

# Physician

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The pain, weakness, and associated functional limitations of patients with chronic soft-tissue injuries require careful treatment and rehabilitation. Management of chronic soft-tissue injuries poses a challenge to physicians, especially as they determine the work and recreational demands that can be placed on patients. New approaches in the treatment of tendinitis, bursitis, and other soft-tissue injuries not only allow exercise and activity, but also require them.

## The evolution of medical management approaches

Early remedies for acute and chronic inflammatory conditions targeted the symptoms of pain and inflammation. Rest or inactivity was recommended and often straps, bands, or splints were used to allow limited activity and to reduce pain. Medical management included cortisone injections and NSAIDS (nonsteroidal anti-inflammatory drugs). Physical therapy included pulsed ultrasound (for its anti-inflammatory effect), icing, and massage. This model of management was successful for acute injuries, especially

## Management of soft-tissue injuries

*Helping patients stay active while they heal*

By Kathleen Picard, P.T.

when treatment was initiated early. Chronic injuries, however, proved harder to manage.

By the late 1970s, physical therapy offered iontophoresis, the transcutaneous local application of dexamethasone using an electrical current instead of injection. At the same time, a more mechanical approach to soft-tissue injuries was gaining favor. The idea was to address the problem at the source of the symptoms—the muscle. It was widely believed that a shortened or contracted muscle created tension at the musculotendonous junction, leading to microtrauma that caused inflammation. The goal was to “lengthen and strengthen” the injured muscle in an attempt to restore normal flexibility and strength. In combination with medical management, this approach

proved to reduce recurrences of acute injuries.

In the 1980s, as more became known about the healing process and about collagen remodeling, manual therapy emerged as a means to treat damaged inflamed tissue. During the healing process, collagen is laid down in a haphazard manner, which can result in either a weak scar or a scar that produces restrictions in motion or function. However, collagen can be shaped and strengthened by placing tension on it. The theory of manual therapy for soft-tissue injuries was based on the belief that an acute injury was best managed by facilitating collagen remodeling as the injury heals. Manual friction massage was applied to the tissue lesion to induce a local inflammatory response. That response triggered the breakdown of fibrotic tissue

and stimulated healing formation of new connective tissue. Exercise during the healing process was widely supported as a means to guide collagen remodeling, based on evidence that new tissue responds to tension demands that are placed upon it.

Meanwhile, debate was growing about whether or not anti-inflammatory agents such as iontophoresis, NSAIDS, or ultrasound were counterproductive when the newly induced inflammatory process was occurring. Mainstream medical practice made use of these types of agents as early interventions for acute injuries, but less so for chronic conditions, which were considered fibrotic or adhesive in nature.

During that time, surgeons were reporting that during surgeries for chronic tendonitis and fasciitis, they found thick scarring, adhesions, and fibrotic tissue rather than inflammatory tissue. This supported the manual therapy approach, especially for chronic cases. As a result, manual therapy in which therapists used their hands to mobilize the soft tissue and trigger the healing process became a more common treatment of choice.

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## New techniques for treating soft tissue injuries

More recently, mobilization of soft tissue has been augmented by the use of tools designed to aid in the detection and treatment of soft tissue scarring, fibrosis, or adhesions. This tool-assisted soft-tissue mobilization technique offers even more promising results than manual mobilization. Different types of tools have been developed by competing manufacturers. Physical and occupational therapists, chiropractors, and athletic trainers are certified in the individual approaches.

In the mid-1990s, the Graston Technique was conceived by an athlete who had suffered a debilitating knee injury while water skiing. Frustrated by the lack of progress following surgery and conventional therapy, he applied his professional expertise as a machinist to create the patented stainless-steel Graston instruments to treat his soft-tissue injury.

Research conducted by Graston-trained clinicians at Ball Memorial Hospital and Ball State University, Muncie, Ind., found that controlled microtrauma induced through the use of the tools increased the cellular activity, including fibroblasts, in the treated area. Treatment of the scar tissue in this manner helped initiate the healing cascade.

Around the same time, the ASTYM (augmented soft-tissue mobilization) system, which uses plastic tools, was developed. Like the Graston technique, ASTYM tools are used to

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treat dysfunctional soft tissue—often the source of chronic symptoms. The tools help to initiate remodeling and regeneration of dysfunctional tissue.

Unlike techniques using manual friction massage, these tool-assisted techniques allow the clinician to treat a larger area rather than just the painful local lesion. The tools are designed to fit the contours of the body precisely, as well as to identify dysfunctional soft tissue by means of their resonance properties.

### **What to expect from this new approach**

A typical course of therapy using the tool-assisted approach is six to 12 visits. The number of visits varies depending upon whether the condition is subacute or chronic. Patients are seen once or twice per week for sessions that last 30 to 45 minutes. The low frequency of visits allows the soft tissue to respond between sessions. Each session usually includes a warm-up, the tool-assisted soft tissue mobilization, stretching, strengthening exercises, and functional activity. The first visit may be uncomfortable and can result in local tenderness and bruising. Most importantly, patients are taught to self-manage with

a home program.

Adequate hydration during the remodeling process is also encouraged to facilitate the carrying away of waste products.

Tool-assisted soft tissue mobilization is often not tolerated by red-haired and extremely fair-skinned patients or elderly patients with fragile skin. Healing wounds and fragile scars also need some time before the treatment can be initiated.

Tool-assisted soft-tissue mobilization is not a treatment in and of itself, but rather is a facet of a biomechanical approach to treating soft-tissue injuries. Use of the tools frees up the tissues and allows for retraining of movement. Very much in keeping with earlier approaches involving exercise to optimize collagen remodeling, tool-assisted approaches are most effective in combination with exercise and activity. Occasionally, additional modalities are needed. Ongoing research and collection of outcomes data by both Graston and ASTYM support the efficacy of this approach.

Because healing occurs best under conditions of controlled tension, it is vital during new tissue formation that the tissue remain active

and responsive to the demands that are placed upon it. Therefore, customized exercise programs are required, and temporary modifications in activity are sometimes recommended. Throughout the treatment, patients are encouraged to stay active in their work, sport, recreation, and daily activities. Proper ergonomics at work and during recreational activities are important to reduce the risk of re-injury. Straps, bands, and splints are rarely or minimally used in conjunction with this approach.

The following conditions typically respond well to tool-assisted soft tissue mobilization:

- Tendinitis (wrist, rotator cuff, patellar, Achilles);
- Trochanteric bursitis;
- Plantar fasciitis;
- Carpal tunnel syndrome;
- DeQuervain's tenosynovitis;
- Medial epicondylitis and lateral epicondylitis;
- Strains (spinal and hamstring);
- IT band syndrome;
- Trigger finger;
- Post-surgical scarring; and
- Post-traumatic fibrosis.

The appeal of tool-assisted soft-tissue mobilization is that patients can stay active while they heal. They can remain on the job, on the athletic field, and doing the things they love to do. ■

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