

What treatment works best for tennis elbow?

Evidence-based answer

Topical or oral nonsteroidal anti-inflammatory medications (NSAIDs), corticosteroid injection, and acupuncture are more helpful than placebo in treating lateral epicondylitis, or tennis elbow (strength of recommendation [SOR]: **B**, multiple systematic reviews of randomized, controlled trials [RCTs] of limited quality and individual RCTs).

A corticosteroid injection is effective for short-term therapy—as long as 6 weeks—but produces no long-term

improvement. Physiotherapy or a wait-and-see approach are superior to corticosteroid injection at 52 weeks (SOR: **B**, RCTs).

There's insufficient evidence to support specific physiotherapy methods or orthoses (braces), shock wave therapy, ultrasound, or deep friction massage (SOR: **B**, multiple systematic reviews). Surgery may succeed in refractory cases that have failed extensive conservative measures (SOR: **C**, case series and expert opinion).

Clinical commentary

How about strengthening the extensor muscles?

Tennis elbow is one disorder that I see almost every day in my clinic or the sports medicine clinic. The age-old standard treatments are rest, ice, and NSAIDs, followed by corticosteroid injection if the condition doesn't improve in 3 to 4 weeks. Because these remedies are all symptomatic, not curative, we should look at the mechanism of injury to help design therapy.

The extensor muscle group of the forearm is weaker than the flexor group, which puts a lot of stress on the insertion of the extensor muscles—that is, the lateral epicondyle. For this reason, I've

been advocating exercises to strengthen the extensor muscles as a more long-term “cure” for lateral epicondylitis. When I didn't see any mention of extensor muscle strengthening exercises in this Clinical Inquiry, I searched the database and found that insufficient data exist to recommend for or against such exercises.

I agree that rest, ergonomic activity modification, and NSAIDs are the best initial treatments for lateral epicondylitis. However, more studies of extensor muscle strengthening need to be done because this approach may be very helpful in the long term.

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FAST TRACK

NSAIDs, corticosteroid injection, and acupuncture are helpful in the treatment of tennis elbow.

Evidence summary

NSAIDs: Benefits with limits

A Cochrane systematic review evalu-

ating the efficacy of topical and oral NSAIDs to treat lateral epicondylitis found that topically applied diclofenac

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One study that compared diflunisal with naproxen for tennis elbow found no difference in patients' perception of pain.

gel was more effective than placebo, as measured by overall patient satisfaction (relative risk [RR]=0.39; 95% confidence interval [CI], 0.23-0.66; number needed to treat [NNT]=3).¹ Topical diclofenac or benzydamine gel had a significant effect on the patient's perception of pain compared with placebo, but not beyond 4 weeks of therapy (weighted mean difference [WMD] on a 10-point scale=-1.88 points; 95% CI, -2.54 to -1.21). However, no difference was noted in functional outcomes, measured by grip or wrist extension strength.

Patients who used topical NSAIDs reported more adverse events than those using placebo, including minor skin irritation (RR=2.26; 95% CI, 1.04-4.94).¹

Oral NSAIDs relieve pain, but not as much as steroids

In the same review, oral diclofenac reduced pain scores at 4 weeks compared with placebo (WMD on 100-point scale=-13.9 points; 95% CI, -23.21 to -4.59).¹ Adequate studies are lacking to show a benefit of oral NSAIDs past 4 weeks. Significantly more complaints of abdominal pain occurred with oral diclofenac than placebo (RR=3.17; 95% CI, 1.35-7.41; number needed to harm [NNH]=5).¹

One study that directly compared diflunisal with naproxen for lateral epicondylitis found no difference between the therapies in patients' subjective perception of pain on a 5-point scale (RR=0.24; 95% CI, 0.03-1.89).¹ When oral NSAIDs were compared with steroid injections, patients receiving an injection reported more improvement in pain than patients who took an oral NSAID (RR=3.06; 95% CI, 1.55-6.06; NNT=4).¹

Corticosteroids more effective in short term than long term

A subanalysis of 4 studies in another systematic review found corticosteroid injections to be superior to other conservative treatments such as elbow supports, oral NSAIDs, and physiotherapy at 2 to

6 weeks (RR=0.50; 95% CI, 0.36-0.70).² The positive effects weren't maintained at 6 weeks.

In a randomized study with 3 treatment arms, 185 patients were treated with a corticosteroid injection, physiotherapy, or a wait-and-see approach (ergonomic advice, rest, and oral anti-inflammatory medication). Corticosteroid injections were significantly more effective for the patients' main complaint at 6 weeks compared with wait-and-see (mean difference in improvement [MDI] on a 100-point scale=24; 95% CI, 14-35; NNT=2) or physiotherapy (MDI=20; 95% CI, 10-31; NNT=2).³ By contrast, at 26 and 52 weeks' follow-up, physiotherapy was more effective than steroid injections (MDI=15; 95% CI, 5-25) but statistically equivalent to a wait-and-see approach (MDI=7; 95% CI, -4 to 17).

Physiotherapy, exercise, acupuncture bring short-term relief

In a separate RCT, physiotherapy and exercise were significantly better than a wait-and-see approach at 6 weeks for pain-free grip force, rating of pain severity, and global improvement (RR=0.5; 99% CI, 0.2-0.8; NNT=3), but by 52 weeks the outcomes were statistically equal.⁴

An individual RCT, cited in a Cochrane review, showed acupuncture had a very short-term benefit for pain relief compared with placebo (WMD=18.8 hours; 95% CI, 10.1-27.5).⁵ Another individual RCT, which was not included in the meta-analysis because of methodologic problems in the other studies, found that a short course of 10 acupuncture treatments resulted in an excellent or good outcome (as reported by participants) compared with placebo (RR=0.09; 95% CI, 0.01-0.64; NNT=4).⁵ No benefit was noted after 3 or 12 months.

Physiotherapy techniques, orthotics are hard to evaluate

Systematic reviews of specific physiotherapy or orthotic (bracing) treatments are hampered by the large number of

treatment options available and the heterogeneity of the available studies, which prevent statistically useful evaluation.^{6,7}

Shock wave, ultrasound, massage offer little or no benefit

In a meta-analysis of 3 trials, shock wave therapy provided no significant benefit at 4 to 6 weeks compared with placebo (WMD on a 100-point scale=-9.42; 95% CI, -20.70 to 1.86).⁸ Pooling 2 studies in a different systematic review showed weak evidence that ultrasound reduced pain at 13 weeks compared with placebo (standardized mean difference=-0.98; 95% CI, -1.64 to -0.33).⁶ Another Cochrane review found no added benefit in function from combining deep transverse friction massage with ultrasound or a placebo ointment (RR=3.3; 95% CI, 0.4-24.3).⁹

Recommendations

The Work Loss Data Institute recommends ice, rest, ergonomic modifications, and short-term topical or oral NSAIDs. Progressive physical or occupational therapy may follow if no improvement is seen in 2 weeks.

Splinting, acupuncture, and corticosteroid administration by injection or iontophoresis may reduce pain for as long as 2 to 6 weeks. If these conservative measures fail, surgical treatment is recommended as a last resort.¹⁰ ■

References

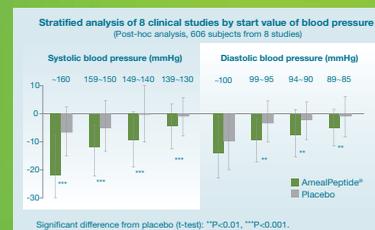
- Green S, Buchbinder R, Barnsley L, et al. Non-steroidal anti-inflammatory drugs (NSAIDs) for treating lateral elbow pain in adults. *Cochrane Database Syst Rev.* 2001;(4):CD003686.
- Smidt N, Assendelft WJ, van der Windt DA, et al. Corticosteroid injections for lateral epicondylitis: a systemic review. *Pain.* 2002;96:23-40.
- Smidt N, van der Windt DA, Assendelft WJ, et al. Corticosteroid injections, physiotherapy, or a wait-and-see policy for lateral epicondylitis: a randomised controlled trial. *Lancet.* 2002;359:657-662.
- Bisset L, Beller E, Jull G, et al. Mobilisation with movement and exercise, corticosteroid injection, or wait and see for tennis elbow: randomised trial. *BMJ.* 2006;333:939.
- Green S, Buchbinder R, Barnsley L, et al. Acupuncture for lateral elbow pain. *Cochrane Database Syst Rev.* 2002;(1):CD003527.
- Smidt N, Assendelft WJ, Arola H, et al. Effectiveness of physiotherapy for lateral epicondylitis: a systematic review. *Ann Med.* 2003;35:51-62.
- Struijs PA, Smidt N, Arola H, et al. Orthotic devices for the treatment of tennis elbow. *Cochrane Database Syst Rev.* 2002;(1):CD001821.
- Buchbinder R, Green SE, Youd JM, et al. Shock wave therapy for lateral elbow pain. *Cochrane Database of Syst Rev.* 2005;(4):CD003524.
- Brosseau L, Casimiro L, Milne S, et al. Deep transverse friction massage for treating tendinitis. *Cochrane Database Syst Rev.* 2002;(4):CD003528.
- Chapell R, Turkelson CM, Coates V, et al. *Diagnosis and Treatment of Worker-Related Musculoskeletal Disorders of the Upper Extremity.* Evidence Report/Technology Assessment Number 62 (prepared by ECRI, Health Technology Assessment Group under contract no. 290-97-0020). AHRQ Publication no. 02-E038. Rockville, Md: Agency for Healthcare Research and Quality; December 2002. Available at: <http://www.ncbi.nlm.nih.gov/books/bv.fcgi?rid=hstat1a.chapter.29294>. Accessed June 8, 2007.



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