**Gunduz R, Malas F, et al. Physical therapy, corticosteroid injection, and extracorporeal shock wave treatment in lateral epicondylitis. Clinical and ultrasonographical comparison. Clin Rheumatol. 2012;31(5);807-12.**

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Design: randomized clinical trial

Purpose of study: to compare the effectiveness of physical therapy (PT), corticosteroid injection, and extracorporeal shock wave treatment (ESWT) in lateral epicondylitis (LE)

Population/sample size/setting:

* 59 patients (21 men, 38 women, mean age 45) treated for LE at a physical medicine and rehabilitation clinic in Ankara, Turkey
* Eligibility criteria were less than 3 months of pain on the lateral side of the elbow severe enough to interfere with daily living activities, tenderness over the lateral epicondyle compared with that of the normal elbow, and pain during extension of wrist and fingers against resistance
* Exclusion criteria were previous treatment for ipsilateral LE, other elbow pathologies, cervical vertebrae/upper limb disorders, previous elbow surgery, joint limitations due to a previous radius/ulna fracture, osteoporosis, malignancy, hemophilia, neurological deficits in the ipsilateral upper limb, and cognitive dysfunction

Interventions:

* Randomization was to one of three groups: PT (n=19), steroid injection (n=20), or ESWT (n=20)
	+ PT group received 10 sessions of modalities including 15 minutes of hot pack, 5 minutes of ultrasound (1 W/cm2 ), and 5 minutes of friction massage
	+ Steroid group received a single injection of 20 mg methylprednisolone and 1 ml prilocaine
	+ ESWT group received ten sessions of ESWT with pressure of 1.4 atmospheres, 4.0 Hz, 500 pulses per session, with a 1 day interval between sessions

Outcomes:

* The authors reported data for VAS pain, grip strength, and pinch strength at baseline, 1 month, 3 months, and 6 months
* Changes in these outcomes were similar between the groups at the followup appointments
* However, it is not clear which outcome was considered to be primary, and the results are given in terms of within-group improvements in grip strength and VAS but without numerical data for between-group differences
* Pinch strength did not improve between baseline and the six month followup

Authors’ conclusions:

* PT, steroid injection, and ESWT have similar benefits for lateral epicondylitis, with improvements in pain and grip strength but not in pinch strength

Comments:

* The presentation of outcome data is lacking in clarity and in between-group comparisons; presenting within-group changes separately is not a substitute for presenting group differences with confidence intervals
* The lack of a primary outcome is another problem; the authors also reported sonographic measurements of thickness and echogenicity of the common extensor tendon at baseline and at 6 months, but it is not clear whether this was expected to contribute to understanding the comparative effectiveness of the three treatment groups

Assessment: inadequate for evidence of the comparative effectiveness of PT, steroid injection, and ESWT for treating lateral epicondylitis