

ending

epic

by Timothy Agnew • photography by Herb Booth

TENNIS ELBOW OR GOLFER'S ELBOW—THEY BOTH TRANSLATE TO THE SAME THING: PAIN IN THE EPICONDYLE. AS MASSAGE THERAPISTS, YOU MIGHT EVEN SUFFER FROM IT YOURSELF. READ ON FOR SUGGESTIONS ON HOW TO HELP EASE THE PAIN.

If you have been a massage therapist for any period of time, you've probably seen clients suffering from epicondylitis, or have battled the condition yourself. Like most overuse injuries, it can become a chronic, painful ordeal, especially for the busy therapist with back-to-back appointments. While this condition is common in athletics—it accounts for as much as 50 percent of all athletic injuries—the epicondylitis epidemic in the United States does not reside in athletes alone.¹ The Bureau of Labor Statistics reports approximately 68,000 cases of elbow-related tendinitis cases per year in private industry, but there are plenty of others suffering from this condition. Like any chronic condition, treating epicondylitis can be tricky. With the right tools and a specific approach, nonsurgical treatment can be successful, both for you and your clients.

THE CONDITION

Most therapists know epicondylitis as “tennis elbow” or “golfer's elbow;” the former affecting the lateral epicondyle, the latter the medial epicondyle. The client might present with burning, numbness or extreme tenderness over the epicondyle. At its worst, the client will report she can no longer hold a mug of coffee. From its name, epicondylitis is a

tendinitis to the tendons of the forearms; “itis” means inflammation. Yet in my experience most cases involve something else called *tendinosis*. So what is the difference and why is it so important to the therapist?

Tendinitis is an inflammatory response within the collagen triggered by an overuse activity. Swelling of tendons and local tenderness are common. A good example is tendinitis of the rotator cuff tendons of the shoulder; once inflamed, these tendons impinge under the acromion. The inflammation can be the beginning of a more severe situation, *tendinosis*.

Tendinosis is a pathology of chronic degeneration to the tendon matrix; it is an accumulation over time of microscopic injuries that do not heal properly. The important differences between the two are the lack of tendon inflammation in someone with tendinosis, and misalignment of tendon fibers.

In a study performed during surgery of more than 600 cases of lateral elbow tendinitis, the extensor carpi radialis brevis tendon contained disrupted collagen fibers and no inflammatory cells.² Therefore, a solid treatment plan should assume tendinosis, or failed healing to damaged matrix of the collagen, and not tendinitis, especially if the client admits to months of pain.



ondylitis



TRADITIONAL TREATMENTS

Some of the traditional, nonsurgical treatments for epicondylitis include injected corticosteroids, bracing and physical therapy. The success rate for these treatments can be good, for a *short* time. The problem with many of these treatments is that they only last a short time. The client relies on the provider to solve his problem, so when the pain returns he must receive another injection, more physical therapy, or worse, pills. Since tendinopathy issues often involve excessive injury to the tendons, treatment philosophy should include long-term, client-involved care. Unfortunately, there are no 20-minute treatments that will resolve tendinopathies. With a specific, isolated approach, however, recovery can occur.

A DIFFERENT APPROACH

The Spring 2006 issue of *mtj* featured Clinical Flexibility and Therapeutic Exercise (CFTE) as a therapy for sciatica. CFTE is also effective for tendinopathies. While massage therapy can be helpful at easing the pain in the forearm—especially when it is applied to specific extensor and flexor muscles—engaging these muscles using flexibility and resistance is also necessary. Therapy for epicondylitis must be specific and empowering. The client must be motivated to heal or long-term results will not occur. When dealing with a chronic, painful condition, it's not difficult to get client compliance; most are desperate to

find a solution. The athlete wants to return to the courts, the mother wants to hold her baby.

The radial and ulnar bones that make up the elbow are surrounded by a plethora of muscles that act on the elbow joint. For the purpose of this article, we will be looking closely at the actions of several of these muscles, especially those that act on the phalanges (see table, opposite page).

The therapy approach for epicondylitis has several specific goals. The first consideration is muscle flexibility. One of the goals in restoring range of motion (ROM) is to improve natural movement, preventing compensation from the rest of the body. Flexibility also increases blood flow and improves muscle tendon alignment, and in the process helps dislodge scar tissue along both epicondyles. Remember, in tendinosis we are dealing with tendon damage that needs a chance to heal, so stretching can help move the process along.

Another consideration is why a client develops epicondylitis in the first place. In general terms, tendinopathies evolve due to an imbalance in the muscles of the forearms. The flexors are weaker than the extensors, or vice versa. A weak muscle cannot handle vector forces placed upon it in over-use movements. The serious tennis player might rebuke a therapist's suggestion that he is "weak" in his extensors along the lateral epicondyle. But weaknesses exist because

of limited specific strengthening of these muscles. This is one of the reasons many professional tennis players strength train all-year long.

After both of these goals have been achieved, the client must be educated on how to maintain the condition. This involves simple weekly exercises. It must be made clear that there is no solution without client contribution. For example, eight weeks of maintenance exercises might improve the condition, but only through continued dedication to a lifetime program will the solution materialize.

A typical physical therapy program for epicondylitis might involve many forearm dumbbell exercises such as wrist flexion and extension. While these movements might help heal a tendinopathy, it is necessary to be more specific. Some of the things I presume when assessing any dysfunction is that there are compromised movements relating to ignored muscle groups. For example, with epicondylitis we understand there is an imbalance between the flexors and extensors, but elbow flexion and extension are common movements in normal activities. While this does not mean we should ignore these movements in therapy, it does mean that this muscular group has some stability from movement. A less uncommon set of movements are radial and ulnar rotation, extension and flexion. These are the movements this article will focus on for epicondylitis therapy.

MUSCLE	ACTION	IMPORTANCE	RESISTANCE EXERCISE
Extensor digiti minimi, digitorum	Extends metacarpophalangeal joint, and in conjunction with the lumbricalis and interosseous, extends the interphalangeal joints of the little finger. Assists in abduction of the little finger.	Often weak at phalanges; affects lateral epicondyle upon extension/flexion. Second to fifth phalanges must be strengthened separately as well as forearm.	Rubber band extension; work thumb individually
Extensor carpi radialis longus/brevis, ulnaris	Extends and assists in abduction of the wrist. The longus also assists in flexion of elbow.	Weakness decreases wrist extension; affects lateral epicondyle	Wrist roller, counter-clockwise
Palmaris longus	Tenses the palmar fascia, flexes wrist, may assist in flexion of elbow.	Common flexor tendon attachment to medial epicondyle; weakness decreases ability to cup hand, weakness in wrist is transferred to medial epicondyle.	Wrist roller, clockwise; therapy ball
Flexor digitorum superficialis, profundus	Flexes the phalanges and wrist.	Often weak at phalanges; affects medial epicondyle upon flexion; weakness interferes with finger function. Profundus is the only muscle that flexes the distal interphalangeal joints, so it must be strengthened independently. Overuse flexion during active tendinopathy irritates medial epicondyle tendons.	Wrist roller, clockwise; therapy ball with extensive repetitions on third to fifth phalanges
Flexor carpi radialis, ulnaris	Flexes and abducts wrist, may assist in elbow flexion and pronation of the forearm.	Large wrist flexors are often weak; medial epicondyle involvement during flexion/extension.	Wrist roller, clockwise.
Pronator teres, quadratus	Pronates forearm, assists in flexion of elbow joint.	Often weak; affects integrity of medial epicondyle.	Radial/ulnar rotation with weight sleeve
Supinator, biceps brachii	Supinates the forearm.	Often weak; affects lateral epicondyle, many ligamentous attachments at elbow joint.	Radial/ulnar rotation with weight sleeve

Adapted by Tim Agnew from *Kinesiology: The Mechanics and Pathomechanics of Human Movement*. Carol A. Otis, Lippincott Williams & Wilkins 2004.

“When dealing with a chronic, painful condition, it’s not difficult to get client compliance; most are desperate to find a solution.”

FLEXIBILITY

The first step in treatment is to prepare the soft tissue by getting the circulation moving to the injured area. While therapy might include many other stretches, only two will be shown in this article.

All of these stretches are held for two seconds only, and they are always active (the client uses the opposite muscle groups to apply the stretch). The elbow is extended on these stretches to increase the pull on the epicondyles. To perform these movements, the client is seated or standing. It is best if you mirror the actual techniques and do these with her.

FLEXOR STRETCH:

palmaris longus, flexor carpi ulnaris, radialis, digitorum, and pollicis longus

The client locks the elbow and turns her palm up (Figure 1). The client uses extensor muscles to extend her hand down. She then gently stretches at the end movement with her other hand (Figure 2). Have the client repeat this stretch 8 to 10 times.

EXTENSOR CARPAL STRETCH:

extensor carpi radialis longus, pollicis brevis, minimi, digitorum, ulnaris and retinaculum

The client makes a tight fist, with his thumb on the inside. Again, the elbow is locked (Figure 3). Using the flexor muscles, the client flexes the fist down and stretches at the end movement. Repeat 8 to 10 times.

STRENGTHENING:

manual resistance, radial and ulnar rotation—brachioradialis, pronator teres and quadratus, biceps brachii, supinator

Manual resistance offers the therapist a simple way to help the client build strength without the use of free weights. It is important to strengthen muscle fibers by challenging them in every way that they move. The pronator teres and quadratus, as well as supinator and biceps brachii, are important muscles to strengthen in therapy. Collectively, they produce radial and ulnar rotation of the forearm and this is often one of the weakest

movements for the client.

With the client seated and her elbow bent at 90 degrees, sit on the involved side and place one hand at the elbow. This helps hold the arm in place during the exercise. With the other hand, “shake” the client’s hand, grasping it firmly (Figure 4a). Starting with the palms up, instruct the client to turn the palm down against your resistance (Figure 4b). This movement is *ulnar* rotation, or pronation of the forearm. Your resistance should be weak at first, always asking the client for feedback on pain level. A chronic tendinopathy will be tender, but it is important to work through the discomfort as it often subsides after a set or two. Perform 1 set of 10 and move to the next exercise.

In the same position, the client turns the palms down and rotates the hand until it is facing up as you apply resistance. (Simply perform the reverse of Figures 4a and 4b). This movement is *radial* rotation, or supination. Perform 1 set of 10 and alternate between ulnar rotation and radial rotation, performing up to three to four sets.

Figure 1. The following two exercises stretch the flexor muscles of the forearm. Have the client lock her elbow and turn her palm up.



Figure 2. She then contracts her extensor muscles to extend her hand down, gently stretching with her other hand.



Figure 3. The client makes a tight fist with his thumb on the inside. Make sure his elbow is locked.



Figure 4a and 4b. For these two exercises, the therapist's resistance is used to strengthen muscle fibers by challenging them in every way that they move.



Figure 5a. Lie on your side on a therapy table. Your elbow is bent at 90 degrees, and tucked under your side. **5b.** Begin rotating the hand into supination, taking care not to flex or extend the wrist.



SELF-CARE

The previous exercises are wonderful in a clinic environment, but how would you or your client perform these exercises? The first item that's needed is a steel sleeve of a dumbbell set. These are available at any sporting good store and weigh about 2 pounds.

Lie on your side on a therapy table. Your elbow is bent at 90 degrees, and tucked under your side (Figure 5a). Your wrist crease is at

the edge of the table, and your other hand is holding it down so no elevation is possible. The sleeve is held first with thumb *up*, and your grip position along the shaft can be adjusted if it is too difficult to perform the movements.

Begin rotating the hand into supination, taking care not to flex or extend the wrist (Figure 5b). Movement should be smooth and controlled. When you achieve full

supination, rotate the sleeve to the start position, but resist as you do so. Perform 8 to 10 repetitions.

Now begin with the thumb *down* (Figure 6a). This time the hand is rotated into pronation (Figure 6b). At the end movement, return to the start position, resisting the movement again. Perform 8 to 10 repetitions and alternate between the previous exercises for a total of three to four sets.

“For these exercises, perform 8 to 10 repetitions and alternate between the previous exercises for a total of three to four sets.”



Figure 6a. This time, begin with the thumb pointing down. **6b.** At the end movement, return to the start position with thumbs up, resisting the movement again.





Figure 7. Begin with a 2 to 3 pound weight. You can add more weight as you get stronger.



Figure 8. Grasping the tube with the weight on the floor, begin to roll the rope around the tube *clockwise*, pulling the weight up.

STRENGTHENING

STRENGTHENING THE WRIST AND FOREARM, WRIST ROLLER:

palmaris longus, flexor carpi ulnaris, radialis, digitorum, and pollicis longus; extensor carpi radialis longus, pollicis brevis, minimi, digitorum, ulnaris, and retinaculum

One of the most powerful ways to strengthen the forearms without performing 10 different exercises is to use a wrist roller. Every massage therapist should have one of these and be performing the following exercises on a weekly basis. The wrist roller is 14 inches long, 1 inch

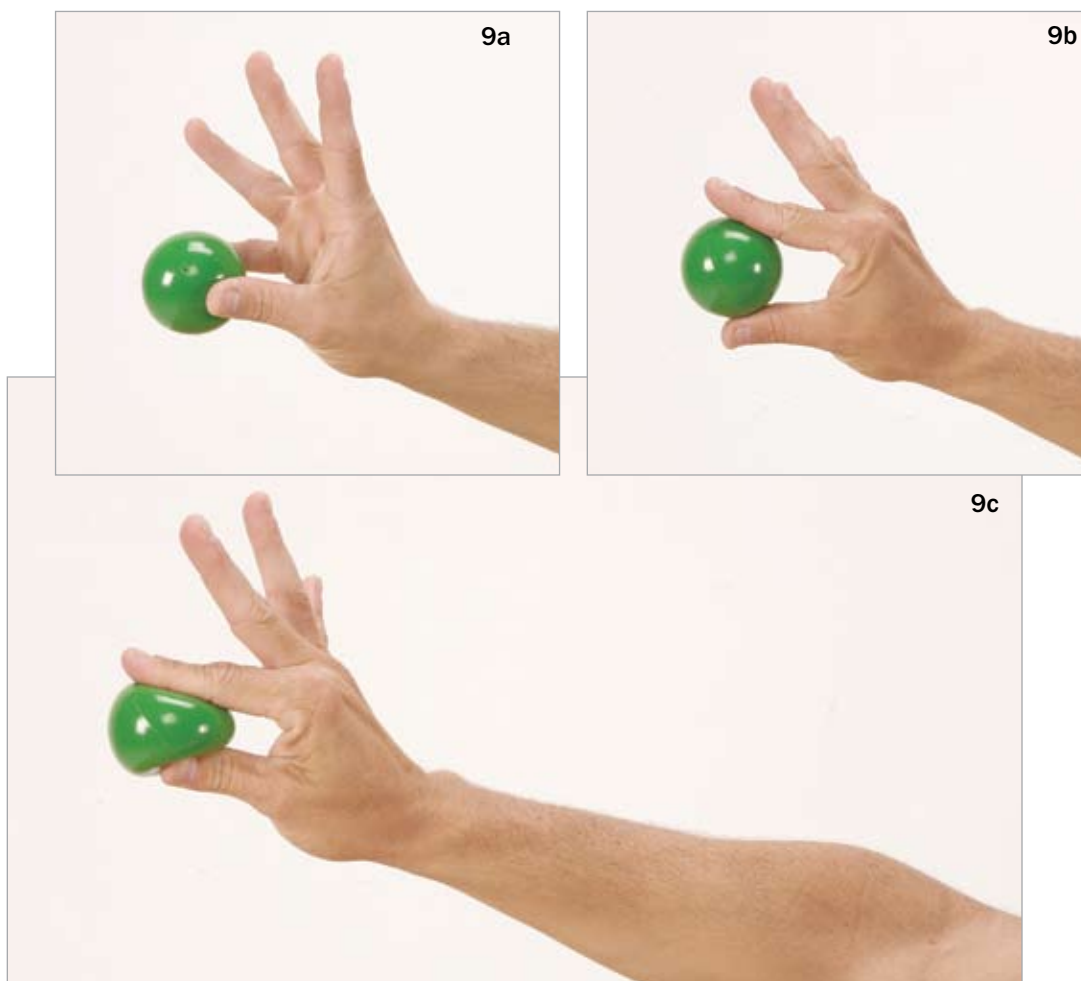
in diameter PVC pipe with a hole drilled into the center; it can be put together at any hardware store. A 5 foot- $\frac{1}{4}$ -inch rope holds a weight, and this is “rolled” up and down to strengthen the wrists dynamically. Begin with a light weight of 2 or 3 pounds, and add more as you get stronger.

Try this: Stand straight and extend your arms out in front of you (Figure 7). Grasping the tube with the weight on the floor, begin to roll the rope around the tube *clockwise*, pulling the weight up (Figure 8). This strengthens the *flexors* of the fore-

arms. You can drop your arms and relax before rolling the weight back down to the floor in the same controlled manner (*counterclockwise*). The down movement is an *eccentric* (lengthening) muscle contraction, so be sure to let the weight down slow to challenge the muscles.

Now, in the same start position, roll the tube *counterclockwise*, pulling the weight all the way to the tube. Slowly return it to the floor again. This *counterclockwise* movement strengthens the *extensors* of the forearm. Perform two to three sets of 10 in both directions.

Figure 9a,b,c. A client's first digit is usually strong, but as they move toward the fifth phalange it becomes very difficult. But challenging all of the digits individually—especially the pinky finger—has a dynamic affect on healing epicondylitis



RESISTANCE

RESISTANCE HAND BALL:

Phalanges: flexor digitorum superficialis and profundus, opponens digiti minimi, flexor pollicis longus/brevis, flexor digiti minimi, palmar interossei, lumbricales, and adductor pollicis

When I first introduced these exercises to an avid golfer, he was skeptical. “What does a squeeze ball have to do with curing my golf elbow?” he said. When I asked him to hold the ball with just his pinky finger and thumb, then squeeze, he closed his eyes in pain.

One of the secrets to solving epicondylitis is finding weaknesses in ignored areas. Resistance balls designed to increase grip strength are common with athletes. They are also employed for carpal tunnel syndrome and other wrist problems. But how can they help elbow conditions?

Flexor digitorum superficialis and profundus are important muscles to consider in treatment. They originate from the medial epicondyle and ulna, and insert at the phalanges. They flex the fingers and assist in flexion of the wrist, but our main concern is their effect on the epicondyle.

Ask most people to squeeze the ball and they can do it without much challenge. Ask them to squeeze the ball with an extended elbow using only one digit at a time and things change dramatically. (Try this yourself.) Their first digit is usually strong, but as they move toward the fifth phalange it becomes very difficult. But challenging *all* of the digits individually—especially the pinky finger—has a dynamic affect on healing epicondylitis (Figure 9a). Flexing the phalanges, especially with the elbow extended, causes a dramatic tension along the medial

epicondyle. In short, these muscles are strengthened along their attachments to the medial epicondyle.

Using a resistance ball (try to find one that has a spring to it, and stay away from the putty balls), have the client clasp it between the first finger and thumb (Figure 9b, start position). The elbow joint must be completely extended throughout the exercise or you will not isolate the proximal tendon attachments at the medial epicondyle. Ask them to slowly squeeze and release the ball (Figure 9c, end position). This is repeated 10 times on each finger, with more repetitions on the pinky. Often performing these simple exercises reduces pain almost instantly at the epicondyle because of the isolation of the muscles and tendons. The client should perform two to three sets of 10, and ask him or her to try these exercises while in the car or while watching TV, etc.

“The client has to take a proactive stance that lasts a lifetime, and you must empower them to do so.”

EXTENSION

PHALANGEAL EXTENSION, RUBBER BAND:

abductor pollicis brevis, extensor pollicis longus/brevis, abductor pollicis longus, abductor digiti minimi, dorsal interossei, extensor indicis, extensor digiti minimi, and extensor digitorum

In resistance training, it is beneficial to work opposite muscle groups, especially in cases of dysfunction. The last set of exercises worked the flexors of the hand, so now we will look at the extensors. These exercises focus on the phalangeal extensors and will be felt along the lateral epicondyle. All that is needed is a rubber band.

Begin by holding the rubber band so that it is wrapped around all the fingers and thumb (Figure 10a). The elbow is extended throughout the exercise. Now extend the fingers as far as you can against the resis-

tance of the rubber band, and at the end movement extend the wrist, too (Figure 10b). Try to hold the open position for two seconds; then slowly return to the start (closed finger) position. Repeat 8 to 10 times for two to three sets.

To strengthen thumb extension, it must be isolated because it is a saddle joint. While there are many other exercises for the thumb, we'll look at one for this article. This is an excellent exercise for de Quervain's syndrome. The rubber band is held by the pinky finger and wrapped around the palmar side of the hand (Figure 11a). The other end wraps around the thumb. Starting with the thumb flexed across the palmar surface, extend the thumb as far as possible (Figure 11b). Return to the start position and repeat. Like the previous exercise, the rubber band can be used in the car or during daily activities.

As massage therapists, these exercises can help keep your forearms in good condition for your treatments, and help you avoid a chronic problem. The next time you encounter a client with epicondylitis, try some of these different approaches. The most important part of any therapy is education. Clients need to learn about their conditions, and how they can maintain them. It is not up to you as a therapist to solve their dysfunction; you are merely the guide. The client has to take a proactive stance that lasts a lifetime, and you must empower them to do so. Chronic conditions such as epicondylitis require constant maintenance. But this does not mean eight hours per day of grueling exercises. Just 20 to 30 minutes every other day is all that is required once the injury has healed. ■

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Figure 10a. These exercises focus on the phalangeal extensors and may be felt along the lateral epicondyle. Begin by holding the rubber band so that it is wrapped around all the fingers and thumb



10b. With the elbow extended throughout the exercise, extend the fingers as far as you can against the resistance of the rubber band, and at the small caption spaces can explain how the position starts or finishes depending on what is shown in the photos



11a. This exercise helps strengthen thumb extension. Hold the rubber band by the pinky finger and wrap it around the palmar side of the hand.



11b. Starting with the thumb flexed across the palmar surface, extend the thumb as far as possible.

