

# Is Weight Training Safe for Kids?

by Kim Goss

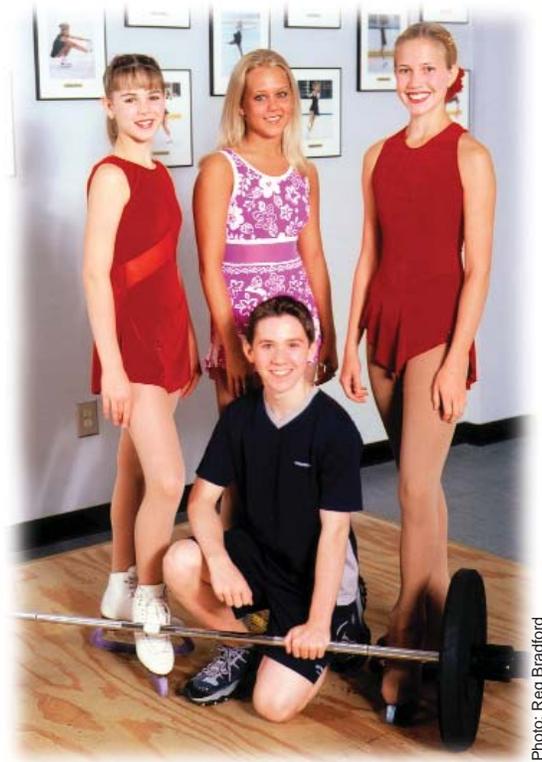
*BFS uncovers the facts and fallacies about weight training for young athletes*

**J**ust about everyone in this country has participated in some type of resistance training, whether publicly in a health club or school, or privately with home gym equipment. And with good reason. Decades of research have proven that weight training is the single-most effective way to build strength and prevent injuries. That's why I find it puzzling that many coaches and parents are reluctant to have young athletes participate in strength training.

Having been involved in strength coaching and competitive weightlifting for almost 30 years, I've seen the gradual acceptance of weight training as an essential conditioning tool for athletes. Coaches know that weight training can improve an athlete's power, speed, flexibility, body composition and muscular endurance. Further, exercise

scientists have conducted clinical studies that prove that any cardiovascular health benefits that occur with aerobic training can also be achieved with weight training. When it comes to training children, however, there are widely differing opinions.

Some parents and coaches fear not only that weight training and competitive barbell sports carry far greater risks for injury than other sports young athletes engage in but also that lifting might stunt growth. Unfortunately, misplaced fears and lack of understanding of the true effects of early training are doing many young people a great disservice. Hopefully, after examining the following evidence, you will agree with the preponderance of research that shows weight training is a must for the serious athlete.



Heavy weight training has been a vital part of the training of these teenage figure skaters from the Dr Pepper StarCenter in Plano, Texas.

## The clock is ticking

First, it's important to review the reasons why young athletes need to lift weights, especially in such BFS core lifts as the power clean and the squat. The primary reason is simply that more is expected from today's athletes, and this requires practicing their sports harder and longer at an earlier age.

My own conditioning program for skaters uses BFS core lifts such as the clean and the trap bar deadlift. These are "economical" exercises, meaning that they work many muscle groups simultaneously, reducing the time my athletes need to spend in the gym. This is important, as many of my skaters spend as much as 15 hours a week on the ice and several hours a week in ballet and other forms of dance. When



**Improper lifting technique is the primary cause of injuries in the weightroom. In this photo Erin, who won several championships in Texas and competed at the novice level, demonstrates perfect form in the jerk. An honor student at Shelton School in Dallas, Erin wants to pursue a career in trauma medicine.**

performing the clean and jerk, for example, skaters will strengthen all the major muscles used in jumping. To achieve a similar training effect with conventional exercises, an athlete would have to perform a leg press, back extension, calf raise, upright row, biceps curl and military press—and even then they would be missing a few muscles.

In addition to their practical advantages, such Olympic lifting variations as the power clean enable the muscles to contract faster (so skaters can jump higher) and to control impact forces (to land more difficult jumps). However, if I were to use the protocols set by many medical authorities, I would not be able to use weightlifting programs such as BFS until after most of my athletes had retired.

### **The Bigger They Are . . .**

One of the major - and unfounded - concerns about weight training for young athletes is that it could cause damage to the epiphyseal (growth) plates.

Although injury to the epiphyseal plates may cause bone deformity, there is little risk of this occurring with weight training compared to most sports. As for the risk of weight training stunting growth, premature closing of the epiphyseal plates is related primarily to hormonal influences, not injury. Addressing this subject is Mel Siff, Ph.D., an exercise scientist whose doctorate thesis examined the biomechanics of soft tissues.

“It has never been shown scientifically or clinically that the periodic imposition of large forces by weight training on the growing body causes damage to the epiphyseal plates,” says Siff, in his book *Facts and Fallacies of Fitness*. “It is extremely misleading to focus on the alleged risks of weight training on children when biomechanical research shows that simple daily activities such as running, jumping, striking or catching can impose far greater forces on the musculoskeletal system than very heavy weight training.”

To illustrate his point, Siff

compared the stress of squatting with running. “Suppose that one child runs a few hundred meters a day in some sporting or recreational activities. This can easily involve several thousand foot strikes in which the reaction force imposed on the body can easily exceed 4 times bodyweight with every stride. Now let another child do a typical average weight training session with 3-5 sets of squats (say, with 10 reps, 8, 6 and 4 reps), with bodyweight or more for the last set. That bodyweight is divided between the two legs, so that, even taking acceleration into account, the loading per leg is bodyweight or a little more, while the spine is subjected to the full load on the bar. In other words, the legs and spine in controlled squatting are exposed to significantly less force than in running and jumping. Normally, exercises such as squatting will be done no more than twice a week for a total of about 60 repetitions, while the running child will run every day and subject the body to



Photo: Eric Varian

**When she was 11 years old, figure skater Sakiko Oga could clean 80 pounds while weighing only 61 pounds.**

those many thousands of impulsive foot strikes.”

“It does not require much scientific knowledge or computational genius to see that the cumulative loading imposed by simple running activities on the lower extremities and the spine is far greater than the cumulative load of two or three times a week of weight training. Does this now mean that we are justified in recommending that children not be allowed to run, jump, throw or catch because biomechanical research definitely shows that such activities can produce very large forces on many parts of the growing body?”

It should be obvious then that there is nothing wrong with running and other normal activities of childhood, and therefore no reason to disallow activities of lesser impact, such as carefully structured programs of weight training.

Siff also notes that bone density scans have proven that youngsters who do competitive



Photo: Matthew Georgopoulos

**Figure skaters at Kristen Hasselmeier's level often spend 15 hours a week on the ice. Weight training will help them handle the stress of such training.**

**Children who compete in weightlifting have higher bone densities than children who do not use weights. A great bone builder is the trap bar deadlift as demonstrated by Eric Varian. Last year Eric competed in the Junior Nationals in pairs skating.**

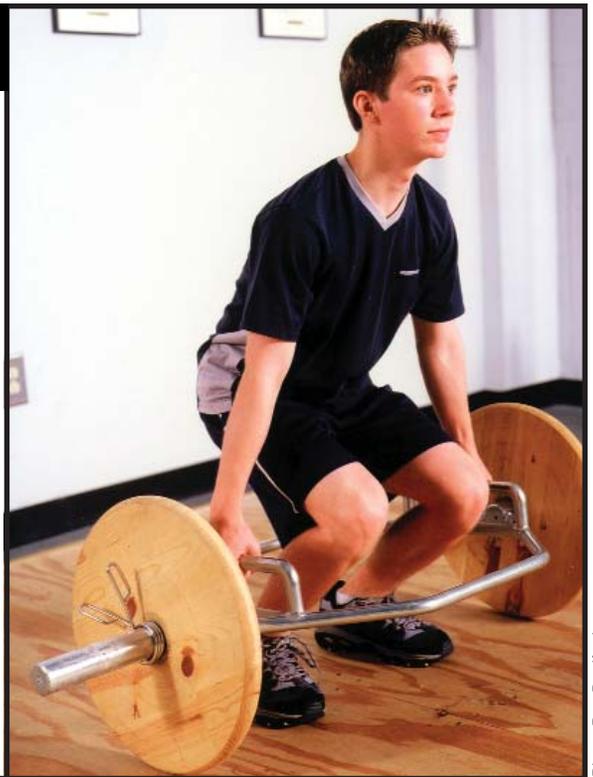


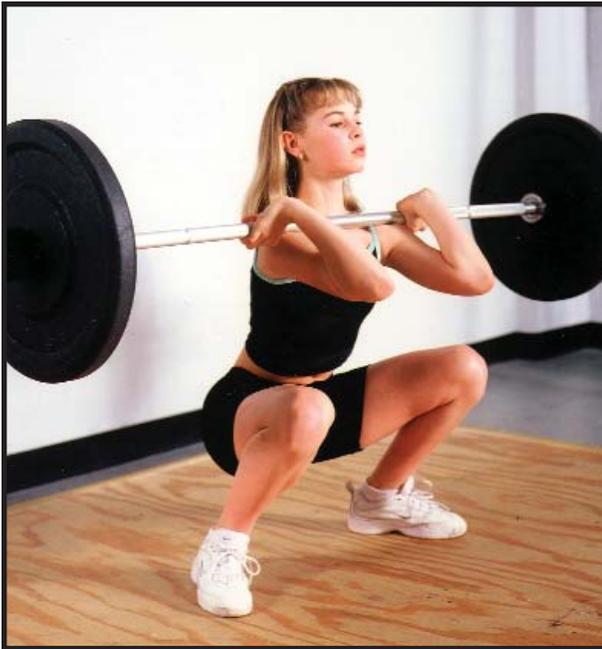
Photo: Reg Bradford

weightlifting (i.e., the snatch and the clean and jerk) have higher bone densities than children who do not use weights, and that clinical research has not shown any correlation between weight training and epiphysial damage. Further, an extensive Russian study on young athletes, published in a book entitled *School of Height*, concluded that heavy lifting tends to stimulate bone growth in young athletes rather than inhibit it.

Two possible reasons for the fear that weight training could stunt growth are that weightlifters tend to possess more muscle mass than other athletes and that smaller athletes are attracted to the sport. In gymnastics, the average height of elite athletes has steadily declined in the past several Olympics because shorter athletes tend to be more successful in this sport. But saying that weightlifting makes you shorter because many elite weightlifters are short would be like saying that basketball makes you taller because most professional basketball players are tall!

## The Numbers Game

Risk of injury is another area of concern for some coaches and parents. In this regard, it's instructive to look at the many studies that have measured the rate of injuries associated with weight training compared to other sports. For example, a study published in the November/December 2001 issue of the *Journal of American Academy of Orthopaedic Surgeons* cited research showing that in children aged 5 to 14 years, the number of injuries from bicycling was almost 400 percent greater than from weightlifting! Also, in a review paper on resistance training for prepubescent and adolescents published this year in *Strength and Conditioning Coach* (Vol. 9, No. 3), author Mark Shillington reported in a screening of sports-related injuries in school aged children that resistance training was the nominated cause of 0.7 percent (or 1576 injuries) compared to 19 percent for football and 15 percent for baseball. Further, the primary



**Kelsey Weisheit, who has competed in the Junior Nationals, demonstrates excellent technique in the clean. When she was 12 years old, Kelsey was able to clean 15 pounds over her bodyweight after only a few months of training.**

cause of injury in the studies I've examined is improper technique.

The simple truth is that weight training and the competitive lifting sports are among the safest activities an athlete can participate in, and this fact is known worldwide. For example, renowned Russian sport scientist Vladimir Zatsiorsky in his book *Science and Practice of Strength Training* had this to say about the dangers of weight training: "The risk of injury for a well-coached strength training program has been estimated to be about one per 10,000 athlete-exposures," with an athlete-exposure being defined as one athlete taking part in one training session or competition. "Compared to tackle football, alpine skiing, baseball pitching, and even sprint running, strength training is almost free of risk."

Siff agrees with Zatsiorsky's assessment, but adds that it is ridiculous to condemn many sporting activities solely because of presumed increased injury risk. "Many school sports place the bodies of youngsters in danger—it is the nature of sport and, if one is going to take part in any physical activities, no matter how well controlled, there is going to be a

greater risk of injury than if the kids sat in front of the TV," says Siff. "On the other hand, the sort of heavy loading imposed on the child's growing body may well equip it better to cope with the normal physical stresses of life, as is suggested by research which reveals a high incidence of back pain, spinal dysfunction, osteoporosis and arthritis among people who are sedentary."

Despite these facts, many medical experts still refuse to endorse heavy lifting for young athletes, and their conservative stance is often taken to the extreme. In one article published last year in a professional journal for pediatric medicine, the following recommendations were made: "Preadolescents and adolescents should avoid competitive weight lifting, power lifting, body building, and maximal lifts until they reach physical and skeletal maturity." This statement implies that athletes should not be lifting heavy until they are at least old enough to vote!

Although using lighter weights seems the safest way to train, physics suggest otherwise. According to Siff, the lighter weights "can be accelerated more

rapidly than heavier loads or in ways that deviate further from the body than heavy loads. This means that movement under these more modest conditions can produce much greater forces on the body, which is precisely what we are trying to minimize. We must not fall for the fallacy that training with heavy weights necessarily imposes greater forces and torques on the body. This simply is not true."

From an anecdotal perspective, it should be pointed out that virtually all the world's best Olympic-style weightlifters in the past three decades began lifting before they were teenagers. One of the most notable examples is Naim Suleymanoglu, a Turkish lifter who broke senior world records when he was just 15 years old, and went on to win three Olympics without suffering any significant injuries.

## Can You Handle the Truth?

Whether you look at research studies, practical experience or the basic laws of science, the fact is that weight training is safe for kids and can help prevent injuries and increase performance. It's not risk free, but it is certainly safer than most sports. To minimize the risk, BFS holds clinics not only to teach the athletes how to lift and spot properly but also to instruct coaches in how to teach proper technique. As the proverb goes, "Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime."

The success and popularity of BFS clinics are solid proof of the merits of early weight training. As our young athletes strive to achieve the highest levels in competitive sports, they must participate in serious training at a younger age than the champions of the past. Such is now the price of success. And for young bodies to handle the stress of this training safely, weight training is essential. **BFS**