

Strength Training and the Young Athlete

Many parents let their children play football but believe weight training is too dangerous. Bill Starr examines the issue and explains how to train children safely and effectively.

Bill Starr



Staff/CrossFit Journal

As long as I have been involved in physical culture, the notion that lifting weights is harmful to young people has prevailed.

Coaches of various sports have voiced this opinion, and medical authorities have backed them up. Basically, they state that a youngster should be at least in his teens before embarking on any type of fitness program that includes lifting weights. This recommendation primarily has to do with the growth plates found in the long bones of the body. The contention is that lifting heavy weights, relatively speaking, will cause damage to those bones, which will have a detrimental effect on the eventual height of the individual.

This idea never made much sense to me.

Ideas vs. Evidence

If the coaches and doctors are correct, athletes shouldn't train with weights until they're out of their teens, because growth is still taking place until a person reaches 20. Everyone who follows the sport of Olympic weightlifting is aware of countless examples of athletes in their early and mid-teens who have set national records, won national and international titles, and competed on a level with much older men.

I believe the assumption that lifting weights at an early age is harmful to long-term growth to be completely false. It's one of those concepts that's been around for so long that no one bothers to challenge it. While just about every authority will say training a very young boy or girl in the weight room is risky, I've never come across any scientific data to support the idea—although I've read a number of studies done in several European countries that drew the opposite conclusion. Those studies concluded a properly administered strength program is extremely beneficial to young athletes. In many of the studies, boys and girls were introduced to weight training when they were six years old.

I believe the assumption that lifting weights at an early age is harmful to long-term growth to be completely false. It's one of those concepts that's been around for so long that no one bothers to challenge it.

Another reason I never went along with the prevailing belief was because I grew up in a farming community. In high school, the farm boys were always bigger and stronger than the rest of the class and therefore became the most proficient players on the various sports teams. This was at a time when everything was done by hand, which meant they did a great deal of manual labor and a lot of heavy lifting. It was clear that this hard work, day in and day out, didn't stunt the growth of these laborers—not by a long



Courtesy of CrossFit Davis

Many people will forbid their children to pick up a kettlebell but allow them onto the football or soccer field, where injuries are much more common. Bill Starr questions this logic.

Courtesy of CrossFit Davis



Constant supervision from quality instructors will ensure young athletes correct any faults and train safely.

shot. In my view, it stimulated growth in their muscles and bones. In every farming family, as well as other families whose members did a great deal of physical labor, the sons were always taller and more muscular than their fathers.

The concept of sparing a child from doing anything strenuous is now very prevalent in this country. Just walking a few blocks to catch the school bus is out of the question. There's no mystery to me why the country is facing an epidemic in the form of obese young people: we have encouraged them to be lazy.

The only exceptions are those offspring of a father who was a part of competitive weightlifting. Such parents understand how beneficial strength training can be for their kids and introduce them to a barbell at an early age. Yet, in the total scheme of things, these instances are but a drop in the bucket.

Here's another thing that continues to baffle me: while parents forbid their children from participating in a strength routine, they often encourage, and sometimes push, them to participate in sports which involve a high degree of risk to life and limb. Lacrosse is big in Maryland, and throughout the summer here countless camps run throughout the state. Some are for boys as young as six. The same holds true for football, and in the northern states it's hockey. Soccer and baseball are not nearly as dangerous as full-contact sports, yet there are always reports of youngsters getting seriously hurt on those fields as well.

I'm very much in favor of all these camps and leagues for youngsters, yet it seems so illogical to forbid youngsters to lift weights while they're urged to take part in a violent sports activity. What's more dangerous? Blasting head-on into an opponent at full speed on a football field or power-cleaning a 10 lb. bar in the garage? It's a no-brainer, yet the old notion prevails. Even more insane is the explosion of extremely risky sports. For example, skateboarding has millions boys and girls soaring high in the air over a slab of concrete.

What parents need to understand is that by helping their children get started on some sort of strength-training program, they greatly reduce the odds of them getting seriously hurt when playing any sport. Stronger legs help stabilize the ankles and knees. Stronger shoulders keep the shoulders, arms and elbows from harm, and a stronger back can mean the difference between getting up after a violent impact and being carried off the field on a stretcher.

Strength is a valuable asset at any age. Consider the infant before he becomes a toddler. What does he do a lot before he actually toddles? He squats—and perfectly, I might add. The squatting eventually makes his legs strong enough to support him, and he takes his first steps. This is the beginning of the bell curve, and strength is the most important factor in movement throughout life. At the far end of the curve, the octogenarian, after hip-replacement surgery, has to gain enough strength in her legs before she can walk again.

Secondly, strength training is a safe activity for people of any age if properly administered. While this is extremely important for anyone getting started in the discipline, it's even more critical for the young, growing body. Safety is really the No. 1 concern when dealing with young athletes in the weight room. Obviously, a boy or girl cannot be dealt with in the same manner as an adult.

Supervision Is the Key

At what age can a youngster start some form of strength training? Should only light weights be used? How many sets and reps and how many exercises in the routine? How long should each session be and how many times a week should young athletes train? Is there any special equipment they will need to ensure their safety? Where can a capable instructor be found?

I'll get to these concerns, but first I want to state that the most important thing to know when training youngsters is that they must be supervised. The younger they are, the more crucial the supervision. To allow a boy or girl to train alone, even after good coaching, is an invitation to trouble.

This is a strict rule laid down by the European coaches and should be the same for anyone handling young athletes. Left alone, the youngster will use faulty form, attempt weights he's not ready to handle, or neglect the more beneficial exercises in favor of others that are much more fun—bench presses and curls. And while I said the exercises are safe when done correctly, there is one exercise that is potentially dangerous when it's done alone: the flat bench press. This movement is also typically the favorite. Getting stuck on the bench press and having the bar fall across the throat is the leading cause of injury, and often death, in the country with regards to weight training.

Never let a young athlete train alone. When she has trained for a few years, the rule can be relaxed, but she still should only do exercises that do not require a spotter.

Ignore Age—Let Maturity Be Your Guide

What's a good age to introduce a boy or girl to the discipline of strength training? There is no hard and set number. What matters more than age is mental maturity. I've seen some six-year-olds who were more regimented than many 12-year-olds. The real question is this: is the youngster ready to follow instruction to the letter and be able to focus on what he's trying to accomplish? If so, he can start

Recommended Equipment

Unlike most athletic endeavors youngsters take part in, strength training doesn't require helmets, pads, gloves, uniforms or special shoes. A T-shirt, shorts and a pair of Nikes are sufficient. However, a couple of items are useful because they make workouts less stressful: a four-inch leather lifting belt and a few rolls of white trainer's tape. The belt is useful for overhead lifting and squatting. It helps to maintain a tight midsection, gives feedback on body positioning during the execution of the movement, and keeps the back warm during the workout. Keep in mind that a belt, no matter how strong it is, cannot prevent an injury if sloppy form is used.

The tape is for the wrists. Most youngsters have very small wrists, and the tape will support them when they do any exercise that forces the wrist to bend, such as when the bar is racked during a power clean. The tape also helps and reminds the athlete to keep her wrists straight when doing such exercises as the overhead press, incline bench press and conventional flat bench press.

As the adage states, "An ounce of prevention is worth a pound of cure."



The CrossFit Kids program uses the "angry-gorilla back" cue to help kids learn how to deadlift objects safely.

resistive training. If not, it's better to have him wait, not so much because he might hurt himself, but rather because he'll get very little, if anything, out of the training. If he starts off with a poor experience, the odds of his taking it up again are slim to none.

As I mentioned, six-year-olds are playing football, baseball, soccer and lacrosse, and gymnasts and figure skaters frequently start training for their sports at even younger ages. The Europeans, from whom we have gotten all the information on how to train young athletes, start children on a strength regime as young as six.

I know of two examples in this country where children of former Olympic lifters were introduced to weightlifting when they were just four years old. Jim Moser's son Willy was doing snatches with a broomstick when he was four, trying to emulate what his father and older brother James were doing. He has since gone on to win national titles in his age group. In a similar manner, Mike Burgener's daughter Sage began lifting with her brothers at the tender age of four and has now competed at the international level.

It needs to be noted that when Willy and Sage started getting interested in lifting weights, even if it was only a broomstick or a plastic bar, it was not a regimented routine but rather a part of daily physical play. Neither was pushed into the activity. As they became more interested, more exercises were taught to them. Young athletes have to be self-motivated, and there's no way this can be instilled in them. It has to come from within. Try to force them to train on a regular basis and they will rebel.

While it's a mistake to rush youngsters into some form of strength work, it's also a mistake to tell them they can't take part in the activity. Doing so will only prompt them to do some things on their own, which will only lead to an unhappy experience for both child and parents. What the coach of a young athlete must be able to do is create an atmosphere of enjoyment and satisfaction. Sessions need to be more fun than serious. Sure, they must learn to follow instructions and do what's required of them during the workout, but it shouldn't be like a boot camp.

Two Days a Week Is Plenty

How often should young athletes train? It depends. If they're going to school and participating in a sport or sports, then a couple of times a week with weights is enough. One day is heavy, and one not so heavy. If they have a lot of free time, such as in the summer, three



Minor form flaws can be spotted and corrected at an early age, setting children up for a lifetime of safe, effective lifting.



Youngsters should only be introduced to strength training when they're mentally mature enough to follow the instructions that will keep them safe.

The emphasis in the beginning should be on perfecting technique. Don't get caught up in numbers. Master the form and the numbers will come automatically.

workouts are recommended. And three sessions will be plenty for a long time. At times, studies and scholastic sports demands may be severe and force the youngster to stop training altogether. This is OK, because if he did enjoy his time lifting weights, he'll get back into a routine down the line.

The emphasis in the beginning should be on perfecting technique. Don't get caught up in numbers. Master the form and the numbers will come automatically. It's fine, and even helpful, to set goals because it gives young athletes something tangible to shoot for—but these goals need to be realistic.

Regardless of how often a youngster trains, form must always be the main priority. Make it a hard and fast rule that the numbers can never be moved up if form is sloppy. Never—period. This will not only reduce the chance of getting injured but also ensure the youngster will know how to do that exercise correctly when he's more motivated to get bigger and stronger. In some cases, athletes will have to stay with the same poundage on a certain exercise for several months. This is fine because he has lots of years ahead of him to move heavier weights.

Low or High Reps?

How many sets and reps are appropriate for a young athlete just starting on a strength program? The standard formula that has been around for ages is three sets of 10, and many coaches still use it. The idea behind it is the higher reps force the athlete to use lighter weights, which reduces the risk of injury. I don't agree. Even with a light poundage, a youngster who is just learning how to do an exercise will start to tire when she reaches the eighth, ninth and 10th reps. At that point, her form breaks down. On the final set, form may disintegrate halfway through because she hasn't yet done enough work to build a solid base. Using improper technique, even if it's only for a few reps on each set, breeds bad habits.

I prefer starting youngsters out with lower reps. Research has shown that the best formula for gaining strength and building a solid base is 4-6 sets of 4-6 reps, and this applies to young athletes as well as their older counterparts. Start an athlete with 4 sets of 4 reps on any primary exercise. When he is able to handle all the sets using flawless form without any difficulty, move to 5 sets of 5. Then proceed to 6 sets of 6. At that point, add weight to the bar and drop the sets and reps back down to 4s. And so on and so forth right up the strength ladder.

Courtesy of CrossFit Davis



Traditional wisdom prescribes high reps for young athletes, but Bill Starr recommends sets of 4-6 reps. Low reps will help increase strength and also allow youths to concentrate on perfect form for a short period of time.

In this manner, excellent form can be adhered to on every set and the progression is slight. It's important to note that there is no need to get in a hurry. The gains need to be small in order to give the tendons, ligaments and muscles time to adapt to the new form of stress and recover.

The question often arises about limit attempts. I don't allow youngsters to do any singles until they have been training for at least six months and are using a sufficient amount of weight so they have built a solid foundation of strength. Their form also has to be absolutely perfect. If those two requirements are met, I can find no reason why they can't take a shot at a max single. One of two things will happen: the athlete will make the attempt or he'll miss. There's no risk involved if his technique is flawless. In fact, I think singles are most useful to young athletes. It necessitates that they put forth a supreme effort, quite often for the first time in their lives. Singles can teach a youngster how much grit she has, and when she's successful with a new PR, her self-confidence soars. This is not only a valuable trait in the world of sports but also in life itself.

There is no need to get in a hurry. The gains need to be small in order to give the tendons, ligaments and muscles time to adapt to the new form of stress and recover.

However, singles should not be done too often. Three or four times a year is plenty unless, of course, the young athlete wants to compete in an Olympic meet. Then singles have to be done more frequently.

One exercise should not be maxed out: the deadlift. The most weight is handled in this exercise, and even good form invariably breaks down on a heavy single. It serves no purpose, so just don't do it. Deadlifts done for the sets and reps I suggested are fine, just so perfect technique is utilized, but skip the singles. There will be time for them later on.

Which Exercises Are Best?

Length of workouts is an individual matter. Obviously, a youngster in high school can handle more work than one in junior high, and the eighth-grader can do more than someone in grade school. Size, state of fitness, background in athletics and desire are also factors. As a general rule, 45 minutes of lifting is plenty for the first month, and that can be expanded to an hour for most. A knowledgeable instructor is so valuable here. He knows his athletes and can tell if they are getting tired or if they still have some gas in the tank for more work.

Youngsters, on the whole, have boundless energy. That's not the problem as much as mental concentration. If their interest starts to wander, send them out of the gym. If a youngster who uses excellent form is suddenly doing a great many things wrong, have her do something else or dismiss her for that day. You don't want to push her to exhaustion, yet you need her to do enough to reach the goal of getting stronger.

As for exercises, stay with primary movements for the three major muscle groups: shoulder girdle, back and hips/legs. Choose the back squat for the hips and legs, power cleans for the back, and overhead presses or incline benches for the shoulder girdle. I much prefer inclines and overhead presses over flat benches, but if the youngster is involved in a strength program at his school that includes bench presses, teach him how to do the lift properly.

Program three exercises per session no more than three times a week. Make these lifts stronger and performance in any athletic endeavor will be greatly improved. The smaller muscles groups should be exercised with free-hand movements rather than with weights in the very beginning. This means chins are preferred over curls with a bar or dumbbells. Free-hand dips are great for the deltoids, and calf-raises with no resistance for high reps will help stabilize the ankles and increase foot speed.

Eventually, more exercises can be inserted into the routine, and auxiliary movements can be done with weights, but in the beginning using bodyweight for the smaller groups is a smarter idea because they're already receiving attention on the three core lifts. Hammering away on the biceps after the heavy work has been done is counterproductive. There will be ample time to hit those smaller groups with specialized exercises.

While a youngster is being introduced to the discipline of strength training, it's a good idea to encourage her to take part in other athletic activities, particularly those that require high degrees of coordination, balance, foot speed and quickness. It's preferable to choose activities without a great deal of physical risk. Linked with the benefits of strength training, they help build a more proficient athlete.

Coaches and Additional Resources

Finding a capable person to teach your child how to do the suggested exercises correctly may be the most difficult part of the whole deal. Personal trainers are not much help, unless they come from a background of Olympic lifting. Most fitness facilities offer some type of instruction, but seldom does it include the exercises the young athlete needs. Usually, commercial gyms are geared toward bodybuilding and not strength training. Ask around.

Some strength coaches at local colleges and even high schools know how to deal with young athletes, and most welcome them, especially in the summer months when they aren't busy with sports teams. See if you can find an Olympic lifting club within a few hours' drive.

While the majority of franchised gyms do not cater to athletes, CrossFit affiliates are making quite an impact. Instructors teach members how to do the very exercises I recommended, and the [CrossFit Kids](#) program is specially designed to meet the needs of young athletes. CrossFit also holds teaching clinics across the country to help youngsters get started on the right direction in strength training. Visit [CrossFit.com](#) to find an affiliate or clinic in your area.

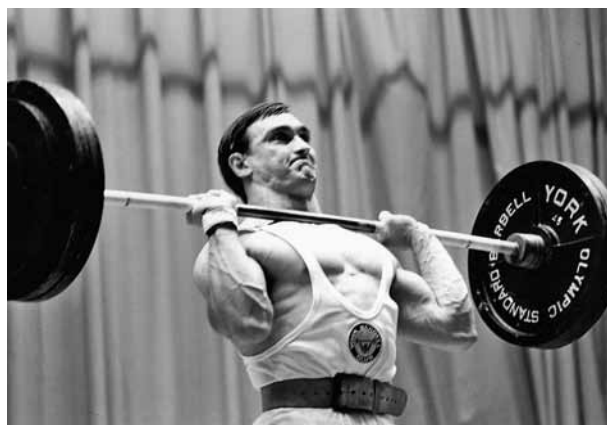
Two instructional books on strength training should be read by every young athlete and parent: my book, *The Strongest Shall Survive*, and *Starting Strength* by Mark Rippetoe and Lon Kilgore. These are filled with sequence photos to help a beginner learn how to perform the various lifts correctly. A *Starting Strength* DVD is also available. All can be ordered online from [The Aasgaard Company Bookstore](#).

Hidden Health Benefits

Many positive side effects from getting involved in a strength program aren't always obvious. Once a youngster gets hooked on lifting weights, he starts paying closer attention to his diet, shunning junk foods and selecting items that are more wholesome. A protein shake instead

of a Coke, for example. He sleeps more soundly because of the strenuous exercising and learns that when he gets to bed a bit earlier than usual, he has a better workout the next day.

While it may not happen right away, persistence and determination will cause the athlete's muscles to grow and take on a new shape. Endurance will improve, overall strength will increase, and performance in the athletic arena will be at a much higher level. This leads to elevated self-esteem and pride in accomplishments. These factors gain him or her more attention from the opposite sex. At this point, parents or coaches no longer have to prompt children to work out. Rather, they have to get a lock for the weight-room door.



Jody Forster

About the Author

*Bill Starr coached at the 1968 Olympics in Mexico City, the 1970 World Olympic Weightlifting Championship in Columbus, Ohio, and the 1975 World Powerlifting Championships in Birmingham, England. He was selected as head coach of the 1969 team that competed in the Tournament of Americas in Mayaguez, Puerto Rico, where the United States won the team title, making him the first active lifter to be head coach of an international Olympic weightlifting team. Starr is the author of the books *The Strongest Shall Survive: Strength Training for Football* and *Defying Gravity*, which can be found at [The Aasgaard Company Bookstore](#).*