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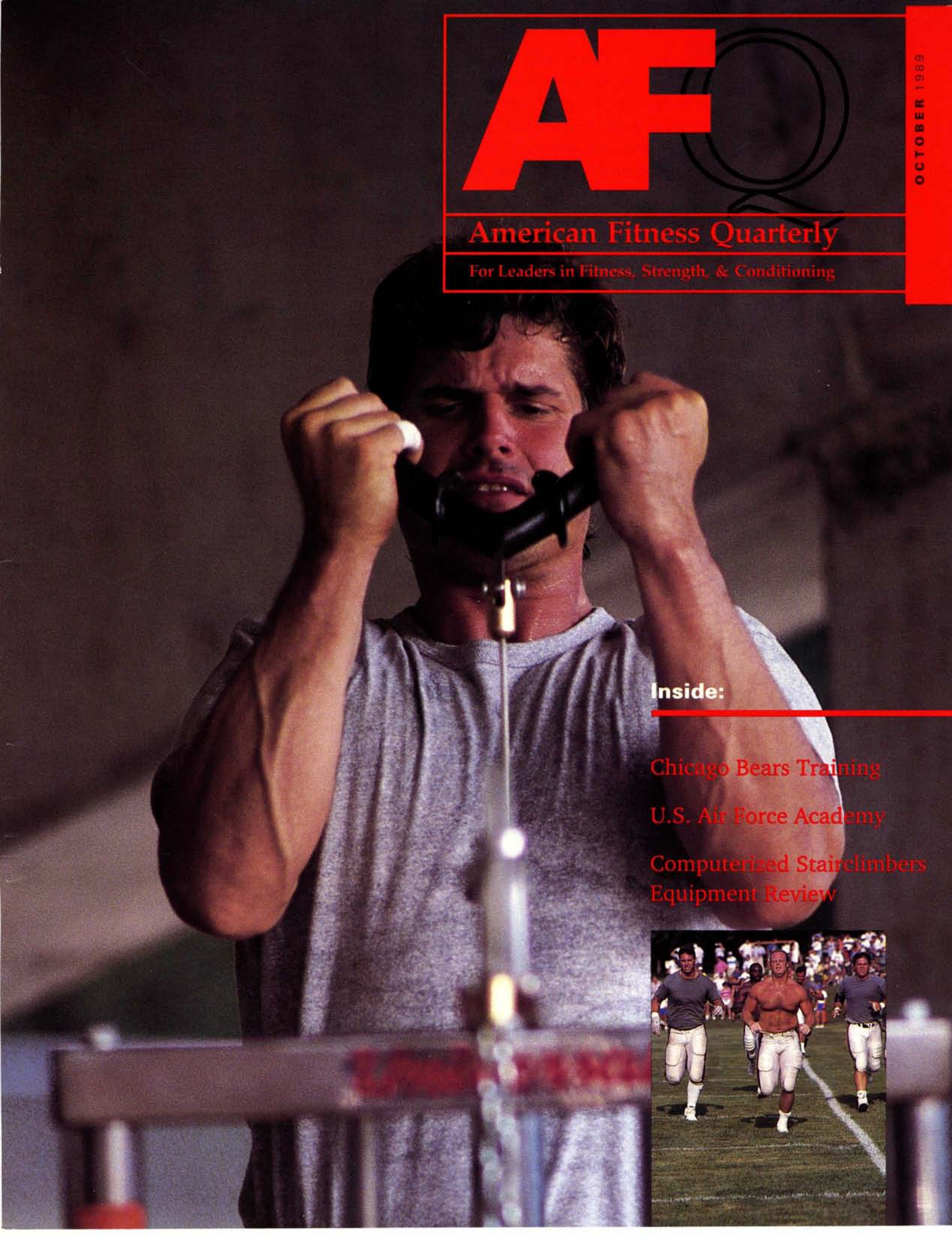

Inside:

Adolescent Strength Training

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Although calisthenics and running activities have been viewed as an acceptable means of physical conditioning for youngsters, strength training has yet to gain such favor. Much of this reason is that the literature contains very little information that can be applied in a practical manner to meet the needs of the adolescent. This is unfortunate, since younger individuals have a great deal to gain from weight training. A safe, practical and productive strength program can prepare youngsters for the demands of their particular sport. Strengthening their muscles, joints and connective tissue is an excellent precautionary measure against injury. In addition, young athletes can perform closer to their potential by increasing their functional strength.

At What Age Can You Begin?

The answer to the question, "At what age can a youngster begin weight training?" is not so simple. The so-called "adolescent growth spurt" is a period of accelerated increases in height and weight that occurs with the onset of adolescence. The age of onset and the duration of the "spurt" may vary considerably from one individual to another. For example, the average boy experiences this rapid period of growth at about the age of 13. However, it may begin as early as 10.5 or as late as 16. For the average girl, the growth spurt occurs around the age of 11, but may begin as early as 7.5 or as late as 14.5. These wide variations in maturation can create a difficult and confusing dilemma for the coach, physical educator or parent who wishes to get their youngsters started on a weight training program.

Bone development is often used as an indicator of body maturity; an individual's skeletal age can be predicted from X-rays of bones in various parts of the body. Chronologically, a youth might be 13 years old but may only be 11.5 in terms of skeletal maturation; conversely, another 13 year old might possess the skeleton of a 14.5 year old. As you can see, there is no clear cut borderline since everyone "ages" at different rates. In any event, most youngsters are physically mature enough to begin weight training at the age of 13 or 14. The best advice, however, is to proceed cautiously and carefully.

The "Growth Plates"

Some of the concern in adolescent strength training is the potential for various overuse injuries associated with highly repetitive activities. In addition, there is concern in the risk of sustaining epiphyseal injuries. The so-called "growth plates" are the structures responsible for longitudinal growth of the immature bone. The growth plates are cartilaginous discs that lie between the central shaft of the bone (or diaphysis) and the ends of the long bone (or epiphysis) until full maturation occurs. Bone growth ceases when these discs are replaced by bone. The diaphysis and epiphysis are united or "fused" and growth in length is no longer possible. Excessive loads on immature bones or extreme weight-bearing activities may interrupt the normal growth pat-

terns or predispose an individual to injury.

Implications for Weight Training

Several precautionary measures will significantly reduce a young individual's risk of injury. Youngsters should perform each exercise throughout the greatest possible range of motion that safety allows. This will promote or maintain flexibility. Also, require your younger athletes to raise and lower weights in a controlled manner. EXPLOSIVE LIFTING IS DANGEROUS! If explosive lifting doesn't cause immediate musculoskeletal damage, it will certainly predispose your athletes to future injury.

Avoid movements that place an unreasonable amount of stress on the musculoskeletal system so as not to disturb the growth plates. Potentially dangerous movements that have been identified as being orthopaedically unsafe include barbell squats (which compress the spinal column and create undesirable shear forces in the knee joint), power cleans, snatches and plyometrics (especially those that are performed vertically).

A productive workout need only take 30-40 minutes if it's done right. There's absolutely no reason why an adolescent should spend much more time than this in the weight room. Marathon workouts are generally associated with overuse injuries in the muscles and connective tissue. Remember to emphasize the major muscle groups (hips, legs, upper torso) and the neck (if the athlete is involved in a combative sport such as football or wrestling) as a safeguard against injury. Workout cards are an extremely valuable tool in making a youngster's routine more meaningful and in providing a guide as to what should be accomplished.

Exercises that involve the bodyweight as resistance (e.g. dips, chins, pushups, situps) along with partner-resisted movements are very productive for building strength. In particular, dips and chins work every major muscle in your upper torso. When selecting exercises, keep in mind that youngsters with relatively small frames may not fit properly on some machines. On the other hand, when it comes to barbells it may be said that "One size fits all!"

"Maxing Out"

Many of your younger athletes will want to "max out" to see how much weight they can lift for one repetition. Never...and I mean NEVER...have them "max out." In fact, younger athletes should never do less than 10 repetitions on any exercise. Have them use slightly higher repetition ranges than your older athletes such as 20-25 for the hips, 15-20 for the legs and 10-15 for the upper torso. The higher repetition ranges will necessitate using somewhat lighter weight which will reduce musculoskeletal stress. Seeing how much you can lift should not be viewed as a "right of passage" into adulthood. "Maxing out" substantially increases your athletes' risk of injury and proves absolutely nothing. Remember, the winner of an athletic event has never been decided by a bench press contest.

Intensity

A strength training program will produce excellent results if performed with a high level of intensity. High Intensity Training (H.I.T.) is characterized by performing each exercise to the point of muscular failure. To increase the intensity further, a training partner can assist the lifter in performing 3-4 additional post-fatigue reps immediately following muscular exhaustion. These extra reps can either be "forced reps" or "breakdowns".

Needless to say, most young athletes will have a problem handling this level of intensity. There's nothing wrong with having your younger athletes stop a few reps short of muscular failure. Gradually, you can have them train to exhaustion as they mature physically and psychologically. The next step would be to incorporate some form of post-fatigue repetitions. I encourage the use of "breakdowns" instead of "forced reps" with younger athletes.

continued on page 30—

ability guarantees that your stimulated muscles will become larger and stronger in the most efficient manner.

4 Try Training Three Times PerWeek

If you haven't consistently tried training your overall body three times per week, please do so. You won't regret it.

For muscle building, if weeks didn't exist, then it might be necessary to invent them. Evidence shows that a seven-day cycle of training is almost perfect for the production of the best results from exercise. This is primarily true, it seems, because it provides needed rest, recovery, and irregularity of training.

A first workout is performed on Monday, a second on Wednesday, and a third on Friday. On Sunday your body is expecting and is prepared for a fourth workout, but it doesn't come. Instead, it comes a day later, on Monday of the next week when your body is not expecting it. This schedule of training prevents your body from falling into a rut, since your system is never quite able to adjust to this irregularity of training. And with almost forty-eight hours of rest between two workouts and almost seventy-two hours after the third, a Monday-Wednesday-Friday schedule allows consistent growth stimulation and consistent recovery over compensation within your major muscle groups.

5 Reduce Your Training to Five Times in Two Weeks

Training three times a week, once you reach a certain level of strength, can also lead to overtraining. As you get stronger, you must gradually reduce your overall training by doing fewer exercises per routine or by working out less frequently.

Your first reduction in overall training should be in frequency per week. Going from three times per week to two times per week is often too big of a reduction. A far better reduction is to go from six times in two weeks to five times in two weeks.

In other words, instead of training on a weekly Monday-Wednesday-Friday-Monday-Wednesday-Friday schedule—your training would entail a Monday - Thursday - Saturday - Tuesday - Friday schedule. You'd have an extra days rest between all of your workout days, except the Saturday workout of the first week.

As you eventually get stronger in your five-times-in-two-weeks routine and begin to overtrain, your next reduction should be in your number of exercises. Your exercises should be decreased by several, say from sixteen exercises to fourteen. Eventually, you'll have to go to twice-a-week training and twelve or fewer exercises.

In my opinion, you're always better to err in the direction of doing too few exercises and too few exercise sessions per week, than doing too many

6 Emphasize Carbohydrates After Your Workout

High-intensity exercise involves the use of an energy source within your body called glycogen. Glycogen is stored in your muscles and your liver. The most efficient way to replenish your glycogen stores is by consuming carbohydrate-rich foods. Muscles seem most responsive to glycogen storage during the first several hours after heavy exercise. Therefore, your first meal after a high-intensity routine should contain a large percentage of carbohydrates.

7 Take An Occasional Layoff

Another way to prevent overtraining is to take an occasional layoff. How long should your layoff last? It should last a full week. Ten days would be even better. You could take your last workout on a Friday and re- sume training on Monday of the second following week. Two weekends of rest can do wonders for your recovery ability, motivation, and future progress.

In fact, I strongly recommend that you take a full ten-day layoff from training every six months. Your body will love you for it.

To order a copy of 100 High-Intensity Ways to Improve Your Bodybuilding, please send $17.50 to: 100 High-Intensity Ways, P.O. Box 809014, Dallas, TX 75380-9014

Adolescent Strength Training

continued from page 9—

("Breakdowns" or "stripping the weight stack" is where a training partner quickly reduces the starting weight by about 25-30% and the lifter performs his 3-4 post-fatigue reps with the lighter resistance.)

One More Rep

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 improving their self-image during the identity-forming years. Strength training can also instill 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.

All of this can be accomplished provided that the strength program is designed with safety in mind.

Reference:

Brzycki, Matt. *A Practical Approach To Strength Training*. Grand Rapids, Michigan: Master Press, 1989.

Note: *A Practical Approach To Strength Training* will be available in the Fall of 1989. Please write: Masters Press, 5025 28th Street SE, Grand Rapids, Michigan 49506 or call 1-800-722-2677 for details.