THE LAT PULL

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Introduction
The development of the upper body musculature plays an essential role in athletic success in the prevention of injury. The lat pull is a basic exercise which can be incorporated into a weight training program. Understanding the exercise from the standpoint of anatomical specificity is vital to the proper teaching and the expectation one has in using this exercise.

The motion of the lat pull is basic to the anatomical design of the upper body region requiring the utilization of the muscles of both the trunk and the arms. Wells and Lutgens describe this saying: "Anatomical coordination is beautifully illustrated in the movements of the arms on the trunk, the arms travel through a wide range of movements and in each of these the scapula cooperates by placing the glenoid fossa in the most favorable position for the head of the humerus."

Lat Pull Apparatus
The information in this article will be concerned with accomplishing a lift which involves pulling a bar down to the base of the neck. Many types of equipment are available and can be adapted to achieve this motion.

Starting Position
The starting position can be sitting or kneeling depending on the preference of the athlete. In inner position the trunk must be held erect, the spine should not flex during the lift; neither should the hips flex if the athlete is in a kneeling position. Either of these movements can cause improper technique resulting in a loss of specificity or possible injury. The athlete should position the body directly under the pulley. Steindler provides the reason for this: "As long as the weight to be lifted has its weight-center close to the line of gravity of the body, the rotation movement this weight produces in the different articulations is small; consequently the weightlifter is particularly anxious to choose his stance so that the weight is as close as possible to the line of gravity."

Instructions
The athlete should assume the starting position he desires following the above guidelines. The hands then grasp the bar at the maximum width. The lift is a downward pull to the base of the neck and return to the starting position.

Movement and Applied Anatomy
Prior to considering the musculature involved, the anatomy of the shoulder girdle must be reviewed. The shoulder girdle is hung on the axial skeleton with only one joint the, sternoclavicular. Again Wells and Lutgens provide excellent imagery in describing this delicate articulation: "The sternoclavicular joint is the anatomic arrangement that accounts for the excessive freedom of motion enjoyed by the upper extremity and is a vital factor in the superior cooperation that exists between the shoulder joint and shoulder girdle." The musculature used follows the idea of muscles acting as stabilizers and agonists. Due to the many different movements possible by a ball and socket joint this action is necessary. The posterior muscles involved are the latissimus dorsi, teres major and minor, the supraspinatus, the infraspinatus, and the subscapularis. The anterior muscles involved are the pectoralis major and coracobrachialis. The deltoid is another important muscle and is found laterally. The arm is also involved in this exercise. The muscles involved are the flexors and extensors. The flexors are the biceps brachii, the brachioradialis and the brachialis. The extensors are the triceps brachii and the anconius. The major muscle actions of the anterior muscles are:

1. The coracobrachialis action appears to be that of a stabilizer during the lift. This is possibly due to the shallow angle of pull.
2. The pectoralis major acts as an
adductor. The muscles are composed of two sections, a clavicular (upper) and a sternocostal (lower). Because the arm is abducted above the horizontal, the line of pull of the clavicular section shifts above the center of the joint becoming an adductor. The sternocostal fibers act only in downward movements of the arm.

The major muscle actions of the posterior muscles are:

1. The latissimus dorsi’s most favorable angle of pull is for depression of the arm, particularly when raised between 30 and 90 degrees.

2. The teres major maximum action occurs at 90 degrees of humeral elevation. Therefore it is said to be the latissimus dorsi’s “little helper”.

3. The supraspinatus’ angle of pull is favorable for initiating abduction.

4. The infraspinatus and the teres minor act as one, holding the head of the humerus into the glenoid fossa.

5. The subscapularis acts as a stabilizer of the glenohumeral joint.

The deltid is a powerful abductor with the greatest activity occurring when the humerus is raised between 90 and 120 degrees. This also helps to provide a strong stabilizing effect. This is fortunate because in this position the shoulder joint depends more on muscles than ligaments for holding the head of the humerus on the glenoid fossa.

The above description involves the muscles which are developed when using the lat pull. Thus the lat pull can be an effective upperbody exercise to be included in any athlete’s weight program.

Selected References


