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## Differentiating Rotator Cuff Injuries

### Proper Assessment is Key

By Ben E. Benjamin

**Is it helpful when a client arrives at your office and says, “I was told I have a rotator cuff injury”?**

The statement may be somewhat useful, but it’s not specific enough. It usually means that a general diagnosis was given with no specifics. In order to work with each client successfully, you have to know exactly which tendon or tendons are strained so you know where to work.

The rotator cuff consists of four separate tendons that form a continuous band encased in fascia: the subscapularis, supraspinatus, infraspinatus, and teres minor. These tendons work together synergistically to ensure smooth, coordinated movement of the shoulder. When there is pain during arm or shoulder movement, one or more of those tendons is usually injured. In this article, we will look at how you differentiate which tendon is injured when your client presents with this diagnosis.

#### TESTING FOR SUBSCAPULARIS TENDON INJURY

The subscapularis muscle-tendon unit is difficult to visualize because the tendon goes through the body from back to front. This muscle helps you clap your hands, hug someone, lift things, open jars, throw a ball, and complete the forehand and serving actions in tennis. The subscapularis is by far the strongest of the four rotator cuff muscles. If a client under age 40 has a shoulder injury, there is a 70 percent chance it is to the subscapularis tendon. Yet, it is the shoulder injury most likely to be missed by the health-care professional. Before I understood how to assess this problem, it was the most perplexing shoulder injury imaginable. One likely reason for this confusion is that the subscapularis is such a

strong muscle that, unless it is severely injured, it does not test positively during the most commonly used test to locate this injury. However, there are different assessment tests that help you clearly differentiate one injury from another.

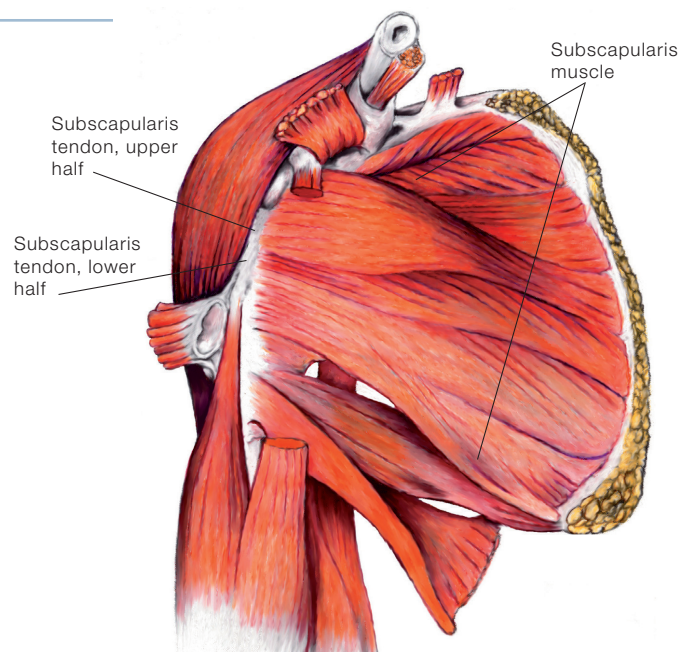
While performing the assessment tests for the subscapularis, try to ignore exactly where the client feels pain, as long as it is felt in the upper arm and shoulder. While testing for this injury, the client will often feel pain in strange places, like down the back of the upper arm in the triceps area, within the arm, at the back of the deltoid muscle, or occasionally far under the scapula.

The most important positive test for this injury is pain felt on resisted medial rotation (Test 1). This test is called the “major indicator,” because it gives you the most important information you are seeking. There are also secondary or auxiliary tests that can help you refine the area of injury. I want to give you a clear overview of how to differentiate each injury. For greater detail, you can see my previous articles on these injuries or the hour-long webinars devoted to each one (“Shoulder Series #1: Infraspinatus Tendinitis,” June/July 2004, page 100; “Shoulder Series #2: Supraspinatus Tendinitis,” August/September 2004, page 104; “Shoulder Series #3: Subscapularis Tendinitis,” October/November 2004, page 98).

#### Subscapularis Major Indicator—Resisted Medial Rotation

To efficiently test for subscapularis tendinitis, the client’s upper arm must be fixed into her body. To stabilize the upper arm into the body, place one hand on the client’s upper arm just above the elbow and press the upper arm into the body. With her arm bent in front at a right angle, place your other hand on the inside of the client’s wrist. Now, ask the client to pull the wrist toward her stomach while you pull outward with equal force, maintaining the 90-degree angle to the abdomen. Be sure to keep the upper arm into the body to stabilize the shoulder or the test will not read correctly. If this test causes no pain, begin the test from a stretched position by laterally rotating the arm to 135 degrees (Test 1A), then to 180 degrees (Test 1B).

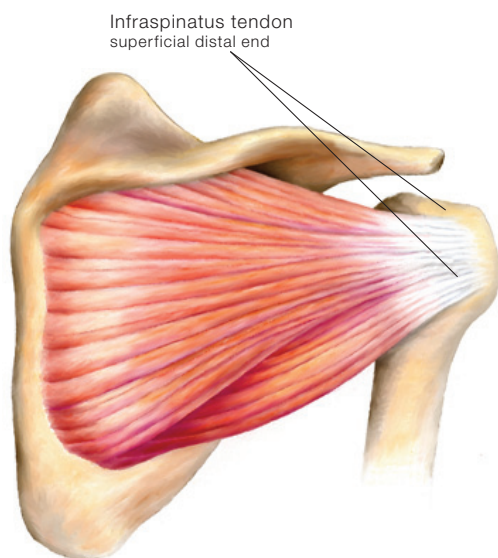
From these new starting positions, have the client pull toward the abdomen. Each test variation stretches the muscle a little bit and progressively puts more stress on the tendon. This principle is important to keep in mind while testing all tendon injuries.



Test 1







Another essential principle to keep in mind is that during any resisted test, the subject pushes gently at first. If no pain is felt, have the client push harder. It is important that the person does not move the arm through space while you are doing the resisted test. Therefore, your resistance should match the strength of the subject.

### TESTING FOR INFRASPINATUS TENDON INJURY

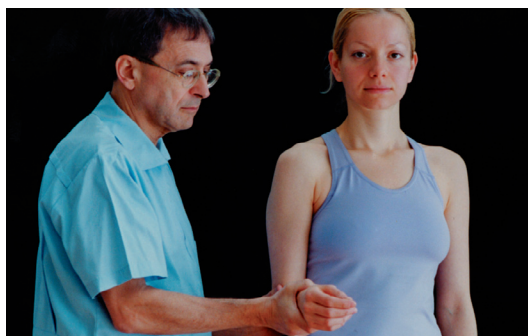
You use the infraspinatus muscle-tendon unit in a backhand motion, when you open a door, reach behind you, or write. Because it has a poor mechanical advantage, the infraspinatus is a relatively weak muscle in most people. If it is called upon to suddenly perform heavy exertion, it can easily strain or tear. Some people have a minor strain of the infraspinatus tendon that continues almost unnoticed for years. They may experience slight discomfort when reaching for something on a high shelf or into the back seat of the car. However, when this minor lesion does not heal properly, it can set the stage for a more severe injury later.

The most important test for this injury is pain felt on resisted lateral rotation (Test 2).

#### Infraspinatus Major Indicator—Resisted Lateral Rotation

Have the client stand with her legs at least shoulder width apart so she is stable while doing the test. Place one hand on her upper arm just above the elbow and press the upper arm into the body for stability. With the person's arm bent in front at a right angle, place your other hand on the outside of her lower arm just above the wrist. Now ask the client to push laterally, or outward, toward you while you resist the push with equal force. This test is first done at 90 degrees to the body, but also may need to be done at 30 degrees (Test 2A) and at 135 degrees (Test 2B) for more precise testing. The different angles put stress on different parts of the tendon. A positive test (when pain is felt) indicates that the infraspinatus is injured.

Test 2



A



B

### TESTING FOR SUPRASPINATUS TENDON INJURY

Supraspinatus tendon strain is a very common cause of pain in the shoulder. This tendon can be injured in many ways. Carrying a heavy suitcase or massage table, lifting heavy objects, or swimming are a few of the culprits. Athletes often suffer severe injury to this tendon and older individuals sometimes rupture it, making it impossible for them to lift their arms out to the side.

The supraspinatus muscle initiates abduction, allowing you to move the arm away from the side of the body up to 15 or 20 degrees before other muscles take over the action. Above this level, the supraspinatus keeps working, but minimally. A person uses this muscle often when performing certain outward circular massage strokes, and many massage therapists and bodyworkers are afflicted with this injury.

This injury often occurs for no apparent reason, and the exact cause may be difficult to pinpoint. The supraspinatus muscle is even weaker than the infraspinatus in most people. Like the infraspinatus tendon, if called on to do a sudden, strenuous activity, it can easily tear.

The important positive test for supraspinatus tendinitis is pain felt on resisted abduction (Test 3).

Test 3



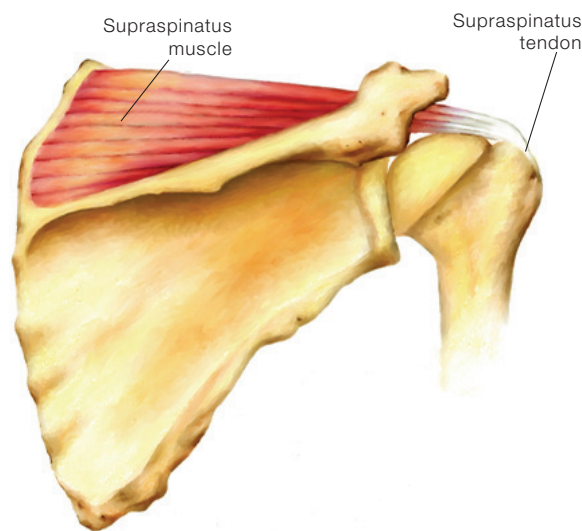
#### Supraspinatus Major Indicator—Resisted Abduction

With the client standing, the therapist places one hand on the outside of the client's elbow and the other hand around the waist on the opposite side of the body to stabilize the person. Ask the client to push the arm out (laterally) toward you while you push in the opposite direction, offering equal and opposite resistance. When the client pushes out, allow the arm to move approximately 2 inches away from the body before

offering equal resistance. In this position, the muscle is in the midrange with maximum mechanical advantage and strength.

If this test causes discomfort while you are pushing, the supraspinatus is injured. But if the client feels pain after you release pressure and let go, another injury is present; most likely, the subscapularis or infraspinatus tendon is injured. If there is no strength whatsoever, and the client cannot push out at all during this test, the tendon may be ruptured.

In order for the client to heal, the adhesive scar tissue must be eliminated. If your work breaks down that useless, painful tissue, the person will be out of pain and back to normal more quickly than either one of you can imagine. The offending tissue is usually located at the tenoperiosteal junction, where the tendon attaches to the humerus. This



adhesive scarring in the rotator cuff tendons is the most common cause of chronic shoulder injuries. After the scar tissue is gone, the client has to be guided through a series of rehabilitation exercises so that full strength and flexibility are achieved. **m&b**

*Editor's note: Massage & Bodywork is dedicated to educating readers within the scope of practice for massage therapy. Essential Skills is based on author Ben E. Benjamin's years of experience and education. The column is meant to add to readers' knowledge, not to dictate their treatment protocols.*

**6** Ben E. Benjamin, PhD, holds a doctorate in education and sports medicine and is founder of the Muscular Therapy Institute. Benjamin has been in private practice for more than 45 years and has taught extensively across the country on topics including orthopedic massage, Active Isolated Stretching and Strengthening, and ethics. He is the author of *Conversation Transformation* (McGraw-Hill, 2012), *Listen to Your Pain* (Penguin, 2007), and coauthor of *The Ethics of Touch* (Sohnen-Moe Associates, 2003). Presently, he is offering continuing education for massage therapists around the world via webinars. He can be contacted at [ben@benbenjamin.com](mailto:ben@benbenjamin.com).