# Graston Technique® as a Treatment for Patients with Chronic Plantar Heel Pain

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## ABSTRACT

Use of Instrument-Assisted Soft Tissue Massage has increased in popularity, and the plantar fascia is a superficial tissue that may benefit from this treatment. The objective of this study was to determine the effectiveness of Graston Technique® (GT) for decreasing pain and increasing function in participants with chronic plantar heel pain over a six-week period. A single blind, pretest-posttest control/comparison group design, with a sample of 22 adults (5 males, 17 females) was utilized. Participants were assigned to three groups: GT/stretching, effleurage/stretching, and stretching only. After completion, effleurage/stretching and stretching only groups were later offered GT with posttest scores recorded. Participants were pretested/posttested using the Foot Health Status Questionnaire (Foot Pain, Foot Function, and General Foot Health), McGill Pain Questionnaire, and Visual Analog Scale. A posttest Kruskal-Wallis analysis between the three groups demonstrated a significant difference of the Visual Analog Scale between the GT/stretching and effleurage/stretching groups. From pre to posttest, Wilcoxon Test resulted in GT/stretching group significantly improving in 4 out of 5 variables, with effleurage/stretching significant in 1 out of 5, and stretching only demonstrating significance in 3 out of 5. Friedman's Test for effleurage and stretching only groups resulted in significant differences in all the variables when GT was later administered. The mean differences between pre and posttest for the groups demonstrated a minimal important difference of 4 out of 4 variables for GT/stretching, 2 out of 4 variables for effleurage/stretch, 2 out of 4 variables for the stretching only group. Participants improved in variables measured over a six week treatment of GT. This was both shown to be not only statistically significant, but clinically significant utilizing minimal important difference.

**Key Phrases**
Instrument assisted soft tissue massage, chronic plantar heel pain, manual techniques

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## INTRODUCTION

Chronic plantar heel pain (CPHP), previously referred to as "plantar fasciitis", is one of the most common causes of heel pain, accounting for approximately 11-15% of all foot disorders.[1] CPHP typically results from repetitive micro trauma or excessive overload to the fascia.[1] Individuals most prone to this condition are middle-age women,[2] and those with high body mass index.[2] CPHP has been shown to have a negative impact on foot health and overall quality of life resulting in functional disabilities.[3]

Historically, CPHP has been described as a painful heel with inflammation of the plantar fascia at its origin.[1] In recent years, research has suggested that plantar heel pain is rather a non-inflammatory degenerative fasciosis.[4] Snider et. al, [5] conducted histological examinations of surgical biopsy specimens and found degenerative tissue markers such as collagen necrosis, angiofibroplastic hyperplasia, chondroid metaplasia, and matrix calcification. Others observed similar findings on histological examination such as, "marked thickening and fibrosis,"[6] and "fiber fragmentation in association with myxoid degeneration."[4] However, no markers for inflammation were found in these studies.

Numerous interventions have been utilized for treatment of CPHP, which include, heat,[7] cryotherapy,[7] non-steroidal anti-inflammatory drugs,[7] heel pads/cups,[8] night splints,[9] low-dye arch taping,[10] plantar fascia specific stretching,[11] calf stretching,[12] steroid injection,[13] extra-corporeal shock wave therapy,[14] platelet-rich plasma injection,[13] and myofascial trigger point therapy.[15] Unfortunately, not all patients



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experience a resolution of symptoms following these treatment interventions.

In recent years instrument assisted soft tissue massage (IASTM) has grown in popularity and usage among clinicians working with active populations.[16-21] It has been hypothesized, for degenerative tissue conditions such as tendinosis and fasciosis, that IASTM reinitiates the inflammatory response by creating controlled microtrauma in the affected tissues.[16,22] It has been further hypothesized that this controlled microtrauma to degenerated tissue ultimately results in tissue maturation and remodeling.[16,17,23-26]

While numerous case studies have been published regarding the GT (Indianapolis, IN) with chronic degenerative disorders, [16,18-21] there is only one case series study of plantar heel pain on multiple participants.[23] The effectiveness of IASTM on CPHP has not, to our knowledge, been studied in a randomized group design. Therefore, the purpose of our study was to determine the effectiveness of instrument-assisted soft tissue mobilization, specifically the GT (GT), for the treatment of patients suffering from CPHP. We hypothesized that GT would be more effective at decreasing foot pain and increasing foot function with patients suffering from chronic plantar heel pain when compared to a placebo and stretch only protocol.

## PARTICIPANTS

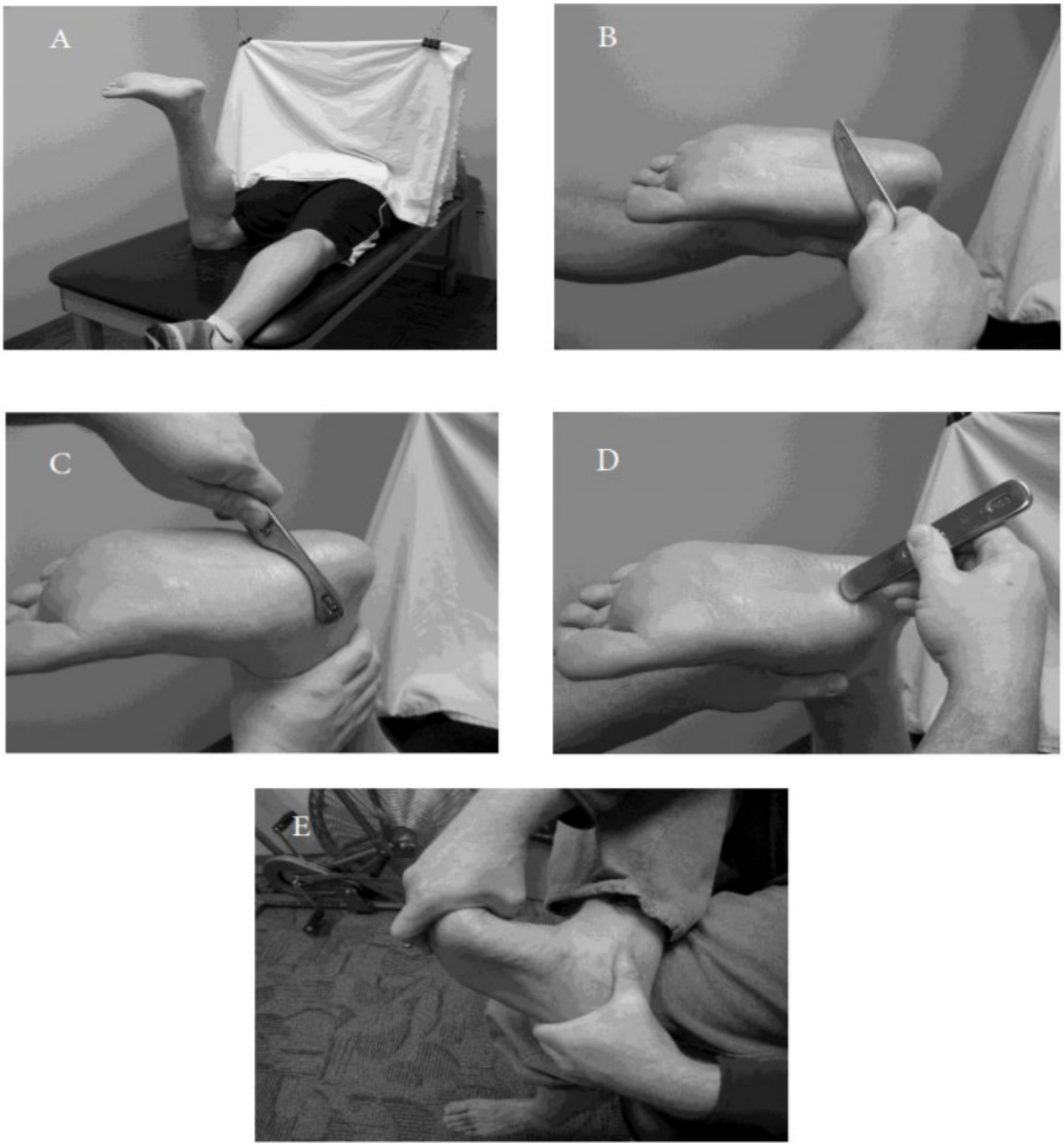
Following Institutional Review Board approval, volunteers were recruited for a period of 10 months. Of the 44 patients screened, 28 met the inclusion criteria and agreed to participate (**Figure 1**). Overall, 7 men and 21 women with CPHP symptoms (age = 46.45 ± 12.5 years, Body Mass Index = 30.45 ± 6.13) were enrolled. Four participants discontinued intervention, due to scheduling conflicts (n=2) and due to not tolerating the GT (n=2). Also, two participants (n=2) were later excluded from the analysis because they were later diagnosed with a pathological bone spur of the calcaneus, therefore, they were deemed ineligible for inclusion in the study. Of the remaining 22 participants, 7 were assigned to the GT/stretching group (2 males and 5 females, 48.5 ± 13.8 years), 7 were assigned to the effleurage/stretching group (2 males and 5 females, 44.6 ± 13.3), and 8 were assigned to the stretching only group (1 male and 7 females, 46.1 ± 10.4 years).

Individuals were included in the study if they had a physician (M.D., D.O., or D.P.M.) clinical diagnosis of CPHP that resulted in pain and discomfort for at least 3 months; with no corticosteroid injections within 30 days of participation. Individuals were excluded from participation if they reported having a history of diabetes; pathological bone spurs of calcaneus; any past plantar fascia release surgery; or any acute plantar fascia injuries. Cancer, burn scars, rheumatoid arthritis, polyneuropathies, chronic regional pain syndrome, or other conditions known to be contraindications to GT also resulted in exclusion from the study.[22]

## INTERVENTIONS

Carey et al[22] states that the basic components of the GT are: (1) 3-5 minutes of active warm-up, (2) 8-10 minute GT treatment, and (3) specifically targeted tissue stretches. For the warm up, the participants were placed on a stationary bike, then asked to cycle for 5 minutes, at a comfortable pace appropriate to their level of fitness prior to the treatment intervention. Participants then removed the shoe and sock of the involved foot and assumed a prone position on the treatment table. A drapery was attached to wires hanging from the ceiling between the levels of the waist to mid-thigh to ensure visual blinding to the treatment (**Figure 2A**).

**Figure 2: (A):** Blinding of the participant during interventions. **(B)** GT instrument #4. **(C)** GT instrument #2. **(D)** GT instrument #3. **(E)** Plantar Fascia Sp ecific Stretching as defined by DiGiovanni et. al.[1]



The knee of the involved foot was flexed to 90°, while the investigator supported the ankle proximal to the malleoli, maintaining the ankle in a neutral position. GT emollient (Indianapolis, IN) was applied to the plantar surface of the foot for all participants. For the GT/stretching group, one of three certified athletic trainers (ATC) level M1 certified Graston Technique® providers (years of GT experience = 4.17 ± 2.02) performed a predetermined protocol of: 4 minutes of GT instrument #4 (**Figure 2B**), the large convex instrument; 3 minutes of GT instrument #2 (**Figure 2C**), the medium concave instrument; and 3 minutes of GT instrument #3 (**Figure 2D**), the small convex instrument, for a total of 10 minutes. All certified providers were instructed to provide pressure to the participants comfort level, while performing sweeping strokes from anterior to posterior and posterior to anterior[22] from the calcaneus to the metatarsal heads of the plantar surface. Participants were monitored and encouraged to report if the treatment was too painful or caused a high level of discomfort. Treatment was focused on areas where adhesions were discovered through the GT instruments. When using GT instruments, if adhesions are detected, a vibratory sensation is felt by the clinician.[22]

The effleurage/stretching group participants were placed in the same prone position following the warm-up. However, after the emollient was applied, the investigator provided light touch effleurage with the fingertips, from the calcaneus to the metatarsal heads, for 8 minutes. Investigators were instructed that the effleurage was to be very light for sensory effects and not deep enough to cause mechanical effects to the tissue. For the stretching only group, participants were placed in the same position. Emollient was lightly applied for 10 seconds, the ankle was held in the same neutral position for 8 minutes without any additional contact to the plantar surface. A towel was used to remove the emollient at the end of the timed treatment for each group.

Each session, for all participants regardless of treatment group, was concluded with plantar flexion specific stretching as described by DiGiovanni et al.[11] The participant assumed a seated position, crossed the involved foot over the uninvolved leg, stabilized the calcaneus with the contra-lateral hand, and stretched the plantar fascia by forcibly extending the toes at the metatarsal heads with the ipsilateral hand (Figure 1E). The investigator confirmed successful stretching by verifying tautness of the medial plantar fascia. Participants performed 10 stretches holding each for 10 seconds.[11] Participants were scheduled for 11 more sessions (2 per week, not on consecutive days). All the participants were instructed not to perform any additional plantar fascia specific stretching outside of their scheduled treatment sessions. This information was repeated after each treatment session. In addition, patients were told there were no restrictions in physical activity or activities of daily living.

At the end of the 12th session all participants completed posttest survey instruments of the Foot Health Status Questionnaire, McGill Pain Questionnaire, and Visual Analog Scale. Participants of the effleurage/stretching and stretching only groups were offered the investigative GT treatment for another 12 sessions as the GT/stretching group, with 12 out of 15 eligible participants electing to receive the treatment. Of the three that declined, two had no interest in receiving GT, one later voluntarily discontinued. This group of (n=12) received a second round of posttest survey outcome measurement after the 12th GT session.

## PROCEDURES/OUTCOME MEASURES

This study was a single blind, randomized pretest-posttest control/comparison group

design, in which individuals with CPHP were randomly assigned to one of three interventions: (1) GT of plantar fascia plus plantar fascia specific stretching (Graston/stretching); (2) effleurage of the plantar surface of the foot plus plantar fascia specific stretching (effleurage/stretching); (3) and the only stretching group (received no treatment) plus plantar fascia specific stretching (stretching only). Participants underwent 2 treatment sessions a week (not on consecutive days) for 6 weeks, totaling 12 sessions. The Foot Health Status Questionnaire, McGill Pain Questionnaire, and Visual Analog Scale were administered before and after the 6 week intervention for all 3 groups. After the posttest, the effleurage/stretching and stretching only groups were offered the investigative treatment in the same manner as the Graston/stretching group for an additional 6 weeks. The independent variable was treatment type, with gender being controlled by randomization. The dependent variables were foot function, foot pain, and general foot health (from the Foot Health Status Questionnaire) and also foot pain of two other instruments (McGill Pain Questionnaire and Visual Analog Scale).

Participants were recruited from local podiatry clinics and by a university-wide online advertisement. Four local podiatry clinics with 8 doctors of podiatry provided letters of support for this study. Patients with a clinical diagnosis of CPHP were given an envelope with an enclosed recruitment flyer including the contact information of the investigators. Potential participants were instructed to contact the investigators if they were interested in participation. Upon making contact, a telephone interview was conducted to determine if inclusion and exclusion criterion were met.

Following the telephone interview, participants were scheduled to meet an investigator at the athletic training research laboratory, where the: consent form, list of contraindications, and a medical release form (to verify CPHP diagnosis) were signed. Specific information such as treatment interventions, full design of the study, and to which group assigned was withheld from the participants during the screening process and throughout the treatment intervention phase of the study. Initial pretesting survey outcome instruments consisting of the Foot Health Status Questionnaire, McGill Pain Questionnaire, and Visual Analog Scale were completed.

Foot Pain, Foot Function, and General Foot Health were utilized. Foot Health Status Questionnaire scores were calculated using the Foot Health Status Questionnaire Data Analysis Software© (Version 1.03). Numerous sources have shown strong content validity and reliability, with Cronbach α ranging from .85 to .88[28] with appropriate factorial structure and high internal consistency and test-retest reliability, ICCs ranging from .74 to .92,[28,29] with specific sensitivity to patients with CPHP.

The McGill Pain Questionnaire long form consists of 20 groups of words describing pain, with the participant circling the word in each subsection that best applies and then an ordinal ranking score is tabulated.[30] The range of the total McGill Pain Questionnaire score is 0 for "no pain" and 76 being the maximal score for the "worst pain". Test-retest reliability of multiple studies report a correlation of $r > .70$.[31]

The Visual Analog Scale is a 10 cm line that states "No Pain" on the left, and "Worst Pain Imaginable" on the right. Participants are instructed to make a vertical mark on the scale best describing their pain within the last 24 hours. The score is measured from the distance from the left border to the vertical mark in millimeters. Visual Analog Scale scores were tabulated by an individual independent of the study measuring the distance from the left (no pain) to the vertical mark made by the subject in

millimeters. Test-retest reliability has been reported as high as r=.94, with correlations ranging from .61 - .92 when compared to pain scales using words for validity.[32]

Landorf and Radford[33] examined the minimal important difference (MID) which is defined as the amount of improvement needed that was deemed important to the patient, for the Foot Health Status Questionnaire and Visual Analog Scale, specifically for patients with 'plantar fasciitis.' For the Foot Health Status Questionnaire, the minimal important differences were reported as: 14 for Foot Pain, 7 for Foot Function, and 9 for General Foot Health. For the Visual Analog Scale, 9 millimeters of improvement was reported as the minimal important difference.[33] MID data for the McGill Pain Questionnaire has not been reported in the literature.

**Statistical Analysis**

Non-parametric tests were utilized to analyze the data. A Kruskal-Wallis test was conducted to determine differences between the three treatment groups at pretest, and later at posttest. Any significant differences was analyzed with a Mann-Whitney U test. Within group differences between pretest and posttest for each of the five variables was calculated utilizing Wilcoxon Signed Ranks Test. Effleurage/stretching and stretching only group was computed together from pretest to posttest to post GT with Friedman's Test. Alpha was set at $P<0.05$ for all tests, with Post Hoc for Friedman's test having Bonferroni correction set at 0.0167.[34] All data were analyzed on IBM SPSS Statistics 24 (Chicago, IL).

**RESULTS**

To test for homogeneity between the groups, a Kruskal-Wallis test was conducted to analyze the pre test scores. There were no significant differences between the groups on all the dependent variables: Foot Pain $H(2) = 2.73$, $p = 0.25$, $r = .58$, Foot Function $H(2) = 1.16$, $p = 0.55$, $r = .24$, General Foot Health $H(2) = 0.95$, $p = 0.62$, $r = .20$, McGill Pain Questionnaire $H(2) = 1.47$, $p = 0.47$, $r = .31$, and Visual Analog Scale $H(2) = 1.90$, $p = 0.36$, $r = .40$. A posttest analysis between the three groups resulted in a significant difference with Visual Analog Scale $H(2) = 8.78$, $p = 0.012$, $r = 1.87$. Post Hoc Mann-Whitney test demonstrated a significant difference for Visual Analog Scale between the GT/stretching and effleurage/stretching groups ($p=0.011$).

Within groups significance was measured utilizing the Wilcoxon Signed Ranks test and are displayed in **Table 1**. Four of the five variables of the GT/stretching group were found to be significant. One out of 5 variables were significant for the effleurage/stretching group. The stretching only group was significant on 3 out of 5 variables. Mean differences within groups from baseline to posttest along with 95% CI and MID data are reported in **Table 2**.

The effleurage/stretching and stretching only groups were offered GT after the initial posttest, and 12 out of 15 participants received the treatment. Data for the two groups were combined, and Friedman's test was conducted between pretest (baseline), post effleurage or stretching only, and following the administration of GT. Data for Friedman's test is displayed in **Table 3**, as the combined effleurage/stretching and stretching only groups demonstrated significant differences after GT, utilizing the Bonferroni Correction level of significance.

**DISCUSSION**

The purpose of this study was to determine the effectiveness of instrument-assisted soft tissue mobilization, specifically the GT, for the treatment of patients suffering from CPHP. The results showed significant Kruskal-Wallis posttest

**Table 1:** Within Groups Baseline to Post Test Wilcoxon Signed Ranks Results.

| | Graston/stretching | | | | Effleurage/stretching | | | | Stretch only | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Baseline mean±SD | Post mean±SD | Sig | Effect Size | Baseline mean±SD | Post mean±SD | Sig | Effect Size | Baseline mean±SD | Post mean±SD | Sig | Effect Size |
| Foot Pain | 41.0±14.1 | 75.2±13.6 | *0.028 | 0.58 | 27.5±16.3 | 40.3±32.0 | 0.173 | 0.36 | 47.4±27.7 | 59.2±27.0 | 0.26 | 0.28 |
| Foot Function | 58.9±23.6 | 91.9±8.6 | *0.018 | 0.63 | 41.1±37.4 | 50.8±34.0 | *0.042 | 0.54 | 53.9±21.6 | 72.6±27.1 | *0.011 | 0.63 |
| General Foot Health | 40.0±28.2 | 65.4±26.4 | 0.058 | 0.5 | 26.8±39.2 | 31.1±39.4 | 0.414 | 0.21 | 38.1±33.1 | 29.1±29.5 | 0.144 | -0.36 |
| MPQ | 29.6±10.3 | 13.4±9.7 | *0.043 | 0.54 | 22.8±11.7 | 24.0±12.0 | 0.866 | -0.04 | 28.8±18.1 | 15.5±11.5 | *0.012 | 0.63 |
| VAS | 47.8±20.0 | 13.9±10.2 | *0.018 | 0.63 | 63.1±18.7 | 63.7±31.6 | 0.865 | -0.04 | 51.4±25.8 | 24.1±16.2 | *0.017 | 0.59 |

* = $p<0.05$

Foot pain, foot function, and general foot health are categories of the Foot Health Status Questionnaire, where 100 equals optimal foot health.
MPQ=McGill pain questionnaire is scored with 0 being no foot pain and 76 as maximal foot pain.
VAS=Visual analog scale is scored with 0 being no foot pain and 100 as maximal foot pain.

**Table 2**- Mean Differences and 95% Confidence Intervals Between Baseline and Post-Test.

| | | Foot Pain | Foot Function | General Foot Health | MPQ | VAS |
|---|---|---|---|---|---|---|
| Graston Technique® | Mean | 42.5 | 32.8 | 25 | 14.8 | 35 |
| | (95%CI) | (11.9,58.1) | (12.5,56.25) | (-12.5,75.0) | (-2,29) | (13,54) |
| Effleurage | Mean | 11.9 | 12.5 | 10.6 | -0.75 | -3.5 |
| | (95%CI) | (-6.3,33.1) | - | - | (-17.0,12.5) | (-29,37) |
| Stretch Only | Mean | 10.6 | 18.8 | -16.3 | 13.3 | 27.3 |
| | (95%CI) | (-12.5,39.1) | (12.5,28.1) | - | (4.5,23.0) | (7.5,46.5) |
| MID[33] | | 14 | 7 | 9 | NA | 9 |

MPQ=McGill Pain Questionnaire; VAS=Visual Analog Scale; MID=Minimal Important Difference. - = Calculation not possible due to small amount of differences between baseline and posttest (n<=5).

**Table 3.** Friedman Mean Ranks for Effleurage/Stretching and Stretching Only Groups with additional Graston/Stretching treatment (n=12).

| | Pre Test 1 post hoc 1v2 | Post Test 2 post hoc 2v3 | Post Test 3 post hoc 1v3 | Freidman sig |
|---|---|---|---|---|
| Foot Pain | 1.46 (0.068) | 1.71(0.004)* | 2.83 (0.003)* | 0.001 |
| Foot Function | 1.08 (0.001)* | 2.08 (0.008)* | 2.83 (0.003)* | 0.000 |
| General Foot Health | 1.71 (0.496) | 1.50 (0.005)* | 2.79 (0.008)* | 0.001 |
| MPQ | 2.75 (0.061) | 2.17 (0.004)* | 1.08 (0.002)* | 0.000 |
| VAS | 2.58 (0.069) | 2.33 (0.003)* | 1.08 (0.002)* | 0.000 |

*= Bonferroni Correction to 0.0167 level of significance. MPQ=McGill Pain Questionnaire; VAS=Visual Analog Scale

differences between the GT/stretching and effleurage/stretching groups with the Visual Analog Scale. Within group pre- post-test comparison revealed significant differences with the GT/stretching group in 4 out of 5 variables. The effleurage/stretching group showed significant differences in 1 out of 5 variables, and stretching only was significant with 3 out of 5 variables.

Additionally, we found a bimodal response utilizing the Minimal Important Difference (MID) as reported by Landorf and Radford[33], who report the MID of the scores for Foot Health Status Questionnaire and Visual Analog Scale for CPHP (14 points for Foot Pain, 7 points for Foot Function, 9 points for General Foot Health, and 9 points with the Visual Analog Scale). The GT/Stretching group exceeded the MID in all 4 variables that report MID data. Effleurage/Stretching group exceeded the MID with 2 out of 4 variables, and the Stretch only group also exceeded on 2 out of 4 variables.

The unexpected positive effects for the effleurage/stretching and stretching only groups may be a result of the plantar fascia specific stretching which was performed for all three groups. The GT Manual[22] recommends that a therapy session ends with a period of stretching the treated tissue. DiGiovanni[11] has reported benefits with plantar fascia specific stretching compared to Achilles stretching during an eight week program, which therefore may explain the improvements among all three groups. However, the effleurage/stretching and stretch only groups improved significantly with all measured variables utilizing Friedman's analysis (**Table 3**) after completing the GT regimen. Therefore, there appears to be a trend of improved outcomes when utilizing GT combined with plantar specific stretching for the treatment of CPHP.

To date, only one study[23] utilizing GT for CPHP with multiple participants, has been published. Their findings are similar to this current study, where they found significant improvement for pain and function from baseline to follow-up. However, due to the case series design and the lack of a control group, a cause-and-effect relationship could not be established. In addition, different outcome instruments, treatment durations, and stretches were used in the design of this study. Therefore, caution should be used when comparing Looney et.al.[23] with our results due to methodology differences, and comparing a case series to randomized comparison group design.

While there is limited published research using GT as a treatment intervention for CPHP, there are positive benefits[16,18-21] for the treatment of other chronic disorders. Sevier et al[19] reported improvements in function and pain when comparing a treatment intervention consisting of

transverse friction massage, phonophoresis, stretching, and cryotherapy with a GT intervention for the treatment of lateral epicondylitis. In a case report of a 40 year old patient presenting with chronic Achilles tendinopathy, Miners and Bougie[21] reported improvements in self-reported pain and function following an 8 week intervention of GT, Active Release Techniques, eccentric exercise and static gastrocnemius/soleus stretching. One noticeable limitation of each of these case reports is the combination of several treatment modalities in the treatment of the patients. Therefore, it is difficult to determine if the GT was responsible for the improvements in pain relief and function. In a systematic review conducted by Cheatham et al[35] looking at the efficacy of IASTM as an intervention to treat various pathologies, they similarly concluded that a lack of treatment protocol homogeneity makes it difficult to determine the effects of IASTM in general. Cheatham et al[35] also report that no IASTM study has ever reported a significant difference between control or comparison groups and IASTM groups. In contrast, we found a post-test significant differences with the Visual Analog Scale between our GT/stretching and effleurage/stretching groups.

Schaefer and Sandrey,[18] examined the effects of GT in conjunction with a dynamic balancing treatment (DBT) program on outcomes associated with chronic ankle instability; they found no significant difference between the groups. The GT/DBT group demonstrated an increase in functional outcomes as did the other groups in the study. Thus, it appears that GT offers some benefit in the treatment of other chronic conditions in addition to this study with patients suffering from CPHP.

This study was limited by the small sample size (n=22). In addition, it was also limited by a lack of a repeated-measures design, therefore only an immediate follow-up after the intervention. Therefore, no long term results are known for our study population, including the rates of recurrence or a need for any additional intervention. The sample population represented the group that is most susceptible to chronic plantar heel pain, consisting of people of middle age with elevated body mass index, so our results may not represent young healthy athletes, and not patients with acute plantar fascia injury. The participants represented a population with an average age in the mid 40's with a body mass index averaging 28-30, which is above the obese range of greater than 25. It has been previously reported that a population of higher body mass index and over age 40 are more susceptible to suffering from CPHP.[2] The participants were not monitored for activity levels during the duration of the intervention. This study was also limited by the inequality of males (n=5) to females (n=17) as participants. The methods of this study limited the GT treatment to the use of 3 instruments with basic sweeping strokes. Future research needs to be completed regarding different GT strokes, different foot and ankle positions, and the use of more advanced GT techniques. Future research should also incorporate more objective instruments, such as plantar fascia thickness via diagnostic ultrasound to supplement the subjective scales.

## CLINICAL APPLICATION

To our knowledge, this study is the first randomized pretest-posttest control/comparison group design investigating the use of GT plus plantar-fascia specific stretching as an intervention for CPHP. Consequently, our findings shed light on the use of GT as a potential treatment of CPHP. It is our recommendation that clinicians take a multifaceted approach to treating patients with CPHP which includes GT along with Plantar Fascia Specific Stretching[11] and other traditional treatment methods.[36] Future research should focus on multicenter randomized

controlled trials incorporating IASTM specifically regarding CPHP.

The authors declare that no financial conflict of interest exists with the research comprised within this article. There is no commercial or proprietary interest with any materials used for this study.

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