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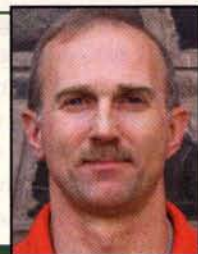
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# High-Intensity Training: *Multiple-Set Applications*

By Matt Brzycki



**H**igh-Intensity Training (HIT) is a method of strength training that is characterized by brief sessions of high-intensity efforts. In its purest form, HIT involves one set of each exercise done to the point of muscular fatigue.

This is not to say that more than one set cannot be done, however. The fact of the matter is that some HIT enthusiasts simply prefer to do multiple sets. Other HIT enthusiasts sometimes take a break from their usual one-set-to-fatigue routines and employ multiple-set protocols.

## SPECIFIC APPLICATIONS

There are a number of ways in which you can perform multiple sets while adhering to the brief, intense workouts that form the cornerstone of HIT. Let us take a look at some of the applications that are prescribed by some of the foremost strength and conditioning authorities in the country.

### The 3x3 Workout

One multiple-set application of HIT is referred to as a "3x3" (which is read "three by three"). To the best of my knowledge, Bob Rogucki devised the 3x3 Workout when he was the strength and conditioning coach at the United States Military Academy. (Coach Rogucki went on to the National Football League, serving on the staff of the Arizona Cardinals, Jacksonville Jaguars and Philadelphia Eagles.)

A 3x3 Workout involves a series of three multiple-joint movements: one for the hips, one for the chest and one for the upper back (or "lats"). This series of three exercises is done a total of three times (thus the name "3x3"). So, the total number of sets in this workout is nine. Virtually every major muscle in your body is addressed in a 3x3 Workout including your hips, hamstrings, quadriceps, chest, upper back, shoulders, biceps, triceps and forearms.

Numerous multiple-joint movements can be used in the 3x3 Workout. The safest and most effective multiple-joint movements for your hips are the deadlift, leg press and ball squat. Any multiple-joint movement that involves a pushing motion – such as the bench press, incline press, decline press, dip and push-up – can be

used to target the muscles of your chest (as well as those of your shoulders and triceps); any multiple-joint movement that involves a pulling motion – such as the lat pulldown, seated row, bent-over row, chin and pull-up – can be used to target the muscles of your upper back (along with your biceps and forearms).

The first time that the series is done, you should reach muscular fatigue by 20 repetitions for the hip exercise and 12 for the chest and upper-back exercises. The second time through the series, the repetition goals should be 15 for the hip exercise and 10 for the chest and upper-back exercises. And the third time that the series is done, the repetition goals should be 12 for the hip exercise and 8 for the chest and upper-back exercises. In summary, the target number of repetitions for each of the three sets should be 20, 15 and 12 for the hip exercise and 12, 10 and 8 for the chest and upper-back exercises.

As you might imagine, there are countless variations for a 3x3 Workout. Perhaps the most demanding series of exercises is the deadlift, dip and chin. Another version is a series of the leg press, bench press and seated row. Not to belabor a point but in both examples, the series of three exercises would be done three times (for a total of nine sets in the workout). As a side note, each of the three series can contain different exercises. For instance, a 3x3 Workout could be the deadlift, incline press, pull-up, leg press, bench press, seated row, ball squat, decline press and lat pulldown.

In performing a 3x3 Workout, you should take as little recovery as possible between exercises/sets. This will yield excellent improvements in your metabolic conditioning.

A 3x3 Workout is very time-efficient; most workouts can be completed in about 20 minutes or less. Do not be fooled by the simplicity of this workout. Though it may not appear so, a 3x3 Workout – if done as outlined here – can be incredibly challenging and demanding. Remember, you are doing exercises that engage a large amount of muscle mass while training to the point of muscular fatigue and taking as little recovery as possible between each of the nine sets. This brief workout should leave you gasping for air.

### The 4x4 Workout

Another multiple-set application of HIT is known as a "4x4." The person who is credited with conceiving the 4x4 Workout is Ken Mannie, the fiery yet erudite strength and conditioning coach at Michigan State University.

Similar to the 3x3 Workout, this multiple-set application of HIT is quite simple while extremely challenging and demanding. As the name suggests, the 4x4 Workout involves a series of four exercises that is done a total of four times. So, the total number of sets in this workout is 16.

Much like the 3x3 Workout, the 4x4 Workout has countless variations. In his extensive arsenal of routines, Coach Mannie has 4x4 Workouts for the lower body as well as the upper body. A 4x4 Workout for the lower body consists of a series of four exercises for the hips; a 4x4 Workout for the upper body consists of a series of two exercises for the chest and two exercises for the upper back that are done in an alternating fashion.

For the lower body, Coach Mannie prescribes a series of the front squat, deadlift, lunge and leg press; for the upper body, he prescribes a series of the bench press, seated row, incline press and lat pulldown. To be clear, the series of four exercises would be done four times (for a total of 16 sets in the workout).

Although the aforementioned examples incorporate multiple-joint movements, Coach Mannie notes that a 4x4 Workout can use single-joint movements or a combination of multiple- and single-joint movements. Another option is to do a series of four multiple-joint movements followed by a series of four single-joint movements and repeat this sequence of eight exercises one more time (so that the workout has a total of 16 sets).

The first time that the series is done, you should reach muscular fatigue by 12 repetitions for each exercise. The second time through the series, the repetition goal should be 10 for each exercise. The last two times through the series, the repetition goals should be 8 and 6, respectively. In short, the target number of repetitions for each series of exercises should be 12, 10, 8 and 6.

Coach Mannie recommends taking several minutes of recovery between each



series of four exercises. Of course, the recovery period can be shortened or lengthened based upon an athlete's level of conditioning.

### Descending Pyramids

In a descending pyramid, three sets of an exercise are done to the point of muscular fatigue using descending repetitions – such as 10, 8 and 6 – with descending resistance. Descending pyramids work especially well for training the upper body. You can use descending pyramids to emphasize muscles that produce either a pushing motion (the chest, shoulders and triceps) or pulling motion (the upper back, biceps and forearms). In Coach Mannie's descending pyramids for the upper body, six exercises are chosen: three that involve a pushing motion and three that involve a pulling motion. In addition, the sequence of exercises would alternate a pushing motion with a pulling motion.

Workouts that employ descending pyramids can emphasize different muscles but would contain the same number of sets. For example, a workout could be the bench press, lat pulldown, seated press, seated row, incline press and pull-up. If you want to emphasize the "pushing" muscles, you would do three sets of the bench press, seated press and incline press and one set

of the lat pulldown, seated row and pull-up; if you want to emphasize the "pulling" muscles, you would do three sets of the lat pulldown, seated row and pull-up and one set of the bench press, seated press and incline press. So despite highlighting different groups of muscles, each of these workouts has a total of 12 sets for the upper body.

Descending pyramids for the upper body can be done as part of a total-body workout. But even in this case, the entire workout should not take more than about one hour.

### The 50s Workout

This multiple-set application of HIT dates back to at least 1985 when it was described in an article that was written by Dr. Ken Leistner, a long-time strength coach from Valley Stream, New York. Referred to as a "50s Workout" or "50s," it consists of several sets of each exercise that are done to the point of muscular fatigue for a total of 50 repetitions. In other words, you would finish 50 repetitions of an exercise before moving to the next exercise.

There are many interpretations of how to complete the 50 repetitions. But the most time-efficient way is to perform one set of an exercise then quickly reduce the resistance and perform another set of the same

exercise. This procedure would continue until you complete 50 repetitions. Once this is accomplished, you would move to the next exercise and perform it in the same manner as just described.

The number of sets that are used to achieve the 50 repetitions can be varied but, in the interests of time, should not exceed three or four sets. To illustrate, 50 repetitions could come from one set of 30 and one set of 20; two sets of 25; one set of 20 and two sets of 15; one set of 30 and two sets of 10; or two sets of 17 and one set of 16.

When doing a 50s Workout, you should include enough exercises to address all of the major muscles in your body. An example of a 50s Workout is the leg press, incline press, lat pulldown, shoulder shrug, tricep extension, bicep curl and wrist flexion. A 50s Workout that consists of seven exercises can be completed in less than about one hour.

### 50% Sets

This multiple-set application of HIT can be traced back to another article that was penned by Dr. Leistner in 1985. More than 20 years later, it is still used by some coaches including Mark Asanovich, the strength and conditioning coach of the Jacksonville Jaguars.

*The Martin's Present*

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In this protocol, three sets are performed to the point of muscular fatigue with the same resistance. After the first set, your goal is to achieve 50% (half) as many repetitions during the second and third sets (with the same resistance). So if you do 12 repetitions on the first set, you would try to do six repetitions on the second set and six repetitions on the third set; if you do 10 repetitions on the first set, you would try to do five repetitions on the second set and five repetitions on the third set.

When performing 50% sets, Coach Asanovich recommends a recovery period of about 45 seconds between sets for the upper body and 60 seconds between sets for

the lower body. Again, the recovery period can be shortened or lengthened based upon an athlete's level of conditioning.

### The Dumbbell Elevator Series

Dan Riley, the elder statesman of strength coaches in the National Football League, has popularized an innovative sequence of exercises for the chest, shoulders and triceps that has become known as the "Dumbbell Elevator Series." With this application, you would do several sets of an exercise with dumbbells at different settings (or "floors") of an adjustable bench.

A routine that Coach Riley prescribes for the upper body is the bench press, rear delt,

seated row, pec fly, incline press (18 degrees), rear delt, lat pulldown, incline press (36 degrees), lateral raise, incline press (54 degrees), front raise and incline press (72 degrees). Of note is that each set is performed to the point of muscular fatigue with 12 the target number of repetitions.

In the aforementioned workout, five exercises that make up the Dumbbell Elevator Series – the bench press along with the incline press done at four different angles – are intermingled with other exercises. You can also do the exercises in the Dumbbell Elevator Series one after the other. For instance, you can do a series of three exercises that consists of the seated press (90 degrees), incline press (45 degrees) and bench press. In this case, you might use repetition goals of 10, 8 and 6 for the three sets.

Something else to consider is that if you start at the "top floor" (the most vertical position) and work your way "down" to the "bottom floor" (the most horizontal position), you should be able to use roughly the same resistance for all of the sets since you will lose strength but gain leverage. (This, of course, depends upon the angles that are used.) Finally, the Dumbbell Elevator Series is not limited to exercises that involve a pushing motion. If you face the adjustable bench, you can do several exercises at different settings that involve a pulling motion such as the bench row, bench shrug and bicep curl.

### THE LAST REP

Most people who do strength training perform multiple sets of each exercise. However, traditional forms of multiple-set training are relatively inefficient in terms of time. Therefore, it is highly undesirable for time-conscious individuals.

One thing that distinguishes multiple-set applications of HIT from traditional forms of multiple-set training is that the workouts do not deteriorate into marathon sessions of mindless activity. Another difference is that in multiple-set applications of HIT, all of the sets are purposeful; there is no wasted effort.

A final point is that when employing these or any other protocols, it is important for wrestlers to include 2 - 4 exercises for their necks. This will help to reduce the potential for catastrophic injury to that area.

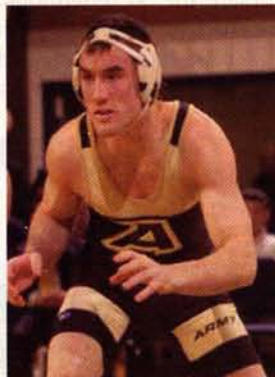
Matt Brzycki has authored, co-authored or edited 15 books on strength and fitness including *Wrestling Strength: The Competitive Edge*, *Wrestling Strength: Prepare to Win* and *Wrestling Strength: Dare to Excel*. These three wrestling books are available at all major bookstores or through Cardinal Publishers Group (800-296-0481).

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