

# THE ROTATOR CUFF: THE HIDDEN MUSCLES

by Dr. Richard Seibert, Chiropractor

*(EDITOR'S NOTE: Dr. Seibert is a former member of the United States Junior Olympic Lifting Team and has represented our country in international competition. He still competes in the annual New York State Empire Games as an Olympic weightlifter and gives much of his time training and treating many of the Olympic lifters in the New York City/Long Island area. I am proud to note that Richard was a patient of mine whom I encouraged to attend Chiropractic college, and he was an associate in my practice prior to opening his own, successful practice over a decade ago.)*

As with any discussion of a musculoskeletal group and its inherent problems, it is important to first address the anatomy so that we have an understanding of the location and biomechanics. This will provide insight into how a muscle works and how it can be properly trained, as well as understanding how injuries occur and how to avoid them. The sports news media takes great delight in being pseudo experts so that every time a pitcher goes down with an ailing shoulder, a smug announcer will usually note, "probably the old rotator cuff".

So, what is the rotator cuff and what is its primary function? The cuff is nothing more than four individual muscles that due to their close proximity to one another, in a banded type of alignment, hold the shoulder together, as well as allowing for rotation (hence the name) both internally and externally. The four muscles of the rotator cuff are named with the acronym SITS (Supraspinatus, Infraspinatus, Teres Minor, and Subscapularis). The range of motion that we're talking about, internal and external rotation, applies to the movement of the brachium or upper arm and its proximal joint (shoulder joint). No matter which position you hold the arm in, you can still internally and externally rotate the upper arm and herein lies one of the keys of rehabilitation, a concept which is much overlooked, and that is working these rotator cuff muscles in various positions.

While it is easy to visually access certain muscle groups, not that this is a great indicator of strength, you should remember that the rotator cuff muscles are buried or hidden beneath the deltoid group. Thus, as in many things in life, looks can be deceiving. I was reminded of this clinically when seeing a patient in my office. He was an Olympic lifter with a reputation for being very strong, having cleaned over four hundred pounds and power cleaned in the area of three hundred and forty pounds. When he removed his shirt for examination, he had well defined, muscular deltoids that resembled the proverbial "cannon balls". Upon

examination he was distressed to find that he had "weak" and "strained" rotator cuff muscles. I advised him that he should do exercises to specifically strengthen these and sit astride a bench with his arm at a ninety degree angle, forearm to upper arm, and upper arm to torso, with a light dumbbell weighing fifteen to twenty pounds. He kind of laughed and stated that he never used less than an eighty pound dumbbell in any movement. However, on his follow up visit for a second therapy session, he noted that he started the prescribed movement with a forty pound dumbbell and by the twelfth rep, he was in screaming pain. Obviously, these hidden muscles were not balanced with his deltoid and general shoulder strength. How important are these muscles? Another clinical case provides more insight. Another Olympic lifter had come into my office after several months of continually missing snatches and noting persistent shoulder pain. On examination, his rotator cuff came up exceedingly weak and he had trouble just holding his positions for any time. I had noticed this lifter, who was at the time, a national level competitor, had had several competitions in a row where he "bombed out" in the snatch (missed all of his attempts in that one movement). He would haul huge weights overhead to arms length, seemingly easily, only to drop them after a sustained pressing struggle in the squat position. The whole time, his coach would exhort him with such positive thoughts such as "you're a wimp, what's the matter with you?" or "why can't you just hold the weight overhead?" When I explained my findings and related that he had seen an orthopedist who took x rays and saw nothing, I had to further note that these muscles are not visualized with a plain x ray film. They are a good diagnostic tool for fractures, tumors, and dislocations but do not display soft tissue injury (muscle, tendon, and ligaments) very well at all. Imagine the shock on the lifter's face when the MRI report came in and three of the four rotator cuff muscles were completely disengaged (avulsed or torn from) the bone. In essence, he had twenty five percent of his rotator cuff intact!

I had mentioned the technique to work the external rotators which would be the example of the individual sitting astride the bench with the ninety degree angle between the forearm and upper arm and the upper arm to the torso and then using a dumbbell to externally rotate or lift, if you will, the dumbbell away from the surface of the bench just to ninety degrees. There is no reason to go past the neutral point, zero degrees, perpendicular to the floor. However, we still have to work the internal rotator, which is the subscapularis, and this could be performed by again lying on a bench or on the floor. As it is with most of these movements, forearm is at a right angle to the upper arm, the upper arm abducted or taken away from the torso to ninety degrees and we go against gravity this time, bringing the dumbbell again up to a point perpendicular to the floor or to zero degrees.

If you've ever wondered why rotator cuff injuries are so common at a high level, just look at a still photo of a pitcher's arm in relation to his body and you can see the tremendous amount of torque and external rotation. We clearly have a situation where the power being generated is indeed leaving a great deal of strain on these four, thin muscles. A great book on this topic, written by Joe Horrigan, D.C., is the Seven Minute Rotator Cuff Solution, and in it, with diagrams, Dr. Horrigan describes the different exercises properly and clearly. So, as with a good book, don't judge the rotator cuff by its cover, rather look deeply to find the solution to your shoulder training problems.

Dr. Seibert is available for consultation and treatment for athletes in the Long Island area at 516-867-8585.

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## LESSONS LEARNED ON THE JOB

by **Chris Doyle, Strength And Conditioning  
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*(Editor's Note: Chris Doyle has paid his dues in the coaching ranks. He served as a graduate assistant football coach at Syracuse University, the offensive line coach at The College Of The Holy Cross, and then returned to his first love, the field of strength coaching. After serving as an assistant at the University Of Wisconsin, he was the head strength coach at the University Of Utah prior to assuming his current position at the University Of Iowa. He was voted the Big Ten Strength Coach Of The Year in 1999 and is an innovative and dedicated professional. Chris has also acquitted himself well as a drug free competitive powerlifter who joined me for a number of workouts at the Iron Island Gym when he recruited the New York City/Long Island area.)*

Maintaining the beginner's mind is critical to success in any field of endeavor. When embarking on a career as an athlete or coach, there is a thirst for knowledge. "How can I get better?" "What are the most productive programs and movements?" "How often should I train?" The motivated athlete or coach will experiment with many methods in search of the best training program. The successful ones will learn from their experience and continually improve their efforts by applying what they have learned. At Iowa, we do not pretend to have all the answers. We strive to maintain the beginner's mind by seeking out the best people in the field and asking questions as well as constantly reevaluating our own program. Hopefully, through combining what we have learned from others, with our own personal experience training athletes, we are on the right path. There are many coaches who

unselfishly took the time to share their knowledge and experience with us over the years and it is our obligation to the profession that we pass along what we have learned, with the goal of helping someone else along the way. Some of the most valuable lessons we have learned are the following:

### 1. BASIC MOVEMENTS

You will get "the most bang for the buck" with basic multiple joint barbell movements executed with the feet on the ground. You only have so much time to train. Focus on squats, presses, rows and variations of the Olympic lifts. Training with your feet on the ground requires you to stabilize your own body structure, strengthening the stabilization muscles and reducing the risk of injury on the field. Basic, multi joint, ground based movements promote the most lean body mass gains because they involve more muscle tissue than single joint movements. The more muscle mass involved, the better you will stimulate the endocrine system. In order to take a 275 pound freshman and build him into a 315 pound junior, we rely on basic barbell movements such as the squat, presses, rows, cleans, etc.

### 2. SQUAT DEPTH

At Iowa we squat to a depth where the top of the thigh is at least parallel. There are five reasons why we squat to parallel and not higher.

-First and foremost the people we train are athletes. If you are an athlete and cannot squat to parallel with an upright torso and your heels flat, you have a flexibility problem.

-Full range of movement. By squatting to at least the parallel position you will move through a greater ROM resulting in more lean body mass gain. You will also develop the posterior chain more effectively. The hams, gluteus, and erectors are largely responsible for your ability to run and jump well.

-Structural balance. When squatting above parallel you will develop strong quads while neglecting the posterior chain.

-Safety. How sensible is it to load the bar to 400 pounds, shake your way into the set up and execute a half squat when you are only capable of squatting 300 pounds properly? Sure, its a great ego boost but at what cost? We would rather see an athlete squat with excellent technique than stroke their ego and fabricate big numbers. We are performance driven, not numbers driven.

-Joint stability. By squatting to at least parallel you will greatly enhance the stability of the knee joint.

### 3. FRONT SQUAT FIRST

Teaching the front squat before incorporating the back squat has been a productive method of developing good squat technique. The front squat forces the athlete to