Clinical Practice Guideline: **Instrument-Assisted Soft Tissue Mobilization**

Date of Implementation: **July 13, 2005**

Product: **Specialty**

GUIDELINES

American Specialty Health – Specialty (ASH) considers Instrument-assisted Soft Tissue Mobilization (IASTM) (i.e., use of Graston Technique®, Astym®, Gua Sha, or other similar tools) as reasonable in the treatment of soft tissues including muscle, fascia, and tendon, if used to assist the practitioner's hands during soft tissue mobilization. There is no evidence to support its use for other purposes and in treatment of any other medical conditions.

Cupping in any form is not medically necessary as it has unproven effectiveness based on the quality and outcome of the literature with a resulting unacceptable risk:benefit ratio.

DESCRIPTION/BACKGROUND

The Graston Technique® is an IASTM technique that enables clinicians to effectively treat scar tissue and restrictions that affect normal function. The technique uses 6 handheld stainless-steel instruments. The instruments are applied to the affected area in multiple directions to correct restrictions that create the abnormal barrier sensation. Proponents of the Graston Technique® believe the intervention accomplishes the following (without support of high-quality research):

- Separates and breaks down collagen cross-links, and splays and stretches connective tissue and muscle fibers
- Increases skin temperature
- Facilitates reflex changes in the chronic muscle holding pattern
- Alters spinal reflex activity (facilitated segment)
- Increases the rate and amount of blood flow to and from the area
- Increases cellular activity in the region, including fibroblasts and mast cells
- Increases histamine response secondary to mast cell activity

It has been postulated by practitioners of this technique that the stainless-steel instruments are more sensitive at locating soft tissue restrictions than manual palpation. The practitioner may feel a 'vibratory' sensation as the instrument passes over a soft tissue lesion. Skilled clinicians use the stainless-steel instruments to comb over and 'catch' on fibrotic tissue, which immediately identifies the areas of restriction. Once the tissue has been identified, the instruments are used to break up the scar tissue so it can be absorbed by the body. The patient may experience a similar sensation as the tool crosses over the treatment area. The protocol includes a brief warm-up exercise, Graston Technique® treatment, followed by stretching, strengthening and ice, thus it is not used in isolation.

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Also, only clinicians who have been trained and accredited in the Graston Technique® basic course are qualified to obtain the Graston Technique® instruments and apply the technique to treat patients. The course is available either on-site or at trainings offered throughout the year at a variety of locations.

Any condition that is a contraindication for soft tissue mobilization (STM) is also a contraindication for IASTM (i.e., use of Graston Technique®, Astym®, Gua Sha, or other similar tools). These conditions include but are not limited to:

- Open wound
- Unhealed fracture
- Thrombophlebitis
- Uncontrolled hypertension
- Kidney dysfunction
- Patient intolerance/hypersensitivity
- Osteomyelitis
- Myositis ossificans

Astym® treatment is another form of instrument assisted STM and is a regenerative soft tissue therapy which is claimed to successfully resolve many difficult conditions, including chronic tendinopathies and movement restrictions/pain resulting from scar tissue. Astym® treatment was developed from basic science investigations to stimulate regeneration at a cellular level and eliminate or reduce problematic scar tissue that may be causing pain or movement restrictions. Theories regarding mechanisms of action for Astym® treatment were developed based on the foundation of recent histologic research identifying the primarily degenerative nature of tendinopathies, and the investigations into the use of cellular mediators, growth factors and related products to assist in the healing and regeneration of tissues. Guided by these principles and proposed theories, the Astym® process research team conducted their own basic science and clinical research to develop and refine non-invasive protocols aimed at activating a regenerative process. According to their research team, Astym® treatment non-invasively activates a regenerative response throughout dysfunctional soft tissues by inducing dysfunctional capillary exudation, local fibroblast activation, macrophage mediated phagocytosis (micro debridement) and release of growth factors that result in additional fibroblast recruitment. In addition to this release of humoral mediators and growth factors, the Astym® process detects and eliminates or reduces inappropriate fibrosis that may be causing irritation or restrictions in movement. Treatment includes customized exercises and stresses on the collagen remodeling to adapt the tissues, so they become stronger and more functional, which reduces the risk of re-injury.

According to proponents of Astym® treatment, it safely, effectively, and efficiently stimulates scar tissue to be resorbed by the body and regenerates damaged soft tissues. They also believe that Astym® therapy and IASTM are very different in goals and application, and therefore any application of research findings from one to the other would be inappropriate and misleading. Some of the more common diagnoses that have demonstrated excellent clinical results according to Astym® literature are:

General Conditions

- Chronic tendinopathy
- Joint and muscle stiffness
- Pain and stiffness associated with early degenerative joint disease

Specific Conditions

- Achilles tendinopathy
- Anterior and posterior tibialis tendinopathy
- Arthrofibrosis
- Carpal tunnel syndrome
- Chronic ankle pain and stiffness
- Chronic wrist pain and stiffness
- DeQuervain's tenosynovitis
- Golfer's elbow
- Hamstring strain
- IT band syndrome
- Jumper's knee
- Lateral epicondylopathy
- Low back pain (nonradicular)
- Medial epicondylopathy
- Patellar tendinopathy
- Plantar fasciopathy
- Post-mastectomy scarring
- Post-surgical scarring/fibrosis
- Rotator cuff tendinopathy
- Scar tissue/fibrosis
- Tennis elbow
- Trochenteric bursitis

Gua Sha is another form of IASTM, but with a different philosophy behind it. It is also known as skin scraping, scraping therapy, or coin rubbing, and has long been a traditional healing that is widely practiced in China and Southeast Asia. Gua Sha involves scraping the body surface with a tool (e.g., a buffalo horn scrape) with or without a skin lubricant to intentionally create petechiae, which is traditionally called Sha and can be loosely

translated as stagnant blood. Gua Sha roughly translates into English as "dredging meridian stagnation." The scraping marks (petechiae and ecchymoses) are formed when capillaries break open and blood leaks into the subcutaneous space. These marks fade and completely resolve over 2–5 days. Disappearance of petechiae and ecchymoses occurs via erythrocyte lysis. Cell debris is concurrently removed by microglia/macrophages. Hemolysis is associated with the release of hemoglobin and its catabolic products. It is hypothesized that the skin, the nervous system, and immune system interact with one another to generate a cascade of physiological responses to the scraping, through which scraping may result in therapeutic benefits. Potential mechanisms of therapeutic benefit include dampening of pain-promoting substances, presence of nitric oxide and its antinociceptive properties, and modulation of pain by counterirritation (gate theory principles). It is often used to treat neck pain, myalgia, chronic pain, and other muscle issues.

Cupping is another type of ancient healing of using heated cups to create petechiae for a therapeutic purpose. It has been used in the alleviation of pain and many other complaints for millennia and is still commonly practiced as part of traditional acupuncture, Persian and European medicine. Cupping therapy is similar to Gua Sha in terms of its hypothetical, physiological and clinical basis. Cupping therapy can generally be described as a technique that uses cups placed over the skin to create negative pressure through suction. The specific mechanism in which cupping exerts its therapeutic effect has not been identified. There are two types of cupping methods, dry and wet. Dry cupping is noninvasive with no bloodletting. Wet cupping is invasive and includes bloodletting. It is further subdivided into traditional wet cupping and Al-hijamah, which comes from the Arabic word hajm translating to sucking, expansion, and bloodletting. Traditional wet cupping is commonly used in China, Korea, and Germany. Al-hijamah is more common in the Middle East and North Africa. One method, called Taibah, suggests wet cupping mimics an artificial kidney. Where an in vivo kidney filters hydrophobic materials through the glomeruli via normal pressure filtration, wet cupping filters both hydrophilic and hydrophobic material through high-pressure filtration. The high pressure from suction leads to increased blood volume which leads to increased capillary filtration rate leading to the expulsion of filtered and interstitial fluid in the area. Scalpels are also used in this method. The scratches made with the scalpel increase innate and acquired immunity by stimulating inflammatory cell migration and endogenous opioid release. This action leads to improved blood flow, removal of toxins, restored neuroendocrine balance, improved oxygen supply, and tissue perfusion.

Jam (2016) describes the novel cupping technique of Tissue Distraction Release with Movement (TDR-WM), which involves the gliding of the cups in various directions while the patient simultaneously actively moves the relevant joint and tissues underneath the cup. During TDR-WM, the negative pressure inside the cup literally lifts and separates the tissue underneath the cup; the addition of active movement of the tissues while the cup is applied may further assist the release of the interfaces between the soft-tissues such as skin, fascia,

neural tissues, muscles, ligaments, and tendons. TDR-WM techniques have been clinically observed to be particularly effective in soft-tissue conditions where physical therapy treatments have classically focused on tissue compression. According to Aboushanab et al. (2018) and referenced in Matos et al. (2021), "From a Western perspective, the cupping action mechanisms are still unclear. The sub-atmospheric pressure inside the cup seems to change the skin's biomechanical properties, increasing peripheral blood circulation and pain threshold, improving local anaerobic metabolism, reducing inflammation, and modulating the cellular immune system. The comfort and relaxation sensation on a systemic level often reported after cupping might be related to the resulting increase in endogenous opioid production in the brain leading, to improved pain control."

Localized ailments that may benefit from cupping therapy include myofascial conditions, headache, lower back pain, neck pain, and knee pain. Systemic illnesses with claimed benefits include hypertension, rheumatoid arthritis, diabetes mellitus, mental disorders, heart disease, hypertension, infections, and skin disorders.

Absolute contraindications to cupping therapy include cancer patients, those suffering from any organ failure and those using a pacemaker or suffering from hemophilia or a similar blood disorder. Cupping therapy is not recommended for geriatric patients, pediatric patients, women experiencing their menstrual cycle and pregnant women. Those with high serum cholesterol are at higher risk of developing cardiovascular ailments with cupping. Anatomical contraindications include sites with deep vein thrombosis, open wounds, and bone fractures. Cupping should not be done directly on nerves, arteries, veins, varicose veins, skin lesions, body orifices, lymph nodes, eyes, or areas with skin inflammation. Those suffering from chronic diseases (e.g., cardiovascular diseases), using anticoagulants or have an acute infection should generally avoid cupping therapy. Cupping therapy is generally safe with adverse events being infrequent. Those that are reported range from mild to moderate in severity. Preventable adverse events reported include scar formation, burns, bullae formation, abscess and skin infection, pruritus, anemia, and panniculitis. Nonpreventable adverse events reported include Koebner phenomenon, headaches, dizziness, tiredness, vasovagal attack, nausea, and insomnia. Risk of infection, vasovagal attacks and scarring are seen more in wet cupping. Standard results of dry cupping include bruising (may be severe), erythema, and ecchymosis. There is an increased risk of burns if fire is used for suctioning.

EVIDENCE REVIEW

Instrument-Assisted Soft Tissue Mobilization (IASTM)

Some case series have shown promising results with the use of instrument assisted soft tissue mobilization for plantar fasciitis, plantar heel pain and Achilles tendinopathy, demonstrating clinically meaningful improvements. However, given the study designs, no conclusions can be drawn from the outcomes (Holtz et al., 2012; Phipps et al., 2011; Looney et al., 2011). A study was performed on patients with lateral epicondylitis who

were randomly assigned to one of two groups: traditional physical therapy protocol (phonophoresis and manual cross-friction massage) or the Graston Technique protocol. The physical therapy group and the Graston group also received cryotherapy, exercise, and stretching programs. Pain level, mechanical finger power, and grip strength were measured. Although both groups improved, the Graston group improved significantly more than the physical therapy group (Sevier et al., 1995). Schaefer and Sandrey (2012) examined the effects of IASTM in conjunction with a dynamic balance program for subjects with chronic ankle instability. All groups received the exercise program, while one received IASTM and the other received a sham IASTM protocol. All groups improved over time based on outcome measures, with the IASTM group improving the most (though not significantly). Laudner et al. (2014) studied whether IASTM can improve passive glenohumeral (GH) horizontal adduction and internal rotation range of motion (ROM) acutely in collegiate baseball players. Thirty-five asymptomatic collegiate baseball players were randomly assigned to one of two groups. Seventeen participants received one application of IASTM to the posterior shoulder in between pretest and posttest measurements of passive GH horizontal adduction and internal rotation ROM. The remaining 18 participants did not receive a treatment intervention between tests, serving as the controls. The results of this study indicated that an application of IASTM to the posterior shoulder provides acute improvements in both GH horizontal adduction ROM and internal rotation ROM among baseball players. Given subjects were asymptomatic, consideration of clinical applicability is of concern.

Sevier and Stegink-Jansen (2015) completed a RCT using IASTYM (Astym protocol) treatment vs. eccentric exercise for lateral elbow tendinopathy (107 subjects with 113 affected elbows) Subjects were randomly assigned to 4 weeks of Astym treatment (57 elbows) or eccentric exercise (EE) treatment (56 elbows). Results demonstrated resolution response rates of 78.3% for the Astym group and 40.9% for the EE group. Astym subjects showed greater gains in DASH scores and in maximum grip strength than EE subjects. Astym therapy also resolved 20/21 (95.7%) of the EE non-responders, who showed improvements in DASH scores, pain with activity and function following Astym treatment. Gains continued at 6 and 12 months. No adverse effects were reported. Authors suggest that Astym therapy is an effective treatment option for patients with lateral elbow tendinopathy, as an initial treatment, and after an eccentric exercise program has failed. However, there is a need for more effective, conservative treatment options given the lack of large RCTs using this intervention with similar or same conditions.

Cheatham et al. (2016) systematically appraised the current evidence assessing the effects of IASTM as an intervention to treat a musculoskeletal pathology or to enhance joint ROM. A total of seven randomized controlled trials were appraised. Five of the studies measured an IASTM intervention versus a control or alternate intervention group for a musculoskeletal pathology. The results of the studies were insignificant ($p>.05$) with both groups displaying equal outcomes. Two studies measured an IASTM intervention versus a

control or alternate intervention group on the effects of joint ROM. The IASTM intervention produced significant (P<.05) short term gains up to 24 hours. Authors concluded that the literature measuring the effects of IASTM is still emerging. The current research has indicated insignificant results which challenges the efficacy of IASTM as a treatment for common musculoskeletal pathology, which may be due to the methodological variability among studies. There appears to be some evidence supporting its ability to increase short term joint ROM.

Lambert et al. (2017) systematically examined evidence on the effectiveness of IASTM, compared to other interventions on patients with pain and disability resulting from musculoskeletal impairments. Seven studies met the inclusion criteria. The studies involved treatment of numerous anatomical locations and the majority of the studies demonstrated significant improvements in pain and/or range of motion when compared to control or other conservative treatment groups. Authors conclude that these outcomes support the idea that IASTM may have an impact on physiological changes by providing an increase in blood flow, reduction in tissue viscosity, myofascial release, interruption of pain receptors, and improvement of flexibility of underlying tissue. It is suggested that IASTM is an effective treatment intervention for reducing pain and improving function in less than a three-month period. Kim et al. (2017) reviewed the mechanism and effects of IASTM, along with guidelines for its practical application. Some experimental studies and case reports have reported that IASTM can significantly improve soft tissue function and range of motion following sports injury, while also reducing pain. Based on the previous studies, it is thought that IASTM can help shorten the rehabilitation period and time to return to sports among athletes and ordinary people who have suffered sports injuries. However, authors report that few experimental studies of the mechanisms and effects of IASTM have examined, while case reports have accounted for the majority of articles. Authors conclude that future studies should provide the scientific basis of IASTM and its reliability through well-designed experimental studies on humans. Moreover, they note that IASTM studies have mostly focused on tendons and need to broaden their scope toward other soft tissues such as muscles and ligaments.

Cheatham et al. (2019) authored an article stating the need for development of clinical practice guidelines describing intervention, indications, precautions, contraindications, tool hygiene, safe treatment and assessment relative to IASTM. They encourage further discussions of standards and implore other sports medicine professionals and researchers to contribute their expertise to the development of such guidelines given the widespread use of these instruments. Seffrin et al. (2019) sought to determine the overall effectiveness of IASTM in improving range of motion (ROM), pain, strength, and patient-reported function in order to provide recommendations for use. Included articles were randomized controlled trials that measured ROM, pain, strength, or patient-reported function and compared IASTM treatment with at least 1 other group. Authors concluded that the current literature provides support for IASTM in improving ROM in uninjured individuals as well

as pain and patient-reported function (or both) in injured patients. However, more high-quality research involving a larger variety of patients and products is needed to further substantiate and allow for generalization of these findings. Nazari et al. (2019) assessed the effectiveness of IASTM to other treatments or placebo in athletes or participants without extremity or spinal conditions and individuals with upper extremity, lower extremity, and spinal conditions in a systematic review. Randomized controlled trials of participants without extremity or spinal conditions or athletes and people with upper extremity, lower extremity, or spinal conditions, who received IASTM vs other active treatment, placebo, or control (no treatment), to improve outcome (function, pain, range of motion). Nine trials with 43 reported outcomes (function, pain, range of motion, grip strength), compared the addition of IASTM over other treatments vs other treatments. Six trials with 36 outcomes reported no clinically important differences in outcomes between the two groups. Two trials with 2 outcomes displayed clinically important differences favoring the other treatment (without IASTM) group. Six trials with 15 reported outcomes (pressure sensitivity, pain, range of motion, muscle performance), compared IASTM vs control (no treatment). Three trials with five outcomes reported no clinically important differences in outcomes between the two groups. Furthermore, in one trial with five outcomes, IASTM demonstrated small effects (standard mean difference range 0.03-0.24) in terms of improvement muscle performance in physically active individuals when compared to a no treatment group. Authors concluded that the current evidence does not support the use of IASTM to improve pain, function, or range of motion in individuals without extremity or spinal conditions or for those with varied pathologies.

Elserty and Galal (2020) compared the effects of active soft tissue therapies versus Graston technique in chronic neck pain patients with latent trigger point of upper trapezius muscle. Forty-five female chronic neck pain patients with latent myofascial trigger points in the upper trapezius muscle were randomly assigned into equal groups of 15 subjects. Group (A) received stretching exercise and active soft tissue therapy, group (B) received stretching exercise and Graston technique and group (C) received stretching exercise only. Pain pressure threshold (PPT) and cervical ranges of motions were obtained before and after treatment in each group. Results demonstrated a significant main effect of time and interaction of treatment and time. Between groups comparisons pretreatment revealed no significant difference in all parameters. Comparison between groups post treatment revealed a significant increase in PPT and cervical flexion, extension, lateral flexion, and rotation toward affected and non-affected side of group A and B compared with that of group C ($p < .01$). Most importantly, there was no significant difference in in PPT and all cervical ROM between group A and B post treatment. Authors concluded that this study does not support the efficacy of IASTM in increasing pain pressure threshold and range of motion in chronic neck pain patients with latent trigger point of upper trapezius muscle when compared with other soft tissue treatments.

El-hafez et al. (2020) investigated the effects of IASTM versus stripping massage (SM) on myofascial trigger points in the right upper trapezius. Forty patients (34 women and 6 men) aged 18–23 years, with active trigger points in the right upper trapezius were divided into two equal groups (A and B). Group A (n = 20) received IASTM using an M2T blade twice a week for four weeks in addition to stretching exercise. Group B (n = 20) received SM twice a week for four weeks in addition to stretching exercise. The visual analogue scale, a pressure algometer, and the Arabic version of the Neck Disability Index were used to evaluate patients' pre- and post-treatment statuses. Results showed significant differences between pre- and post-treatment values of all outcome measures in both groups based on within group analysis. In contrast, between-group analysis did not show any significant differences between the two groups in pre- or post-treatment values of any outcome measures. Authors concluded that IASTM and SM are effective methods for improving pain and function in patients with upper trapezius trigger points.

Sandrey et al. (2020) examined the effects of myofascial release techniques (foam rolling [FR] vs the instrumented portion of IASTM) on knee joint ROM, rectus femoris (RF) and biceps femoris (BF) fascial displacement, and patient satisfaction. Twenty moderately active participants (age 21.1 [2.0] y) with variable levels of soft tissue restriction in the quadriceps and hamstrings started and completed the study. Participants were randomly assigned to two groups, FR or IASTM. All participants completed the same warm-up prior to the intervention. The FR group followed the proper FR protocol for gluteal/iliotibial band, quadriceps, and hamstrings/adductors, and the participants were monitored while the protocol was completed. The IASTM group received treatment on the gluteal/iliotibial band followed by the quadriceps, adductors, and hamstrings. Participants in both groups attended intervention sessions twice per week for 3 weeks. Prior to the start, knee ROM measurements were taken, along with fascial displacement measured via ultrasound. Upon completion of the study, posttest measurements were completed. A patient satisfaction survey was also administered at this time. Results demonstrated that both groups improved pretest to posttest for knee-extension ROM, with a slight trend toward increased knee-extension ROM for the FR group. Both groups improved pretest to posttest for BF and RF fascial displacement, in favor of the IASTM group for BF fascial displacement. Both groups were equally satisfied.

Studies are limited with use of Gua Sha. The majority are pilot studies with low sample sizes. In a 2011 study, Braun et al. aimed to investigate the effectiveness of Gua Sha in the symptomatic treatment of chronic neck pain. Forty-eight outpatients with chronic mechanical neck pain were the subjects of the study. Patients were randomized into Gua Sha (N=24) or control groups (N=24) and followed up for 7 days. Gua Sha patients were treated once with Gua Sha, while control patients were treated with a local thermal heat pad. Neck pain severity improved significantly after 1 week in the Gua Sha group compared with the control group. Authors concluded that Gua Sha has beneficial short-term effects on pain and functional status in patients with chronic neck pain. The value of

Gua Sha in the long-term management of neck pain and related mechanisms remains to be clarified. Saha et al. (2019) tested the efficacy of Gua Sha therapy in patients with chronic low back pain. 50 patients with chronic low back pain were randomized to two Gua Sha treatments ($n = 25$) or waitlist control ($n = 25$). Primary outcome was current pain intensity (100-mm visual analog scale); secondary outcome measures included function (Oswestry Disability Index), pain on movement (Pain on Movement Questionnaire), perceived change in health status, pressure pain threshold, mechanical detection threshold, and vibration detection threshold. After treatment, patients in the Gua Sha group reported lower pain intensity ($p < 0.001$) and better overall health status ($p = 0.002$) compared to the waitlist group. No further group differences were found. No serious adverse events occurred. Authors concluded that Gua Sha appears to be an acceptable, safe, and effective treatment for patients with chronic low back pain. Further rigorous studies are needed to confirm and extend these results.

Nazari et al. (2023) critically appraised randomized controlled trials (RCTs) on Instrument-Assisted Soft Tissue Mobilization (IASTM) and quantified the effects of IASTM compared with other treatment in individuals with or without pathologies on function, pain, and range of motion. Forty-six RCTs were considered eligible for data analysis. Effects of IASTM plus other treatment versus other treatment on function and pain intensity were not statistically significant or clinically meaningful. No clinically meaningful improvements were found on range of motion outcomes. Out of the 46 included RCTs, only 10 assessed and reported IASTM-related adverse events. Results indicated that evidence of very low quality certainty does not support the efficacy of IASTM in individuals with or without various pathologies on function, pain, and range of motion in the management of upper body, lower body, or spinal conditions. The included RCTs had a high risk of bias and were assessed as very low quality evidence for all the included outcomes. Authors concluded that IASTM does not lead to clinically meaningful improvements in function, pain, or range of motion in individuals with upper body, lower body, and spinal conditions. The available evidence on IASTM does not support its use to improve function, pain, or range of motion in individuals with upper body, lower body, and spinal conditions. They also note that the publication of IASTM trials in suspected predatory journals is increasing and health care practitioners should be wary of these articles and conclusions.

Cupping

Dry cupping has been commonly used for musculoskeletal pain and muscular tension. Cao et al. (2010) evaluated the therapeutic effect of cupping therapy using an evidence-based approach based on all available clinical studies. A total of 550 clinical studies were identified published between 1959 and 2008, including 73 randomized controlled trials (RCTs), 22 clinical controlled trials, 373 case series, and 82 case reports. The quality of the RCTs was generally poor according to the risk of bias of the Cochrane standard for important outcome within each trial. The diseases in which cupping was commonly employed included pain conditions, herpes zoster, cough, and asthma. Wet cupping was

used in majority studies, followed by retained cupping, moving cupping, and medicinal cupping. Thirty-eight studies used a combination of 2 types of cupping therapies. No serious adverse effects were reported in the studies. Authors concluded that the majority of studies from China show potential benefit on pain conditions, herpes zoster and other diseases. However, further rigorously designed trials in relevant conditions are warranted to support their use in practice.

Li et al. (2017) evaluated the available evidence from RCTs of cupping therapy for treating patients with knee osteoarthritis (KOA). Seven RCTs met the inclusion criteria, and most were of low methodological quality. Study participants in the dry cupping therapy plus the Western medicine therapy group showed significantly greater improvements in the pain and physical function domains of Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) compared to participants in the Western medicine therapy group, with low heterogeneity. However, it failed to do so on a Visual Analog Scale (VAS). Authors concluded that only weak evidence can support the hypothesis that cupping therapy can effectively improve the treatment efficacy and physical function in patients with KOA.

Ma et al. (2018) reviewed data from RCTs of cupping therapy for treating patients with Akylosing spondylitis (AS). A total of 5 RCTs met the inclusion criteria, and most were of low methodological quality. Authors concluded that only weak evidence supported the hypothesis that cupping therapy had potential benefits for patients with AS. Wang et al. (2018) aimed to evaluate the efficacy and safety of cupping therapy for treating patients with KOA. A total of 5 studies (535 participants) met inclusion criteria. All included studies were judged to be at high risk for bias. Dry cupping therapy plus Western medicine therapy was more effective than Western therapy alone in reducing the pain score. In addition, the study participants in the dry cupping therapy plus Western medicine therapy group showed significantly greater improvements in the pain, and physical function domains of the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) compared to participants in the Western medicine therapy group. Authors concluded that there is weak evidence to support the hypothesis that cupping therapy has beneficial effects on reducing the pain intensity and improving the physical function in patients with KOA. Wang et al. (2018) assessed the effects and safety of cupping for patients with low back pain (LBP). Six RCTs were included in this synthesized analysis. The results showed that cupping therapy was superior to the control management with respect to VAS and ODI scores. No serious adverse events were reported in the included studies. Authors concluded that cupping therapy can significantly decrease the VAS scores and ODI scores for patients with LBP compared to the control management. High heterogeneity and risk of bias existing in studies limit the authenticity of the findings.

Kim et al. (2018) aimed to investigate the effects of cupping on neck pain from the current literature. Nine databases, including Chinese, Korean and Japanese databases, were

searched for data up to January 2018 with no restrictions on publication language. Participants include patients with neck pain who received cupping therapy as the sole or add-on intervention compared with no treatment or active controls. Primary and secondary outcome measures included pain severity, functional disability, and quality of life. Eighteen RCTs were selected. Compared with the no intervention group, the cupping group exhibited significant reduction in pain and improvement in function. Compared with the active control, the cupping group reported significant reduction in pain and significantly improved quality of life. The group that received control treatment with cupping therapy (add-on group) displayed significant pain reduction compared with the active control group. Of the 18 studies, only 8 reported occurrences of adverse events, which were mostly mild and temporary. Authors concluded that cupping was found to reduce neck pain in patients compared with no intervention or active control groups, or as an add-on treatment. Depending on the type of control group, cupping was also associated with significant improvement in terms of function and quality of life; however, due to the low quality of evidence of the included studies, definitive conclusions could not be drawn from this review. Future well-designed studies are needed to substantiate the effectiveness of cupping on neck pain.

Charles et al. (2019) compared the efficacy of different treatments in the short-term relief of myofascial pain and myofascial trigger points. Eight studies on manual therapy, twenty-three studies on dry needling, and two studies on dry cupping met the inclusion criteria. While there was a moderate number of randomized controlled trials supporting the use of manual therapy, the evidence for dry needling ranged from very low to moderate compared to control groups, sham interventions, or other treatments and there was a paucity of data on dry cupping. Limitations included unclear methodologies, high risk for bias, inadequate blinding, no control group, and small sample sizes. Authors concluded that while there is moderate evidence for manual therapy in myofascial pain treatment, the evidence for dry needling and cupping is not greater than placebo. Future studies should address the limitations of small sample sizes, unclear methodologies, poor blinding, and lack of control groups.

Wood et al. (2020) evaluated the efficacy and safety of western dry cupping methods for the treatment of musculoskeletal pain and reduced range of motion. A total of 21 RCTs with 1049 participants were included. Low-quality evidence revealed dry cupping had a significant effect on pain reduction for chronic neck pain and low back pain. Moderate-quality evidence suggested that dry cupping improved functional status for chronic neck pain. For range of motion, low quality evidence revealed a significant difference when compared to no treatment. Authors concluded that dry cupping was found to be effective for reducing pain in patients with chronic neck pain and non-specific low back pain. However, definitive conclusions regarding the effectiveness and safety of dry cupping for musculoskeletal pain and range of motion were unable to be made due to the low-moderate quality of evidence. Further high-quality trials with larger sample sizes, long-term follow

up, and reporting of adverse events are warranted. Cramer et al. (2020) aimed to assess the effectiveness and safety of cupping in chronic pain. Of the 18 included trials (*n* =1,172), most were limited by clinical heterogeneity and risk of bias. Meta-analyses found large short-term effects of cupping on pain intensity compared to no treatment, but no significant effects compared to sham cupping or other active treatment. For disability, there were medium-sized short-term effects of cupping compared to no treatment, and compared to other active treatments, but not compared to sham cupping. Adverse events were more frequent among patients treated with cupping compared to no treatment; differences compared to sham cupping or other active treatment were not statistically significant. Cupping might be a treatment option for chronic pain, but the evidence is still limited by the clinical heterogeneity and risk of bias.

Choi et al. (2021) aimed to describe and assess the current evidence in systematic reviews on cupping therapy for various conditions. Thirteen systematic reviews that met the inclusion criteria were included in the evidence map. The findings from six reviews showed potential benefits of cupping for conditions such as low back pain, ankylosing spondylitis, knee osteoarthritis, neck pain, herpes zoster, migraine, plaque psoriasis, and chronic urticaria. Cupping has been applied in a variety of clinical areas, and systematic reviews in a few of these areas have demonstrated statistically significant benefits. Evidence of a positive effect, as indicated by statistically significant pooled treatment effects in systematic reviews, were noted for low back pain. Evidence of a potentially positive effect of cupping include ankylosing spondylitis, knee osteoarthritis, neck pain, herpes zoster, migraine, plaque psoriasis, and chronic urticaria. Unclear evidence is noted for cupping in treating clinical conditions (e.g., cervical spondylosis, lateral femoral cutaneous neuritis, scapulohumeral periarthritis, facial paralysis, acne, stroke rehabilitation, hypertension, and obesity) based on more than one included study.

Seo et al. (2021) aimed to evaluate the effectiveness of cupping therapy for migraine. 218 studies were identified, and six RCTs were enrolled in this review. In comparison to drugs, wet cupping showed a higher total effective rate (TER). In the dry cupping plus acupuncture, the result of TER showed more effectiveness compared with acupuncture alone, but there was no statistically significant difference. In qualitative analysis, the results showed wet cupping plus drugs treatment could quickly relieve pain and significantly improve patients' quality of life and wet cupping could reduce headache pain. Authors concluded that cupping therapy could be effective for the treatment of migraine. However, the qualities of the evidence were low, so well-designed RCTs are needed to confirm the effectiveness of cupping. Almeida Silvo et al. (2021) studied the effects of dry cupping on pain intensity, physical function, functional mobility, trunk range of motion, perceived overall effect, quality of life, psychological symptoms and medication use in individuals with chronic non-specific low back pain. Ninety participants with chronic non-specific low back pain participated in the study. The experimental group (*n* = 45) received dry cupping therapy, with cups bilaterally positioned parallel to the L1 to L5 vertebrae. The control

group (n = 45) received sham cupping therapy. The interventions were applied once a week for 8 weeks. Participants were assessed before and after the first treatment session, and after 4 and 8 weeks of intervention. Authors concluded that dry cupping therapy was not superior to sham cupping for improving pain, physical function, mobility, quality of life, psychological symptoms or medication use in people with non-specific chronic low back pain.

Shen et al. (2022) evaluated the evidence from the literature regarding the effects of dry and wet cupping therapy on LBP in adults. There were 656 studies identified, of which 10 studies (690 patients with LBP) were included in the meta-analysis. There was a significant reduction in the pain intensity score with present pain intensity using wet cupping therapy. In addition, both cupping therapy groups displayed significant Oswestry disability index score reduction compared to the control group. The patients with LBP experienced a substantial reduction when undergoing wet cupping, but there was not a considerable decrease observed with dry cupping. In addition, only wet cupping therapy groups displayed a significantly improved quality of life compared to the control group. The study had a very high heterogeneity, which means there is no standardization in the treatment protocol in randomized clinical trials. Authors concluded that the meta-analysis demonstrated the effectiveness of wet cupping therapy effectively in reducing the pain intensity of LBP. Furthermore, both dry and wet cupping therapy improved the quality of life for patients with LBP.

Szlosek and Campbell (2022) sought to determine whether there is evidence suggesting that dry cupping is effective in improving pain and function for patients experiencing plantar fasciitis when compared with therapeutic exercise or electrical stimulation. Three studies examining the effectiveness of dry cupping for the treatment of plantar fasciitis were included in this review. Two studies compared dry cupping to therapeutic exercises and stretching, and one study used electrical stimulation. Authors note that there is moderate evidence to support the use of dry cupping to improve pain and function in patients with plantar fasciitis.

Mohamed et al. (2023) evaluated the evidence level of the effect of cupping therapy in managing common musculoskeletal and sports conditions. A total of 2214 studies were identified through a computerized search, of which 22 met the inclusion criteria. The search involved randomized and case series studies published between 1990 and 2019. The results showed that most studies used dry cupping, except five which used wet cupping. Most studies compared cupping therapy to non-intervention, the remaining studies compared cupping to standard medical care, heat, routine physiotherapy, electrical stimulation, active range of motion and stretching, passive stretching, or acetaminophen. Treatment duration ranged from 1 day to 12 weeks. The evidence of cupping on increasing soft tissue flexibility is moderate, decreasing low back pain or cervical pain is low to moderate, and treating other musculoskeletal conditions is very low to low. The incidence of adverse events is

very low. Authors concluded that this study provides the first attempt to analyze the evidence level of cupping therapy in musculoskeletal and sports rehabilitation. However, cupping therapy has low to moderate evidence in musculoskeletal and sports rehabilitation.

PRACTITIONER SCOPE AND TRAINING

Practitioners should practice only in the areas in which they are competent based on their education, training and experience. Levels of education, experience, and proficiency may vary among individual practitioners. It is ethically and legally incumbent on a practitioner to determine where they have the knowledge and skills necessary to perform such services and whether the services are within their scope of practice.

It is best practice for the practitioner to appropriately render services to a member only if they are trained, equally skilled, and adequately competent to deliver a service compared to others trained to perform the same procedure. If the service would be most competently delivered by another health care practitioner who has more skill and training, it would be best practice to refer the member to the more expert practitioner.

Best practice can be defined as a clinical, scientific, or professional technique, method, or process that is typically evidence-based and consensus driven and is recognized by a majority of professionals in a particular field as more effective at delivering a particular outcome than any other practice (Joint Commission International Accreditation Standards for Hospitals, 2020).

Depending on the practitioner's scope of practice, training, and experience, a member's condition and/or symptoms during examination or the course of treatment may indicate the need for referral to another practitioner or even emergency care. In such cases it is prudent for the practitioner to refer the member for appropriate co-management (e.g., to their primary care physician) or if immediate emergency care is warranted, to contact 911 as appropriate. See policy *Managing Medical Emergencies (CPG 159 – S)* for information.

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