



Strength Training in Youth: Is it Safe?

BY: David L. Marshall, MD

As the number of young children participating in competitive sports continues to rise, many are trying to gain an edge by enrolling in speed and agility programs as well as strength training programs. Through the years, strength training in youth has been discouraged due to its perceived deleterious effect on growing bone. New evidence however, supports that a properly designed and appropriately supervised strength training program is not only safe, but provides several health benefits for children. Below are some answers to commonly asked questions.

How old should a child be before he or she starts lifting weights?

When children reach the age where they can participate in competitive team sports, it is ok to begin a strength training program. This may occur as early as seven or eight years of age. If using free weights, such as junior barbell sets, the child needs to be able to safely support and balance the weight above his or her head to avoid injury. With age-appropriate machines, such as Nautilus, not as much balance and coordination is required.

Can kids pre-pubescent get stronger by lifting weights?

Yes, kids can achieve significant strength gains before puberty, even though they do not have high levels of circulating testosterone to stimulate increases in muscle size, as adolescent males do. Children gain strength by improving their neuromuscular control and coordination of muscle firing in their bodies. In other words, the more a task is performed, the more muscle memory is achieved, and the task becomes easier to repeat. This is true for not just weight training but also for throwing, catching, cartwheels, etc. The muscles don't necessarily get bigger, they get smarter.

Because of the similar levels of circulating testosterone in boys and girls before puberty, boys and girls tend to be very similar in strength and strength gains in response to weight training.

Besides strength gains, what are some other benefits of strength training?

Strength training has been shown to increase some motor specific skills in young athletes, such as vertical leap, long jump, sprint speed and medicine ball toss. Other benefits noted are a decrease in a number of sports-related injuries such as ACL tears, improvements in self-esteem, reduction in blood pressure in hypertensive children, and increased insulin sensitivity in individuals who are



obese or at risk of developing diabetes. In addition, strength training is an excellent activity for obese individuals who have trouble with running or other aerobic activities.

Can weight lifting stunt your growth?

There is no evidence that adequately designed and supervised weight training programs affect linear growth or affect final adult height. In fact, it has been shown that regular resistance training

with adequate calcium intake will promote healthy bone growth and increase bone mineral density in adolescents. Therefore, the compressive forces associated with weightlifting actually make bones stronger, not weaker.

Another area of concern with youth weight training involves the growth cartilage, found in three areas: near the ends of long bones (physes), lining the joint surfaces (articular cartilage) and at sites of muscle attachments (apophyses). To date, there have been



no reports of injuries to the growth cartilage of pre-adolescents or adolescents due to an appropriately designed and supervised weight training program.

Is it ok for kids to perform a one-rep single maximum lift or max out?

While the growth plates are still cartilaginous and thus still vulnerable to shear stress, there is a theoretical risk of injury during single rep maximal lifts. It is the stance of the American Academy of Pediatrics Committee on Sports Medicine and Fitness that children and adolescents who are still growing not perform single rep maximum lifts. The National Strength and Conditioning Association

states that "unless there is qualified adult supervision, there is adequate progression of loading, and proper technique, children and adolescents should not perform single rep maximal lifts due to the risk of injury."

Top tips for youth weightlifting

1. Provide qualified adult instruction and supervision
2. No gum chewing, bare feet or jewelry
3. Always lift with a partner, never alone
4. Keep a workout log to monitor progress
5. Start each session with a dynamic 5-10 minute warm-up period
6. Perform 1-3 sets (1 for beginners) of 6-15 reps on a variety of upper and lower body exercises
7. Complete a full range of motion with each rep. No cheating!
8. Increase the resistance gradually by 10-15% as strength increases
9. Cool down with 10-15 minutes of stretching.
10. Maintain healthy nutrition, hydration, adequate sleep

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