

Literature Search for High Energy Studies for Plantar Fasciitis 2000 - Present

Energy Level	Article Title	Journal Reference	First Author	Study Type	Key Points	Brand	No. of treatments	Shocks /Energy
High	High-Energy Extracorporeal Shock-Wave Therapy (ESWT) for the Treatment of Chronic Plantar Fasciitis	Foot Ankle Int, Sept 2010, Vol. 31, No.9	Metzner, G	Retrospective Case Series: Level of Evidence IV	Success = 30% reduction in VAS; 6weeks follow-up 81% successful; 18months follow-up 88% successful; 72 months follow-up 96% follow-up. This study shows effectiveness of ESWT and results are maintained over time (6 years). BMI, nor presence/absense of a plantar heel spur had a significant influence on clinical outcome.	Dornier Lithorripter S	Single treatment	1060 pulses/0.35 mJ/mm ²
High	Extracorporeal Shock Wave for Chronic Proximal Plantar Fasciitis: 225 Patients With Results and Outcome Predictors	J Foot & Ankle Surgery,48(2): 148-155 2009	Chuckpai-wong, B	Retrospective Review of 225 patients (246 feet): Level of Clinical Evidence 2	Success rates of 70.7% at 3 months and 77.2% at 12 months. Previous cortisone injections, body mass index, duration of symptoms, presence of bilateral symptoms, and plantar fascia thickness did not influence the outcome of ESWT. The presence of diabetes mellitus, psychological issues, and older age were found to negatively influence ESWT outcome. Whereas many factors have been implicated in the development of plantar fasciitis, only diabetes mellitus, psychological issues, and age were found to negatively influence ESWT outcome.	Dornier Epos Ultra	Single treatment	3800 shocks (300 graded shocks and 3500 shocks at 0.36 mJ/mm ²).
High	Long-Term Results of Extracorporeal Shock Wave Technology for Plantar Fasciitis	Am J Sports Med. 2006 Apr,34(4):592-6.	Wang, C.	RCT with non-placebo control group with conservative treatment	ESWT group: 69.1% excellent results 5 years post treatment. 11% (9/81) recurrence rate. Control group: 0% excellent results 55% (43/78) recurrence rate. (P<.001).	OssaTron	Single treatment	1500 impulses at 16kV (energy flux density, 0.32 mJ/mm ²
Low vs High	Extracorporeal Shockwave Therapy Versus Placebo for the Treatment of Chronic Proximal Plantar Fasciitis: Results of a Randomized, Placebo-Controlled, double-Blinded, Multicenter Intervention Trial	J Foot Ankle Surg, Vol 45, No 4, July/Aug 2006	Malay, D.S.	RCT, placebo controlled, double blinded, multi-center	This study made clear the difference in outcomes when using high energy levels versus low energy levels. Placebo mean change from baseline at 3 months post treatment was equivalent to low energy treatment levels whereas a highly statistical difference was noted in the high energy treated participants.	Orthospec	Single treatment	3800 shocks Variable energy levels
High	Randomized, Placebo-Controlled, Double-Blind Clinical Trial Evaluating the Treatment of Plantar Fasciitis with an Extracorporeal Shockwave Therapy (ESWT) Device: A North American Confirmatory Study	J Ortho Res, Feb 2006,115-123	Kudo, P	RCT placebo controlled, double blind	Clinical success defined by >60% improvement on the primary outcome measure ESWT group: 47% improvement Placebo group: 23% improvement	Dornier Epos Ultra	Single treatment	3800 shocks (3500 at 0.36 mJ/mm ²) for a total of 1300 mJmm ²

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High	Evaluation of Ultrasound-Guided Extracorporeal Shock Wave Therapy (ESWT) in the Treatment of Chronic Plantar Fasciitis	J Foot Ankle Surg, 44 (2) March/April 2005:137-143	Hyer, C	Prospective	83% improved a statistically significant mean of 56% from baseline.	Dornier Epos Ultra	Single treatment	3800 shocks (3500 at 0.36 mJ/mm ²) for a total of 1300 mJmm ²
High	Effectiveness of Extracorporeal Shock Wave Technology in 353 Patients with Chronic Plantar Fasciitis	JAPMA Vol 95 (6): 517-524, 2005	Norris, D.	Retrospective 353 patient post-treatment survey.	76% of Post Treatment surveyed patients experienced a 43% decline in pain and 66% of patients experiencing a 44% increase in mobility.	OssaTron and EPOS	Single treatment	1300 mJ/mm ²
High	Extracorporeal shockwave therapy for plantar fasciitis and other musculoskeletal conditions utilizing the OssaTron - an Update	Clin Podiatr Med Surg, 21 (2004) 441-447	Wilner, JM	Retrospective	87% good to excellent success after two years from OssaTron treatment.	OssaTron	Single treatment	1800 shocks, 18kV
High	Electrohydraulic High-Energy Shock-Wave Treatment for Chronic Plantar Fasciitis	J Bone Joint Surg, Vol 86-A, No 10, Oct 2004, 2216-2228.	Ogden, J.	RCT, placebo controlled, double blinded, multi-center	95% success at one year and was maintained for 5 years. (phase 1 pts) 76.8% of 289 patients treated had good or excellent results.	OssaTron	Single treatment	100 graded shocks starting at 0.12 to 0.22 mJ/mm ² , followed by 1400 shocks at 0.22mJ/mm ²
High	Extracorporeal Shock Wave Therapy for the Treatment of Plantar Fasciitis	Foot Ankle Int, Vol. 25, No. 5, May 2004	Theodore, G.	RCT, placebo controlled, double blinded, multi-center	56% success at 3 months and 94% success at 12 months	Dornier Epos Ultra	Single treatment	3800 shocks (3500 at 0.36 mJ/mm ²) for a total of 1300 mJmm ²
High	Extracorporeal Shock Wave Therapy (ESWT) in Patients with Chronic Proximal Plantar Fasciitis: A 2-Year Follow-up	Foot Ankle Int 24 (11) 823-828, 2003	Hammer, DS	Prospective Randomized clinical study with cross over	94% improvement in first study group, 90% improvement in second study group at 2 years post treatment.	Piezoson 300	Three treatments	3000 shockwaves 0.2mJ/mm ²
High	Symptom Duration of Plantar Fasciitis and the Effectiveness of Orthotripsy®	Foot Ankle Int, Vol. 24, No. 12, Dec 2003	Alvarez, R.	Retrospective	"The longevity of symptoms of chronic proximal plantar fasciopathy had a minimal impact on the likelihood of positive response to Orthotripsy."	OssaTron	Single treatment	1500 shocks at 18kV or 1500 shocks at 20kV
High	Extracorporeal Shock Wave Therapy for Chronic Proximal Plantar Fasciitis	Clin Podiatr Med Surg, Oct 2002, Vol 19(4)	Strash, W.	Retrospective	74% excellent to good results after twelve weeks 87% excellent to very good results after 6 months.	OssaTron	Single treatment	1800 shocks at 20 kV

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High	Extracorporeal Shock Wave Therapy (ESWT) for the Treatment of Chronic Plantar Fasciitis: Indications, Protocol and a Comparison of Results to Fasciotomy	J Foot Ankle Surg, June 2002, Vol 41(3), 166-172.	Weil, Jr., L.	Prospective comparative	ESWT: 82% good to excellent results with a mean follow-up of 8.4 months Percutaneous Plantar Fasciotomy: 83% successfully treated.	Orbasone	Single treatment	1500-3000 shocks, 17-21kV
High	Shock Wave Therapy for Patients with Plantar Fasciitis: A One-Year Follow-up Study	Foot Ankle Int, March 2002, Vol. 23, Nov.3	Wang, C.	RCT with non-placebo control group with conservative treatment	82% complaint free after single treatment. 94% success retention after one year	OssaTron	Single treatment	1500 shocks at 16kV
High	Stosswellentherapie bei therapieresistenter plantarfasziitis mit ferensporn: eine prospektiv randomised plazebokontrollierte doppelblindstudie	Z Orthop 2002, 140:548-54	Abt, T.	RCT, placebo controlled, double blinded	ESWT group: 88% pain free or good results Control Group: 0% pain free, 33% good results. German article reported positively within several review articles, including BMC Thomson et al article. English abstract available www.pubmed.gov	OssaTron	Single treatment	1000 shocks at 14 kV (.18 mJ/mm ²)
High	Preliminary Results on the Safety and Efficacy of the OssaTron for Treatment of Plantar Fasciitis	Foot Ankle Int, March 2002, Vol 23, No. 3	Alvarez, R.	Prospective	65% painfree after single treatment. 90% maintained painfree/improved status (18 out of 20 patients) one year post treatment.	OssaTron	Single treatment	1000 shocks 16kV, 2 Hz
High	Treatment of Painful Heel Syndrome With Shock Waves	Clin Orthop, No 387, pp. 41-46, June, 2001	Chen, H.	Prospective clinical study with cross over	73.5% complaint free to good results after twelve weeks, and 87% complaint free to good results at six months.The improvements in pain relief and function restoration was statistically significant	OssaTron	Single treatment	1000 shocks at 14kV
High	Shock Wave Therapy of Chronic Proximal Plantar Fasciitis	Clin Orthop, Number 387, pp. 47-59, June, 2001	Ogden, J.	RCT placebo controlled, double blinded, multi-center	76% excellent to good results. FDA Clinical Study	OssaTron	Single treatment	18 kV, 1500 shocks
High	Treatment of Painful Heels Using Extracorporeal Shock Wave	J Formos Med Assoc. 2000, Vol 99, No. 7	Wang, C.	RCT with non-placebo control group with conservative treatment	81%were complaint free to very good results after 12 weeks	OssaTron	Single treatment	1500 shocks at 16kV

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ESWT Literature Review and Meta Analysis Articles								
Article Title		Journal Reference	Author	Key Points				
Shock Wave Therapy for Treatment of Foot and Ankle Conditions		Technq Foot Ankle Surg; 5(1): 60-65, 2006	Younger, A.	Review of 18 prospective papers for plantar fasciitis. Outcome studies in general have supported a positive outcome. Shock wave therapy should be offered as a second line of treatment to patients with plantar fasciitis, possibly before steroid injection, as the complication rates may be lower and the therapeutic effect higher. Shock wave therapy may have better outcomes than surgery for plantar fasciitis.				
Extracorporeal Shockwave Therapy in the Treatment of Chronic Tendonopathies		JAAOS; 14(4): 195-204, April 2006.	Sems, A.	Review of 11 published studies. Based upon the preponderance of well designed studies showing favorable results, it seems that ESWT is an effective modality for managing chronic plantar fasciitis in patients who have failed nonsurgical treatment.				
Shockwave Therapy for Chronic Proximal Plantar Fasciitis: A Meta Analysis		Foot & Ankle Intl; April 2002, Vol. 23, No. 4:- 301-308	Ogden, J.	Review of 20 published studies, of which 8 studies were used because they fit the criteria for a clinically reasonable, evidenced based medicine, outcome study. Directed application of shockwaves to the enthesis of the plantar fascia at the inferior calcaneus is a safe and effective non-surgical method for treating chronic, recalcitrant heel pain syndrome that has been refractory to other commonly used non-operative therapies. The results suggest that this therapeutic procedure should be considered before any surgical intervention, and may be preferable prior to cortisone injection, which has a recognized risk of rupture of the plantar fascia and a frequent recurrence of symptoms.				
Extracorporeal Shockwave Therapy, A Review		Sports Medicine; 2002, 32(13): 851-865	Chung, B.	Review of 48 published studies, 15 studies were heel studies. There is an increasing body of literature that suggests that ESWT can be an effective therapy for patients who have had repeated conservative treatment failures ESWT is effective. No reports of significant adverse effects. Highest strength of evidence coming from randomized controlled studies.				
BlueCross BlueShield of Tennessee Medical Policy Manual. Effective 4/13/2006		BlueCross BlueShield of Tennessee Medical Policy Manual. Effective 4/13/2006	BlueCross BlueShield of Tennessee Medical Policy Manual.	High-energy extracorporeal shock wave therapy for the treatment of plantar fasciitis on only one side at a time is considered medically necessary if the medical appropriateness criteria are met. Repeat high energy extracorporeal shock wave therapy or any subsequent other surgical procedure, for the treatment of persistent symptoms of plantar fasciitis occurring a minimum of six months after the approved initial treatment has been performed, is considered medically necessary . Review of 31 sources including Blue Cross Blue Shield of Tennessee network physicians. Policy can be viewed at this web address: http://www.bcbst.com/MPManual/Extracorporeal_Shock_Wave_Therapy_for_Musculoskeletal_Conditions.htm				
APMA and ADFAS Joint Policy Statement		APMA and ADFAS Joint Policy Statement	APMA and ACFAS	Review of 35 published articles. This new technology (ESWT) is revolutionizing the treatment of chronic heel pain... The number of shock wave procedures being performed has greatly increased in the past year, primarily due to the effectiveness of the treatment to patients with plantar fasciitis, possibly before steroid injection, as the complication rates may be lower and the therapeutic effect higher. Shock wave therapy may have better outcomes than surgery for plantar fasciitis.				