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## summary

Modifying chest press for the athlete with shoulder pathology is critical to prevent further damage. The modifications shown in this column will allow the athlete to safely train and reduce microtrauma to this region.

Maintaining the integrity of the shoulder joint should be a major focus for professionals who work with the strength and conditioning of athletes. The focus should be on maximizing the benefit of any particular exercise while minimizing the risk. Risk usually comes in the form of repetitive microtrauma, which leads to chronic and painful conditions. There are many exercises that cause unnecessary stress and strain when the exercise is performed as typically instructed. Unnecessary stress and strain could also come from the fact that the lifting technique is not as sound as it should be. The strength and conditioning specialist can limit the amount of strain by simply fine-tuning the technique and modifying the actual exercise.

# Modifying Chest Press Exercises for Athletes With Shoulder Pathology

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Through effective communication of strength and conditioning specialists with physical therapists and athletic trainers, guiding principles often used as a foundation for rehabilitation protocols can be adapted and applied to strength and conditioning protocols. Sound shoulder rehabilitation protocols are replete with guidelines to ensure the protection of the joint while simultaneously promoting an environment for reconditioning. These guiding principles allow the treating health care professional to do no harm to the patient while facilitating an optimal environment for healing. It seems only reasonable that one should continue to use these principles as the athlete leaves rehabilitation and moves into more traditional strength-training regimes.

Strength and conditioning specialists often work with athletes following

rehabilitation and sometimes continue using some of the exercises that were part of an athlete's end-stage rehabilitation protocol. To maintain the integrity and "functional health" of the shoulder joint, certain exercises should be avoided altogether, and others can simply be altered or modified to suit the special needs of the athlete.



Previous columns (*SCJ*, 25(5), p. 53 and *SCJ*, 25(6), p. 67) discussed modifying the seated row and latissimus pull-down exercises to allow

them to be more beneficial and safer for the athlete with shoulder injury. In continuing with this theme, important guiding principles should be incorporated during chest press exercises. No matter what apparatus or mode of exercise you choose to use with your athletes, a slight modification of the exercise technique could help protect the



**Figure 1.** (a) The typically instructed ending position for the barbell chest press exercise. (b) Recommended ending position for the barbell chest press exercise using a towel roll.



**Figure 2.** (a) The typically instructed ending position for the dumbbell chest press exercise. (b) Recommended ending position for the dumbbell chest press exercise.

shoulder joint without taking anything away from the benefits of the exercise. Chest press exercises could include but are not limited to the incline, decline, and flat barbell or dumbbell chest press, as well as any of the various chest press machines.

The instruction for the technique of almost all chest press exercises is to allow the elbows to descend so that they move past the level of the bench or back support (during seated chest press) to where a barbell would touch the chest (Figures 1a, 2a, and 3a). In this position, the elbows have moved well past the level of the shoulders, causing the glenohumeral joint to reach the extreme ranges of horizontal abduction. Moving the elbows past the shoulders would be moving into a dangerous zone for the shoulder joint. This is a common mistake made by most athletes with past or present shoulder pathology that could cause irritation to an already compromised joint. A common reason for this method is to maximize the stretch of the pectoralis muscle group while strengthening the muscle throughout the entire range of motion. With the maximal stretch of the pectoralis muscle comes a maximal stretch of the anterior shoulder capsule, the acromioclavicular (AC) joint, and to a lesser extent the sternoclavicular joint. This repetitive microtrauma of the capsular-ligamentous structures will lead to potential breakdown of the tissue over time. During any chest press exercise the athlete should be instructed to allow the elbows to move only slightly past the level of the shoulders (Figures 1b, 2b, and 3b), thereby avoiding the extreme range of motion available to them during the descent. This will prevent overstretching of the anterior capsule and AC joints.

Some may consider that performing the exercise in this manner may not

be the best option, because it is not as beneficial if the athlete does not move through the full available range of motion. This belief is based upon the length-tension relationship, which means that a muscle is weakest at its end range of motion. Some feel it is necessary to strengthen the muscle at these end ranges of motion. With this argument in mind, we would like to mention that there is what we like to call a *cost-benefit* (sometimes referred to as *risk-benefit*) ratio built into this and almost every exercise. When looking at an exercise and the technique that should be used, one must pose some questions: Does the benefit of the exercise outweigh the cost or risk? Can the exercise be performed in a risk-reducing manner without altering the benefit? The cost or risk is greater when chest press exercises are performed with the elbows moving to extreme ranges during the descent. With a simple modification of the technique, allowing the elbows to move only slightly past the level of the shoulders during descent, the cost or risk is greatly reduced. The benefit of this exercise changes very little, if at all.

The authors have personally worked with and rehabilitated athletes who have reported injury to the capsular-ligamentous structures of the shoulder complex during the chest press exercise. The most common injuries witnessed were to the anterior capsule and the acromioclavicular joint. These injuries mostly occur during the maximal descent phase of the exercise. This is consistent with the common knowledge that capsular-ligamentous or joint injuries usually occur during an overload at the end ranges of available joint motion.

Through the use of proper spotting techniques, the strength and conditioning specialist can assist the athlete in learning where to stop during the



**Figure 3.** (a) The typically instructed ending position for the machine chest press exercise. (b) Recommended ending position for the machine chest press exercise.

descent of a chest press exercise. A towel roll placed on the sternum during the flat-bench barbell chest press exercise is a useful tool to cue the ath-

lete regarding how low the bar should be lowered (Figure 1b). Focusing on the minor details and making these small adjustments will minimize the

risk of any chest press exercise without interrupting the benefits afforded by it. The authors feel that all athletes, regardless of past or present injury, have special needs, and modification of this and many other strength-training exercises is paramount in reducing the amount of wear and tear the athlete will place through their shoulder complex. In addition, the authors also believe that modifying this and many other strength-training exercises will help reduce the potential for future shoulder pathology. ♦

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