adolescents, maintain or increase bone density in adults and minimize age-related bone loss in older adults. Strength training can be accomplished with the use of hand-held weights or barbells, resistance bands, machines, and even a person's own body weight. The variety of equipment and exercises available for this type of training allows the individual to safely start a new program, challenge muscles specific to sports, and strengthen muscle groups related to activities of daily living.

Strength Training Effects on Osteoporosis

Research indicates there are 44 million Americans at risk for osteoporosis and 10 million Americans affected with the disease, making it a widespread issue. This condition exists when there is a reduction in both bone mineral density and bone quality. Risk factors include family history, female gender, estrogen deficiency, low weight, dietary factors, long term use of corticosteroids, smoking and physical inactivity. Bone is active tissue that constantly breaks down and builds back up. It maintains or increases density in response to mechanical loading, which occurs when muscle flexion causes stress on the bone due to resistance or weight bearing exercise. Fortunately, resistance-based and weight bearing activity helps the body maintain or increase bone material and alter risk factors of the disease. It does this by increasing muscle strength, bone-mineral density, and balance, which can ultimately reduce the risk for falls and fractures.

Strength Training Effects on Muscle

Research indicates that strength training helps preserve and strengthen muscle tissue, which can be lost with age. A reduction in physical activity, especially after the age of 30, can result in a three to five percent loss in muscles mass with each decade. Another way to understand this decrease in muscle mass is to think of it in terms of how metabolism works. Muscle tissue is more metabolically active than fat tissue, meaning it will burn more calories. Over a ten year period an average resting metabolism reduction because of loss of muscle mass is about 15 calories a day. Expending 15 fewer calories a day can result in a 15 pound fat gain over a decade. Consequently, more muscle may equal higher metabolic rates, which in turn may help one achieve a

desired weight. Also, stronger muscles allow for greater absorption of stress on a joint, which may prevent or alleviate arthritis pain.

Other Strength Training Benefits

Other conditions that are positively affected by strength training include diabetes, heart disease, blood pressure and depression. Exercise has been shown to assist in regulating glucose control by improving insulin sensitivity and driving glucose into the muscle for contraction, which may help control diabetes. Data from the Health Professionals' Follow-up Study provides evidence that as little as 30 minutes of resistance training per week may reduce the risk of an initial heart disease event. A recent review of the research related to strength training and its role in modifying cardiovascular disease risk indicates that strength training can result in a decrease in intra-abdominal fat, a known risk factor for cardiovascular disease in men and women. Resistance training at a moderate intensity has also been shown to assist in reducing both systolic and diastolic blood pressure. Strength training may also help improve one's state of mind through self-confidence and independence gained with increased muscle control, mobility and the social aspects of exercising with peers.

Recommendations:

- Depending on your fitness level and your primary care provider's recommendation, you should exercise all major muscle groups two to three days per week, allowing for 48 hours of rest between work-out sessions. Major muscles groups include: Upper body – front and back of arms, shoulders, chest and upper back. Torso – abdominals, sides of torso and lower back. Legs – front and back of thighs, calves, and buttocks.
- Begin with larger muscle groups first and proceed to the smaller ones which allows you to perform the most demanding exercises when you are least fatigued.
- Breathing is important for providing oxygen to your muscles. Holding your breath can cause your blood pressure to rise. The common recommendation is to exhale during the lifting phase and inhale during the lowering phase. It may be helpful to count when lifting (i.e.: 1,2,3, 2,2,3, 3,2,3); breathing comes naturally with counting.
- Keep wrists in a straight line while using all strength training equipment to prevent straining your wrists.
- It is important to perform the same exercises on both sides of your body.
- Consistency is important while you work each muscle group. Count for three seconds when you extend your muscle, rest for one second and count for another three seconds when you contract the same muscle. Performing the movement in this controlled manner is optimal for muscle mass, strength and tone.
- Start with one set of 8 to 12 repetitions. Each repetition should be done with proper form and control. When you are able to perform 12 repetitions of an exercise correctly and without fatigue, you can safely increase weight or resistance level in five to ten percent increments. A more advanced program may include 2 or 3 sets of each exercise.

Where to find more information about strength training:

University of Arizona

UA Life & Work Connections Worksite Wellness Program: On-going Elastic Bands for Strength classes (see listing on website: <http://lifework.arizona.edu>)

Campus Recreation Center: <http://CampusRec.arizona.edu>

Websites

American Council on Exercise: www.acefitness.org

American College of Sports Medicine: www.acsm.org

Centers for Disease Control and Prevention: www.cdc.gov

Physical Activity Guidelines for Americans: <http://health.gov/paguidelines>

Mayo Clinic: www.mayoclinic.com

MedlinePlus: www.medlineplus.gov

National Osteoporosis Foundation: www.nof.org

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