Equipment Utilization:

The low pulley machine

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Back development is an integral part of any comprehensive strength training program. Back muscles are the antagonistic group to the chest muscles. While the chest muscles are primarily responsible for all pushing motions, the back muscles are responsible for pulling motions. Through proper back development, the athlete will obtain proper muscle balance and symmetry between the chest and back. This symmetry helps to prevent many musculo-tendinous injuries due to fatigue, overuse and the stress placed on a particular muscle group by its antagonist. Without proper back development, muscle imbalances may be caused, resulting in shortening of the pectoral tendon and lengthening of the rhomboids, trapezius and muscles of the posterior shoulder. This may lead to a rounded-shoulder look. One piece of equipment that is useful in back development is the low pulley selectorized machine.

The low pulley machine can be a versatile piece of equipment for any weightroom, simply by changing the hand accessory from a straight bar to a cage grip or a high lat pulldown straight bar.

The most common exercise performed on the low pulley is the low row. In a seated position with the knees slightly bent, begin the exercise by leaning forward at the waist far enough to feel a good stretch in the posterior aspect of the shoulder region (Photo 1).

Photo 1. Narrow grip low row, starting position.

Photo 2. Pull the bar into the stomach, extending the chest and keeping the upper arms close to the body.
Lean back (trunk extension) to the point where the back is straight and perpendicular to the floor. Pull the bar into the stomach while sticking out the chest (Photo 2). The upper arm is kept close to the side of the body and the shoulders are pulled back. Return to starting position for the next repetition. Never use excessive low back involvement, especially in an explosive fashion. The low row can be performed with either a straight bar or cage grip. Both exercises work the shoulder proper as well as the posterior stabilizers of the shoulder. The difference between the two exercises is the focus of primary movers.

The cage grip low row focuses more on the muscles of the shoulder and arm with a secondary emphasis on the stabilizing musculature of the scapula. The cage grip places the forearm in a neutral position, which allows greater contribution from the biceps. This means the grip can be pulled into the stomach, decreasing the need for humeral extension. This in turn decreases the emphasis on the shoulder stabilizers and retractors. The pectoralis major contributes to internal rotation and adduction of the upper arm. The posterior deltoid and latissimus dorsi produce horizontal extension of the upper arm, while the latissimus and teres major contribute to adduction and internal rotation. As the cage is pulled into the stomach (Photo 3), the rhomboids and lower traps adduct the scapula, while the serratus anterior stabilizes the scapula against the chest wall. Using a straight bar with a narrow grip produces a slightly different focus in primary movers.

The wide grip low row is similar to the cage grip and narrow grip low row except, as the name indicates, a wide grip is utilized to perform the exercise. A high lat pulldown straight bar works best for this exercise. With the straight bar attached to the cable, grasp the bar as wide as possible on the foam handgrips. Begin the exercise by leaning forward far enough to feel a good stretch in the posterior region of the shoulder (Photo 4). Lean back (trunk extension) to the point where the back is straight and perpendicular to the floor. Pull the straight bar into the stomach while pulling the shoulder blades back and sticking out the chest. The elbows are kept away from the side of the body with the forearm almost parallel to the floor (Photo 5). Return to starting position for the next repetition. Never use excessive low back involvement, especially in an explosive fashion.

The wide grip low row changes the line of pull of the muscles and position of the upper limb, putting more emphasis on the rhomboids, lower trapezius, latissimus dorsi and posterior deltoids to produce greater scapular retraction and humeral horizontal extension. The posterior deltoid works to extend the humerus, and the latissimus dorsi contribute to internal rotation and extension, while the rhomboids and trapezius adduct the shoulder blades. The contribution from the biceps is decreased due to the pronated position of the forearm.

The upright row is another back exercise that utilizes the low pulley machine. The upright row is performed in a standing position with the straight bar attachment. The back should be straight and knees slightly bent. Use a narrow grip on the bar and stand close to
the bottom pulley to allow a vertical pull (Photo 6). Pull the bar, leading with the elbows, up to the base of the neck (Photo 7) and return to the starting position. Maintain erect posture and slightly bent knees throughout the entire exercise. The upright row primarily works the upper trapezius and medial deltoids, as well as biceps. The biceps work as primary elbow flexors due to the angle of pull.

Photo 6. Upright row, start position

Photo 7. Upright row

Photo 8. Shoulder shrug, starting position

Photo 9. Elevate medial deltoids toward ears.

Photo 10. Use palms-up grip for biceps curl.

Photo 11. Curl bar to chest.
while the medial deltoid produces abduction of the upper arm to a position parallel to the floor. The upper trapezius elevates the scapula and rotates the distal end upward above a position parallel to the floor.

The shoulder shrug is another exercise that can be done with the low pulley and long straight bar while in a standing position. Use a palms-down, shoulder-width (or slightly wider) grip and maintain a straight back (Photo 8). Using scapula elevation, bring the medial deltoid as close to the ears as possible (Photo 9). Arms should remain extended and relaxed except for the grip. The trapezius works as the prime mover, assisted by the levator scapula. This exercise helps increase the integrity of the neck and decrease neck injuries.

While not a back exercise, the biceps curl can also be done using the low pulley. Using the same bar and stance as in the shoulder shrug, merely switch the hands to the palms-up grip (Photo 10). Grip should be shoulder-width apart or comfortable. Start with arms fully extended, back straight and knees slightly flexed. Curl the bar up to the chest (Photo 11) and return to the starting position. Do not use excessive back lean or body sway. Wrist flexors act as stabilizers, and the biceps brachii and brachialis muscles are the prime movers.

Photos by Hazel R. Halling.

Many Thanks

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Conditioning for Cycling will be a quarterly publication that takes the knowledge established by the NSCA Journal and adapts it to the specific needs of the athlete and coach of this Olympic sport. NSCA members will get a chance to take a look at the inaugural issue of Conditioning for Cycling this spring.

Gatorade’s funding will also be used to collect athlete test data to establish national norms for high school athletes in football, men’s and women’s basketball, wrestling and volleyball. The NSCA Test and Measurements Committee will be collecting data over the next year. Members will then have a tool to measure the progress of their athletes’ training.

Thanks again to Gatorade for its support of the NSCA. We appreciate Gatorade’s help in making quality resources available to our members.