

## Squatting Outside the Box

Searching for common ground, powerlifting guru Dave Tate and this CrossFitter agree:  
The explosive box squat works—if you can handle it.

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**Russell Berger**

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What do you get when you give a stubborn kid with no friends, plenty of bullies, and learning disabilities access to a small, private powerlifting gym? That depends. In Dave Tate's case, you get a 700-pound back squat before you've even graduated from high school. Decades later, Tate's experience as a professional athlete and coach have turned that stubborn, bullied kid into a powerful motivational speaker, successful author, and the founder of Elite Fitness Systems, a multi-million dollar equipment supplier to strength coaches and athletes.

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CrossFit San Diego recently hosted a seminar in which Tate, a world-class powerlifting competitor and trainer, shared his knowledge and experience with the CrossFit community. CrossFit continually produces trainers and athletes who are adept in everything, but masters of nothing. How CrossFit manages to pull this off is no surprise: we occasionally check in with the real masters and find out what we can learn from them. So what does the bald-headed Dave Tate, with an extremely specialized skill set, fondness for box squats, and an infamously terrible diet have to teach us? More than you might think.

Tate, an Ohio-based father of two young sons and the author of the 2005 book ***Under the Bar: Twelve Lessons of Life from the World of Powerlifting***, is impressive in more ways than one. His elite status in three separate weight classes of powerlifting obviously comes to mind. His best lifts, a 935 squat, 740 deadlift, and 610 bench press, put him at a monstrous total of 2,205. With a career that spans the roles of world-class athlete, coach, and businessman, Tate's life experiences make him an equally incredible source of knowledge. As a self-described "meat-head" and college drop-out, Tate returned to the University of Toledo and graduated with a degree in exercise science and nutrition, combining the wisdom of the gym rat with a detailed understanding of the human body and its mechanics. At 41, Tate's life-long resume has made him the stuff of legend to aspiring strength athletes all over the world.

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Tate was already a relatively successful powerlifter when he was recruited by the now-legendary Westside Barbell Club of Grove City, Ohio in 1990. His success bred stubbornness, and he had developed a disdain for the unorthodox methods of Westside coach Louie Simmons, a strength consultant with several NFL teams and the only man over age 50 to total 2100. Simmons is responsible for pioneering "Dynamic Training," a method that puts heavy reliance on generating power by using relatively light weights lifted at high velocity.

At first, Tate was extremely critical of Simmons and his unique training, refusing to even try such an unorthodox method. "Speed work seemed like bullshit," he explained, "I had been using western-style progressive overload, you know, sets of fives, threes, and singles, and went nowhere for a year." Finally, however, he succumbed to dynamic training, adopting an exercise known as the "box squat"—a squat in which the eccentric phase of the lift carries the lifter to a sturdy box placed just below parallel, allowing the movement to be partitioned and more focus to be given to the explosiveness out of the bottom (see sidebar). Tate used the box squat for the rest of his time at Westside, only attempting full squats during competition. This notion seems a little unbelievable at first, until he points out that he added 200 pounds to his squat in six months with this method.

### Powerlifting vs. Strength-training vs. GPP

Impressive resume aside, Tate is a highly specialized athlete. What value he might be to us, even with his level of experience, was hard to estimate. I don't think any of us knew what to expect when he began speaking at our seminar, Tate included. Like others in his industry, Tate is known for complete, expletive-ridden honesty. Gathered before him was a small crowd of military personnel, CrossFit trainers, and HQ staff. All of us knew full well that we could end up having gained nothing from this interaction. After all, how did we know this guy was any different from others in his realm of the fitness industry? Would he spend his time labeling our methods as dangerous or ineffective, echoing the weak sentiments of CrossFit critics Poliquin, Boyle, and Cook?

### TATE'S BOX SQUAT TECHNIQUE

The box squat is relatively simple. The athlete first chooses an object to serve as his or her box. This can be a sturdy plyometric box, a stack of bumper plates, or even a flat bench, but the object used must be able to accommodate the full weight of the lifter and the bar being squatted. The height of the box is largely determined by the individual squatter. One inch below parallel is preferred, a height that can be achieved with relative accuracy by stacking thinner bumper plates onto a 12-inch plyo box that has been turned at a 90-degree angle to the squatter.

#### Proper Body Position

**Wide Stance:** Take a much wider stance than a typical squat, with your toes facing nearly forward. Often, this will be just wide enough for you to get your hips below parallel, something that may be uncomfortable if your groin muscles aren't used to being stretched that far.

**Knees Back:** Do not let your knees move forward for the entire squat. This is challenging. Have someone watch you from the side and make sure it doesn't happen. Even slight movement forward is a sign that your quadriceps are being engaged to make up for a position in which your hamstrings are weak.

**Proud Chest:** Keep your torso as high as possible. This will require what may seem like an excessive lumbar extension, but does help to keep the bar moving on a straight path.

**High Eyes:** Look up and forward. This is primarily done to keep the chest high.

#### Execution

**Step 1:** Assuming a very wide stance, inhale and fill your abdomen fully with air. Begin pushing your butt and hips back like you are trying to sit on an object behind you. Continue to reach back, keeping the chest as high as possible and limiting forward motion of the knee as much as possible.

**Step 2:** Descend in the squat as you would without the box present. Squat style plays no role in the effectiveness of this exercise as long as you don't begin to blend styles together or lose proper form.

**Step 3:** Touch the box slowly, allowing your weight to settle on it with absolute control. At this point, every muscle in your body must be tight, and you must continue to hold your breath tightly in the abdomen.

**Step 4:** Wait one or two seconds. At the moment the crease of the hip passes below the top of the patella (knee), immediately squeeze (contract) the posterior muscles violently and violently snap up from the box/bottom of the squat.



### Common Errors and Fixes

**Out-of-control landing:** The most common and potentially dangerous error in the box squat is bouncing off of or slamming onto the box. In order to prevent injury and perform the movement correctly, the athlete must be in absolute control of the squat all the way to the point where his or her weight settles gently onto the box. Not staying on the box long enough can also lead to attempts to bounce off. If you are falling onto your box, adjust the height of it until you are in control at the base. Then count two seconds in your head before exploding upwards again.

**Moving the knee too far forward:** Keep the knee positioned back, over the heel. If you are too quad-dominant to perform this type of squat to full depth, box squatting to the threshold of that depth can help. After enough practice, you should be able to lower the box and gradually improve your range of motion.

**Not keeping the chest up:** Dropping the chest during the squat is a common error. Lumbar flexibility is a must, and lowering your chest too far forces the barbell out of the straight-line path you are looking to achieve. If possible, having someone watch you and cue you to raise your chest when it drops will help. Looking up is generally effective at getting an athlete to raise his or her chest farther.

### Assistance Exercises and Recovery Tips

If you have 300-pound hamstrings and 200-pound hip abductors, you will only squat 200 pounds. This is the simple way that Tate breaks down specific muscular weaknesses within your movement. Tate recommends analyzing the squat for apparent weak points, and using "assistance exercises" to build up that weak point. For example, falling onto your box because you can't get below parallel using only your hamstrings implies that you are weak at that particular range of motion.

**The GHD Raise:** One of the most devastating assistance exercises Tate uses is the GHD raise. Start face down on a GHD bench, with knees just shy of the close edge of the pad and your body parallel to the ground. Without engaging your lower back, begin flexing your knee joint, curling your body to an upright position using nothing but hamstring strength. If this is relatively easy, prop the foot-end of the GHD bench onto a 12-inch box. If you can get more than three or four of these in a row you are doing well.

**Less is more:** If there isn't a good reason to be doing an exercise in the gym, get rid of it. Training economy is key, and wasted energy both hurts recovery and limits time that could be spent on more effective training.

Doing more than four reps at 90% of your 1RM range during training, for example, won't actually increase strength, but will seriously inhibit recovery speed.

**Savor success:** Always leave on a good lift if possible. Let's pretend you just PR'ed on your deadlift by 30 pounds. You think you might have more in the tank, but don't get greedy. In the grand scheme of your training, a PR is a huge accomplishment, and you've already asked enough of your body. You might be able to pull ten more pounds, but what if you fail? The psychological impact of leaving the gym on a missed lift is huge, and sets you up for failure in the future.



From the start, however, Tate made it abundantly clear that he wasn't interested in CrossFit's calling card, GPP, or "general physical preparedness." He opened by acknowledging our differences, noting, "I can't train for general fitness. I respect the shit out of anybody that can, but I want to break records; that's just me."

This was an important piece of diplomacy from a guy who serves as an icon to many who trash CrossFit on a regular basis. Tate was offering us the value of his expertise, and it was up to us to do what we wanted with it. His no-bullshit approach to training made it clear that even though our goals and methods might be polar opposites, we were speaking the same language. As Tate began explaining his training philosophy, striking similarities between our methods arose. His three prerequisite considerations for training programs, for instance, "safety, efficiency, and effectiveness," were a surprisingly familiar parallel of Greg Glassman's hallmark measurement of "safety, efficacy, and efficiency." He even touted the need for "quantifiable goals," scribbling the classic black box theory on the board in his own words: "Progress = Correct training."

Where the differences between Dave Tate and CrossFit became apparent were largely in the form of our goals. Because Tate's training is designed around competitive performance, his objective is relatively simple: increase the load on the bar. How this happens isn't really important to him; squat suits, drugs, knee wraps, and complex technical training are all fair game. The end result is a man who has made a career out of squeezing every possible ounce of usefulness out of an athlete's available resources, applying a great deal of time and energy towards what we might consider tricks and gimmicks.

CrossFit's own strength training, while making use of many of the same movements found in powerlifting meets, is designed to promote the adaptation of general strength. In theory, an athlete who is relatively capable in the squat will be generally stronger, and therefore more prepared to meet similar challenges in the real world. General strength, as we measure it with barbells and plates, shares in the desire to increase the load on the bar, but only in the context of increasing an athlete's functional capacity.





## Squatting Outside the Box ... (continued)

These differences were highlighted for me at the Basic Barbell cert taught last December by Mark Rippetoe, CrossFit's resident strength expert. During his cert, I made the mistake of confusing Rip for a powerlifting coach, something he really didn't appreciate. Rip respects the athletes who compete in powerlifting, but dislikes the changes that have come about in the sport itself. Rip's own powerlifting career ended in the late 1980s, and he criticizes the sport for the increased importance of equipment and the deterioration in qualifying deadlift weights—something Tate refutes. Some bench shirts and squat suits are so supportive that many lifters must train to fight against their own garments just to achieve full range of motion, but Tate holds that the technical skills required to effectively use this equipment adds a tremendous skill component to the sport. As Tate explains, "One can't just put on gear and get a 300-pound bench carryover. There is a very technical skill to this and a pretty large learning curve; you could say that these federations have added a higher skill aspect to the sport that was never there before. So now those who do not have the genetic advantage can beat those who do." Regardless, Tate disagrees with judging an entire community based on only a percentage of its members. Raw divisions, for instance, which were recently allowed to compete at the national level by USA Powerlifting, are still recording squats well over 600 pounds using little more than lifting belts in competition.

Overall, Rip's negative view of powerlifting seems to revolve around this same difference in goals. As a strength-training coach, Rip isn't looking for every training trick and piece of equipment available to work a few extra pounds onto the bar. Rip's goal is general strength, increased to further benefit a novice lifter's work capacity inside and outside of the gym. While arguably less awe-inspiring than an 800-pound back squat, this is a goal far more valuable to us as CrossFitters. My mistake, confusing Rip's strength-training with powerlifting, was a complete misunderstanding of Rip's role as a coach. This is obviously something that happens frequently judging by his frustration, but I don't blame him for his reaction. Being compared the likes of Simmons and Tate, who have produced a plethora of Elite level powerlifters, makes Rip's resume look pretty unimpressive, but in the end the comparison is apples to oranges.

While Tate's performance is undeniably impressive, it's fairly clear how competitive powerlifting translates into GPP: poorly. Tate's level of specialization is the antithesis of CrossFit. I'm not talking about trading a little work capacity



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for a successful powerlifting career; I'm talking about not even having the ability to function effectively in daily life. Tate himself admitted that he became concerned about a lifter's need for "cardio" when he had trouble making it from the parking lot to the platform before a training session. When Tate retired, his own mobility was so bad that he couldn't walk down stairs unless he moved down them one step at a time. This isn't a far cry from the ultra-marathon runner that can't jump onto a 12-inch box, and certainly constitutes a failure in our measurement of fitness. As CrossFitters, our interest in GPP forces us to balance strength training with all other aspects of fitness. Specific strength training efforts represent a small percentage of our overall training. Equally, these efforts also represent a small percentage of our capacity.

*Or do they?*

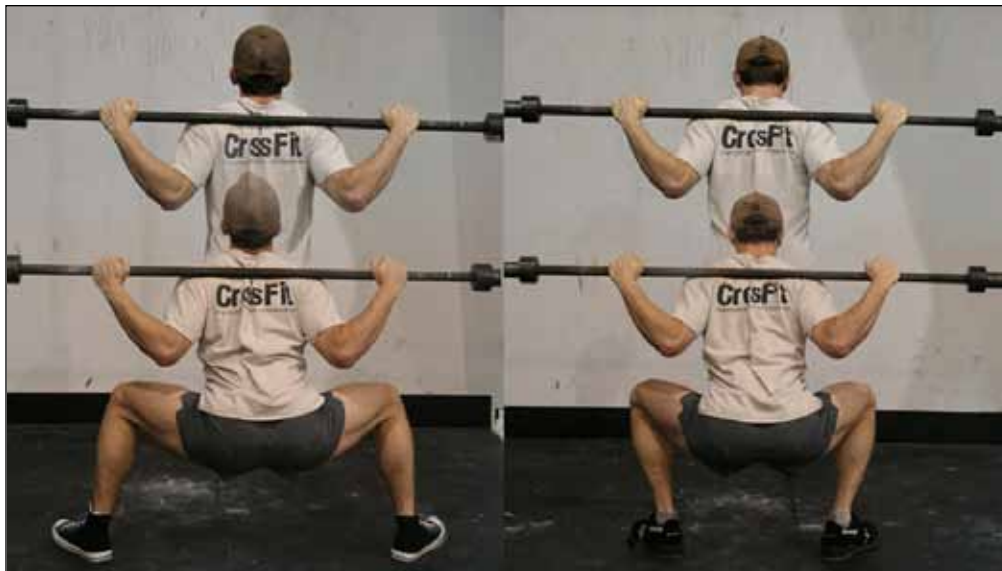
The question has been around as long as CrossFit itself: "Will an extra 100 pounds on my back squat increase my Fran time?" Some believe that increased maximal strength can increase GPP by increasing an athlete's ability to move lighter weights faster, since those lighter weights now represent a smaller percentage of his or her maximal effort. Others disagree entirely, citing examples of very strong people being beaten by much weaker people in efforts like "Grace." Here was a chance to ask Dave Tate, who has put an estimated 50,000 hours into training, coaching, and consulting on strength, one of the most fundamental and

controversial questions in our community. His response, however, wasn't quite what I expected: "I don't know, and anyone who says they do is probably bullshitting you."

That was it. He didn't budge from this position. This "million dollar question," as Tate puts it, is the Holy Grail to strength and conditioning coaches everywhere. Does increased strength directly carry over to increased performance in any sport? Tate offered a number of counter examples to strength benefit in field sports, pointing out that there are always star players that don't have to work hard in the gym because they are so naturally talented. But what does Tate think about more measurable events like CrossFit workouts? He couldn't say, and held that anyone who thinks they know all the answers is selling nothing more than "educated guesses."

### The Instantaneous Explosion of Box Squats

Most of Tate's training involves improving a lifter's ability to get out of the bottom of the squat. The box squat, as Tate showed us, is a unique method for teaching the instantaneous generation of force or "explosiveness" required to reverse the direction of a massive weight. Practicing exploding out of the bottom of the squat wasn't new to me. Rip teaches this at his certification before even allowing anyone to touch a barbell. What was amazing then, was how profoundly inept I was at generating this force off of a box.



Tate began by teaching us his style of squat as we simultaneously learned the box-squat technique; coaching us down to, and up from, a box that was set just below parallel. Tate's squat form involves an extremely wide stance and a higher chest than Rip teaches. The most notable change, however, is that Tate does not allow the lifter's knees to move forward at all during the squat. Watching Tate demonstrate this type of squat is something to behold. As he descends, he forces his hips dramatically to the rear, and when he reaches the point just below parallel, his knee is actually at a point *behind* his heel. How is this even possible? For many of us it isn't.

One by one, Tate called us forward to attempt his style of squat. Just about everyone in this seminar was a veteran CrossFitter. Certainly a simple change of technique wouldn't come as much of a challenge surprise to athletes with our capabilities. As Tate describes it, even slight preference of the quadriceps near the bottom of the squat, which can be seen as the knee moving forward, isn't acceptable. One by one, everyone who attempted Tate's technique ran into serious difficulties. Allowing the knee to move forward of the heel, a normal occurrence in both Rip's techniques and the Olympic-style back squat, was incredibly difficult to resist, and restricting the knee's movement successfully often resulted in the lifter losing control at the bottom of the squat and falling onto the box. To deal with this, Tate began stacking thin bumper plates underneath lifters, attempting to reach this breaking point even if it meant the athlete was no longer squatting below parallel.

Always ready for a challenge, I was ready for the box squat, but since the squat technique I learned from Rippetoe had worked well for me, I wasn't particularly interested in learning something new if it meant I had to start from scratch. My "Texas-style squat," as Tate calls it, seemed to concern him, so he asked that I volunteer for the next practical exercise. I knew that I had Rip's teachings down pretty well, and after watching me squat the bar a few times, making sure I was moving it along a straight path, Tate gave his approval, even complimenting Rip on a job well done. If Tate believed that his squat style was superior to the "Texas-style" taught by Rip, he didn't show it. He took a measurement of the path of the bar during my squat, and began coaching me through his own squat style.

I stretched my stance out a couple of inches, pushed my chest up, and sat back to the point where I could feel my body hanging off of my groin muscles and hamstrings.

This wasn't comfortable, but to the surprise of us both, I pulled it off. The width of Tate's stance requires the lifter to drive his or her knees outward with a great deal of force, pushing into the outer edge of the foot for support. This explains Tate's affinity for lifting in Chuck Taylor shoes, which allow for traction against the ground without putting the ankle in a compromising position, something that happens when balancing on the outer edge of a typical weightlifting shoe.

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**"...Sure, if you're trying to bounce off the box or you're using more weight than you can handle, then there are definitely dangers to the spine."**

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Under Tate's direction, at the base of the squat, I settled onto the stack of wood and bumper plates beneath me, keeping every muscle in my body as tight as possible. I paused for a moment, and then squeezed everything I could, trying to "pop" out of the bottom. As hard as I concentrated, I still felt muted and slow. This was the kind of failure I felt the first time I saw someone doing double-unders with correct technique. When Tate demonstrated the box squat, it was like watching a cartoon character snap off of a hot frying pan. I simply couldn't re-create this display of power. His ability to instantaneously fire his muscles and generate speed was clearly something we lacked. Even the best of us looked sluggish in the bottom two inches of the squat, gradually picking up speed as we neared the top of the squat. There was obviously something to this technique, and we were all clearly incompetent at it.

### **Box Squats are Difficult and Risky. But Even Rip Admits They'll Build Strength and GPP**

Tate's practical exercise was humbling. The explosiveness I thought I could generate at the base of the squat didn't seem to exist, at least not with any amount of weight on the bar. Was I completely missing a vital aspect of Tate's training, or was this just another gimmick reserved for competitive powerlifters?





Would doing box-squats have any carry-over into a CrossFit athlete's performance without the equipment, drugs, and diminished work capacity associated with it? In his response, Tate didn't skip a beat. "This style of squatting and dynamic effort training has nothing to do with equipment or drugs." He even offered to show me how to tweak the techniques and training he taught us to get the most out of a squat suit, but pointed out that I would never use anything like that.

Perhaps the most important endorsement of Tate's techniques comes from Rippetoe himself, who has written that, "The dynamic effort techniques are extremely useful for anyone wanting to get stronger. CFT [CrossFit Total] benefits from their application immediately. They are an incredible tool, and in my opinion are the major contribution Louie [Simmons] has made to modern strength and conditioning."

Rip's book, "Starting Strength," however, provides a telling disclaimer on his concerns for the safety of the movement: "Box squats are an advanced exercise with a huge potential for injury if done by inexperienced or physically unprepared trainees." Rip's opinion is that these

techniques, because of their danger, should be reserved for intermediate or advanced lifters, and novices will take the most benefit from the basic strength programming CrossFit currently prescribes.

On this point, Tate disagrees. He does admit that technical errors can lead to dangerous compression of the spine, but points out how easily these errors are avoided if technique is properly taught. The most common error, bouncing off the box at the bottom of the squat, has the potential to be very dangerous. (Add some momentum to that 400 pounds that you are trying to squat by dropping straight to a box, and see how your spine feels when it "catches" that weight, trapped firmly between the box and the bar.) The fact that this is a very observable and easily corrected mistake, however, makes mitigation of this risk relatively easy. An excerpt from one of Tate's training articles says it all:

"...Sure, if you're trying to bounce off the box or you're using more weight than you can handle, then there are definitely dangers to the spine. When performed correctly, however, box squats are safe."

After teaching Tate's techniques to my own athletes, I've noticed that even the best of them frequently can't pull off the unique range of motion required to get below parallel without falling over. Learning Tate's squat technique takes time and energy, and frequently requires the lifter to practice at a height well above parallel, gradually reducing box height until his or her control and range of motion has improved. Whether or not learning Tate's squat style is worth this amount of effort is unclear. But Tate himself said that the "Texas-style" squat was perfectly effective and could be used in conjunction with his form of dynamic training.

Using Tate's squat style, my depth was exactly the same as with the Texas squat, but my starting position was a great deal lower—a result of both the extreme width of my stance and an increased back angle relative to the ground. After taking a measurement of my bar path during the second squat, we concluded that Tate's style of squat and coaching had dropped the barbell's total range of motion eight inches. In Tate's world, where efficiency is an absolute necessity if you want to win, eight inches is a mile. By shortening the path the barbell travels, even by a small amount, the athlete is technically doing less work. To Tate this means one very important thing: greater potential load on the bar. My ability to recreate this diminished bar path, however, is questionable.

Without the presence of a world-class coach, I can't effectively reduce my starting position to the proper depth achieved by Tate's improvements to my form in San Diego. At this point, any increased load I could have put on the bar to take advantage of those improvements is gone.

Thankfully, Tate did teach us that fully squatting a heavier load might not be the only way to make use of one. In fact, just getting that heavy load off of the rack can have a big impact on your ability to squat at maximal efforts. The physical effect of skeletal loading, or simply un-racking a weight and standing under it, can be a big factor in training your physical and mental capacity. As Tate describes it, strengthening the core and getting accustomed to holding a heavy weight allows your bones and connective tissues to adapt to greater load. Equally important, simply holding up underneath a weight heavier than your desired 1RM can build mental confidence in your ability to control something lighter.

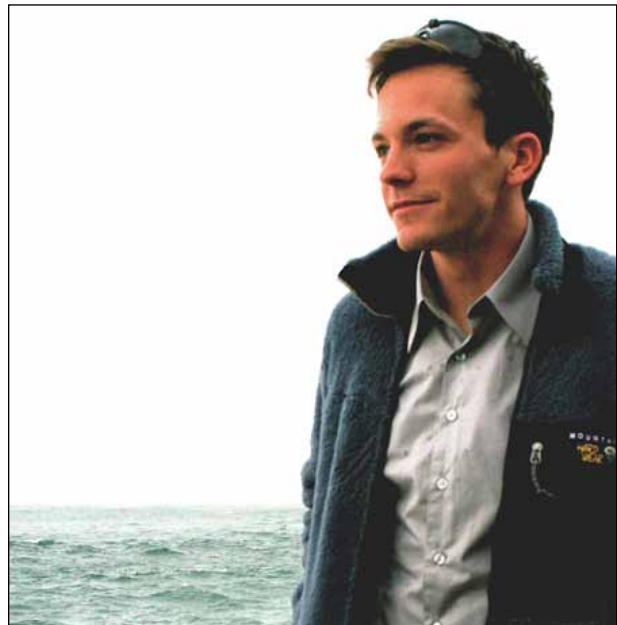
The "explosiveness" Tate demonstrated during the box squat, however, represents a challenge that must be overcome in any squat, regardless of style. After his seminar, I had 20 of my best CrossFitters attempt a "dynamic" squat workout that Tate had recommended we try: 20 sets of two box squats at 50-60% of the athlete's current 1RM back squat. As familiar as this aspect of the squat was to us, the style of training we had been using didn't seem to aid our ability to move explosively in the bottom two inches of the squat—the make-or-break point for a maximal effort. Even though the percentages used represented a relatively light weight, especially for sets of only two reps, none of our athletes had the same "pop" off the box that Tate displayed. To my surprise, however, each of them had improved dramatically by set 15, indicating that the light-weight, high-velocity lifting Tate recommends worked as a form of neuromuscular "practice."

If Tate's seminar could be summarized by a single quote, it would be this: "There are no bad exercises, only bad ways of doing them." In other words, if your squat style is efficient and safe, keep doing it, and while you're at it, use box squats to help you get better.

How much better will you get? I'm not entirely sure. It's fairly safe to assume that at some point, regardless of how much dynamic training you do, you will need to become physically stronger to move greater weight. But watching a large group of CrossFitters perform so weakly at the box squat was humbling to witness. Rip's strength

training, designed for the novice lifter, bumped my back squat up a hundred pounds, but when Tate asked me to pop off of a box with less than half of that weight I was clearly incompetent.

My suggestion? Go out and try it yourself, even with just a box and a bar, see how "explosive" you are in those bottom two inches, the part of the squat that really matters. My guess is you will find the same thing I did: a great tool for improving your performance. Use whatever style of squat you want with it, but do Dave Tate a favor and don't wear your Chuck Taylors outside of the gym.



### About the Author

*Raised in Atlanta, Russell Berger spent four years in 1st Ranger Battalion and saw numerous combat deployments. After starting CrossFit in 2004, he left the military, moved to Alabama and opened CrossFit Huntsville. Currently he splits his time between running his gym, writing for CrossFit, and spending time with his family.*