

Coaching optimal technique in the snatch and the clean and jerk

Part II

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Before Learning the Clean and Jerk

The learning of the clean and jerk is greatly facilitated by first learning the snatch. The lifts are taught in this sequence since the snatch requires a greater degree of hip extension, and thus properly reinforces the action of the legs and hips in the pull. This is especially valuable to the untrained athlete since the relatively lighter weights of the snatch afford the pulling musculature to develop at a more reasonable rate than if the athlete began the learning process with the clean and jerk.

About the clean and jerk

The clean and jerk is the event in which an athlete can lift the greatest weight from the floor to overhead. A correctly trained lifter weighing the optimal amount for his height can snatch between 78 and 82 percent of his clean and jerk. Due to the tremendous intrathoracic pressure that must be maintained to catch the clean and support the jerk overhead, the torso musculature is developed to an extent that is impossible with any other movement. This torso

strength is absolutely invaluable in any event that requires severe trunk stability, including sports involving heavy physical contact. As in the snatch, every major joint is required to move through an extreme range of motion, while supporting the heaviest weights possible. Connective structures benefit immensely as they adapt to the demands placed upon them by the clean and jerk. In addition, balance is developed by this lift. If we consider the barbell and athlete to be a single unit, the

center of gravity rises as the weight is lifted from the floor to overhead. When the jerk is completed, the center of gravity is at its highest point, taxing the athlete's balance to its maximum.

The front squat (Figure 17)

The front squat should be utilized to determine the athlete's grip width for the clean. The grip should be such that the posterior surfaces of the hands are outside of the shoulders. Beyond that, the front squat will

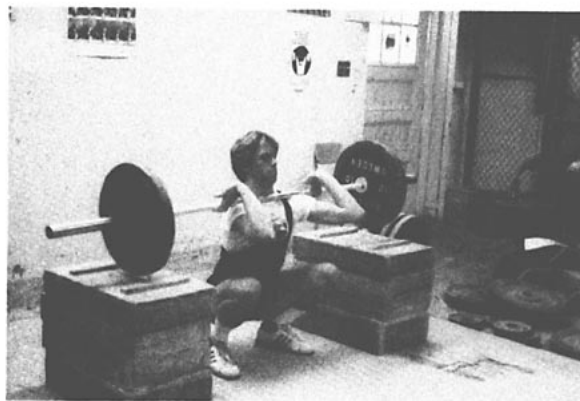


Figure 17. Hands are outside the shoulders in the grip for the front squat.

determine the exact width. The arms should be utilized to keep the bar from rolling off the shoulders--not to support the weight! The bar should be placed above the clavicles, while actually resting on the deltoids. This positioning should take place while the bar is resting on the squat rack. The hands should be placed palms up under the bar and lateral to the shoulders, with the thumbs nearest the mid-sagittal plane (mid-line of the body). The fingers and thumbs should not be wrapped tightly around the bar, and in fact, a tight grip will actually inhibit arm speed in both the clean and the jerk.

The athlete, having positioned his arms and hands in an optimal position, is ready to remove the bar from the rack. The rack should be placed at a height that allows the legs to bend in a one-eighth squat while the bar is at rest. The spinal erectors should tighten, and the rib cage lifted to brace the weight, and the bar can now be lifted off the squat with a vertical, but not violent, straightening of the knees and hips. The athlete should now step back from the racks and place the feet in a stance that should closely approximate that determined by the overhead squat.

While keeping the head level, the spine erect, and the rib-cage inflated and elevated, the lifter should lower himself into the full squat position, attempting to keep the torso as erect as possible. If the torso can be held reasonably erect, the feet are flat on the floor, and the bent knees are forward of the ankle joints, the front squat position is acceptable, as is the grip width, the stance width and feet angles.

The pulling stance (Figure 18)

The pulling stance and foot angle should closely resemble those of the snatch, but may be slightly wider. This adjustment should be made

under the supervision of a coach. Care should be taken to insure that a change in foot stance will not affect the optimal back angle. Excessively spreading the stance will cause the hips to drop noticeably.

The high pull off blocks (Figures 18, 19)

The power position as determined in the snatch should again be utilized with the following modification--the bar will contact the thighs at a lower position due to the grip width being narrower. When this bar height is determined, again under supervision, blocks should be placed so that the bar is at the proper height when loaded with the correct plates (Terms such as "proper," and "correct" are relative terms here, since each athlete is an individual entity with unique limb-length ratios, levers, joint mobilities, and other biologically determined factors).

The movement should commence with the lifter taking the hook grip at the previously determined grip-width. The coach should remind

the athlete to keep the shoulders ahead of the bar, the spine erect, the elbows turned out to the sides, and the weight on the balls of the feet. The arms should be straight, the trapezius muscles relaxed and the eyes on the focal point. Once set, the movement should begin with the rapid extension of knees, hips and ankles. When the entire body is very nearly vertical, the trapezius muscles should contract violently, while the elbows rise high to the sides, almost simultaneously. The athlete should remain up on toes, until the weight is lifted as high as possible in an explosive manner.

Coaching hint: Many athletes tend to favor the use of the arms, especially in terms of incorporating them too soon. To help alleviate this tendency, some training may be performed with what is called an extension. An extension is simply a pull without bending the arms. The leg and hip extensions are employed with the trapezius shrug only to create the most violent explosion



Figure 18. Beginning the high pull off blocks--hook grip.



Figure 19. Elbows turn out, knees, hips and ankles extend, and trapezius contracts violently.

possible. Always keep in mind that the lifts are synergistic, and imbalanced strong or weak areas will result in a total effort that is less than when all components are complementarily utilized.

This exercise should be performed until it is perfected. Stress the use of the focal point to keep the head from dropping at the top of the pull. This will insure that the trapezius muscles are utilized in the most optimal fashion. A sufficiently explosive athlete will not find it unusual to actually impart enough momentum to a light weight to lift himself up off the floor.

The power clean off the blocks (Figures 18, 19, 20)

This exercise is the logical progression from the high pull. It is simply a high pull followed by a rack and catch. The rack is the position of the arms previously determined by the front squat. Once the bar has reached its maximum height, the elbows should be as high as possible



Figure 20. Rack and catch.

to the sides of the body. They should then be moved rapidly forward in an arc, while simultaneously popping the thumbs out of the hook grip and lowering the shoulders under the bar by resettling the heels on the floor and bending the knees and hips. At this point the feet may need to be skimmed sideways to the foot stance determined by the front squat. The reason for releasing the hook grip is the tendency of a tight grip to inhibit arm speed. This is the same principle involved in throwing a punch with a loosely closed fist that clenches only at the point of impact. The tightly closed fist will inhibit arm speed in both a punch and a rack.

During this unsupported phase, the legs must determine the depth to which they will bend in order to make for a catch that is precise and without crashing. I realize that the brain actually makes this determination, but it is more expedient to inform the athlete that the legs are actually responsible for a smooth catch and rack. The bar should land on the deltoids at the precise instant that the elbows reach their maximum forward rotation, and the knees stop their bend. The weight should be primarily on the balls of the feet, although the heels should be contacting the floor. If the torso is not braced tightly at this point, the lift may be lost due to excessively forward trunk inclination that might not be saved by a quick step forward.

The power clean off blocks and front squat (Figures 17, 18, 19, 20).

This combination movement utilizes both the power clean and front squat. Once the power clean off blocks is mastered, it should be combined with a front squat. The squat clean will later be learned quickly if this movement is performed smoothly. There should be no

stopping of the bar at the rack. Once the bar is racked, instead of tightening up the legs, they should bend and lower the athlete and the weight into the front squat in a smooth, controlled fashion that will, when performed correctly, blend into a fluid action. Emphasis must be placed on keeping the elbows high in the rack since serious wrist injuries can result if the elbows strike the legs (rest on the thighs) while lowering into the squat. This training of the elbows is extremely important since the descent into an actual squat clean will be even more violent, and failure to clear the elbows of the legs can result in the wrist injury mentioned above.

Perform this combination movement until it is a well-developed motor pattern. Once it is well established with weights in the 60 to 75 percent range, the lifter can then proceed to the next logical progression--the squat clean off blocks.

The squat clean off block (Figures 17, 18, 19)

If the bottom (front squat) position is well established, and the athlete is comfortable "in the hole," the squat clean off blocks can be practiced with weights in the 80 to 85 percent range (percentages in my training programs are based on the projected weight to be lifted in the next competition as being 100 percent). Weights in these ranges will prevent the athlete from pulling the bar high enough to effect a power clean and will require the catching of the weight in the full squat position, or slightly higher. As in the squat snatch, it is difficult to determine when the athlete will overcome the fear of "going in the hole," but once this is accomplished, it will be a well-established motor pattern that will only be inhibited by pain from injuries.

Select a weight, after warming

up with power cleans and front squat, in the 80 to 85 percent range, and after effecting a solid get set position, initiate the pull with rapid extension of the legs and hips, followed by trap shrug and arm pull. When maximum height is reached, drop rapidly into a low position while focusing on catching the bar with a nearly vertical torso. Trepidation may cause the athlete to keep the hips too high and too far back, so that the torso is inclined excessively forward. This will be a weak position for catching the weight, since the body is misaligned for the amortization phase (slowing the weight). The hips in particular are important for slowing the downward momentum of the weight, and must tighten quickly, along with the quadriceps to prevent "crashing." All efforts must be directed toward preventing the bar from free falling down to the shoulders. Although some crashing is unavoidable with maximum attempts, every effort must be made in learning the movement to prevent this, as it is a significant source of

joint trauma. Athletes with weak, thin thighs, or insufficient torso mass are most susceptible to injuries by crashing (free-falling) weights.

Deadlifting to the knees (Figures 21, 22)

Once the squat clean off blocks is mastered, the athlete is now ready to learn the movement from the floor. This portion of the lift is extremely important to the overall success of a clean and jerk, since it is the "cocking of the pistol," the preparation for a rapid second pull from the power position. The one error that must be avoided at all costs is to generate excessive speed off the floor, since this will result in pulling with a bent back, inappropriate elevation of the hips, and the resulting shifting of the weight so far back on the heels that the optimal power position is never achieved.

Athletes of insufficient body mass for height will be the ones that find this movement most difficult. It requires tremendous leg and hip strength, not to mention sufficient

stabilizing capacities in the torso musculature, especially the latissimus dorsi group.

Assume a get set position similar to that of the snatch, except that the grip width is closer, and thus the hips will be relatively higher than in the snatch. Again the bar should be over the metatarsals with the shoulders ahead of the bar, and the back flat. The latissimus group must be tightly flexed to keep the shoulders ahead of the bar. It is often helpful to visualize the bar as a gymnastics apparatus, with the latissimus responsible for holding the shoulders ahead of the bar. This isometric flexion of the latissimus, however, should pull the elbows backward toward the midline of the body.

With the head set at either the extension of the spine posture or on the focal point, the movement should commence only with an extension of the legs. It will help to visualize the bar as a stable implement, and the floor as a moveable platform that is being pushed downward by the legs. This will result in the shoulders, hips



Figure 21. Begin with bar on the floor, hands closer together than before.



Figure 22. Extending the legs only, lift the bar to the knees.



Figure 23. Beginning the power position, with body weight shifted forward.

and bar rising at the same velocity to the knees. The only movement should be in the hip, knee and ankle joints. As the weight rises to the knees, the balance on the feet should shift from the metatarsal region to the front of the heels in a gradually increasing lateral pathway.

The athlete should hold the bar at the knees for a few seconds to reinforce the position.

The deadlift and shift to the power position (Figures 21, 22, 23)

This pattern can be particularly difficult to learn since the tendency, especially among weak individuals, is to shift back on the heels to a more comfortable but less effective posture. It is in the performance of this particular phase of the pull that weightlifters exhibit the superiority of their strength development. While many athletes can perform adequately in the squat clean off

blocks, a large percentage of them are incapable of achieving optimal power position when lifting the weight off the floor.

The deadlift to the knees is performed as described in the previous section. The difficult portion is that short movement from the knees to the power position when the hips are shifted forward, the knees are re-bent, and the balance is moved forward to the metatarsal region. During this shift, the absolute position of the shoulders changes little, while the hips and knees are moved forward, and slightly downward to place the body in a power position. The prime movers are the latissimus and the hamstrings. Simultaneously, the balance of the feet moves from the front of the heel medially to the metatarsals. The athlete might feel at this point as though falling forward. The balance is precarious,

and even the musculature of the feet is involved in maintaining equilibrium.

The clean pull (Figures 21, 22, 23, 24)

The clean pull is a continuation of the previous movement and simply involves the rapid pull executed off blocks previously. The pull will be vigorous if the balance of the feet is upon the metatarsals at the conclusion of the shift to the power position. It will be considerably less dynamic if the balance is back on the feet.

Again, a pause of two or three seconds will reinforce the motor sequence.

The power clean and front squat (Figures 21, 22, 23, 24, 25)

Weights of 60 to 70 percent will allow the athlete to clean pull the weight from the floor, rack and catch, and then descend into the front squat. It is not uncommon for athletes to become excessively enthusiastic and attempt to generate maximum speed during the pull from the floor. The coach must supervise this and emphasize that the pull from the floor to the power position is a tightly controlled movement that is merely a "cocking" device to prepare for further explosive efforts above the power position.

The athlete should practice the power clean and front squat until it is a smooth, controlled activity. Previous training off the blocks should carry over to a smooth catch and descent.●



Figure 24. Balance on the metatarsals for a dynamic lift.



Figure 25. Rack and catch and descend into front squat to complete the movement.

The conclusion of this article will appear in *NSCA Journal*, Volume 10, Number 1, February/March, 1988.