Strength Training

Strength training (or resistance training) uses a resistance to increase an individual's ability to exert force. It involves the use of weight machines, free weights, bands or tubing, or the individual's own body weight. This is not the same as Olympic lifting, power lifting, or body building, which requires the use of ballistic movements and maximum lifts and is not recommended for children.

The following are answers from the American Academy of Pediatrics to common questions about strength training.

What are the risks of strength training?

The risks of participating in an unsupervised strength training program include injury to the discs and growth plates of the spine and even occasionally death from weights landing on the chest wall. A well-supervised program has a coach-to-student ratio of 1:10 or less and proper certification of the instructor. Significant injuries are rare in well-supervised programs, but can include stress fractures of the shoulder (osteolysis) or spine (spondylolysis), muscle strains, disc herniation, and tendinitis. Misuse of anabolic steroids to improve physique is another possible risk.

What are common strength training myths?

Myth	Reality
Strength training results in loss of flexibility.	Research shows that strength training does not decrease flexibility and that incorporation of a stretching program has resulted in improved flexibility.
Strength training is dangerous to growth plates.	Strength training is not harmful to the growth plates when done in supervised settings using low weight and high repetitions. In fact, research shows that it is safer than playing soccer, football, and basketball.
Strength training will not result in an increase in strength until puberty.	Well-designed strength training programs of at least 8 weeks' duration can increase strength by 30% to 50%. However, in young athletes, these changes happen by changing how the muscle works rather than increasing the muscle size.

What are the benefits of strength training?

Strength training improves muscle strength and stamina. Regular participation in strength training improves cardiac (heart) health, body composition, and bone mineral density, and decreases cholesterol levels. It is particularly helpful for overweight (obese) youth because it increases lean body mass and metabolic rate without the extra stress on the body. In some sports (like swimming or tennis), strength training may prevent common rotator cuff problems. Research also shows a possible reduction in knee injuries in girls when strength training is combined with a plyometric (jumping) program.

Who should not participate in strength training?

Strength training is not recommended for people with the following:

- Uncontrolled high blood pressure
- Seizure disorders
- Prior history of childhood cancers treated with chemotherapy

Children with complex congenital heart disease should get an OK by a pediatric cardiologist before starting a strength training program.

When can my child start strength training?

The proper age is based on the following:

- Maturity (if the child has reached certain developmental milestones)
- The type of sport the child wants to play
- A desire to participate
- The discipline to train several times a week
- The ability to listen and follow directions

Most young athletes have these characteristics and can maintain proper balance and postural control by around 7 or 8 years of age.

What are the key components in a strength training program?

To get the most out of strength training, athletes should

- Include aerobic training along with strength training.
- Train 2 to 3 times a week for 20 to 30 minutes.
- Warm up and cool down for at least 10 minutes.
- Practice all lifts without weights to make sure form and technique are correct. As techniques are mastered, weights can be slowly added.
- Work all major muscle groups including the core. Joints should be moved through a full range of motion.
- Do 2 to 3 sets of 8 to 15 repetitions.
- Train for a minimum of 8 weeks.
- Gradually increase weights by no more than 10% per week.

How can injuries be prevented?

To prevent injuries, keep the following in mind:

- Use proper techniques when lifting.
- Adjust machines for height.
- Always wear proper clothing and closed-toe shoes with good traction.
- Always weight train with proper supervision and spotting.
- Start each session with a 10- to 15-minute warm-up. Avoid rapid breathing (hyperventilation), bearing down, or holding your breath while lifting.
- No maximum 1 repetition, maximum weights, or ballistic maneuvers should be performed before reaching skeletal maturity.
- Stop lifting at once if pain is felt.

Where can I learn about qualified strength trainers?

There are many different strength training certification programs in the United States. Some require only an open-book test to become certified, while others require a college degree, CPR training, written and practical examinations, and continuing education to maintain certification. We recommend that, at a minimum, the program be certified through the National Committee for Certifying Agencies.

The organizations with the most national recognition are the National Strength and Conditioning Association (www.nsca-lift.org), the American Council on Exercise (www.acefitness.org), and the American College of Sports Medicine (www.acsm.org).

Notes

American Academy of Pediatrics

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