



## Medicines Evidence Commentary

commentary on important new evidence from Medicines Awareness Weekly

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### Effect of corticosteroid injection, physiotherapy or both on clinical outcomes in people with tennis elbow

#### Document as included in MAW

A small, randomised controlled trial in adults with unilateral tennis elbow has found that there was a worse clinical outcome 1 year after corticosteroid injection compared with placebo, despite its short term benefits. Physiotherapy compared with no physiotherapy had no effect on clinical outcomes after 1 year, although there were short term benefits. Further research is needed to guide practice.

#### Overview and current advice

Tennis elbow is characterised by pain in the region of the lateral epicondyle (the outside aspect of the elbow), which is exacerbated by active and resisted movements of the extensor muscles of the forearm. Tennis elbow is common (population prevalence 1–3%) and usually occurs after minor or unrecognised trauma of the forearm extensor muscles (despite its name, racquet sports are the cause in only around 5% of people with tennis elbow). The usual duration of a typical episode of tennis elbow is between 6 months and 2 years but it is a condition that frequently recurs. Peak incidence occurs between 40 and 50 years of age (see the [NICE Clinical Knowledge Summary on tennis elbow](#)).

Recommendations on management are available in the [NICE Clinical Knowledge Summary on tennis elbow](#). The initial recommended treatment is to modify the activities that cause symptoms (if possible) and to use analgesics such as a non-steroidal anti-inflammatory drug (NSAID) or paracetamol (with or without codeine). If symptoms persist other options that can be considered include corticosteroid injection, physiotherapy or use of an orthosis (forearm band).

#### New evidence

An [Australian randomised controlled trial](#) has investigated the effectiveness of corticosteroid injection, physiotherapy or both in 165 adults 18 years of age and older (mean age 50 years, 38% women) with unilateral tennis elbow of longer than 6 weeks' duration. People who had received a corticosteroid injection in the previous 6 months or physiotherapy in the previous 3 months were excluded from the study.

Participants were [randomised](#) in approximately equal numbers to 1 of 4 treatment groups:

- corticosteroid injection: 10 mg triamcinolone (1 ml) plus 1 ml of 1% lidocaine (n=43)
- placebo injection: 0.5 ml isotonic saline (n=41),
- corticosteroid injection plus multimodal physiotherapy (n=40)
- placebo injection plus multimodal physiotherapy (n=41).

It is not clear if [allocation was concealed](#). The injection was given within 10 days of randomisation. Physiotherapy consisted of 8 sessions of treatment, 30 minutes each over an 8 week period, with the first session scheduled prior to the injection. Participants in the physiotherapy groups were also given a home exercise programme. All participants received standardised advice to avoid activities that caused or provoked pain and to refrain from performing strenuous activity for 2 weeks after receiving their injection. Participants could use analgesic or anti-inflammatory medication, heat or cold packs, or braces as needed.

The researcher who assessed outcomes and performed the intention-to-treat analysis was blinded to both injection and physiotherapy assignment. Participants were blinded to injection type (corticosteroid or placebo) but not to physiotherapy allocation (yes or no).

Participants estimated their global rating of change using a 6-point Likert scale, which ranged from 'complete recovery' to 'much worse'. The 2 co-primary outcomes were patient-rated 1-year global change scores for complete recovery or much improvement; and 1-year recurrence (defined as complete recovery or much improvement at 4 weeks but not at 8, 12, 26 or 52 weeks or complete recovery or much improvement at 8 weeks but not at 12, 26 or 52 weeks). Secondary outcomes included patient-rated global change scores for complete recovery or much improvement at 4 weeks. Because of the multiple comparisons, the [p](#) value for statistical significance was taken as less than 0.01, instead of the more usual 0.05, and correspondingly, **99%** [confidence intervals](#) (CI) were calculated instead of the more usual 95% CI.

At 1 year, there was no statistically significant interaction between the type of injection participants received and whether or not they received physiotherapy ( $p=0.99$ ). Consequently, the primary outcomes were reported for the 2 corticosteroid groups (with or without physiotherapy) combined compared with the 2 placebo injection groups combined, and similarly for the comparison of physiotherapy or no physiotherapy. The results were as follows:

- Participants who received corticosteroid injection were statistically significantly **less** likely to have complete recovery or much improvement at 1 year compared with those who received placebo (83% versus 96% respectively; [relative risk](#) [RR] 0.86; 99% CI 0.75 to 0.99;  $p=0.01$ ). There was also a higher incidence of recurrence in the corticosteroid injection groups compared with those in the placebo groups (54% versus 12% respectively; RR 0.23; 99% CI 0.10 to 0.51;  $p<0.001$ ).
- There were no statistically significant differences between the participants who received physiotherapy and those who did not for complete recovery or much improvement at 1 year (91% versus 88% respectively; RR 1.04; 99% CI 0.90 to 1.19;  $p=0.56$ ) or recurrence (29% versus 38% respectively; RR 1.31; 99% CI 0.73 to 2.35;  $p=0.25$ ).

Similar results were seen at 26 weeks. However, at 4 weeks, there was a statistically significant interaction between the 2 treatments:

- Among participants who were **not** receiving physiotherapy, receiving a corticosteroid injection was **more** likely to produce complete recovery or much improvement

compared with receiving placebo (71% versus 10%; RR 7.32; 99% CI 2.1 to 25.5;  $p < 0.001$ ).

- Among participants receiving physiotherapy, receiving a corticosteroid injection produced no statistically significant effect (at the level of statistical significance chosen) on their chance of complete recovery or much improvement compared with receiving placebo (68% versus 39%; RR 1.73; 99% CI 0.97 to 3.08;  $p = 0.02$ ).

Similarly, among participants who had received a corticosteroid injection, receiving or not receiving physiotherapy produced no statistically significant effect on their chance of complete recovery or much improvement at 4 weeks (RR 0.95, 99% CI 0.65 to 1.38,  $p = 0.57$ ). However, those who received placebo injection were more likely to have complete recovery or much improvement at 4 weeks if they received physiotherapy (RR 4.00, 99% CI, 1.07 to 15.00,  $p = 0.004$ ).

A number of limitations to the study were highlighted by the authors. They comment that the results may not be generalised to other clinical contexts where treatments may be combined in a different sequence, for example corticosteroid injection for people who have not recovered after a period of 'wait and see' or physiotherapy. In addition, the study population was limited to unilateral tennis elbow and excluded people with significant neck or other upper limb symptoms. Tennis elbow may present bilaterally or be associated with concomitant symptoms of the neck or upper limb. They also comment that the lack of patient and therapist blinding to physiotherapy may have biased estimates of the benefit of physiotherapy. In addition, although the study authors conducted a power analysis, the small size of the study groups limits the conclusions that can be drawn from the results.

### **Commentary provided by Linda Chesterton, Academic physiotherapist and Senior Lecturer Arthritis Research UK Primary Care Centre, Keele University**

This is the first trial to evaluate the individual and combined effects of steroid injections with physiotherapy over the long term and has a strength of high retention (99.8%) of patients at the primary follow up, plus the consistency of the findings across both primary and secondary outcome measures. The long term findings from this study generally confirm results from previous studies that corticosteroid injections can produce reductions in pain in the short term but are associated with poorer long term outcomes<sup>(2-4)</sup>. This is, therefore, unlikely to change current recommended practice. Nevertheless the finding that physiotherapy and injection combined provided no beneficial long term effect and reduced the beneficial short term effects from steroid injection is new and may influence the choice to offer these combined treatments.

Generalisation of the results needs to consider the characteristics of the study population. The authors highlight the findings are likely to be the best case scenario in terms of outcomes for the wider tennis elbow clinical population and especially may not apply to those with previous failed treatments or treatments delivered in a different manner /order. A key finding is that 90% of patients in the study reported complete recovery or much improvement over 12 months regardless of the intervention possibly reflecting the natural history of the condition.

## Study sponsorship

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## References

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