Instrument Assisted Soft Tissue Mobilization

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What is Instrument Assisted Soft Tissue Mobilization?

An advanced system of instrument assisted soft-tissue mobilization combined with rehabilitative exercises to improve overall musculoskeletal function.
SUPERFICIAL POSTERIOR SPINAL FASCIAL LAMINA

Deep Posterior Spinal Lamina

FUSION OF SUPERFICIAL & DEEP LAMINAe

SERRATUS POSTERIOR INFERIOR

GLUTEUS MEDIS

SACROTUBEROUSLIGAMENT

IASTM Concepts - Functional and Kinetic Treatment with Rehab (FAKTR)

- Functional – We are interested in treating patients during a function that reproduces their pain, discomfort, a loss or ROM or you or the patient describes tightness within the soft tissues. We may or may not elect to treat in a static posture – determine if the patient’s condition is worse with load or no load and if with load, treat with load, etc.

- Kinetic – We are interested in how kinetic chain plays a role in this patient’s condition.

IASTM Concepts

- Treatment – You can use your own choice of soft tissue treatment, Pin and Stretch, MRT, Nimmo, PNF, Mattes, Mulligan, GT®, Cyriax, Muscle Energy, PIR, etc

- Rehab – Try combining low tech rehab equipment during the treatment process in addition to post treatment

IASTM Concepts

- Provocation – Place the patient into a position of provocation, i.e., if back pain is present when seated, treat the patient seated in the position of provocation.

- Motion – Evaluate the patient to determine if the pain is worse with or without motion, if with motion, treat with motion.
IASTM Concepts

- Once you determine all components of FAKTR, you begin your treatment protocols.

- Before initiating any form of treatment, a complete history and physical examination must be performed that leads you to the determination that your patient will benefit from whatever type of care you plan to utilize always remembering that your treatment MUST beat the natural history of that disorder.

Why bring soft tissue and exercise rehabilitation together?

- Rehab / proprioceptive techniques
- Functional movement patterns utilizing the kinetic chain
- Movements and/or positions of provocation are all utilized to recreate symptoms, referral patterns, imbalances, instabilities, weaknesses, functional loss or injuries.

Why utilize dynamic activities during soft tissue treatments?

- Through the use of active motions, functional positioning, and exercise rehabilitation during the soft tissue treatment it is possible to immediately initiate changes in the alignment of collagen and soft tissue remodeling through an increase in fibroblastic activity.
Why utilize dynamic activities during soft tissue treatments?

- Dynamic activities force fascial planes to move against and over each other
- If there adhesions are present, preventing fascial, or soft tissue function, why would we want to treat in a static position
- We can use dynamic activities to assist us in rearranging how fascia/soft tissues heal utilizing manual or IASTM methods.

INSTRUMENT-ASSISTED CROSS FIBER MASSAGE ACCELERATES KNEE LIGAMENT HEALING: Dept of anatomy and cell biology, Indiana University. Loghmani, MT et al., 2006

- Controlled study: 20 rats underwent surgical bilateral transection of the MCL.
- 7 days postoperatively GT was used on the left MCL for one minute 3x per week for 3 weeks.
- Results: “Ligaments treated with IACFM were found to be 31% stronger and 34% stiffer than untreated ligaments.”
- Article will appear in JOSPT.
M. TERRY LOGHMANI, PT, MS, PT, PhD.
Instrument-Assisted Cross-Fiber Massage
Accelerates Knee Ligament Healing

Results
Ligament mechanical properties
(4 weeks) 9 IACFM treatments

Results
Ligament mechanical properties
(12 weeks) 30 IACFM treatments
Discussion
Summary of preliminary findings

- **Short term**
  IACFM accelerates ligament healing
  - **Biomechanical Testing**
    Stronger • Stiffer • Absorbed more energy to failure
  - **Light Microscopy & SEM**
    Qualitative improvements in collagen alignment

- **Longer-term**
  IACFM may augment ligament healing
  - **Biomechanical Testing**

Effect of GT on Ligamentous Healing

Before Treatment: Irregularly oriented and diminished amount of fibroblasts

The treated appears to have increased cellularity and more regularly oriented, elongated fibroblasts.

Results
LDI

- IACFM had no immediate effect on tissue perfusion ratios (treated/unreated)
  - Immediately prior (PRE) to treatment or at 5, 10, 15 or 20 min post treatment at any assessment point, or at 24h after 1st treatment session
  - Perfusion Ratio > 1 indicates greater perfusion in LCFM-treated hindlimb.

- Significantly greater perfusion 24h after treatment sessions and 1 week after final treatment

\[ p < 0.05 \]
Eccentric Training for Tendiopathies

Research has shown that treating tendinopathies in the eccentric phase can be effective.

Studies exist currently on the following body parts:
- Achilles tendon
- Patellar tendon
- Proximal lateral elbow
- Rotator cuff

Alfredson used 3 sets of 15 reps with the knee fully extended and 3 sets with the knee partially flexed. These were performed 2 X’s per day for 12 weeks. Initially pain was expected but as the pain subsided, he added a backpack with weight.

At the end of the 12 weeks of treatment, all 15 patients returned to preinjury running activities. In addition to improving their calf strength, Alfredson began this study due to his own Achilles tendinopathy.
Those receiving eccentric training showed 82% satisfaction and resumed their previous activity level, compared to only 36% of those receiving concentric training. A study by Silbernagel et al. showed significantly less pain with eccentric care for midportion Achilles tendinopathy exhibited 65% without symptoms at a 5 year follow-up.


There have been a small number of studies involving lateral epicondylitis and additional studies are warranted. Tyler et al. used a flexbar (Theraband). The control group used stretching, cross-friction massage, US, heat and ice. Those using the flexbar showed superior results for pain reduction, strength and subjective disability.

Rotator Cuff Tendon Eccentric Treatment

One study evaluated eccentric training in chronic, painful impingement syndrome waiting for surgery with a duration of pain for 41 months. There were 9 patients in the study. All 9 had tried differing treatments including rest, steroid injections, NSAIDs, and shoulder rehab exercises. Those with arthrosis in the AC joint or with large calcifications causing mechanical impingement were excluded. These patients underwent painful eccentric training for the SS and Deltoid of 3 sets of 15 reps twice a day for 12 weeks.


At 52 weeks, 5 of the 9 patients were satisfied with the treatment and withdrew from the surgical list. Among the remaining satisfied patients, 2 had partial tears of the SS tendon and 3 had Type 3 shaped acromions.

Another study looked at eccentric of the rotator cuff and concentric or eccentric exercises of the scapula stabilizers on the need for surgery in those with subacromial impingement. The control group did nonspecific neck and shoulder exercises. Both groups received 5 to 6 sessions by PT's with home exercises 1-2 times per day for 12 weeks. There was significant reduction in pain in the eccentric group as well as a significantly reduced number undergoing surgery.


Treatment of Plantar Fascitis

Many different forms of treatment for this condition have been utilized such as Shockwave, botulinum toxin-A injection, radiofrequency ablation and surgery.

A recent study looked at Protein Rich Plasma (PRP) which appears to address the pathophysiology of the collagen matrix degradation and chaotic vascularity seen in this disorder.


The conclusion by Moton in his study suggested PRP combined with eccentric exercise and cyclic plantar fascia-specific stretching enhanced and accelerated healing with excellent long-term results.

Once again, it appears treatment coupled with eccentric loading is beneficial in the treatment of a variety of pathologies, oses and itises.


Robert Schleip states that “Fascia forms a continuous tensitional network throughout the human body, covering and connecting every single organ, every muscle, and even every nerve or tiny muscle.”
Muscles hardly ever transmit their full force directly via tendons into the skeleton but rather distribute a large portion of their contractile or tensional forces onto fascial sheets. In turn, these fascial sheets transmit these forces to both synergistic as well as antagonistic muscles when means they stiffen not only the respective joint, but may even affect regions several joints further away.

Schleip

Fascia is densely innervated with many sensory nerve endings including mechanoreceptors and nociceptors, which can become the source for acute myofascial pain. Fascia also has the ability to contract. Fascia has a blood supply in addition to a nerve supply and lymphatics. These coupled with it’s ability to contract raises the possibility for classification as an “organ.”

Schleip

With the FAKTR-PM concept, we place focus on areas or regions rather than on origins and insertions. We look at regions and how these regions overlap or interconnect, rather than treating isolated, individual muscles. One important aspect of what we stress is how groups of muscles and fascia work together. Example: The shoulder.
These images represent only a few positions to address soft tissue injuries to the shoulder. Notice the position of the scapula in each image.

In these images, the patient's arm has been abducted to 90 degrees and is resting on the clinician's knee. The head is tilted toward the side of treatment. Both IASTM and manual techniques are applied to the junction of the muscle/tendon junction of the Supraspinatus muscle.
The image on the left allows easy access to the insertions of the Infraspinatus and Teres Minor. The arm is flexed to 90 degrees, with adduction and external rotation of the forearm. Treatment is directed just below the deltoid.

The image above shows full adduction allowing an excellent position to treat the belly of the Infraspinatus.

IASTM applied under the Deltoid to the Infraspinatus and Teres Minor. Manual therapy can be applied to any site displayed in these images.

Treatment of the anterior portion of the Subscapularis muscle and medial Biceps tendon. The lateral Biceps tendon can be treated with the same technique as well as manually.
The Acromioclavicular joint may also be treated with manual or IASTM methods.

Treatment of the biceps proper from the proximal position distally to include the Lacertus Fibrosus.
Treatment of the Infraspinatus with a fan stroke.

Outlining the border of the scapula.

Demonstrating treatment of the Levator Anguli Scapulae from the upper 4 cervicals distally to the medial border of the scapula.
The medial border of the scapula should be treated with the scapula elevated and depressed.

The spine of the scapula is covered with fascia and should be included in your treatment regimen.
IASTM addressing portions of the Trapezius muscle.

The Subscapularis can be treated with manual and IASTM methods. This is a difficult area to locate a portion of the muscle; however, treatment of portions of its fascia may result in improved function or reduced pain when the region is treated.

Treatment of the axilla with movement of the arm from perpendicular to horizontal.
Continuation of treatment of the Serratus Anterior with retraction.

Pectoralis Major treatment with a fan stroke. The Pectoralis Minor should also be treated with many shoulder soft tissue injuries.

Rotating and lifting the arm provides great access to the Subclavius.
Before IASTM treatment for bilateral surgery some 10 years previously, the patient had been unable to externally rotate completely as demonstrated here using the Kcap App. The patient gave permission for the use of this and the following image.

This image shows greater external range of motion following IASTM. Follow-up several months later revealed the changes had persisted.
Thank You

I would also like to thank Palmer College of Chiropractic, Hygienic Corporation (Biofreeze/Theraband) and Rock Tape