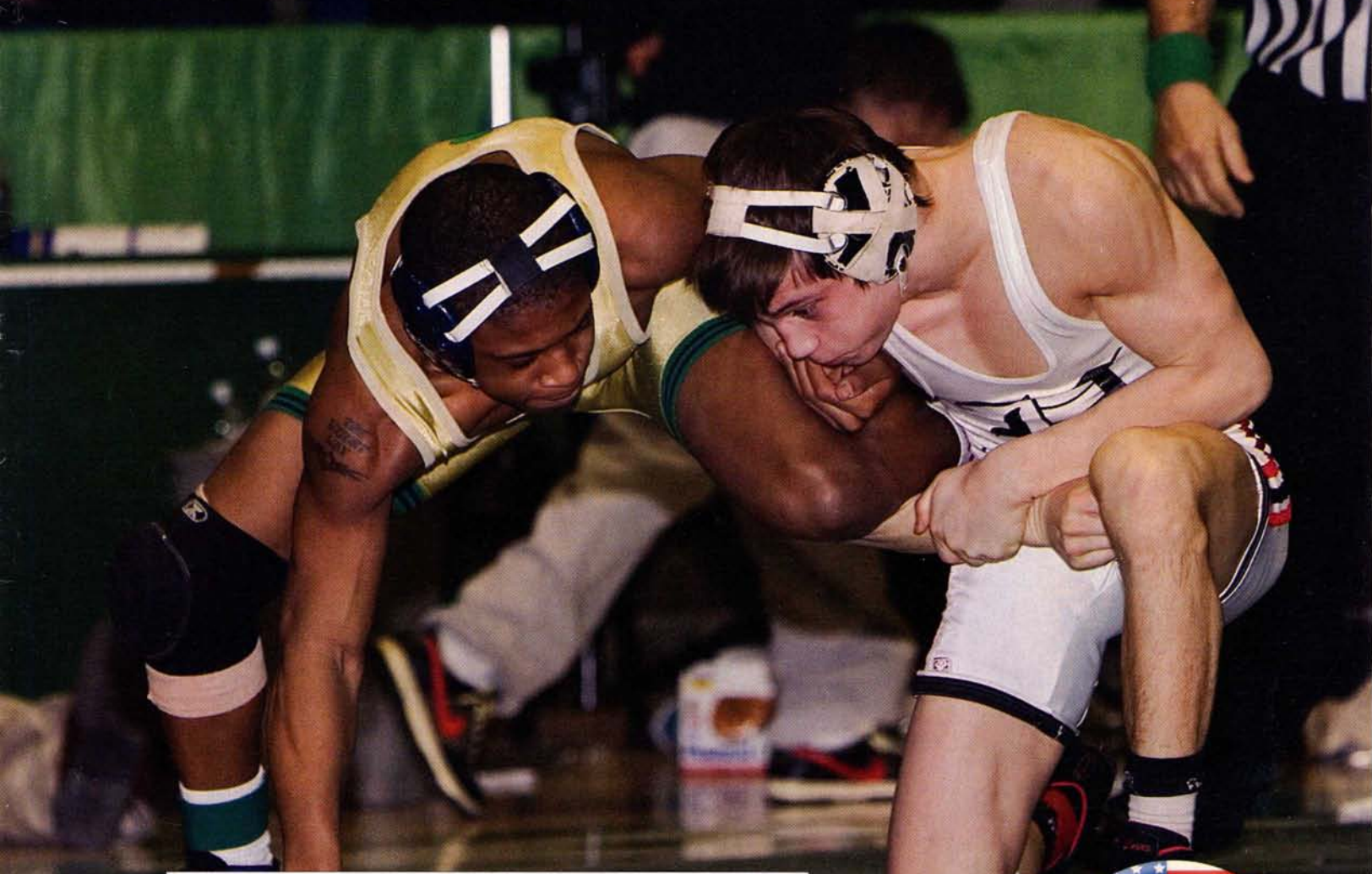


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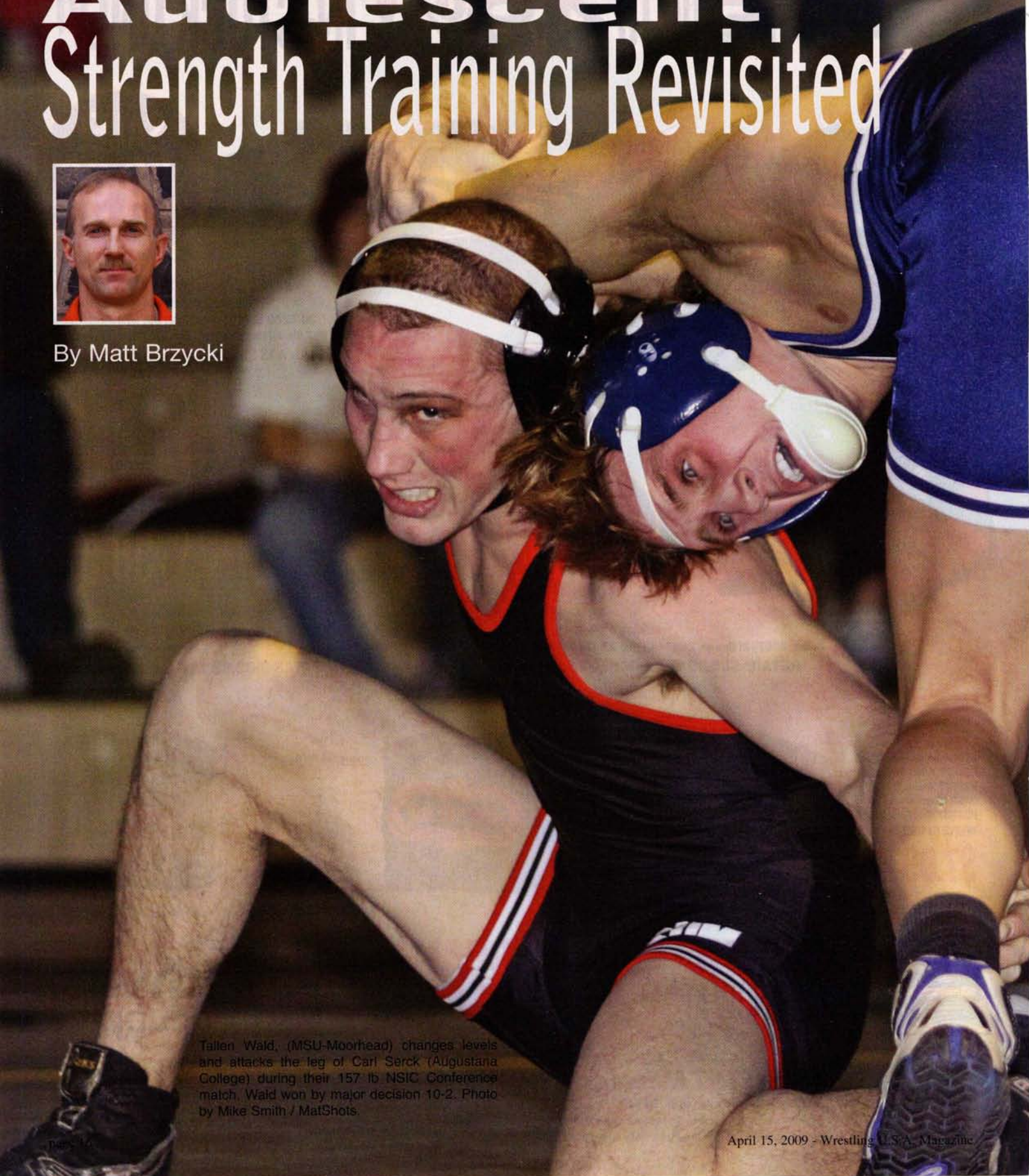
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# Adolescent Strength Training Revisited



By Matt Brzycki



Tallen Waid, (MSU-Moorhead) changes levels and attacks the leg of Carl Serck (Augustana College) during their 157 lb NSIC Conference match. Waid won by major decision 10-2. Photo by Mike Smith / MatShots.



**T**wenty years ago - April 15, 1989, to be exact - *Wrestling USA Magazine* published an article that I wrote called "Adolescent Strength Training." A lot was different back then.

At the time that the article was published, the Berlin Wall separated two Germanys. The Soviet Union was fully intact and its troops had just left Afghanistan. Iraq was ruled by Saddam Hussein. There were about 1.5 billion fewer people on the planet. The World Wide Web was only a vision in the mind of Tim Berners-Lee. The current governor of California was starring in action films. The very thought of a black president in the White House was inconceivable. The Tennessee Titans were the Houston Oilers, the Oakland Raiders were the Los Angeles Raiders and the Saint Louis Rams were the Los Angeles Rams. A first-class postage stamp cost 25 cents. The average price of a gallon of regular unleaded gas was about \$1.20. Minimum wage was \$3.35 per hour. "Bad" meant "awful" (not "good"), "sick" meant "ill" (not "exceptional") and "the bomb" meant "a nuclear weapon" (not "the greatest"). And I was a 31-year-old assistant strength coach at Rutgers University with most of my hair. My, how times have changed.

Also different then was the conventional wisdom regarding strength training for youths, especially children. A generation ago, it had been believed that doing any strength training prior to the development of secondary sexual characteristics would damage their growth plates and, thus, impair or "stunt" their growth. As a result, it was recommended that youths wait until the age of about 13 or 14 before engaging in strength training.

While these fears were certainly well intended, it turns out that they were unfounded. Although there is no clear-cut borderline for determining an appropriate age, research has shown that children as young as 10 can participate in strength training without risk of injury provided that certain guidelines are followed.

With that, let's revisit strength training for adolescents and take a fresh look at strength training for children. (Note: The term "children" refers to boys and girls who have not developed their secondary sexual characteristics which is about the age of 11 in girls and 13 in boys; "adolescents" refers to boys aged 14 to 18 and girls aged 12 to 18. The term "youth" encompasses children and adolescents.)

## **BENEFITS**

Strength training can be quite beneficial for young athletes. First and foremost is the fact that it can significantly improve their strength. As youths age, they will increase their strength from normal growth and maturation. However, these processes may very well be expedited by strength training.

Having greater strength can reduce the frequency and severity of injuries and enhance athletic potential/performance. Like all other physical activities, strength training produces an expenditure of calories that can help establish a favorable percentage of body fat and improve appearance. Moreover, youths can increase their self-confidence and self-esteem during the all-important identity-forming years. (One thing that should not be expected in children and younger adolescents, though, is a noticeable increase in their muscular size.)

## **FITT PRINCIPLES**

Youths can improve their strength by following several principles of physical training. The principles can be organized under the acronym FITT which stands for frequency, intensity, time and type. Incorporating these principles will enable youths to do their strength training in a manner that is effective, efficient and safe.

### **Frequency**

Care must be taken to ensure that there is an adequate amount of recovery between workouts. Children should do strength training once or twice a week on non-consecutive days. As they age and mature physically and emotionally, strength training can be increased to two or three times per week on non-consecutive days.

### Intensity

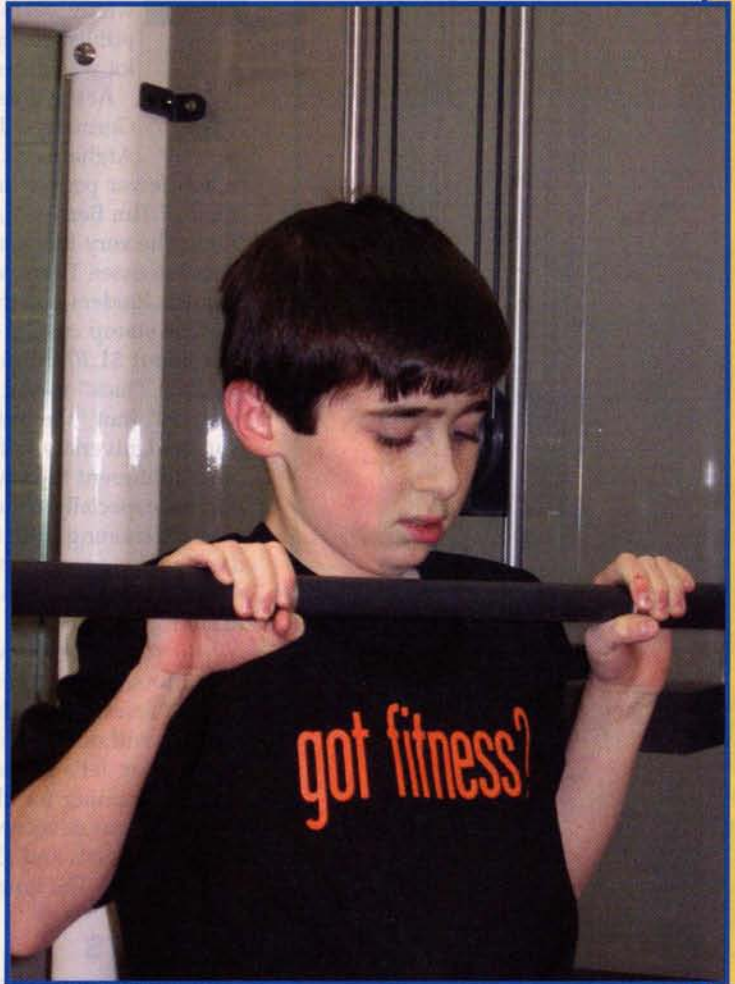
An appropriate level of intensity (or effort) is one that reaches or approaches muscular fatigue. This is the point where no additional repetitions can be done with good technique. Because of their physical and mental immaturity, children should not train to muscular fatigue. Instead, children should terminate a set a few repetitions short or when they feel that they have given a decent effort. As children get older and more mature, they should gradually increase their level of exertion.

### Time

When it comes to strength training, more is not necessarily better. The workouts of children should be limited to about 20 to 30 minutes; the workouts of adolescents should be limited to about 30 to 40 minutes. It is not necessary for them to spend much more time than that engaged in strength training. Lengthy workouts can lead to disinterest and dissatisfaction which will decrease adherence to the program. Furthermore, lengthy workouts can increase the risk of over-use injuries.

### Type

A muscle can be fatigued with a resistance that comes from a wide assortment of equipment including machines, barbells, dumbbells, resistance bands and sandbags. Youths can



also benefit from doing exercises that involve their own body-weight (such as push-ups, dips, chins/pull-ups and sit-ups/crunches).

### ADDITIONAL CONSIDERATIONS

Besides the FITT principles, there are additional things to consider. Here are more elements that encompass a well-rounded program of strength training.

#### Progression

In order for a muscle to get stronger, it must be "asked" to do progressively harder work. To accomplish this, an attempt must be made to increase either the resistance used or the repetitions performed in relation to a previous workout. Once the recommended number of repetitions is attained, the progressions in resistance should be made in small increments (preferably no more than about 5%).

#### Sets

There is no agreement as to how many sets of an exercise should be done by youths. Most of the recommendations, though, are between one and three sets. Doing one set of each exercise represents an efficient way of training and is recom-

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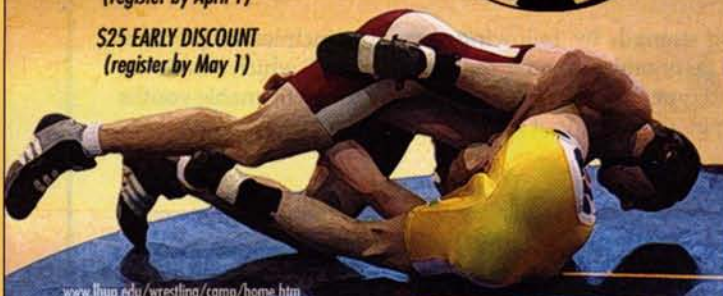
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mended. The emphasis should be on the quality of work that is done in the weight room not the quantity of work.

### Repetitions

It is generally agreed that youths need to perform a higher number of repetitions than adults. Doing higher repetitions necessitates using a lighter resistance; this, in turn, reduces the stress placed on their bones and fibrous tissues (such as tendons and ligaments). Children should do about 20 - 25 repetitions for exercises involving their hips, 15 - 20 repetitions for their legs and 10 - 15 repetitions for their upper body. As they get older and more mature, those ranges can be reduced over time to about 15 - 20 repetitions for exercises involving their hips, 10 - 15 repetitions for their legs and 8 - 12 repetitions for their upper body. Youths should not try to "max out" or do low-repetition sets.

### Technique

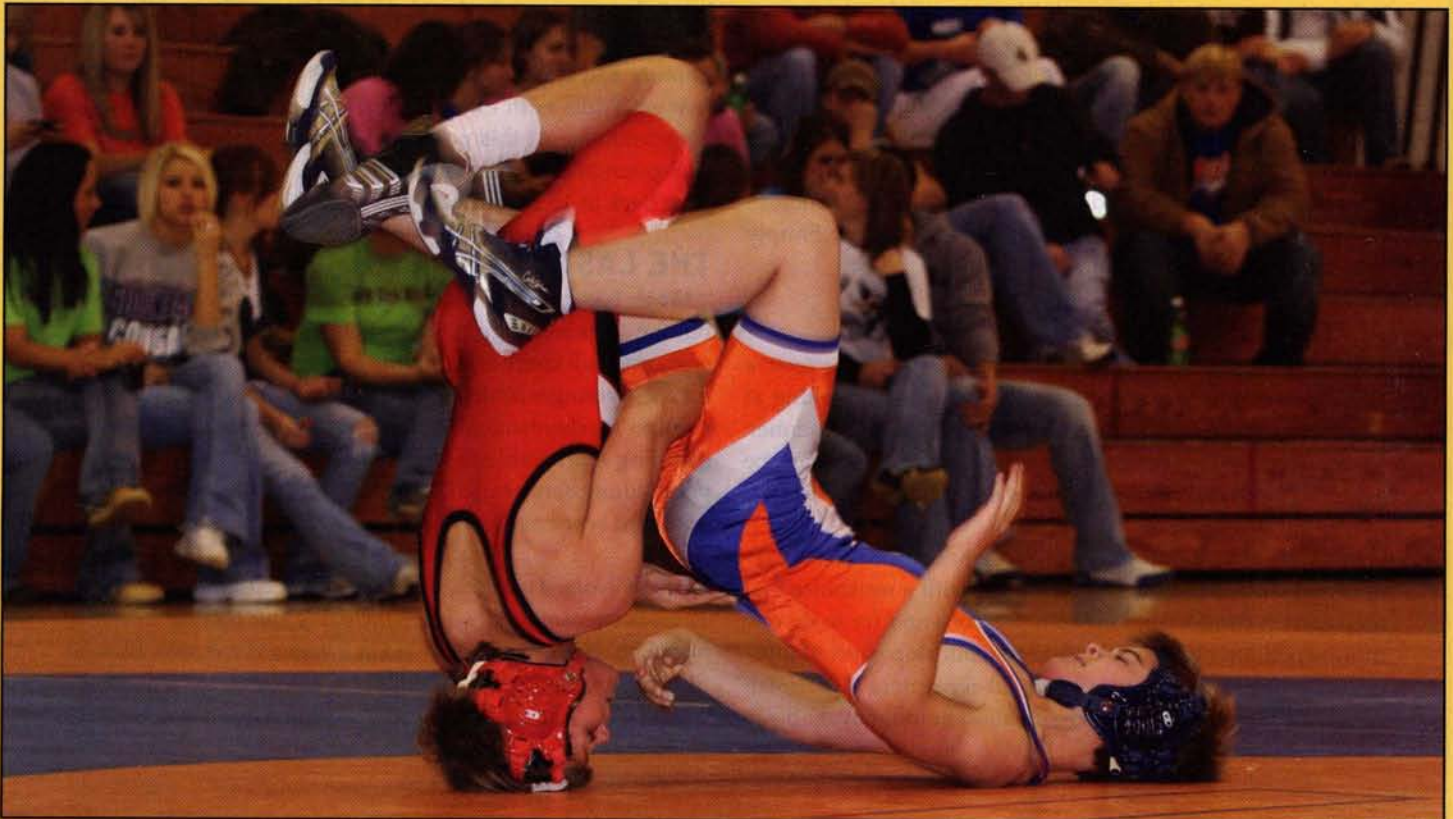
To make each exercise safer and more effective, it is important to employ good technique. The resistance should be raised in a deliberate, controlled manner without any jerking movements or excessive momentum. After raising the resistance, there should be a brief pause in the mid-range position (that is, the position of full muscular contraction). Then, the resistance should be lowered in a deliberate, controlled manner. A repetition should also be done throughout the greatest

possible range of motion that safety allows: from a full stretch to a full muscular contraction and back to a full stretch. Emphasis should be placed on how the weight is lifted, not how much weight is lifted.

### Volume

Children should perform about 10 exercises (one set each) per workout. As they age and mature physically and emotionally, the volume can be increased to about 17 exercises (one set each) per workout. This lower volume of exercises decreases the potential for overuse injury and increases adherence to the program.

For children, a workout can consist of one exercise (one set each) for their hips, hamstrings, quadriceps, calves/dorsi flexors, chest, upper back (the "lats"), shoulders, forearms, abdominals and lower back; for adolescents, a workout can consist of one exercise (one set each) for their hips, hamstrings, quadriceps, calves/dorsi flexors, biceps, triceps, forearms, abdominals and lower back; two exercises (one set each) should be done for their chest, upper back and shoulders; and two exercises (one set each) for their neck. If multiple sets of an exercise are done, the total number of exercises should be reduced accordingly so as to stay within the aforementioned boundaries for the time (duration) and volume of training.



South Dakota - 103 lbs. David Kocer (Wagner) is standing on his head on the roll through by Mitch Heisinger (Parkston). Kocer won by fall at 5:59. Photo by Denelle Dvroak.

### Sequence

A workout should begin with exercises that influence the largest muscles and proceed to those that involve the smallest ones. In general, the order should be hips, upper legs (hamstrings and quadriceps), lower legs (calves or dorsi flexors), torso (chest, upper back and shoulders), upper arms (biceps and triceps), lower arms (forearms), abdominals and lower back. Exercises for the neck can be done at the beginning of the workout or just after the lower body (prior to beginning exercises for the torso).

### Records

The value of keeping accurate records cannot be overemphasized. A record is a log of what youths have accomplished during every exercise of every workout. This is an extremely useful tool to monitor their progress and make their workouts more meaningful. It can also be used to identify exercises in which they have reached a plateau. In the unfortunate event of an injury, the effectiveness of the rehabilitative process can be gauged if there is a record of their pre-injury strength levels.

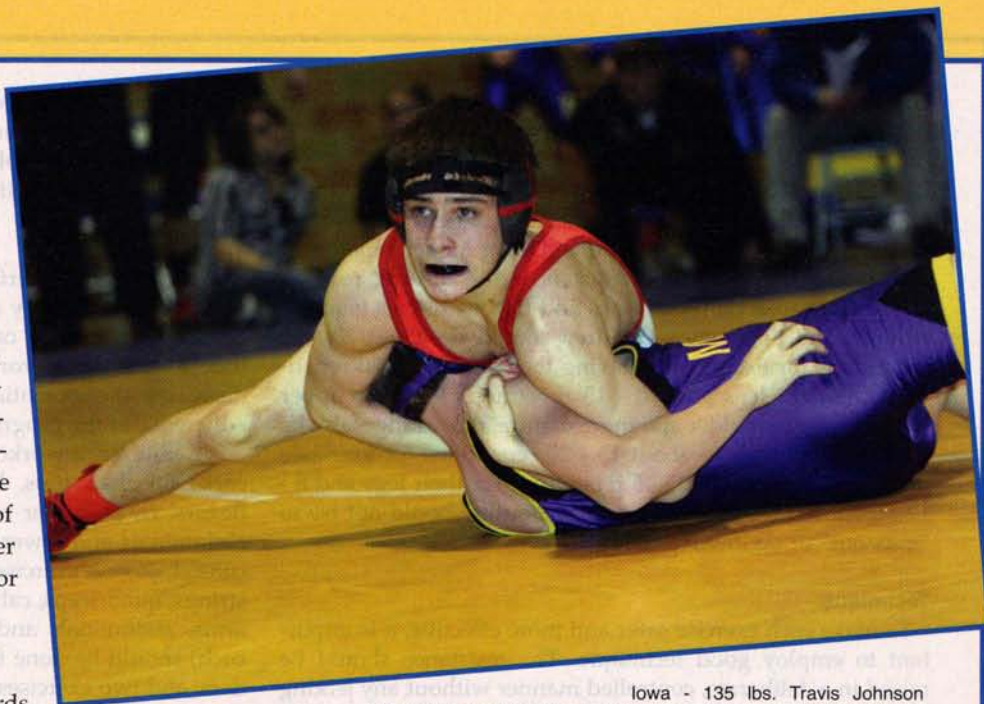
### Supervision

It is of utmost importance that the strength training of youths be supervised by competent and qualified individuals. To be safe and effective, their workouts must be overseen very closely. Youths should receive adequate instruction in the proper performance of all exercises/activities. Simply put, an emphasis must be placed on safety.

## A PRACTICAL APPLICATION

As noted earlier, one element that is necessary for effective strength training is progression. It is well worth looking at how progression can be incorporated in a practical manner. Recall that with strength training, progression can be achieved by doing more repetitions or using more resistance in comparison to a previous workout.

An application of progression that works well with beginners and children is to have them start with a resistance that they can lift comfortably for 15 repetitions and try to do one more repetition every workout or two but stop short of muscular fatigue. When they achieve 20 repetitions, the resistance should be increased by the smallest amount available in



Iowa - 135 lbs. Travis Johnson (East Buchanan) looking up for the pin on Brendan Wanatee (East Marchall). Johnson would get the pin in 1:31. Photo by Johnnie Johnson.

their next workout and then drop back to doing 15 repetitions.

Example: In today's workout, Ryan did 15 repetitions with 30 pounds in the lat pulldown. In his next five workouts, he lifted the same weight for 16, 17, 18, 19 and 20 repetitions. In his next workout, the resistance was increased to 31.25 pounds and he dropped back to 15 repetitions. In his next five workouts with that resistance, he did 16, 17, 18, 19 and 20 repetitions. At this point, the resistance was increased to 32.5 pounds and the aforementioned cycle repeated (dropping back to 15 repetitions).

## THE LAST REP

Much has changed since that 1989 article was published but the same message at the end of it remains appropriate: "I encourage all coaches to initiate a strength training program for their younger athletes. In addition to being an injury-prevention mechanism, weight training is an excellent way of instilling a favorable work ethic at an early age. Make sure your youngsters realize the value of dedication, discipline and hard work as a way of achieving athletic ambitions."

*Editor's Note: Matt Brzycki has authored, co-authored or edited 17 books on strength and fitness including four that are devoted to wrestling. His latest book is Youth Fitness: An Action Plan for Shaping America's Kids.*