

the **CrossFit** JOURNAL ARTICLES

Learning How to Do Full Cleans

Full cleans can get complicated, but Bill Starr simplifies the movement into a power clean and a front squat. Get comfortable with the movements, then start refining the clean by adding speed and power.

Bill Starr



Susannah Dy/CrossFit Journal

Full cleans are one of the very best exercises for any strength athlete.

They are beneficial because they involve so many of the large muscles of the body in a dynamic fashion. When performed correctly, full cleans work the hips, legs, back, shoulders and arms. And while these groups can be strengthened with other exercises, none do so in the same manner. Primarily, full cleans force the nervous system to work much harder than any other exercise—except for full snatches. Snatches will be the topic of an upcoming article in the *CrossFit Journal*.

1 of 8

Start Simple

An athlete needs a high degree of concentration when he does full cleans, and this process of having to think intently through each phase of the lift means that the nervous system ends up getting as much of a workout as the muscles and attachments. After a strenuous session of full cleans, most athletes are completely worn out. That's because tapping into the nervous system is much more fatiguing than just stimulating the muscular system.

Another reason I include full cleans in my strength programs for athletes is that they require not only undivided focus but also a large measure of coordination, timing and foot speed. It's a high-skill movement, and when done with demanding amounts of weight, it enhances skills that are then available for a wide range of sports. Full cleans are certainly helpful to those in contact sports because they build lots of strength in the hips, legs and lower back, but they're also most useful to those who participate in sports such as tennis, volleyball and baseball. And, of course, they're really beneficial to throwers in the field events.

Combo exercises seem to be big in strength training right now, and full cleans are the ultimate combo movement: a heavy pull followed by a front squat. So why isn't this exercise included in a great many programs? Basically, because whoever is in charge doesn't know how to do it and is therefore unable to teach it to the athletes.

Many shun it since they believe it's far too complicated. In fact, it isn't complicated at all. It's no more than a power clean and a front squat done in a smooth manner. It really is a natural movement. Young athletes pick up the form right away. I think humans have been performing full cleans ever since one of them found that the mastodon bone he was trying to lift to his shoulders was heavier than he thought, so he simply squatted down under it.

I've also watched coaches give the athlete far too many things to think about when doing full cleans, and this does nothing but confuse him. A great many coaching points are not necessary to learn how to do the lift. As the numbers start to climb, form has to be constantly refined, but in the beginning simplicity is the ticket.



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The clean is the ultimate combo movement, and it doesn't have to be complicated if you break it down into pieces.

As the numbers start to climb, form has to be constantly refined, but in the beginning simplicity is the ticket.

Rack It Right

Simplicity is the key, but there is one prerequisite to full cleans: the athlete must have enough flexibility in his shoulders to enable him to rack the bar across his frontal deltoids so that his triceps are parallel to the floor. Otherwise, he's not going to be able to do a front squat, and if he can't front squat correctly, there's no way he's going to be able to do full cleans.

This is not an insurmountable problem. Tight shoulders can be made flexible, usually in a short period of time. Naturally, an older athlete will have more difficulty than his younger counterpart, but if a person is willing to spend the time enhancing the flexibility in his shoulders, he can usually do so.

This, then, is the first step in the process of learning how to do full cleans. You can do it alone, although having a training mate assist you is more effective. Load up a bar in a squat or power rack. Rest the bar across your frontal deltoids. Don't let it lie across your collarbones. Not only does that hurt like hell, but if you repeatedly rack a clean on the clavicles, you will damage them. Grip the bar firmly with one hand and elevate your elbow upward as high as you can, then have a training partner apply pressure to extend it even higher. Once it reaches the point where it can go no further, keep it there for a count of 10. Now do the same thing for the other arm.

Relax a bit, then grip the bar with both hands and have your helper push up against both arms at the same time. Again, hold at the apex for a count of 10 (longer if you can handle it).

Be sure to keep your torso upright throughout these stretching moves. The tendency is to curl the hips forward to ease the discomfort, but this does nothing to help your cause. In addition to these stretches, you can spend time just lifting your elbow up by using your other hand and holding it there for as long as you can. This can be done while watching TV or waiting in line at the grocery store. Sure, you may get a few odd stares, but that's a small price to pay for better shoulder flexibility.

Once you've achieved sufficient flexibility to rack the bar firmly across your frontal delts, you can do front squats. Because the wrists are placed under a great deal of stress in both the front squat and clean, I suggest you wrap them using trainer's tape. If you can find leather wrist straps, use them as well. The wrists are small joints and can be easily dinged. When they are, it takes long rehab to get them back to normal, so it's smart to protect them from the very onset. With improved shoulder flexibility and wrapped wrists, you're ready to learn how to do full cleans.

Susannah Dy/CrossFit Journal



Whether performing a clean or a front squat, it's critical to lead with the elbows when moving out of the bottom.

Start With the Front Squat

Start by power-cleaning a weight, then front-squatting it. Concentrate on finding the correct line of pull on the power clean—which is extremely close to your body—and giving the bar a snap at the finish. A strong top pull is essential when cleaning a heavy weight. At the completion of the pull, skip your feet from their starting position to a slightly wider stance. They need to be wider than shoulder width to allow you to go into a deep front squat. Plus, you will need to move your feet when performing a full clean, so get used to it.

Make sure your rack is solid, with the bar squeezed down into your frontal deltoids. If you feel the bar touching your clavicles, elevate your entire shoulder girdle until you're able to move the bar off the bones. Keep your elbows up so that your triceps are parallel with the floor, and ensure they stay that way throughout the front squat. Pull yourself to the deep bottom position in the squat. Stay very tight and go down rather quickly. If you attempt to lower yourself slowly, when you get to the middle, you will invariably lean forward, and you don't want that. Your torso has to remain perfectly erect throughout the movement. Any leaning, no matter how slight, puts a huge amount of additional stress on your wrists. Should it be excessive, the bar will crash to the floor.

In the back squat, your hips drive up and back, but in the front squat, this same move would cause you to lean forward and carry the bar far out of the proper line. When you start out of the bottom in the front squat, think "elbows up."

Your first move out of the bottom is quite different in the front squat than it is in the back squat. In the back squat, your hips drive up and back, but in the front squat, this same move would cause you to lean forward and carry the bar far out of the proper line. When you start out of the bottom in the front squat, think "elbows up."

That allows you to stay in an upright position and keeps the weight over your power pack. As soon as you drive upward, stand right up. No hesitation at all. You need to explode upward and glide right through the sticking point. Should the bar stall, once again think "elbows" and lift them skyward to keep the weight over your powerful hips and legs. Lower the bar back to the floor, take a deep breath and repeat the sequence: power clean, front squat.



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Low elbows are sometimes the result of a poor line of pull. If the bar is too far away from you, it's hard to get the elbows around. If you keep the elbows high throughout the lift, your chances of success increase dramatically.

Learning the Drill

Once you're comfortable with these moves, you're ready to do full cleans by using the Drill. I learned this from Morris Weissbrot, the long-time coach of the Lost Battalion Hall in New York City and one of the top officials in AAU Olympic Weightlifting in the '60s. We worked a clinic together at Rutgers University, and he demonstrated this technique. Within a very short time, he taught a group of football players how to do full cleans, a lift none of them had ever tried before. I was duly impressed and have utilized the Drill since then. It's extremely simple and effective—two reasons why I like it.

My version isn't identical to how Morris taught it, yet he deserves the credit nonetheless.

You'll quickly find out that when you give a nice pop to the top of the pull, it's much easier to slip under the bar.

Before teaching the Drill, I make sure the athlete has warmed up his abs and lower back and spent some time stretching out his shoulders in preparation for racking the bar. Then I have him do some light power cleans to warm up the muscles that are going to be called upon presently, and also to establish the line of pull in the clean.

The Drill consists of three parts performed in succession. Most find this a tad confusing at first because they aren't accustomed to doing multiple steps in a single set, but they usually get the hang of it rather quickly. Obviously, the more athleticism one possesses, the faster he will learn the Drill.

The first part is the easiest because the athlete has already been doing it: a power clean quickly followed by a front squat. Step 2 is a bit harder. It's a hang clean, which is immediately followed by a deep front squat. This is really the most important step in learning how to do full cleans. Lower the bar to just above your knees and clean it. As soon as it's racked on your shoulders, lower into the bottom of a front squat. It needs to be done in a fluid motion, not with hesitation at any phase. Fluid motion isn't going to happen right away. That's why it's called the Drill. You must work the three segments until they all flow together smoothly.

Susannah Dy/CrossFit Journal



Maintaining good form on cleans during a chipper is tough, but experienced athletes know good technique makes for efficient movement. Jolie Gentry keeps the elbows high during the final WOD at the 2009 CrossFit Games.

You'll quickly find out that when you give a nice pop to the top of the pull, it's much easier to slip under the bar. With the short stroke of the hang clean, you are forced to move fast in order to rack the weight and get to the bottom of the squat. That's exactly the point. When you attempt to clean a maximum poundage, the final snap at the top of the pull has to be strong so the bar jumps, allowing you the time to drive to the bottom and rack the weight.

The final step is to place the bar on the floor, pull it as high as you normally do in power cleaning, then drive to the bottom once again. By starting from the floor, you're going to have a much stronger pull than you did from the hang, and this gives you more time to jump to the bottom and rack the weight. In other words, the final stage of the Drill is a full clean. The first two moves are merely set-ups for the final one.

The fact that you have to do three different movements back-to-back with no break in between forces you to focus intently on what you're doing, which is good because that's what you must do when performing a full clean with a taxing poundage. Plus, the hardest part of the Drill is at the end. This means you're going to have to lean into the pull more and really drive into the hole with determination. Again, what this teaches you is directly transferable to a heavy full clean.

As you reverse your keys from pulling to moving down into the hole, pull the bar down with you and guide it into the proper rack on your shoulders.

When an athlete gets the feel of what he's trying to accomplish, he masters the Drill, sticking that third segment solidly. Once this is done, he can cease using the Drill and move on to just doing full cleans. However, I've had several lifters who continued to use the Drill even after they were winning medals at competitions. Some used it as a warm-up before proceeding to a full clean workout.



Staff/CrossFit Journal

Full extension is critical to getting under a heavy load.

Keep in mind that the weight used on the Drill has to be light enough so the various moves can be learned, yet heavy enough so that the athlete has to extend himself fully. In order to handle much weight in the Drill and in the full clean itself, you must learn to use the hook grip. You cannot use straps because you have to be able to release the bar if you fail during the execution of the Drill or a full clean. Being locked onto the bar would spell disaster with a large load.

Be forewarned: initially using the hook grip is painful. Oddly enough, you soon get used to it. When I was still competing in Olympic meets, I would find myself hooking the steering wheel in my car. It had become second nature. To ease the discomfort, wrap strips of training tape around your thumbs at the joints below the ones with nails. A half strip is about right for most, and only wrap it around twice. More than that causes the tape to bunch up, which only makes matters worse.

Bring your thumbs under the bar and lock them down with your index and middle fingers. Some who possess chubby fingers can only manage to hook with their index fingers. That's better than nothing. Start hooking right away so that you get used to it before attempting to clean anything heavy. If you're serious about cleaning a

considerable amount of weight, you have to hook. I also found it more beneficial to hook than to use the reverse grip when deadlifting. With the hook, I was able to bring my traps into the mix much more readily. The hook grip is only bothersome for the first few weeks, then it becomes a matter of course.

The Finer Points

Now that you understand the fundamentals of doing a full clean, you have to start paying attention to the various form points.

No. 1 on the list is line of pull. If the bar is pulled too far away from your body, you're not going to be able to rack it properly, and in most cases it will crash to the floor. If you pull it too far back, you'll find yourself on your butt. The biggest concern most beginners have about doing a full clean is that it will knock them back and the bar will fall on them. As it so happens, this will most likely occur. It's like learning to ride a bike: you're going to fall. The thing to know is if you find you're going to end up on your backside, relax and don't fight the descending weight. You will fit easily under an Olympic bar.

Do full cleans in sets of three reps in the beginning. As you become more advanced, the reps can be lowered to twos and even singles, but triples work nicely early on. The sequence of the pull must be precise in the full clean. Mistakes can be overcome in the power clean, but not in the full movement. In order to help accomplish this, start the bar off the floor slowly, then pick up speed through the middle and have the bar flying at the top. All the while, it's snug to your body. Once you feel the ideal line of pull, try to hit it on every rep.

Most beginners fail to fully extend before moving to the bottom, fearful that they aren't going to get there in time to rack the weight. But because they don't fully extend, they don't provide that final, critical jolt to the bar, and that jolt is needed to allow them time to jump into the bottom. In addition, when the pull is cut short, the body is leaning forward slightly, and this is not what you want. It costs time for you to return to the upright position. Otherwise, you'll be leaning forward when you rack the bar, and this usually results in the bar being bumped.



Staff/CrossFit Journal

If you can't front squat, you can't do a full clean. Note the vertical torso and high elbows, as well as the position of the bar—on the deltoids, not the clavicle.

At the very instant you provide that final bit of power to the bar at the top of the pull, you must move. Any hesitation will give the bar the edge—and it will beat you to the bottom.

Knowing when to bring the traps into play and when to bend the arms are the two most difficult parts of the pull. Bring the bar off the floor smoothly in a tight, controlled line. When the bar passed your knees, drive your hips forward forcefully and immediately contract your traps. All the while, your elbows are locked and arms are straight. But once you activate your traps, bend your arms and drive your elbows up and out to provide that final bit of impetus to the upward-moving bar.

At that same instant, you should be high on your toes. This latter point is extremely important for a couple of reasons. The calves help to elevate the bar a bit higher,

and quite often that bit is the difference between success and failure. You can also move to the bottom faster when you're on your toes than when you're flat-footed. When your body is perfectly vertical with your elbows up and out and you feel the bar jump, that's your cue to drive to the bottom.

However, you don't just want to give a hard pull, move into a front squat and let the bar crash down on you in the bottom. While some of the greatest lifters in the history of Olympic lifts did this—the most notable being Bob Bednarski—it's not fitting for many others. Barski was tremendously strong and was rock solid when the bar hit his shoulders. For those just learning the lift, the bar will simply bounce off or drive the athlete off balance. As you reverse your keys from pulling to moving down into the hole, pull the bar down with you and guide it into the proper rack on your shoulders. Should you meet the bar high, which is often the case, just ride it on down to the bottom, staying extremely tight the whole time. Any relaxation from your ankles to your shoulders will cause problems.

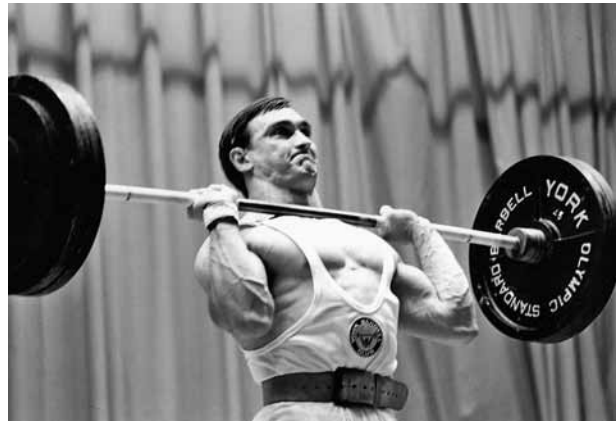
When you have the bar racked and under control in the bottom, stand up. Don't hang around down there any longer than you have to. When you hit things just right, you'll be able to get a slight recoil out of the bottom, which is a tremendous plus to aid you in recovering with the weight on your shoulders.

Because foot placement at the bottom of the full clean is so crucial, time must be spent practicing this part of the lift. I have my lifters use chalk to mark where they want their feet to land, and after each rep they check to see how close they came to the marks. Not only must they land in the same spot each time, but the feet also have to be slammed into the floor. At the very instant you provide that final bit of power to the bar at the top of the pull, you must move. Any hesitation will give the bar the edge—and it will beat you to the bottom.

The King of Lifts

There is a coordinated rhythm to the full clean, and when everything is done precisely, the bar will seemingly float upward effortlessly and drop in the slot on your shoulders like magic. The clean and jerk has been called the "King of Lifts" for good reason. The athlete who can clean and jerk the most weight is considered the strongest. Re-read my article [Mastering the Jerk](#) so you can combine these two high-skill movements.

Anyone with athletic attributes can learn how to do full cleans. Take the time to gain more flexible shoulders, wrap your wrists and thumbs, practice the Drill until you're proficient, then start attacking some bigger numbers in the full clean—and follow that with some jerks. Once you've done that you're well on your way to achieving success in the sport of Olympic lifting; that is, after you learn how to do full snatches, which I will cover next time.



Jody Forster

About the Author

*Bill Starr coached at the 1968 Olympics in Mexico City, the 1970 World Olympic Weightlifting Championship in Columbus, Ohio, and the 1975 World Powerlifting Championships in Birmingham, England. He was selected as head coach of the 1969 team that competed in the Tournament of Americas in Mayaguez, Puerto Rico, where the United States won the team title, making him the first active lifter to be head coach of an international Olympic weightlifting team. Starr is the author of the books **The Strongest Shall Survive: Strength Training for Football** and **Defying Gravity**, which can be found at [The Aasgaard Company Bookstore](#).*