



**AMERICAN COLLEGE
of SPORTS MEDICINE®**

American College of Sports Medicine • Current Comment • September 2002

STRENGTH TRAINING IN CHILDREN AND ADOLESCENTS

Benefits of Strength Training

Strength training in children and adolescents encourages a healthy lifestyle and builds confidence through successful completions of exercise, continued strength gains. Throughout the scientific literature, strength training has been shown to improve coordination by improving motor skills and sports performance. Especially in younger children, most strength gains are the result of improved technique, muscle fiber recruitment, and coordination as opposed to muscle enlargement. With childhood obesity on the increase nationwide, strength training has been shown to improve body composition by increasing lean body mass. Many studies looking at resistance training in children and adolescents reflect an improved cholesterol level, cardio-respiratory fitness, bone health, self-image and self-esteem. A lower rate of sports-related injuries has been seen in adolescents who take part in a regular resistance training program. Children and adolescents who have experienced a sports-related injury, often achieve more effective rehabilitation through strength training.

Safety Issues and Concerns

Severe injuries causing death or severe disability are exceedingly rare, but can occur while strength training in children and adolescents. These injuries are mostly due to the lack of appropriate adult supervision, instruction, or technique. Much controversy has surrounded the more explosive lifts involving children with open growth plates. A recent study involving 1109 children and adolescents lifting at national meets over a four-year period showed not only no growth-plate injuries but no serious injuries requiring hospitalization or surgery. Minor injuries such as muscle strains are common among children and adolescents, as they are in their adult counterparts who do strength training. When compared to other sports in which children and adolescents participate--such as football, soccer, basketball and even baseball--the injuries due to all types of strength training are much lower. There is no current scientific evidence to support that early weight training can "stunt" a child's growth. Children and adolescents wishing to participate in intermediate and advanced strength training programs should consult with a certified or qualified strength specialist when developing individual programs.

Definitions

Strength Training (a.k.a. resistance training, weight training): Method of conditioning using resistance to increase muscular strength by various methods (i.e. free weights, weight machines, resistance bands)

Weightlifting: Ballistic, explosive maneuvers involving a weighted barbell which is lifted from the ground to the overhead position. Weightlifting consists of two unique, complex lifts called the snatch and the clean and jerk.

Snatch: One fluid motion, in which the barbell is pulled off the ground immediately into the overhead position. The lifter then stands upright with the barbell.

Clean and jerk: A two-motion lift, in which the barbell is explosively lifted from the ground to the shoulder level. Then, after a brief pause, the lifter jerks the barbell overhead.

Powerlifting: Non-ballistic maneuvers involving a weighted barbell, which is lifted in one of three methods: the bench press, the squat, or the deadlift.

Bench Press: A weighted barbell is lowered onto the lifter's chest with their arms while lying on a bench in a supine position. The barbell is then "pressed" or pushed off the chest until arms are fully extended.

Squat: A weighted barbell is placed over the back of the shoulders on a standing lifter. The lifter then flexes at the knees and hips until thighs are parallel to the floor. Then the lifter attempts to stand upright with the barbell still on the shoulders.

Deadlift: Lifter grasps weighted barbell on floor. The lifter then proceeds to raise the barbell to a position in front of the thighs by extending the legs, hips and back.

Free-weights: dumbbell, barbells, and other devices that are without external support and have independent motion.

Weight Machine: Devices which are used for resistance work through a certain, limited range of motion. May utilize weights, rubber-bands, hydraulics, pulleys, are leveraged to create resistance.

"Spotter": A person with knowledge of strength training whose role is to assist the lifter and prevent injury.

Children: Boys up to 13 years old; Girls: up to 11 years old

Adolescents: Boys 14-18 years old; Girls: 12-18 years old

Guidelines

- 1) Qualified adults should supervise and instruct youth at ALL times
- 2) Set realistic goals for the younger athlete
- 3) Focus on proper technique instead of amount lifted
- 4) Use a "spotter" when necessary
- 5) Each weight-training session should begin with a period of warm-up and stretching
- 6) Strength training should be part of a well-balanced exercise program
- 7) Increase the resistance gradually as technique, control and strength improves

Training Program

Basic (beginner) program:

Example of a program: One should start with a basic program for two to four weeks that consists of one or two sets of each exercise.

Warm-up	(5 minutes)	Leg Extension	(10-15 reps max)
Leg Press	(10-15 repetitions max)	Military Press	(10-15 reps max)
Bench Press	(10-15 repetitions max)	Reverse Sit-up	(10-15 reps max)
Leg Curls	(10-15 repetitions max)	Bent-Leg Sit-ups	(10-15 reps max)
Arm Curls	(10-15 repetitions max)	Stretch	(5 minutes)

Written for the American College of Sports Medicine

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