

# Starting Strength

## The Power Clean

by

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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, exercising – 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. Novices left to their own devices in the weight room will usually decide to do things the easy way, and then come up with an explanation about why that makes perfect sense to other novices.

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 not a “new guy.”

Now, Bill was not one to beat you over the head with advice. He was never as concerned with being listened to as I was. I have learned over the years why he is not. How is it in my personal 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? At some level it is important just to be right, but the older I get, the less important it becomes to me that everyone else recognize that I am. Bill knew what he knew, 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, and now I am too.

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

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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, and I was more coachable by then. 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 thirty 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 do. 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. This is accomplished by reaching back with the hips, which places the back at an angle quite a bit less vertical than a front squat. The squat 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 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, squat specifically because the more vertical back angle produced by the higher bar position opens the hip angle and reduces the contribution of the posterior chain muscles to the movement.

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 the hamstrings; they are in a shortened position due to the back angle and the knee angle, and cannot generate much force since they are already contracted in this position. The front squat therefore depends primarily on the glutes and adductors for hip extension.

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 enables a shorter range of motion for the pull. But for a novice trainee who is not an Olympic lifting prospect, I am more interested in a correct back squat than a shorter pull. I want the back squat to be right from the beginning because I am more interested in strength for novices. The front squat and the back squat are very different movements, true, but to a person unfamiliar with either one, 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, 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 to wait a month until hip drive in the back squat is automatic, so that the front squat part of the squat clean can be kept as a separate motor pathway.

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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 vertical back angle of the Olympic squat is not reproduced in the pull of either the snatch or the clean. 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 closely resembling 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 700 pounds, it would speed up a 450 clean off the floor, acceleration being a function of force production. Weightlifting does involve strength after all, at least at the international level.

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

The power clean cannot be done slowly; explosion is inherent in the movement. 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 that the clean is so critical to sports performance training is that it is a scalable way to keep power production current with increasing strength. There will be a weight that the athlete can use correctly for the clean, and that weight can be gradually increased along with the squat and deadlift, enabling athletes of any level of advancement to increase power production along with strength.

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, and because none of the power production aspects of the clean are specific to the full squat version. The top part of the pull is where power is at maximum anyway, and the power clean emphasizes this over the squat clean because the bar has to be pulled higher – and therefore harder, farther, and for a longer time – to rack it.

The power clean is best taught as a jump with the bar in the hands, followed immediately by a 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 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 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 close to 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,

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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 or soft back) 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. Now, you don't have to listen to me, but if I were you I'd listen to Bill.

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