

Goodyear-Smith F, Arroll B. What can family physicians offer patients with carpal tunnel syndrome other than surgery? A systematic review of nonsurgical management. *Ann Fam Med.* 2004;2:267-273.

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### Appendix 3. Study Outcomes

Study Details	Participants	Intervention	Outcomes
<b>Aigner &amp; Fialka, 1998<sup>1</sup></b>			
Single-blind RCT	N = 26 E = 13 C = 13	E = laser acupuncture C = placebo acupuncture	E had significant preoperative reduction in nocturnal pain but not paraesthesia compared with C
<b>Carter et al, 2002<sup>2</sup></b>			
RCT	N = 30 E = 15 C = 15	E = 1,000-G magnet disk applied to carpal tunnel area for 45 min C = placebo disk of identical appearance	Both E and C had significant decrease in pain using visual analogue scale during 45-min application; effect detectable after 2/52  No difference in effect between E and C
<b>Chang et al, 1998<sup>3</sup></b>			
RCT	N = 73 patients E1 = 16 E2 = 18 E3 = 23 C = 16	E1 = diuretic E2 = NSAID-SR E3 = prednisone oral 20 mg reduced to 10 mg C = placebo All for 4 wk	No significant reduction in symptom measures from baseline to 4th-wk assessment for diuretic, NSAID, or placebo  Significant reduction in mean score at 4 wk for steroid group
<b>Dammers et al, 1999<sup>4</sup></b>			
RCT	N = 60 patients E = 30 C = 30	E = injection, 40 mg methylprednisolone + 10 mg lignocaine C = injection, 10 mg lignocaine	Good-quality study Trial stopped at 1 mo to offer C the injection. 20/24 (86%) responded but 10 (50%) required surgery within 1 y  At 1-y follow-up, 8/23 successfully treated patients (asymptomatic (35%) at 1 mo) required 2nd injection  Local steroid affords only temporary relief

Study Details	Participants	Intervention	Outcomes
<b>Davis et al, 1998<sup>5</sup></b>			
Single-blind RCT	N = 91 E1 = 46 E2 = 45	E1 = NSAID (ibuprofen 800 mg twice a day for 1 wk; as needed to tds for 7 wks) + nocturnal splint  E2 = chiropractic treatment (manipulation 3 times for 1 wk; 2 times a week for 3 wk; 1 time per week for 4 wk) + nocturnal splint	No significant difference in the 2 treatment groups after 9 wk
<b>Ebenbichler et al, 1998<sup>6</sup></b>			
RCT	N = 60 hands (30 patients) E = 30 hands C = 30 hands Mild to moderate CTS	E = One wrist ultrasound 15 min per session C = other wrist sham ultrasound	Favorable response rate 68% patients E had significant improvement on sum of subjective symptom scores ( $P < .001$ ); NNT 1.9 Grip strength ( $P < .0005$ ) NCS motor ( $P < .0005$ ) NCS sensory ( $P = .001$ )
<b>Elbaz et al, 1994<sup>7</sup></b>			
RCT	N = 54 hands (37 patients) Numbers in E and C not stated Mild CTS	E = Injection 3 mg betamethasone C = injection normal saline	No significant differences between E and C for clinical and NCS parameters
<b>Feuerstein et al, 1999<sup>8</sup></b>			
Systematic review	Reviewed 6 studies Studies not graded but reported as all being methodologically flawed	Studies compared different splinting regimes No studies of splint vs no splint	1 study indicated neutral angle provided superior symptom relief to 20 degrees extension and relief did not often improve between 2 wk and 2 mo of wear <sup>34</sup>
<b>Garfinkel et al, 1998<sup>9</sup></b>			
RCT (single blinded)	N = 67 hands (42 patients) E = 35 hands (22 patients) C = 32 hands (20 patients)	E = yoga program plus current treatment C = splint plus current treatment	E had significant improvement in Phalen's sign ( $P = .008$ ), grip strength ( $P = .009$ ), and pain reduction by visual analogue scale ( $P = .02$ ) Improvement was not significant in Tinel's sign, sleep disturbance, or NCS

Study Details	Participants	Intervention	Outcomes
<b>Herskovitz et al, 1995<sup>10</sup></b>			
RCT	N = 15 E = 6 C = 9	E = Oral prednisone 20 mg/d for 1 wk then 10 mg/d for 1 wk C = placebo	Significant improvement in E symptom scores (pain, numbness, paresthesias, weakness, nocturnal awakening) at 2 wk ( $P < .05$ ) but no difference between E and C at 4 and 8 wk (after treatment discontinued)
<b>Marshall et al, 2001<sup>11</sup></b>			
Systematic review	Reviewed 2 RCTs that included clinical improvement as outcome <sup>12,13</sup>	E = Local steroid injection C = placebo	Local corticosteroid injection has short-term benefit
<b>O'Gradaigh &amp; Merry, 2000<sup>14</sup></b>			
RCT	N = 123 E1 = 32 E2 = 32 C = 20 E3 = 18 E4 = 21	Phase 1 E1 = 25 mg hydrocortisone E2 = 100 mg hydrocortisone C = no injection Phase 2 E3 = 20 mg triamcinolone E4 = 100 mg hydrocortisone	Significant improvement in symptom improvement with both doses hydrocortisone vs no injection
<b>Ozdogan &amp; Yazici, 1984<sup>12</sup></b>			
RCT	N = 37 patients E = 18 C = 19 All female	E = 1.5-mg injection betamethasone in carpal tunnel and 0.5-mL normal saline in deltoid muscle on same side C = 0.5-mL normal saline in carpal tunnel and 1.5-mg injection betamethasone in deltoid muscle on same side	Significant improvement in E by clinical assessment and Tinel's and Phalen's signs at 1 mo, but at 10- to 12-mo follow-up, only 4 (22%) of E were symptom-free Local steroid affords only temporary relief
<b>Oztas et al, 1998<sup>15</sup></b>			
RCT	N = 30 hands (18 patients) E1 = 10 hands (7 patients) E2 = 10 hands (9 patients) C = 10 hands (9 patients)	E1 = 1.5 W/cm <sup>2</sup> ultrasound E2 = 0.8 W/cm <sup>2</sup> ultrasound C = 0.0 W/cm <sup>2</sup> ultrasound For 5 min, 5 d/wk for 2 wk	No significant difference in pain symptoms or NCS between E1, E2 or C Nonsignificant negative effect on motor NCS in both E1 and E2

Study Details	Participants	Intervention	Outcomes
<b>Rozmaryn et al, 1998<sup>16</sup></b>			
Before-after case study using historical controls	N = 240 hands (197 patients) E = 93 patients (1998-1991) C = 104 patients (1992-1993)	E = Nerve and tendon gliding exercises plus traditional treatment (eg, splinting, NSAID, steroid injections) C = traditional treatment only	No significant difference between E and C for Phalen's sign ( $P = .11$ ), Tinel's sign ( $P = .29$ ), or NCS ( $P = .53$ ) E had significantly reduced rates of surgery ( $P = .0001$ ), NNT 3.6
<b>Spooner et al, 1993<sup>17</sup></b>			
RCT	N = 35 hands (21 patients) E = 18 hands C = 17 hands	E = 200-mg pyridoxine C = placebo	E had significantly reduced finger swelling ( $P < .05$ ) and discomfort after movement ( $P < .001$ ) but no difference in nocturnal pain, numbness; Phalen's or Tinel's signs, or NCS
<b>Stransky et al, 1989<sup>18</sup></b>			
RCT	N = 15 E = 6 C1 = 5 C2 = 4	E = pyridoxine 200 mg od C1 = placebo C2 = no treatment 2 patients had crossover for 2 wk	No significant difference between E and C in either clinical symptoms or NCS
<b>Walker et al, 2000<sup>19</sup></b>			
RCT	N = 24 E = 11; C = 13	Use of hemoplastic, custom-molded, neutral wrist splint E = instructed full-time use C = group nighttime only	No difference in measures of symptom severity or functional deficit between 2 groups E had significantly more improvement in NCS (distal latency motor $P = .04$ and sensory $P = .05$ )
<b>Wong et al, 2001<sup>20</sup></b>			
RCT Steroid injection vs oral steroid	N = 60 E1 = 30 E2 = 30	E1 = 15-mg methylprednisone injection plus oral placebo for 10 d E2 = 2 5-mg oral prednisone for 10 d plus placebo injection	Significant improvement in symptoms for injection group at 8 wk ( $P = .002$ ) and 12 wk ( $P = .004$ )

N = number of participants; E = experimental group; C = control group; NSAID = nonsteroidal anti-inflammatory drug; SR = sustained release; NNT = numbers needed to treat; NCS = Nerve conduction studies; CTS = carpal tunnel syndrome.

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