Exercise Techniques

The Exercise Technique Column provides detailed explanations of proper exercise technique to optimize performance and safety.

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The Countermovement Shrug

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SUMMARY

THE COUNTERMOVEMENT SHRUG (CMS) IS A DYNAMIC TOTAL BODY EXERCISE THAT ALLOWS AN ATHLETE TO BECOME MORE EFFICIENT AT PRODUCING FORCE WITH AN OVERLOAD STIMULUS THROUGH THE EMPLOYMENT OF THE STRETCH-SHORTENING CYCLE. THIS MOVEMENT CAN BE USED AS A TEACHING MODALITY FOR THE DOUBLE KNEE BEND AND IMPROVING EXTENSION AT THE TOP OF THE SECOND PULL FOR THE CLEAN AND THE SNATCH. THIS EXERCISE CAN BE USED IN VARIOUS STAGES DURING THE TRAINING YEAR. THIS COLUMN PROVIDES A DETAILED DESCRIPTION AND FIGURES OF THE PROPER EXERCISE TECHNIQUE FOR A CMS.

TYPE OF EXERCISE

The countermovement shrug (CMS) is a dynamic total body exercise that allows an athlete to become more efficient at producing force with an overload stimulus through the employment of the stretch-shortening cycle (SSC). In addition, this movement can be used as a teaching modality for gaining mastery of the double knee bend and improving extension at the top of the second pull for the clean and the snatch.

MUSCLES INVOLVED

- Initial static stability in start position: erector spinae group (iliocostalis, longissimus, and spinalis), deep spinal muscles (rotators, interspinales, multifidus, and intertransversarii), rectus abdominis, transverse abdominis, external obliques, internal obliques, quadratus lumborum, triceps brachii (long head), deltoid, subscapularis, latissimus dorsi, flexor and extensor masses of forearm, brachioradialis, trapezius, splenius capitis, splenius cervicis, infraspinatus, serratus posterior inferior, rhomboid major, rhomboid minor, and the supraspinatus.
- Descending portion of the CMS: hamstrings group (biceps femoris, semimembranosus, semitendinosus), gluteus maximus, quadriceps group (rectus femoris, vastus lateralis, vastus medialis, and vastus intermedius), gastrocnemius, soleus, tibialis posterior, flexor hallucis longus, flexor digitorum, peroneus longus, and the peroneus brevis.
- Ascending portion of the CMS: trapezius, splenius capitis, splenius cervicis, levator scapulae, rhomboid minor, rhomboid major, serratus posterior superior, posterior deltoid, teres minor, teres major, erector spinae group (iliocostalis, longissimus, and spinalis), deep spinal muscles (rotators, interspinales, multifidus, and intertransversarii), rectus abdominis, transverse abdominis, external obliques, internal obliques, quadriceps group (rectus femoris, vastus lateralis, vastus medialis, and vastus intermedius), gluteus maximus, hamstrings group (biceps femoris, semimembranosus, semitendinosus), gastrocnemius, soleus, tibialis posterior, flexor hallucis longus, flexor digitorum, peroneus longus, and the peroneus brevis.

BENEFITS OF THE EXERCISE

The CMS is a dynamic movement that can potentially serve as an exercise that promotes greater rate of force development and a potentiating mechanism for skill development and refinement. Because of the effects of the SSC, the athlete is able to overcome a greater force at a higher velocity. This resultant phenomenon allows the athlete to become more proficient at completing the top of the second pull in the clean and snatch. In addition, the nature of this exercise allows it to be used in various stages during the training year.

STARTING POSITION

- Before assuming the starting position, have the lifter place their hands on the bar using their favorable clean or snatch grip length. In conjunction to spacing, it is advantageous for the athlete to use the hook grip to prevent losing control of the bar and prematurely bending the elbows during the extension phase of the lift.
- Once the lifter has assumed a proper grip, the lifter should proceed to stand up with the bar, ensuring that their stance is similar in width to their traditional position used in partial pulling movements. Specifically, the feet should be near hip width, with the toes slightly open for comfort (Figure 1). F1
- Start the exercise in a standing position with a slight bend at the knee (avoid "locking out"). While in the position, the lifter would need to continue with isometric contraction of the musculature surrounding the upper and lower extremities, and the posterior musculature to remain erect and upright. This "tight" position can be the result of having the athlete inhale deeply to inflate the chest. At this point, the bar should be at a position in which it is in contact with the body and would "brush the thigh" during the second pull. Most often, the barbell can be seen high on the thigh near the pelvic area. Minor differences in bar height will be seen when changing from the clean grip to the snatch grip (Figure 2). Specifically, the bar will be higher on the thigh when the athlete is performing snatch-grip CMSs because of the abbreviated arm length as a result of the wider hand spacing.
- Before beginning the descent portion of the movement, the lifter should make sure that the elbows are rotated out and wrists flexed. These 2 biomechanical adjustments allow the barbell to stay closer to the athlete's body during the lift.
- Finally, the athlete should be cued to anchor themselves with their heels, so that the descent is linear, allowing for proper muscle activation to occur. Teaching the athlete to "sit on their heels" will allow for greater control and bar speed to occur at the top of the lift as a result of better positioning.

Figure 1. Starting position with clean grip.

DESCENDING PHASE

- Maintain an upright position of the upper body during the descent by continuing to isometrically contract the posterior musculature to avoid any potential anterior pelvic tilt. The athlete should continue to descend on their heels to allow for stabilization and muscular recruitment (Figure 3).

Figure 2. Snatch grip position.

Figure 3. Front view of descended (power) position.

- Descend approximately into a ¼ squat position, with a knee angle at approximately 120° to 135° (wide range to account for novices to well-trained individuals). This bent knee position is often referred to as the "peak power position."
- During the descent, the barbell should not deviate from the original position on the thigh. Most often, a change in bar placement on the thigh during the descent is the result of either unwanted forward flexion of the hip joint (chest drops) or spinal flexion.
- Finally, at the end of the descent, the athlete should feel "loaded" in the hamstrings group because of the acute overstretching of these muscles and "anchored to the floor" through the heels (Figure 4). F4

ASCENDING PHASE

- The final portion of this exercise begins with a forceful counter to the eccentric movement, causing a stretch reflex to occur in the hamstrings group leading to a rapid concentric movement.
- The lifter should be taut to concentrically extend fully at the ankles, knees, and hips, creating triple extension (Figure 5). F5

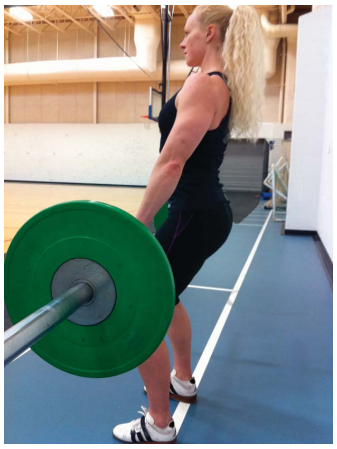

Figure 4. Lateral view of descended (power) position.

- During this phase, the lifter will also be using the momentum created by the countermovement to "shrug" at the top of the movement by contracting the trapezius and surrounding musculature, which includes the splenius capitis, splenius cervicis, levator scapulae, rhomboid minor, rhomboid major, serratus posterior superior, posterior deltoid, teres minor, and teres major (Figure 6).

F6

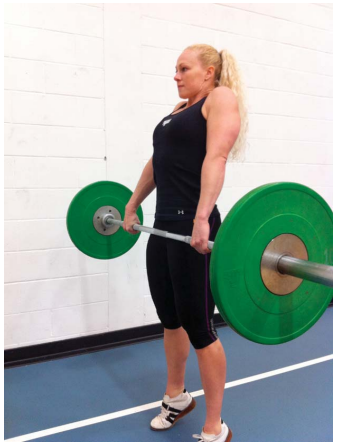

Figure 5. Front view of complete extension and shrug.

Figure 6. Rear view of complete extension and shrug.

- In conjunction with the shrug, the athlete should be taught to slightly flex the wrists, thus allowing the barbell to stay closer to the athlete's body.
- Recall that the elbows should remain "locked" and have the appearance of being slightly rotated outward during the concentric portion of the lift. Prematurely bending of the elbow (humeroulnar) joints prevent the shrug from being fully maximized.
- Finally, on the descent from full extension, there should be flexion at the knee when "landing" to absorb the weight on the barbell. Again, the lifter should remain focused on not allowing any anterior pelvic tilt.
- The athlete should take the time to fully return to the set position before performing the next repetition.

PRACTICAL APPLICATION

Recall that the CMS is a weight-training movement that allows the athlete to produce greater rates of force through the inclusion of the SSC. As a result of this feature, the CMS can potentially be used as a resource in furthering an athlete's ability to learn and better use the double knee bend in weightlifting movements from the floor. Specifically, the amortization phase of the CMS reinforces the sensation provided from the SSC that occurs just before the second pull is initiated. This sensation is typically noticed when the athlete is in a vertical position with the knees ahead of the bar, as previously described above.

In addition to enhancing an athlete's ability to perform the double knee bend and use the SSC, it has the potential to assist in improving an athlete's ability to perfect the second pull. For this reason, this exercise can be implemented in various phases of the annual plan.

- General preparatory: When working with athletes of higher ability, a coach may opt to use this exercise to promote power endurance. For instance, this exercise could be implemented early on in a pulling session when the coach is using a higher repetition block (3×10) or in more complex situations such as cluster training.
- Maximal strength: This block or phase of training is developed by a coach to ensure an athlete optimizes his or her ability to produce high forces. This typically occurs through the inclusion of strength training movements that require an athlete to overcome a heavier external load coinciding with a lowered volume (3×5). Although the CMS does not align with the traditional requirements of a maximum strength phase, this exercise could be used to maintain an athlete's ability to produce force quickly.
- Speed strength/conversion: The CMS can be used as a higher speed overload stimulus when the athlete is transitioning out of a maximal strength block to impart greater rates of force. For example, an athlete could perform the CMS at a lower volume (3×3 to 3×5) with an intensity that is greater than an athlete's maximum performance in the clean or snatch. In addition, this exercise could be performed before a heavier pull from the floor, such as a power clean or snatch, to potentiate the speed of movement and improve the positioning within the complete movement.

- Explosive speed/maintenance: Just as this exercise is used in the aforementioned scenario, the CMS can be used to maintain an athlete's performance abilities by requiring the athlete to focus on speed of movement in a traditional maintenance phase. Specifically, the coach can recommend that the athlete perform the CMS at a lower volume (3×2 to 3×3) with a moderate to heavy load that is equal to or slightly heavier than the athlete's current clean or snatch maximum. Moreover, the lift can be used as a possible potentiating mechanism for strength/power athletes who have the requisite strength to take part in such training agendas.

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