

# Instrument Assisted Soft Tissue Mobilization Utilizing Graston Technique®: A Physical Therapist's Perspective

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## INTRODUCTION

The purpose of this article is to describe instrument assisted soft tissue mobilization (IASTM) using Graston Technique (GT) in a manual therapy construct. This intervention was selected because it fulfills the following criteria: (1) matches the skill set of a physical therapist, (2) has practical clinical value, (3) is efficacious, (4) follows a clinical decision making paradigm, (5) is patient centered across the life span, and (6) enhances treatment outcomes.

Soft tissue mobilization (STM) is a recognized intervention used to ameliorate pain, functional limitations, and impairments associated with somatic dysfunction. *Graston Instrument Assisted STM (GISTM) is a specialized technique whereby the clinician uses stainless steel instruments to contact the tissue instead of the hands.* An emollient is placed on the skin prior to application of the technique. Rubber gloves are used by some clinicians to improve their grip on the instruments, but their use is not mandatory. GT follows the same principles and rationales as conventional digital STM. Because the magnitude of tissue deformation is greater with the Instruments, indications, precautions, and contraindications vary slightly in certain patient populations because of the possibility of bruising that may occur in muscles due to its highly vascularized make up. GT can be applied over the tendon, muscle, ligament, fascia, and scars and can be used to treat their associated nonsurgical and surgical conditions of these tissues. Entrapment neuropathies, edema, and lymphedema are also effectively treated. Treatment is guided and dosages are determined by the stages of tissue healing and repair, reactivity levels, patient tolerance, and posttreatment responses. GT can be administered statically, dynamically, and during functional movement patterns with or without resistance.

Six stainless steel instruments with convex or concave curvilinear edges are the hallmark of Graston Technique (Figures 1 and 2). The patented combination of shapes and edges allow the instruments to mold over body contours. The Instrument's varied treatment edges provide the clinician with the ability to control and monitor the appro-

priate treatment dosage by allowing them to alter the depth of penetration and respond to a patient's comfort level by changing to a different treatment edge that is perceived as more comfortable by the patient. GT Instrument design also allows for ease of treatment by minimizing the potential of repetitive stress to the clinician's hands.

## CERTIFIED GT PROVIDER

The GT Instruments can be purchased after successfully participating in the GT sponsored Basic, or Module 1 (M1) course. The primary objective of M1 is to assure an understanding of the Graston Technique and how it is integrated into the full spectrum of physical rehabilitation. Clinicians can only be certified as GT Providers after successfully completing and demonstrating compulsory skills in the Advanced Training, Module II (M2).

## GT VS. CONVENTIONAL STM

The shape of the Instruments allows magnification of tissue texture abnormalities through the Instrument into the clinician's hands as it glides along the targeted tissue much like a stethoscope magnifies sound. When a tissue texture abnormality is encountered, both the clinician and patient

experience and detect palpable sensations such as grit, ridges, or nodules. Often audible sounds are heard when the adhesion is of significant magnitude. Descriptions of the lesions can and should be documented with descriptors including, but not limited to: focal, diffuse, compressible, soft, and rigid. These findings can be also be recorded on a body diagram and updated as the tissue texture abnormalities are abolished. If digital STM is applied over the same region, these lesions are often missed during palpation with the unaided hand. In contrast to digital STM, GT Instruments detect restrictions and/or adhesions that the unaided hand is less accurate in detecting.

Once a lesion is detected and patient tolerance is assessed, the GT Instruments are used to 'break up' cross-links, fibrosis, or restrictions or adhesions by splaying fibers and in some cases augmenting the inflammatory process so that healing can occur. It is theorized that GISTM provides the trained clinician with Instruments that can achieve this expected treatment outcome by their effectiveness in controlling the amount of microtrauma in an area of diffuse scar and or soft tissue fibrosis. Since the metal surfaces of the instruments do not compress the tissue in the same manner as do the fat pads of the fingers, deeper restrictions can be accessed and treated affording the patient more comfort during the intervention. The treatment effect is more substantial because the Instruments have the potential to break up larger amounts of dysfunctional tissue in one session than can the unaided hand. Most importantly, functional changes and pain reduction take place immediately postintervention or in a shorter amount of time. The immediacy of the changes provides the clinician with pre and posttreatment variables that can be documented the same session.

## CURRENT RESEARCH

Through research conducted on rat tendons, morphological and functional changes resulting from Instrument Assisted STM suggests that the controlled micro trauma induced through the Graston Technique protocol may promote healing by increased fibroblast recruitment.<sup>1</sup> As has been hypoth-



Figure 1. Graston Technique® Instruments



Figure 2. GT treatment s/p lateral meniscus transplant, osteochondral autograft lateral femoral condyle.

esized with transverse friction massage, it is theorized that the controlled micro trauma induced through GT also initiates the inflammatory cascade to start the healing process. Results from a recent unpublished study on animal ligaments reveals that ligaments treated with Instrument-Assisted Cross Fiber Massage (IACFM) were found to be 31% stronger ( $p < 0.01$ ) and 34% stiffer ( $p < 0.001$ ) than untreated ligaments indicating that IACFM is a beneficial intervention for providing mechanical stimulation to repairing ligaments to accelerate and re-gain ligament strength.<sup>2</sup> Following treatment with GT, adaptive stress is paramount during the reparative process to promote proper tissue healing and alignment. Stretching and ROM activities are of equal importance and used to increase and maintain movement gained during the GT intervention.

Recent research explaining inflammation at the molecular level and the histopathology underlying tendon disorders reveals degenerative changes vs. the previously assumed presence of inflammation or inflammatory cells which are not present upon examination.<sup>3-6</sup> These findings explain why somatic pain associated with injury, repetitive stress or the like often prove recalcitrant to pharmacological and manual therapy treatment. This new information provides the groundwork for changing contemporary models of care and how it affects clinical management of various conditions. GT is a reasonable choice based on recent histological findings. It is being determined through research that GT enhances the adaptive potential of CT structure. More importantly, it is a least invasive alternative and more practical than pharmacological management in certain cases based on current clinical management guidelines.

### **GT'S EFFECT ON MOVEMENT IMPAIRMENTS AND PAIN BEHAVIORS**

Because most changes in movement and pain are immediate my ability to identify and treat movement impairments and associated pain behaviors has improved since incorporating GT into my daily patient care regimen. I have always critically analyzed the elusive nature of the CT system, especially muscles and fascia due to their multidimensional nature. Take for example the helix configuration of the levator scapulae which changes shape and form based on the position of the head and scapula. Using GT, I am better able to conceptualize this system and where lesions might be found because I

can see changes that might include improved ROM or the amelioration of pain simultaneously during treatment. Because treatment effects are usually immediately observable, GT has afforded me the opportunity to identify trends in pain behaviors that are caused by CT dysfunction in regions I would not have addressed during digital STM because I was not aware that region, remotely distant to the region of perceived CT pain, was the target tissue. I am hypothesizing that CT restrictions or adhesions in the muscle and fascial system produce tension points capable of causing stress and subsequent over use symptoms including pain and movement loss above or below the area of restriction. This hypothesis might be elucidated further by the work of Thomas Myers who describes the interconnectedness of the linkages of the muscular and fascial systems and offers clinical insights as to how any alterations in the balance of this system may make contributions to pains and dysfunctions consistent with somatic dysfunction.<sup>7</sup>

### **RECIDIVISM AND SOMATIC PAIN**

As clinicians we can generalize that a majority of our patients achieve favorable outcomes. We can also generalize that we have discharged patients who only achieved partial restoration of function, still had pain, or participated in a longer episode of care than projected. Recidivism is another variable of somatic pain and dysfunction that affects long-term favorable treatment outcomes. Like most clinicians, I am always asking questions and critically appraising my success and failures. Time and clinic tenure enhance effectiveness but sometimes we are still left with limited treatment successes. I have always questioned why in certain cases my interventions did not resolve or completely ameliorate somatic dysfunction related to connective tissue. It was not until I implemented GT that I realized my hands were the confounding variable limiting my treatment effectiveness when addressing certain CT dysfunctions. In some scenarios I was not identifying the correct tissues or did not use my hands effectively enough to produce a meaningful treatment outcome. There are also times in a clinician's tenure when a patient's pain cannot be reproduced by any test or movement rendering them unable to identify the connective tissue lesion. GT can be used diagnostically to identify lesions because of the Instruments' inherent ability to tease out lesions when a muscle is 'scanned' or examined better than the unaided hand. Once the lesion is localized a patient's usu-

al response is "That's it! That *IS* my pain." While routinely implementing GT, I have found and continue to find the pieces of the treatment puzzle that I have been searching for.

Due to the immediate changes that occur in movements and pain while implementing GT, documentation that reflects efficacy of care can be used more easily. I have become more effective in changing and implementing interventions due to these immediate changes. Prior to starting any treatment, my patients and I have a dialoged about their response to the last treatment, their current functional status, and symptom behavior. When they don't have an objective measurable variable to offer I ask them "What do we still need to get better?" When movements or functional activities are provocative they are used as pretreatment and posttreatment measures during GT. Although subjective, the patient can quantify the percentage of change in pain. Range of motion can be documented pre- and posttreatment and qualitative variables about the change in the functional task can be documented as evidence of change. This immediate change enhances patient satisfaction and increases compliance with their self management efforts. As they see the changes, they become more active in their care reporting and quantifying change without prompting. This team effort by the patient and clinician enhances the ability to document changes in function and impairments.

### **THE CURRENT EVOLUTION OF GT**

GT was developed and evaluated in clinical trials at Ball Memorial Hospital and Ball State University in Muncie, Indiana. The GT is part of the curriculum at 4 colleges/universities. Research is ongoing and includes current projects at Texas Back Institute, New York Chiropractic College and St. Vincent's Hospital in Indianapolis. GT has been visible in the literature.<sup>8-34</sup> GT is now present in the work force and used currently by 4 major companies for the care of their injured employees. More than 40 major professional amateur sports organizations currently utilize GT. GT is evolving as an effective intervention in many settings.

### **CONCLUSION**

GT is a technique that meets my clinical expectations. It has plausible explanations for its effects and has predictable outcomes. GT makes practical clinical sense to me. Effects can be documented and it actively involves the patient. The pt can be an active partici-

part in the treatment based on how they localize the lesion, by position or activity etc...they become more active in the treatment. The GT has the potential to enhance the effectiveness of other interventions such as muscle energy techniques (MET), high velocity low amplitude thrust techniques (HVLAT), and mobilization due to its effect on CT. I currently use GT on at least 95% of my patients; however, I have not abandoned any prior treatment interventions and I still apply digital STM. GT is not the answer to all clinical shortcomings such as recidivism, and partial recovery rather the technique represents part of the solution for treating tissue dysfunction. The effectiveness of GT is enhanced by a clinician's skills. This treatment approach has the potential to decrease recidivism, improve patient compliance and produce more favorable outcomes in a shorter episode of care. I recommend and urge clinicians to learn more about this technique because it contributes to our clinical knowledge and supports clinical practice.

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