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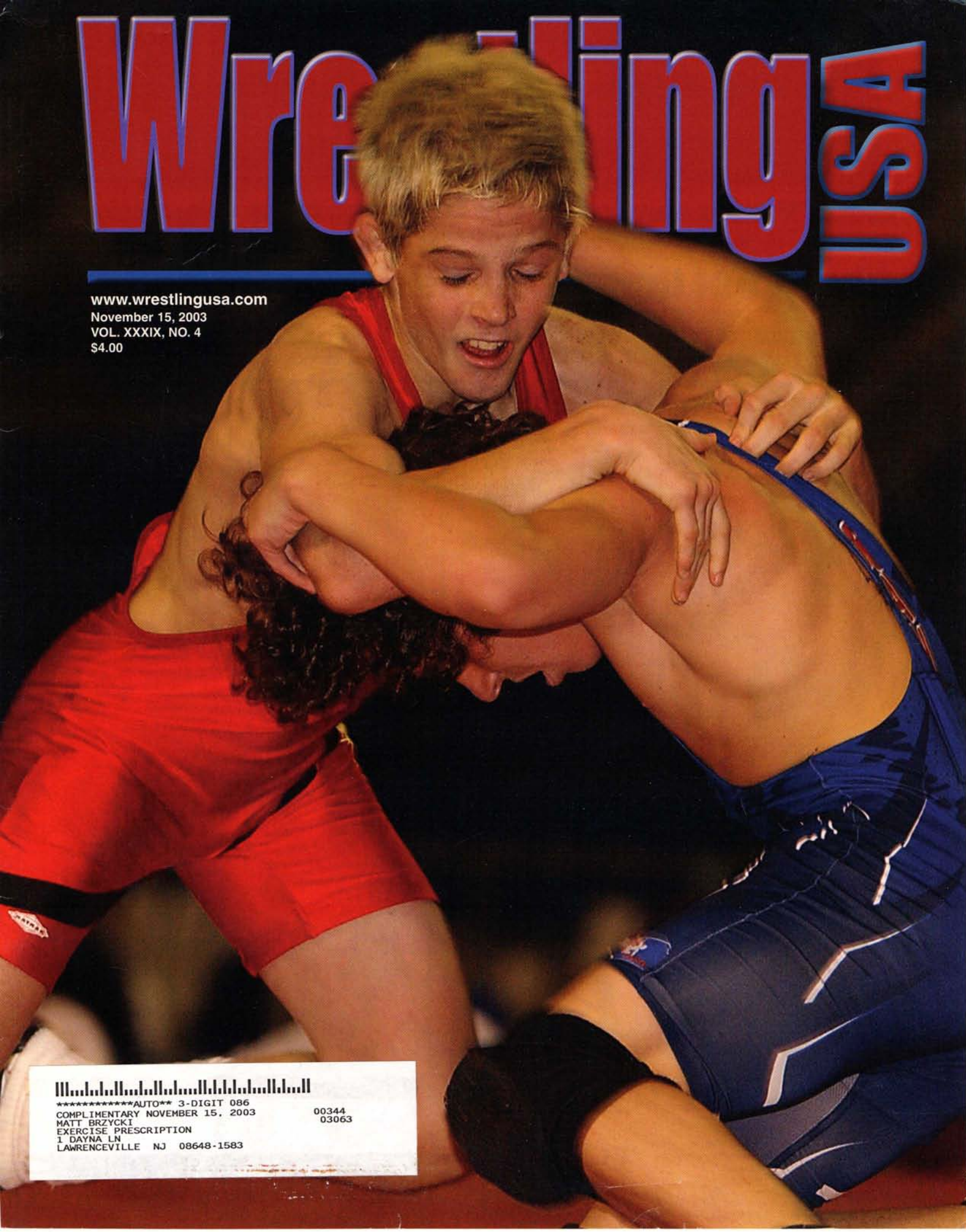


The Importance of Recovery

By Matt Brzycki

There are three basic requirements for increasing muscular size and strength. First, your muscles must be loaded with some form of resistance that is made progressively more challenging over time. Second, your muscles must receive adequate nourishment by consuming appropriate amounts of carbohydrates, protein and fat along with sufficient quantities of vitamins and minerals. And third, your muscles must obtain enough recovery between workouts. It is the third requirement - adequate recovery - that is often ignored.

A CLOSER LOOK

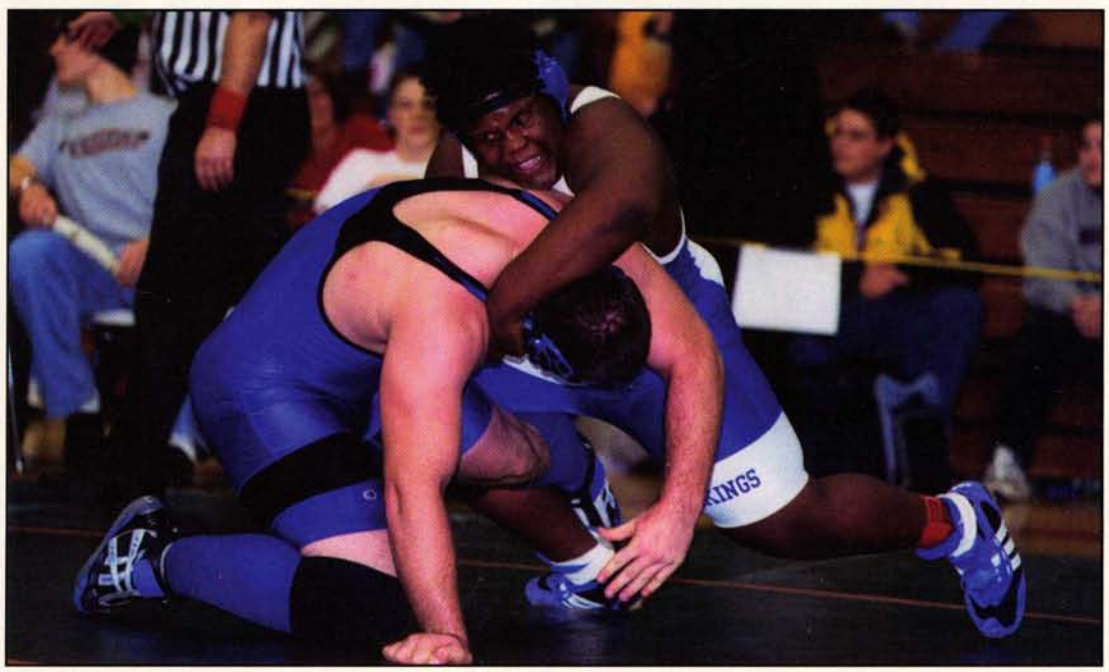
Intense strength training places great demands upon your muscles. In order to adapt to those demands, your muscles must receive an ample amount of recovery between your workouts.

The "compensatory adaptation" to the demands occurs during the recovery process. Believe it or not, your muscles do not get stronger during your workout . . . your muscles get stronger *after* your workout. If the demands are of sufficient magnitude, a muscle is literally torn. Although these tears are quite small - microscopic, in fact - the recovery process is essential in that it allows the damaged muscle enough time to repair itself. Think of this as allowing a wound to heal. If you had a scab and picked at it every day, you would delay the healing process. But if you left it alone, you would permit the damaged tissue time to heal. So in a sense, the recovery following a workout is a process in which damaged tissue - in this case, muscle tissue - is healed.

There are individual variations in recovery ability - everyone has different levels of tolerance for exercise. However, a period of at least 48 hours is usually necessary for muscle tissue to recover sufficiently from an intense workout in the weight room. Keep in mind, too, that intense strength training relies heavily upon carbohydrates as the primary source of energy. Adequate recovery is required to return the carbohydrate (or glycogen) stores to their pre-training levels. It appears as if about 48 hours are also needed to replenish the carbohydrate stores that are depleted as a result of intense physical exertion. As such, it is suggested that you perform your strength training 2 – 3 times per week on non-consecutive days (such as on Monday, Wednesday and Friday). This advice is consistent with the recommendation of the American College of Sports Medicine. (Note that this assumes total-body workouts.) Can you achieve significant improvements in strength by doing just two weekly workouts? Absolutely. In one study that involved 117 subjects, a group that trained two times per week experienced approximately 80% of the gains in strength of the group that trained three times per week.

An appropriate frequency (and volume) of strength training can be likened to doses of medication. In order for medicine to improve a condition, it must be taken at specific intervals and in certain amounts. Taking medicine at a greater frequency or in a larger quantity beyond what is needed can have harmful effects. Similarly, an "overdose" of strength training - in which workouts are done too often or have too much volume - can also be detrimental.

Most individuals respond well to three total-body workouts per week. But because of a low tolerance for strength training, others respond more favorably to two total-body workouts per week. (In rare circumstances, an individual may respond better from one total-body workout per week.) Performing any more than three "doses" of total-body workouts per week will gradually become counterproductive if the demands placed upon your muscles exceed your recovery ability.



Michigan's Cosell Beavers, Dundee, defeats Trevor Schultz, Battle Creek, Harper Creek, 8-4 in the semi-finals of the Jackson Northwest Tournament. Beavers would go on to win the 275 pound weight class. Photo by David Schankin.

IN-SEASON STRENGTH TRAINING

Most authorities have suggested that a muscle begins to lose strength (and size) if it is not adequately stimulated within 48 - 96 hours of a previous workout. Some anecdotal reports suggest that it may be more than this time frame - at least for some individuals. Clearly, however, a loss of muscular strength (and size) will occur after some period of extended inactivity. As an athlete, then, it is important for you to continue strength training even while in-season or while competing. However, you should reduce the number of your workouts to twice a week due to the increased activity level of practices and meets/matches. One workout should be done as soon as possible following a match but not within 48 hours of your next match. So if you wrestle on Saturday and Tuesday, you should do your strength training on Sunday and Wednesday (or Thursday, provided that you have at least 48 hours before your next competition). From time to time, you may only be able to do strength training once per week because of a particularly heavy schedule such as wrestling three times in one week or several days in a row at a tournament.

How do you know if your muscles have had an adequate amount of recovery? You should see a gradual improvement in the amount of resistance and/or number of repetitions that you are able to do over the course of several weeks. If not, then you are probably not getting enough recovery between your workouts – which could be the result of performing too many sets, too many repetitions or too many exercises. Remember, strength training will be effective if it provides an *overload* not an *overdose*.

THE SPLIT ROUTINE

A method that has been popularized by bodybuilders and competitive weightlifters is known as the "split routine." When using a split routine, the body is divided - or "split" - into different parts that are trained on different days. There are many possibilities for a split routine. One example would be to split the muscles such that the hips, legs and mid-section are trained on Monday and Thursday; the chest, shoulders and triceps on Tuesday and Friday; and the upper back, biceps and forearms on Wednesday and Saturday. So in this split routine, each muscle would be trained twice per week during six workouts.

Despite the popularity of split routines, they are no more effective than total-body workouts. In a study involving 30 subjects, one group did a split routine consisting of four workouts per week (two for the upper body and two for the lower body) and another group did two total-body workouts per week. (A third group served as the control and did not train.) After 20 weeks of training, the researchers concluded that both protocols were equally effective in improving maximum strength, increasing lean-body mass and decreasing body fat.

Split routines can be productive as long as they encourage progressive overload and provide adequate recovery. It is the latter area in which split routines often fall short. If a split routine is designed correctly, an individual will not train the same muscles two days in a row. Recall, however, that it takes about 48 hours for your body to replenish its stockpiles of carbohydrates following an intense workout. (Again, carbohydrates are the principal fuel during intense exercise.) So if you trained your lower body on Monday with a desirable level of intensity, you exhausted much of your carbohydrate stores. Even if you train different muscles on Tuesday, your body may not have had enough time to fully recover those carbohydrate stores. Keep in mind, too, that even though you may train part of your body in a workout, you still stress your entire anaerobic energy pathways (which provide metabolic support for your efforts in the weight room). Your energy systems do not recover in parts - they recover as a whole. The researchers in the aforementioned study that compared split routines to total-body workouts noted that doing fewer workouts per week in the weight room "would free more days for recovery or other types of training." This is an important consideration for wrestlers who must invest significant amounts of time in aerobic and anaerobic conditioning and skill development.

If you prefer to use a split routine, make sure that you group your muscles based upon their functions and relations with other muscles. For instance, your triceps and shoulders are used to train your chest and your biceps and forearms are used to train your upper back. As such, muscles with common functions should be trained together.

One final point: From a performance perspective, split routines do not make sense because they are not specific to the muscular involvement in wrestling. When you use a split routine, you train different muscles on different days. However, a selective use of muscles almost never happens during a wrestling match. Rather, you are required to integrate all of your muscles at once. Therefore, it makes little sense for you to prepare for wrestling by training your muscles separately on different days.

THE LAST REP

While there are certainly other important ingredients in a strength-training program, the basic requirements are progressive overload, proper nutrition and adequate recovery. So if you want a muscle to get larger and stronger, you must stress it, feed it and rest it!

Matt Brzycki has been involved in the strength and conditioning of collegiate wrestlers for more than 20 years. Since 1986, he has authored more than 70 articles for *Wrestling USA Magazine*. Reprints of 42 of these articles have been updated and adapted into two books (Wrestling Strength: The Competitive Edge and Wrestling Strength: Prepare to Win). A third book in this series (Wrestling Strength: Dare to Excel) will contain reprints of another 21 articles and be published in the spring of 2004. All books are available through Cardinal Publishers Group (800-296-0481).