## TABLE OF CONTENTS:



HawkGrips®

# INTRODUCTION

To begin, let us go over a brief background on physiology so as to better understand exactly how Instrument Assisted Soft Tissue Mobilization (IASTM) works. Connective tissue serves to provide mechanical support, exchange metabolites between blood and tissues, protect against infection, and repair damaged tissue.[1] The cells embedded in the connective tissue include fibroblasts, myoblasts, and macrophages, to name just a few. Fibroblasts play a large role in connective tissue repair, as they are the ground substance in collagen synthesis.[1]

When soft tissue injury occurs collagen is reassembled in abnormal arrangements or cross-linkages resulting in decreased tensile strength, reactivity, and limited range of motion. This decrease in strength, reactivity, and range of motion can allow the involved tissue to become prone to chronic re-injury and/or pain. Soft tissue injury often involves damage to structural elements of the tissue. This may result in rupture of capillaries, arterioles, and venules while initiating the healing response. The first phase of the healing process, the inflammatory phase, promotes healing by removing injured tissue and promoting growth and repair to restore the tissue to its normal physiological function.[2, 3]

IASTM is an advanced form of myofascial mobilization primarily used to detect and release scar tissue, adhesions, and fascial restrictions.[4] When coupled with stretching, strengthening, and cryotherapy, IASTM is intended to improve connective tissue function. This technique allows a clinician to locate the area of adhesion in the soft tissue involved through the vibrations or undulations of the instruments in the clinician's hands. The clinician may utilize the instruments to break-up the abnormal cross linkages between muscle, tendon, or fascia and return the injured area to its optimal function.

The theory behind IASTM was based on Cyriax's concept of cross-friction massage.[4] Cyriax's goals of this massage are to soften or break up scar tissue by providing movement to the tissue itself and increase tissue temperature.[5] Tissue movement encourages realignment and lengthening to ensure proper lying down of new collagen without stretching or tearing the healing fibers. Collagen, being the basic fiber of soft tissues, needs to lay down parallel to each other to provide rigidity and strength in mechanical tension. Cyriax hypothesized that cross-friction massage will not detach fibrils during healing but instead will prevent their adherence at abnormal sites, thus decreasing abnormal adhesions in connective tissue.[5]

The goal of IASTM is to provide an optimal healing environment for connective tissue by modifying the physiologic responses to injury, such as inflammation, or by enhancing components of normal musculoskeletal function, such as increasing range of motion and strength.[6] IASTM may re-initiate the inflammatory process, allowing for healing and scar tissue remodeling to begin again.[4]

## HAWKGRIPS®

- HawkGrips® (HG) are ergonomically advanced, professionally engineered instruments specifically designed to detect and treat soft tissue dysfunction in muscle, fascia, tendons, and scar tissue.
- HawkGrips® are contoured to facilitate treatment around different body parts.
- HawkGrips® were designed to conform to different body soft tissue contours and joint shapes.
- HawkGrips® were designed with the practitioner in mind. HG4, 5, 6, 7, 8 and 9 are textured to give the clinician a better “grip” on the instruments. This allows the practitioner to use less force holding the instruments, resulting in a reduction of fatigue in the hands and wrists. HG1, 2 and 3 handlebars were designed to be held comfortably and with no stress being placed on the thumbs of the practitioner. During the testing phase, practitioners asked us to hollow out the solid steel handlebars. This transferred much of the weight from the handles to the treatment area of the instrument. It also allowed for more sensitive detection of fibrotic tissue.
- HawkGrips® allow clinical goals to be accomplished more effectively in less time, with less pressure, and less discomfort and strain on the part of the clinician.

## CONDITIONS TREATED

HawkGrips® can be used to treat a large range of abnormalities that include:

**TENDINOPATHIES**
Such as lateral epicondylitis, trigger finger, and Achilles tendinitis.

**POSTURAL ABNORMALITIES**
Such as upper and lower cross syndrome.

**MYOFASCIAL PAIN SYNDROMES**
Such as fibromyalgia, ITB syndrome, and plantar fasciitis.

**ENTRAPMENT SYNDROMES**
Such as carpal tunnel and thoracic outlet syndrome.

**LIGAMENT PAIN**
Such as chronic and acute ankle sprains.

**SCAR TISSUE/ADHESIONS**
Such as mature post-surgical scarring.
(Best used in conjunction with creams used to treat the appearance of scars.)

**EDEMA REDUCTION**
Such as acute swelling and lymphedema.




## CONTRAINDICATIONS

**ABSOLUTE (Red Flags)**

- Patient intolerance and/or non compliance
- Open wounds
- Unhealed suture sites
- Unhealed or non-union fractures
- Thrombophlebitis
- Uncontrolled hypertension
- Hemophilia
- Hematoma
- Osteomyelitis
- Myositis ossificans

**RELATIVE (Yellow Flags)**

- Anti-coagulant medicine
- Cancer
- Varicose veins
- Burn scars
- Anemia
- Family history of hemophilia
- Contractures due to rheumatoid arthritis*
- Pregnancy
- Kidney dysfunction
- Osteoporosis

*It is important to be mindful when treating near a joint that is affected by an autoimmune inflammatory disease such as rheumatoid arthritis as this could cause an unwanted increased inflammatory response.

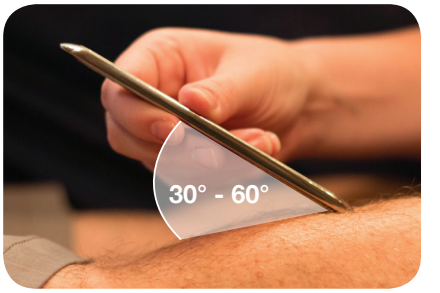
# HAWKGRIPS® THERAPY

**WARM-UP:**

- Ultrasound, diathermy, hot-pack, or active exercise (e.g. stationary bicycle)

**INSTRUMENT APPLICATION:**

- Apply a small amount of emollient; just enough to make the skin shiny. (Avoid build up of the emollient on the instrument during treatment.)
- Identify the treatment edge.
- Keep the angle of the treatment edge on the skin between 30 and 60 degrees.
- Apply light pressure through the instrument, keeping wrists in a neutral position and fingers loose, in a sweeping motion from proximal to distal. Decrease pressure as you slide the tool back proximally, never removing the instrument from the patient's skin.
- Basic scan of area to find adhesions.
- Use appropriate instrument(s) and stroke(s) for precise treatment.
- Finish with broad strokes in the direction of the heart to control any heightened inflammatory response.




**STRETCHING & REHABILITATIVE EXERCISE:**

- High repetition, low load exercise
- Stabilization exercises
- Proprioceptive training

**STROKES:**

**Brush** - desensitizes dermatomes with very light pressure stroke, treated in all directions

**Sweep** - scan for adhesions in a unidirectional, distal to proximal or proximal to distal manner

**Fan** - scan for adhesions in different planes by fixing one side of the instrument to the skin while pivoting the other side, like opening a fan

**Strum** - small strokes on localized adhesions, treated in all directions

**J-Stroke** - sweeping stroke ending with a sharp curve, appearing like a "J". Used often to teat around bony prominences

**NOTES:**

Depending on the structures involved in treatment, cryotherapy may be warranted at the end of treatment. If the condition is inflammatory in nature such as acute injury, tendonitis or bursitis, clinician may recommend using ice to control any extra inflammation post treatment.

HawkGrips® Therapy is best used as a conjunctive therapy. Encourage your patients to perform stretching and high repetition, low load exercises that utilize the involved tissue after receiving an IASTM treatment to encourage proper lying down of new collagen.

## PATIENT PROGRESSION

**FIRST PHASE:**

**First session:** Soft-tissue evaluation and gentle treatment to desensitize dermatomes and gauge patient response

**Second session until second phase:** Implement HawkGrips® Therapy with tissue on a slack

**SECOND PHASE:** Implement HawkGrips® Therapy with the tissue on a stretch

**THIRD PHASE:** Implement HawkGrips® Therapy while the patient is doing rehabilitative exercise (high repetition, low load; postural positioning; proprioceptive training, etc.)

**NOTES:**

Progression may occur at different times for different patients. A patient may need numerous treatments to desensitize their dermatomes before being able to treat the tissue for adhesions.

As a patient's therapy starts to plateau, move them to the next phase of HawkGrips® Therapy. Treating a tissue on stretch will increase the intensity of the treatment as will treating the tissue while the patient is firing that muscle, as during a rehabilitative exercise. (i.e. treating the patellar tendon while the patient is performing 15-18 body weight squats)

Modify technique to maximize response and improve functional levels.

## POTENTIAL TREATMENT RESPONSES

It is essential that the clinician appropriately coach patients through potential side effects. Some patients may experience the following responses during treatment.

**PAIN:**

- Be in constant communication with your patient to ensure the amount of pressure is to the patient's tolerance.
- Determine a sign that indicates "stop" that the patient can use if a technique is painful.

**PETECHIAE:**

- Petechiae is small broken capillaries underneath the skin.
- It is caused by friction.
- This serves as a sign that it is time to end treatment in that area as you may have initiated an uncontrolled inflammatory response that may lead to bruising.

**BRUISING:**

- The epithelial walls of capillaries in traumatized areas are weakened due to chronic or acute inflammation and swelling.
- As scar tissue is released from healthy tissue, capillaries that have infiltrated the scar may rupture, resulting in a visible bruise. Forewarn the patient of this possibility. Explain why it may occur.
- Dysfunctional soft tissue is more susceptible to bruising than healthy tissue.
- Clear communication with the patient is important. Above all use your clinical experience to decide the best course of treatment for your patient.

**DO NOT OVERTREAT:**

Excessive treatment may exacerbate a patient's condition. The goal is to break up abnormal adhesions and promote parallel lying down of fibers by initiating a controlled inflammatory response and encouraging healthy use of the involved tissues.

## HELPFUL HINTS

- Single bevel edges penetrate deeper than double bevel edges.
- Single bevel treatment strokes are applied in only one direction. When you are ready to treat in the opposite direction, you must turn the tool around so that the bevel edge is against the skin.
- Double bevel strokes can be applied both directions.
- Always position your patient to ensure practitioner comfort during the entire treatment.
- Always treat the entire kinetic chain. Do not concentrate only on area of pain.
- It is important to realize that there is no substitute for hands on experience when using HawkGrips® Therapy. The more hands on experience you have with them, the more they will become an extension of your own trained hands.
- Do not overtreat. This may lead to uncontrolled inflammation and bruising.

# PUBLISHED TEXTBOOKS & ARTICLES

**TEXTBOOKS**

Prentice, W.E. **Therapeutic Modalities in Rehabilitation**, 4th Ed., New York, McGraw-Hill, 2011. pgs 568-569

Prentice, W.E. **Principles of Athletic Training: A Competency Based Approach**, 14th Ed., New York, McGraw-Hill, 2011.pg 435

Prentice, W.E. **Rehabilitation Techniques in Sports Medicine and Athletic Training**, 5th Ed., New York, McGraw-Hill, 2011. pg 191

Prentice WE. **Principles of Athletic Training: A Competency-based Approach**, 14th Ed. McGraw-Hill; 2011.

Prentice WE. **Rehabilitation Techniques in Sports Medicine and Athletic Training**, 5th Ed. McGraw-Hill; 2011.

Prentice, W.E. **Therapeutic Modalities in Sports Medicine and Athletic Training**, 6th Ed., San Francisco, McGraw-Hill, 2009. pgs368-369

Hammer WI. **Functional Soft Tissue Examination and Treatment by Manual Methods**. Jones & Bartlett; 2007.

Hyde TE. **Conservative Management of Sports Injuries**. Jones & Bartlett; 2007.

Perle SM. **Soft Tissue Manual Techniques. In: Haldeman S, editor. Principles and Practice of Chiropractic**, 3rd Ed. New York: McGraw Hill; 2004. p. 805-20.

**ARTICLES ABOUT IASTM (Instrument-Assisted Soft Tissue Mobilization)**

Hutsick M. **Triple trouble**. Training & Conditioning. 2011 Apr; 21(3).

Heller M. **Soft (and not-so-soft)-tissue overview**. Dynamic Chiropractic. 2011 Apr 9: 20-29.

**Q & A with Jeanne O'Brien**. Training & Conditioning. 2011 Mar; 21(2).

Cusumano E. **Back on track**. Training & Conditioning. 2011 Mar; 21(2).

***2010***

Page P, Labbe A. **Adhesive capsulitis: use the evidence to integrate your interventions**. North American Journal of Sports Physical Therapy. 2010 Dec; 5(4): 266-272.

Kline, C. **Soft-tissue injuries: better, faster healing**. JACA. 2010 Nov; 47(8): 16-17

Forcum T, Hyde T, Aspegren D, Lawson G. **Plantar fasciitis and heel pain syndrome**. JACA Online. 2010 Oct.

Kline C. **Instrument-Assisted Soft Tissue Mobilization [part III]: when to start and what's on the horizon?** JACA Online. 2010 Oct.

Mishock J. **A treatment option for carpal tunnel syndrome**. The Mercury. 2010 Oct 25.

Schultz L. **Save your shoulder: part 1**. examiner.com. 2010 Oct 17.

Kline C. **Soft-tissue healing, part II: what does Instrument-Assisted Soft Tissue Mobilization bring to the table?** JACA Online. 2010 Aug-Sep.

Kline C. **Instrument-Assisted Soft-Tissue Mobilization (IASTM) part I: chiropractic help or hindrance?** JACA Online. 2010 Jul.

Hooper J. **Hands-on healing: why women are turning to manual therapy**. Elle. 2010 Jun.

Davies CC, Brockopp DY. **Use of ASTYM® treatment on scar tissue following surgical treatment for breast cancer: a pilot study**. Rehabilitation Oncology. 2010 Jul; 28(3): 3-12.

McCrea EC, George SZ. **Outcomes following augmented soft tissue mobilization for patients with knee pain: A case series**. Orthopaedic Physical Therapy Practice. 2010 Apr; 22(2): 69-74.

Dunleavy R. **Josh Pressley, Matt Hagen spent offseason recovering from injuries.** myCentralJersey.com. 2010 Apr 28.

Price, C. **The complete guide to your back**. Men's Journal. 2010 Apr; 19(3): 57.

McFadden M. **Healing touch helps breast cancer survivors**. wndu.com. 2010 Jan 7.

***2009***

**Norwalk chiropractor Hammer speaks at conference**. Wilton Villager. 2009 Dec 20.

Lukacs C. **Survivor support: DC brings range of motion to breast cancer survivors**. ACA News. 2009 Nov.

Hammer W. **Movement heals**. Dynamic Chiropractic. 2009 Sep; 27(19).

Howitt S, Jung S, Hammonds N. **Conservative treatment of tibialis posterior strain in a novice triathlete: a case report**. J Can Chiropr Assoc. 2009; 53(1).

Bosak C. **Improving range of motion in breast cancer survivors**. The Hour. 2009 Jul 16.

**Fascia and scarring**. wsoctv.com. 2009 May 1.

Hammer W. **Manual loading for lateral epicondylopathy**. Dynamic Chiropractic. 2009 Apr 22; 27(9).

Kelly A. **Tough massage with results**. kfrtv.com. 2009 Jan 29.

Stromberg C. **Chiropractic treatment indispensable for soft tissue injuries**. Wilmington News Journal. 2009 Jan 15.

***2008***

Shedden M. **This massage method produces results**. Tampa Bay Online. 2008 Nov 25.

Lui, J. **Instruments of change**. Experience Life. 2008 Oct.

***2007***

Ploski, M. **MCL injury massage**. BioMechanics. 2007 Oct.

Ploski, M. **Plantar fasciitis treatment**. BioMechanics. 2007 Aug.

***2006***

DeLuccio, J. **Instrument-assisted soft tissue mobilization utilizing Graston Technique: a physical therapist's perspective**. Orthopaedic Physical Therapy Practice. 2006; 18(3).

Matthews S. **Graston Technique helps athletes get back into the game**. indychannel.com. 2006 Oct 25.

***2005***

**Soft tissue mobilization with instruments makes solid biz sense, practice owners find**. Article: Impact Magazine. 2005 Sep.

**Adding income with instruments**. Chiropractic Economics. 2005 Sep;14.

Basset J, Nickenig T, Olsen D. Top 5 injuries. Advanced for Directors in Rehabilitation. 2005; 14(5): 37-46.

**(The) Benefits of IASTM**. Article: The American Chiropractor. 2005 Jul.

**Championship chiropractic**. Article: Dynamic Chiropractic. 2005 Jun.

Smith S. **Faster, better, easier soft-tissue mobilization**. Exploring Hand Therapy. 2005 Apr; 5(1): 1,3,4,9,13,18.

**Exercise balls, home gym equipment and the Graston Technique**. spine-health.com. 2005 Apr 4.

Smith S. **A growing trend in hand therapy: instrument-assisted soft tissue mobilization helps therapists work smarter, not harder**. Physical Therapy Products [feature cover article]. 2005 Apr/May.

**A hand for the hand: IASTM helps therapists work smarter, not harder**. Physical Therapy Products. 2005 Apr/May.

Hammer WI, Pfefer, MT. **Treatment of a case of subacute lumbar compartment syndrome using the Graston Technique**. JMPT. 2005 Mar/Apr; 28(3): 199-204.

Anderson RJ. **Pitching in Stitches**. Training & Conditioning. 2005; 15(3): 15-23.

***2004***

Duffy M, Greenapple S. **Graston Technique: the (non-)cutting edge of treatment**. Carolina SportsLink Magazine. 2004 May; 18.

Boughton B. **Wristoration: alleviating the pain of carpal tunnel syndrome**. BioMechanics. 2004; 11(1): 20-27.

Hammer WI. **Instrument-assisted soft tissue mobilization: a scientific and clinical perspective**. Dynamic Chiropractic. 2004 May 24; 22(11): 28, 47.

Perle SM., Lawson G. **Stimulating healing by initiating inflammatory response**. Canadian Chiropractor. 2004 Apr; 9(2): 10-13.

***2003***

Hyde TE. **Graston Technique for athletic injuries**. D.C. Tracts. 2003 Fall; 15(3): 2-4.

Hyde TE. **The Graston Technique: a new manual therapy for back pain**. spine-health.com, posted: 2003 Aug 5.

**10 more great techniques**. The American Chiropractor [feature cover article]. 2003 Aug.

Martinez R. **Graston instrument assisted soft tissue mobilization**. Integrative Medicine. 2003 Jun/Jul; 2(3): 18-23.

Wilczewski K. **Changing the treatment of soft tissue injuries**. The American Chiropractor: 2003 Jan.

Wilson, JK, Sevier TL. **A review of treatment for carpal tunnel syndrome**. Disability and Rehabilitation. 2003; 25(3): 113-119.

Perle SM. **The leading edge**. Training & Conditioning. 2003 Oct; XIII(7): 27-31.

**Chiropractic soft tissue expertise: boon to patients**. Focus Article: JACA. 2003 Sep.

Hammer WI. **Joint preservation is necessary for hands-on chiropractic**. Dynamic Chiropractic. 2003 Nov 30; 21(25).

Hammer WI. **Applying the Graston Technique: an update**. Dynamic Chiropractic. 2003 Jan 1; 21(1).

***2002***

Hammer WI. **The pathology & healing of tendinosis**. Dynamic Chiropractic. 2002 Apr 22; 20(9).

**No tunnel of love: carpal tunnel syndrome**. Focus Article: JACA. 2002 Jul; 39(7): 8-16.

Wilczewski K. **The Graston Technique: changing the treatment of soft tissue injuries**. The American Chiropractor. 2002; 25(6).

Fedorczyk JA. **Therapist's management of elbow tendonitis**. In: Mackin EJ, Callahan AD, Skirven TM, Schneider LH, Osterman AL, Hunter JM, eds. Rehabilitation of the Hand and Upper Extremity. St. Louis: Mosby. (DDD) 2002; 1271-1281.

Hammer WI. **Rotator cuff tendinosis**. D.C. Tracts. 2002 Spr;14(1): 3-6.

Kleinkort JA. **Pain management special interest group: president's message**. Orthopaedic Physical Therapy Practice. 2002;14(4):44.

**The chiropractic take on tendonitis**. Focus Article: JACA. 2002 Mar; 39(3): 8-15.

Snodgrass SJ, Rivett DA. **Thumb pain in physiotherapists: potential risk factors and proposed prevention strategies**. The Journal of Manual & Manipulative Therapy. 2002; 10(4): 206-217.

Hammer WI. **Anatomic predisposition to carpal tunnel syndrome**. Dynamic Chiropractic. 2002 Jan 28; 20(3).

***2001***

Hammer WI. **Weak abdominals – tight lumbodorsal fascia**. Dynamic Chiropractic. 2001 Nov 19; 19(24).

Hammer WI. **Graston Technique: a necessary piece of the puzzle**. Dynamic Chiropractic. 2001 Sep 24; 19(20).

Hammer WI. **Knee stiffness in a young athlete after activity**. Dynamic Chiropractic. 2001 Jul 30; 19(16).

Falvey M. **The promise of tissue remodeling**. Dynamic Chiropractic. 2001 Mar; 26: 8-9.

Kipp D, Wilson JK. **Carpal tunnel syndrome: a critical review**. Critical Reviews in Physical Therapy and Rehabilitation Medicine. 2001; 13(1): 67-77.

***2000***

Kleinkort JA. **A new approach to chronic pain**. Orthopaedic Physical Therapy Practice. 2000; 12(1): 44-46.

Roush MB, Sevier TL, Wilson JK, Helfst RH, Gehlsen GM, Bassey AL. **Anterior knee pain: a clinical comparison of rehabilitation**. Clinical Journal of Sports Medicine. 2000; 10(1): 22-28.

Sevier TL, Helfst RH, Stover SA, Wilson JK. **Clinical trends on tendinitis**. WORK: A Journal of Prevention, Assessment, and Rehabilitation. 2000; 14(2): 123-126.

Sevier TL, Helfst RH, Stover SA, Wilson JK. **Tendinitis: a critical review**. Critical Reviews in Physical and Rehabilitation Medicine. 2000 Sum.

Sevier TL, Wilson JK. **The industrial athlete**. WORK: A Journal of Prevention, Assessment and Rehabilitation. 2000 Fall.

Sevier TL. **Industrial athlete**. Occupational and Environmental Medicine. 2000; 57(4): 285.

Wilson JK, Sevier TL. **Common treatment modalities utilized in treating lateral epicondylitis**. Physical Therapy Reviews. 2000 Sum.

Wilson JK, Sevier TL, Helfst RH, Honing EW, Gehlsen GM, Thomann AL. **Comparison of rehabilitation methods in the treatment of patellar tendinitis**. Journal of Sports Rehabilitation. 2000; 9(4): 304-314.

Wilson JK, Sevier TL. **Methods utilized in treating lateral epicondylitis**. Physical Therapy Reviews. 2000; 5: 117-124.

Henry P, Panawitz B, Wilson JK. **Rehabilitation of a post-surgical patella fracture: a case study**. Physiotherapy. 2000; 86(3): 139-142.

Falvey M. **Repetitive stress injuries: fighting back with the Graston Technique**. Claims Magazine. 2000 Apr; 4(5): 38-46.

Fowler S, Wilson JK, Sevier TL. **Innovative approach for the treatment of cumulative trauma disorders**. WORK: A Journal of Prevention, Assessment, and Rehabilitation. 2000; 9(4): 304-314.

***1999***

Haller KH, Helfst RH, Wilson JK, Sevier TL. **Treatment of chronic elbow pain**. Physical Therapy Case Reports. 1999; 2(5): 195-200.

Henry P, Panawitz B, Wilson JK. **Treatment of a bilateral total knee replacement using augmented soft tissue mobilization**. Physical Therapy Case Reports. 1999; 2(1): 27-30.

Helfst RH. **Why thirst hurts**. Safety + Health. 1999; 160(2): 58-59.

Baker D, Wilson JK. **Bilateral carpal tunnel syndrome in a piano teacher**. Physical Therapy Case Reports. 1999; 2(2): 73-76.

Fowler S. **Responding to managed care**. Occupational Health & Safety. 1999; 68(10): 212-215.

Thomann A. **Entering the world of outcome collection**. OT Practice. 1999; 4(8): 45-47.

Thomann A, Sevier TL, Wilson JK. **Treating soft tissue fibrosis: a new rehabilitation technique for the treatment of various soft tissue injuries**. Physical Therapy Products. 1999; 10(5): 56-58.

Sevier TL, Wilson JK. **Treating lateral epicondylitis**. Sports Medicine. 1999; 28(5): 375-380.

Stover SA. **Know your enemy. Not all cases of cumulative trauma disorders are alike**. Safety + Health. 1999; 159(6): 86-87.

***1998***

Stover SA. **Suggestions for slaying the two-headed CTD beast**. Occupational Medicine Clinical Care Update. 1998; 5(10).

Focht D. **Augmented soft tissue mobilization: a new frontier in treating soft tissue conditions**. OT Practice. 1998; 3(9): 49-50.

Melham TJ, Sevier TL, Malnofski MJ, Wilson JK, Helfst RH. **Chronic ankle pain and fibrosis successfully treated with a new non-invasive augmented soft tissue mobilization (ASTM): a case report**. Medicine and Science in Sports and Exercise. 1998; 30(6): 801-804.

O'Connor SM. **New soft tissue mobilization process claims success in decreasing scar tissue and repetitive motion symptoms**. Work Injury Management News and Digest. 1998; 7(1): 3.

Sevier TL. **Using sports medicine to treat industrial athletes**. Occupational Medicine Clinical Care Update. 1998;5(7).

Pearson D, Gehlsen GM, Wilson JK, Lee G, Sevier TL. **An objective measure of lateral epicondylitis**. Isokinetic and Exercise Science. 1998; 7: 27-31.

***1997***

Sevier TL, Wilson JK, Stover SA, Helfst RH. **Therapeutic tools in CTS rehab**. CTD News. 1997; 6(10): 11, 7.

## RESEARCH

Loghmani MT (PT, PhD, MTC); Warden SJ (PhD). Instrument-assisted cross fiber massage alters regional microvascular morphology in healing knee ligaments suggesting possible angiogenesis. APTA Combined Sections Meeting [platform presentation]. New Orleans (LA). 2011 Feb.

Looney B, Srokose T, Fernández-de-las-Peñas, Cleland J. Graston instrument soft tissue mobilization and home stretching for the management of plantar heel pain: a case series. Journal of Manipulative and Physiological Therapeutics (JMPT). 2011 Feb; 138-142.

Bayliss AJ, Klene FK, Gundeck EL, Loghmani MT. Treatment of a patient with post-natal chronic calf pain utilizing instrument-assisted soft tissue mobilization. APTA CSM [platform presentation]. 2010.

Loghmani MT. Instrument-assisted cross-fiber massage improves blood flow in healing knee ligaments suggesting enhanced angiogenesis. APTA CSM [orthopedic section platform presentation]. 2010.

Brantingham JW, Globe G, Jensen M, Cassa TK, Globe D, Price J, Mayer SN, Lee F. A feasibility study comparing two chiropractic protocols in the treatment of patellofemoral pain syndrome. JMPT. Sep 2009; 32(7): 536-548.

Loghmani MT, Warden SJ. Instrument-assisted cross-fiber massage accelerates knee ligament healing. Journal of Orthopaedic & Sports Physical Therapy (JOSPT). 2009 Jul; 39(7): 506-514.

Loghmani MT, Kiesel J, Lassiter J, Taylor L, Beaman M, Grogg J, Streeter H, Warden SJ. Long-term effects of instrument-assisted cross-fiber massage on healing medial collateral ligaments. JOSPT. 2007 Jan; 37(1): A18.

Hayes D, Loghmani MT, Lubitz R, Moore E. A comparison of two instrument-assisted soft tissue mobilization techniques: effects on therapist discomfort/fatigue and treatment time. JOSPT. 2007 Jan; 37(1): A17.

Burke J, Buchberger DJ, Carey-Loghmani MT, Dougherty PE, Greco DS, Dishman JD. A pilot study comparing two manual therapy interventions for carpal tunnel syndrome. Journal of Manipulative and Physiological Therapeutics (JMPT). 2007 Jan; 30(1): 50-61.

Hammer WI, Pfefer, MT. Treatment of a case of subacute lumbar compartment syndrome using the Graston Technique. JMPT. 2005 Mar/Apr; 28(3): 199-204.

Gehlsen GM, Ganion LR, Helfst R. Fibroblast response to variation in soft tissue mobilization pressure. Medicine and Science in Sports and Exercise. 1999 Apr;31(4): 531-535.1

Davidson CJ, Ganion LR, Gehlsen GM, Verhoestra B, Roepke JE, Sevier TL. Rat tendon morphologic and functional changes resulting from soft tissue mobilization. Medicine and Science in Sports and Exercise. 1997 Mar;29(3): 313-319.1

Hammer W. The use of transverse friction massage in the management of chronic bursitis of the hip and shoulder. JMPT. 1993 Feb;16(2): 107-111.

Davidson CJ, Ganion L, Gehlsen G, Roepke J, Verhoestra B, Sevier TL. Morphologic and functional changes in rat achilles tendon following collagenase injury and GASTM. Medicine and Science in Sports and Exercise 1995; 27(5) [presented, not published].

Sevier TL, Gehlsen GM, Wilson JK, Stover SA, and Helfst RH. Traditional physical therapy vs. Graston Technique Augmented Soft Tissue Mobilization in treatment of lateral epicondylitis Medicine and Science in Sports and Exercise. 1995; 27 (5) [presented, not published].

## WORKS CITED

1. Bloom W, Fawcett D. A Textbook of Histiology. Vol Ed 10. 10 ed. Philadelphia: WB Saunders Co; 1975.
2. Pyne D. Exercise-induced muscle damage and inflammation: a review. Australian J Sci Med. 1994;26(3/4):49-58.
3. Depner CM, Kirwan RD, Frederickson SJ, MP M. Enhanced inflammation with high carbohydrate intake during recovery from eccentric exercise. Eur J Appl Physiol. 2010;109:1067-1076.
4. Carey M. Graston Technique Instruction Manual. 2 ed. Indianapolis: TherapyCare Resources, Inc; 2001.
5. Chamberlain G. Cyriax's friction massage: a review. JOSPT. 1982;4(1):16-22.
6. Stow R. Instrument-assisted soft tissue mobilization. Int J Athl Thera Train. 2011;16(3):5-8.