

SECTION 5

HIGH FORCE AT HIGH VELOCITY
(55-80 PERCENT)

5.1: TRAINING BETWEEN 55 AND 80 PERCENT

The moment I tell someone that I refer to my speed-strength phase as a “high force at high velocity” phase, I'm met with a blank stare. That stare, I've come to find, is a sign that the person is trying to reconcile in their mind how an athlete can produce a high force at high velocities. You see, most people have come to view these two variables—force and velocity—as inverse dependent rather than independent variables. They think that an increase in one must mean the decrease in another. You will recall from the last section that this is the classic parametric relationship often associated with F_m and V_m on the hyperbolic curve. This curve has come to embody a relationship between force and velocity that has led strength coaches to believe the only way to train force (strength) is to train with heavy loads all the time! I sit here today telling you that this is blatantly wrong. Force and velocity are not dependent on one another. Quite to the contrary, they can both be produced at high levels by an athlete. And not surprisingly, the athletes who can produce both variables at high levels are always the ones who everyone *depends* on to come through in the clutch. They are the elite.

Based on the hyperbolic curve, many people view my definition as a paradox, a statement that is seemingly contradictory to common sense or preconceived notions. To be honest, they aren't completely wrong. Like most things in training, there isn't any single definition that is right *all the time*. The idea that force and velocity are dependent variables is correct when held in the context with which it was originally intended. The hyperbolic curve was originally created from the research of A.V. Hill and looked at isolated muscle tissue from cadavers.³² The researchers isolated the calf muscle, hooked it up to a car battery (this might be a slight exaggeration, but I doubt it), and stimulated it to perform isotonic contractions. Isotonic contractions simply mean that the tension remains unchanged as the muscle's length changes. Lifting an object at a constant speed is an example of isotonic contractions. Hill and his colleagues found that as they increased

³² Hill AV (1953) The mechanics of active muscle. *Proceedings of the Royal society* B141.

the wattage applied to the muscle, the rate of muscle shortening (velocity) decreased. The hyperbolic curve was born.

Now, I don't know about you, but I have a hard time finding a lot of transferability from a cadaver hooked up to a car battery performing a contraction at a constant rate of speed (isotonic) to an explosive, dynamic, elite athlete. However, the question remained from this early research as to whether this curve, obtained under strict isotonic conditions, can be used to predict the behavior of the contractile component under dynamic conditions. Based on the research, it is highly questionable whether the velocity of shortening at each point along the hyperbolic curve is a function of only the force at that instant or influenced by other factors such as the preceding rate of force development or additional energy contributions from other components.³³

So what does the hyperbolic curve supposedly tell us?

It claims four things:

- 1) Velocity of movement is inversely proportional to load—kind of.
- 2) It is impossible to exert a high force with fast movements—kind of.
- 3) The highest velocities are attained at light loads—true!
- 4) The intermediate values of force and velocity depend on maximal isometric force—true!

As you can see, the hyperbolic curve is correct half of the time. I should quantify that by saying that it is correct half the time when talking about its relationship to sport performance. If we were applying the hyperbolic curve to its original context—a steady isotonic contraction—all four points would be correct.³⁴ However, when looking at explosive, dynamic movement, its application falls short. You see, the curve failed to include one *huge* variable that is pertinent to sport performance—the series elastic component of dynamic contraction. When you *include* the

³³ Jewell BR, Winkie DR (1958) An analysis of the mechanical components in frog's striated muscle. *Journal of Physiology* 143:515–40.

³⁴ Huxley AF (1957) Muscle structure and theories of contraction. *Progress Biophysics* 7:255–318.

extra energy supplied by the stretch shortening cycle (SSC) during full speed dynamic movements, points one and two from above are incorrect. When lifting moderate loads (55–80 percent), the addition of a powerful SSC makes it possible to develop high levels of force at high velocities.

According to the hyperbolic curve, the highest power outputs would occur somewhere around 50 percent of the athlete's 1RM (figure 5.1). Because power is the product of force and velocity ($P = F \times V$), you simply find the highest values associated with the highest power output along the contraction curve. Why do you think everyone prescribes loads of 45–55 percent on their dynamic effort days? It's because that is what is prescribed by the parametric relationship that force and velocity play, according to the hyperbolic curve.

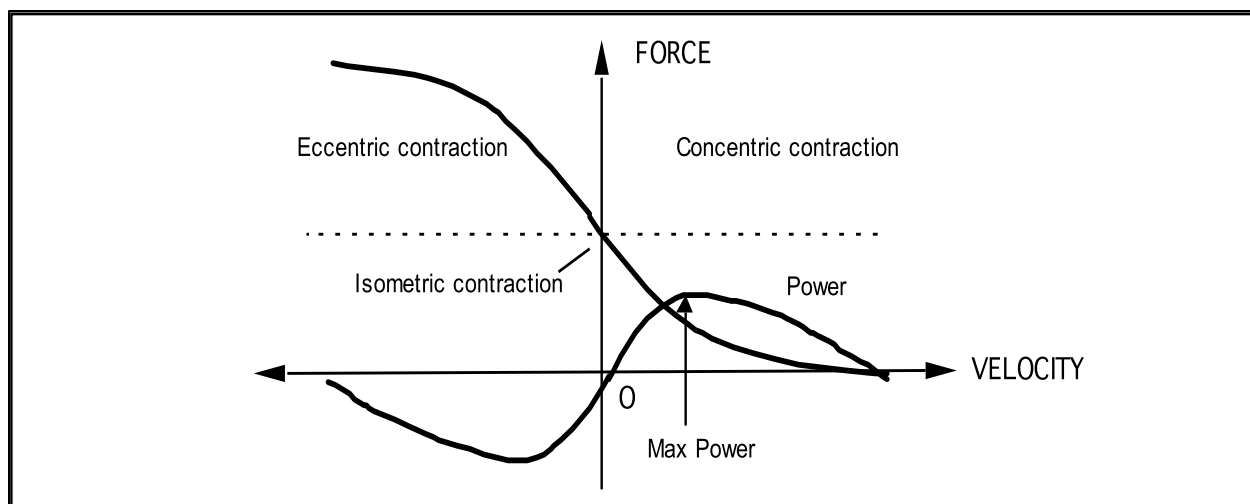


Figure 5.1: An idealized force-velocity curve with a power curve overlaid based on the work of A.V. Hill. This doesn't take into account the contribution of the stretch shortening cycle. Graph from *Supertraining*; used with permission.

This is a classic example of taking research and prescribing it to a population that it was never intended for—athletes. You have to recognize that the force-velocity curve as you know it is a romanticized view of how the body works. It ignores the impact of the SSC as well as neural inhibition, motor unit recruitment, and the stretch reflex. Sure, this way is simpler to understand and program for, but it won't maximize the power producing abilities of your athletes. It will lead

you down a path that will result in using loads below that which will create the greatest adaptations at high velocities.

The work of A.V. Hill and his colleagues, such as B. Katz, D.R. Wilki, and L. MacPherson from the 1940s and 50s, and their concept of a parametric relation between force and velocity stood for over fifty years. By no means should the work of these men be minimized. They laid the groundwork for our current understanding of the human body. Modern day researchers, however, have taken a closer look at the hyperbolic curve and its implications for power development in maximal dynamic contractions. The work by Dr. Paavo Komi in 2000 showed that for *in vivo* muscle contractions (meaning live tissue), the hyperbolic curve actually shows a parabolic shape. Instead of bowing inward, the line bows outward (figure 5.2).³⁵ The implications of this are that it is possible to produce high forces at high velocities.

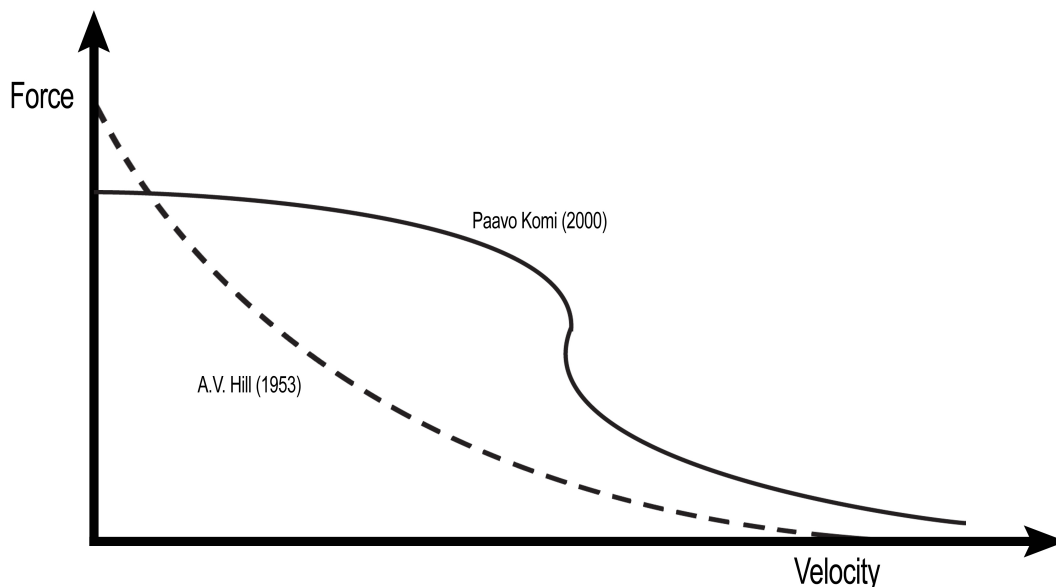


Figure 5.2: Force-velocity relationship of isolated, isotonic muscle contraction (dashed line) from the work of Dr. Hill versus the relationship of *in vivo* human muscles (solid line) as seen in the work of Dr. Komi. The graph shows that the addition of the SSC enables muscle tissue to generate high levels of force during high-velocity movements.

³⁵ Komi PV (2000) Stretch-shortening cycle: a powerful model to study normal and fatigued muscle. *Journal of Biomechanics* 33:1197–1206.

In his experiment, Dr. Komi placed a fiber optic cable into the Achilles tendon of his subjects with a 19-gauge needle. The things people do in the name of science...wow! After that fun little event, the subjects performed various jumps of different kinds with the cable still implanted to measure the forces being produced by the soleus (through the Achilles tendon). The results showed that when taking into account the effect of the stretch shortening cycle and Golgi tendon inhibition, the hyperbolic curve wasn't completely hyperbolic. At levels of high force production, velocity of movement could be greatly enhanced during dynamic actions through the addition of kinetic energy from the SSC.

It should be noted that at lower forces, Hill's hyperbolic curve still applies. As Dr. Hatfield explained, loads that are light (below 55 percent of an athlete's 1RM) don't pose enough resistance (force) to generate high power outputs. Velocity will continue to increase as these loads decrease. However, it increases at the expense of force and power development.

During his study, Dr. Hatfield not only found the specific loading percentage that optimized an athlete's power production, but also the range of training loads that seemed to help develop total body power, the optimal training zone for establishing an efficient, high threshold nervous system. He refers to these percentages as the *training zone*.³⁶ Dr. Hatfield demonstrated that training within 55 percent to 80 percent of an athlete's 1RM was optimal for retaining the highest power outputs and teaching an athlete's body to develop high rates of force development. The best explanation of this zone is to think of it as an inverted "U", which can be explained by two rational points:

- 1) Loads that are too light (below 55 percent of an athlete's 1RM) don't pose enough resistance (force) to generate high power outputs even though the velocity of the bar remains high.
- 2) Loads that are heavy (above 80 percent of an athlete's 1RM) decrease the terminal velocity of movement and decrease power output.

³⁶ Hatfield F (1989) *Power: A scientific approach*. New York: McGraw-Hill Publishing.

In both cases, the rationale for staying within the *training zone* lies with the amount of time a muscle can spend under maximal tension with a given training load. A load that is very light can be moved fast. However, it is impossible to recruit the large, power producing, high threshold motor units that produce high power outputs. This goes back to motor unit recruitment, which we discussed in section three. A load that is too heavy, on the other hand, *does* provide time for a muscle to recruit its high threshold motor units. The motor units are fatigued, however, before the completion of the movement, resulting in decreased velocity of the bar and a lower power output.

5.2: LOADING PARAMETERS

Just as in the previous section, we will use the three-day model of the 55–80 percent training block to explain the loading parameters and sequencing of exercises, as well as the specialized training methods used to maximize the parameters of this phase. At the end of this section, there will be two-day, four-day, five-day, and six-day in-season models built out and labeled so that you can immediately implement them with your athletes. The principles and foundations of each program are identical, so understanding a three-day model (Monday, Wednesday, Friday) will teach you all you need to know when reviewing and building similar models of differing training week lengths.

When training with loads of 55–80 percent, equal emphasis is placed on both the force (**F**) and velocity (**V**) portions of the power equation. Using loads at 55–80 percent of one's 1RM, the power output remains high because, as stated previously, the percentages are within Dr. Hatfield's *training zone*. This range maximizes the contribution of the SSC to the rapid production of force when using moderately heavy loads and ensures that an athlete can continue to produce *high force at high velocities*.

Even though the loads are lighter than the above 80 percent blocks, emphasis is still placed on quality of movement and repetition as opposed to quantity. When training for power, this must always be your goal. Remembering that the power suffers after the third repetition of an exercise, the only sensible answer is to end the set and save energy for a high quality second set.

Table 5.1 shows the loading scheme (sets/ reps/ percentages) for my 55–80 percent block. Notice that even though the loads have decreased by 10–15 percent, the rep range has only increased by one to two reps per set. This is a common mistake that most coaches make. They assume that just because an athlete can do more reps with less weight, they should. Wrong! Emphasis must always be placed on quality, high level neural work. Practice doesn't make perfect. Perfect practice makes perfect!

TABLE 5.1

TABLE 5.1													
		MONDAY LOADING (MEDIUM INTENSITY)				WEDNESDAY LOADING (HIGH INTENSITY)				FRIDAY LOADING (HIGH VOLUME)			
7 1-RM	MAXIMUM REPS POSSIBLE	HIGH QUALITY REPS (STRENGTH)	SETS (OFF-SEASON)	SETS (IN-SEASON)	HIGH QUALITY REPS (STRENGTH)	SETS (OFF-SEASON)	SETS (IN-SEASON)	HIGH QUALITY REPS (VOLUME)	SETS (OFF-SEASON)	SETS (IN-SEASON)	HIGH QUALITY REPS (VOLUME)	SETS (OFF-SEASON)	SETS (IN-SEASON)
80%	5 - 6				1 - 2	4 - 5	2 - 3						
77.5%	6 - 7				1 - 3	4 - 5	2 - 3						
75%	7 - 8				1 - 3	4 - 5	3 - 4						
72.5%	8 - 9				2 - 3	4 - 5	3 - 4						
70%	9 - 10	2 - 3	4 - 6	3 - 4									
67.5%	11 - 12	2 - 3	4 - 6	3 - 5									
65%	13 - 14	3	4 - 6	3 - 5									
62.5%	14 - 15	3	4 - 6	3 - 5							5 - 8	4 - 6	
60%	15 - 16										5 - 8	4 - 6	IN-SEASON VOLUME COMES FROM PRACTICE
57.5%	17 - 18										5 - 8	4 - 6	
55%	19 - 20										5 - 8	4 - 6	

This table displays my three-day loading variables of 55–80 percent undulated mesocycle. The column on the far left displays the percentage load of the athlete's 1RM with the maximum number of repetitions possible listed in the column to the right. The reps and sets within each training day indicate the number of each that can be performed while maintaining a high quality of work for the athlete. A few things to notice—the rep ranges stay the same regardless of whether the athlete is in-season or in off-season training, the number of sets used for in-season training are fewer than with off-season training because of the high work demands and added stress of practices and games during the season, and all the volume work comes from practices and games (see Friday/Sets (In-Season)). Don't train volume in-season. You'll overtrain your athletes.

Figure 5.3 depicts my 55–80 percent three-day undulated model. This is what I also refer to as my *high force at high velocity phase*.

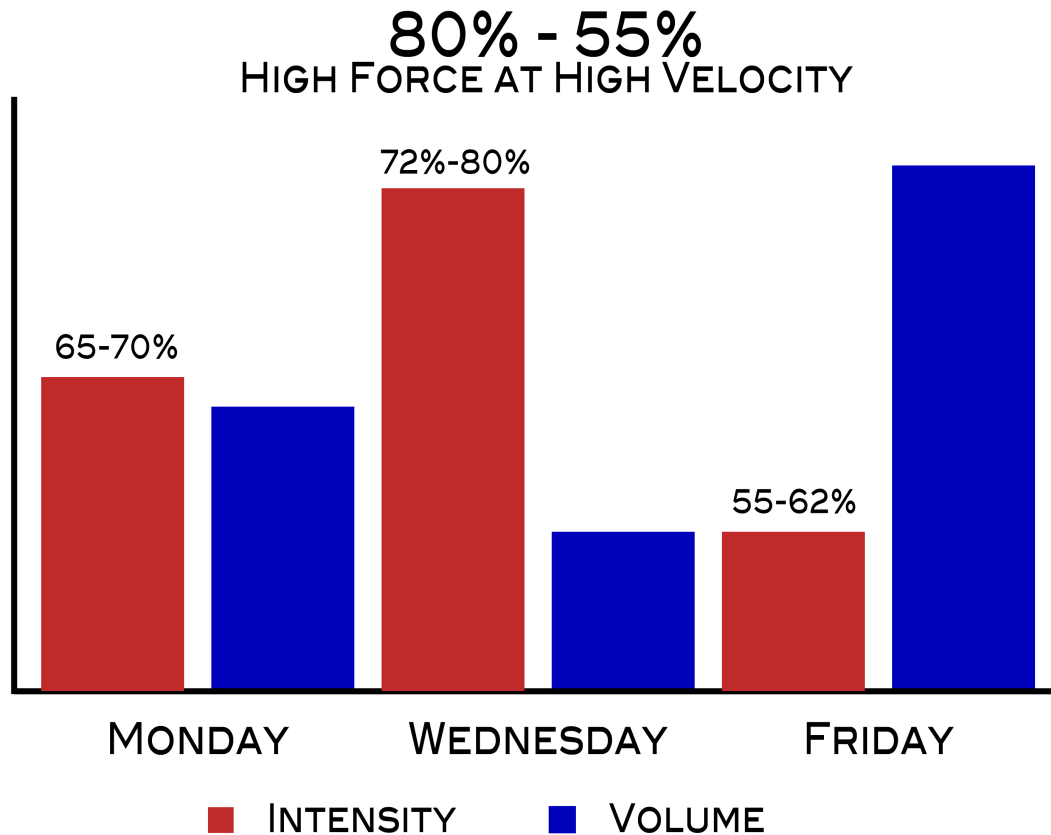


Figure 5.3: Graph depicting the training loads associated with the three-day 55–80 percent training model.

The above figure is the same one that I used to show you the above 80 percent high load at low velocity phase of my undulating model. However, there is one major difference—all the percentages are now 55–80 percent. Again, this is based off the work of Dr. Hatfield melded with my own theories about isolating specific components of the nervous system for further specificity of training parameters.

It is important that you get over the idea that in order to keep an athlete strong or make him more powerful, he must lift heavy loads. He doesn't! You can lift loads below 80 percent at higher velocities while still applying high amounts of force through the enhanced SSC and see improved strength in athletes while increasing their power output.

Let's take a quick run through of the loading parameters. They are very similar to the above 80 percent *high force at low velocity phase*. Rep ranges stay fairly constant. Monday is your medium heavy day using loads that equal 70 percent of your athlete's 1RM. I know that an athlete could likely lift this load ten times. However, I will only have him perform sets of two or three reps focusing on moving the weight at a high velocity. Again, the point here is to train the athlete to be powerful. Teach his neuromuscular system to use the kinetic energy benefits of the SSC with a high rate of force development in the concentric phase. After three reps, the athlete's ability to maintain a high rate of force development (RFD) is severely limited by energy substrate depletion as well as neuromuscular fatigue.

Wednesday is the heavy day of the week, using a load that equals 80 percent of the athlete's 1RM. I use the term “heavy” as a relative term. The load isn't going to be interpreted by the athlete's body as heavy, so the goal must be to attack the weight—moving it at high velocities and accentuating the SSC. Now, I know in the previous phase we performed sets of three at 80 percent. However, here we're only going to perform singles. The difference is this single rep will have a much higher eccentric/concentric velocity.

Friday, day three, is again correlated with lighter loads and increased volume. Here I typically use 65 percent of the athlete's 1RM for two to four reps. However, sometimes I will decrease that to 55 percent, depending on the methods I'm using. Again, I can't stress enough the importance of quality reps over quantity even on a volume day. Any training performed with suboptimal focus—that is to say with a low rate of force development and diminished velocities—will send mixed neural signaling patterns and inhibit the adaptability of the athlete to other training stressors within the block. The loading variables table from the previous page explains loads that should *not* be used on a given training day. This is shown by the shaded areas and their associated loads.

5.3: 55 TO 80 TRAINING BLOCK

Now that you understand the loading scheme and undulation used within the 55–80 percent training week, let's take a closer look at the actual block that makes up this mesocycle. This will be short and sweet because unlike the previous phase, which consisted of three separate blocks, this phase consists of only one. The chart below shows the loading variables used on each day in the training week. Just as before, the length of the block can be shortened or extended to fit different peaking schedules. Typically, my athletes perform this block for three to four weeks. This has proven to be optimal. However, there are times when the block can be as short as two or as long as five weeks.

TABLE 5.2: BLOCK 4 LOADING VARIABLES (55–80%)				
BLOCK	DAY	LOAD	REPS	SETS
BLOCK 4 3–4 WEEKS	MONDAY (MEDIUM INTENSITY)	62–70%	2–3	4–6
	WEDNESDAY (HIGH INTENSITY)	72–80%	1–3	4–5
	FRIDAY (HIGH VOLUME)	75–80%	5–8	4–6

Taking into account the range of loading variables that can be used within each training day of the undulated week, coaches can develop progressive loading schemes to constantly spur gains week after week for their athletes. Below is a table outlining the typical progression that I've found to work the best with my athletes. If an athlete's training block length is shorter than four weeks, adjust by starting with higher loads in the progression. For example, if an athlete only has two weeks to train in the 55–80 percent phase, use loading parameters from weeks three and four (Table 5.3). If the block length is extended, maintain the same progression (Table 5.3) and have the athlete repeat week four loading on the fifth week.

TABLE 5.3: PROGRESSIVE LOADING SCHEME FOR 55-80%

WEEK	MONDAY LOADING (MEDIUM INTENSITY)	WEDNESDAY LOADING (HIGH INTENSITY)	FRIDAY LOADING (LOW INTENSITY)
1	62.5% 3 REPS, 4-6 SETS	72.5% 1-3 REPS, 4-5 SETS	55% 5-6 REPS, 4-6 SETS
2	65% 2-3 REPS, 4-6 SETS	75% 1-3 REPS, 4-5 SETS	57.5% 5-6 REPS, 4-6 SETS
3	67.5% 2-3 REPS, 4-6 SETS	77.5% 1-3 REPS, 4-5 SETS	60% 5-6 REPS, 4-6 SETS
4	70% 2-3 REPS, 4-6 SETS	80% 1-3 REPS, 4-5 SETS	62.5% 5-6 REPS, 4-6 SETS

5.4: SPECIALIZED METHODS OF APPLYING TRAINING MEANS

Just as the parameters of each mesocycle are specialized, it is important that the methods used to develop them should be specifically molded as well to promote maximal adaptation of the athlete. The ability of these methods to promote positive adaptation through increased RFD and power development is unparalleled. For this specific mesocycle, the 55–80 percent phase, there is one method in particular that develops RFD and reactive ability better than any other when using moderate loads at high velocities. This method is known as biometric training. Biometrics is the science of measuring and analyzing biological data. It is the process by which an athlete's physical traits are measured and recorded by an electronic device as a means of confirming or identifying a specific characteristic. In this case, the characteristic we are measuring is fatigue.

The original biometric method and still the gold standard in application is the Tendo unit. I love these. They are amazing. They measure the bar speed of every repetition, giving a coach feedback on the force, velocity, and power output of the bar and allow the coach to see the state of fatigue of an athlete from set to set, one workout to the next. I've been very fortunate at the University of Minnesota to have a budget that allowed me to buy several when they first came out a decade ago. Over the past several years, I have experimented with trying to find a simple, inexpensive way to simulate the biometric measure of the Tendo unit that would allow anyone to take advantage of this potent training method. After years of trial and error, I came up with the 'timed set drop-off' method. These are relatively easy for a coach to implement, inexpensive to perform (requiring only a stopwatch), and work just as well as the Tendo unit.

TIMED DROP-OFFS

One easily manipulated variable for developing an athlete's requisite physical qualities is time. Not only does it correspond well with energy system development, but it is also highly practical to implement in any coach's program. The concept is simple—keep time constant or vary it such that athletes either perform more work in that time frame or more work. I will give two examples

of how I use this variable to form the biometric training methods that I use with my athletes in the 55–80 percent training block.

Depending on the time of the year and the athlete, we'll use time as our determinant of when a set is completed. For example, I might have our men's hockey team take a prescribed weight based on an athlete's maximum and give him a certain amount of reps. So hypothetically, let's say that we take 60–70 percent of an athlete's 1RM bench press and have him do six reps. Obviously, this is very light for only six reps. The parameters you choose to use vary based on the desired qualities you're looking to develop. In this case, we're trying to develop a high level of speed-strength by increasing the athletes RFD. After the athlete unracks the barbell, the coach will begin a stopwatch precisely when the first movement downward begins. The coach then stops the watch exactly after the last rep is locked out. Record the time on the athlete's sheet.

Before you begin this method, it's important to know what you'll use as your drop-off or cutoff point. I tend to use 3–7 percent drop-offs when using hand-timed biometric measures because there is a greater range of variability by the timer. If I'm using a more precise biometric means to measure fatigue such as a Tendo unit, I will use a lower percentage as my cutoff point (more on that in a minute). After years of trial and error, I've found that these guidelines work the best in ensuring fatigue but not overtraining of my athletes. The drop-off percentage used is dictated by the amount of recovery time the athlete has before returning to similar forms of stress. That is, if athletes do a bench work out, how long do they rest until they bench again? Table 5.4 explains the guidelines that work best.

TABLE 5.4: HAND-TIMED BIOMETRIC PARAMETERS			
DROP-OFF	REST PERIOD	WORKOUT (STRESS A)	NEXT RETURN TO STRESS A
3%	24 HRS	MONDAY	TUESDAY
4–5%	48 HRS		WEDNESDAY
6–7%	72 HRS		THURSDAY

When using a stopwatch to hand-time an athlete's biometric response, it can be slightly complex. What works best is to print out a sheet listing various times on the far left-hand column. To the right of them is the drop-off that would indicate that an exercise needs to be stopped. For example, if our athlete's best bench was 135 pounds for six reps in four seconds and the workout had a parameter of a five percent drop-off, the athlete would continue to perform sets until his time increased to 4.20 seconds, at which point the exercise is terminated.

Time Drop Off Charts 5% Drop Off

Best		Drop off	Best		Drop off	Best		Drop off
1.5	<input type="checkbox"/>	1.575	3.5	<input type="checkbox"/>	3.675	5.5	<input type="checkbox"/>	5.775
1.55	<input type="checkbox"/>	1.6275	3.55	<input type="checkbox"/>	3.7275	5.55	<input type="checkbox"/>	5.8275
1.6	<input type="checkbox"/>	1.68	3.6	<input type="checkbox"/>	3.78	5.6	<input type="checkbox"/>	5.88
1.65	<input type="checkbox"/>	1.7325	3.65	<input type="checkbox"/>	3.8325	5.65	<input type="checkbox"/>	5.9325
1.7	<input type="checkbox"/>	1.785	3.7	<input type="checkbox"/>	3.885	5.7	<input type="checkbox"/>	5.985
1.75	<input type="checkbox"/>	1.8375	3.75	<input type="checkbox"/>	3.9375	5.75	<input type="checkbox"/>	6.0375
1.8	<input type="checkbox"/>	1.89	3.8	<input type="checkbox"/>	3.99	5.8	<input type="checkbox"/>	6.09
1.85	<input type="checkbox"/>	1.9425	3.85	<input type="checkbox"/>	4.0425	5.85	<input type="checkbox"/>	6.1425
1.9	<input type="checkbox"/>	1.995	3.9	<input type="checkbox"/>	4.095	5.9	<input type="checkbox"/>	6.195
1.95	<input type="checkbox"/>	2.0475	3.95	<input type="checkbox"/>	4.1475	5.95	<input type="checkbox"/>	6.2475
2	<input type="checkbox"/>	2.1	4	<input type="checkbox"/>	4.2	6	<input type="checkbox"/>	6.3
2.05	<input type="checkbox"/>	2.1525	4.05	<input type="checkbox"/>	4.2525	6.05	<input type="checkbox"/>	6.3525
2.1	<input type="checkbox"/>	2.205	4.1	<input type="checkbox"/>	4.305	6.1	<input type="checkbox"/>	6.405
2.15	<input type="checkbox"/>	2.2575	4.15	<input type="checkbox"/>	4.3575	6.15	<input type="checkbox"/>	6.4575
2.2	<input type="checkbox"/>	2.31	4.2	<input type="checkbox"/>	4.41	6.2	<input type="checkbox"/>	6.51
2.25	<input type="checkbox"/>	2.3625	4.25	<input type="checkbox"/>	4.4625	6.25	<input type="checkbox"/>	6.5625
2.3	<input type="checkbox"/>	2.415	4.3	<input type="checkbox"/>	4.515	6.3	<input type="checkbox"/>	6.615
2.35	<input type="checkbox"/>	2.4675	4.35	<input type="checkbox"/>	4.5675	6.35	<input type="checkbox"/>	6.6675
2.4	<input type="checkbox"/>	2.52	4.4	<input type="checkbox"/>	4.62	6.4	<input type="checkbox"/>	6.72
2.45	<input type="checkbox"/>	2.5725	4.45	<input type="checkbox"/>	4.6725	6.45	<input type="checkbox"/>	6.7725
2.5	<input type="checkbox"/>	2.625	4.5	<input type="checkbox"/>	4.725	6.5	<input type="checkbox"/>	6.825
2.55	<input type="checkbox"/>	2.6775	4.55	<input type="checkbox"/>	4.7775	6.55	<input type="checkbox"/>	6.8775
2.6	<input type="checkbox"/>	2.73	4.6	<input type="checkbox"/>	4.83	6.6	<input type="checkbox"/>	6.93
2.65	<input type="checkbox"/>	2.7825	4.65	<input type="checkbox"/>	4.8825	6.65	<input type="checkbox"/>	6.9825
2.7	<input type="checkbox"/>	2.835	4.7	<input type="checkbox"/>	4.935	6.7	<input type="checkbox"/>	7.035
2.75	<input type="checkbox"/>	2.8875	4.75	<input type="checkbox"/>	4.9875	6.75	<input type="checkbox"/>	7.0875
2.8	<input type="checkbox"/>	2.94	4.8	<input type="checkbox"/>	5.04	6.8	<input type="checkbox"/>	7.14
2.85	<input type="checkbox"/>	2.9925	4.85	<input type="checkbox"/>	5.0925	6.85	<input type="checkbox"/>	7.1925
2.9	<input type="checkbox"/>	3.045	4.9	<input type="checkbox"/>	5.145	6.9	<input type="checkbox"/>	7.245
2.95	<input type="checkbox"/>	3.0975	4.95	<input type="checkbox"/>	5.1975	6.95	<input type="checkbox"/>	7.2975
3	<input type="checkbox"/>	3.15	5	<input type="checkbox"/>	5.25	7	<input type="checkbox"/>	7.35
3.05	<input type="checkbox"/>	3.2025	5.05	<input type="checkbox"/>	5.3025	7.05	<input type="checkbox"/>	7.4025
3.1	<input type="checkbox"/>	3.255	5.1	<input type="checkbox"/>	5.355	7.1	<input type="checkbox"/>	7.455
3.15	<input type="checkbox"/>	3.3075	5.15	<input type="checkbox"/>	5.4075	7.15	<input type="checkbox"/>	7.5075
3.2	<input type="checkbox"/>	3.36	5.2	<input type="checkbox"/>	5.46	7.2	<input type="checkbox"/>	7.56
3.25	<input type="checkbox"/>	3.4125	5.25	<input type="checkbox"/>	5.5125	7.25	<input type="checkbox"/>	7.6125
3.3	<input type="checkbox"/>	3.465	5.3	<input type="checkbox"/>	5.565	7.3	<input type="checkbox"/>	7.665
3.35	<input type="checkbox"/>	3.5175	5.35	<input type="checkbox"/>	5.6175	7.35	<input type="checkbox"/>	7.7175
3.4	<input type="checkbox"/>	3.57	5.4	<input type="checkbox"/>	5.67	7.4	<input type="checkbox"/>	7.77
3.45	<input type="checkbox"/>	3.6225	5.45	<input type="checkbox"/>	5.7225	7.45	<input type="checkbox"/>	7.8225

Figure 5.4: An example of a biometric drop-off chart. The left-hand column shows the athlete's best time on a given exercise. The right-hand column tells the coach the time at which the athlete will terminate performing sets due to fatigue. The two middle columns are check boxes to allow a coach to mark and track multiple athletes' work sets at one time. You can find additional drop-off charts on xlathlete.com.

A few things to keep in mind—the drop-off is based on the athlete's best set. It isn't uncommon to see an athlete get better times three to four sets into the exercise due to the potentiation effect. Also, to be consistent, have the same coach time the same athletes. Lastly, after the athletes perform a work set in whatever time frame, have them go perform some non-intensive assistance exercises. They may do some light shoulder prehabilitation, groin work, or whatever. It shouldn't detract from the main movement, but still keep them moving until they return for the next set (about two to four minutes later). This serves a dual purpose of shortening the total lift time by supersetting prehabilitation exercises with main movements and keeping the nervous system engaged. Studies have found that mild stimulation of the nervous system after intensive work bouts leads to increased performance in subsequent work bouts.³⁷ One particular study found that having the athlete perform simple math problems between work bouts increased performance. Researchers theorized that it kept the neural synaptic pathways in the brain active and primed for additional work.³⁸ In laymen's terms, it appears that this mild stimulation is equivalent to keeping the engine running on the car instead of turning it off.

The best movements to use with biometric training are going to be, as always, the big lifts—back squats, hex bar deadlifts (it's easier to move the hex bar quickly than the straight bar), and bench presses. This form of biometrics is simply one way in which a coach can use the athlete's readiness to gauge how much they will do that day to ensure that optimal fatigue is applied and maximal gains achieved. There are limitations to this, mainly how hard athletes push themselves. It isn't uncommon, however, to see athletes pushing each other to get better times. It creates an environment of competitiveness with immediate feedback. I have never seen athletes compete so hard in a weight room as when I use biometric training, trying to beat their time so that they're the last guy still performing work sets.

³⁷ Filipovic A, Kleinöder H, Dörmann U, Mester J (2011) Electromyostimulation—A systematic review of the influence of training regimens and stimulation parameters on effectiveness in electromyostimulation training of selected strength parameters. *Journal of Strength & Conditioning Research* 25(11):3218–38.

³⁸ Burns K (2011) Applied exercise physiology lecture. *The University of Minnesota*, 11/18.

Bear in mind that with an increase in speed, athletes are liable to adjust their technique accordingly. If you start seeing obvious changes in technique (i.e., cutting reps short) or something dangerous (low back rounding in a back squat), end the set. Give them one more chance to get their technique back to an acceptable range. Ultimately, decide if this will work for your team/athletes and then understand what types of adaptations you want to make. Don't just throw it in a program because it seems easy to implement and might be fun. It can be a useful method insofar as the coach implementing it doesn't have his/her head in the sand.

✓ COACH'S CORNER

BIOMETRIC TENDO UNIT TRAINING

BY: GAL DIETZ

One of the unique advantages that a Tendo unit provides is that it gives athletes feedback on bar speed or velocity of power output so that they realize how hard they can train. The unique thing about a Tendo is that it will give feedback such that the athlete knows how hard he/she is training, or if they can push themselves harder. It will also give them a facilitated motor pattern. I truly believe that by seeing that feedback number and pushing themselves, athletes learn how to apply force into the ground. The Tendo unit is such a unique tool for this. Please be aware that the technique could get out of control based upon the amount of effort the athletes are pushing into the bar and the floor. So please be aware and don't let technique get out of control when using these methods.

How did you come across the drop-off methods for your biometric training?

Much of my biometric method and the amount of the percentage drop-off that is used came from the necessity of training large groups of athletes with varying abilities. For example, I have fifth year seniors with high work capacities who can train through the roof, and first year freshman who have never trained before. This was a realization that I dealt with as a college strength coach. I needed to be able to control and regulate the sets, reps, and volumes to provide optimal training for my athletes. In talking with great track coaches like Phil Lundin and college strength coaches like Todd Hamer, it's obvious that in this type of training the quality and speed must remain high. This has been confirmed by many conversations with sport biomechanist Dr. Michael Yessis.

Quality and speed are king in sports. This has always been my guideline for training at least 90 percent of the time. We all know that you have to build work capacity in the human so that you can have greater speed quality development at a later date, but the guidelines should be for speed. That's how the biometric methods came to be. I, or any other strength coach, didn't develop this specifically. You see it in many training methodologies throughout history such as in track and field and swimming programs. One of the track coaches I talked to asked me a question: "How many sets and reps should I do to make sure that I get optimal training without overtraining? How do I know how to do the correct amount?"

The answer—you take a percentage drop-off. For example, if an athlete's best effort on any particular distance is four seconds, have the athlete continue to run that particular distance until 4.12 seconds or slower. That would be the slowest point and the training point at which you would stop the athlete. In this scenario, we're using time as the plyometric measure for the amount of training that can be completed.

The other possibility is if you're doing another three percent drop-off in high quality work. You could take a flying thirty meters and reduce it by one meter. So you would take the best thirty-meter effort the athlete has. If it was two seconds, you would reduce the distance the athlete runs and have him continue to do 29-meter flying runs until he ran two seconds or slower. You can always manipulate the rest, but in most cases, you would want the rest to be maximal because you're training for maximal effort, which is something we can get into later. The concept from various coaches developed into my time set controls biometric training. Essentially, you're doing the same thing as the track coach did to regulate training, but you would do it in the weight room. You can take a set weight with an exercise, and if you do five reps in four seconds, you will keep doing five repetitions until you do the same weight in 4.12 seconds. At that point, your regulation of sets becomes dictated by time.

I found this method to be optimal with submaximal days. For example, in the undulated periodization model, you would complete this on day one using the three training methods. There are other ways to manipulate the time sets, but I have found this to be optimal for measuring the time it would take an experienced coach with a stopwatch in timing the sets. Please keep in mind that technique is also a variable. If the athlete's technique changes over the sets, stop the amount of sets you're doing because the change in technique often increases the time. The athlete won't have consistent metrics and you won't be able to continue measuring what he's doing effectively and correctly. As with everything in maximal effort training—even with the submaximal loads—you would most likely focus on technique.

How did you come up with various drop-off percentages?

The drop-off percentages that I use in my programming with more advanced athletes basically came from simple concepts from testing an athlete in the vertical at the beginning of a workout. Train the athlete for that particular day. Stop when the vertical goes back up and the athlete isn't fatigued and still supercompensating with the jump squat height. In the beginning, I used some other device for measuring the percentage of the drop-offs that the athlete performed and how soon they recovered. Then I used those methods to provide myself with the frequency (how often) the athlete should train again.

For example, I had a professional athlete who had camp in four weeks. He hadn't worked upper body all summer and had come to me for help. He was a fighter in the NHL and informed me that he must get his bench to over ten reps with 225 pounds. On day one, we tested him, and he could only do two reps. He had been to a higher level prior to that, but at this point in time and over the summer, he had never trained upper body. As a result, we went with a 1–2 percent drop-off and benched every day for four weeks. By the end of his training with me at four and a half weeks, we retested him and he went to thirteen reps with 225 pounds. Understand that this athlete had been close to that level before but needed to train the motor skill to get better and do it as often as he could. Some days we only got six to eight reps in a certain weight. On other days, we did as many as sixteen singles at a certain percentage above or below 225 pounds. Again, we could keep training every day because we regulated the amount of drop-off and the

quality of the drop-off that he performed each day, so he didn't overtrain and was able to heal for 24 hours.

TABLE 5.5: TENDO UNIT BIOMETRIC PARAMETERS			
DROP-OFF	REST PERIOD	WORKOUT (STRESS A)	NEXT RETURN TO STRESS A
1-2%	24 HRS	MONDAY	TUESDAY
2-4%	48 HRS		WEDNESDAY
5-6%	72 HRS		THURSDAY

Example

One of the most amazing results I've seen from a plyometric method was an elite, professional athlete with large work capacity potential perform his training sets for roughly four sets of squats at a body weight of 205 pounds. He was using 295 pounds and would do one repetition, rest 15 seconds, and do another repetition. With our drop-off percentage guidelines, he achieved 3-4 percent. He was able in one set to perform 31 repetitions and not drop-off more than three percent of his bar speed during that set. That particular day, the athlete did over seventy repetitions of the back squat at 295 pounds at a very high velocity. Essentially, some could say it was a jump squat because he was coming off the ground at the top due to acceleration. He was accelerating all the way through the bar. If he had done eighty repetitions, we would have overtrained him. If he had done fifty repetitions, he would have been undertrained for that particular workout and the demands we imposed on him.

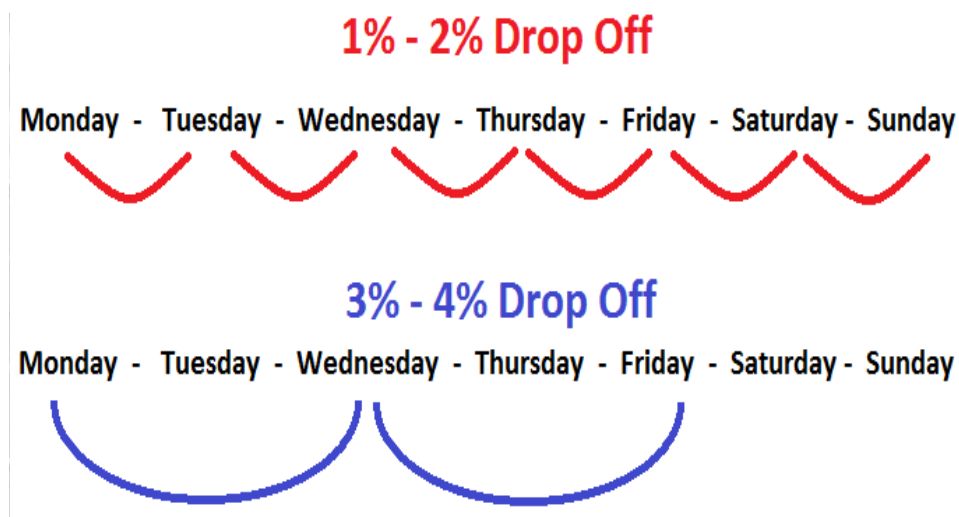


Figure 5.5: Example of the different biometric drop-off percentages used with Tendo unit measures.

How do you use biometric training on max effort days?

One of the great things about the max effort training is that it gives the athletes a huge amount of feedback in their ability to push against a lot of force. In my undulated weekly model, it would go on the max effort day, which would be day two loading methods. I often use Tendo training for maximal velocity training in regards to regulating max effort days. Essentially, what you're doing with the Tendo is measuring the bar speed. This will give you an understanding of how many sets an athlete should do on a particular day. I often only do singles or clusters with this particular method, so please be aware that anything more than a single with maximal loads probably isn't optimal. For example, I had an athlete regulate in regards to a three percent drop-off. This particular professional athlete weighed 205 pounds and back squatted 295 pounds for 72 singles over four sets on one day. He came in two days later. We tested him and he was able to repeat things that he did two days prior during the workout in regards to bar speed and vertical jump height. We know this athlete's work capacity ability at this point and training age. He was able to handle a 2–3 percent drop-off on training in every other day frequency. In one of the sets, this particular athlete did 32 reps in a row before he reached a three percent drop-off.

The max effort biometric training is inspired by the Bulgarians. They hit maximal effort on a particular day to find out where the athlete was and then reduced the weight by five to ten kilos and hit singles until either technique failed or the weight couldn't be lifted any more in that particular workout. This isn't confirmed through Bulgarian coaches—only through people who have talked to many Bulgarian coaches over the years. It seems to be a very effective method for training maximal effort. The biggest key for maximal effort is being able to find the drop-off point on a percentage base in regards to how much the athlete should reduce bar speed and when the next time his training will take place.

Sources

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5.5: MONDAY, MEDIUM INTENSITY (SUBMAXIMAL EFFORT)

LOADING

Below is a section from the loading table, showing exclusively the loading variables applied on Monday (Table 5.6). Just as before, shaded sections indicate that these are loads that wouldn't be used at this point of the training week.

TABLE 5.6: MONDAY LOADING (MEDIUM INTENSITY)				
7 1- RM	MAXIMUM REPS POSSIBLE	HIGH QUALITY REPS (STRENGTH)	SETS (OFF-SEASON)	SETS (IN-SEASON)
80%	5-6			
77.5%	6-7			
75%	7-8			
72.5%	8-9			
70%	9-10	2-3	4-6	3-4
67.5%	11-12	2-3	4-6	3-5
65%	13-14	3	4-6	3-5
62.5%	14-15	3	4-6	3-5
60%	15-16			
57.5%	17-18			
55%	19-20			

WORKOUTS

Below you will find Monday's workout for the three-day, 55–80 percent block. The column on the left is the actual workout, using our “imaginary” athlete to calculate the loads used on each exercise. The column on the right, labeled “Coaching Points,” gives further explanation about exercise sequencing and important coaching queues to use with your athletes. The coaching points are labeled with the respective workout box that they apply to. At the end of this section, you will find workouts for each block of a four-day, five-day, six-day, and two-day in-season model.

BLOCK FOUR, MONDAY

100%	MONDAY	21-Jun-10			
		REPS	LOAD	SETS	NOTES
	OH SQ Rack Press	6		2	Eyes Closed
	Pair w/				
	2-WAY NECK	8		2	
	Pair w/				
	STNDING Glute Kicks	6		2	
500	BACK SQUAT	3	275 - 300	Roll I-band	
		2	325 - 350	Spine Rolls	
	Test	2	400 - 415	CW TEST	
	Pair Below	3	350 - 365	0:0:0:0	
	Pair Below	3	350 - 365	0:0:0:0	
	Pair Below	3	350 - 365	0:0:0:0	
	French Contrast	3	350 - 365	0:0:0:0	
	Hurdle Hop	4	*N/A .. *N/A	4	Distance
	Pair w/				
250	Squat Jump	4	200 - 205	4	0:0:0:0
	Pair w/				
	Acc Band Jump	4		4	Rest 5:00
	4 way neck	8		2	
	Pair w/				no Rest
	Wrist Flexion	6		3	
	Pair w/				no Rest
	ANT TIB BND	10		3	Band Medium
	Walking Band Lunge Jump	4		3	Bands
	Pair w/				Speed/Jump
105	DB BENCH	9,7,5	75 - 85	3	Toes
	Pair w/				
225	Lat Pull Down	8	170 - 180	3	
500	Glute Bar Lift	6	375 - 400	3	0:0:0:0
	Pair w/				No Rest
	Hip FLX BND Pulls	6		3	
	Pair w/				No Rest
75	DB Shoulder Press	10S	45 -	3	OC
150	Rev Grip Tri Push	8	115 - 120	3	
	Pair w/				No Rest
	Bicep shock curls	10S		3	
	Pair w/				No Rest
	Bam Bam	10		3	

COACHING POINTS AND EXERCISE TUTORIAL

Box 1

-In the first cluster of exercises, these may often be skipped if a very intense dynamic warm up has been completed that involves a number of disciplines from various sciences to activate the body to train.

[Over head rack squat](#); [Manual 4-way neck](#); [Standing Glute Kicks](#)

Box 2-4

-Back squat: Notice the first three sets are warm up sets and the third set is one that the coach watches to test the fatigue level of the athletes.

-The four work sets at submaximal loads in the back squat are paired with the following six exercises. The first three are used to complete the French contrast method and the last three are used as active rests during the course of training. In this case, the French contrast was used to address various aspects of the particular sport training with these methods.

-Notice that the hurdle hop is for a distance during this program. In the prior programs, the hurdle hops were for height. I feel that distance is a better correlation in sports performance when jumping hurdles, so I save the distance part of this for the latter stages of training.

[Back Squat](#); [Hurdle Hop](#); [Squat Jump](#); [Accelerated Band Jump](#); [4 way neck](#); [Wrist Flexion](#); [Anterior Tib BND](#)

Box 5

-Walking band lunge jumps are done at high speeds, extremely quickly. The athlete is coached to jump in the air and drive through his big toe.

[Walking Band Lunge Jumps](#); [DB Bench](#); [Lat Pull Down](#)

Box 6

-The dumbbell OC shoulder press is used very effectively in this case and doesn't stress the triceps but only isolates the shoulder girdle.

[Glute Bar Lift](#); [Hip Flex Band Pulls](#); [DB Shoulder Press](#)

Box 7

-The bicep shock curl is a reactive exercises for the upper arm; the athlete turns the palms down and away after releasing the bar, and supinates the hand fully when catching it.

[Reverse Grip Tricep Push Down](#); [Bicep Curl Shock](#); [Bam Bams](#)

✓ COACH'S CORNER

BAND TRAINING

BY: CAL DIETZ & JONATHON JANZ

EDITED BY: BEN PETERSON

The use of elastic bands in training has occurred for quite some time, increasing in popularity with each passing year. Initially utilized by “old time Strongmen” in the form of chest expanders, elastic resistance has long been a convenient (though sometimes dubious) means of training the muscles. More recently, elastic resistance has taken the form of bands, which are either used on their own or in unison with free weights and/or machines. These loops of durable rubber have many different uses in the weight room.

Studies have suggested support for the use of bands in training, primarily with regards to improvements in peak force and peak power during exercises, which combine bands and traditional weight training exercises (such as back squats; 2). For example, a back squat load of 85 percent of an athlete’s maximum, combined with resistance bands attached to the barbell has been shown to significantly increase the athlete’s peak force and peak power output during the exercise (2). This increase in force and power during training may, over time, induce favorable adaptations in the athlete to a greater extent than weight training without bands (1). In some cases, the addition of bands in training has increased strength and power levels two to three times greater than training that doesn't include bands (1).

There are several different ways of utilizing bands in training. One method is to use them as a means of assisting exercises or other activities. This type of use helps to introduce bands to athletes unfamiliar with them. For example, an athlete may choose to use a band to aid with stretching, known as band stretching. The band essentially replaces the need to have a partner to help with stretching. Athletes may also use bands to assist with exercises such as the band pull-up or chin-up. By taking advantage of the band’s elasticity, the athlete is able to more easily complete the exercise and perform more repetitions than without the band.

By far the most common use of bands is in the form of resistance for exercise. Whether they are used alone such as in the Bulgarian band squat or in combination with weighted implements (barbells and/or dumbbells), bands can supplement nearly any exercise and add greater stress and variety. Increased stress and novel stimuli help to encourage adaptation and challenge athletes to develop a higher level of force and power output in such activity.

The elastic resistance provided by bands alone is often enough to make several exercises much more difficult. The piston squat becomes decidedly more intense with the addition of a band as does the split squat. For these normally body weight exercises, resistance is increased with the use of the band. The addition of the band also compels the athlete to exert more force throughout the entire range of motion (accommodating resistance; 3). In the piston squat, for example, the band is lax when the athlete is sitting upon the bench. The most difficult part of this exercise is the initial liftoff phase from the bench and body weight alone is more than adequate for

resistance. As the athlete stands up, the exercise becomes easier as the active muscles move into a range of motion of increased mechanical advantage. During this part of the exercise, the athlete's own body weight is significantly easier to move. To make this phase more difficult, the band begins to stretch and provide increased resistance. Thus, the athlete receives a greater amount of stress throughout the entire range of motion for this exercise with the addition of a band. This scenario may be duplicated with many other body weight exercises such as push-ups and sit-ups. Once an athlete has adapted to a particular body weight exercise, one may add additional resistance in the form of a band in order to increase the degree of difficulty.

Body weight exercises aren't the only activities that can be made more difficult with the addition of bands. One can attach bands to a weighted barbell and perform back squats, bench presses, and a host of other exercises. As mentioned before, the addition of bands to an exercise forces the athlete to exert a greater amount of effort throughout the entire range of motion. This is true for weighted exercises as well. For example, a maximum back squat of 500 pounds represents the amount of weight an athlete can successfully lift from a full squat to an erect position. The limiting factor for success in this lift is the highly difficult range of motion near the bottom of the squat. Once this is negotiated, the rest of the range of motion is considerably easier. This essentially means that the athlete can lift 500 pounds from the bottom of a squat. As we know from experience, however, athletes can squat considerably more weight in shorter ranges of motion (such as the half squat or quarter squat). As a result, coaches will often prescribe half rack squats with significantly more weight than the athlete's maximum full squat in order to properly stress the athlete within that range of motion. While this is certainly an acceptable practice, it may be easier and more efficient to attach bands to the barbell for use during full squats. The bands will be lax at the bottom of the squat, where the load on the bar is enough to fully stress the athlete, but increase in tension as the athlete stands up (which more adequately trains the stronger portion of the lift). Bands can be added to numerous exercises including dumbbell exercises. If a coach seeks a method of making an exercise more difficult or simply wants to add more variety to a program, band training may be an excellent option.

References

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2. Wallace BJ, Winchester JB, McGuigan MR (2006) Effects of elastic bands on force and power characteristics during the back squat exercise. *Journal of Strength and Conditioning Research* 20(2):268–72.
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5.6: WEDNESDAY, HIGH INTENSITY (MAXIMAL EFFORT)

LOADING

Below is a section from the loading table, showing exclusively the loading variables applied on Monday (Table 5.7). Just as before, shaded sections indicate that these are loads that wouldn't be used at this point of the training week.

TABLE 5.7: WEDNESDAY LOADING (HIGH INTENSITY)				
7 1 RM	MAXIMUM REPS POSSIBLE	HIGH QUALITY REPS (STRENGTH)	SETS (OFF-SEASON)	SETS (IN-SEASON)
80%	5-6	1-2	4-5	2-3
77.5%	6-7	1-3	4-5	2-3
75%	7-8	1-3	4-5	3-4
72.5%	8-9	2-3	4-5	3-4
70%	9-10			
67.5%	11-12			
65%	13-14			
62.5%	14-15			
60%	15-16			
57.5%	17-18			
55%	19-20			

WORKOUTS

Below you will find Monday's workout for the three-day, 55–80 percent block. The column on the left is the actual workout, using our “imaginary” athlete to calculate the loads used on each exercise. The column on the right, labeled “Coaching Points,” gives further explanation about exercise sequencing and important coaching queues to use with your athletes. The coaching points are labeled with the respective workout box that they apply to.

BLOCK FOUR, WEDNESDAY

100%	WENDESDAY	23-Jun-10			
		REPS	LOAD	SETS	NOTES
	Triangle Terror	6		2	
	Pair w/				
	2-WAY NECK	8		2	
	Pair w/				
	Piston Squat Band	6		2	Bands
500	BACK SQUAT	3	275 - 300	Roll I-band	
		2	325 - 350	Spine Rolls	
		1	400 - 415		
	Speed 95% Drop off	1	390 - 400	1:15 Rest	
		1	390 - 400	1:15 Rest	
		1	390 - 400	1:15 Rest	
		1	390 - 400	1:15 Rest	
		1	390 - 400	1:15 Rest	
		1	390 - 400	1:15 Rest	
		1	390 - 400	1:15 Rest	
	Split SQ Drop Jump	4		4	
	Pair w/				Rest 30
	USSR Plyo Box	4		4	Bands
	Pair w/				Rest 30
250	Squat Jump	4	170 - 175	4	Rest 2:00
	Power Step up	4		3	Bands
	Pair w/				Speed/Jump
	Laying External Rot	6		3	5:0:5:0
	Pair w/				Rest 30
100	DB SL Calf Raise	10	65 - 70	3	Knee Bend
	Nordic HAM Curls	8		3	Assist
	Pair w/				Rest 30
90	DB INCLINE BENCH	9,7,5	65 - 70	3	
	Pair w/				Rest 30
105	DB BO Row	8	80 - 85	3	Rest 1:00
200	DB RDL InLine	6	150 - 160	3	
	Pair w/				
	Hip FLX BND Pulls	6		3	
	Pair w/				
75	DB Shoulder Press	10S	45 -	3	
150	Rev Grip Tri Push	8	115 - 120	3	
	Pair w/				
	Bicep shock curls	10S		3	
	Pair w/				
	Bam Bam	10		3	

COACHING POINTS AND EXERCISE TUTORIAL

Box 1

-The first box can be skipped if an intense dynamic warm up has been completed.

[Over head rack squat](#); [Manual 4-way neck](#); [Standing Glute Kicks](#)

Box 2

-More advanced athletes will use 8 percent of the drop-off during this time, which will be the indicator of how many sets must be completed.

[Back Squat](#)

Box 3

-The next cluster of exercises are split squat jumps, Russian plyos, and loaded squat jumping, which is just a combination of plyometrics post-maximal effort squat.

[Split Squat Drop Jump](#); [USSR Plyo Box Bands](#); [Squat Jump](#)

Box 4

-The power step up is performed with bands attached around the athlete's waist; the athlete should drive the foot through the box forcefully. The coach holding the band should not hold so tight as to reduce the speed of the movement

-For the DB SL calf raise, cue the athletes to push through the big toe

[Power Step Up](#); [Laying Eccentric External Rotation](#); [DB SL Calf Raise](#)

Box 5

-Adjust the band tensin with the nordic hamstring curl; athletes generally should use between a light and mini band
[Nordic Ham Curls Assisted](#); [DB Incline Bench](#); [DB BO Row](#)

Box 6

-The hip flexor band pull is an explosive exercise for the anterior hip musculature

[DB RDL InLine](#); [Hip Flexor Band Pulls](#); [DB Shoulder Press](#)

Box 7

-The bicep shock curl is an explosive exercise for the upper arm; the athlete should turn the palms down and away after releasing the bar. When bring the hands up, the athlete should fully supinate the hand and catch the bar. This is done as fast and explosively as possible.

[Reverse Grip Triceps Push-Down](#); [Bicep Curl Shock](#); [Bam Bams](#)

✓ COACH'S CORNER

PROPER BREATHING FOR SPORTS RECOVERY

BY: CAL DIETZ & DANIEL RAIMONDI

EDITED BY: BEN PETERSON

An often overlooked component of many programs is restoration and recovery. Coaches attempt to manipulate variables in their workouts, changing intensities, volume, and exercises in order to cause adaptation. However, a training program is most effective if the athlete is able to recover from and adapt to the previous stress/workout. There are numerous techniques used to aid in restoration—[recovery baths](#), [contrast showers](#), proper nutrition, [stretching](#), massage, and [recovery rollers](#). This article will cover a technique seldom employed and even less commonly programmed—breathing.

Slow, deep, breathing has been shown to induce a calming effect on the body, decreasing everything from blood pressure to stress. Deep voluntary belly breathing also has been shown to shift the nervous system from sympathetic dominance to parasympathetic dominance (Jerath et al. 2006). What does this mean for your athletes? It means faster recovery by starting the digestive process sooner, creating stronger and faster athletes while responding better to future stress.

The neural response to training is well documented with an excitatory effect occurring in response to a stressor. Therefore, the key to recovery is being able to switch as soon as possible from the catabolic state brought on by training into a more anabolic state (Chen et al. 2011). The faster an athlete can go from an excited state to a calm one, the more capable he will be recovering from the workout.

So what exactly constitutes good belly breathing? Well, it's basically as simple as it sounds—deep breathing into the naval. Take a deep breath into your belly through the nose and exhale slowly through the mouth. Another useful tip is to take longer to exhale than to inhale. So an example of a good, deep breath might be a four-second inhale held for seven seconds with eight seconds taken to exhale (Weil). Repeat this process three to four times, letting your body calm itself, relax, and adjust to the new breathing pattern.

The last piece of this breathing puzzle is simply how to program it into your workout. Most coaches are raising an eyebrow. With time restrictions, most agree that the focus of the workout should be the workout. I'd contend that taking five to ten minutes at the end of the training session to include something as simple as deep, belly breathing can have huge impacts on future training sessions. One could also combine this type of breathing with a stretch (think yoga). An example might be a simple bar hang with slow, relaxing, rhythmic breaths. Another variation would be to perform a [glute ham hang](#). To do this, have the athlete lie face down on a glute ham machine, hang over the edge, and let the body completely relax.

This will not only readjust the breathing pattern but also help to decompress the spine. Every breath out should feel the body relax more and more, such that the spine feels longer and the athlete feels zero tension.

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5.7: FRIDAY, LOW INTENSITY (HIGH VOLUME)

LOADING

Friday is very similar to Monday with the exception that you replace the moderate intensity level with extra volume. The last training day of the week is always the most difficult in terms of trying to generate intensity, focus, and excitement from the athlete. They have worked hard all week—training, doing homework, going to class, hanging out with their friends, going to other activities like piano lessons or club sports. All that “stress” adds up fast. To try and keep the training level as high as possible, I have found that it works best to expand the list of methods used to keep the athlete’s attention. Training means used on Friday include but aren't limited to bodybuilding methods, Strongman training, dinosaur training, and CrossFit methods.

These methods are applied by using the loading variables listed in the table 5.8. Any shaded area signifies that it's a load that shouldn't be used on the low intensity/high volume day.

TABLE 5.8: FRIDAY LOADING VARIABLES (HIGH VOLUME)				
7 1 RM	MAXIMUM REPS POSSIBLE	HIGH QUALITY REPS (STRENGTH)	SETS (OFF-SEASON)	SETS (IN-SEASON)
77.5%	6-7			
75%	7-8			
72.5%	8-9			
70%	9-10			
67.5%	11-12			
65%	13-14			
62.5%	14-15	5-8	4-6	IN-SEASON VOLUME COMES FROM PRACTICE
60%	15-16	5-8	4-6	
57.5%	17-18	5-8	4-6	
55%	19-20	5-8	4-6	

WORKOUTS

Below you will find Friday's workout for the three-day, 55–80 percent block. Coaching points with their respective hyperlinks to the exercises are in the right-hand column. At the end of this section, you will find workouts for each block of a four-day, five-day, six-day, and two-day in-season model.

BLOCK FOUR, FRIDAY

100%	FRIDAY	25-Jun-10			NOTES
		REPS	LOAD	SETS	
	3 - WY Ham PRSS	9		2	Eyes Closed
	Pair w/				no rest
	2-WAY NECK	8		2	
	Pair w/				no rest
	BAL SNGL LG SQ	6		2	Air Max
	Hurdle Hop	4		3	
	Pair w/				Rest 30
	USSR Plyo Box	4		3	
	Pair w/				Rest 30
	Acc Band Jump	4		3	
225	Single Leg Squat	12	145 - 160	3	
	Pair w/				Rest 30
150	SL Reverse Hyper	7	105 - 115	3	
	Pair w/				Rest 30
	Cuban PRSS INC F8	6		3	*****
	Cross Over STEP Up	4		3	Bands
	Pair w/				Rest 30
	SWB LG Curl SNGL Leg	8		3	
	Pair w/				Rest 30
	Thors Hammer	8		3	*****
300	BENCH PRESS	FFFF	195 - 105	4	Rest 45
	Pair w/				
75	DB Shoulder Press	FFF	55 - 30	3	OC
	Pair w/				Rest 45
150	TRI PUSH DOWN	FFF	105 - 60	3	Rest 45
	Nordic HAM Curls	6		2	
	Pair w/				
	Hip FLXor ISO Pull	6		2	
	Pair w/				
	Iso Ball Grion Squeeze	10S		3	
	Hindu Squat Iso	180s		1	
	Glute Ham Back Cav Iso	180s		1	
	GH HANG	120S		1	Relax Mouth
	Pair w/				
	Partner Leg Walks	120S		1	
	Pair w/				
	LAYING RELAXATION	120S		1	Relax Mouth

COACHING POINTS AND EXERCISE TUTORIAL

**On day three, I will often address some more plyometrics even in a fatigued state but still try to keep the quality high, however with an understanding that this block in particular could be my tenth to twelfth week into training.

Box 1

[3 Way Hamstring Press](#); [Manual 4-way neck](#); [Balance Single Leg Squat](#)

Box 2

[Hurdle Hop](#); [Russian Plyo Box](#); [Accelerated Band Jump](#)

Box 3

-With this high volume day, I have selected exercises that will increase work capacity and paired them together with the single leg squat and the single leg reverse hyper.

[Single Leg Squat](#); [Reverse Hyper](#); [Cuban Press Incline Figure 8](#)

Box 4

[Cross Over Step Up](#); [Single Leg Ball Curl SL](#); [Thors Hammer](#)

Box 5

-The bench press, dumbbell shoulder press, oscillatory movement, and triceps push-down are all done to failure (signified by the FFF). The latter part of the week is the only time that I do sets to failure in my undulated model.

[Bench Press](#); [DB Shoulder Press](#); [Tri push down](#)

Box 6

[Nordic Hamstring Curl](#); [Hip Flexor Isometric Pull](#); [Isometric Ball Groin Squeeze](#)

Box 7

-Once into training, I've found little value in long duration isometrics and have found the only place they can be inserted into a program to address the qualities that may increase for these types of movements are in the latter part of the week during fatigued states to increase work capacity quality.

[Isometric Hindu Squat Trap Shoulder Bicep Hold](#); [Isometric Glute Ham Back Iso](#)

Box 8

[Glute Ham Hang](#); [Partner Leg Walks](#); [Laying Relaxation](#)

✓ COACH'S CORNER

COACHING THE SQUAT FOR TALLER ATHLETES

BY: GAL DIETZ AND TOMMY MILLER

EDITED BY: BEN PETERSON

When teaching young athletes to squat, coaches need to remember that squatting isn't a "cookie cutter" exercise. Not everyone's squatting form is going to look the same. This is especially true of taller athletes or athletes with long thighs (femurs). When training taller athletes, a coach must recognize the inherent biomechanical disadvantage that a taller athlete experiences when squatting compared to the efforts of shorter athletes. This must be accounted for.

When an athlete performs a squat, there is a great amount of torque about the knee and hip joints. When an athlete has a long thigh (femur), there is considerably more torque about the knee joint when compared to shorter athletes. To counteract that increased amount of torque, it has been said that the athlete should incline the trunk (or bend farther forward) in order to bring the center of gravity closer to the knee joint, thus reducing torque. However, to safely incline the trunk, an athlete must position the bar further down his back, which will put more stress upon the hip joints and hip extensors while lessening the stress on the knee joints.

In theory, this may seem like a good idea. In practice, however, an athlete who doesn't possess a strong enough back to lift the weight in such a manner may set himself up for injury. The stress applied to the back when the torso is more inclined is much greater than that which is applied to a straighter or more upright torso. So if this is the case with your athlete, what is the solution? In order to safely squat an athlete with long thighs, the coach must tell the athlete to spread out his feet. This will not actually shorten the length of the thigh but will help the athlete keep his center of gravity closer to the knee joint while performing a safe and effective squat. Being able to squat correctly will allow the athlete to increase the torque about the hip joint and less about the knee joint, thus shifting the stress to the glutes and hip extensors.

If an athlete uses a wide stance when squatting, special attention must be paid to the feet as well as how the knees move during the exercise. As a result of utilizing a wide squatting stance, an athlete will tend to place more weight on the medial side of his foot, which may cause the knees to move inward. Coaches need to be aware of this and must correct this error when it appears (by encouraging the athlete to keep his knees in line with his legs). Squatting with a wide stance will help provide a biomechanical advantage for taller athletes by reducing torque about the knee joints. The wider stance allows the athlete to obtain a lower squatting depth than a more traditional, narrower stance.

5.8: 55-80 PERCENT THREE-DAY PROGRAM OVERVIEW

TABLE 5.9: UNDULATING BLOCK MODEL							
TRAINING WEEK:		DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
THREE-DAY MODEL	FOCUS	TOTAL BODY	OFF	TOTAL BODY	OFF	TOTAL BODY	OFF
	LOAD	62-70%		72-80%		55-62%	
	MEANS APPLIED	BIOMETRIC		DYNAMIC/BIOMETRIC		VOLUME	

TABLE 5.10: 55-80 PERCENT THREE-DAY CONDITIONING MODEL			
TRAINING DAY	CONDITIONING GOAL	SPECIAL INSTRUCTIONS	EXAMPLE WORKOUT
DAY 1	Long Sprints or Short Sprints with Reduced Rest (Speed Conditioning)	<ul style="list-style-type: none"> Sprints over 15 seconds or Sprints under 10, recovery under 20 seconds. 	<ul style="list-style-type: none"> High Quality Lactic Anaerobic Power Training Builder Metabolic Injury Prevention Runs
DAY 2	Short Sprints (High Quality Speed)	<ul style="list-style-type: none"> Sprints under 10 seconds Full recovery; rest 90-120 seconds. 	<ul style="list-style-type: none"> Alactic High Quality Workout Flying 60's 16 Week Short Sprint Workouts Cone Agility
DAY 3	Longer Sprints or Continuous Running (Oxidative Conditioning)	This day is purely work capacity focused	<ul style="list-style-type: none"> Aerobic Work Capacity Training Builder Game Speed Conditioning Bike Conditioning TrashBall

BLOCK FOUR (3-DAY): HIGH FORCE AT HIGH VELOCITY (55-80%)

% 100	MONDAY		21-Jun-10		REPS	LOAD	SETS	NOTES
	EXERCISE	PAIR	REPS	LOAD				
	OH SQ Rack Press		6		2	Edges Closed		
	Pair w/							
	2-WAY NECK		8		2			
	Pair w/							
	STANDING Glute Kicks		6		2			
500	BACK SQUAT		3	275 - 300	Roll I-band			
	Test		2	325 - 350	Spine Rolls			
	Pair Below		2	400 - 415	CW TEST			
	Pair Below		3	350 - 365	0:0:0			
	Pair Below		3	350 - 365	0:0:0			
	French Contrast		3	350 - 365	0:0:0			
	Hurdle Hop		4	110s	4	Distance		
	Pair w/							
250	Squat Jump		4	200 - 205	4	0:0:0		
	Pair w/							
	Acc Band Jump		4		4	Rest 5:00		
	4 way neck		8		2	no Rest		
	Pair w/							
	Wrist Flexion		6		3	no Rest		
	Pair w/							
	ANT TIB BND		10		3	Band Medium		
	Walking Band Lung. Jump		4		3	Bands		
	Pair w/					Speed Jump		
105	DB BENCH		8,7,5	75 - 85	3	Toes		
	Pair w/							
225	Lat Pull Down		8	170 - 180	3			
500	Glute Bar Lift		6	375 - 400	3	0:0:0		
	Pair w/					No Rest		
	Hip FLX BND Pulls		6		3	No Rest		
	Pair w/							
75	DB Shoulder Press		10S	45 -	3	OC		
150	Rev Grip Tri Push		8	115 - 120	3			
	Pair w/					No Rest		
	Bicep shock curfs		10S		3	No Rest		
	Pair w/							
	Bam Bam		10		3			

% 100	WEDNESDAY		23-Jun-10		REPS	LOAD	SETS	NOTES
	EXERCISE	PAIR	REPS	LOAD				
	Triangle Terror		6		2			
	Pair w/							
	2-WAY NECK		8		2			
	Pair w/							
	Piston Squat Band		6		2	Bands		
500	BACK SQUAT		3	275 - 300	Roll I-band			
			2	325 - 350	Spine Rolls			
			1	400 - 415				
			1	390 - 400	1:15 Rest			
			1	390 - 400	1:15 Rest			
			1	390 - 400	1:15 Rest			
			1	390 - 400	1:15 Rest			
			1	390 - 400	1:15 Rest			
			1	390 - 400	1:15 Rest			
	Split SQ Drop Jump		4		4			
	Pair w/					Rest 30		
	USSR Plyo Box		4		4	Bands		
	Pair w/					Rest 30		
250	Squat Jump		4	170 - 175	4	Rest:2:00		
	Power Step up		4		3	Bands		
	Pair w/					Speed Jump		
	Laying External Rot		6		3	5:0:50		
	Pair w/					Rest 30		
100	DB SL Calif Raise		10	65 - 70	3	Knee Bend		
	Nordic HAM Curfs		8		3	Assist		
	Pair w/					Rest 30		
90	DB INCLINE BENCH		8,7,5	65 - 70	3			
	Pair w/					Rest 30		
105	DB BO Row		8	80 - 85	3	Rest:1:00		
200	DB RDL InLine		6	150 - 160	3			
	Pair w/							
	Hip FLX BND Pulls		6		3			
	Pair w/							
75	DB Shoulder Press		10S	45 -	3			
150	Rev Grip Tri Push		8	115 - 120	3			
	Pair w/							
	Bicep shock curfs		10S		3			
	Pair w/							
	Bam Bam		10		3			

% 100	FRIDAY		25-Jun-10		REPS	LOAD	SETS	NOTES
	EXERCISE	PAIR	REPS	LOAD				
	3-WY Ham PRSS		9		2	Eyes Closed		
	Pair w/					no rest		
	2-WAY NECK		8		2			
	Pair w/					no rest		
	BAL SNLGL SQ		6		2	Air Max		
	Hurdle Hop		4		3			
	Pair w/					Rest 30		
	USSR Plyo Box		4		3			
	Pair w/					Rest 30		
225	Single Leg Squat		12	145 - 160	3			
	Pair w/					Rest 30		
150	SL Reverse Hyper		7	105 - 115	3			
	Pair w/					Rest 30		
	Cuban PRSS INC FB		6		3		
	Cross Over STEP Up		4		3	Bands		
	Pair w/					Rest 30		
	SVB LG Curl SNGL Leg		8		3			
	Pair w/					Rest 30		
	Thors Hammer		8		3		
300	BENCH PRESS		FFFF	195 - 105	4	Rest 45		
	Pair w/							
75	DB Shoulder Press		FFF	55 - 30	3	OC		
	Pair w/					Rest 45		
150	TRI PUSH DOWN		FFF	105 - 60	3	Rest 45		
	Nordic HAM Curfs		6		2			
	Pair w/							
	Hip FLXor ISO Pull		6		2			
	Pair w/							
	Iso Ball Grion Squeeze		10S		3			
	Hindu Squat Iso		180s		1			
	Glute-Ham Back Cav Iso		180s		1			
	GH HANG		120S		1	Pelvic Mouth		
	Partner Leg Walks		120S		1			
	Pair w/							
	LAYING RELAXATION		120S		1	Pelvic Mouth		

5.9: 55-80 PERCENT FOUR-DAY PROGRAM

Below, you will find how to take the three-day model and extrapolate it to a four-day model. In table 5.11, day one loading parameters are in white, day two loading parameters are in red, and day three loading parameters are in blue. Notice that in the four-day model there isn't a blue day. In this mesocycle, day three loading parameters (signified by the color blue) are the “volume” days of the week. In a four-day model, there aren't enough training days to give each focus its own volume day. Instead of sacrificing a high intensity day of training, extra volume work is placed at the end of training days two and five of the week.

TABLE 5.11: 55-80 PERCENT THREE-DAY VERSUS FOUR-DAY MODEL							
TRAINING WEEK:		DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
THREE-DAY MODEL	FOCUS	TOTAL BODY	OFF	TOTAL BODY	OFF	TOTAL BODY	OFF
	LOAD	62-70%		72-80%		55-62%	
	MEANS APPLIED	BIOMETRIC		DYNAMIC/BIOMETRIC		VOLUME	
FOUR-DAY MODEL	FOCUS	LOWER BODY	UPPER BODY	OFF	LOWER BODY	UPPER BODY	OFF
	LOAD	62-70%	62-70%		72-80%	72-80%	
	MEANS APPLIED	BIOMETRIC			DYNAMIC/BIOMETRIC		

Another important aspect of training that can't be forgotten is speed work and conditioning. Below is a table that shows where in the training week each should be emphasized along with an example workout.

TABLE 5.12: 55–80 PERCENT FOUR-DAY CONDITIONING MODEL			
TRAINING DAY	CONDITIONING GOAL	SPECIAL INSTRUCTIONS	EXAMPLE WORKOUT
DAY 1	Short Sprints (High Quality Speed)	<ul style="list-style-type: none"> • Sprints under 10 seconds • Full recovery; rest 90–120 seconds. 	<ul style="list-style-type: none"> • Alactic High Quality Workout • Flying 60's • 16 Week Short Sprint Workouts • Cone Agility
DAY 2	Long Sprints or Short Sprints with Reduced Rest (Speed Conditioning)	<ul style="list-style-type: none"> • Sprints over 15 seconds or • Sprints under 10, recovery under 20 seconds. 	<ul style="list-style-type: none"> • High Quality Lactic Anaerobic Power Training Builder • Metabolic Injury Prevention Runs
DAY 3	Short Sprint (High Quality Speed)	<ul style="list-style-type: none"> • Sprints under 10 seconds • Full recovery; rest 90–120 seconds. 	<ul style="list-style-type: none"> • Alactic High Quality Workout • Flying 60's • 16 Week Short Sprint Workouts • Cone Agility
DAY 4	Longer Sprints or Continuous Running (Oxidative Conditioning)	This day is purely work capacity focused	<ul style="list-style-type: none"> • Aerobic Work Capacity Training Builder • Game Speed Conditioning • Bike Conditioning • TrashBall

Finally, we need to talk about the different exercises, methods, and means that I use in a four-day program that I don't use and didn't show you in the three-day program. The following hyperlink will take you to a video that explains the four-day program in detail.

[**FOUR-DAY 55–80 PERCENT VIDEO**](#)

QUICK TRAINING NOTES

Day one

- The back squat at submaximal effort is paired with power step-ups and cycle kicks, which are highly reactive. This is a contrast method based upon this particular sport's individual needs. Isometrics were still used in early season to build this particular team's work capacity levels.

Day two

- The bench press is paired with various exercises that are important to the particular sport trained.
- This program is essentially an upper body day with any four-day split.
- Days one and two of this particular program are submaximal days.

Day three

- The lat pull and press is a unique exercise. It is done with an eccentric component in this particular lift and is highly effective for swimming.
- The sport back squat, which is mentioned earlier in this book, is paired with an accelerated band jump, which in the acceleration sport would be done to deep squat levels and in other sports such as distance running or swimming would be done to higher levels.

Day four

- This is another upper body day with clustered training used to address maximal effort and is paired with a clap push-up. Often the clap push-up is done with bands around the arm pits hanging from the racks. It's done at a high speed and a high velocity.

**BLOCK FOUR (4-DAY): HIGH FORCE AT HIGH VELOCITY
HYPERLINKS**

Day 1	Exercise Hyperlink	Day 2	Exercise Hyperlink	Day 3	Exercise Hyperlink	Day 4	Exercise Hyperlink
Box 1	Back Squat	Box 1	Bench Press	Box 1	Glute Bar Lift Lat Pull and Press 3- Way Ham Touch	Box 1	Bench Press
Box 2	Back Squat Power Step up Cycle Kicks	Box 2	Bench Press DB Rear Delt Leg Press Calf Raise	Box 2	Back Squat	Box 2	Bench Press Clap Push Up DB Rear Delt
Box 3	90 90 Groin ISO Hold 3- Way Ham Touch DB Walking Lunge	Box 3	DB Incline Fly DB Bent Over Row Side DELT Raise	Box 3	Sport back Squat Accelerated Band Jump KA Bent Over Rows	Box 3	DB Bench DB Bent Over Row DB Shrug
Box 4	Hip Flex Ecc Prone Dumbbell Push Backs	Box 4	JM DB Press Bar Curl Chest Reverse Grip Iso	Box 4	90 90 Groin ISO Hold Ball LG curl DB Walking Lunge	Box 4	JM DB Press Incline Hammer Curls Chest Reverse Grip Iso
Box 5	Supine Glute Ham Back Iso	Box 5	Supine Glute Ham Back Iso	Box 5	Glute Ham Back Cav Iso Supine Glute Ham Back Iso	Box 5	Supine Glute Ham Back Iso
Box 6	Glute Ham Back Cav Iso	Box 6		Box 6		Box 6	
Box 7	3:00 Core Test SWB Down TW	Box 7	3:00 Core Test SWB Down TW	Box 7	SWB Down TW	Box 7	SWB Down TW
Box 8	GH HANG Rollers Glutes and Hams Laying Relaxation	Box 8	GH HANG Rollers Quads and Back Laying Wall Shakes	Box 8	GH HANG Rollers Glutes and Hams Laying Relaxation	Box 8	GH HANG Rollers Quads and Back Laying Wall Shakes

5.10: 55-80 PERCENT FIVE-DAY PROGRAM

Table 5.13 shows how to take what you learned about the three-day model and convert it to a five-day training platform. In the table, day one loading parameters are in white, day two loading parameters are in red, and day three loading parameters are in blue.

TABLE 5.13: 55-80 PERCENT THREE-DAY VERSUS FIVE-DAY MODEL							
TRAINING WEEK:		DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
THREE-DAY MODEL	FOCUS	TOTAL BODY	OFF	TOTAL BODY	OFF	TOTAL BODY	OFF
	LOAD	62-70%		72-80%		55-62%	
	MEANS APPLIED	BIOMETRIC		DYNAMIC		VOLUME	
FIVE-DAY MODEL	FOCUS	LOWER BODY	UPPER BODY	LOWER BODY	UPPER BODY	TOTAL BODY	OFF
	LOAD	62-70%	62-70%	72-80%	72-80%	55-62%	
	MEANS APPLIED	BIOMETRIC		DYNAMIC		VOLUME	

Another important aspect of training that can't be forgotten is speed work and conditioning. Table 5.14 shows where in the training week each should be emphasized along with an example workout.

TABLE 5.14: 55–80 PERCENT FIVE-DAY CONDITIONING MODEL			
TRAINING DAY	CONDITIONING GOAL	SPECIAL INSTRUCTIONS	EXAMPLE WORKOUT
DAY 1	Short Sprints (High Quality Speed)	<ul style="list-style-type: none"> • Sprints under 10 seconds • Full recovery; rest 90–120 seconds. 	<ul style="list-style-type: none"> • Alactic High Quality Workout • Flying 60's • 16 Week Short Sprint Workouts • Cone Agility
DAY 2	Long Sprints or Short Sprints w/ Reduced Rest (Speed Conditioning)	<ul style="list-style-type: none"> • Sprints over 15 seconds or • Sprints under 10, recovery under 20 seconds. 	<ul style="list-style-type: none"> • High Quality Lactic Anaerobic Power Training Builder • Metabolic Injury Prevention Runs
DAY 3	Short Sprints (High Quality Speed)	<ul style="list-style-type: none"> • Sprints under 10 seconds • Full recovery; rest 90–120 seconds. 	<ul style="list-style-type: none"> • Alactic High Quality Workout • Flying 60's • 16 Week Short Sprint Workouts • Cone Agility
DAY 4	Short Sprints (Anaerobic Conditioning)	<ul style="list-style-type: none"> • Sprints under 10 seconds • Limited recovery; 45–60 seconds 	<ul style="list-style-type: none"> • Work Capacity Alactic Anaerobic Training Builder • Flying 60's • 16 Week Short Sprint Workouts • Cone Agility
DAY 5	Longer Sprints or Continuous Running (Oxidative Conditioning)	This day is purely work capacity focused	<ul style="list-style-type: none"> • Aerobic Work Capacity Training Builder • Game Speed Conditioning • Bike Conditioning • TrashBall

Finally, we need to talk about the different exercises, methods, and means that I use in a five-day program that I don't use and didn't show you in the three-day program. The following hyperlink will take you to a video that explains the five-day program.

[**FIVE-DAY 55–80 PERCENT VIDEO**](#)

QUICK TRAINING NOTES

Day one

- The hex deadlift is done with a time control drop-off point using the biometric methods mentioned in this book. The athlete will perform the weight listed for six repetitions. We will take a percentage of the drop-off, and he will perform that particular weight in 3.1 seconds six times. When he can't reach that time or the bar travels more slowly, his sets drop at that point. We have had athletes do ten, eleven, and twelve sets with this particular method. The athlete will pair these exercises below for particular rest periods of up to 3.5–5 minutes doing these prehabilitation exercises between the main sets.
- The single leg press is highly reactive and is a must watch on the video to see how to perform the exercise.

Day two

- Loading is a set drop-off using Tendo units on the bench press. Between these sets of bench presses, I had the athletes rotate between vibration devices held on the flexors or chest muscles and then iced them between sets to stimulate the nervous system.
- The vibration devices are set at high frequency.
- The sets are completed to failure.
- Isometrics were used during this particular time to keep increasing work capacity levels for the last six weeks of summer training.

Day three

- Maximal loading lower body.
- This is a maximal effort day at submaximal levels used to train the athletes for strength qualities.
- We do the sports back squat in a particular time for four reps. We will time the reps and then use a drop-off percentage of their best time. For example, if the athlete completed four reps within five seconds, the drop-off is 5.15 for this particular loading method.
- The athlete will also complete five more exercises within the rest cycle, which will include some contrasting with the single leg bench hops and the split squat.
- By adding plyometrics, one must realize that the drop-off percentages may need to go a little higher because of the greater stress in a similarly specific area of the back squat.

Day Four

- Maximal loading upper body
- At this point, we're completing with the bench press Tendo testing for percent drop-off with set drop-off percentages based upon the current level of the athlete's readiness.
- These are often paired with exercises for stimulation or prehabilitation.

Day Five

- Keep in mind this particular lift is a work capacity lift with high volume and low intensities.

- Notice that the bench press, the dumbbell bench press, and the triceps push-down are essentially my day three upper body loading model, which would usually take place on a Saturday. I pushed it into Friday so that it quickly addresses upper body work capacity.
- Many people ask, "Because you've done your max effort on Thursday, can you do work capacity on Friday?" I've never found this to be a problem. Essentially, you've taken care of the maximal, high quality work on Thursday and you might be fatigued to train work capacity. A fatigued state won't be very detrimental unless it's within athletes of the highest quality and level.

BLOCK FOUR (5-DAY): HIGH FORCE AT HIGH VELOCITY (LOWER BODY)

%100	FRIDAY				16-Jul-11	23-Jul-11
	REPS	LOAD	SETS	NOTES		
	3 - WY Ham PRSS	9	2	Eyes Closed		
	Pair w/					
	2-WAY NECK	8	2			
	Pair w/					
	BAL SNGL LG SQ	6	2	Alt Max		
	Hurdle Hop S.L.	4	3			
	Pair w/					
	Acc Vertimax 1 Band	3	3			
	Pair w/					
250	Squat Jump	5	125 - 150	3		
225	Single Leg Squat	12	145 - 160	3		
	Pair w/					
150	SL Reverse Hyper	7	105 - 115	3		
	Pair w/					
	Cuban PRSS INC F8	6	3			
	LAT BND Lunge	4	2			
	Pair w/					
	SVBLG Cur SNGL Leg	8	2			
	Pair w/					
	Thors Hammer	8	2			
	Messie FRT SQ s	8	2			
	Pair w/					
	LAT SUP F8	6	2			
	Pair w/					
	Ankle Band Work	10	2			
200	DB RDL InLine	6	150 - 160	2		
	Pair w/					
	Hip FLXor ISO Pull	10S	2			
	Pair w/					
	Iso Ball Grion Squeeze	15S	2			
300	BENCH PRESS	FFFF	195 - 105	4		
	Pair w/					
75	DB Shoulder Press	FFF	55 - 30	3	OC	
	Pair w/					
	TRI PUSH DOWN	FFF	70% - 40%	3		
	GH HANG	120S	1	Relax Mouth		
	Partner Leg Walks	120S	1			
	Pair w/					
	LAYING RELAXATION	120S	1	Relax Mouth		

%100	WEDNESDAY				14-Jul-11	21-Jul-11
	REPS	LOAD	SETS	NOTES		
500	Sport Back Squat	5	225 - 275	1	PW-2 Neck	
	Pair w/				I-band Rolls	
500	Sport Back Squat	3	295 - 325	1	PW-2 Neck	
	Pair w/				Back Rolls	
500	Sport Back Squat	3	390 - 400	1	PW-2 Neck	
500	Sport Back Squat	4	350 -	TC	TC	
	Pair w/				Set Drop off	
	SNGL LG BCH Hop	4	4	4	Alternating	
	Pair w/					
	Split SQ Drop	3	4	4	Each Leg	
	Hip FLXor ISO Pull	6S	4	4	Each Leg	
	Pair w/				Alternating	
	Speed Adduction	6	4			
	Pair w/					
	Ankle Band Work	8	2	2	Each Side	
	Walling Band Lunge Jump	5	2	2	Bands	
	Pair w/				Jump	
	USSR Plyo Box	3	2	2	Speed	
	Pair w/					
100	DB SL Calf Raise	4	95 - 95	2	Knee Bend	
	Pair w/					
	Nordic HAM Curtis	6		2		
	Pair w/					
	Power Step up	4	2	2	Alternating	
	Pair w/					
	90 90 Grion ISO Hold	15S	2			
500	Glute Bar Lift	6	375 - 400	2		
	Pair w/					
	Manual Clam Guites	5	2			
	Pair w/					
	Depth Drop	5	2	2	Box 36	
	Hindu Squat Iso	180S	1			
	Pair w/					
	Glute Ham Back Daviso	180S	1			
	GH HANG	120S	1	Relax Mouth		
	Partner Leg Walks	120S	1			
	Pair w/					
	LAYING WALL SHAKES	120S	1	Relax Mouth		

%100	MONDAY				12-Jul-11	19-Jul-11
	REPS	LOAD	SETS	NOTES		
	Hurdle Hop S.L.	4	3	Speed		
	Pair w/			Height		
	Split SQ Drop Jump	4	3	Box/Speed		
	Pair w/			Each leg		
	Acc Split jump	3	3	Each Leg		
575	Hex Deadlift	5	280 - 315	1	PW-2 Neck	
	Pair w/			Quad/20		
575	Hex Deadlift	3	340 - 375	1	PW-2 Neck	
	Pair w/			Back Rolls		
575	Hex Deadlift	1	450 - 460	1	PW-2 Neck	
575	Hex Deadlift	6	375 - 345	1c	TC	
	Pair w/			Set Drop off		
	Speed Abduction	5	3			
	Pair w/			Rest 30		
	2-WAY NECK	8	3			
	Pair w/					
	Cuban PRSS	6	3			
	Pair w/			Rest 30		
	Speed Adduction	6	3	Each Leg		
	Pair w/			Rest 30		
	Ankle Band Work	10	3			
375	SL Leg Press	6	245 - 285	3	Reactive	
	Pair w/					
125	DB Straight Leg DL	6	80 - 90	3	3 way	
	Pair w/					
100	DB SL Calf Raise	10	65 - 70	3		
500	Glute Bar Lift	6	325 - 350	3	0:0:0:0	
	Pair w/					
	Hip FLX BND Pulls/LAT	6	3			
	Pair w/					
	Iso Ball Grion Squeeze	10S	3			
	Cross Swing Abs	5	3			
	Core Training 4					
	Pair w/					
	Hip Traction	30S	1	Each Leg		
	GH HANG	120S	1	Relax Mouth		
	Partner Leg Walks	120S	1			
	Pair w/					
	LAYING RELAXATION	120S	1	Relax Mouth		

BLOCK FOUR (5-DAY): HIGH FORCE AT HIGH VELOCITY
HYPERLINKS

Day 1	Exercise Hyperlink	Day 3	Exercise Hyperlink	Day 5	Exercise Hyperlink
Box 1	Hurdle Hop Single Leg Split SQ Drop Jump Acc Split Jump	Box 1	Sport back Squat	Box 1	3 Way Ham Press Balance Single Leg Squat
Box 2	Hex Deadlift	Box 2	Sport back Squat Single Leg Bench Hops Split SQ Drop	Box 2	Hurdle Hop Single Leg Squat Jump
Box 3	Hex Deadlift Speed Abduction	Box 3	Hip Flexor Iso Pull Speed Adduction Ankle Band Work	Box 3	Single Leg Squat Cuban Press INC F8
Box 4	Cuban Press Speed Adduction Ankle Band Work	Box 4	Walking Band Lunge Jump USSR Plyo Box DB Single Leg Calf Raise	Box 4	Lateral Band Lunge SWB Leg Curl Single Leg Thors Hammer
Box 5	SL Leg Press DB Straight Leg DL DB Single Leg Calf Raise	Box 5	Nordic Ham Curls Power Step up 90 90 Groin ISO Hold	Box 5	Messier Front Squat Figure 8 Lateral Supine Ankle Band Work
Box 6	Glute Bar Lift Hip FLX BND Pulls LAT Iso Ball Groin Squeeze	Box 6	Glute Bar Lift Manual Clam Glutes Depth Drop	Box 6	DB RDL Inline Hip Flexor Iso Pull Iso Ball Groin Squeeze
Box 7	Cross Swing Abs Hip Traction	Box 7	Glute Ham Back Cav Iso	Box 7	Bench Press DB Shoulder Press Tricep Push Down
Box 8	GH HANG Rollers Glutes and Hams Laying Relaxation	Box 8	GH HANG Rollers Quads and Back Laying Wall Shakes	Box 8	GH HANG Partner Leg Walks Laying Relaxation

BLOCK FOUR (5-DAY): HIGH FORCE AT HIGH VELOCITY (UPPER BODY)

		7-Jul-08			9-Jul-08				
100%	Thursday	REFS	LOAD	SETS	NOTES	REFS	LOAD	SETS	NOTES
300	BENCH PRESS	5	135 - 165	1		5	135 - 165	1	
	Pair w/								
300	BENCH PRESS	3	175 - 195	1		3	175 - 195	1	
	Pair w/								
300	BENCH PRESS	1	235 - 240	1		1	235 - 240	1	
300	BENCH PRESS	CIT	165 - 180	3	¾ - Tendo	CIT	210 - 225	4	¾ - Tendo
	Pair w/				Set Drop off				Set Drop off
	Med Ball Chest Pass	4		4		3		4	Alt-V/b-Ice
	Pair w/								
	Det BO OH Reb Drop	10		4		10		4	Each Leg
90	DB INCLINE BENCH	12	65 - 70	3	oc+2	97.5	65 - 70	3	
	Pair w/								
105	DB BO Row	12	70 - 75	3	Reactive				
	Pair w/								
30	OH LAT Raise	12	20 - 20	3	+ Strug	20	45 - 50	3	OC
64	JM DB Press	6	50 - 50	2		3	215 - 220	3	3 Board
	Pair w/								
	Bicep shock curts	10		2		8	40 - 45	3	
	Pair w/								
	ANT TIB BND	15		2					
150	Rev Grip Tri Push	10	100 - 105	3		15	60 - 65	3	Knee Bend
	Pair w/								
105	Revs Curl	12, 6, 6	70 - 85	3		6	85 - 85	3	
	Pair w/								
360	Spider Flips	12		3	Each Arm	12		3	
	Shrug	FFF	250 - 145	3		12		2	
	Closed Lunge V BND TV	10		2		12		2	
	Pair w/								
180	Gripper	12	135 - 145	2	LS Failure	8		2	
	Chest Rev Grip Iso	180s		1		180s		1	
	Pair w/								
	Shr Sho Bi Cav Iso	180s		1		180s		1	
	Pair w/								
	ISO SPLIT	30s	40% -	1	Each Leg				
	GH HANG	120s		1	Relat Mouth	120s		1	Relat Mouth
	Pair w/								
	Rollers Glutes & Hams	120s		1		120s		1	
	Pair w/								
	LAYING WALL SHAKES	120s		1	Relat Mouth	120s		1	Relat Mouth

BLOCK FOUR (5-DAY): HIGH FORCE AT HIGH VELOCITY HYPERLINKS

Day 2	Exercise Hyperlink	Day 4	Exercise Hyperlink
Box 1	Bench Press	Box 1	Bench Press
Box 2	Bench Press Med Ball Chest Pass Delt BO OH Rebound Drops	Box 2	Bench Press Push Up Drops Delt Lateral Rebound Drop
Box 3	DB Incline Bench DB Bent Over Row OH LAT Raise	Box 3	DB Incline Bench Dynamic Lat Pull DB Shoulder Press
Box 4	JM DB Press Bicep Shock Curls ANT TIB BAND	Box 4	Close Grip Bench Incline Hammer Curls DB Single Leg Calf Raise
Box 5	Reverse Grip Tri Pushdown Reverse Curl Spider Flips	Box 5	DB Tri Floor Press Drag Curl Round House
Box 6	Shoulder Shrug Closed Lunge V Band Twist Gripper	Box 6	Gopher U ABS SWB Up TW
Box 7	Chest Reverse Grip Iso Shr Sho Bi Cav Iso Iso Split	Box 7	Chest Reverse Grip Iso Shr Sho Bi Cav Iso GH HANG
Box 8	GH HANG Rollers Glutes and Hams	Box 8	Rollers Quads and Back Laying Wall Shakes

5.1 1: 55-80 PERCENT SIX-DAY PROGRAM

Table 5.15 shows how to take what you learned about the three-day model and convert it to a six-day training platform. In the table, day one loading parameters are in white, day two loading parameters are in red, and day three loading parameters are in blue.

TABLE 5.15: 55-80 PERCENT THREE-DAY VERSUS SIX-DAY MODEL							
TRAINING WEEK:		DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
THREE-DAY MODEL	FOCUS	TOTAL BODY	OFF	TOTAL BODY	OFF	TOTAL BODY	OFF
	LOAD	62-70%		72-80%		55-62%	
	MEANS APPLIED	BIOMETRIC		DYNAMIC/BIOMETRIC		VOLUME	
SIX-DAY MODEL	FOCUS	LOWER BODY	UPPER BODY	LOWER BODY	UPPER BODY	LOWER BODY	UPPER BODY
	LOAD	62-70%	82-87%	72-80%	90-97%	55-62%	75-80%
	MEANS APPLIED	BIOMETRIC		DYNAMIC/BIOMETRIC		VOLUME	

Another important aspect of training that can't be forgotten is speed work and conditioning. Table 5.16 shows where in the training week each should be emphasized along with an example workout. Finally, we need to talk about the different exercises, methods, and means that I use in a six-day program that I don't use and didn't show you in the three-day program. The following hyperlink will take you to a video that explains the six-day program.

[SIX-DAY 55-80 PERCENT VIDEO](#)

TABLE 5.16: 55–80 PERCENT SIX-DAY CONDITIONING MODEL			
TRAINING DAY	CONDITIONING GOAL	SPECIAL INSTRUCTIONS	EXAMPLE WORKOUT
DAY 1	Short Sprints (High Quality Speed)	<ul style="list-style-type: none"> • Sprints under 10 seconds • Full recovery; rest 90–120 seconds. 	<ul style="list-style-type: none"> • Alactic High Quality Workout • Flying 60's • 16 Week Short Sprint Workouts • Cone Agility
DAY 2	Long Sprints or Short Sprints with Reduced Rest (Speed Conditioning)	<ul style="list-style-type: none"> • Sprints over 15 seconds or • Sprints under 10, recovery under 20 seconds. 	<ul style="list-style-type: none"> • High Quality Lactic Anaerobic Power Training Builder • Metabolic Injury Prevention Runs
DAY 3	Short Sprints (High Quality Speed)	<ul style="list-style-type: none"> • Sprints under 10 seconds • Full recovery; rest 90–120 seconds. 	<ul style="list-style-type: none"> • Alactic High Quality Workout • Flying 60's • 16 Week Short Sprint Workouts • Cone Agility
DAY 4	Short Sprints (Anaerobic Conditioning)	<ul style="list-style-type: none"> • Sprints under 10 seconds • Limited recovery; 45–60 seconds 	<ul style="list-style-type: none"> • Work Capacity Alactic Anaerobic Training Builder • Flying 60's • 16 Week Short Sprint Workouts • Cone Agility
DAY 5	Longer Sprints or Continuous Running (Oxidative Conditioning)	This day is purely work capacity focused	<ul style="list-style-type: none"> • Aerobic Work Capacity Training Builder • Game Speed Conditioning • Bike Conditioning • Trash Ball
DAY 6	Longer Sprints or Continuous Running (Oxidative Conditioning)	This day is purely work capacity focused	<ul style="list-style-type: none"> • Aerobic Work Capacity Training Builder • Game Speed Conditioning • Bike Conditioning • Trash Ball

QUICK TRAINING NOTES

Day one

- Notice that the Olympics lifts are extremely high quality. Speed often causes an excitation of the nervous system and will facilitate practice later in the day.
- This particular contrasting method is used with various loads changing from higher loads to lower loads to facilitate speed.

Day two

- Workout two is upper body in nature, and we use a submaximal loading with bands. Use Tendo units as your drop-off regulation.
- Day two front squats are performed with bands, which requires posterior and upper back strength in regards to holding the right positions.
- The front squat submaximal loading is often paired with reactive plyometrics.
- The glute ham hyper is very highly reactive in the free fall and then held for four seconds at the bottom position. Come back up as fast as possible and then actually push yourself down with your quads into the bottom position.
- The Romanian deadlift is an excellent posterior chain exercise in regards to strength efforts in strength sports.

Day three

- Power snatch down with cluster training and various changing of loads from higher and lower to enhance speed properties of each individual lift. This is the first lift of the particular day and the highest loading levels in this type of cycle.
- The incline bench press is done with clusters and singles for this particular throwing athlete. The incline bench press sets are then followed by a bench press throw at 75 lbs, which is roughly 50 percent of this athlete's max bench press.

Day four

- The max lower body leg day in this loading cycle is at 80 percent with a four percent drop-off the biometrics method. With this particular lift, the sets are four complete sets and the repetitions are a four percent drop-off regulated by the athlete's state of readiness paired with Russian ploy boxes and speed abductions.
- Depending on the type of technique used in throwing, the speed adduction is an effective tool.

Day five

- You will notice that this particular day is extremely light. Sometimes our athletes will do both morning and afternoon lifts prior to a meet so that they can be at the beginning of the season's training of six days a week and compete at a meet Friday night and/or Saturday.

Day six

- This lift is often done after a meet or after a morning training session to increase work capacity potential, which will be backed off on the very next cycle.
- The power snatch is often substituted for the deadlift in case the athlete's back feels tight or fatigued.
- The deadlift is often used with a hex bar to prevent fatiguing the thrower's back.

BLOCK FOUR (6-DAY): HIGH FORCE AT HIGH VELOCITY (UPPER BODY)

Monday		Tuesday		Wednesday		Thursday		Friday			
REFS	LOAD	SETS	NOTES	REFS	LOAD	SETS	NOTES	REFS	LOAD	SETS	NOTES
5	135 - 165	1	Pre-Set Vup	5	95 - 115	1	Pre-Set Vup	5	135 - 165	1	Pre-Set Vup
			Rest 1:30				Rest 1:30				Rest 1:30
3	175 - 195	1	PW-2Neck	3	125 - 135	1	PW-2Neck	3	175 - 195	1	PW-2Neck
			Rest 1:30				Rest 1:30				Rest 1:30
1	240	1	PW-2Neck	1	170	1	PW-2Neck	1	235 - 240	1	PW-2Neck
			0:0:0:15				0:0:0:20				0:0:0:10
3	195 - 205	3	0:0:0:15	1,1	170 - 175	3	0:0:0:20	3	165 - 180	4	0:0:0:10
			Rest 3:00				Rest 2:30				Rest 2:30
3	210 - 225	3	0:0:0:10	1,1	150 - 160	5	0:0:0:20				0:0:0:10
			Rest 2:30				Rest 2:30				Rest 2:30
			Strength Prep				Strength Prep				Strength Prep
5	135 - 165	1	BENCH PRESS	5	110 - 130	1	INCLINE BENCH	5	135 - 165	1	BENCH PRESS
			Rest 1:30				Rest 1:30				Rest 1:30
3	175 - 195	1	BENCH PRESS	3	140 - 155	1	INCLINE BENCH	3	175 - 195	1	BENCH PRESS
			Rest 1:30				Rest 1:30				Rest 1:30
1	240	1	BENCH PRESS	1	190	1	INCLINE BENCH	1	235 - 240	1	BENCH PRESS
			Coach Vup				Coach Vup				Coach Vup
4	210 - 225	4	3% Tendo	1,1	190 - 200	3	0:0:0:20	1,1	190 - 200	3	0:0:0:20
			Bands				Rest 2:30				Rest 2:30
10		5	45 Pounds	1,1	175 - 180	5	0:0:0:15				Med Ball Chest Pass
			Rest 1:30				Pair/E Set				Speed
15	195 - 210	1	BENCH PRESS	3	70 - 75	5	0:0:0:3				Rest 2:00
			Rest 1:30				Increase Vgr				0:4:0:0
87.5	65 - 70	3	Lat Pull Down	3	145 - 155	4	Push Press				Decrease Vgr
			Rest 1:30				Pair w/				
87.5	160 - 180	3	Lat Pull Down	8	40 - 45	4	DB Curl				
			Rest 1:30				Pair w/				
10	25 - 30	3	DB Side Lat Raise	10	115 - 125	4	Gripper				
			0:0:0:0				Chain				
6	45 - 50	4	DB Tri Ext	6	85 - 85	3	EZ Tri Ext				
			Rest 1:30				Pair w/				
88.4	85 - 95	3	Bar Curl	8	80 - 85	3	1 Arm Lat Pull Down				
			Rest 1:30				Pair w/				
12	25 - 25	4	DB Rear Delt	8			Gopher U Abs				
							3 25 Pounds				
12	70% - 75%	3	Bam Bam								
120S		1	GH HANG	120S		1	GH HANG	120S		1	Relax Mouth
			Relax Mouth				Pair w/				Relax Mouth
120S		1	Rollers Quads & Hams	120S		1	Rollers Quads & Back	120S		1	Rollers Quads & Back
			Pair w/				Pair w/				Pair w/
30S		1	ISO SPLIT	120S		1	LAYING WALL SHAKES	120S		1	LAYING WALL SHAKES

**BLOCK FOUR (6-DAY): HIGH FORCE AT HIGH VELOCITY
HYPERLINKS**

Day 1	Exercise Hyperlink	Day 3	Exercise Hyperlink	Day 5	Exercise Hyperlink
Box 1	Power Clean	Box 1	Power Clean	Box 1	Power Clean
Box 2	Power Clean	Box 2	Power Clean	Box 2	Power Clean
Box 3	Bench Press	Box 3	Incline Press	Box 3	Bench Press
Box 4	Bench Press INC OH Sit Up Bench Press	Box 4	Incline Press Bench Throw	Box 4	Bench Press Med Ball Chest Pass
Box 5	DB INCLINE BENCH Lat Pull Down DB Side Lateral Raise	Box 5	Push Press DB Curl	Box 5	
Box 6	DB Tri Ext Bar Curl DB Rear Delt	Box 6	EZ tri Ext 1 Arm Lat Pull Down Gopher U Abs	Box 6	
Box 7	Bam Bam	Box 7		Box 7	
Box 8	GH HANG Rollers Glutes and Hams Laying Wall Shakes	Box 8	GH HANG Rollers Quads and Back Laying Wall Shakes	Box 8	GH HANG Rollers Quads and Back Laying Wall Shakes

BLOCK FOUR (6-DAY): HIGH FORCE AT HIGH VELOCITY
HYPERLINKS

Day 2	Exercise Hyperlink	Day 4	Exercise Hyperlink	Day 6	Exercise Hyperlink
Box 1	FRONT SQUAT	Box 1	Back Squat	Box 1	Deadlift
Box 2	Front squat Drop Box Jumps Hip Flex Band Pulls	Box 2	Back Squat USSR Plyo Box Speed Adduction	Box 2	Deadlift Close Grip Bench
Box 3	STEP UP GH HYPR Incline Speed Adduction	Box 3	SL Leg Press Assist Nordic Ham Curl 90 90 Glute Iso Hold	Box 3	Nordic HAM Curls Calf Raises OH LAT Raise
Box 4	RDL ANT TIB BAND 90 90 Glute Iso Hold	Box 4	ANT TIB BAND PRTNR BND ABS SWB Down TW	Box 4	Bar Curl JM Dumbbell Press Cuban Press INC F8
Box 5		Box 5		Box 5	
Box 6	Closed Lunge V Band Tw SWB Up TW Band	Box 6		Box 6	
Box 7		Box 7		Box 7	Power Snatch
Box 8	GH HANG Rollers Glutes and Hams	Box 8	GH HANG Rollers Quads and Back Laying Wall Shakes	Box 8	Power Snatch

5.12: 55-80 PERCENT TWO-DAY IN-SEASON PROGRAM

Last but not least, the table below shows how to take what you learned about the three-day model and convert it to a two-day in-season program. In table 5.17, day one loading parameters are in white, day two loading parameters are in red, and day three loading parameters are in blue. Remember, whenever athletes are in-season, all their volume work comes from practice. Additional volume in the weight room or through conditioning will likely lead to an overtrained, underperforming athlete.

TABLE 5.17: 55-80% THREE-DAY VERSUS TWO-DAY IN-SEASON MODEL							
TRAINING WEEK:		DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
THREE-DAY MODEL	FOCUS	TOTAL BODY	OFF	TOTAL BODY	OFF	TOTAL BODY	OFF
	LOAD	62-70%		72-80%		55-62%	
	MEANS APPLIED	BIOMETRIC		DYNAMIC/BIOMETRIC		VOLUME	
TWO-DAY MODEL	FOCUS	TOTAL BODY	OFF	LOWER BODY	OFF	OFF	OFF
	LOAD	82-87%		90-97%			
	MEANS APPLIED	BIOMETRIC		DYNAMIC/BIOMETRIC			

Remember, *don't do any additional conditioning in-season outside of organized practice!* Finally, we need to talk about the different exercises, methods, and means that I use in a two-day in-season program that I don't use and didn't show you in the three-day program. Click on the hyperlink below for a complete explanation of the two-day in-season training model.

[TWO-DAY IN-SEASON 55-80 PERCENT VIDEO](#)

BLOCK FOUR (2-DAY IN-SEASON): HIGH FORCE AT HIGH VELOCITY

MONDAY		24-Nov-08			
100%		REPS	LOAD	SETS	NOTES
250	Squat Jump	CIT	140 - 150	2	2x- Tendo
					Set Drop off
	Cuban PRSS INC F8	5		2	P/W-2 Neck
	Ankle Band Work	8		2	Each Side
500	Back Squat	3	300 - 325	3	Reactive
	Pair w/				Bands
	Hip Flex Iso Prone	4		3	0:5:0:0
	Pair w/				Bench
75	1 Arm Lat Pull Supine	8	55 - 60	3	Rest 1:30
300	BENCH PRESS	4	220 - 225	3	Reactive
	Pair w/				
	GH HYPR Incline	5		3	Reactive
	Pair w/				
30	OH LAT Raise	10	20 - 20	3	+ Strug
60	DB Tri Ext	6	45 - 50	2	
	Pair w/				
	Bicep shock curls	6		2	
	Pair w/				
	90 90 Grion ISO Hold	15S		2	
	H-Sq Sh Bi Trap	180s		1	
	Pair w/				
	Chest Rev Grip Iso	180s		1	
	Core workout 5				
	Pike SWB Abs	8		2	
	GH HANG	120S		1	
	Pair w/				
	Roller's Glutes & Hams	120S		1	
	Pair w/				
	LAYING RELAXATION	120S		1	

WEDNESDAY		26-Nov-08			
100%		REPS	LOAD	SETS	NOTES
	Vertimax DS 2 Band	CIT		2	2x- Tendo
	Pair w/				Set Drop off
	Tea Cup Stuff	5		2	
	Pair w/				
	Calf Raises	8		2	
500	Back Squat	3	390 - 400	3	Reactive
	Pair w/				
	Iso Ball Grion Squeeze	4		3	0:5:0:0
	Pair w/				
165	Dynamic Lat Pull	8	125 - 130	3	Rest 1:30
300	BENCH PRESS	3	235 - 240	3	Reactive
	Pair w/				
	Ball LG Curl	6		3	Reactive
	Pair w/				
38	DB Rear Delt	10	25 - 25	3	
45	DB Tri Pro Sup	10	30 - 35	2	
	Pair w/				
60	DB Curl to Press	6	45 - 50	2	
	Pair w/				
	90 90 Glute ISO Hold	15S		2	
	Glute Ham Back Cav Iso	180s		1	
	Pair w/				
	H-Sq Sh Bi Trap	120S		1	
	Core workout 9				
	PRTRN BND Abs	8		2	
	GH HANG	120S		1	Relax Mouth
	Pair w/				
	Roller's Quads & Back	120S		1	
	Pair w/				
	LAYING WALL SHAKES	120S		1	Relax Mouth

BLOCK FOUR (2-DAY): HIGH FORCE AT HIGH VELOCITY HYPERLINKS

Day 1	Exercise Hyperlink	Day 2	Exercise Hyperlink
Box 1	Squat Jump Cuban Press INC F8 Ankle Band Work	Box 1	Tea Cup Stuff Calf Raises
Box 2	Back Squat Hip Flex Iso Prone 1 Arm LAT Pull	Box 2	Back Squat Isometric Ball Groin Squeeze Dynamic Lat Pull
Box 3	BENCH PRESS GH HYPER Incline OH LAT Raise	Box 3	Bench Press Ball Leg Curls Dumbbell Rear Delt
Box 4	DB Tri Ext Bicep Shock Curls 90 90 Groin ISO Hold	Box 4	Supinate Pronate Tricep Extention Dumbbell Curl to Press 90 90 Glute ISO Hold
Box 5	H-sq Shi Bi Trap Chest Rev Grip Iso	Box 5	Isometric Glute Hamstring Back Hold Isometric Hindu Squat Trap Shoulder Bicep Hold
Box 6		Box 6	
Box 7	Pike Swiss Ball Abs	Box 7	Partner Band Abs
Box 8	GH Hang Rollers Glutes and Hams Laying Relaxation	Box 8	Glute Ham Hang Laying Wall Shakes