

Addition of a Novel Eccentric Wrist Extensor Exercise to Standard Treatment for Chronic Lateral Epicondylitis: A Prospective Randomized Trial

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Objective: Isokinetic eccentric training of the wrist extensors has been shown to be effective in treating chronic lateral epicondylitis.¹ However, isokinetic dynamometry is not widely available or practical for daily exercise. The objective of this study was to assess the efficacy of a novel eccentric wrist extensor exercise added to standard treatment for chronic lateral epicondylitis.

Methods: Patients with chronic lateral epicondylitis were randomized into an eccentric group (6 men, 5 women; age 47 ± 2 yr) or a standard treatment group (4 men, 6 women; age 51 ± 4 yr). Both groups received wrist extensor stretching, ultrasound, cross-friction massage, heat and ice. The Standard Treatment Group performed isotonic wrist extensor strengthening and the Eccentric Group performed isolated eccentric wrist extensor strengthening, which involved twisting a rubber bar with concentric wrist flexion of the noninvolved arm and releasing the twist with eccentric wrist extension of the involved arm (3 x 15 daily). DASH questionnaire, visual analog pain scale (VAS), tenderness (myometer just distal to the lateral epicondyle), and wrist and middle finger extension strength (hand-held dynamometer) were recorded at baseline and after the treatment period. Treatment effects were assessed using Treatment Group by Time ANOVA. Based on previous work² it was estimated that 15 patients per group would be sufficient to detect a 40% difference in DASH score improvement between groups ($P < .05$, 80% power).

Results: Groups did not differ in duration of symptoms (Eccentric 6 ± 2 mo vs. Standard 8 ± 3 mo, $P = .7$), physical therapy visits (9 ± 2 vs. 10 ± 2 , $P = .81$) or treatment duration ($7.2 \pm .8$ wk vs. $7 \pm .6$ wk, $P = .69$). Improvements in all dependent variables were greater for the Eccentric Group versus the Standard Treatment Group (percent improvement reported): DASH 76% vs. 12%, $P = .01$; VAS 81% vs. 22%, $P = .002$, tenderness 70% vs. 4%, $P = .003$; strength (wrist + middle finger) 72% vs. 11%, $P = .032$.

Conclusions: All outcome measures for chronic lateral epicondylitis were markedly improved with the addition of an eccentric wrist extensor exercise to standard physical therapy. Given the consistently poor outcomes for patients in the Standard Treatment Group it was deemed appropriate to terminate the randomization with 21 patients having completed the study. This novel exercise, using an inexpensive rubber bar, provides a practical means of adding isolated eccentric training to the treatment of chronic lateral epicondylitis.