



ACSM Sports Medicine Basics

YOUTH STRENGTH TRAINING



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Current recommendations suggest that school-age youth should participate in at least 60 minutes of moderate to vigorous physical activity daily. In addition to aerobic activities such as running and cycling, research increasingly indicates that regular participation in a youth strength-training program can offer observable health, fitness and performance benefits for children and adolescents. Presently, a growing number of boys and girls are experiencing the benefits of strength training in schools, fitness centers and sports training facilities. Contrary to the traditional belief that strength training is dangerous for children or that it could lead to growth plate disturbances, the American College of Sports Medicine (ACSM) contends that strength training can be a safe and effective activity for this age group, provided that the programs are properly designed and competently supervised. It must be emphasized, however, that strength training is a specialized form of physical conditioning that involves the progressive use of a wide range of resistive loads and a variety of training modalities. As such, instruction and supervision should be provided by qualified professionals to ensure that strength-training programs are consistent with the needs, goals and abilities of each participant.

Children and adolescents can participate in strength training programs provided that they have the emotional maturity to accept and follow directions. Many seven- and eight-year-old boys and girls have benefited from

strength training, and there is no reason why younger children could not participate in strength-related activities, such as push-ups and sit-ups, if they can safely perform the exercises and follow instructions. Generally speaking, if children are ready for participation in organized sports or activities—such as Little League baseball, soccer or gymnastics—then they are ready for some type of strength training. The goal of youth strength training should be to improve the musculoskeletal strength and general fitness of children and adolescents while exposing them to a variety of safe, effective and fun training methods. Adult strength training guidelines and training philosophies should not be imposed on youngsters who are anatomically, physiologically or psychologically less mature. Strength training should be one part of a well-rounded fitness program that also includes endurance, flexibility, agility and skill-building exercises.

Properly designed and competently supervised youth strength training programs may not only increase the muscular strength of children and adolescents, but may also enhance motor fitness skills (e.g., sprinting and jumping) and sports performance. Research evidence indicates that participation in a well-rounded fitness program that includes strength training may also decrease the incidence of some sports-related injuries by increasing the strength of tendons, ligaments and bone. During adolescence, training-induced strength gains may be associated

with increases in muscle size, but this is unlikely to happen in prepubescent children who lack adequate levels of muscle-building hormones. Although the issue of childhood obesity is complex, youth strength training programs may also play an important role in effective weight loss strategies. Participation in an exercise program that includes strength training may provide an opportunity for all youth, including those who are sedentary or overweight, to improve their muscle strength, enhance their motor coordination and gain confidence in their perceived abilities to be physically active.

There is the potential for serious injury if safety standards for youth strength training such as competent supervision, qualified instruction, safe equipment and age-related training guidelines are not followed. All youth strength training programs must be closely supervised by knowledgeable professionals who understand the uniqueness of children and have a sound comprehension of youth strength training guidelines. The exercise environment should be safe and free of hazards and all participants should receive instruction regarding proper exercise technique (e.g., controlled movements), safe training procedures (e.g., sensible starting weights), and weight room etiquette (e.g., adherence to safety rules). Although a medical examination is not required for apparently healthy children who want to participate in a strength training program, a medical examination is recommended for children

with known or suspected health problems. A variety of training programs and many types of equipment—from medicine balls to free weights (barbells and dumbbells) or child-size weight machines—have proven to be safe and effective.

Although there is not one optimal combination of sets and repetitions for all children and adolescents, one to three sets of six to fifteen repetitions performed two to three times per week on nonconsecutive days have been found to be reasonable. Beginning with one or two sets of 10 to 15 repetitions on several upper and lower body exercises that focus on the major muscle groups will allow room for progress to be made. As competence and confidence to perform different strength exercises improve, the program can be made more challenging by gradually increasing the weight or the number of sets. Although not all exercises need to be performed for the same

number of sets and repetitions, youth with strength training experience may progress to 2 to 4 sets of 6 to 12 repetitions with a heavier weight provided progression is based on technical competency. This is especially important for youth who perform multi-joint exercises (e.g., squatting) or complex exercises (e.g., weightlifting) due to the complex nature of these movements. As training experience increases, young athletes may be introduced to periodic phases of lower repetition ranges (≤ 6) and heavier weights... It must be underscored that the overriding emphasis of any youth strength-training program should be on proper technique and safety—not on how much weight can be lifted.

Proper training guidelines, program variation and competent supervision will make strength training programs safe, effective and fun for children and adolescents. Instructors should understand the physical and emotional

uniqueness of children, and, in turn, participants should appreciate the benefits and risks associated with strength training. If age-related guidelines are followed, it is the opinion of ACSM that strength training can be enjoyable, beneficial and healthy experience for children and adolescents.

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