

Shoulder Injury and Prevention
Applications for the Bench Press Exercise
by
Ramsey Rodriguez, NSCA, CSCS

What do you hear when you ask someone, "what's wrong with your shoulder?" The most common response is: "...well the doctor thinks it's my Rotator Cuff muscle, but that's it." Typically, rest followed by ice and/or aspirin is recommended. This might work if it's the first time you have strained your Rotator Cuff(s); however, when it becomes a recurring condition, then it needs to be re-addressed beyond the 'rest/ice/aspirin' remedy.

There is a lot of information out there about Rotator Cuff injuries and the various methods for recovery. I too have experienced these problems, especially while doing extensive high intensity training and specifically during the Bench Press exercise. This article gives priority to several key aspects; first, how the Rotator Cuff muscles function during the performance of the Bench Press exercise. Second, I have included muscle testing information to help you pinpoint which one, the muscle or the Rotator Cuff is truly the culprit. Third, I will teach you which stretching exercises to use before and after performing the Bench Press. Finally, I will provide you with specific strengthening exercises to enhance the overall health and stability of the shoulder.

Part I: Rotator Cuff Muscle Functionality in Relation to the Bench Press Exercise

The Bench Press exercise is classified as a double-joint exercise, in which one performs the exercise by laying down on a bench, lowering the bar to the chest and then pressing it up. The basic bio-mechanics are explained as: lowering of the bar is "Retraction of the Shoulder Girdle" and the Pressing is "Protraction of the Shoulder Girdle." The muscles most susceptible to stress or injury (in both actions) are the Rotator Cuff muscles, Supraspinatus (underneath the Trapezius muscle) and the Subscapularis (underneath the shoulder blade).

Another common injury area associated with the Bench Press, but not related to the Rotator Cuff muscles are the Bicep Tendons and the Pectoral Minor—a novelty finding! The lifter or health practitioner often mistakes a Rotator Cuff problem when in fact, it can be related to a bicep tendon or pectoral minor concern. There are two reasons why this could occur. One, the lifter does not stretch this area properly and/or the lifter's upper body development (chest/shoulders) is such that the anterior shoulder area (Bicep Tendons underneath) sits too high while the lower pecs are underdeveloped, thereby putting too much strain on the front shoulder area and not enough lower pectoral muscle is being used. Example: A novice lifter complains that he does not feel the "Pecs" working while at the same time, feeling too much of the stress in his shoulder area - case in point!

Part II: Practical Steps to Determine which Muscle is the Source of the Pain:

Rotator Cuff Supraspinatus: The shoulder hurts or aches when you raise your arm over your head and when you would perform the "press" action of the Bench Press.

Rotator Cuff Subscapularis: The stronger shoulder area experiences pain when lowering the bar to the chest during the Bench Press exercise (eccentric phase). Secondly, it continually feels tight in the back of the shoulder area after a workout or, another example would be experiencing tightness in the shoulder when you are trying to talk on the cell phone.

This problem is most commonly referred to as the "Frozen Shoulder" condition.
Pectoralis Minor: This muscle condition is tricky to identify; one, because it involves both bone and muscle and two, because it mimics another type of strain.

Usually, this condition affects the muscle in the stronger arm. The tightness will be in the front of the shoulder giving you the impression it is a bicep tendon strain. A good method of verifying a Pectoral strain would be while laying on your back, your training partner notices that you have one shoulder resting higher than the other. Another muscle condition indicating a pec minor strain can be experienced in the collarbone region. If you are feeling tightness or discomfort in this area, it is likely that your collarbone attachment (located directly below the throat) is out of alignment. This will be noticeable as a swelling or protrusion. NOTE: At this point, it would be advisable to consult a sports chiropractor for the misalignment, as well as stretch and strengthen the Pec Minor area with the exercises below.

Bicep Tendon: The Bicep Tendons attach underneath the shoulder towards the end of the Humerus bone. If you are experiencing pain directly in front of the shoulder while lowering the bar (this is an "Eccentric" motion) during the Bench Press exercise; you have strained your Bicep Tendon. Another example would be pain caused by simply picking up your gym bag or suitcase or, while reaching into the backseat of your car.

Part III : Stretching the Rotator Cuff Muscles:

Dynamic Stretching: This form of stretching should be done before workouts to warm up the major and minor Rotator Cuff muscles. The benefits of Dynamic (Active) Stretching are: improved range of motion, enhanced circulation and the "activation" of the muscle fibers. Examples of dynamic stretching are: jumping jacks, body weight squats, lunges and arm swings.

Arm Swings: This is a great warm up for shoulders. Below are four variations of arm swings:

- i. With arms straight, position the thumbs downward (palms out) and move the arms forward in a circular fashion. If you are tight you may only be able to perform the stretches in small circles. As the shoulders loosen you will be able to increase the circular motion. Perform 20 reps.
- ii. Maintaining the same hand position now go backward for 20 reps.
- iii. Change the hand position to thumbs up (hand shake position). Perform 20 reps. going forward
- iv. Maintaining the same hand shake position going backward 20 reps.

Note: Rest 30 seconds to a minute between stretching exercises.

Static Stretching: The purpose of this type of stretching is to improve mobility and range of movement. It involves placing the muscle in a maximally lengthened position and holding it there for a sustained time interval. Research has shown that holding the stretch at the end for 30-90 seconds is the optimal time period. These stretches are "passive" in nature and should be done after workouts. However, in some cases if the muscles are really tight, it is best to perform them before and after workouts.

- i. Supraspinatus - Seated, tilt the head forward and away from the shoulder you are stretching. Grasp the bench keeping the arm straight with minimal tension in the hand/arm. Lean away from the shoulder; you should feel a stretch in the lower neck (Trapezius muscle) area. While your head is in the tilt/away position have your partner press gently down on the shoulder being stretched. Most of the stretching will be experienced in the "Traps". Repeat.

ii. Subscapularis - (Lying Rotator Cuff Stretch) Start by laying on your side. Position the arm closest to the floor so it is perpendicular to your torso. Bend this arm at the elbow to form a 90 degree angle (fingertips pointing toward the ceiling). With your free arm push the wrist and forearm of the opposite arm toward the floor until you feel a stretch in your shoulder. Those with adequate flexibility will be able to touch their wrists to the floor. Hold the bottom position for 30 seconds before switching sides. Release and relax. Attempt again for another 30 seconds applying more pressure if necessary. Perform this stretch for several intervals of 30 seconds. The range of motion to accomplish is when the forearm is parallel to the floor. Change sides and repeat.

iii. Pectoralis Minor - In a standing position; place the arm up against a pole or doorway keeping the forearm firmly against the pole. Maintain an "L" position (90 degree angle) with the arm. Slowly press forward and rotate away from the shoulder to allow a stretch in the pecs. Hold 30-60 seconds and release. Repeat.

iii. Bicep Tendons - Using the Bench Press rack, grasp the bar while facing away from the bar allowing your hands to be 'open' (palms facing away). Gently squat down while bending the elbows and lowering the arms. This creates a stretch in the front of the shoulders and into the bicep attachments. Hold for 10-30 seconds. Repeat.

Warning: This stretch is uncomfortable and holding for 30 seconds will take a few attempts. It is an intensive stretch to be used if the biceps are tight.

Part IV: Strengthening Exercises for Rotator Cuff Muscles.

Rotator Cuff strengthening exercises are essential for shoulder stabilization during heavy lifting in the Bench Press exercise. They are designed to strengthen the Rotator Cuff, Supraspinatus and Subscapularis. As mentioned earlier, it is the Supraspinatus and the Subscapularis that are afflicted the most during the Bench Press exercise.

1. Straight Arm Laterals (for the Supraspinatus): Sit at the end of a bench, lean forward and grasp two light dumbbells (5-10lbs) with palms facing toward the body. Position the dumbbells below your legs (arms against the mid-thigh). Raise the dumbbells straight out maintaining the prone position (no bend in the elbows). Raise the arms almost parallel position to the floor. NOTE: Raising the arms past parallel may cause an impingement in the shoulder. Lower the dumbbells in a slow, controlled manner back to the starting position. You will know you are performing this exercise properly if you feel a muscle burn in the back of the shoulder.

2. Internal Rotation/Mid-Line Position (for the Subscapularis): The Subscapularis is located inside a large muscle group that is housed within the Rotator Cuff muscles; therefore strengthening this muscle from two different positions is not much more effective. Use either a pulley handle device or a resistance band. Grasp the pulley handle/band and place your arm in an L-position (elbow bent at a 90 degree angle) directly against your body. Take two or three steps out away from the device. Pull the handle/band in toward your mid-section until you feel the effort in the shoulder (fist should be in line with the navel). It is imperative you maintain the L-position at the arm in order to isolate the Subscapularis muscle! Do not pass the mid-line of the body or you will lose the effectiveness of the exercise.

Tip: For more resistance and effectiveness try stepping further away from the device.

3. Internal Rotation/Overhead Position (for the Subscapularis):

*Using an adjustable pulley handle or a resistance band attached to a pole or door above your head. Face away from the device, grasp the handle creating a 90 degree/L-position with the arm (your hand should be parallel with the top of your head) and pull downward from the elbow. The forearm will be parallel to the floor at the bottom of the movement.

You will feel a tightness in the back of the shoulder, this is a good indicator you are exercising the muscle effectively.

Part V: Identifying the Muscles that Stabilize the Shoulder Joint:

1. Supraspinatus: This muscle is located underneath the Trapezius muscles. It originates in the Scapula and inserts at the Humerus and shoulder joint capsule attaching at the upper arm/Humerus.

i. Action: Raises the arm laterally (away from the body) along with the deltoids and stabilizes the Humerus in the Glenoid Cavity. During the pressing action of the Bench Press the Supraspinatus muscle stabilizes the shoulder joint.

2. Subscapularis: Located in the shoulder blade, the origin is in the middle region of the shoulder blade and inserts at the head of the Humerus.

i. Action: Rotates the shoulder-medially (towards the body) and stabilizes the shoulder joint. Example: activates primarily during the pressing motion of the Bench Press.

3. Infraspinatus: Located in the Shoulder Blade and inserts in the Humerus.

i. Action: Laterally rotates the shoulder joint and stabilizes the head of the Humerus in the Glenoid Cavity. For example, as the arm is raised away from the body and a throwing motion is created (i.e. throwing a baseball).

4. Teres Minor: Originates in the upper region of the Shoulder Blade and inserts in the Humerus and shoulder joint capsule. It works with the Infraspinatus to laterally rotate the shoulder joint (i.e. baseball pitch).

5. Pectoralis Minor: Located underneath the Pectoralis Major, its' origin is in the third, fourth and fifth ribs and attaches at the anterior region of the Scapula.

i. Action: Creates the pressing motion along with the chest muscles.

6. Bicep Tendon: Originates at the elbow and attaches on the anterior region of the Humerus Head. They are positioned in a groove of the Humerus and tend to move or shorten under heavy stress caused by shoulder pressing exercises.

Conclusion:

For years physical therapists and athletic trainers discouraged strength coaches from implementing the Bench Press exercise because of the strong opinion that it actually caused injury to the shoulder. Today, equipped with the knowledge of proper techniques and preventive measures an athlete can use the Bench Press long term without wearing out the shoulder.

The inspiration for this article came from personal experience and fellow lifters I have worked with over the years. I really wanted to break down all the information out there and explain the most important elements such as: the shoulder anatomy, how to identify the source of the pain and how to stretch and strengthen those muscles in an attempt to alleviate any discomfort, prevent further aggravation to the muscle(s), improve the overall health of the shoulder and ultimately, increase your strength and power as you perform the Bench Press exercise.

I know you are asking yourself, ... "why I am putting so much effort into this when anyone can now surf the internet superhighway for the answers?" Well, it's because so much is either misunderstood or simply not known about the correlation between the shoulder/Rotator Cuff muscles and the Bench Press exercise. Believe me when I tell you, I had no idea of the aggravation and frustration I would experience with my injury, however, with my 25 years of training and experience I was able to determine the source of my shoulder problem (Subscapularis muscle) and, in a relatively short period of time I was able to return to one of my favorite exercises - the Bench Press. As a result of this experience I wanted to share my knowledge and expertise with you, the reader, in the hope that you might not have to endure the set backs and discomfort that it has caused me in the past.

About the Author:

Ramsey Rodriguez is a Sports Fitness Consultant with 25 years of professional experience in fitness training, sports nutrition and natural alternatives for health and wellness. He has also created sport-specific training and nutrition programs for various professional and collegiate athletes in the areas of football, sprinting, swimming, weightlifting and powerlifting.

His Mission Statement: I am 100% committed to the passion and pursuit of improving human performance

Ramsey Rodriguez was born and raised in Texas, earned his Bachelor of Science degree in Physical Education and a minor in Health from The University of Texas at San Antonio. He is a nationally certified personal trainer credentialed as a Certified Strength and Conditioning Specialist (CSCS) through the National Strength and Conditioning Association (NSCA).

Ramsey is also a disciple of Dr. Angel Spassov (a world-renowned Bulgarian strength and conditioning specialist and former 7 time Olympic competitor), who taught him Periodization Training methods based on Eastern Bloc theory and whose inspiration led to the creation and development of "Tribustol" some years later.

In 1994, Ramsey, alongside several other notable names in the sports industry, conducted the first Creatine Monohydrate studies for weightlifters.

Over the past 15 years, Ramsey Rodriguez has made appearances on several televised sports/fitness programs, including, "The Larry North Fitness Show". He has also published articles for various health and fitness magazines and has collaborated with and been featured in several internet articles by Jon Benson, including the popular book, "Fit Over 40".

In addition to his accomplishments, Ramsey founded two successful companies:

Pinnacle Fitness, Inc. and Nutritional Ergogenic Systems (NES). NES is dedicated to developing safe and effective nutritional supplements designed as an alternative to anabolic steroids. NES was formed around the creation and development of "Tribustol"- an all natural proprietary blend that is solely intended to enhance performance, build lean muscle mass, improve strength and quicken recovery time.

Currently, Ramsey resides in Dallas, Texas. He is a competitive bodybuilder and former NPC Bodybuilding Judge. He also takes an active interest in powerlifting via his affiliation with 100% RAW Powerlifting.

For more information about Tribustol or for a sports fitness consultation, contact Ramsey Rodriguez directly at: www.tribustol.com