

## TENNIS ELBOW

### What Is Tennis Elbow?

Tennis elbow known as lateral epicondylitis is an injury to the muscles and tendons on the outside (lateral aspect) of the elbow that usually comes from overuse or repetitive use. It is not just seen in tennis players and occasionally can occur with an injury. Golfer's elbow known as medial epicondylitis occurs on the inner part of the elbow.



### Cause of Problem

#### Tennis Elbow

Tennis elbow is generally caused by overuse of the extensor tendons of the forearm in tennis players but also occurs with other overuse activities. Commonly experienced by the amateur player, this injury is often a result of (1) a one-handed backhand with poor technique (the ball is hit with the front of the shoulder up and power generated from the forearm muscles), (2) a late forehand swing preparation with resulting wrist snap to bring the racquet head perpendicular to the ball, or (3) while serving, the ball is hit with full power and speed with wrist pronation (palm turned downward) and wrist snap which increases the stress on the already taught extensor tendons.

**Most** patients with tennis elbow symptoms are **not** tennis players at all. Activities that require repetitive use of the elbow can often cause injury over time. However, sometimes patients will have pain without a history of repetitive use. This is mostly due to the normal aging process of tendons. As we age, tendons that are under high stress (elbow tendons, rotator cuff tendons, Achilles tendons) will tend to lose their blood supply. As the tendons lose their blood supply, they in turn lose their elasticity and healing potential. So, what may be perceived as normal everyday activity may actually injure a tendon that is not quite healthy.

#### Golfer's Elbow

Golfer's elbow is less common and usually occurs with wrist flexion activity and pronation (gripping like motion). Medial epicondylitis can result from (1) late forehand biomechanics where the player quickly snaps the wrist to bring the racquet head forward, (2) the back-scratch or cocking phase when serving, which places tremendous stress on the medial tissues of the elbow, (3) in the right elbow of a right-handed golf swing by throwing the club head down at the ball with the right arm rather than pulling

the club through with the left arm and trunk or (4) improper pulling technique with certain swim strokes, especially the backstroke (also referred to as "swimmers elbow"). It should be kept in mind that elbow overuse is not limited to those persons playing tennis, golf, baseball or swimming and can result from any activity that puts the inner or outer parts of the elbow under repetitive use and strain (e.g., hammering, turning a key, screw driver use, computer work, excessive hand shaking).

### **Rehabilitation-What You Can Expect**

It is important for you to wait to begin exercises only when you have minimal or no pain.

In general, the longer you have had symptoms, the longer it will take you to recover (up to 8 weeks).

### **Rehabilitation-What Should I Do, When Should I Do It, And How Epicondylitis often becomes a chronic problem if not cared for properly.**

Regaining full strength and flexibility is critical before returning to your previous level of sports activity.

In general, the rehabilitation process can be divided into three phases:

#### **PHASE 1**

*Goals:* decrease inflammation and pain, allow the tissues to heal, and avoid muscle atrophy.

**Rest** - this means avoiding further overuse not absence of activity. You should maintain as high an activity level as possible that do not cause pain. Absolute rest should be avoided as it encourages muscle atrophy, deconditioned tissue, and decreases blood supply to the area, all of which is detrimental to the healing process. Pain is the best guide to determine the appropriate type and level of activity.

**Ice** - is recommended as long as inflammation is present. This may mean throughout the entire rehabilitation process and return to sports. Ice decreases the inflammatory process slows local metabolism and helps relieve pain and muscle spasm.

#### **PHASE 2**

*Goals:* Improve flexibility, increase strength and endurance, increase activities and return to function.

##### Stretching

Gentle stretching exercises including wrist flexion (bending the wrist down), extension (bending the wrist up). The elbow should be fully straightened. These stretches should be held for 20-30 seconds and repeated 5-10 times, at least twice a day. Vigorous stretching should be avoided - do not stretch to the point of pain that reproduces your symptoms.



## Strengthening

With the elbow bent and the wrist supported perform the following exercises:

*Wrist Extension.* Place 1 lb. weight in hand with palm facing downward; support forearm at the edge of a table or on your knee so that only your hand can move. Raise wrist/hand up slowly, and lower slowly.

*Wrist Flexion.* Place 1 lb. weight in hand with palm facing upward; support forearm at the edge of a table or on your knee so that only your hand can move. Bend wrist up slowly, and then lower slowly (similar to exercise below).



*Combined Flexion/Extension.* Attach one end of a string to a cut broom stick or similar device, attach the other end to a weight. In standing, extend your arms and elbows straight out in front of you. Roll the weight up from the ground by turning the wrists.

*Forearm Rotation.* Grasp hammer (wrench, or some similar device) in hand with forearm supported. Rotate hand to palm down position, return to start position (hammer perpendicular to floor), rotate to palm up position, repeat. To increase or decrease resistance, by move hand farther away or closer towards the head of the hammer.



**Ball Squeeze.** Place rubber ball or tennis ball in palm of hand, squeeze. If pain is reproduced squeeze a folded sponge or piece of foam.

**Finger Extension.** Place a rubber band around all five fingers. Spread fingers 25 times, repeat 3 times. If resistance is not enough, add a second band or use a thicker band.



For all of the exercises (except combined flexion\extension) perform 10 repetitions 3-5 times a day. With the combined flexion/extension perform until you feel fatigue. **With all exercises use pain as your guide - all exercises should be pain free.**

**When to progress.** Begin with a 1 lb. weight and perform 3 sets of 10 repetitions. When this becomes easy, work up to 15 repetitions. Increase the weight only when you can complete 15 repetitions 3 times without difficulty. The axiom "No Pain No Gain" does **NOT** apply here.

After exercising, massage across the area of tenderness with an ice cube for about 5 minutes. You might also try filling a paper cup half-full with water and freeze; peel back a portion of the paper cup to expose the ice.

### PHASE 3

*Goals:* Improve muscular strength and endurance, maintain and improve flexibility, and gradually return to prior level of sport or high level activity.

Continue the stretching and strengthening exercises.

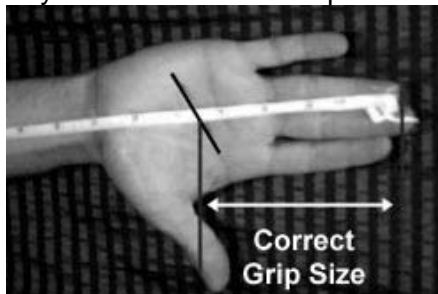
When your symptoms are resolved and have regained full mobility and strength, you may **gradually** increase your level of playing activity.

### Equipment Modifications

Using the wrong tennis racquet may have been a contributing factor to your injury. Guidelines for racquet selection for non-tournament players are provided below.

**Racquet material** - Graphite composites are currently considered the best in terms of torsion and vibration control.

**Head size** - A midsize racquet (95-110 square inches) is preferred. The popular oversized racquets cause problems because they make the arm susceptible to injury due to the increased



torque effect of shots hit off-center.

**String tension** - stay at the lower end of the manufacturer's recommendation. While higher string tensions provide improved ball control, it also increases the torque and vibration experienced by the arm.

**Stringing material** - synthetic nylon (re-string every 6 months).

**Grip size** - A grip too large or too small lessens control and promotes excessive wrist movement. To measure an appropriate grip size for your hand see image below.