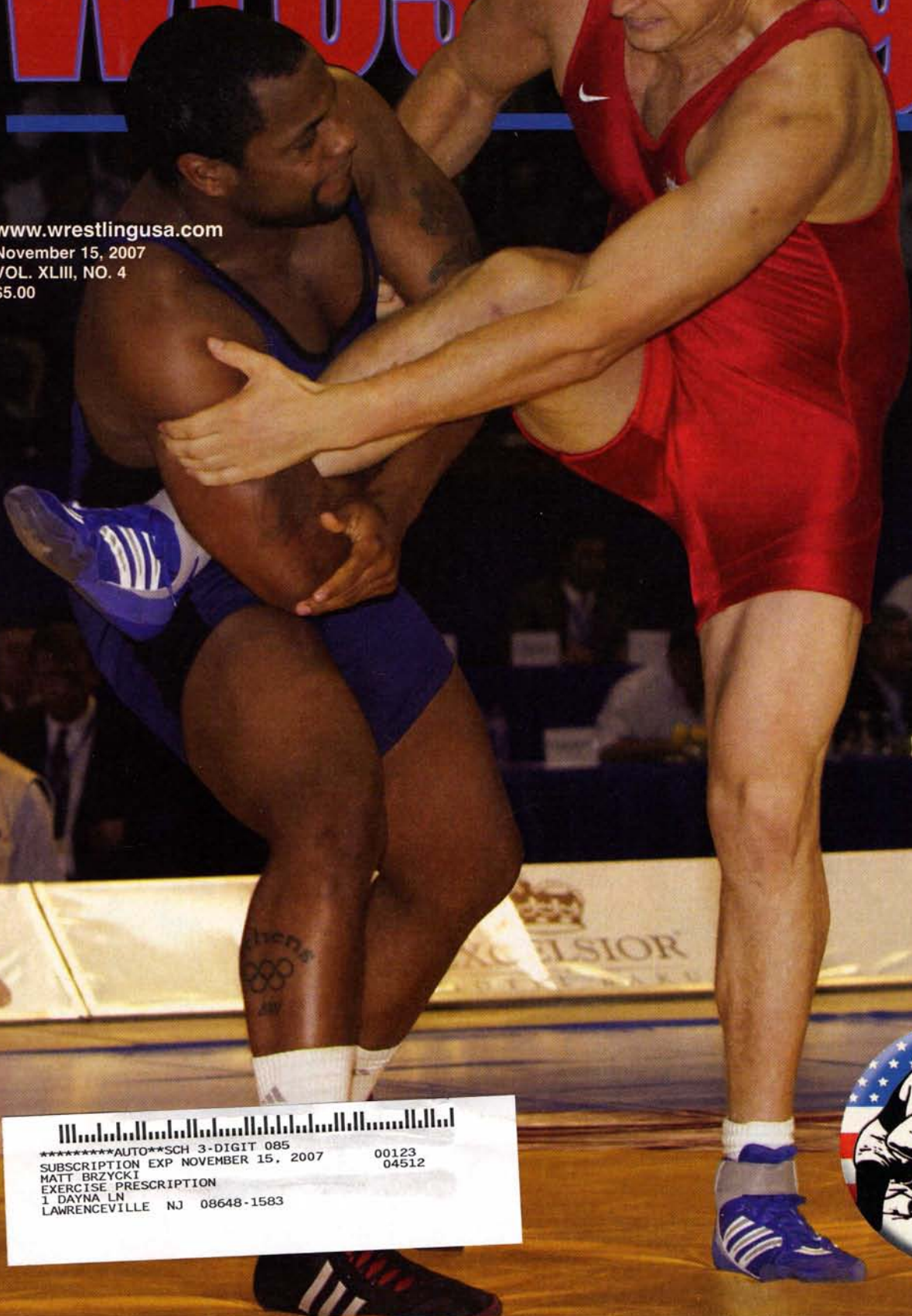


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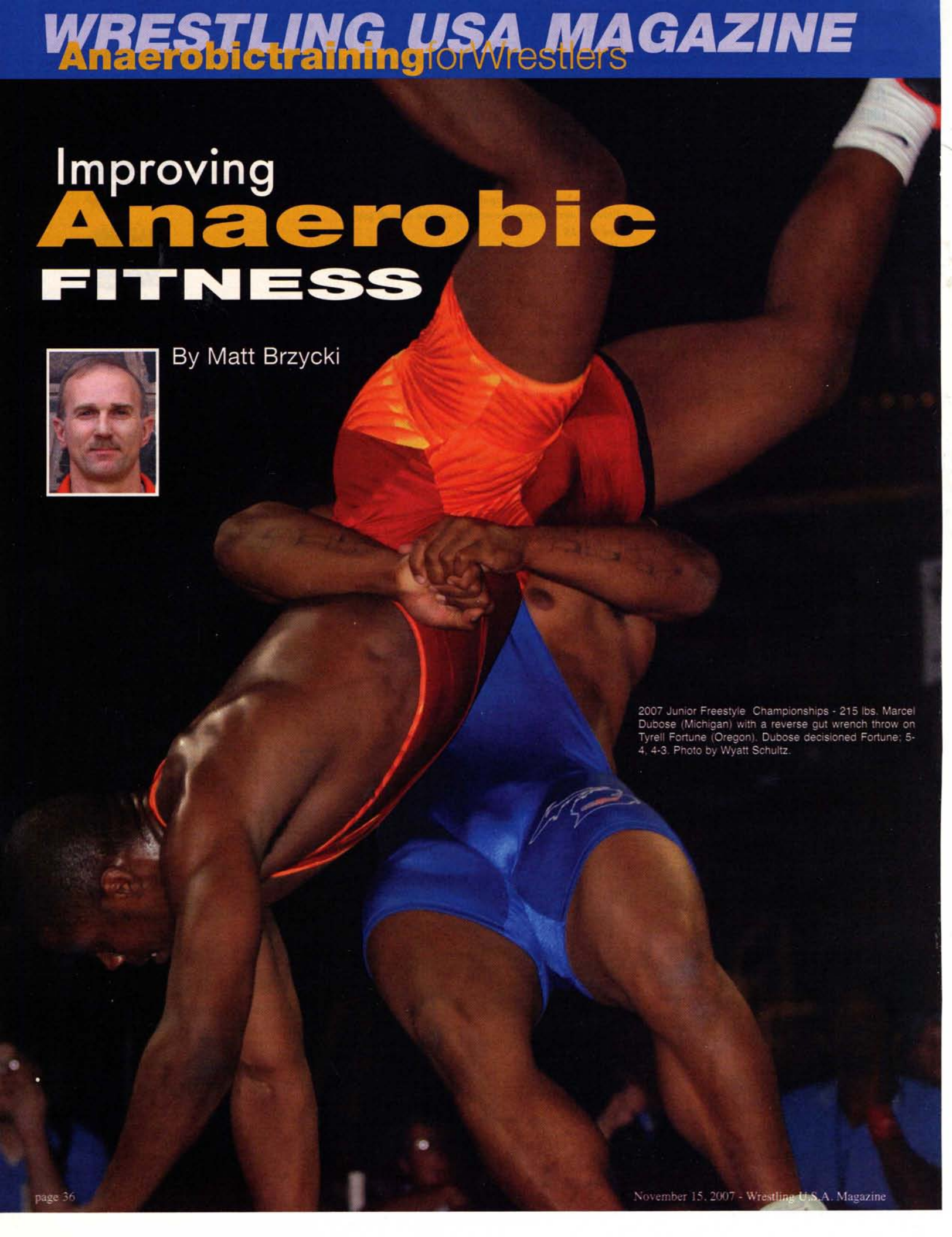
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Improving **Anaerobic** **FITNESS**



By Matt Brzycki

A large, high-contrast photograph of a wrestling match. A wrestler in a blue singlet is performing a reverse gut wrench throw on a wrestler in an orange singlet. The scene is lit with dramatic spotlights, highlighting the athletes' muscles.

2007 Junior Freestyle Championships - 215 lbs. Marcel Dubose (Michigan) with a reverse gut wrench throw on Tyrell Fortune (Oregon). Dubose decisioned Fortune; 5-4, 4-3. Photo by Wyatt Schultz.

The majority of your efforts on the wrestling mat are composed of brief, intense movements that rely heavily upon your anaerobic fitness. The best way for you to prepare for these specific demands is through anaerobic training. (Literally, the term "anaerobic" means "in the absence of oxygen.")

The main purpose of anaerobic training is to improve the functional ability of your two anaerobic energy systems. A second purpose is to enhance your performance potential as a wrestler, especially as it relates to doing short-term, high-intensity activities.

THE ANAEROBIC DOMAIN

It is an absolute requirement that you perform anaerobic training with a level of intensity that is as high as possible for a specific amount of time. Your anaerobic energy systems play a significant role in activities that last anywhere from a split second to roughly three minutes if – and only if – your intensity of effort is great enough to elicit an anaerobic response. To engage your anaerobic pathways, then, your intensity must be great enough such that you cannot train continuously for much more than about three minutes at a time.

You can measure your anaerobic intensity by monitoring your training heart rate. Specifically, you must raise your heart rate to near-maximal levels for brief periods of time. Elevating your heart rate to 90% or more of your age-predicted maximum is usually a good indicator that you are utilizing your anaerobic pathways.

APPROPRIATE ACTIVITIES

Your anaerobic training should approximate the nature of a wrestling match. Since wrestling involves a series of efforts that are brief and intense, this should receive the most emphasis. At least some of your efforts, though, should exceed those that are beyond what you normally encounter in a match.

A wide range of physical activities can be used for anaerobic training. Outdoor activities include cycling, rowing and running; indoor activities include rope jumping, swimming and stationary exercises on specialized equipment such as bikes, rowers, treadmills and stairclimbers/steppers.

That said, the best activity that wrestlers can do for anaerobic training is running. Occasionally, you can – and should – use other activities to minimize the impact forces that are associated with running. But running should be done during most of your anaerobic workouts.

INTERVAL TRAINING

Several different methods can be used to develop your anaerobic pathways. But perhaps the most popular one is interval training.

Structured interval training has been around since the 1930s. Essentially, interval training is a series of repeated segments or "intervals" of intense activity – such as sprinting – alternated with periods of recovery that can be either reduced activity or complete inactivity. In brief, an example of interval training is to run a given distance at an intended pace, recover for a prescribed amount of time and then repeat the run-recovery sequence until your workout is completed.

With interval training, you are able to repeatedly reach and sustain a high level of intensity for a cumulative time that is greater than what you could achieve during continuous train-

ing with the same intensity. The reason for this is because the recovery periods allow your anaerobic energy systems the opportunity to partially recover thereby permitting you to make a physiological comeback between your intense efforts. Dividing your workout into short, intense efforts with intervals of recovery interspersed between those efforts enables you to perform a greater volume of work at the same intensity. So with an appropriate amount of recovery between your anaerobic efforts, you can run a series of six 400-meter sprints at a pace that might otherwise completely exhaust you after two or three consecutive 400s without a recovery period.

Interval training has been a favored method for running and swimming. Nevertheless, the principles of interval training can be applied to virtually any type of physical activity. For instance, if your goal for a particular workout is to run six 400-meter sprints in 90 seconds per sprint, you could simply bike, row or do another activity with an intense effort for 90 seconds a total of six times.

There are seven different variables of interval training that you can manipulate to effectively overload your anaerobic energy systems. Keep in mind that all of these elements are dependent upon your level of fitness: Someone who has a low level of fitness will not be able to perform as much volume and frequency of training as someone who has a high level of fitness.

The seven variables of interval training are as follows:

Repetitions

During interval training, the numbers of times that you perform your anaerobic efforts are the repetitions. For instance, you might do eight repetitions of a specified distance during a workout.

Repetition Distance

Another variable of interval training is the distance (or length) of the repetitions. Examples include running 800 meters and swimming 200 meters in a specified time.

An interval workout usually begins with longer anaerobic efforts and tapers down to shorter ones. In a workout that consists of sprinting several repetitions of 400, 200, 100 and 50 meters, you would complete all of the 400-meter sprints then all of the 200-meter sprints and so on.

Work Interval

The intended duration of each anaerobic effort is the work interval. Your goal, for example, might be to complete a specified distance in a work interval of 30 seconds or less.

Recovery Interval

The duration that is allotted for you to recuperate between your anaerobic efforts (the work intervals) is the recovery interval. It is important for you to receive a sufficient amount of recovery between your anaerobic efforts. This allows your depleted anaerobic energy systems enough time to recover so that you can produce another intense effort. As an example, the recovery intervals between your work intervals might provide 90 seconds of recovery.

The duration of the recovery interval is related to the time that it takes you to complete the work interval. This will be detailed in the next section.

Your recovery interval can consist of either complete inactiv-

ity or low-intensity activities such as slow walking or easy jogging. Rule of thumb: The more intense the work interval, the less intense the recovery interval.

Work: Recovery Ratio

The recovery interval is usually expressed in relation to the work interval. This is referred to as the "work:recovery ratio" and is most often designated as 1:1, 1:2, 1:3 or 1:4. These ratios state that your recovery interval should be one, two, three or four times the duration that it took you to perform your work interval.

In general, the shorter the duration of your effort – and the higher the intensity of your effort – the greater the work:recovery ratio. Because of the high level of intensity, an all-out effort that takes less than about 30 seconds requires a work:recovery ratio of at least 1:3; an all-out effort that takes about 30 - 90 seconds requires a work:recovery ratio between about 1:2 and 1:3; and an all-out effort that takes about 90 - 180 seconds requires a work:recovery ratio between about 1:1 and 1:2. To illustrate, an all-out effort that you complete in 15 seconds should be followed by a recovery interval of about 45 seconds or more [15 sec x 3 = 45 sec].

An alternative to using a work:recovery ratio is to customize the duration of your recovery intervals by checking your heart rate. This will help you to determine when you are physiologically ready to begin a subsequent work interval. For example, you might start your next work interval when your heart rate drops to a predetermined level such as 60% of your age-predicted maximum. An appropriate decrease in heart rate depends upon several factors including the length of the upcoming work interval and your level of fitness.

Workout Distance

The sum of all the distances that you perform in an interval workout is the workout distance. When doing work intervals that last about 1.5 - 3.0 minutes, the total distance of your workout should not exceed about 2.0 - 2.5 miles (or about 3,200 - 4,000 meters) of running; when doing work intervals that are less than about 90 seconds, the total distance of your workout should not exceed about 1.5 - 2.0 miles (or about 2,400 - 3,200 meters) of running.

The recommended total distance for an interval workout is related to the activity. For instance, swimming distances equate to roughly 25% of running distances. So, swimming 100 meters (freestyle) is roughly the same as running 400 meters.

Workout Frequency

A final variable of interval training is the frequency of your interval workouts. Except for highly conditioned individuals, interval training should not be performed more than once or twice a week because of the high level of intensity that is employed.

Sample Workouts for Interval Training

A prescription for interval training can be written in shorthand. In the language of interval training, for example, a workout for running that is written as "8x100 (0:20/1:00)" indicates that you are to perform eight 100-meter work intervals and that each effort should be done in 20 seconds (or less)

with a recovery interval of one minute between each of the eight repetitions. Note that the work:recovery ratio is 1:3 because each effort is less than 30 seconds in duration.)

Here are a few sample workouts for interval training to be used for running. Once again, it should be noted that interval training designed for running can be easily adapted to just about any type of physical activity such as biking, rowing, stairclimbing and swimming.

Workout #1: 4x800 (2:45/2:45)

Workout #2: 3x800 (2:45/2:45); 2x400 (1:20/2:40)

Workout #3: 2x800 (2:40/2:40); 4x400 (1:20/2:40)

Workout #4: 2x800 (2:40/2:40); 4x400 (1:15/2:30)

MEANINGFUL ANAEROBIC TRAINING

After a period of time, you will likely notice that the same anaerobic workout – which was originally challenging – can be done with less effort. This is an indication that you are increasing your anaerobic fitness. In order to make further improvements, it is critical that you make your anaerobic training progressively more difficult in subsequent workouts.

To ensure that you derive continued anaerobic improvements, you can progressively overload your anaerobic energy systems by (1) covering the same distances in shorter amounts of time; (2) decreasing the duration of the recovery intervals; or (3) covering longer distances at the same pace.

Consider this example: Suppose that as part of your workout, you swam a series of four 100-meter sprints in an average time of 1:30 (that is, one minute and 30 seconds) and took an average recovery time of 3:00 between your efforts. In a future anaerobic workout, you should try to (1) swim the four 100s in an average time of less than 1:30; (2) take an average recovery time of less than 3:00 between the four 100s; or (3) swim four 125s in an average time of 1:52.5 (the same pace as the 100s). Regardless, you made your anaerobic energy systems work harder than they were accustomed to working.

Because of this, it is important for you to keep accurate records of your anaerobic performances. Maintaining records allows you to monitor your progress thereby making your workouts more productive and more meaningful. During anaerobic training, the main components to document include the date of the workout along with the number of repetitions, the repetition distances, the work intervals and the recovery intervals.

THE LAST REP

Remember that your anaerobic efforts must be done in an aggressive and enthusiastic fashion. Simply put, your level of intensity during anaerobic training must be sky high.

Finally, it should be noted that before you initiate your anaerobic training, you must first establish a solid base of aerobic support. Your anaerobic pathways cannot function at optimal levels without assistance from your aerobic pathway.

Matt Brzycki has authored, co-authored or edited 16 books on strength and fitness including four that are devoted to wrestling. The four are available at all major bookstores or through Cardinal Publishers Group (800-296-0481).