

Best Practice for Cutaneous Manual Therapy

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2017 Great Lakes Athletic Trainers' Association
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Conflict of Interest

No Conflict

- The views expressed in these slides as well as today's presentation are my own based off my research and clinical experience with cutaneous manual therapy interventions
- My views may not be the same as the views of my institutions' constituents or my colleagues
- Attendees of this workshop must use discretion when using the information contained in this presentation

Objectives

- Recall the timeline of events that lead to the development of IASTM in the United States
- Understand the body's biophysical response to treatments using IASTM and similar treatments
- Recognize the differences between IASTM and associated cutaneous manual therapy techniques

Objectives

- Compare the current evidence regarding the use of two cutaneous soft tissue manual therapy treatments on muscle/tendon pain
- Consider clinician recommendations for best IASTM and cutaneous manual therapy treatment practices and professional development

Historical Overview of IASTM

“Necessity is the Mother of Invention”.
- unknown



Davidson, C. J., Ganion, L. R., Gehlsen, G. M., Verhoestra, B. E. T. H., Roepke, J. E., & Sevier, T. L. (1997). Rat tendon morphologic and functional changes resulting from soft tissue mobilization. *Medicine and Science in Sports and Exercise*, 29(3), 313-319.

Sevier TL, Gehlsen GM, Wilson JK, Stover SA, and Helfst, RH (1995). Traditional physical therapy vs. Graston augmented soft tissue mobilization in treatment of lateral epicondylitis. *Journal of the American College of Sports Medicine*, 27(5), S52.

Gehlsen, G., Ganion, L., & Helfst, R. (1999). Fibroblast responses to variation in soft tissue mobilization pressure. *Medicine and Science in Sport and Exercise*, 31(4), 531-535



Melham, T.J., Sevier, T.L., Malnofski, M.J., Wilson, J.K., Helfst, R.H. (1998). Chronic ankle pain and fibrosis successfully treated with a new noninvasive augmented soft tissue mobilization technique (ASTM): a case report. *Medicine and Science in Sports & Exercise*, 30 (6), 801-804.

My history with Cutaneous Manual Therapy

- **Aly Williams, PhD, AT-Ret, CSCS**
 - 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.
- **Mary Jacobs, MA, LAT, ATC, CSCS**
 - Lifetime Astym clinician
- **Andrew Doyle, MA, LAT, ATC, CSCS**
 - (finishing PhD work with Astym this summer)
 - One year away from Lifetime Astym clinician

Theory Behind Cutaneous Manual Therapies

- IASTM is a form of manual therapy that enables clinicians to detect adhesions and break down scar tissue and fascial restrictions once detected through the use of ergonomically designed instruments.
- These instruments allow trained clinicians to effectively address these pathologies, which are often the cause of pain and dysfunction, resulting in improved patient outcomes.

Theory Behind Cutaneous Manual Therapies

- Trained clinicians utilize these specially designed instruments to facilitate the introduction of controlled micro-trauma to the affected superficial soft tissue causing the stimulation of a local inflammatory response.
- Adhesions within the soft tissue, which may have developed as a result of surgery, immobilization, repeated trauma or other multiple other mechanisms, are identified and targeted for treatment.

Theory Behind Cutaneous Manual Therapies

- This incurred microtrauma initiates the healing process through the re-absorption of inappropriate fibrosis and/or excessive scar tissue.
- This results in remodeling of the affected soft tissue structures and promotes restoration of function & ROM.
- IASTM is an advanced clinical intervention that has changed the way chronic and acute soft tissue injuries are treated.

Theory Behind Cutaneous Manual Therapies

- IASTM varies widely in its depth of application from simple massage/ mobility based techniques aiming at improving general tissue mobility, metabolic effect and general function to a complex soft-tissue treatment system encompassing the latest research on myofascial pain and movement dysfunction.
- It was once thought that incurring a localized superficial response was imperative to initiate fibroblastic activity.

Theory Behind Cutaneous Manual Therapies

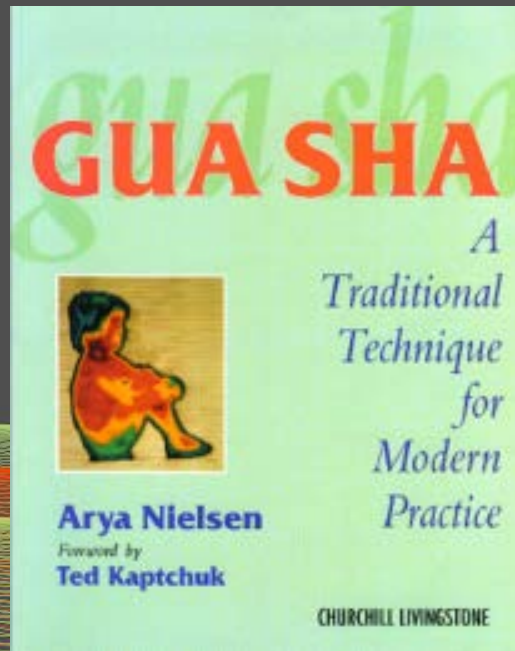
- AKA - Petechiae - Histamine Response
- Clinician experience has challenged the evidence leading away from incurring this superficial response (Gehlsen et al., 1999).



KTools <http://kiastm.com/5-common-iastm-mistakes-people-make/>

Gua Sha

- IASTM has roots in Eastern Medicine as 'Gua Sha' and was first documented in Traditional Chinese Medicine several thousand years ago
- Gua Sha used instruments made from buffalo horn to successfully elicit similar outcomes in treatment as current IASTM interventions.



Gua Sha

- Gua- means to scrape & SHA means 'Sha-syndrome, or 'reddish, elevated, millet-like skin rashes'. The technique of Gua Sha intentionally brings the Sha rash to the surface



Theory Behind Cutaneous Manual Therapies

- When using IASTM interventions for soft tissue mobilization there will always be a constant variance on pressure based off whether the clinician is using an evaluation technique as compared to a treatment technique
- The pressure utilized for evaluation and scanning is less than the pressure used for therapeutic IASTM treatment

Theory Behind Cutaneous Manual Therapies

- Developing a clear understanding of the difference between evaluation pressure and treatment pressure is a critical part of clinician training for instrument therapies.
 - Training is imperative
 - There are protocols to follow
 - Staying current on the ever developing literature on these therapies is imperative

Theory Behind Cutaneous Manual Therapies

- Extrapolation is a problem!
 - the action of estimating or concluding something by assuming that existing trends will continue or a current method will remain applicable.
- There are instruments readily accessible today that require little to no training, a background of or understanding of prior to purchase and use
 - Potentially dangerous
 - Unethical
 - Unprofessional

What does the Evidence say about Cutaneous Manual Therapy?

- Many IASTM interventions may have been developed from Astym™ and the Graston Technique®, which are the industry standards and benchmarks, having been the first to develop instruments and teach clinicians patient applications.

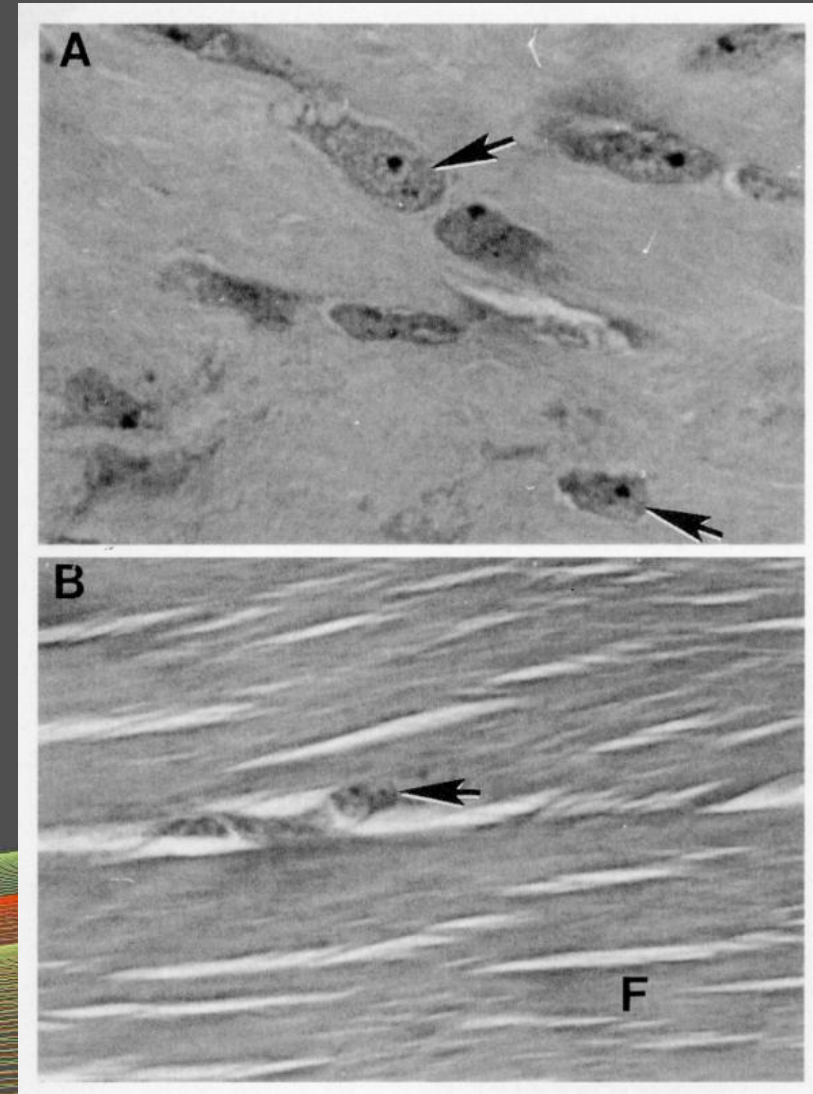
- <https://astym.com/blog/>

What does the Evidence say about IASTM?

- The Graston Technique® patent expired in 2010
- Multiple IASTM variations and competitors have been developed since that patent expiration but research on the “newer” instruments doesn’t exist yet, is limited, or “piggy-backs” prior research from another instrument

Defining the Technique-Biophysical Changes

- Bench top science says 'something' is happening in the tissue (Davidson et al., 1997 → Gehlsen et al., 1999)
 - Fibroblast activity
 - Collagen reformation



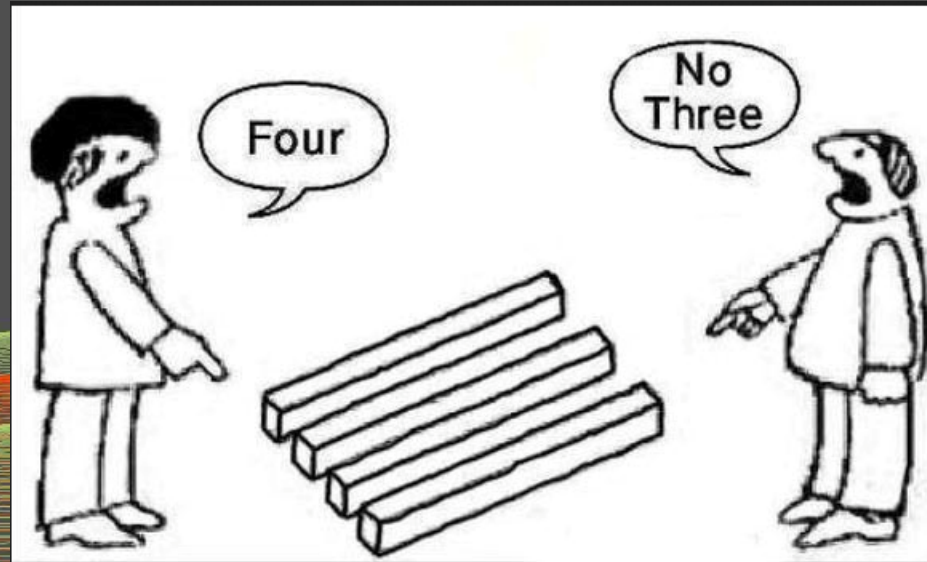
Defining the Technique

- However clinically...it is important to follow the literature...what techniques have been published and shown effective for SPECIFIC conditions?
- Most all peer-reviewed studies that have been published reference Astym™, Graston, or (G)IASTM which is later defined as the Graston Technique®

Defining the Technique

Research Issues

- The most glaring potential issue is
 - EXTRAPOLATION!!!!
- When you dig deep enough, you may find that a technique you are interested in may not be considered IASTM based on the prior definitions



The Differences Between IASTM and Other Cutaneous Manual Therapy Techniques

- Some IASTM techniques
 - MAY NOT Break down the tissue (or be a treatment goal)
 - MAY treat healthy tissue in addition to dysfunctional
 - MAY NOT use cross friction in the treatment
 - MAY be considered a protocol
 - MAY NOT be predictable
- Research the evidence to help make a firm decision on what technique you would like to use



<http://brainden.com/face-illusions.htm>

Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

- Two PIO Questions investigated:
 - PIO #1
- Does muscle/tendon injury pain improve among patients being treated with the Astym™ Protocol?
- P - patients with muscle/tendon pain
- I - Astym™ Protocol
- O - pain measurement



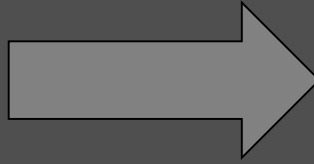
Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

- Two PIO Questions investigated:
 - PIO #2
- Does muscle/tendon injury pain improve among patients being treated with the Graston Technique®?
- P - patients with muscle/tendon pain
- I - Graston Technique®
- O - pain measurement



Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

- Databases



- Terms:

- ‘pain’, ‘function’
- ‘muscle pain’
- ‘tendon pain’
- ‘soft tissue treatment’
- ‘Astym’ and ‘Graston’

PubMed

PEDro
PHYSIOTHERAPY EVIDENCE DATABASE

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Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

- Criteria for Inclusion
 - Level 2 Evidence (RCTs)
 - PEDro Score of 6 or better
 - Outcome measure using of an objective pain scale
 - Evaluating muscle or tendon injury
- # of articles/findings that met the above criteria:
 - **Astym: 2 RCTs**
 - **Graston: 2 RCTs**

Alphabet Soup Resource

- Outcome Scales, Definitions, Validity, reliability, Usage, etc.
- Physiopedia
 - http://www.physio-pedia.com/Main_Page
 - VISA-A (Victorian Institute of Sport Assessment- Achilles)
 - DASH (Disability of the Arm ,Shoulder, Hand) score
 - NPRS (Numeric Pain Rating Scale)
 - ODI (Oswestry Disability Index)
 - VAS (10cm vs. 100mm) (Visual Analog Scale)

Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

- PIO # 1 Regarding Astym and Pain
- Article #1(Sevier, 2015)
 - RCT w/ a delayed entry design after 4wk wash out...We only appraised first 4wk data
 - ITT analysis performed
 - Investigated worst Lateral Elbow Pain patients
 - Used The DASH & VAS
 - 2 Tx per week for 4wks of:
 - Astym + EE + Stretching (11 dropouts)
 - EE + Stretching (12 dropouts)

PeerJ

Astym treatment vs. eccentric exercise for lateral elbow tendinopathy: a randomized controlled clinical trial

Thomas L. Sevier¹ and Caroline W. Stegink-Jansen²

¹Performance Dynamics, IU Health Ball Memorial Hospital, Muncie, IN, USA

²Department of Orthopaedic Surgery and Rehabilitation, The University of Texas Medical Branch, Galveston, TX, USA

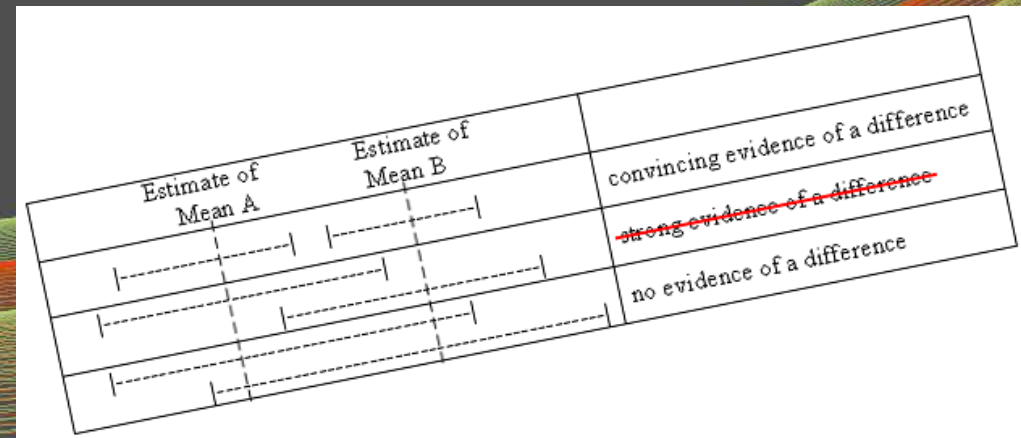
Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

•PIO # 1 Regarding Astym and Pain

- Astym + EE/Stretching had statistical significant DASH score improvement interaction between baseline and 4wks
- Astym + EE/Stretching DASH reduction
 - 13.3 points (95%CI 9.78 to 16.82)
- EE + Stretching DASH reduction
 - 7.8 points (95%CI 4.16 to 11.44)
- No Statistical difference between 4wk tx and 12mo

Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

- PIO # 1 Regarding Astym and Pain
 - Regarding CHANGE in VAS for Pain
 - Astym + EE/Stretching and EE + Stretching were not significantly different between groups
 - Astym + EE/Stretching 24 (95%CI 16.63 to 31.27)
 - EE + Stretching 13 (95%CI 5.28 to 20.72)
 - Were significantly different over 4wk time
 - No significant differences in VAS Pain reduction
 - btwn 4wk Tx and 12 mo
 - VAS MCID = 13.7mm



Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

- PIO # 1 Regarding Astym and Pain
- Article #2 (McCormack, 2016)
 - RCT w/ long term f/u
 - ITT analysis performed
 - Investigated Pts. w/ Achilles Tendinopathy Pain
 - Used The VISA-A & NPRS
 - 2 Tx per week for 6wks for total of 12 sessions:
 - Astym + EE (2 dropouts)
 - EE (1 dropout)



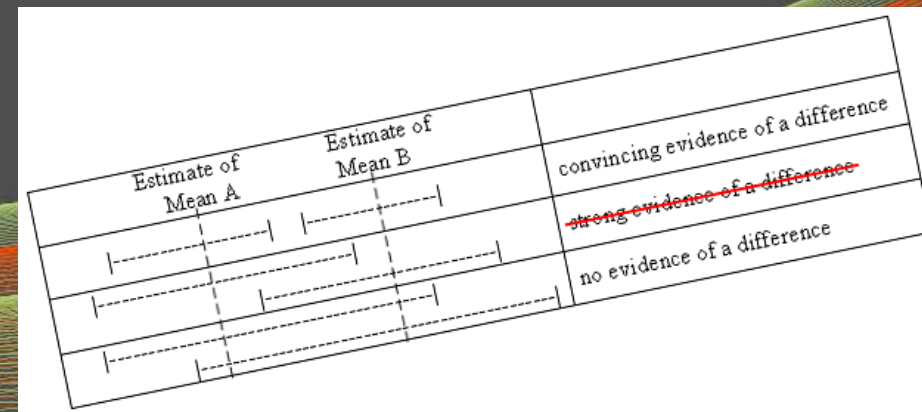
Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

- PIO # 1 Regarding Astym and Pain
 - Statistical significance improvement in VISA-A was found between Astym + EE and EE at weeks 12, 26, & 52 on VISA-A --Favoring Astym + EE

Tx Group	Wk 12	Wk 26	Wk 52
Astym + EE	81.9 score (95%CI 69.9 to 94.0)*	86 (95%CI 70 to 102)^	90.7 (95%CI 79.2 to 102.1)^
EE only	51.5 score (95%CI 33.2 to 69.8)	55.3 (95%CI 38.4 to 72.2)	67 (95%CI 52.8 to 81.2)

* Clinical significance

^ Clinically meaningful



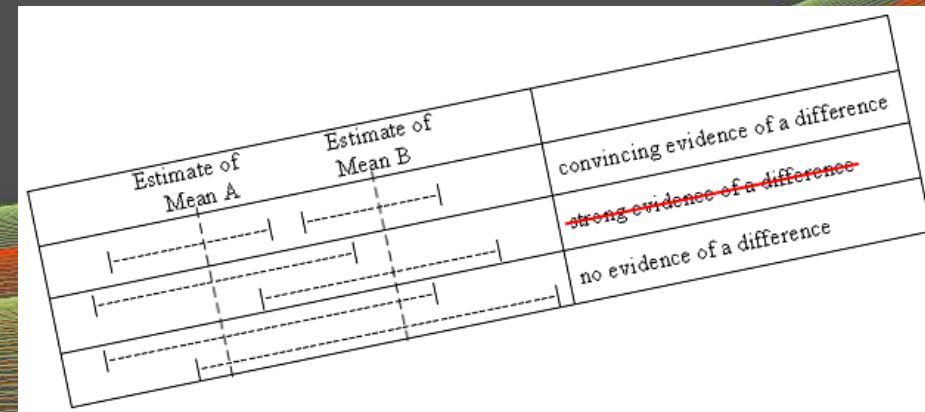
Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

•PIO # 1 Regarding Astym and Pain

- No Statistical significance comparing the group differences w/ NPRS improvement was found at any time point
- All groups statistically improved the NPRS score over time

Tx Group	Wk 12	Wk 26	Wk 52
Astym + EE	1.7 (0.8-2.8)	0.8 (-0.2-1.9)^	.67 (-0.6-1.9)
EE only	3.0 (1.5-4.4)	2.1 (1.4-2.8)	1 (-0.6-2.6)

^ Clinically meaningful by beating the MCID of 2



Clinical Bottom Line

- PIO # 1 Regarding Astym and Pain
 - Astym can statistically improve pain from baseline
 - Astym can meet MCIDs for pain
 - Astym can be statistically and clinically significant compared to EE alone within 4 to 6 weeks, 2 Tx/wk
 - Astym can keep pain significantly reduced at 1yr follow up compared to EE alone



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Clinical Bottom Line

- PIO # 1 Regarding Astym and Pain
 - Astym can be statistically and clinically significant for disability improvement compared to EE alone within 4 to 6 weeks, 2 Tx/wk
 - Astym can keep pain significantly reduced at 1yr follow up compared to EE alone



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Clinical Bottom Line

- PIO # 1 Regarding Astym and Pain
 - Astym can be statistically & clinically significant:
 - at restoring function via DASH and VISA-A compared to EE alone
 - Clinicians should incorporate eccentrics w/ Astym
 - Clinicians should use qualitative surveys to evaluate disability
 - Clinicians should not extrapolate



Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

- PIO # 2 Regarding Graston and Pain
- Article #1 (Corthers, 2008)
 - RCT *Erratum* 2016
 - ITT analysis performed
 - Those w/ Mid Back Pain (T1 to T12)
 - Used the ODI & VAS (10cm)
 - 10 Tx w/in 3 to 4wks:
 - Low Amplitude Thrusts SMT (11 dropouts)
 - Placebo - De-Tuned US (18 dropouts)
 - Graston (27 Dropouts)

Crothers et al. *Chiropractic & Manual Therapies* (2016) 24:16
DOI 10.1186/s12998-016-0096-9

Chiropractic &
Manual Therapies

RESEARCH

Open Access



Spinal manipulative therapy, Graston technique® and placebo for non-specific thoracic spine pain: a randomised controlled trial

Amy L. Crothers¹, Simon D. French^{2,4}, Jeff J. Hebert³ and Bruce F. Walker^{2*}

Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

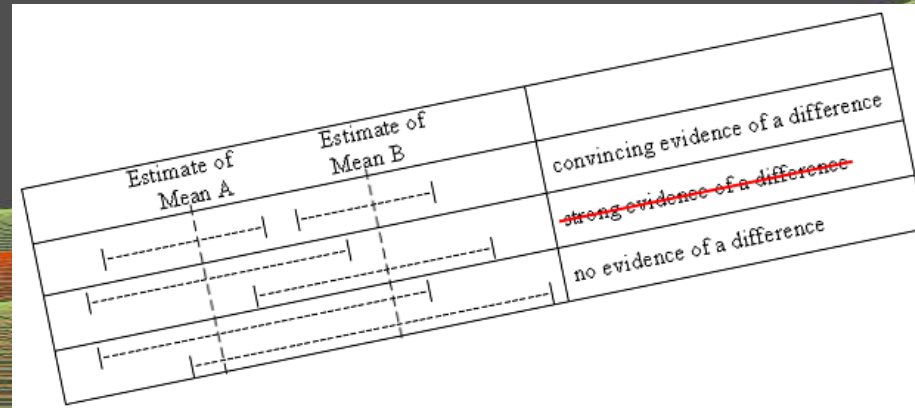
- PIO # 2 Regarding Graston and Pain
 - No Statistical significant differences between group and time for the ODI

Time	Graston vs. SMT	Graston vs. Placebo	SMT vs. Placebo
1 mo	-3.4 (-7.7, 0.9) G	-4.5 (-8.6, -0.4) G	-1.1 (-5.7, 3.6) SMT
6 mo	-1.9 (-6.9, 2.9) G	-0.4 (-4.9, 4.2) G	1.6 (-3.7, 6.9) P
12 mo	-4.8 (-10.5, 0.9) G	-1.2 (-6.8, 4.4) G	3.6 (-2.5, 9.7) P

G = Graston favored

SMT = Low Amplitude Thrusts favored

P = Placebo favored

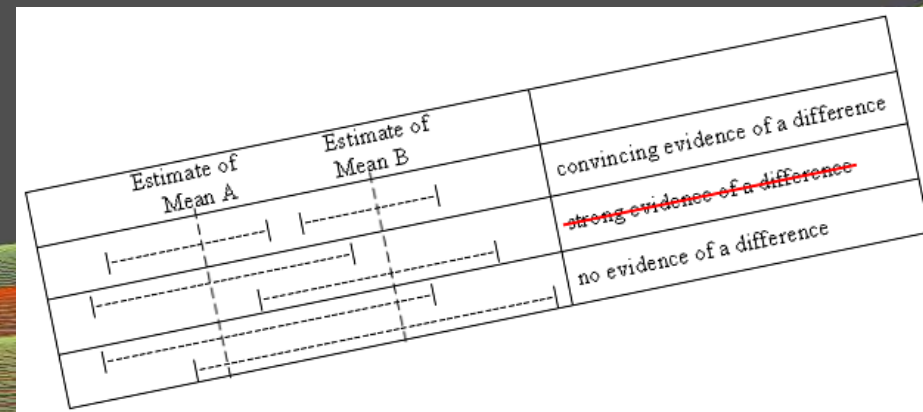


Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

- PIO # 2 Regarding Graston and Pain
 - Graston met the MCID (9 pts) for the change of the ODI

Time	Graston	SMT	Placebo
Baseline to 1 m	11.5*	7.4	6.6
Baseline to 1 yr	13.3*	6	12*

*Met ODI MCID



Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

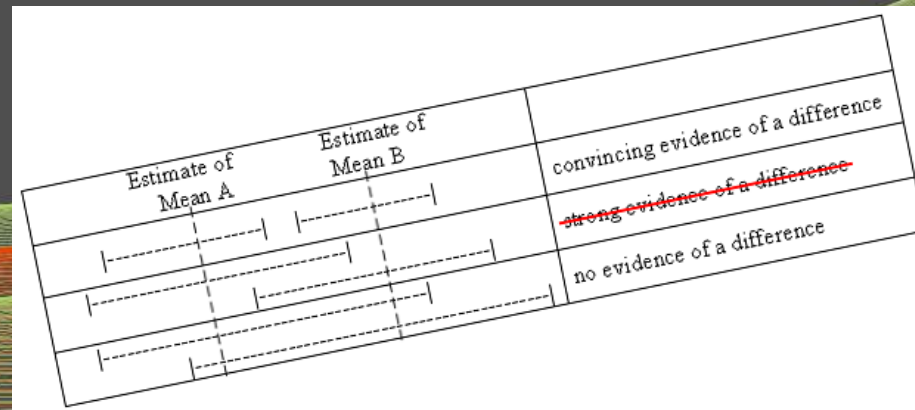
- PIO # 2 Regarding Graston and Pain
 - No Statistical significant differences between group and time for the VAS (10cm)

Time	Graston vs. SMT	Graston vs. Placebo	SMT vs. Placebo
1 mo	-1.0 (-1.9, -0.2) G	-0.9 (-1.7, -0.1) G	-0.4 (-1.5, 0.7) P
6 mo	-0.4 (-1.4, 0.7) G	-0.2 (-1.2, 0.8) G	0.2 (-1.0, 1.3)
12 mo	-0.8 (-1.9, 0.3) G	-0.4 (-1.5, 0.7) G	0.4 (-0.8, 1.6) P

G = Graston favored

SMT = Low Amplitude Thrusts favored

P = Placebo favored

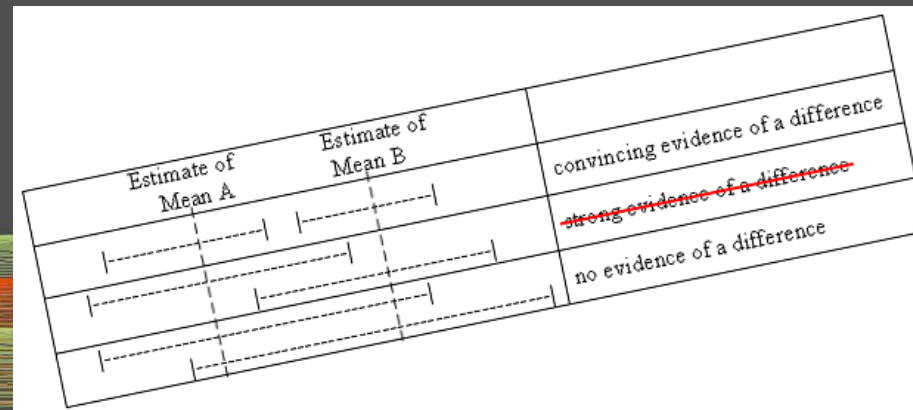


Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

- PIO # 2 Regarding Graston and Pain
 - Graston met the MCID (1.37 pts) for the change of VAS (10cm)

Time	Graston	SMT	Placebo
Baseline to 1 m	2.3*	1.2	1.3
Baseline to 1 yr	2.5*	1.8 *	2.2*

*Met VAS (10cm) MCID



Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

- PIO # 2 Regarding Graston and Pain
- Article #2 (Hoon Lee, 2016)
 - RCT
 - No ITT analysis needed
 - Those w/ Low Back Pain (T1 to T12)
 - Used VAS (100mm)
 - Multiple Tx w/in 4wks:
 - Group 1 - Graston + General exercise
 - Group 2 - General exercise (stretching and stationary cycling)



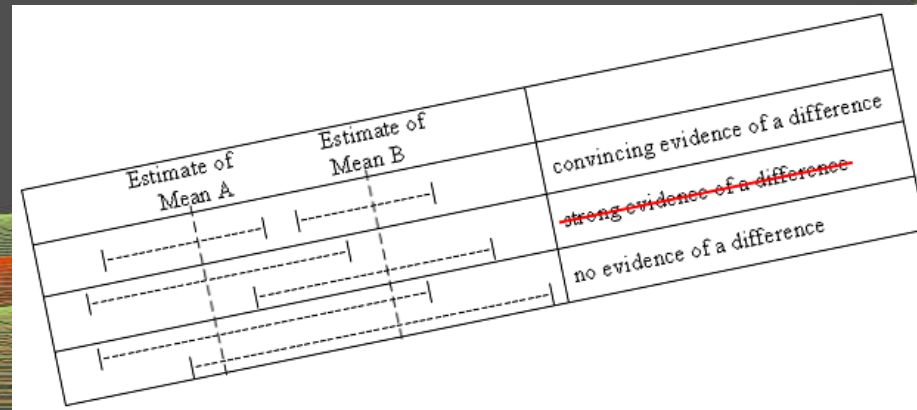
Current Evidence on Pain Using IASTM and Cutaneous Manual Therapy

- PIO # 2 Regarding Graston and Pain
 - Statistical significant differences between group and time for the VAS (100mm)

Time	Graston VAS Change from Baseline to 4wks	Control VAS Change from Baseline to 4wks	Adjusted 95% CI Difference btwn treatment groups*	Independent treatment effect for Graston*
1 mo	25.1	4.3	19.1 (95% CI 11.26 - 26.94)	25.5 (95% CI 21.5 - 29.5)^

*Calculated using PEDro Calculator for CI

^The VAS Improvement meets the MCID of 13.7mm



Clinical Bottom Line

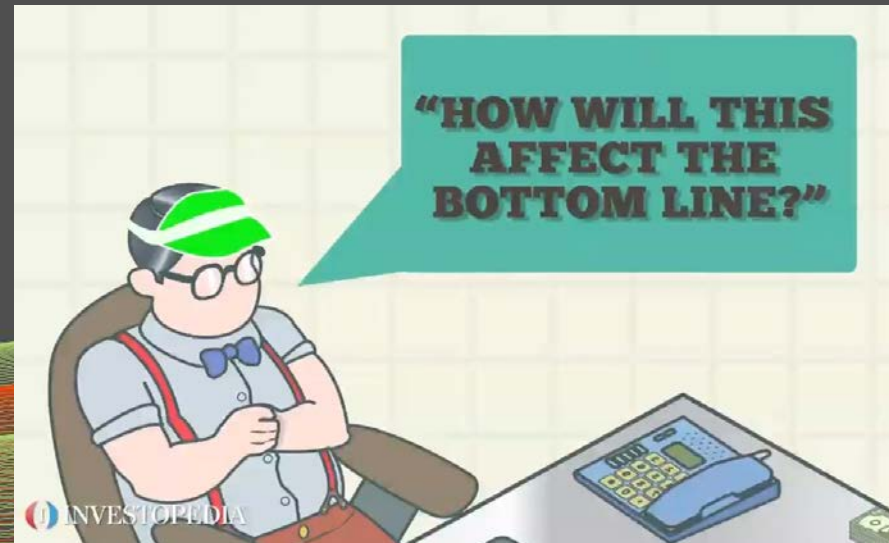
- PIO # 2 Regarding Graston Technique and Pain
 - The Graston Technique can statistically improve pain from baseline within 4 to 6 weeks, 2 Tx/wk
 - The Graston Technique can meet MCIDs for pain
 - The Graston Technique can keep pain significantly reduced at 1yr follow up



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Clinical Bottom Line

- PIO # 2 Regarding Graston Technique and Pain
 - Clinicians should use qualitative surveys to evaluate disability
 - Clinicians should pursue M2 GT training to fully utilize the capabilities of the Graston Technique
 - Clinicians should not extrapolate



The efficacy of instrument assisted soft tissue mobilization: a systematic review. SW Cheatham, M Lee, M Cain, R Baker. J Can Chiropr Assoc 2016; 60(3)

- The purpose of this study was to systematically review the current published research assessing the effects of IASTM as an intervention to treat a musculoskeletal injury or to improve joint range of motion. A **systematic review** is a type of literature review that collects and critically analyzes multiple research studies or papers, and is regarded as the strongest form of medical evidence.

The efficacy of instrument assisted soft tissue mobilization: a systematic review. *SW Cheatham, M Lee, M Cain, R Baker. J Can Chiropr Assoc 2016; 60(3)*

- The goal of this systematic review was to appraise the current IASTM literature to provide a current update for the practicing clinician. A total of 7 randomized controlled trials were reviewed.

The efficacy of instrument assisted soft tissue mobilization: a systematic review. *SW Cheatham, M Lee, M Cain, R Baker. J Can Chiropr Assoc 2016; 60(3)*

- This review evaluated the research on IASTM and concluded research does not support the efficacy of IASTM. Recognizing the fact that some clinicians utilize IASTM without supporting research and training, the systematic review noted there is a gap between research and clinical practice. The authors concluded that the literature measuring the effects of IASTM is still emerging.

The efficacy of instrument assisted soft
tissue mobilization: a systematic review. *SW
Cheatham, M Lee, M Cain, R Baker. J Can
Chiropr Assoc 2016; 60(3)*

- This systematic review did not include Astym™ therapy, but rather distinguished Astym™ therapy and acknowledged Astym therapy has its own body of evidence that differs greatly from IASTM.

The efficacy of instrument assisted soft tissue mobilization: a systematic review. *SW Cheatham, M Lee, M Cain, R Baker. J Can Chiropr Assoc 2016; 60(3)*

- Five studies reported using the Graston Technique® but modified or excluded parts of the protocol. Only one study followed the recommended Graston Technique® protocol. The best available evidence for the Graston Technique® was the only study which followed the complete protocol. This is fairly compelling evidence that the Graston Technique® is superior to IASTM - even IASTM w/ GT instruments!

Practice Recommendations

Clinician Training

Silbaugh, K., Eberman, L., Demchak, T., Wasik, M. (2013). Validity of Instrument Assisted Soft Tissue Mobilization for Detecting Myofascial Adhesions through Secondary Diagnostic Ultrasound Analysis (Master's Thesis)

<http://scholars.indstate.edu/bitstream/handle/10484/5386/Silbaugh%20Kaitlyn.pdf?sequence=2&isAllowed=y>

Retrieved from Sycamores Scholars Database
(Indiana State University)

Clinician Training – Instrument Registration?

- A **Patent** is a set of exclusive rights granted by a sovereign state to an inventor or their assignee for a limited period of time, in exchange for the public disclosure of the invention. An invention is a solution to a specific technological problem, and may be a product or a process. Patents are a form of intellectual property.

Clinician Training – Instrument Registration?

- ® - The Registered trademark symbol, designated by the circled capital letter "R", is a symbol used to provide notice that the preceding mark is a trademark or service mark that has been registered with the national trademark office. In some countries it is against the law to use the registered trademark symbol for a mark that is not officially registered in any country.

Clinician Training – Instrument Registration?

- TM Trademarks are not officially registered with a national trademark office; instead they can be marked with the trademark symbolTM

Clinician Training & Vendors

- ASTYM™ (Isolator, Evaluator, Localizer)
- Graston Technique® (GT #1-6)
- SASTM (Sound Assisted - #1-8)
- Technica GalivanPTB™ (Ala Garra, Pico)
- Hawk Grips (patented) (HG #1-9)
- Fibroblaster
- FMT Blades (functional movement technique)
- IAM® (Instrument Assisted Massage)
- FAKTR-PM (Functional and Kinetic Treatment with Rehab, Provocation and Motion)
- The Edge
- SMART
- Myo-Bar (Faculty Demo)
- KIHealthConcepts – KTools – KIASTM
- RockBlades® (Mallet, Mullet)
- Taktonexx® tools
- BioEdge™
- ST3 Fuzion (soft tissue therapy tools) (patented)
- Myofascial Releaser (patent pending)
- FMST – Fluid Motion Soft Tissue (patented)
- Fascial Abrasion Technique Tool™ (FAT-Tool)
- ZUKA
- Ellipse (patent pending)
- M2T-Blade
- Miyodac Therapy
- Adhesion Breakers
- Narson Body Mechanics
- Scimitar Tools (patent pending)
- I-Assist Tools
- Healers' Friend
- Buffalo Horn
- Jade
- Bian Stone
- Ergon® Tools

Professional Development

- So, you've pursued training and certification; how do you ensure your clinical skills keeps pace with the technique and the research?
- The cutaneous manual therapy approaches and IASTM instruments, techniques, and instruction are continually improving; change is the norm.
- Consider whether the technique you pursue requires training before purchase? Is that an issue for your clinical practice?

Questions??



- <http://unitedhealthkent.com/2014/03/instrument-assisted-soft-tissue-massage-iastm/>

Thank You!

- Thank You to the GLATA Education Committee for the opportunity to present to the Great Lakes athletic training membership!



Thank You!

- Thank You to the Eli Lilly Foundation for providing a research grant to fund the purchase of the various instruments used in today's presentation.

The Eli Lilly logo is rendered in a red, cursive script font. It is positioned in the center of the slide, above a decorative wavy line that spans the width of the image. The wavy line is composed of many thin, overlapping lines in shades of green and yellow, creating a sense of motion and depth.

Thank You!

- Thank You to Paul Calloway with the Miotech Orthopedic Group, LLC. for the assisting in the purchase of many of the instruments used in today's presentation!

