Am Fam Physician. 2011 Sep 15;84(6):676-82.

Diagnosis and treatment of plantar fasciitis.

Goff JD, Crawford R.

Source

Summa Health System, Akron, OH, USA.

Abstract

Plantar fasciitis, a self-limiting condition, is a common cause of heel pain in adults. It affects more than 1 million persons per year, and two-thirds of patients with plantar fasciitis will seek care from their family physician. Plantar fasciitis affects sedentary and athletic populations. Obesity, excessive foot pronation, excessive running, and prolonged standing are risk factors for developing plantar fasciitis. Diagnosis is primarily based on history and physical examination. Patients may present with heel pain with their first steps in the morning or after prolonged sitting, and sharp pain with palpation of the medial plantar calcaneal region. Discomfort in the proximal plantar fascia can be elicited by passive ankle/first toe dorsiflexion. Diagnostic imaging is rarely needed for the initial diagnosis of plantar fasciitis. Use of ultrasonography and magnetic resonance imaging is reserved for recalcitrant cases or to rule out other heel pathology; findings of increased plantar fascia thickness and abnormal tissue signal the diagnosis of plantar fasciitis. Conservative treatments help with the disabling pain. Initially, patient-directed treatments consisting of rest, activity modification, ice massage, oral analgesics, and stretching techniques can be tried for several weeks. If heel pain persists, then physician-prescribed treatments such as physical therapy modalities, foot orthotics, night splinting, and corticosteroid injections should be considered. Ninety percent of patients will improve with these conservative techniques. Patients with chronic recalcitrant plantar fasciitis

lasting six months or longer can consider extracorporeal shock wave therapy or plantar fasciotomy.

PMID:21916393[PubMed- in process]

Br Med Bull. 2011 Sep 4. [Epub ahead of print]

Management of the greater trochanteric pain syndrome: a systematic review.

Del Buono A, Papalia R, Khanduja V, Denaro V, Maffulli N.

Source

†Department of Orthopaedic and Trauma Surgery, Campus Biomedico University of Rome, Via Alvaro del Portillo, Rome, Italy.

Abstract

Introduction: Greater trochanteric pain syndrome (GTPS) is a debilitating condition characterized by lateral hip pain located at or around the greater trochanter. We performed a comprehensive search of Pubmed, Medline, Ovid, Google Scholar and Embase databases, from inception of the database to 20th of June 2011, using a variety of keywords. We identified 52 relevant abstracts of articles published in peer-reviewed journals. Fourteen studies reporting the outcomes of patients undergoing conservative and surgical management of

GTPS were selected. Areas of agreement Significant pain relief and improved outcomes were observed after conservative and surgical management of GTPS. The modified Coleman methodology score averaged 44.7 (range from 14 to 82), evidencing an overall low-to-moderate quality of the studies. Repetitive low-energy radial shock wave therapy and home training approach provide beneficial effect over months, with almost 80% success rate at 15 months. Areas of controversy Poor available data extracted from small studies do not allow definitive conclusions to be drawn on the best treatment for GTPS. Growing points. Further multi-centre prospective studies are necessary to confirm the general validity of the findings reported Areas timely for developing research. Future research and trials should focus on the application and effectiveness of the various conservative modalities for management of GTPS. Conclusion: The effectiveness of the various treatment modalities needs to be tested in carefully conducted randomized controlled trials.

PMID: 21893483[PubMed- as supplied by publisher]

J Am Acad Orthop Surg. 2011 Sep;19(9):563-73.

Management of aseptic tibial nonunion.

Hak DJ.

Source

Department of Orthopaedics, University of Colorado, and Denver Health, Denver, CO, USA.

Abstract

Tibial nonunion remains a significant clinical challenge despite advances in surgical management. New techniques to help manage tibial nonunion include extracorporeal shock wave therapy and percutaneous application of bone marrow aspirate. Management strategies vary based on the type of nonunion: aseptic or infected, and atrophic or hypertrophic. Extracorporeal shock wave therapy has been shown to be as effective as surgical management in patients with stable hypertrophic nonunion. New fixation options include locked plates and intramedullary compression nails. Novel methods of external fixation have been developed for bone graft harvest from the intramedullary canal. Several biologic adjuncts also are available, including bone marrow aspirates, stem cells, and bone morphogenetic protein.

PMID: 21885702 [PubMed - in process]

Chang Gung Med J. 2011 Jul-Aug;34(4):367-74.

Shockwaves enhance the osteogenetic gene expression in marrow stromal cells from hips with osteonecrosis.

Yin TC, Wang CJ, Yang KD, Wang FS, Sun YC.

Source

Department of Orthopedic Surgery, Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Kaohsiung, Taiwan.

Abstract

Background: This in vitro study investigated the angiogenesis and osteogenesis effects of shockwaves on bone marrow stromal cells (BMSCs) from hips with osteonecrosis. Methods: BMSCs were harvested from the bone marrow cavity of the proximal femur in six patients with osteonecrosis of the femoral head. The specimens were divided into four groups, the control, shockwave, shockwave plus nω-nitro- L-arginine methyl ester (L-NAME) and a nitric oxide (NO) donor (NOC18) groups. The control group received no shockwaves and was used as the baseline. The shockwave group received 250 shockwave impulses at 14 Kv (equivalent to 0.18 mJ/mm2 energy flux density). The shockwave plus LNAME group was pre-treated with L-NAME before receiving shockwaves. The NOC18 group received NOC18 after cell culture for 48 hours. The evaluations included cell proliferation (MTT) assay, alkaline phosphatase, real time reverse transcriptase-polymerase chain reaction analysis of vessel endothelial growth factor (VEGF), bone morphogenic protein (BMP)-2, RUNX2 and osteocalcin mRNA expression and von Kossa stain for mineralized nodules. Results: The shockwave group showed significant increases in MTT, VEGF, alkaline phosphatase, BMP2, RUNX2 and osteocalcin mRNA expression and more mature mineralized nodules compared with the control. Pre-treatment with L-NAME significantly reduced the angiogenic and osteogenic effects of extracorporeal shockwave therapy (ESWT) and the results were comparable with the control. Administration of NOC18 significantly enhanced the angiogenesis and osteogenesis effects compared with the control and the results were comparable with the shockwave group. Conclusion: ESWT significantly enhanced the angiogenic and osteogenic effects of BMSCs mediated through the

NO pathway in hips with osteonecrosis. These innovative findings, at least in part, explain some of the mechanism of shockwaves in osteonecrosis of the hip.

PMID: 21880191 [PubMed - in process]

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- Chang Gung Medical Hospital - PDF

Ultrasound Med Biol. 2011 Aug 18. [Epub ahead of print]

Extracorporeal Shock Wave Therapy in Pillar Pain After Carpal Tunnel Release: A Preliminary Study.

Romeo P, d'Agostino MC, Lazzerini A, Sansone VC.

Source

Orthopaedic Department of the Università degli Studi di Milano, Istituto Ortopedico Galeazzi, Milano, Italy.

Abstract

"Pillar pain" is a relatively frequent complication after surgical release of the median nerve at the wrist. Its etiology still remains unknown although several studies highlight a neurogenic inflammation as a possible cause. Pillar pain treatment usually includes rest, bracing and physiotherapy, although a significant number of patients still complain of painful symptoms two or even three years after surgery. The aim of this study was to investigate the efficacy of low-energy,

flux density-focused extracorporeal shock wave therapy (ESWT) in the treatment of pillar pain. We treated 40 consecutive patients with ESWT who had pillar pain for at least six months after carpal tunnel release surgery, and to our knowledge, this is the first study that describes the use of ESWT for treating this condition. Our results show that in all of the treated patients, there was a marked improvement: the mean visual analogue scale (VAS) score decreased from 6.18 (±1.02) to 0.44 (±0.63) 120 d after treatment, and redness and swelling of the surgical scar had also decreased significantly.

PMID: 21856074 [PubMed - as supplied by publisher]

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- Swets Information Services

Med Hypotheses. 2011 May;76(5):635-7. Epub 2011 Feb 1.

Focused extracorporeal shockwave therapy in Dupuytren's disease--a hypothesis.

Knobloch K, Kuehn M, Vogt PM.

Source

Plastic, Hand and Reconstructive Surgery, Hannover Medical School, Germany. Knobloch.karsten@mh-hannover.de

Abstract

Dupuytren's disease is a progressive disease due to unknown causal agents or genetics. An epidemiological analysis of 566 cases in North Germany estimated that around 1.9 million Germans are suffering from Dupuytren's disease. Beside Dupuytren's disease, there are a number of further less common forms of progressive fibromatosis, such as knuckle pads, plantar fibromatosis or Peyronie's disease. Surgery in plantar fasciectomy yields to a 60% recurrence rate depending on the extent of the plantar fasciectomy. Peyronie's disease of the penis affects middle-aged men between 40 and 60 years with penile pain, curvature during erection and potential erectile dysfunction. In a clinical randomized-controlled trial in Peyronie's disease 2000 focused extracorporeal shock waves reduced pain significantly and improved erectile function and quality of life. We hypothesize that focused extracorporeal shock wave therapy is able to reduce Dupuytren's contracture, a fibromatosis of the palm and improve function. Given the fact that recurrence rate in Dupuytren's disease is high und unpredictable extracorporeal shockwave therapy as a non-invasive tool might be applicable both, in primary and secondary prevention of the progression as well as for treatment. As such we have planned a randomized-controlled trial (ClinicialTrials.gov, NCT01184586) studying the effect of high-energy focused extracorporeal shockwave therapy on patients suffering Dupuytren's disease with patient-related outcome measures such as the DASH score and the Michigan Hand Outcome Questionnaire (MHQ) as primary outcome parameters.

PMID: 21277691 [PubMed - indexed for MEDLINE]

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Full Text Sources

Clin J Sport Med. 2011 Sep;21(5):447-53.

Efficacy of treatment of trochanteric bursitis: a systematic review.

Lustenberger DP, Ng VY, Best TM, Ellis TJ.

Source

From the *Department of Orthopaedic Surgery; and †Department of Family Medicine, The Ohio State University Sports Medicine Center, The Ohio State University, Columbus, Ohio.

Abstract

OBJECTIVE:

Trochanteric bursitis (TB) is a self-limiting disorder in the majority of patients and typically responds to conservative measures. However, multiple courses of nonoperative treatment or surgical intervention may be necessary in refractory cases. The purpose of this systematic review was to evaluate the efficacy of the treatment of TB.

DATA SOURCES:

: A literature search in the PubMed, MEDLINE, CINAHL, and ISI Web of Knowledge databases was performed for all English language studies up to April 2010. Terms combined in a Boolean search were greater trochanteric pain syndrome, trochanteric bursitis, trochanteric, bursitis, surgery, therapy, drug therapy, physical therapy, rehabilitation, injection, Z-plasty, Z-lengthening, aspiration, bursectomy, bursoscopy, osteotomy, and tendon repair.

STUDY SELECTION:

All studies directly involving the treatment of TB were reviewed by 2 authors and selected for further analysis. Expert opinion and review articles were excluded, as well as case series with fewer than 5 patients. Twenty-four articles were identified. According to the system described by Wright et al, 2 studies, each with multiple arms, qualified as level I evidence, 1 as level II, 1 as level III, and the rest as level IV. More than 950 cases were included.

DATA EXTRACTION:

The authors extracted data regarding the type of intervention, level of evidence, mean age of patients, patient gender, number of hips in the study, symptom duration before the study, mean number of injections before the study, prior hip surgeries, patient satisfaction, length of follow-up, baseline scores, and follow-up scores for the visual analog scale (VAS) and Harris Hip Scores (HHS).

DATA SYNTHESIS:

Symptom resolution and the ability to return to activity ranged from 49% to 100% with corticosteroid injection as the primary treatment modality with and without multimodal conservative therapy. Two comparative studies (levels II and III) found low-energy shock-wave therapy (SWT) to be superior to other nonoperative modalities. Multiple surgical options for persistent TB have been reported, including bursectomy (n = 2), longitudinal release of the iliotibial band

(n = 2), proximal or distal Z-plasty (n = 4), osteotomy (n = 1), and repair of gluteus medius tears (n = 4).

CONCLUSIONS:

Efficacy among surgical techniques varied depending on the clinical outcome measure, but all were superior to corticosteroid therapy and physical therapy according to the VAS and HHS in both comparison studies and between studies. This systematic review found that traditional nonoperative treatment helped most patients, SWT was a good alternative, and surgery was effective in refractory cases.

PMID: 21814140[PubMed - in process]

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Full Text Sources

- Lippincott Williams & Wilkins
- Ovid Technologies, Inc.
- Swets Information Services

Ultrasound Med Biol. 2011 Sep;37(9):1452-6. Epub 2011 Jul 20.

Effectiveness of ESWT in the Treatment of Kienböck's Disease.

D'Agostino C, Romeo P, Amelio E, Sansone V.

Source

Extracorporeal Shock Wave Unit, Istituto Clinico Humanitas, Rozzano, Italy.

Abstract

Kienböck's disease is a rare, painful disorder of the wrist that can seriously restrict the quality of life of patients who have the disease. Although a century has passed since the pathology was identified, its etiology is still uncertain, with mechanical, traumatic, vascular, and systemic factors all being advocated. Likewise, there is no consensus regarding treatment, and no approach-either conservative or surgical-has been demonstrated to yield significantly better outcomes. Extracorporeal shock wave treatment (ESWT) has been effective in stimulating fracture healing, and it has been adopted as a therapy to restore vascular supply in those bone conditions characterized by vascular impairment. We report our experience in treating 22 patients with Kienböck's disease at various stages with high-energy shock waves. Our results indicate that ESWT has a positive effect on pain and functional impairment of the wrist, and may delay surgical treatment. Further studies are necessary to understand the full potential of this therapeutic tool.

PMID: 21767905 [PubMed - in process]

Ultrasound Med Biol. 2011 Mar;37(3):417-25.

Reduced local perfusion after shock wave treatment of rotator cuff tendinopathy.

Notarnicola A, Moretti L, Tafuri S, Forcignanò M, Pesce V, Moretti B.

Source

Department of Clinical Methodology and Surgical Techniques, Orthopedics Section, Faculty of Medicine and Surgery of University of Bari, General Hospital, Bari, Italy. angelanotarnicola@yahoo.it

Abstract

A marked neovascularity has been demonstrated in tendinopathies, due to the inflammatory-degenerative process. The aim of this study was to assess the effect of extracorporeal shock wave therapy (ESWT) on tissue perfusion in the treatment of tendinopathy. An observational clinical study was made of 30 patients undergoing ESWT for tendinopathy of the rotator cuff. A clinical improvement was obtained in 65.6% of patients at 2 and 6 months. This was associated with a statistically significant reduction in the oxygen tissue saturation, measured by oxymetry that was apparent already during treatment, as well as at subsequent follow-up visits. The reduced perfusion achieved with ESWT supports the hypothesis that this treatment can regulate the inflammatory process and offset increased vascularization, restoring physiologic tendon conditions.

PMID:21316560 [PubMed - indexed for MEDLINE]

Publication Types, MeSH Terms, Substances

Publication Types

- Clinical Trial

Substances

- Oxygen

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Full Text Sources

- Elsevier Science
- EBSCO
- OhioLINK Electronic Journal Center
- Swets Information Services

Medical

- Tendinitis - MedlinePlus Health Information

Molecular Biology Databases

- OXYGEN - HSDB

Am J Sports Med. 2011 Jan;39(1):146-53. Epub 2010 Sep 20.

Shockwave therapy for the treatment of chronic proximal hamstring tendinopathy in professional athletes.

Cacchio A, Rompe JD, Furia JP, Susi P, Santilli V, De Paulis F.

Source

Department of Physical Medicine and Rehabilitation, University of Rome "La Sapienza," Italy. angelo.cacchio@tin.it

Abstract

BACKGROUND:

Chronic proximal hamstring tendinopathy is an overuse syndrome that is usually managed by nonoperative methods. Shockwave therapy has proved to be effective in many tendinopathies.

HYPOTHESIS:

Shockwave therapy may be more effective than other nonoperative treatments for chronic proximal hamstring tendinopathy.

STUDY DESIGN:

Randomized controlled clinical study; Level of evidence, 1.

METHODS:

Forty professional athletes with chronic proximal hamstring tendinopathy were enrolled between February 1, 2004, and September 30, 2006. Patients were randomly assigned to receive either shockwave therapy, consisting of 2500 impulses per session at a 0.18 mJ/mm² energy flux density without anesthesia, for 4 weeks (SWT group, n = 20), or traditional conservative treatment consisting of nonsteroidal anti-inflammatory drugs, physiotherapy, and an exercise program for hamstring muscles (TCT group, n = 20). Patients were evaluated before treatment, and 1 week and 3, 6, and 12 months after the end of treatment. The visual analog scale (VAS) score for pain and Nirschl phase rating scale (NPRS) were used as primary outcome measures.

RESULTS:

The patients were observed for a mean of 10.7 months (range, 1-12 months). Six patients were lost to follow-up because they underwent a surgical intervention: 3 (all in TCT group) were lost at 3 months; 2 (1 in each group), at 6 months; and 1 (in the TCT group), at 12 months. Primary follow-up was at 3 months after the

beginning of treatment. The VAS scores in the SWT and TCT groups were 7 points before treatment (P = .84), and 2 points and 5 points, respectively, 3 months after treatment (P < .001). The NPRS scores in the SWT and TCT groups were 5 points in either group before treatment (P = .48), and 2 points and 6 points, respectively, 3 months after treatment (P < .001). At 3 months after treatment, 17 of the 20 patients (85%) in the SWT group and 2 of the 20 patients (10%) in the TCT group achieved a reduction of at least 50% in pain (P < .001). There were no serious complications in the SWT group.

CONCLUSION:

Shockwave therapy is a safe and effective treatment for patients with chronic proximal hamstring tendinopathy.

PMID:20855554[PubMed - indexed for MEDLINE]

Publication Types, MeSH Terms, Substances

Publication Types

- Randomized Controlled Trial

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Full Text Sources

- HighWire Press
- EBSCO
- OhioLINK Electronic Journal Center
- Ovid Technologies, Inc.
- Swets Information Services

Education

- New England Research Institutes Inc.

Medical

- Tendinitis - MedlinePlus Health Information
- Sports Injuries - MedlinePlus Health Information

Clin Rehabil. 2011 Aug;25(8):731-9. doi: 10.1177/0269215510396740. Epub 2011 Apr 20.

Arm position during extracorporeal shock wave therapy for calcifying tendinitis of the shoulder: a randomized study.

Tornese D, Mattei E, Bandi M, Zerbi A, Quaglia A, Melegati G.

Source

Center for Sports Rehabilitation, IRCCS Galeazzi Orthopedics Institute, Milan, Italy.

Abstract

OBJECTIVE:

To generate data on optimal shoulder position comparing two ultrasound-guided extracorporeal shock wave therapy techniques for the treatment of calcifying tendinitis of the shoulder.

DESIGN:

Random assignment to two groups of treatment with three months follow-up.

SETTING:

The data were collected in outpatients.

SUBJECTS:

Thirty-five subjects affected by calcifying tendinitis of the shoulder were examined. Interventions: Each subject received three sessions of ultrasound-guided extracorporeal shock wave therapy (performed weekly). Neutral position technique was used in group A (n = 17, mean age 53 ± 9.2 years) and the hyperextended internal rotation technique was used in group B (n = 18, mean age 52.2 ± 10.8 years).

MAIN OUTCOME MEASURES:

The Constant and Murley method and radiographs were used to evaluate each subject before the treatment and at three months follow-up.

RESULTS:

There were no significant differences between changes in Constant total score and pain, activity of daily living and range of motion subscales of the two groups. Only the pain subscale showed a significant difference in favour of group B. Significant differences in the radiographic outcome were observed between the two groups: the percentage of total or subtotal resorption of the calcified deposits was 35.3% in group A (neutral position technique) versus 66.6% in group B (hyperextended internal rotation technique). The resorption of the calcific deposit positively influenced the clinical outcome.

CONCLUSIONS:

Positioning the shoulder in hyperextension and internal rotation during extracorporeal shock wave therapy seems to be a useful technique to achieve resorption of calcific deposits.

PMID:21508083 [PubMed - in process]

Am J Sports Med. 2008 Nov;36(11):2100-9. Epub 2008 Oct 1.

Radial extracorporeal shock wave therapy is safe and effective in the treatment of chronic recalcitrant plantar fasciitis: results of a confirmatory randomized placebo-controlled multicenter study.

Gerdesmeyer L, Frey C, Vester J, Maier M, Weil L Jr, Weil L Sr, Russlies M, Stienstra J, Scurran B, Fedder K, Diehl P, Lohrer H, Henne M, Gollwitzer H.

Source

Department of Orthopedic and Traumatology, Technical University Munich, Klinikum Rechts der Isar, Germany. Gerdesmeyer@aol.com

Abstract

BACKGROUND:

Radial extracorporeal shock wave therapy is an effective treatment for chronic plantar fasciitis that can be administered to outpatients without anesthesia but has not yet been evaluated in controlled trials.

HYPOTHESIS:

There is no difference in effectiveness between radial extracorporeal shock wave therapy and placebo in the treatment of chronic plantar fasciitis.

STUDY DESIGN:

Randomized, controlled trial; Level of evidence, 1.

METHODS:

Three interventions of radial extracorporeal shock wave therapy (0.16 mJ/mm(2); 2000 impulses) compared with placebo were studied in 245 patients with chronic plantar fasciitis. Primary endpoints were changes in visual analog scale composite score from baseline to 12 weeks' follow-up, overall success rates, and success rates of the single visual analog scale scores (heel pain at first steps in the morning, during daily activities, during standardized pressure force). Secondary endpoints were single changes in visual analog scale scores, success rates, Roles and Maudsley score, SF-36, and patients' and investigators' global judgment of effectiveness 12 weeks and 12 months after extracorporeal shock wave therapy.

RESULTS:

Radial extracorporeal shock wave therapy proved significantly superior to placebo with a reduction of the visual analog scale composite score of 72.1% compared with 44.7% (P = .0220), and an overall success rate of 61.0% compared with 42.2% in the placebo group (P = .0020) at 12 weeks. Superiority was even more pronounced at 12 months, and all secondary outcome measures supported radial extracorporeal shock wave therapy to be significantly superior to placebo (P < .025, 1-sided). No relevant side effects were observed.

CONCLUSION:

Radial extracorporeal shock wave therapy significantly improves pain, function, and quality of life compared with placebo in patients with recalcitrant plantar fasciitis.

PMID:18832341[PubMed - indexed for MEDLINE]

Publication Types, MeSH Terms

Publication Types

- Multicenter Study
- Randomized Controlled Trial
- Research Support, Non-U.S. Gov't

LinkOut - more resources

Am J Sports Med. 2010 Jan;38(1):125-32. Epub 2009 Sep 23.

Low-energy extracorporeal shock wave therapy as a treatment for medial tibial stress syndrome.

Rompe JD, Cacchio A, Furia JP, Maffulli N.

Source

OrthoTrauma Evaluation Center, Oppenheimer Street 70, D-55130 Mainz, Germany. profrompe@web.de

Abstract

BACKGROUND:

Medial tibial stress syndrome (MTSS) is a pain syndrome along the tibial origin of the tibialis posterior or soleus muscle. Extracorporeal shock wave therapy (SWT) is effective in numerous types of insertional pain syndromes.

HYPOTHESIS:

Shock wave therapy is an effective treatment for chronic MTSS.

STUDY DESIGN:

Cohort study; Level of evidence, 3.

METHODS:

Forty-seven consecutive subjects with chronic recalcitrant MTSS underwent a standardized home training program, and received repetitive low-energy radial SWT (2000 shocks; 2.5 bars of pressure, which is equal to 0.1 mJ/mm(2); total energy flux density, 200 mJ/mm(2); no local anesthesia) (treatment group). Forty-seven subjects with chronic recalcitrant MTSS were not treated with SWT, but underwent a standardized home training program only (control group). Evaluation was by change in numeric rating scale. Degree of recovery was measured on a 6-point Likert scale (subjects with a rating of completely recovered or much improved were rated as treatment success).

RESULTS:

One month, 4 months, and 15 months from baseline, success rates for the control and treatment groups according to the Likert scale were 13% and 30% ($P < .001$), 30% and 64% ($P < .001$), and 37% and 76% ($P < .001$), respectively. One month, 4 months, and 15 months from baseline, the mean numeric rating scale for the control and treatment groups were 7.3 and 5.8 ($P < .001$), 6.9 and 3.8 ($P < .001$), and 5.3 and 2.7 ($P < .001$), respectively. At 15 months from baseline, 40 of the 47 subjects in the treatment group had been able to return to their preferred sport at their preinjury level, as had 22 of the 47 control subjects.

CONCLUSION:

Radial SWT as applied was an effective treatment for MTSS.

Comment in

- Am J Sports Med. 2010 Nov;38(11):NP1; author reply NP1-2.

PMID:19776340[PubMed - indexed for MEDLINE]

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- Pain - MedlinePlus Health Information