

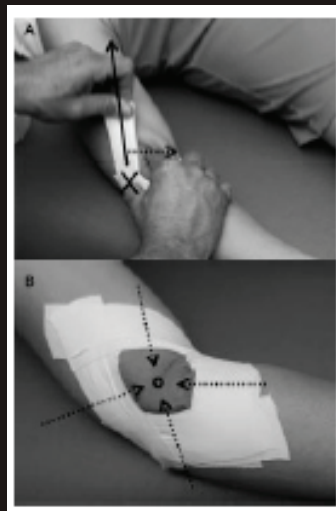
Exercise Program- Must be specific

- Research strongly supports the use of a **very specific** eccentric strengthening program. Often concentric exercise needs to be eliminated initially. The tendon responds to the mechanical forces of **eccentric exercise** by adapting its metabolism and structural/mechanical properties resulting in strengthening and healing. This eccentric exercise program needs to be done in a very-controlled fashion to ensure tendon repair and not further tendon breakdown.
- Stretching of tight, opposing flexor muscle groups can be implemented to decrease resistance, and can be done aggressively.
- Extensor muscle stretching can be helpful prior to performing the eccentric exercises to re-set muscle length. These stretches should be done less aggressively than the flexor stretches.
- If radial nerve involvement is indicated, gentle nerve "glides" can be helpful to treat mechanical entrapment.
- Movement re-education for proper form and motor training is found to be beneficial in reducing abnormal stress to the forearm and elbow. This may include core strengthening, rotator cuff re-education, or addressing lower extremity weakness.

Modalities - Ultrasound has been shown to accelerate the resolution of inflammation at a cellular level and is indicated for use over the lateral epicondyle. Ultrasound has also been shown to improve the tensile strength of the tendon. Electrical Stimulation can be beneficial in providing a "nerve-block" at the end of treatment to limit/prevent soreness from manual therapy or exercise treatment.

Supportive Braces - There are a large variety of braces available designed to treat tennis elbow. The effectiveness of the braces varies greatly, but the right brace can be very effective as an adjunct to treatment and to assist in return to full activity. If a brace is needed your Results therapist can assist you in finding one that is effective.

Taping - Specific taping techniques have been shown to decrease pain and increase the "pain-free grip strength measurements". Taping decreases the mechanical load on the extensor tendon mechanism, allowing healing to occur and limiting/decreasing the stress from aggravating activities.



1. Cleland JA, Whitman JM, Fritz JM. Effectiveness of manual physical therapy to the cervical spine in the management of lateral epicondylalgia: a retrospective analysis. J Orthop Sports Phys Ther. 2004 Nov;34(11):713-22; discussion 722-4.

Notes: The addition of cervical mobilization in lateral epicondylitis patients allowed good long term results in significantly fewer visits than local treatment alone.

2. Svernlöv B, Adolfsson L. Non-operative treatment regime including eccentric training for lateral humeral epicondylalgia. Scand J Med Sci Sports. 2001 Dec;11(6):328-34.

Notes: A group performing an eccentric training program were compared with a group performing contract-relax exercises. Both improved significantly, but the eccentric group had significantly better outcomes.

3. Vicenzino B, Cleland JA, Bisset L. Joint manipulation in the management of lateral epicondylalgia: a clinical commentary. J Man Manip Ther. 2007;15(1):50-6. Notes: Supports the use of specific manual therapy techniques. Compares a variety of studies and techniques. Joint mobilization/manipulation to the Cervical spine and to the elbow +/- wrist increases pain-free grip strength and decreases pressure-pain thresholds.

4. Vicenzino B, Brooksbank J, Minto J, Offord S, Paungmali A. Initial effects of elbow taping on pain-free grip strength and pressure pain threshold. J Orthop Sports Phys Ther. 2003 Jul;33(7):400-7.

Notes: Specific taping techniques were proven to get significant reduction in pain-free grip strength measures when compared with placebo taping and a control group.

results

PHYSIOTHERAPY

Results PT Treatment of Tennis Elbow/Lateral Epicondylitis

This is a clinical overview of the Results Physiotherapy assessment and treatment principles of tennis elbow utilizing a movement dysfunction and manual therapy approach.

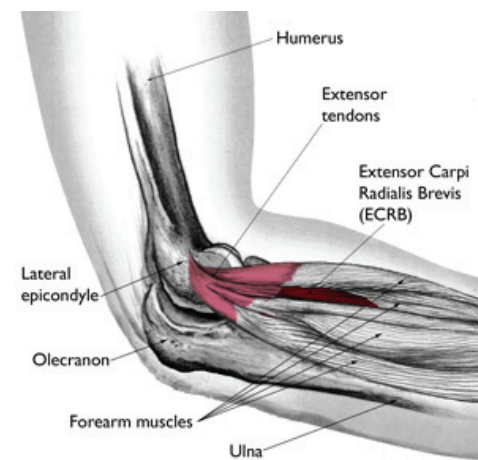
Background: Tennis Elbow or lateral Epicondylitis is a painful condition of the lateral elbow often associated with overuse. Treatment and management of this condition varies enormously partly because the pathology is not always understood. Historically this condition has been labeled as “tendonitis”, which means inflammation of the tendon. Tendon inflammation is rarely the cause of tendon pain. “Tendinosis” refers to micro tears in the tendon and is associated with overuse of the tendon. In the majority of cases this condition is **better described as tendinosis** and needs to be treated as an “overuse” condition rather than simply inflammation.

Conservative Treatment is effective in greater than 90% of cases.

Effective treatment involves activity modification and manual therapy intervention combined with a very specific exercise program to rehabilitate the tendon micro tears.

Anatomy

Lateral Epicondylitis, or tennis elbow, involves the muscles and tendons of the forearm. The forearm muscles extend your wrist and fingers and attach on the lateral epicondyle. The tendon usually involved in tennis elbow is called the Extensor Carpi Radialis Brevis (ECRB).



Cause

- Overuse: Typically related to repetitive activity either with sport: tennis, weight-lifting, golf or with occupation: keyboard entry, painters, plumbers, carpenters, auto-workers, cooks.
- Age: Most common between ages 30-50, but if related to poor technique can come on at any stage of life.
- Change In Activity: Frequently symptoms start after a change in type or frequency of activity; either sport, recreational or work-related.

Symptoms

- Normally begin slowly and gradually worsen over weeks or months.
- Pain or burning over the lateral elbow, sometimes extending down the forearm to the wrist.
- Loss of grip strength.
- Pain increased by forearm activities-such as shaking hands, holding a racquet, using a tool.

Tests/Diagnosis

- Diagnosis is based on signs and symptoms as X-rays are normally negative.

Results PT Assessment

The treatment for tennis elbow needs to be **individualized** to the patient and his/her presentation.

- Contributing factors including sports activity and work demands are assessed. Recent change in activity related to onset of symptoms is often found.
- Technique evaluation for sporting activity including swing analysis (golf), racquet grip (tennis), or workstation set-up (data entry, auto-workers, etc) may be indicated.
- Grip Strength is measured. **Pain-free grip strength has been proven by research to be a more effective measurement than maximal grip strength measurement.**
- With chronic pathology it is not uncommon to find **other structures involved** including: the elbow joint, the cervical spine or the radial nerve. These structures all need to be **assessed** to rule out their contribution to pain. Chronic muscle spasm can lead to mild/moderate radial nerve entrapment.
- Muscle Length Assessment - A common presentation is to find tightness in the flexor muscle group leading to increased resistance for the extensors which contributes to the tendon trauma. With this presentation stretches for the flexor muscles are more relevant than stretching of the extensor muscle groups.

Results PT Treatment

As described above conservative treatment will be successful in greater than 90% of cases. Better outcomes are achieved when treatment is initiated earlier. Anti-inflammatory medication and/or a local steroid injection are useful in conjunction with PT to assist in allowing a more progressive exercise program.

Relative Rest - A short period of rest from aggravating activities may be needed to initiate healing. Successful PT involves re-introducing activity gradually once the patient is responding to the eccentric exercise program.

Ice - Patient education in the use of ice is important. Ice should be applied immediately at the completion of aggravating activities (sport, work, etc).

Manual Therapy - Soft-tissue release techniques are applied to prevent adhesions at the tendon attachment, and to release tightness in the opposing muscle group (the flexors). Joint treatments may be applied at the cervical spine if involvement is indicated from the assessment. Joint mobilization to the elbow has been found to improve grip strength, decrease pain and improve function.

