Modifying Upper Body Exercises to Avoid Shoulder Impingement

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Athletes and coaches realize the importance of strengthening the upper body for improved performance. Many times, however, the athlete may use improper form with certain exercises. This improper form may cause injury or further aggravate an existing injury. The bench press, lat pulldown, dips, triceps extension, lateral deltoid raise, and pectoral flys are common exercises used for upper body strengthening. These exercises may need to be modified if the athlete has a history of impingement or glenohumeral instability, or if he or she uses the arm for repetitive overhead motions such as in pitching.

The bench press (Figure 1) can be modified by placing a rolled towel on the chest to prevent shoulder horizontal abduction/extension. Athletes can also perform the dumbbell press on the floor or table. The aim of this exercise is to strengthen the pectoralis major and triceps while limiting shoulder extension to avoid an increased chance of impingement.

The lat pulldown (Figure 2) is another exercise that can be modified. The bar can be pulled in front rather than behind the head, thus limiting shoulder extension. An athlete may also use a narrower grip to decrease shoulder extension.

There are many triceps extension exercises (Figure 3), and several of these place the upper extremity in an overhead position. This overhead position can increase the chance of impingement. An alternate way to strengthen the triceps is to keep the elbows at the sides to perform pressdowns.

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Lateral deltoid raises (Figure 4) are also commonly used and should be limited to shoulder level or slightly below. Dips can be used to strengthen the triceps, but deep dips in which the shoulders are forced into excessive extension should be avoided.

Finally, pectoral flys (Figure 5), using either dumbbells or a machine, are commonly used for upper body strengthening. This exercise can aggravate anterior glenohumeral instability and must be limited in range if included in an athlete's strengthening program. From 45 to 60° of horizontal abduction is a safe range for strengthening the pectoralis major without placing excessive strain on the anterior shoulder. Athletes with impingement should avoid military presses. However, if these are performed,
the bar should travel in front of the head rather than behind, similar to the lat pulldown.

Each of these exercises, if performed incorrectly over time, can increase the possibility of impingement or re-aggravate an existing injury so that it cannot heal. After the athlete is educated and understands why he or she needs these modifications, the chance of unnecessary injuries will decrease.

Many other upper body strengthening exercises may need to be modified to place less stress on the injured shoulder. The underlying principles of modification are to limit shoulder extension, keep exercises below shoulder level if possible, and keep the arm out of any potentially unstable position.

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