

Starting Strength

Training vs Exercise

by

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It is May 15, and you decide that this year you are going to get a suntan – a glorious, beautiful, tropical suntan. So you decide to go out in the back yard (to spare the neighbors and innocent passers-by) to lay out at lunchtime and catch a ray or two. You lie on your back for 15 minutes and flip over to lie on your belly for 15 minutes. Then you get up, come in and eat lunch, and go back to work. That night, your skin is a little pink, so the next day you just eat lunch, but the following day you're back outside for your 15-minutes-per-side sunbath. You are faithful to your schedule, spending 30 minutes outside every day that week, because that's the kind of disciplined, determined person you are. At the end of the week, you have turned a more pleasant shade of brown, and, heartened by your results, resolve to maintain your 30-minutes-per-day schedule for the rest of the month. So, here is the critical question: what color is your skin at the end of the month?

If you ask a hundred people this question, ninety five will tell you that it will be really, really dark. But in fact *it will be exactly the same color it was at the end of the first week*. Why would it be any darker? Your skin adapts to the stress of the sun exposure by becoming dark enough to prevent itself from burning again. That's the ONLY reason it gets dark, and it adapts exactly and specifically to the stress that burned it. Your skin does not “know” that you want it to get darker; it only “knows” what the sun tells it, and the sun only talked to it for 15 minutes per side. It can't get any darker than the 15 minutes makes it get, because the 15 minutes is what it is adapting to. If you just got darker every time you were exposed to the sun, we'd all be black, especially those of us who live in a sunny area, since we all get out of the car and walk into the house or work several times a day. The skin does not adapt to total accumulated exposure, but to the *longest* exposure – the hardest exposure. If you want it to get darker, you have to stay out longer, in order to give the skin more *stress* than it has already adapted to. The widespread failure to comprehend this pivotal aspect of adaptation is why so few people actually understand training.

Training follows exactly the same principle as getting a tan – a stress is imposed on the body and it adapts to the stress, but only if the stress is designed properly. You wouldn't lay out for 2 minutes and assume that it would make you brown, because 2 minutes isn't enough stress to cause an adaptation. Likewise, only a stupid kid lays out for an hour on each side the first day, because the stress is so overwhelmingly damaging that it cannot be recovered from in a constructive way.

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Lots and lots of people come in to the gym and bench 225 every Monday and Friday for years, never even attempting to increase the weight, sets, reps, speed, or pace between sets. Some don't care, but some are genuinely puzzled that their bench doesn't go up, even though they have not asked it to. And some people bench press once every three or four weeks, or maybe even more rarely than that, using some arbitrary number like their own bodyweight for 10 reps, then 9, then 8,7,6,5,4,3,2, and finally 1 rep, and wonder why their bench doesn't go up, why they got so damned sore.

Your bench press strength doesn't adapt to the total number of times you've been to the gym to bench, or your sincerest hope that it will get stronger. It adapts to the stress imposed on it by the work done with the barbell. Furthermore, it adapts to exactly the kind of stress imposed on it. If you do sets of 20, you get good at doing 20s. If you do heavy singles, you get better at doing those. But singles and 20s are very different, and you don't get better at doing one by practicing the other. The muscles and nervous system function differently when doing these two things, and they require two different sets of physiologic capacities, and thus cause the body to adapt differently. The adaptation occurs in response to the stress, and *specifically* to that stress, because the stress is what causes the adaptation. This is why calluses form on the part of your hand where the bar rubs, and not on the other parts of the hand, or on your face, or all over your body. It can obviously be no other way.

Furthermore, the stress must be capable of being recovered from. Like the 2 hours of sun the first day or the 55 bench reps once a month, the stress must be appropriate for the trainee receiving it. So, if the stress is so overwhelming that it cannot be recovered from in time to apply more of it in a time frame which permits accumulated adaptation, it is useless as a beneficial tool that drives progress. And if this excessive stress is applied so infrequently that any adaptation to it has dispersed before you get around to it again 3 months later, no adaptation can accumulate.

An awareness of this central organizing principle of physiology as it applies to physical activity is essential to program design. **Exercise and training are two different things.** *Exercise* is physical activity for its own sake, a workout done for the effect it produces today, during the workout or right after you're through. *Training* is physical activity done with a longer-term goal in mind, the constituent workouts of which are specifically designed to produce that goal. If a program of physical activity is not designed to get you stronger or faster or better conditioned by producing a specific stress to which a specific desirable adaptation can occur, you don't get to call it training. It is just exercise. For most people, exercise is perfectly adequate – it's certainly better than sitting on your ass.

But for athletes, an improvement in strength provides more improvement in performance than any other adaptation, especially if the athlete is not already very strong. Strength is the basis of athletic ability. If you are a good athlete, you are stronger than a less-good athlete at the same level of athletic skill. If you want to be a better athlete, you get stronger. If you are already very strong, it is necessary to devote most of your attention to the development of other aspects of performance. But there is a very high likelihood that you are not that strong, since most people are not. You may think you're very strong, but really, you know you could get stronger, don't you? Sure you do. You may have convinced everybody else that you're strong enough; you may even be convinced of this yourself. Your coach may have told you so too. This is not productive, because if you can get stronger, you should, and a lack of strength may be why you're not performing as well as you know you could be. If your progress is stuck, and has been for a while, get stronger and see what happens. And for a strength training program to actually work you must do something that requires that you be stronger to get it done, and this must be inherent in the program design.

The less experienced the athlete, the simpler the program *should* be, and the more advanced the athlete, the more complex the program *must* be. We are going to take advantage of a phenomenon

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I have called the “Novice Effect.” Simply described, this is what happens when a previously untrained person begins to lift weights – he gets stronger very quickly at first, and then improves less and less rapidly the stronger he gets. It is nothing more than the commonly observed principle of diminishing returns applied to adaptive physiology. Rank novices are not strong enough to tax themselves beyond their ability to recover, because they are so thoroughly unadapted to stress; they have made almost no progress on the road to the fulfillment of their athletic potential, and almost anything they do that is not heinous abuse will cause an adaptation.

When an untrained person starts an exercise program, he gets stronger. He always does, no matter what the program is. This is because anything he does that is physically harder than what he’s been doing previously constitutes a stress to which he is not adapted, and adaptation will thus occur if he provides for recovery. And this stress will always produce more strength, because that is the most basic physical adaptation to any physical stress on the body that requires the production of force. For a rank a novice trainee, riding a bicycle will make his bench press increase – for a short time. This does not mean that cycling is a good program for the bench press; it just means that for an utterly unadapted person, the cycling served as an adaptive stimulus. The problem with cycling for a novice bench-presser is that it rapidly loses its ability to act as an efficient-enough *systemic* force-production stress to continue driving improvement on the bench, since it does not produce a force-production stress *specific* to the bench press.

The thing that differentiates a good program from a less-good program is its ability to continue stimulating the adaptation. So, by definition, a program that requires a regular increase in some aspect of its stress is an effective program for a novice, and one that doesn’t is less effective. **For a novice, any program is better than no program at all, so all of them work with varying degrees of efficiency.** This is why everybody thinks *their* program works, and why you’ll always find perfectly honest testimonials for every new exercise program on TV or the internet. But nothing works as well as a moderate incremental increase in some loading parameter every workout for as long as an adaptation to the increase continues to occur, because this produces both stress and adaptation – the definition of progress.

And since the best way to produce athletic improvement in novices is to increase strength, a program that increases total-body strength in a linear fashion is the best one for a novice athlete to use if he is to drive the most positive effect on his performance in the shortest time possible. It seems rather apparent that there can be only one efficient way to program barbell training for a novice – a linear increase in force-production stress using basic exercises that work the whole body. If applied in a way that can be supported by adequate recovery from the stress in a timeframe that produces progress efficiently, this approach *always* produces a linear increase in strength, *because it has to*. It takes advantage of the most basic rule of biology: organisms adapt to stress in their environment if the stress is not overwhelming in its magnitude. Hans Selye first articulated this biological law of adaptation in 1936, and ignoring the old guy is a great way to waste a lot of time.

Rank novices can be trained close to the limit of their ability every time they train, precisely because that ability is at such a low level relative to their genetic potential. As a result of this relatively hard training, from which a novice can recover because in absolute terms it’s not really that hard because he’s weak, he gets strong relatively quickly. Weak people can obviously get stronger faster than strong people can. But that changes rapidly, and as you progress through your training career, the program should get more and more complicated as a result of the changing nature of your adaptive response. The intermediate trainee has advanced to the point where the stress required for change is high enough

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that when applied in consecutive workouts it exceeds the capacity for recovery within that period of time. Intermediate trainees are capable of training hard enough that some allowances for active recovery must be incorporated into the training program, but progress still comes faster for these athletes when they are challenged often by maximum efforts. Advanced athletes are working at levels close enough to their genetic potential that great care should be taken to ensure enough variability in the intensity and volume that overtraining does not become a problem. These principles are illustrated in Figure 1, and discussed at length in *Practical Programming for Strength Training, 2nd Edition* (The Aasgaard Company, 2009).

So, as a general rule, you need to try to add weight to the work sets of the exercise every time you train, until you can't do this anymore. This is the basic tenet of "progressive resistance training," and setting up the program this way is what makes it different than exercise. For as long as possible, make sure that you lift a little more weight each time. Everyone can do this for a while, and some people can do it for longer than others, depending on individual genetic capability, diet, and rest. If you are challenged, you will adapt, and if you are not, you won't. Training makes the challenge a scheduled event instead of an accident of mood or whim, and certainly more than a random occurrence within an exercise program.

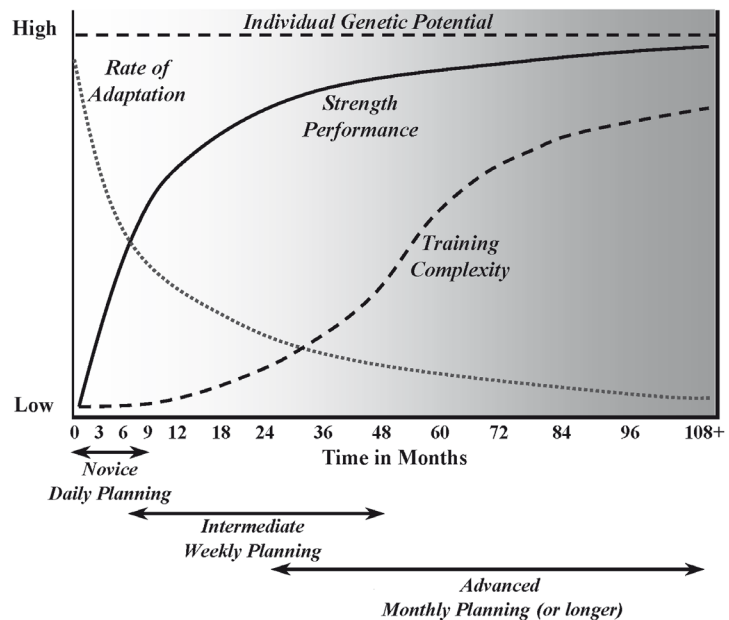


Figure 1. The generalized relationship between performance improvement and training complexity relative to time. Note that the rate of adaptation to training slows over a training career.

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