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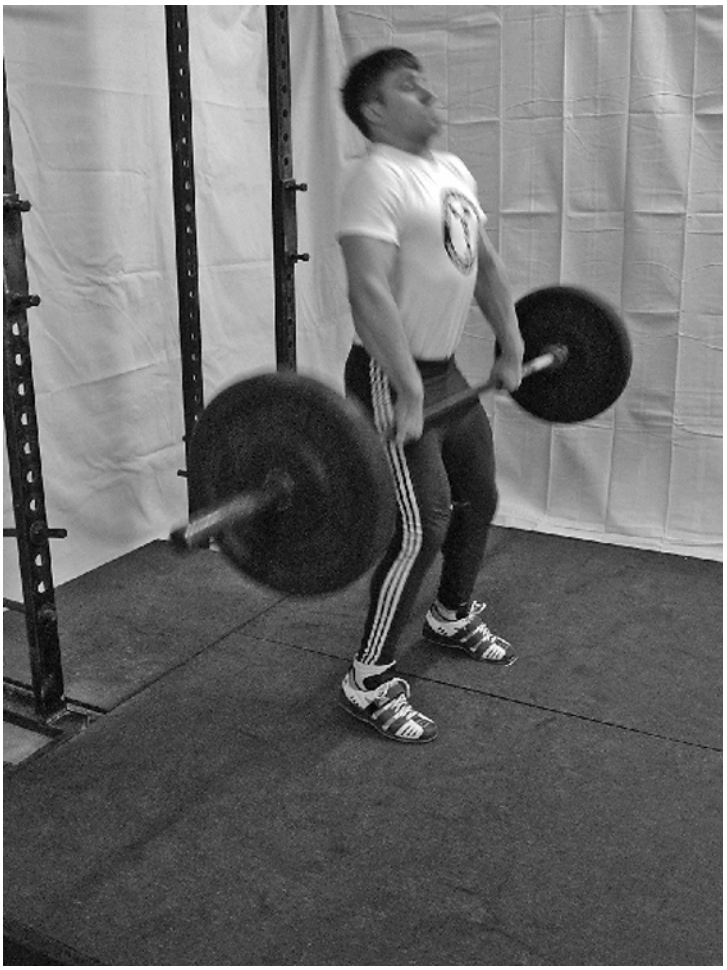
The Power Clean

Mark Rippetoe



When I first started lifting seriously, I had the good fortune to meet Bill Starr in the weight room at what was then Midwestern University in Wichita Falls, Texas. I was a snotty-nosed little smartass at the time and despite the fact that I knew absolutely nothing then about either training or being an effective smartass, I presumed that I did. Bill taught me about both.

I had been training—or, rather, working out—with a guy on faculty at the school, not getting much accomplished. We were doing half-squats. There, I said it, and I'm happy to get it off my chest. In my defense, I didn't know any better, and the other guy, who should have, didn't either. It is truly amazing what interesting things novices left to their own devices in the weight room will decide to do.

I was "training" by myself one afternoon in the dead of summer in 1979 when I ran into Bill in the weight room. He was in town dealing with family in the aftermath of our famous tornado of April 10 that year. Things were still rather hectic, and I had run in for a workout at what was not my normal time. I saw the unfamiliar face on my way in, and wondered who the long-haired guy was (the Falls is a smaller town than its population

would indicate). I began the workout with my cute little partial squats and had gotten up to 225 when he asked me, while I was still under the bar, "Just what in the hell are those things you're doing there?" I tried to explain to the new guy what a squat was, and over the course of the next few minutes became aware of the fact that this was probably not a "new guy."

Now, Bill is not one to beat you over the head with advice. He has never been nearly as concerned with being listened to as I used to be. I have learned over the years why he is not. How is it in my best interest for an 18-year-old kid, or for that matter a 45-year-old football coach, to believe me when I say that squats should be done below parallel? Or that presses are a better exercise for sports than bench presses? Or why snatches are important for powerlifters? I guess that at some level it is important just to be right, but the older I get, the less important it is that everyone else recognize that I am. Bill knows what he knows, and he offered to help me, if I would listen. But his feelings were not hurt when I was stubborn. He was past all that. I am trying to get that way.

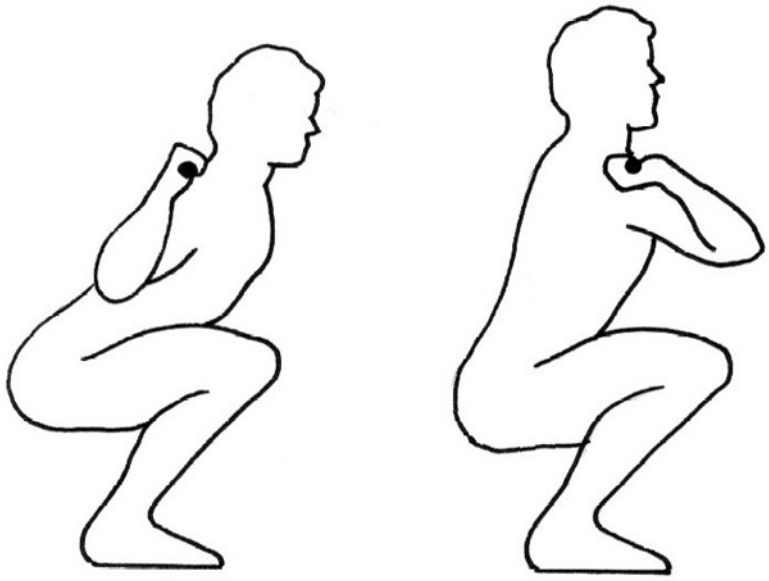
Bill worked with me for several years while he was here. He was in town more often then. I value the things he taught me. One of those things was to try to be more receptive to instruction. One day while we were benching at David Anderson's gym he tried to explain some fine point of technique that had eluded me, and for some reason I wasn't trying very hard to learn. He stepped back and said, "You know, it would be better if you would get more coachable." I thought about that a lot, and I have tried to get and stay more coachable. This requires that I be mindful of the fact that I have many things to learn, even—maybe especially—about things I think I already know.

Those of us who worked with Billy all learned the power versions of the Olympic lifts, even if we were powerlifters. Among those, of course, was the power clean. It took me just one workout to get pretty good at it. He was a good teacher. We didn't do the squat clean, and I didn't ask why, since I actually didn't know what it was until later. Power cleans worked just fine for what we needed: learning to apply power in the pull, for purposes of improving our deadlifts. He deals with them in his famous book *The Strongest Shall Survive*.

I have now been coaching the Olympic lifts for almost twenty years and am well aware that the full squat clean is a very important movement, both for motor skill development and for full-body conditioning. Learning it is important, since it is complicated, and learning complicated things improves the ability to learn. But I still teach the power clean to my novices first, just like Bill did.

This is not because I can't teach the squat clean to inexperienced lifters. I can, and I have. But I choose not to because I think it interferes with learning the squat correctly.

The front squat—the "squat" part of the squat clean—and the back squat are two very different movements that happen to be similar enough to cause problems for a novice lifter. The back squat depends on hip drive for power out of the bottom, and relies on an initial hip extension. This is accomplished by reaching back with the hips, which places the back at an angle quite a bit forward of the vertical. The form I teach places the bar on the back, below the traps, right below the spine of the scapula, allowing the hips to be driven straight up



The bottom positions of the back and front squats. Note the hip/knee relationships and the different back angles. Illustration by Lon Kilgore, PhD.

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out of the bottom very efficiently if the back is at the proper angle. The bar/squatter system is in balance with a heavy weight when the bar is over the middle of the foot, and for most people this happens when the hips are back, the knees are just in front of the toes, and the back is at about 45 degrees. I don't like the traditional high-bar, or Olympic, back squat specifically because the longer lever arm produced by the higher bar position and the resulting higher torque on the lower back reduces the efficiency of the hip drive. (For more on the back squat, see *CrossFit Journal* issue 44 or my book *Starting Strength*.)

The front squat depends on a nearly vertical back angle, since the bar is carried on the front of the shoulders. The most efficient back angle is as nearly vertical as possible, since any forward lean increases rotational torque against the lower back and predisposes the lifter to drop the bar. The cue for the front squat is "chest up" or "elbows up," which makes the back stay vertical. The bar in a back squat is wedged in between the back and the hands, and is much harder to drop; a front squat is so easy to drop that spotting the movement is both unnecessary and dangerous. The bar still gets driven up out of the bottom with a hip extension, since that's what has to happen to stand up, but this occurs without the benefit of a back angle that allows the hips to be consciously driven up. Hips are easier to drive up when they are back away from the heels, and this is why the back squat allows the use of much heavier weights, at least when it is done correctly.

The full squat style does indeed make the clean easier to rack, since the act of dropping under the bar to receive it with a front squat produces a faster elbow rotation. But for a novice trainee who is not an Olympic lifting prospect, I am more interested in a correct back squat than a fast rack in the clean. I can fix slow elbows later, but I want the back squat to be right from the beginning. The front squat and the back squat are very different movements, true, but not for a novice. To a person unfamiliar with them, they are both just squatting down very low with the bar. If the full squat clean is taught along with the back squat the first couple of weeks, the vast majority of novice lifters end up doing a back squat with a vertical back, knees way out over the toes and no hip drive. If you decide to teach the squat clean, it is much better, I think, to wait a month until the back squat is automatic, so that the front squat part of the squat clean can be kept separate in the lifter's motor mind.

In fact, I'll go out on a limb here and say that Olympic lifters should probably learn to back squat with a low bar position, since it allows the use of heavier weights. After all, why do Olympic lifters do the back squat? It is not a contested lift. The front squat is another exercise anyway. The high back angle of the Olympic squat is not reproduced in the pull of either the snatch or the clean. In fact, weightlifting coaches advise their athletes to keep the back angle as high as possible in their back squats precisely to reduce the low back torque that the long lever arm produces, and this angle ends up being more vertical than that used on either of the pulls. It's like trying to make the back squat into a slightly different version of the front squat. But that misses the point of the back squat.

Olympic lifters squat to get their hips, legs, trunk, and back strong, like everybody else does. Since the low bar position allows the use of heavier weights in a position more similar to that of the pulls, and works the low back at an angle more useful for the pull, I submit that it is better for weightlifters, and everyone, to do it this way.

While I'm at it, deadlifts would be good for weightlifters too. Some critics have argued that heavy deadlifts slow the clean pull off the floor. It seems to me, though, that if the deadlift is trained enough to get it up to about 150 percent of the clean, it would speed up the clean quite a bit. Weightlifting does involve strength after all, at least at the international level. But—I'll say it for you—what the hell does Rippetoe know?

Excuse the digression. We were talking about the power clean.

The power clean teaches explosion. It cannot be done slowly. And since it involves a longer pull than the squat clean, it emphasizes the finish, where the maximum hip, knee, and ankle extension occurs, without the added complication of the front squat part of the movement. The reason the clean is so critical to sports performance training is that it is a scalable way to develop power. There will be a weight, however light or heavy, that the athlete can handle correctly. That weight can be gradually increased, enabling athletes of any level of advancement to increase power production. Since athletics depends so heavily on the ability to exert force rapidly, the clean is a very useful tool for all athletes. I like power cleans better, for the reasons discussed above.

The power clean is best thought of as a jump with the bar in the hands, followed immediately by an upward forward slam of the elbows to rack it on the shoulders. It is much easier to learn from the hang position; learning it off the floor tends to understate the importance of the explosive phase at the top. In fact, the reason the power clean is an important assistance exercise for weightlifters is that it teaches the "finish" of the pull at the top, that last little bit of extension that must be done before going under the bar. If the first thing learned is the jump, the trainee has a better chance of keeping the power part of the movement foremost in importance.

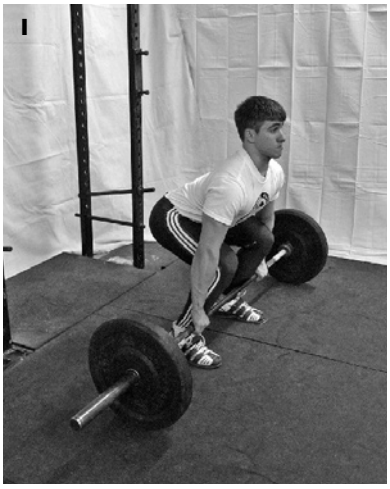
The most important position is what I refer to as the "jumping" position. It is the point at which the bar touches the thigh when both the hips and knees are unlocked and the arms are still straight. It is the point at which Olympic lifters start what they call the scoop or second pull. If the bar touches this point every time the clean is pulled, the back will be vertical enough that the jump, and the bar, will go straight up without going forward. If the clean is first learned from this point, with a jump and a slam of the elbows, it is easy to gradually lower it down the legs to the floor, reinforcing the jumping position each time the bar slides back up the legs.

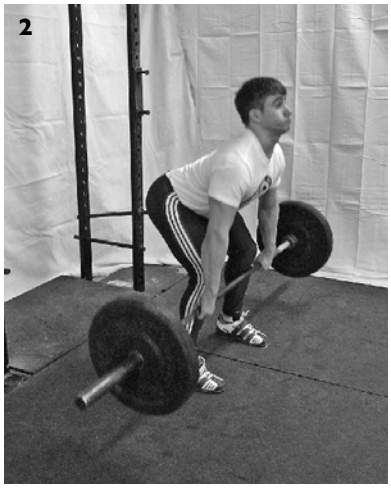
There are just a few important things to keep in mind. First, the bar always leaves the thighs on the way up from the jumping position. This means that the bar will be touching (but not crashing into) the thighs at that point, and as a result is not out away from the body when the jump starts. Second, the elbows are kept straight until after the jump begins. Pulling with bent elbows is a terribly common, unproductive habit that causes some of the pulling force to be absorbed in the straightening-out of the bent elbow. This results in highly variable pulling efficiencies, with differing amounts of force being transferred to the bar. Likewise, the third important thing to remember is that the back must be held flat, as rigid and tight as possible so that efficient, predictable, reproducible force transmission between the hips/legs and the bar takes place. The hips and legs are the motor of the clean, and the back is the transmission; a slipping clutch (i.e., bent arms) means lost power at the wheels.

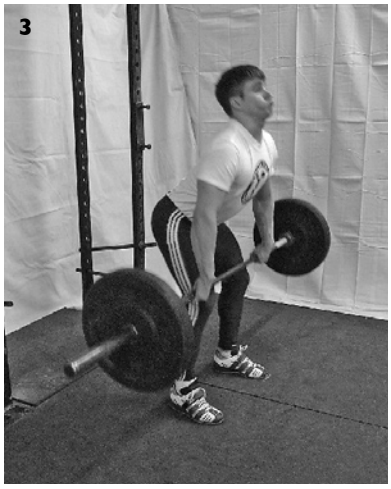
It makes sense to me to separate the learning of the squat and the squat clean. Think of the power clean as the separator, if it helps. I think the result will be a better squat, and just as useful a clean. But you don't have to listen to me.

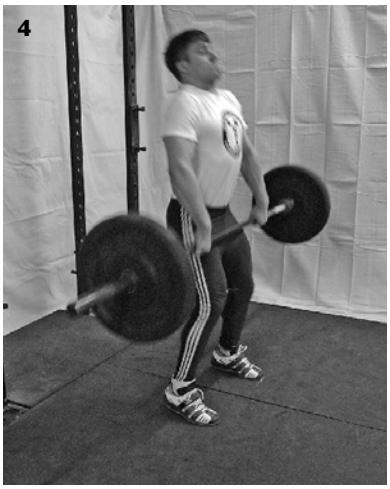
The jumping, or "second pull," position for the power clean. Hips and knees are unlocked, elbows are straight, and the jump will take the bar straight up. Illustration by Lon Kilgore, PhD.

Mark Rippetoe is the owner of Wichita Falls Athletic Club and CrossFit Wichita Falls. He has 28 years experience in the fitness industry and 10 years experience as a competitive powerlifter. He has been certified as an NSCA Certified Strength and Conditioning Specialist since 1985 and is a USA Weightlifting Level III Coach. He has published articles in the *Strength and Conditioning Journal*, and is a regular contributor to the *CrossFit Journal*, and is the author of the books *Starting Strength: A Simple and Practical Guide for Coaching Beginners* and *Practical Programming for Strength Training*.









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