

Starting Strength

Is Olympic Weightlifting Strength Training?

by

Mark Rippetoe

I have written several times in a couple of different places that most Olympic weightlifters in this country need a strength coach, separate from their sport coach, like many other sports all over the world employ. This may seem odd to the large contingent that regards Olympic weightlifting as the pinnacle of strength sport, so let me now begin my typical protracted explanation of exactly what I mean by this heresy.

I agree that Olympic weightlifting is an excellent expression of strength through its derivative quantity *power*. Power is best understood as strength displayed quickly, and as such, power is dependent on strength. You know this because it is blatantly obvious that an athlete with a 500 lb. deadlift has a higher power clean than an athlete with a 200 lb. deadlift. Always true, every time. You cannot clean what you are not strong enough to get off the floor, and the stronger you are the more you can clean. The power that is produced when a weight is accelerated is a function of the ability to recruit the neuromuscular machinery necessary to develop the force to accelerate it. Therefore, another factor plays a large role in the ability to excel in weightlifting – the ability to make the force develop explosively. This ability is heavily dependent on the genetic capacity for explosive movement, and to say that it is predictive of elite levels of performance is a gross understatement.

So, here's the deal: The snatch and the clean and jerk are not themselves capable of producing an increase in absolute strength over the long term, and are incapable of continuing to produce an increase in their own performance when trained in the absence of heavy squats, deadlifts, and upper-body strength exercises that constitute an absolute strength overload. In other words, programs that rely solely on the snatch, the clean & jerk, their derivative exercises, and front squats in the absence of regularly programmed increases in the basic strength movements do not produce international-level performances for athletes with less than elite genetics or the use of anabolic steroids. Furthermore, it is quite likely that an athlete cannot reach his absolute potential in the Olympic lifts until he approaches the same limit in training his absolute strength. Louie Simmons is on record as saying that we lose in Olympic weightlifting at the international level because we are not as strong as they are. He may be wrong about some of the details, but he is dead-ass on the money in his general assessment.

Olympic weightlifting in the United States does not have the pick of the best genetic specimens for strength and power. We're in line behind the NFL, scholarship sports, and team sports at all levels

Is Olympic Lifting Strength Training?

for recruiting these people. If you can't get the best genetics, you have to make up for that with better training of the ones you've got. We obviously don't do that very well. Perhaps understanding why will help.

Force production is the basis of power. *Strength* is the production of force against a resistance. *Power* is the capacity for the rapid production of force against the resistance, the ability to recruit the maximum amount of contractile force and apply it to the system so rapidly that it causes the system to accelerate. Acceleration is the rate of change in the velocity of an object, and is completely dependent on force production to occur, because force is required to produce a change in velocity. The greater the amount of change in velocity desired, the greater the amount of force required. And since higher velocity is the measure of acceleration, the quickness with which the force is applied determines that velocity.

In Olympic weightlifting, the barbell is being accelerated by the entire body as it produces force against the predictably immovable floor and the hopefully moveable barbell. Both lifts display a phase during which the barbell must have sufficient upward momentum to continue up during the shift from being pulled to being caught in the final rack position. The barbell must be accelerated sufficiently that its momentum carries it from the position where force stops being applied to it, up to a position where it can be caught at the top. Of course, you have to be willing to get under the damn thing after it's there.

Power is required to perform these two lifts because acceleration is a function of power. If a barbell is to acquire sufficient momentum to "float" through the transition between pull and catch, it must have a large enough amount of force applied to it in a very short amount of time. Snatches and cleans cannot be performed slowly, and this is why we use them to both develop and measure power production.

Now, it is worth noting that not everybody in the S&C business agrees that the Olympic lifts are good for developing power. There are several papers in "The Literature" that assert a prodigious lack of evidence that the Olympic lifts produce an *improvement* in power, that they are only good for *displaying* power by people who are already powerful, and that an improvement in strength is the mechanism by which power display increases. This is probably an extreme view, since the incrementally increasable nature of the lifts makes them quite suitable for our purposes in training power for athletes.

But to an unfortunately large extent, the capacity for explosion is controlled by the inherent quality of the neuromuscular system – it is genetically predetermined. The factors probably include both the ability of the nerves to send the signal efficiently and the ability of the muscle fibers to contract quickly. The most common and effective method for assessing this capacity is the Vertical Jump test, the best predictor of neuromuscular efficiency and the capacity for power production we have. It is dependent on your ability to accelerate your body's center of mass upward, and the distance it travels up is a function of how fast it was moving when you broke contact with the floor and therefore stopped applying force to the system. The momentum generated carries the body upward off the floor.

The main problem with a sport that requires explosive capacity for an athlete that lacks it is that explosive capacity is very difficult to develop, to the extent that putting 3-4 inches on an athlete's vertical jump is considered an excellent achievement in strength and conditioning. (The test is valuable for what it tells you about the genetics of the athlete, and training to improve the test score is definitely missing the point.) A vertical jump of 36 inches is a rare find, and indicative of an extremely efficient neuromuscular system in a very explosive athlete. Whereas it is common to take a motivated athlete from a squat of 135 up to well over 500 pounds, we can't even add 30% to an athlete's vertical, no

Is Olympic Lifting Strength Training?

matter what you read on the internet, and this indicates a profound difference in the nature of the two mechanisms. Absolute strength and explosive force production are interdependent but separate qualities; Strength can be developed in anybody, but explosion is a gift. Sports that depend on explosion also depend on genetically-endowed athletes.

If you can't get these people to play for you, you have to manipulate the interdependent performance variables of the ones you have: the best way to develop the ability to display strength rapidly is to *increase the strength you want to display*. It's really cool that this works, because that's often the only recourse you have, failing the ability to recruit freaks into your program. Many very good Olympic lifters have gotten that way by being determined to become god-awful strong, but at the pinnacle of the modern version of the sport, a champion is both naturally explosive and god-awful strong.

This is why steroids are used by Olympic weightlifters – they don't improve your technique, and they can't alter your genetics for explosion. Androgens do in fact improve explosive performance, and this is most obviously seen in the differences in average vertical jump between men and women, even after correcting for differences in LBM. But the mechanism responsible for this may just be the obvious fact that steroids make you stronger, and this is recognized as important enough that you risk your career to use them. When American weightlifting coaches remind us that the Olympic weightlifters from other countries are using steroids and we're not, they are actually reminding us that they are stronger than we are.

Remember the previous “duh” observation: an athlete with a 500 lb. deadlift can clean more weight than an athlete with a 200 lb. deadlift. Always true, every time. In the final analysis, it really doesn't matter how fast an athlete can recruit maximum numbers of motor units if those recruited motor units cannot produce enough force to perform the acceleration. Power is strength displayed quickly, but if the strength is not there to display, the result is obvious. The difference between two lifters of the same neuromuscular efficiency (as measured by vertical jump), the same technical proficiency (as measured by the ability to produce a vertical bar path), and different levels of strength (as measured by the squat and the deadlift) are quite predictable: the stronger of the two lifters wins.

Why do the snatch and the clean & jerk, in and of themselves, fail to develop high levels of absolute strength? The glaringly obvious answer is that while they display the aspect of strength we call “power,” neither of them utilize maximum loads over their range of motion. They do not test or develop absolute strength because they are not heavy enough to be limited by the simple ability to produce force independent of the speed of the contraction. A limit deadlift is an event that demands the complete recruitment of *all* of the force-production machinery in the muscles, whereas a clean will not be as efficient in doing so. For most lifters, the contraction in a ballistic movement must happen so fast that the body cannot call all the motor units into contraction in that very short timeframe. Remember pushing the merry-go-round as fast as you could and not being able to push it any faster because your little legs just wouldn't work any faster? It wasn't because you weren't strong enough; you reached the limit of your ability to apply your strength because of the speed. The Olympic lifts are similar: the quickness of the contraction limits its ability to be a complete summation of the activity within the muscle.

This limiting effect of the speed of contraction becomes less an encumbrance as the genetic explosive quality of the athlete improves. People who can recruit high amounts of contractile force rapidly – athletes with big vertical jumps – will be more efficient at doing so under heavy loads. This is why these people make better weightlifters. For them, an explosive contraction is also a more-efficient

Is Olympic Lifting Strength Training?

stimulator of absolute force development for more contractile machinery, and is probably why some international-level lifters can get away with not doing deadlifts in training. They are strong in spite of not deadlifting, because a clean for them is a more deadlift-like event, neurologically.

Another important factor is the effect of working under a maximal load while maintaining a solid isometric position through the whole range of motion. Movements limited to the lifter's ability to display power will undertrain strength because such movements don't last long enough to stress position-holding ability, which is most efficiently developed under heavy weights. Lighter explosive efforts lack the elements of isometric stress and force transmission capacity for long enough an effort to train the adaptation, which involves connective tissue strength as well as maximum force production in the erectors and hamstrings. The ability to maintain a good position out over the bar through the middle of a heavy clean is much more trainable in a slower, heavier pull. And the ability to stay in this position produces the ability to use better pulling mechanics in an explosive pull, thus involving more muscle mass in the explosion.

The pull off the floor in its heaviest form is a deadlift; a clean or a snatch is lighter, and a lighter pull cannot develop the ability to produce as much force against an external resistance as a heavy pull can, unless you're a freak. Most of us are not freaks. A jerk has been started off the shoulders by the ground reaction of the knees and hips. So even though a jerk is heavier than a press, the jerk does not test or develop the absolute strength of the ROM like a press does. The clean is usually caught at the bottom with a ballistic sub-maximal front squat that, again, cannot test or develop absolute squatting strength.

The squat is used by Olympic lifters for overall strength, and the low-bar version of the movement more closely resembles the back angle of the pull off the floor (the front squat is already performed as a separate exercise). The primary advantage of the low-bar version is that it allows the use of heavier weights, thus developing the ability to apply force against the external resistance provided by the barbell, for weaker lifters – those most in need of getting stronger. Strength being a general adaptation, and good athletes being able to use strength accurately when executing their sports-specific practiced movements, it seems to me that the low-bar version would be the best one to use. But if you're doing *any style* squat with 800 pounds, you're strong, and strength is the objective, not style.

Again, this is why steroids are used by Olympic weightlifters. From the time they were introduced in the 1960s up until this very afternoon, Olympic lifters have taken them for one reason only: they make you stronger. Stronger is important, because if you're stronger, you have more strength to display explosively. Steroids make you stronger *even if you're not training for strength*, which comes in handy if your program doesn't include deadlifts, heavy back squats, and presses challenged for PRs on a regular, serious basis. Steroids enable Olympic lifters to get away with sub-optimal strength training programmed into their meet preparation. Genetically strong men with steroids have excelled in the sport for decades, even under coaches that do not understand their jobs clearly.

The point is that the snatch and the clean & jerk are good at testing strength displayed as power, but by themselves they cannot *develop* it unless the lifter is a novice, for whom anything new acts as an adaptive stimulus. This is related to why most American Olympic weightlifting coaches think that a program based on the snatch and the clean & jerk, with a few squats and front squats thrown in as assistance exercises, works just fine for the continued development of the 2-lift total in competition, despite the quite obvious historical fact that it doesn't. It has to do with the nature of team development in this country and in other programs around the world.

Is Olympic Lifting Strength Training?

The Gold Standard of team development is the recruitment of interested kids, from the ages of 11 on up to the high school level. It is thought that age 18 – and perhaps even 16 or 17 – is too late to start a kid that would have the potential to become a national or international-level lifter. So a 14-year-old kid coming up through the team ranks is a typical athlete working with a typical coach, in more than just this sport. Such a kid is growing, and growing kids are getting stronger whether the coach is doing anything to specifically affect their strength development or not. They are also maturing hormonally, and this is true for both sexes. Like a novice, their normal growth occurs in the context of training, and a coach that omits specific strength work in the basic exercises may see what appears to be a strength improvement as a result of the snatch and the clean and jerk, with squats added as assistance and no deadlifts, presses, or benches at all. What is actually happening is the kid is demonstrating a strength increase parallel to his normal growth as he trains the two lifts, and as his growth slows, so does his progress in the sport. I've seen it dozens of times, and you have too if you've been paying attention.

We know how to make athletes stronger. The lifts that are limited only by force production capacity – the squat, deadlift, press, and yes, even the bench press – must be programmed in a way that results in *regular increases in weight on the bar*. So, to make a stronger Olympic weightlifter, we must make a stronger squatter, presser, and deadlifter.

This is the heresy part. Conventional American wisdom holds that since heavy deadlifts are done *slowly* and since you want to pull a clean *fast*, you shouldn't deadlift. Or even worse, some coaches actually believe that it is useless to get your deadlift *too strong* – too far over your clean, because that represents productive time lost in training the clean. I am really not prepared to argue with anybody that still thinks a 700-pound deadlift slows down a 525-pound clean, or that a heavy deadlift workout for PR every two weeks somehow adversely affects the clean, because I don't know what to say in the face of such blind illogic. Except to say that a weight that feels light off the floor can be pulled faster than a weight that is comparatively heavy. And that if you're not in shape to recover from a heavy pull, I can't think of a better way to get in shape than doing heavy pulls. And that if you can keep your back flat pulling 700, you can damn sure keep it flat when you accelerate through 525. Mischa Koklyayev manages quite a bit better than 525/700. This fact itself, of course, proves nothing other than that *his 850 deadlift certainly as hell hasn't slowed him down*, but it does correlate in a pleasing way.

The same wisdom dictates that pressing for PRs is not useful, since a jerk is not a press. Apparently being too strong overhead has been a problem at some point in American weightlifting history, and this new policy has corrected the situation. Thank GOD for that, huh? What idiot ever thought that getting a bar overhead had anything to do with being *strong* in that direction? Sneaking under the bar from the position of a tricep extension with your elbows pointed forward works so much better.

And squatting is always controversial, isn't it? We go back and forth about where the bar should be on the back while we do singles with 440 pounds after our snatches and C&Js, completely missing the point that 440-pound singles *are just not strong enough*. And until they get to be about 600, our time will be better spent worrying about squatting heavier than figuring out ways to break the snatch into 13 different pieces. Squats for PRs – 5s are always best for getting just plain old strong – develop the base of strength for pulling off the floor, front squatting out of the clean, and every other aspect of strength for any barbell activity. Relegating them to assistance-exercise status, as many programs have done, has gutted our athletes' ability to compete with lifters for whom a 700 squat is assumed to be baseline strength.

Is Olympic Lifting Strength Training?

Now, it is obvious that some people are naturally stronger than other people, in the same way that some people are naturally more explosive, prettier, smarter, and better-smelling than other people. The difference in the Chinese National Weightlifting Team and ours is the caliber of athlete, as measured by their genetic gifts of strength and power (I don't know that their coaching is any better). They have several million lifters to choose from. If your athletes are squatting 750 with a 36-inch vertical, it doesn't really matter how or why – steroids or genetics, they're going to beat weaker, less-efficient lifters, because strength displayed quickly wins the meet every single time. If your team can recruit 36-inch verticals on naturally strong athletes, you have a definite advantage. We don't seem to be able to do this, and the reason doesn't matter. It's a cultural, social, fiscal fact that Olympic weightlifting in the USA is not a popular sport that rewards its athletes well, and there's really nothing that can be done about that, especially in the short term.

So, if your weightlifting teams have been slaughtered in the international arena for 3 decades, and, partly as a result, you cannot recruit better genetics into your sport, perhaps it's time to try a different approach. Right now, we have two women and perhaps no men going to the 2012 Olympics in weightlifting, and 70% of our current men's American records in weightlifting were set prior to the 2008 Olympics, so I don't see what we have to lose, except perhaps some demonstrably unproductive coaching jobs. *What we have been doing for the past 30 years has not been working*, so a sane person would try something different.

How about we do the **unthinkable** and *require* our lifters to regularly, periodically improve their performances in the squat, deadlift, and press, as a programming priority? By that I mean codifying a regular increase in the basic strength movements with a proven method of doing so, like sets of 5 squats, deadlifts, and presses approached as more than just assistance exercises done at the end of the workout if there's time and the coach is still around. Maybe the coach puts a little more weight on the squat and deadlift bar each week or two, and the lifter actually lifts it as though it is important to make PRs in your strength too. We have time right now, since we're not doing anything much in London this summer, so why don't we try this approach for 6 months and see what happens? That will be plenty of time to find out.

I have been following the activities of USAW's national program at the US Olympic Training Center in Colorado Springs since 1985, and at no point in the last 27 years has any national coach *required* a PR deadlift or back squat as a regular, formal part of the training program**.

The emphasis has instead been on the snatch and the clean & jerk, under the assumption that doing these two lifts and myriad variations of them will drive up performances in the lifts at a meet. It hasn't. The overwhelming majority of lifters that were strong enough to display their strength quickly enough to get into the program at Colorado Springs immediately stagnate upon the removal of basic strength work from their training. The norm is an athlete who makes little or no progress for the entire time of residence in the program. This is clearly and solely a coaching problem, since no athlete goes there to fuck around.

Shane Hamman (1008 squat in 1996) told me when he was here for our interview that he was not allowed to deadlift or squat heavy during his time as a resident athlete. Dragomir Ciroslan, the men's national coach at the time, told me personally after watching Shane squat 804 in a pair of shorts and a t-shirt, that he would only be impressed by this if Shane could turn it into a big snatch and C&J. His subsequent training involved no heavy weights in any movements except the two lifts, weights that were not heavy for Shane in terms of his absolute strength. Dragomir apparently failed to appreciate the fact that Shane had arrived at the OTC without the benefit of the advanced, highly-

Is Olympic Lifting Strength Training?

effective coaching found *only there*, and that perhaps an 804 very raw squat was one of the reasons why he got there at all. Going into a program in which he was not allowed to develop or even maintain his squat strength, or deadlift anything heavy, might well have had a profound effect on his perception of what “heavy” actually was. Shane might have some valuable insight into this problem, but I’m the only guy that asks him about it? Has it just not occurred to anybody else?

Back in the 1960s when the United States was still performing at the international level, our top lifters did heavy deadlifts, heavy squats, and heavy presses for PRs as a primary part of their training. None of them had a shirt that said “I don’t bench press” or “I don’t deadlift – I’m much more athletic than that” or some other such haughty proclamation of imaginary elite-hood. They just considered themselves *lifters*, not Olympic weightlifters, because *they trained heavy in all the lifts*. Most contemporary American weightlifters do not. Correlation, or causation? You decide.

[Starting Strength](#) : [Home](#) : [Articles](#) : [Forums](#) : [Discuss This Article](#)

Thanks to Stef Bradford and Steve Hill with help in preparation of this article.

**Example programs from USAW

1. [Recent example](#) published in USAW’s magazine Jan 2012 (see page 7)
2. [Older example](#) from the OTC
3. Long-standing USAW program: [part 1](#), [part 2](#), [part 3](#).

Copyright 2012 The Aasgaard Company. All Rights Reserved

This copy is for your personal, non-commercial use only. Distribution and use of this material are governed by copyright law.