Microcurrent Therapy - A Selection of References

Professor Tim Watson, University of Hertfordshire

Allen, J. D., C. G. Mattacola and D. H. Perrin (1999). "Effect of microcurrent stimulation on delayed-onset muscle soreness: a double-blind comparison." Journal of Athletic Training 34(4): 334-337.

Bailey, S. (1999). "How microcurrent stimulation produces ATP -- one mechanism." Dynamic Chiropractic 17(18): 16, 18-19.

Bonacci, J. A. and E. J. Higbie (1997). "Effects of microcurrent treatment on perceived pain and muscle strength following eccentric exercise." Journal of Athletic Training 32(2): 119-123.

Butterfield, D. L., D. O. Draper, M. D. Ricard, J. W. Myrer, E. Durrant and S. S. Schulthies (1997). "The effects of high-volt pulsed current electrical stimulation on delayed-onset muscle soreness." Journal of Athletic Training 32(1): 15-20.

Byl, N. N., A. L. McKenzie, J. M. West, J. D. Whitney, T. K. Hunt, H. W. Hopf and H. Scheuenstuhl (1994). "Pulsed microamperage stimulation: a controlled study of healing of surgically induced wounds in Yucatan pigs." Phys Ther 74(3): 201-213; discussion 213-208.

Chan, H. K., D. T. Fung and G. Y. Ng (2007). "Effects of low-voltage microamperage stimulation on tendon healing in rats." J Orthop Sports Phys Ther 37(7): 399-403.

Chapman-Jones, D. and D. Hill (2002). "Novel microcurrent treatment is more effective than conventional therapy for chronic Achilles tendionpathy: randomised comparative trial." Physiotherapy. 88(8): 471-480.

Davis, P. (1992). "Microcurrents in motion: an effective clinical tool." Chiropractic Journal 7(1): 46.

Davis, P. (1992). "Treating headaches with microcurrent electro-acupuncture." Chiropractic Journal 6(8): 22.

Driban, J. B. (2004). "Bone stimulators and microcurrent: clinical bioelectrics." Athletic Therapy Today 9(5): 22-27.

DuPont, J. S., Jr., R. Graham and J. B. Tidwell (1999). "Trigger point identification and treatment with microcurrent." Cranio 17(4): 293-296.

El-Husseini, T., S. El-Kawy, H. Shalaby and M. El-Sebai (2007). "Microcurrent skin patches for postoperative pain control in total knee arthroplasty: a pilot study." Int Orthop 31(2): 229-233.

Frick, A. (2005). "Microcurrent electrical therapy heals a recalcitrant wound in a horse." Journal of Equine Veterinary Science 25(11): 418-422.

Gardner, S. E., R. A. Frantz and F. L. Schmidt (1999). "Effect of electrical stimulation on chronic wound healing: a meta-analysis." Wound Repair Regen 7(6): 495-503.

Gentzkow, G. D. and K. H. Miller (1991). "Electrical stimulation for dermal wound healing." Clin Podiatr Med Surg 8(4): 827-841.

Gersh, M. R. (1989). Microcurrent electrical stimulation: putting it in perspective, Clin-Manag-Phys-Ther. 1989 Jul-Aug; 9(4): 51-4.

Gossrau, G., M. Wahner, M. Kuschke, B. Konrad, H. Reichmann, B. Wiedemann and R. Sabatowski (2011). "Microcurrent transcutaneous electric nerve stimulation in painful diabetic neuropathy: a randomized placebo-controlled study." Pain Med 12(6): 953-960.

Greenlee, D. L. (1995). Another look at microcurrent: it could be better than you think, Dig-Chiropractic-Econ. 1995 Sep-Oct; 38(2): 50-1.

Johnson, M. I. (2001). "A critical review of the analgesic effects of TENS-like devices." Phys-Ther-Rev. 6(3): 153-173.

Johnson, M. I. (2001). "Transcutaneous electrical nerve stimulation (TENS) and TENS-like devices: do they provide pain relief?" Pain Reviews 8(3/4): 121-158.

Johnson, M. I., P. Penny and M. A. Sajawal (1997). "An examination of the analgesic effects of microcurrent electrical stimulation (MES) on cold-induced pain in healthy subjects." Physiother-Theory-Pract. 13(4): 293-301.

Katz, M. A. (2003). "Treating lower back pain after back surgery: a combination of dry needle injection (acupuncture) and microcurrent stimulation." Pain-Clin---Bernardsville. 5(6): 23.
Kim, M. Y., D. R. Kwon and H. I. Lee (2009). "Therapeutic effect of microcurrent therapy in infants with congenital muscular torticollis." Pm R 1(8): 736-739.
Kirsch, D. L. (1996). A basis for understanding microcurrent electrical therapy (MET) - part I, Am-Chiropractor. 1996 May-Jun; 18(3): 30-4.
Kirsch, D. L. (1996). "A basis for understanding microcurrent electrical therapy (MET) - part II." Am-Chiropractor. 18(4): 29,31-23,53.
Kirsch, D. L. (1997). "How to achieve optimum results using microcurrent electical therapy (MET): A basic clinical protocol for pain management." Am-Chiropractor. 1997 Jan-Feb; 19(1): 24-6, 32 19(4): 16-20.
Kirsch, D. L. (2002). A practical protocol for electromedical treatment of pain. Pain Management : A Practical Guide for Clinicians. R. S. Weiner. Boca Raton, Fla, CRC Press.
Kirsch, D. L. and M. Gilula (2007). "Cranial electrotherapy stimulation in the treatment of depression - Part 1." Practical Pain Management 7(4): 33-41.
Kirsch, D. L. and M. Gilula (2007). "Cranial electrotherapy stimulation in the treatment of depression - Part 2." Practical Pain Management 7(5): 32-40.
Kloth, L. C. (2005). "Electrical stimulation for wound healing: a review of evidence from in vitro studies, animal experiments, and clinical trials." Int J Low Extrem Wounds 4(1): 23-44.
Kloth, L. C. and J. M. McCulloch (1996). "Promotion of wound healing with electrical stimulation." Adv Wound Care 9(5): 42-45.
Koopman, J. S., D. H. Vrinten and A. J. van Wijck (2009). "Efficacy of microcurrent therapy in the treatment of chronic nonspecific back pain: a pilot study." Clin J Pain 25(6): 495-499.
Kulkarni, A. D. and R. B. Smith (2001). The use of microcurrent electrical therapy and cranial electrotherapy stimulation in pain control, Clin-Pract-Alternat-Med. 2001 Summer; 2(2): 99-102.
Lambert, M. I., P. Marcus, T. Burgess and T. D. Noakes (2002). "Electro-membrane microcurrent therapy reduces signs and symptoms of muscle damage." Med Sci Sports Exerc 34(4): 602-607.
Lee, B. Y., K. Wendell, N. Al-Waili and G. Butler (2007). "Ultra-low microcurrent therapy: a novel approach for treatment of chronic resistant wounds." Adv Ther 24(6): 1202-1209.
Leffman, D. J., D. A. Arnall, P. R. Holman and M. W. Cornwall (1994). "Effect of microamperage stimulation on the rate of wound healing in rats: a histological study." Phys-Ther 74(3): 195-200.
Lennox, A. J., J. P. Shafer, M. Hatcher, J. Beil and S. J. Funder (2002). "Pilot study of impedance-controlled microcurrent therapy for managing radiation-induced fibrosis in head-and-neck cancer patients." Int J Radiat Oncol Biol Phys 54(1): 23-34.
Lichtbroun, A. S., M. M. Raicer and R. B. Smith (2001). "The treatment of fibromyalgia with cranial electrotherapy stimulation." J Clin Rheumatol 7(2): 72-78.
Lin, Y. L., H. Moolenaar, P. R. van Weeren and C. H. van de Lest (2006). "Effect of microcurrent electrical tissue stimulation on equine tenocytes in culture." Am J Vet Res 67(2): 271-276.
Maenpaa, H., R. Jaakkola, M. Sandstrom and W. L. Von (2004). "Does microcurrent stimulation increase the range of movement of ankle dorsiflexion in children with cerebral palsy?" Disabil-Rehabil. 26(11): 669-677.
Mannheimer, J. S. (2005). "The effect of microcurrent stimulation on ATP synthesis in the human masseter as evidenced by phosphorus-31 magnetic resonance spectroscopy."
McMakin, C. (1998). "Microcurrent treatment of myofascial pain in the head, neck, and face." Topics in Clinical Chiropractic 5(1): 29-35.
McMakin, C. R. (2004). "Microcurrent therapy: a novel treatment method for chronic low back myofascial pain." J Bodywork and Movement Therapies 8: 143-153.
McMakin, C. R., W. M. Gregory and T. M. Phillips (2005). "Cytokine changes with microcurrent treatment of fibromyalgia associated with cervical spine trauma." J Bodywork Mov Ther 9(3): 169-176.

Medlicott, M. S. and S. R. Harris (2006). "A systematic review of the effectiveness of exercise, manual therapy, electrotherapy, relaxation training, and biofeedback in the management of temporomandibular disorder." Physical Therapy 86(7): 955-973.

Mercola, J. M. and D. L. Kirsch (1995). The basis for microcurrent electrical therapy in conventional medical practice, J-Adv-Med. 1995 Summer; 8(2): 107-20.

Muller, M., D. Tsui, R. Schnurr, L. Biddulph Deisroth, J. Hard and J. C. MacDermid (2004). "Effectiveness of hand therapy interventions in primary management of carpal tunnel syndrome: a systematic review." Journal of Hand Therapy 17(2): 210-228.

Naeser, M. A., K. A. Hahn, B. E. Lieberman and K. F. Branco (2002). "Carpal tunnel syndrome pain treated with low-level laser and microamperes transcutaneous electric nerve stimulation: A controlled study." Arch Phys Med Rehabil 83(7): 978-988.

Noto, K. and P. Grant (2009). "Comparative study of micro-amperage neural stimulation and conventional physical therapy modalities." online access.

Picker, R. I. (1989). "Current trends: low-volt pulsed microamp stimulation... part 1." Clinical Management in Physical Therapy 9(2): 10-14.

Picker, R. I. (1989). "Current trends: low-volt pulsed microamp stimulation... part 2." Clinical Management in Physical Therapy 9(3): 28-33.

Poltawski, L. and T. Watson (2009). "Bioelectricity and microcurrent therapy for tissue healing - a narrative review." Physical Therapy Reviews 14(2): 104-114.

Robinson, A. J. (2008). Electrical stimulation to augment healing of chronic wounds. Clinical Electrophysiology: Electrotherapy and Electrophysical Testing. A. J. Robinson and L. Snyder-Mackler. Philadelphia, Lippincott Williams & Wilkins: 275-299.

Rossen, J. S. (1989). Microcurrent stimulation - why it is replacing many other forms of electrical therapy, Am-Chiropractor. 1989 Mar; 3: 78-89.

Sarhan, T. M. and M. A. Doghem (2009). "Effect of microcurrent skin patch on the epidural fentanyl requirements for post operative pain relief of total hip arthroplasty." Middle East J Anesthesiol 20(3): 411-415.

Sedenu, B. U. (1997). "The effect of microcurrent on recovery from fatigue in the pretibial muscles in healthy adults."

Simons, D. G. and J. Dommerholt (2005). "Myofascial pain syndromes -- trigger points." Journal of Musculoskeletal Pain 13(1): 53-64.

Sizer, P., S. Sawyer and J. Brismee (2000). The effect of microcurrent stimulation on postoperative pain after patellar tendon-bone anterior cruciate ligament reconstruction. American Physical Therapy Association. Indianapolis, Indiana.

Smith, R. B. (2001). "Is microcurrent stimulation effective in pain management? An additional perspective." American Journal of Pain Management 11(2): 64-68.

Smith, R. B. (2002). "Microcurrent therapies: emerging theories of physiological information processing." NeuroRehabilitation 17(1): 3-7.

Smith, T. O. (2005). "Physiotherapy in the management of TMC: a review of the literature part 2... including commentary by Minakuchi H and Deodato F." International Journal of Therapy and Rehabilitation 12(1): 30-37.

Stone, J. A. (1997). "Prevention and rehabilitation. Microcurrent electrical stimulation." Athletic Therapy Today 2(6): 15.

Sussman, C. (2007). Electrical stimulation for wound healing. In Wound Care: A Collaborative Practice Manual for health Professionals. B.-J. B. Sussman C. Philadelphia, Lippincott Williams & Wilkins: 505-554.

Tan, G., T. Monga and J. Thornby (2000). "Electromedicine. Efficacy of microcurrent electrical stimulation on pain severity, psychological distress, and disability." American Journal of Pain Management 10(1): 35-44.

Teachworth, J. L. (1995). "Microcurrent acupuncture and the two faces of popliteal myofascial syndromes." Dig-Chiropractic-Econ. 37(6): 34, 38.

Todd, I., R. H. Clothier, M. L. Huggins, N. Patel, K. C. Searle, S. Jeyarajah, L. Pradel and K. L. Lacey (2001). "Electrical stimulation of transforming growth factor-beta 1 secretion by human

dermal fibroblasts and the U937 human monocytic cell line." Altern Lab Anim 29(6): 693-701.
Volz, D. (1995). "Microcurrent therapy: making gains in medical community." Advance for Directors in Rehabilitation 4(7): 38-41.
Weiss, D., G. D' Amore and R. W. Rothrock (1988). "Microelectrical neuromuscular stimulation: theory and techniques." Am-Chiropractor. 1997 Jan-Feb; 19(1): 24-6, 32(May): 80-82.
Wieder, D. L. (1991). "Microcurrent therapy; wave of the future?" Rehab Manag 4(2): 34-35.
Wing, T. (1989). Modern low voltage microcurrent stimulation: a comprehensive overview, Dig-Chiropractic-Econ. 1989 Jul-Aug; 32(1): 76-81.
Wing, T. W. (1997). Microcurrent primer: introduction and history of the chiropractic modality, Am-Chiropractor. 1997 Jan-Feb; 19(1): 24-6, 32.
Zuim, P. R., A. R. Garcia, K. H. Turcio and M. M. Hamata (2006). "Evaluation of microcurrent electrical nerve stimulation (MENS) effectiveness on muscle pain in temporomandibular disorders patients." J Appl Oral Sci 14(1): 61-66.