DEEP IMPACT

Targeting restrictions with instrument-assisted soft-tissue mobilization

By Mark Butler, PT, DPT, OCS, Cert. MDT

Instrument-assisted soft-tissue mobilization, a manual therapy technique collectively known as IASTM, is rapidly gaining popularity nationwide. I was skeptical when first exposed to the technique approximately 10 years ago, with little interest in learning more.

Since having had the opportunity to be formally IASTM trained, using the techniques in the clinic, and now teaching them myself, I turn to IASTM frequently in caring for my patients. Adding this technique to my patients' treatment programs has been extremely valuable in accelerating improved outcomes in test, treat, and re-test clinical applications.

What is IASTM?

IASTM uses a hard-edged instrument made of metal, plastic or ceramic to add shearing stress to soft tissue in order to enhance the body's healing response. The ability to focus mechanical force along a small contact surface to your patients' target tissue, and do so with a relatively high level of comfort for both the patient and treating therapist, is one of the best features of this technique.

IASTM tools or instruments are designed with these basic concepts in mind; and this is what sets them apart from using items such as reflex hammer handles, spoons or butter knives.

Not only are the instruments useful for transferring force to the target tissues, they're very effective in providing feedback regarding tissue irregularities, since the tool will resonate or vibrate as if you have driven over a rough patch of road in a sports car with a stiff suspension, versus a car with underinflated tires and a soft suspension. This quality of the IASTM tools allows the treating therapist to focus on areas of tissue restrictions.

History of the Technique

A form of IASTM known as gua sha (gua = "to scrape or scratch," sha = loosely translated as "disease") has its origins in Chinese folk medicine, with no known starting point.[1] Gua Sha treatments consist of using traditional tools such as portions of water buffalo horns or shaped pieces of jade, or non-traditional tools such as jar lids and oriental soup spoons to create friction over the skin.

The primary goal is to produce a warming reaction to bring "sha" to the surface so it leaves the body.[1] These techniques appeared in the

West on a large scale in the mid-to-late 1970s, with Vietnamese refugees practicing cao gio (coin rubbing), which prompted school officials to suspect child abuse due to these children showing up with bruising from treatment at home.[2] Gua sha is practiced on a moderate scale by massage therapists and practitioners of Eastern medicine.

The most widely known modern IASTM instruments and techniques developed independent of gua sha and can be traced to Dave Graston. Graston was a machinist and assembly line worker in the auto industry who developed chronic knee problems as a result of a poor surgical outcome from a waterskiing accident.

Graston discovered that by using the edge of a No. 2 pencil to perform friction massage to his stiff knee, his workouts at the gym were more comfortable, and he was gaining motion and function. He machine-shaped metal tools to enhance his results, and modern-day IASTM was born.

Due to increased interest in this modality, there are now a number of IASTM tools or instruments on the market. As a result, therapists can find a system of instruments to match most budgets and applications of this treatment technique.

There's a significant difference in how these instruments feel, both for the treating therapist and the patient, so I recommend doing some research before committing to one system. Most systems offer instructional courses or DVDs to aid in getting started.

There are no comparative outcome studies to show differences between systems. Although some systems offer certifications for completing their education seminars, this certification isn't formally recognized by any accrediting body, and is mainly for marketing purposes and evidence of course completion.

For author Mark Butler, PT, DPT, OCS, Cert. MDT, using IASTM has consistently improved patient outcomes, both within the treatment session and in carry-over from treatment.

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How Does it Work?

Since IASTM is a relatively new modality, there's no definitive answer to this question. From my experience, IASTM impacts patient healing on multiple levels. Analgesia, neuromuscular facilitation and/or inhibition, and more rapid tissue healing are common outcomes of treatment.

The most popular theory discussed in the literature regarding IASTM is the introduction of controlled microtrauma, resulting in increased fibroblast production and conversion of the collagen produced from low-quality type III to high-quality type I collagen.[3-6] IASTM also appears to affect the quantity of collagen produced, and facilitate the conversion of collagen scar tissue to functional tissue with enhanced fiber alignment.[4,7]

Recent interest in the link between fibroblasts, Substance P (SP), and local and central pain mechanisms may provide some background on the analgesic effect of IASTM.[8-10] Substantial evidence exists that patients' pain levels often correlate poorly with radiological evidence of tendinopathy and tissue pathology; therefore, clinically debilitating pain can occur with or without signs of tissue damage.[11-13]

SP, a neuropeptide produced by the small unmyelinated C-nerve fibers and by fibroblasts, affects pain response to stimulus both on a local (peripheral) and central level.[9] SP has been shown to be mechanosensitive; that is, its production and distribution is affected by mechanical stresses.

Although the effect of IASTM on SP is unknown, we do know that SP is involved in tissue healing and pain on a local and central level. Perhaps there's a mechanical response of SP to IASTM, and this is one of the mechanisms through which patients regularly report analgesia and enhanced performance after IASTM treatment.[6] More research is needed in this area since many questions remain unanswered.

Current Evidence Base

The majority of articles published on this topic consist of animal and case studies. The preponderance of case studies have concentrated on ligamentous injuries and tendinopathies,[14-20] with a few focusing on myofascial and neural components.[21-24]

The majority of these, being single case studies, are level 3b and 4 studies based on the Levels of Evidence Hierarchy list per the Centre for Evidence Based Medicine.[25] This list indicates the potential for bias in studies, with level 1A studies having the least and level 5 studies having the most bias potential.

Two studies achieved levels 2b and 2c, respectively, with limited randomization and blinding to minimize examiner bias.[6,24] A study by Schaefer and Sandry looked at the effect of IASTM and dynamic balance training (DBT) versus DBT and sham IASTM or DBT alone on outcomes associated with chronic ankle instability.[6]

For all measures, the group treated with IASTM and DBT demonstrated the largest improvement. The study by Burke et al compared IASTM treatment to similar manual interventions without instruments on patients with clinical and electrodiagnostic signs and symptoms of carpal tunnel syndrome.[24]

Both groups demonstrated significant improvement in outcomes tracked in the study, with the IASTM group demonstrating greater scores in symptom reduction at three months follow-up. However, due to the small sample size of each group, clinically meaningful differences between treatment groups did not achieve statistical significance.

Adding to Your Repertoire

IASTM treatment varies somewhat from system to system in how regimented the protocols are. But there is common ground in the systems that provide treatment guidance.

This includes a warm-up phase, followed next with a scanning or regional treatment phase with the tools or instruments, then a specific treatment phase with tools or instruments that focuses on the target tissue or areas of restriction/pathology, and finally a movement-based phase that includes stretching and exercising the target tissues.

Most systems recommend ice after treatment to help minimize post-treatment soreness and bruising, which can be a benign side effect. The warm-up phase can include active aerobic exercises or passive thermal modalities.

The average length of time spent performing

An added bonus to providing soft-tissue treatments via IASTM has been decreased stress and fatigue levels to his hands, noted Butler.

IASTM is between 5 and 10 minutes, with 1-3 minutes spent on specific lesions in the target tissue. Patients are encouraged to exercise and stretch the target areas through their home program as well.

As both an educator and clinician who's always looking for ways to enhance outcomes, IASTM treatment is a regular component of my patient programs. Of the various continuing education courses I teach around the country, this is currently the course that's generating the most interest. My experience with this relatively new modality has been consistently improved outcomes, both within the treatment session and in carry-over from treatment.

An added bonus to providing soft-tissue treatments via IASTM has been decreased stress and fatigue levels to my hands, since the vast majority of my patients have a soft-tissue component to their treatment programs. It's not unusual for me to have 12-hour-plus clinic days, and replacing many pure manual techniques with IASTM treatment has proven to be a lifesaver — hopefully adding years to my ability to continue practicing manual therapy. Equally as important, if given the choice, most patients prefer the IASTM tools to comparable manual care.

Taking a Closer Look

Although relatively new to mainstream clinical use, IASTM has roots dating back thousands of years in Eastern medicine. Research on this technique is in the early stages, and studies of higher quality are beginning to show up in the literature. By taking a close look at the literature, I expect you will find this modality is worth considering as an adjunct to your manual therapy treatment repertoire.

I started out with a healthy skepticism of the claims of improved patient outcomes by the IASTM community. But after performing over a thousand IASTM treatments, it has become a mainstay of my manual therapy protocols. ■

References are available at www.advanceweb.com/pt under the Toolbox tab.

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