

Common Injuries Series 1:  
Assessing and Treating the Most Common Injuries

# Assessment and Treatment of **Tennis Elbow**

by Dr. Ben Benjamin

## Introduction

These techniques are based on soft-tissue assessment and treatment principles pioneered by Dr. James Cyriax, with whom Dr. Benjamin, Founder of the Muscular Therapy Institute, studied in the 1970s. Dr. Benjamin's unique contribution has been to integrate this protocol with a strong understanding of the roles of friction therapy and other types of bodywork into a course of material that is presented in an easy-to-learn format for hands-on therapists. With this information, you'll be able to isolate and treat problems such as tendon and ligament injuries that often confuse and frustrate health practitioners. You'll also greatly enhance your palpation skills and refine your bodywork approach in general.

## General terminology

**Adhesive scar tissue formation** is a primary mechanism of chronic injury. When adhesive scarring occurs in an injured tissue, that structure is weakened, because scar tissue can be easily torn again and again. Our treatment protocols are designed to eliminate extraneous scar tissue formation and to help the new tissue become strong, organized, and mobile. This is discussed further in *Principles of Frictioning*. There are two types of scar tissue we work with:

- *Internal* — scarring within a particular ligament or tendon
- *External* — scarring that attaches the injured structure to another structure inappropriately

**Referred pain** is relatively common with injuries to central parts of the body, but rarely originates from distal parts of the extremities. In some parts of the body — notably the neck, shoulders, hips, and low back — the analysis of referred pain is an indispensable part of the assessment.

There are four rules of referred pain:

- Referred pain does not cross the midline of the body.
- Pain refers distally not proximally.
- Pain is referred within the dermatome.
- The distance pain refers is proportional to the severity of the injury.

**Ligament laxity** makes joints (and the ligaments themselves) unstable and more prone to injury. This is an extremely common problem and can be very serious, particularly when found in the ligaments of the ankle and the knee.

**Poor alignment** causes the affected structures to be injury-prone.

**Chronic muscle tension** creates a vulnerability to injury.

**Muscle spasm** is a secondary phenomenon to tissue injury.

## Pain in relation to assessment

Pain feels clear and specific when superficial tissues are injured. When a deeper structure is damaged, the pain is more amorphous (harder to pin down).

## Passive versus resisted tests

- *Passive tests* assess injuries to ligaments, joints, and bursae — passive structures
- *Resisted tests* assess injuries to tendons and muscles — contractile structures

## Assessment terminology

- A *major indicator*, also called a major sign, tells you what is injured and will be represented by the letters MI.
- An *auxiliary indicator* is helpful in steering you toward the correct conclusion, but is not as definitive as a major indicator. It will be represented by the letters AXI.
- *Minor indicators*, or minor signs, are test results that are potentially confusing. They're included in the presentation to head off this confusion. They will be represented by the letters mi (lower case).

## Effective treatments

**Friction therapy.** This is discussed more fully under *Principles of Frictioning*.

**Massage therapy.** Massage increases circulation and neuromuscular repatterning. It's extremely helpful in conjunction with friction and exercise therapy.

**Exercise therapy.** We'll be discussing specialized exercise programs that work extremely well to aid the healing of injured tendons and muscles. In some cases, we'll also discuss exercise programs that are helpful in recovering from other types of injuries.

### Injections

- *Corticosteroids* — These anti-inflammatory injections can be very useful in helping inflamed areas to heal, whether they're ligaments, tendons, joints, or bursae. Unfortunately, relatively few doctors are experts in using them; they need to be applied very precisely, which requires exceptional diagnostic skill.
- *Proliferants* — These injections are used to strengthen and tighten injured and loosened ligaments and tendons. Generally, a mixture of dextrose, xilocaine, glycerine, and phenol is used. Proliferants stimulate cells in the relevant tissues to multiply. Their effective application requires great skill. They're used to regenerate ligaments, tendons, bone, cartilage, and muscle.

**Manipulation of a loose body.** In some cases, manipulation by a chiropractor or osteopath can re-align bones and alter the position of a painfully trapped piece of chipped bone.

# Orthopedic Massage Training

## Soft Tissue Assessment and Treatment Techniques

### Outline of the nine-step training for each injury

The format of these learning programs is consistent from section to section. Here is what we do, in the order we generally follow:

- Pretest to see what you already know
- Review the anatomy of the relevant structures
- Draw all of the anatomical structures
- Learn the relevant assessment test protocols
- Palpate the relevant structure
- Learn the theory of the most common injury in that part of the body
- Learn treatment protocols for those injuries
- Learn therapeutic exercises for injuries where appropriate
- Posttest to see what you have learned

### I. Self-testing

#### Pretest

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6. \_\_\_\_\_
7. \_\_\_\_\_
8. \_\_\_\_\_
9. \_\_\_\_\_
10. \_\_\_\_\_

#### Posttest

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2. \_\_\_\_\_
3. \_\_\_\_\_
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10. \_\_\_\_\_

## II. Anatomy of the Elbow

Extensor carpi radialis brevis

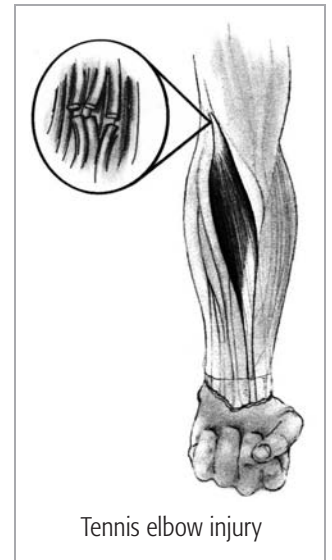
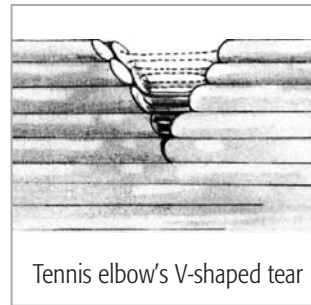
Tenoperiosteal junction

Tendon injury at the radial head

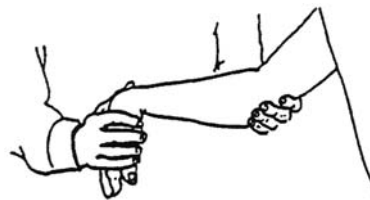
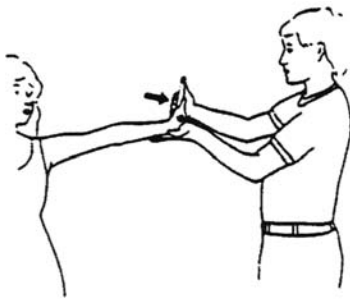
Muscle tendon junction

Muscle belly

Longus attachment on the supracondylar ridge of the humerus



## III. Tennis Elbow Tests



## IV. Theory

Major indicator

Pain on resisted extension of the wrist

Auxiliary indicators

Pain on passive flexion

Treatment

Friction therapy, massage therapy, exercise, injection

## V. Principles of Frictioning

Deep cross-fiber frictioning, or transverse friction massage, is a very precise form of medical massage developed by a legendary British orthopedic physician, Dr. James Cyriax. It is remarkably effective in treating most muscle, tendon, and ligament injuries. Of course, if the lesion (injury) site is inaccessible to the therapist's fingers, this treatment can't be applied, and another must be chosen.

When microscopic tears occur in muscles, tendons, and ligaments, scar tissue — a type of connective tissue — forms to mend the damaged structures. It does this in an indiscriminate fashion, so the resulting scar has much less integrity and uniformity of structure than the original tissue it replaces.

Cross-fiber friction therapy works by breaking down this adhesive scar tissue that prevents proper healing within muscles, tendons, and ligaments. It also separates ligament-to-bone adhesions and allows normal healing to occur. It promotes the formation of properly aligned and mobile tissue. Friction therapy also increases the blood supply to areas that normally have very little circulation. It accomplishes this through a mild, controlled trauma to the injury site.

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### Friction treatment protocol

When clients are receiving friction therapy, they should come for treatment two or three times per week. This consistency aids the correct formation of the tissue. In general, a fresh injury takes 4–6 weeks to heal with treatment, and a long-standing injury takes 8–12 weeks. These are, of course, generalizations, and the actual situation will vary according to: (1) the age of the injury; (2) whether it's a repetitive injury; (3) the client's general health; and (4) whether the client is able to avoid re-injury during the period of treatment and recovery. You can lessen the frequency of treatment as recovery proceeds.

You may begin treatment two or three days after a traumatic injury. Very little frictioning will be needed at this stage as not much scar tissue will exist. Thirty seconds to one minute of gentle friction should be all that's needed. In general, you won't see clients who are so recently injured. Most friction treatment will last between 5 and 15 minutes. The duration of the treatment depends on the client's tolerance, the severity of the injury, and the number of injured areas.

After you have frictioned a structure for 3 to 4 minutes, hyperemia sets in, and the area may become somewhat numb. At this time, you'll be able to work more deeply without producing excessive discomfort. If a structure is very sensitive, you can divide up the frictioning time into two or three short segments and intersperse it with icing, gentle movements of the structure, or other treatments.

Massage generally follows frictioning.

It's important to explain to your client what you're going to do. Explain that since your intention is to break up scar tissue, the treatment may be a little uncomfortable. Watch your client's face and breathing during the frictioning. Make sure that he or she knows to tell you if your pressure is too great — it pays to keep your client comfortable! Check in frequently during the treatment, especially if you suspect that your client may be reluctant to tell you to lighten up.

### Guidelines for frictioning

1. Bring the structure into an accessible position.
2. Use no lubricants. Frictioning is done dry.
3. The direction of friction strokes is across (perpendicular to) the fibers at the lesion site.
4. Apply pressure in one direction only (i.e., a complete friction stroke is composed of a movement done with pressure and an opposite movement done without pressure). You may alternate the direction of pressure as often as needed for your own comfort.
5. Your fingernails must be very short.
6. Use fingertips, thumbs, reinforced fingertips, and reinforced thumbs.
7. Alternate hand positions often during treatment.
8. Move your whole hand, not just your fingers.
9. "Snap through" the tendon, muscle, or ligament.
10. You may choose to move the client's body while your finger remains stationary, as in pronating and supinating the forearm while holding pressure on a wrist tendon.
11. The client's skin moves with your finger; don't slide over the skin while frictioning.
12. If a deeper part of the structure is injured, you'll need to press harder.
13. You'll usually be pressing the lesion against a bone when frictioning.
14. Be sure that the client is in a comfortable position so that you can perform the therapy without unnecessary stress.

It is quite possible to overtreat with friction. Tell your client that he or she may be sore for 1 to 2 days after treatment. If post-treatment soreness lasts longer than that, or if the client simply can't put up with the soreness, cut back on the pressure and/or duration of treatment.

Because this work is so precise and repetitive, you may find *yourself* getting sore. Build up your hand strength gradually by doing only short periods of frictioning and by exercising them to build strength.

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## Friction therapy

### Friction of the tenoperiosteal junction of the extensor carpi radialis brevis

Bend the client's arm at a 90-degree angle and supinate the forearm. While holding the forearm with one hand, place the thumb tip of your other hand at the lateral edge of the lateral epicondyle of the injured elbow. To check that your hand placement is correct, move your thumb medially onto the tendon and ask the client to raise and lower the hand, as in the test. If you are in the right place, the tendon will tighten under your thumb. Press down on the tendon attachment at the elbow and apply friction in a medial direction only. Repeat this for 5 to 10 minutes with interruptions as needed for the client's comfort. After frictioning, massage the entire arm extensively, especially the extensor surface of the forearm.



### Friction of the tendon body of the extensor carpi radialis brevis

Hold the elbow at a 90-degree angle to the upper arm — you do not have to maintain the forearm in supination. Slide your finger distally about a half-inch from the tenoperiosteal junction, so you're on the tendon body of the extensor carpi radialis brevis. Now place your thumb on the medial side of the tendon, apply a downward pressure, and move laterally until you flip over the tendon. You will feel a snap if you are doing it correctly. Friction at a 90-degree angle to the tendon. You can apply pressure in either direction.



### Friction of the muscle belly of the extensor carpi radialis brevis

Have the client lie supine. Place your fingertips on the extensor carpi radialis brevis muscle and anchor your thumb on the opposite side. Now pull through the muscle, gently moving perpendicularly through all of the muscle fibers.



### Friction of the extensor carpi radialis longus tendon

Position the client's forearm at a 90-degree angle to the upper arm. Place the tip of your thumb on the superior aspect of the lateral epicondyle. The tendon extends approximately one half-inch above this structure. Move your thumb superiorly to identify the supracondylar ridge. Perform friction on the anterior portion of the ridge. You can apply pressure in either direction.



## VI. Massage Techniques

Forearm flexor

Reverse forearm flexor

Forearm extensor

Reverse forearm extensor

Thumb pad circles

Thumb pad elbow

## VII. Tendon Injury Exercise Program (client instructions)

This program **MUST** be done every single day, seven days a week, or it will not work. It is usually done once a day at first, but should be done twice a day after about 2 weeks. You may feel slight discomfort afterward. If you feel any more than that, discontinue for one week, then try again.

Here are the five steps:

1. Warm up for 2 to 3 minutes — move the affected body part around.
2. Stretch the affected part five times for 20 to 30 seconds each time. Rest a moment between stretches.
3. Using a light weight, do three sets of 10 of the assigned exercise. Rest a moment between each set of 10 exercises. Ideally, the last set of 10 should cause slight fatigue or distress, and the first 20 should not.
4. Stretch five times for 20 to 30 seconds each, as in Step 2.
5. Apply ice or heat to the affected area for 5 minutes.

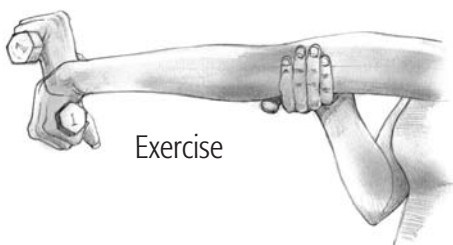
If the last 10 repetitions in Step 3 do not cause any fatigue or a sense of strain in the first session, add a pound the next day. Keep adding a pound a day until you get that feeling.

Do the exercise (Step 3) slowly for the first and second days. On the third, fourth, and fifth days increase the speed to a moderate tempo. On the sixth and seventh days, do the exercises quickly. Always stick to three repetitions of 10: 30 in all.

On the first day of the second week, increase the amount of weight to that which will cause slight tiredness in the last 10 repetitions. (This usually requires an increase of one or two pounds.) Of course, if the original weight is still causing you some distress, stay at that level a little longer. At the beginning of each new week, increase the weight again.

### Stretch and exercise for tennis elbow

**The stretch:** Stand beside a table and rest the back of your hand on the table with your elbow straight. Keeping the hand relaxed, apply a downward force until you feel a stretch through the forearm. Hold it for 30 seconds and repeat five times.



**The exercise:** Extend your arm in front of you, supporting your elbow. Hold a weight in your hand with your palm facing the floor. Lift your wrist up as far as it will go, then slowly bring it back to its original position.

