

# Starting Strength

## Adaptation: Period, Persistence, and Prioritization

by MAJ Damon Wells

The recent surge in the quest for a “well-rounded” and/or “functional” training program (and visible abs) has become the greatest inhibitor to effective training programming. The current trend in “fitness” training involves a complex array of what most perceive as balance of fitness parameters: strength, flexibility, skill specific, and high or low intensity endurance training. Becoming proficient in many skills or modalities is an attractive proposition and has become the fashionable gold standard for flashy, trendy workouts. Often, these techniques are applied haphazardly or in a method that emphasizes variety over consistency and progress. Terms like “muscle confusion” and “broad time and modal domains” are common and many will tell you that these are sound exercise principles. In fact, they are useless techniques that are the *opposite* of progress and are often gimmicks promoted by greedy entrepreneurs. These training methods can even be used to hide the fact that paying clients are making zero improvements following the routine. If you are always doing something different, how can you know if you are improving?

In reality, most of the new fads like CrossFit, P90X, Insanity, etc. are simply glorified and well marketed versions of circuit training. Circuit training is the sequential performance of exercises with little to no rest between sets. This type of training has been around since the 1950’s and certainly isn’t original to any of the programs that are cleverly marketing it today. To the layman, this is seen as a quick way to get multiple training methods into one workout, and thus introduce variety. Typically, a sequence of moderately difficult exercises is chosen at random and strung together to form a circuit. The workout seems “hard” because at some point your performance is going to suffer due to fatigue. This, in itself, does not comprise a legitimate method of training. Hard does not equal good. This type of training, while not completely useless, usually boils down to some form of flopping around for 10-30 minutes. There is no magic in this. There are also compromises that must be made if one attempts to integrate strength, conditioning, and endurance into the same circuit (which is common). Unfortunately – circuit training or not – if one tries to conduct strength and endurance training in the same program, neither will be realized to their optimum potential. This has been shown in numerous studies; attempts to combine strength and endurance training concurrently lead to diminished (or zero) gains in both. Thus, the training is ineffective. Although these methods do induce a calorie burning state for the first month or two, they are not designed for longevity and long term progress (see [The Novice Effect](#)). They inhibit it. The combination of modalities and the trend towards variety leads to a weaker workout program.

The muscle confusion theory leads to a paradox: training that leads to no significant muscular adaption. The body can only adapt sufficiently to chronic stressors, which are stressors that are applied with enough intensity and regularity to cause a change in the physiology or architecture of the body

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necessary to the adaptation. If you frequently change the nature of these stressors, your physiology can only adapt to those aspects which are consistent between workouts. The cardiopulmonary system may respond and adapt to every circuit training session you conduct, but if the exercises are not consistent, your muscles will not adapt. There may be some latent, insignificant adaptation to the muscular stress applied to the lower body, but not to the level required for improvement. If, for example, you choose a different lower body exercise for each session, your body will only accommodate strength into those parameters which are consistent from workout to workout. To the untrained eye a variety of exercises may seem like a good idea, but in reality it limits strength because the body's inherent motor learning capacity is attenuated. The bottom line is this: training the same exercises regularly allows the body to adapt and thus grow stronger, while training a large variety of exercises equates to doing the same workouts with little to no adaptation. This is the paradox of "muscle confusion" training.

Another part of the problem is the mainstream's failure to acknowledge that different modalities stress the body in wholly different ways. These issues stem from the general public's lack of knowledge about the application of effective training techniques and principles in each domain. For example, the majority of people in the gym are working under the assumption that they must train a certain number of body parts or "muscle groups" per day, usually until that body part is incapable of functioning properly. Their schedule most likely involves working this body part on a regular schedule every 4-7 days, regardless of training background. It is fully feasible to this person that the workout they pulled from Men's Health magazine – because it looks rather cutting edge and seems moderately challenging – is good for them. Most people, including trainers and coaches, have steadfastly held to the simplistic notion that every muscle requires 48-72 hours to recover from a workout. *Any workout.* Many people believe that every training session requires a specific recovery period regardless of the level of experience or type of training. The idea that a training session should stress a system just enough to require an appropriate adaptation, and just enough so that training can be resumed as soon as possible, is foreign. A common practice instead is to train a specific muscle into oblivion, then give it around a week to recover. Any attempt to change this behavior is met with resistance and an immediate reference to an article written by Mr. Olympia. This inability to accommodate new ways of thinking when it conflicts with an illogical but well presented and widely-accepted paradigm is common. Revolutions in training are sometimes plagued by holdovers; hard won remnants of the old regime that are reluctant to die. Training methods, recovery techniques, and our understanding of adaptation must improve concurrently and if one changes, the others must follow suit.

The bottom line in training is the realization of improvements that are quantifiable. A runner should get faster. A powerlifter should get stronger. An athlete should improve on sport-specific skills. By incorrectly training a carelessly tossed together hodgepodge of techniques, you are essentially training to be good at nothing. Some proponents of these methods preach the opposite: variety leads to improvement in everything. An example of this is CrossFit's claim that they train for the unknown and the unknowable. Unfortunately, this is not how human physiological systems work. You become better at that which you practice, both metabolically and mechanically. Practicing everything makes you better at nothing.

The counterargument that is frequently espoused is that most people have no need to be good at one modality and this singular focus weakens one's abilities across the spectrum of other modalities. True, a competitive powerlifter probably isn't a great runner. Runners are often weak. But this is too simple and narrow for a proper examination of the issue. If overall health and fitness are the desired goals, is there a way to maximize performance in different modalities other than using circuits or other

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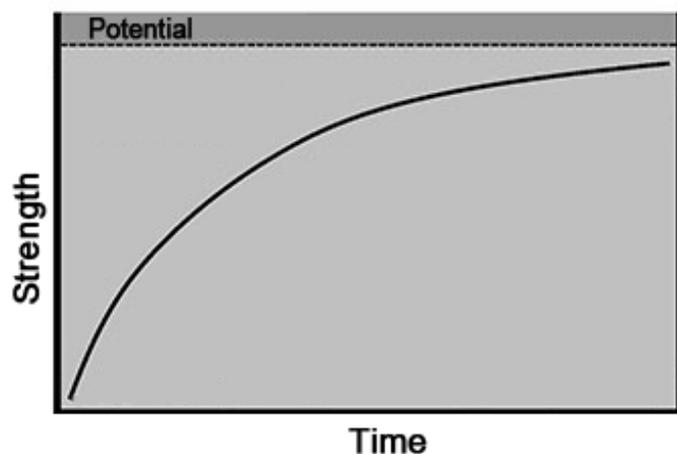
faddish techniques? If one desires no other benefit from training than to get healthy (whatever that is) should they even care about quantifiable results? The answer to this question is simple. Training requires that you induce stress onto your physiological systems. This stress should be appropriate enough to induce a period of shock or alarm followed by recovery. Over time, these properly applied periods of alternating shock and recovery should result in progressive increases in the amount of stress applied. If one particular area is of interest, then this area must be prioritized over less important areas.

Would you try to learn 5 languages by going to a different class each day, or focusing on one until you have some mastery then move on to the next? One cannot excel by mashing together every technique known to man and calling the program “well rounded”. The results are telling. Most people on these programs make negligible strength increases, and are only capable in the cardiorespiratory realm for the lengths of time prescribed by the workouts. Even worse, folks that follow these routines often induce higher levels of soreness, cortisol secretion, and systemic inflammation – the result of exercises performed at high reps and with poor mechanics, leading to a host of unnecessary problems. The glaring absence of progress has already led some gyms to add “strength” and “endurance” alternatives. The way to get the most out of every realm is by maximizing the process of adaptation: period, persistence, and prioritization.

### **Period of Adaptation**

The period of adaptation, when discussing exercise, is the length of time it takes the body to become accustomed to a new stressor, at the end of which (under ideal conditions) the body will be somehow better adapted to deal with this stressor. Taking advantage of this period is essential to maximizing performance. Related concepts such as regularity and progression have roots in this principle. This can be further broken down into acute and chronic adaptation. In a strength program, the period of acute adaptation is the period of shock or alarm that accompanies each training session. This stress sends signals to various physiological systems in the body that something is “wrong” or out of the ordinary (i.e. the muscles have been subjected to greater than normal requirements). Once the stressor has been removed – the end of the training session – the body immediately begins a process of repair and adaptation. Ideally, if you’ve done everything correctly, the result is a fully repaired muscular system and its associated components, as well as a slight over-adaptation or supercompensation that better prepares the body for the next bout of stress.

Chronic adaptation occurs over time. Each interval of stress (exercise) allows the body to recover and supercompensate; chronic adaptation is the accumulation of these compensations. The chronic adaptation period is different for each individual, and can be represented graphically as a curve that approaches a limit. As the line representing your adaptation closes in on the limit of your genetic potential, the slope is reduced,



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indicating that your adaptation from each bout is reduced and your chronic adaptation is thus slowed. Once the body has reached a certain level of training, the gains come slower. This is generally the difference between a novice, intermediate, and advanced trainees. To train for maximum potential, one would need to change training techniques by adding recovery time and other exercises. It is of value to note that many people can get to that portion of the slope with very simple training routines.

### **Persistence of Adaptation**

The persistence of adaptation is the length of time that an acquired adaptation will remain at a certain percentage of maximum (or that which was previously attained) in the absence of the specific stressor. In the absence of appropriate stress, the adaptation will gradually return to pre-stress levels. This is known as detraining or training decay. Certain adaptations last longer than others. Strength is very persistent, showing only slight decreases over a period of weeks. Cardiorespiratory adaptations are not; gains from cardio-respiratory training are significantly reduced at the end of 4 weeks. The reasons are rooted in the fact that our bodies strive to a state of equilibrium, known as homeostasis. Thus, adaptations that are not useful are discarded. Big muscles use up energy and are heavy to carry around if not needed. Excess mitochondria and a higher red blood cell count serve no purpose in the sedentary individual. These adaptations persist for different lengths of time. Since strength training requires the structural adaptation of tissue (bone, muscle, ligaments, tendons, etc.) and the development of motor units, the natural process of returning those structures to pre-training levels is long. Some of these adaptations are relatively permanent. Experienced lifters can take years off from training and return to near previous levels quickly. Cardio-respiratory training, on the other hand, involves improvements in oxygen carrying capacity. The structures involved in daily activity are more prone to change; they are more invested in returning to normal. It seems logical, then, that these two training modalities should be programmed differently. Unfortunately, in many programs they are treated as equals, requiring the same amount of time for recovery as for persistence.

### **Prioritization of Training**

Now let's get to the root of the issue. In my experience, strength training is more useful for humans over the long haul. The goal of training in general should be to develop a robust, injury resistant body that is harder to break. Strength training accomplishes this goal. As useful as it may be, cardiorespiratory training does not. But in some occupations, it is required (the military, in particular). Therefore it makes some sense to design programs that can incorporate both strength and cardio for optimum conditioning.

With this in mind, the majority of training should be based around a strength routine, while some portion of the training cycle must also accommodate cardio training, as well. Since very little research has been done in this specific area, the information henceforth is based on my personal experience in the military with Soldiers, peers, and Cadets. My suggestion is to take this general technique and make some modifications to find out what works best for you. If you are a strength athlete your weak link is the cardio training. Find out how long it takes you, with dedicated training, to reach your cardio goals. It will be somewhere between 2-4 weeks. If it takes longer than that, you

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are either woefully out of shape or your training program is inadequate.

Let's use the Army scenario as an example. The Army requires that Soldiers pass the Army Physical Fitness Test twice a year. Generally this will happen at around six month intervals. Let's break each six month interval into two 3 month cycles. A useful routine might be to train exclusively on strength for 10 weeks, then switch to high intensity cardio for 2 weeks, which permits 2 full cycles between tests. This allows one to reach a decent level of strength and then achieve a moderate level of conditioning for the APFT. From personal experience, I can tell you that after 12 weeks of strength training followed by 4 weeks of cardio, two things were glaringly obvious. First, I achieved a great amount of strength (raw squatted 590, deadlifted 625). Second, my run time on the APFT (2 miles) was about the same as it always is. Normally I train for 8 weeks to prepare for the APFT; I cut the cardio in half and achieved the same goal. Here is the best part, after the 30 day layoff from strength training it took only 2 weeks to get back to 95% of my previous strength! The specific routine may be found in MAJ Ryan Long's article [Why Does the Army Want Me Weak?](#)

What about the other service members that are required to conduct morning physical training (PT) four or five times a week, yet still want to engage in a Starting Strength protocol? This question comes up quite frequently. The biggest problem caused by combining a novice program with intense conditioning work is the interference with normal recovery. The additional training sessions induce a much lower level of systemic recovery ability than the standard novice program. The net result is that the novice gains are attenuated and it is more challenging to make progressive increases if you stick to the letter of the program. There are viable alternatives, however. In the interest of simplicity just two examples are presented here.

For those tactical athletes that are trying to implement the Novice Program, a priority must be placed on recovery and regularity. First, you can cut the SS workouts to twice a week, utilizing the standard 'A' and 'B' workouts. The general protocol is the same, there are just more rest days in between workouts. This twice-a-week program should be followed if the demands of PT are physically interfering with your recovery abilities. In other words, if you are not improving regularly then you'll need to make adjustments. Another option is to alternate with 3 times a week and 2 times a week, but only if your recovery abilities are not compromised.

The second option is for a more advanced athlete and is a three day a week program that focuses on squats for workout A, bench press for workout B, and deadlifts for workout C. Obviously one would need to program ancillary lifts for these workouts, but that is going to be up to the trainee and should be focused on specific weaknesses. This workout can be supplemented with additional press work, if necessary, but I have found that with the addition of push-ups and additional conditioning work for the upper body during PT, one heavy bench workout a week was plenty. Also, it is beneficial to program progressively heavier weekly workouts for 3-4 weeks, and then reduce the weight by half for one week's lifts. Again, there are many ways to tackle the problem of morning PT and strength development; these are a couple that I have found useful.

So what is the lesson here? The point is this: strength gains are persistent and cardio improvements come and go quickly. Does that mean that cardio training should take priority in order to maintain a higher level of fitness? No. Gains from cardio training are not necessarily very useful. It is far better to accept some residual cardio training from a strength routine and whatever cardio is forced upon you during daily activities (and no more!). If you can achieve the requisite level of cardio fitness from less work, why would you do more?

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