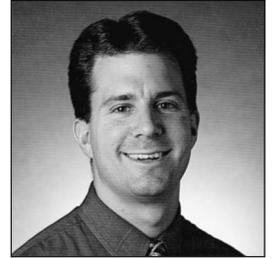


Modifying the Latissimus Pull-down Exercise for Athletes With Shoulder Injury

Jason Lantz, BS
Medical Massage and Manual Physical Therapy of Smithtown
Smithtown, New York
Brentwood High School
Brentwood, New York

Shawn McNamara, BS, CSCS
Luella Middle School
Locust Grove, Georgia



Alan Tyson
Column Editor

CHRONIC SHOULDER PROBLEMS are common among throwing athletes, such as baseball players, quarterbacks, and javelin throwers, as well as other athletes, such as volleyball players and swimmers. These athletes usually continue with strength training programs through both asymptomatic and symptomatic periods. More often than not, these athletes unknowingly perform exercises that could cause further pain and inflammation. To avoid this situation, it would be prudent for strength and conditioning professionals to adapt their strength training programs and modify their instruction of certain exercises for athletes with shoulder pathology. The previous column discussed modifying the seated row exercise to make it more suitable and beneficial for the athlete with shoulder pathology. This column will take the same approach and apply some guiding principles to another commonly prescribed exercise by strength and conditioning professionals, the latissimus pull-down.

A decrease in balanced functional strength and endurance of

the muscles involved with the scapulo-thoracic joint is a major but commonly dismissed factor of chronic shoulder injury. Imbalance of the muscles responsible for scapula stability may develop from prolonged motor patterns “learned” through strength training activities, sport activity, injury, or simply from repetitive overuse of the shoulder joint. During any shoulder joint motion, the scapula must be properly positioned through the delicate balance and coordinated efforts of the scapulo-thoracic muscles (3). With scapular motion such as upward rotation, the serratus anterior and trapezius muscles form a force couple that is responsible for steering the scapula during elevation of the arm (2). If there is imbalance that causes interruption of this force couple, especially among the trapezius muscles themselves, improper scapular mechanics will develop and may ultimately lead to chronic shoulder pain and injury. To balance the muscles responsible for scapula stability, a proper amount of attention should be focused on the muscles most often neglected

during strength training of the back: the rhomboids, middle trapezius, and lower trapezius muscles. This can be accomplished through a slight modification of the latissimus pull-down exercise.

All too often, the latissimus pull-down exercise focuses too much attention on the latissimus dorsi and biceps muscles at the expense of developing the stabilizing muscles of the scapula. The focus of this exercise should be to encourage the activation of the rhomboids, middle trapezius, and lower trapezius muscles while simultaneously exercising the primary movers, the latissimus dorsi and biceps muscles.

The athlete should sit with the hips extended slightly without “arching” through the low back area. A slightly different approach involving scapular movement should be used as compared with the seated row. The initial movement should be scapular depression activating the lower trapezius muscles, immediately followed by scapular adduction incorporating the rhomboids and middle trapezius



Figure 1a-b. (a) Encourage initiation of the exercise through scapular depression (arrow 1) followed by scapular adduction (arrow 2). This scapular position should be maintained during the pull-down portion of the exercise. (b) Instruct the athlete not to let the elbows move past the sides of his or her body.

bar down behind the head, because this will cause excessive strain on the shoulder joint capsule. Any variation in grip, bar attachment, or apparatus is acceptable as long as the elbows do not move past the side of the body. Once the end position is achieved, the athlete should slowly allow the arms to move toward the starting position while still “pinching” the shoulder blades. When the elbows are fully extended, the athlete should then slowly allow the scapula to move to a more relaxed elevated position. In the beginning, it may be easier for the athlete if the exercise is separated into two isolated parts, isolated scapular movement followed by shoulder joint movement.

It is very common to witness the athlete using large dominant muscle groups to perform this exercise while almost neglecting the smaller ones. For example, the athlete may involuntarily allow the scapula to move to an elevated position when initiating the pulling movement by the arms. Because this elevated position is maintained during the performance of the exercise, the rhomboid, middle trapezius, and lower trapezius muscles are totally neglected. The stronger and dominant upper trapezius muscles pull the scapula into this elevated position, allowing for little activation of the middle and lower trapezius muscles (Figures 2a and 2b). This “sets” the scapula in a position that will assist the athlete by providing some additional leverage for the arms to do the actual pull-down. This, perhaps, is a motor pattern learned through continued strength training performed in this manner. This makes the exercise easier, and heavier weights will continually be used as a result.

muscles (1) (Figure 1a). Once this is achieved, the athlete should pull the bar down to a position

below and in front of the chin (Figure 1b). It is recommended that the athlete avoid pulling the

By using this information about the latissimus pull-down and seated row (from the previous column) exercises, strength and conditioning professionals can modify their instruction and use these slightly altered techniques. This will ensure protection of the shoulder joint from any unnecessary strain that may cause further pain and inflammation. By incorporating isolated scapular movement during these exercises, strength development of the weaker scapula-stabilizing muscles will restore balance and proper mechanics to the system. This will help achieve the ultimate goal of restoring both strength and pain-free function to the scapulo-thoracic and shoulder joints. ▲

■ References

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Jason Lantz works as a physical therapist with Medical Massage and Manual Physical Therapy of Smithtown in Smithtown, New York. He is also the athletic trainer at Brentwood High School in Brentwood, New York.

Shawn McNamara is a coach at Luella Middle School in Locust Grove, Georgia.



Figure 2a-b. (a) Improper scapular position: The dominant upper trapezius muscles pull the scapula into an elevated position, causing minimal activation of the middle and lower trapezius muscles. (b) Proper scapular position: scapular depression and adduction through activation of the lower and middle trapezius muscles.