

The Effects of Massage Therapy in Treatment of Chronic Plantar Fasciitis: a Case Study

By Glenda Keller RMT BPHE

Glenda Keller was the Silver Award Winner in the Massage Therapy Foundation in the USA 2008 Practitioner Case Report Contest. *Massage Therapist* is proud to publish her presentation on the effectiveness of massage therapy techniques for treatment of chronic plantar fasciitis – the number one cause of heel pain.

The term plantar fasciitis is often used to designate a clinical condition in which the patient has pain in the plantar aspect of the heel, characteristically worse on arising in the morning and after periods of sitting (Furey, 1975). This is a common problem: 95 per cent of all heel pain is diagnosed as plantar fasciitis. Up to two million cases are reported in the US per year (Werner, 2002). The only physical finding is severe localised tenderness (Furey, 1975).

Review of literature

Plantar fasciitis can also be known as heel pain syndrome and heel spur syndrome (Dyck, 2004). This disorder affects the hind foot, specifically the insertion of the plantar aponeurosis at the medial calcaneal tubercle (Dyck, 2004). The signs and symptoms associated with plantar fasciitis are produced by the excessive load or tension to this area, which forms an anchor around the longitudinal arch of the foot (Dyck, 2004). Plantar fasciitis is the most common cause of inferior heel pain; the word 'fasciitis' assumes inflammation is an inherent component of this condition (Kuhar, 2007). The pain is usually caused by collagen

degeneration (which is sometimes misnamed 'chronic inflammation') at the origin of the plantar fascia at the medial tubercle of the calcaneus. This degeneration is similar to the chronic necrosis of tendonosis, which features loss of collagen continuity, increases in ground substance (matrix of connective tissue) and vascularity, and the presence of fibroblasts rather than the inflammatory cells usually seen with the acute inflammation of tendonitis (Khan, 2000).

Kuhar et al. investigated the effectiveness of myofascial release in treatment of plantar fasciitis (Kuhar, 2007). In this case, thirty subjects with chronic plantar fasciitis were randomly allocated to two study groups. The control group received ultrasound, contrast bath, foot intrinsic strengthening exercises and plantar fascia stretching exercises. The experimental group the same, with added myofascial release technique. The experimental group showed significantly higher improvement levels in terms of both pain relief and in functional ability.

There have been many studies using conventional physical therapy treatments however none that cover conventional massage therapy. There is a lack of studies specifically related to plantar fasciitis and massage therapy to neither confirm nor dispute that massage therapy is beneficial. Similar to massage therapy is physical manipulation such as myofascial release, and it has been one of the physical therapy treatments given in the chronic conditions that cause tightness and restriction in soft tissues such as plantar fasciitis does (Kuhar, 2007).

The purpose of this study was to find out if massage therapy would be effective in treating chronic plantar fasciitis. This prospective study hypothesises that a series

of massage therapy treatments will be beneficial in the treatment of chronic plantar fasciitis and the client will be able to participate in high weight-bearing activities at one hundred per cent with minimal pain levels.

Methods

Client profile

This client was a 51-year-old female with chronic plantar fasciitis and no pre-existing health conditions. Client first began experiencing symptoms approximately two and a half years ago at which time she sought the treatment of a physiotherapist and was diagnosed with plantar fasciitis. After two months of conventional physiotherapy treatment (ultrasound, plantar fascia stretching, achilles tendon stretching, and intrinsic foot strengthening), symptoms eventually become minimal and manageable. Client had a reoccurrence of the plantar fasciitis that started about two months prior to this study. Client works full time as a print production assistant and symptoms do not disturb work or day-to-day functionality. However, the client is an avid Scottish Country Dancer (which is high energy, high weight bearing, and high impact using pattered movement), participating approximately two hours, once per week. One month before the study began, client could only dance five minutes (out of a 2-hour class) before symptoms persisted and dancing had to cease. Pain continued in this pattern for the final three weeks of dancing until the class took a break for the summer months.

The massage therapy assessment concluded that the client did have chronic plantar fasciitis with client subjective findings

as well as the Visual Analog Scale (VAS) pain scale. Severe tenderness was elicited when the calcaneal attachment of the plantar fascia was palpated. Client also had most pain upon taking first steps in the morning and pain after extreme weight-bearing activities (in this case, dancing). Hip, knee and ankle range of motions were all within normal limits bilaterally. There were no contraindications to the treatment of massage therapy in this case.

The subject's desired outcome, at the end of the treatment series was to be able to participate in the full two hours of dancing, without modification of dance steps, with minimal post dancing pain.

The treatment plan

The use of massage therapy for the treatment of plantar fasciitis is well documented and supported (Rattray, 2000). Werner agrees that plantar fasciitis can respond well to bodywork (Werner, 2002). Lowe suggests that massage techniques are quite helpful in the treatment of plantar fasciitis (Lowe, 2003). Massage is often suggested both to decrease tension in the deep calf muscles and to have an organising influence on the growth of scar tissue on the plantar fascia itself (Werner, 2002). The chronic stage of plantar fasciitis is treated with a deep moist heat application before stretching the plantar fascia (Rattray, 2000). Fascial techniques are applied to gastrocs and soleus with cross hand spreading and finger tip spreading (Rattray, 2000). Effleurage and petrissage are used for shortened hypertonic gastrocnemius and soleus, more specifically wringing, fingertip and palmar kneading (Rattray, 2000). Working on the lower leg muscles, especially those involved in plantar flexion, is important because tightness in these muscles may contribute to excess tension in the fascial continuities running from the leg through the bottom surface of the foot (Lowe, 2003). Trigger points and taut bands are successfully treated using repetitive muscle stripping (Travell, 1992). Swedish techniques such as thumb kneading

are used on the intrinsic muscles of the foot (Travell, 1992). Lowe (2003) states that longitudinal stripping methods applied to the bottom surface of the foot will help reduce tension in the intrinsic flexor muscles (Lowe, 2003). Deep transverse friction can be used directly on the plantar fascia to stimulate fibroblast activity and tissue healing from chronic overuse (Lowe, 2003). Cross-fiber frictions are applied for adhesions in the plantar fascia, particularly near the calcaneal attachments (Oloff, 1994). Oloff et. al. state that the techniques (performed in the treatment of plantar fasciitis) should be followed by icing and stretching (Oloff, 1994). Increasing flexibility of the calf muscles is particularly important in the treatment of plantar fasciitis (Young, 2000). Repetitive effleurage is used on the posterior leg and foot muscles to increase local circulation and remove metabolites. (Rattray, 2000).

The Treatment Plan in this case was two 30-minute massage therapy session per week for four weeks (eight treatments in total). Treatments were performed on Tuesdays and Thursdays every week so no discrepancies could be accounted for. Treatments were performed with the client in the prone position with one pillow supporting the ankles and the use of a Body Pillow for alignment of the spine and comfort during the treatment. Palpation of posterior leg muscles was performed at the start of the treatment over top of the sheets as a preliminary to the treatment and to ensure no major changes in the tone of the muscles had developed since the previous treatment. Deep moist heat was applied to the plantar aspect of the affected foot in the form of a hydro collar pack for five minutes while myofascial release techniques combined with general Swedish massage techniques were applied to the upper and lower leg. Palmar and fingertip spreading myofascial techniques of the posterior leg were performed before doing Swedish techniques (including thumb kneading and repetitive

stripping). Trigger point therapy was applied if a trigger point was found during that treatment. No specific treatment was performed on the unaffected leg or foot. Myofascial release techniques were applied to the whole foot in the form of fingertip spreading. Additional specific treatment was applied to the plantar fascia in the form of cross fiber frictions to the calcaneal attachment of the plantar fascia as well as adhesions along the plantar fascia. Repetitive stripping was applied to the entire plantar fascia. Swedish techniques were applied to the whole foot to end the treatment before the stretching of the plantar fascia. Stretching the plantar fascia and calf muscles was done for 45 seconds twice with a 10 second rest in between sets. Ice was applied to the calcaneal attachment of the plantar fascia (where the cross fiber frictions were performed) until numb and repeated once. The client was instructed to continue to stretch and ice for that afternoon three more times and to heat, stretch, and ice before bed. Otherwise no home care was given during the course of the treatments and client refrained from taking any over the counter or prescription NSAIDS.

The Visual Analog Scale, more commonly referred to as the VAS was used to track progress. The VAS is a scale used as a subjective measurement of pain experienced on a level between zero and 10 with zero being no pain and 10 being the worst. The VAS is a well-studied method for measuring both acute and chronic pain (Scott, 1976), and its usefulness has been validated by several investigators (Katz, 1999 and Carlsson, 1983). The client was instructed to keep detailed notes about activity levels during the day and specifically note on the VAS pain levels when first arising in the morning, time spent doing activities (specifically dancing) and pain levels after those activities.

Results

Pain levels of first steps taken in the morning were recorded on a daily basis so that proper

tracking could occur. Refer to Figure 1. Day Zero refers to average pre-treatment (two months prior to the start of the study) pain levels on first steps taken in the morning, which was 3.5/10.

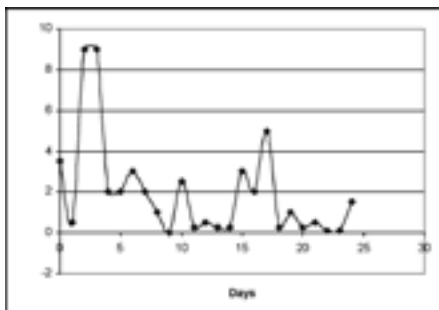


Figure 1 Pain level (using the VAS) of first steps taken in the morning (recorded daily during the four-week study).

The amount of dancing the client was able to participate in dramatically increased throughout the four weeks of treatment. The pain levels post-dancing were inversely related, as the amount of dancing able to participate in increased, the pain levels post dancing decreased. Refer to figure 2 and 3. Two months prior to the beginning of this study the client was only able to participate in about five minutes out of a two-hour class (approximately five per cent) after having to cease the dancing while experiencing an 8/10 pain level on the VAS. Day Zero refers to an average pain level two months prior to the start of the study. Half way through the study the client's pain levels dropped to 4/10 for two classes dancing ninety per cent of the

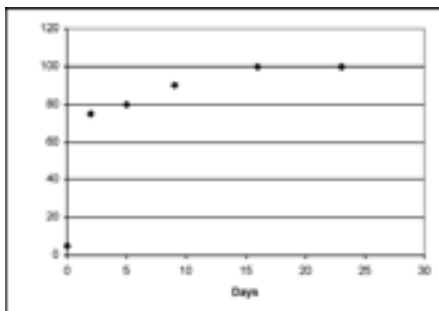


Figure 2 Amount of dancing able to participate in (percentage) recorded as dancing occurred during the four-week study.

class, then to 2/10 on the last dance class before the end of the study participating in one hundred per cent of the dance class.

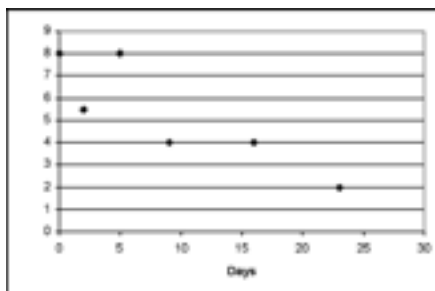


Figure 3 Pain levels experienced post dancing recorded as the dancing occurred during the four-week study.

Discussion

The sudden increase in pain levels during the first steps taken in the morning on days three and four may have been due to the start of the treatment plan. The client had received no treatment for the plantar fasciitis for at least two months prior and the start of the treatments may have irritated the attachment site causing further inflammation and thereby increasing pain levels. On day 10 there was another spike in pain level experienced on the first step taken in the morning. This likely occurred due to the fact that the client danced on the evening of day nine. A similar situation occurred on day 17 showing a dramatic increase in pain levels when the client danced on the evening of day 16. The second spike was higher than the first for no known reason. Generally, pain is increased and more significant when weight-bearing activities (such as Scottish Country Dancing) are performed (Roxas, 2005). On days 22 and 23 pain was almost nil (client indicated it was an 1/8/10 on both days). The sudden spike on the last day of the treatment plan again could be attributed to the evening of day 23 which was dance class, however the spike is significantly less than the earlier two spikes. Noting also that client was able to participate in one hundred per cent of the dance class with minimal pain (2/10), which was what this treatment

plan sought to achieve and was what the hypothesis stated.

Conclusions

This treatment plan was highly successful indicating that massage therapy is beneficial in treating clients with chronic plantar fasciitis. This treatment plan combined traditional massage therapy techniques with myofascial release techniques. Kuhar et al found that using conventional physiotherapy combined with myofascial release to be beneficial in the treatment of plantar fasciitis (Kuhar, 2007).

This study may have yielded superior results due to the fact that manual manipulation of the tissues was performed longer each session and the study was longer in duration. Kuhar et al treated clients for 15 minutes for 10 days, compared to this study, which was conducted for 30 minutes for four weeks. Also note that the Kuhar et al study was 10 consecutive days compared to this study, which was twice per week for four weeks (Kuhar, 2007).

The findings from this study are appropriate to put into clinical practices. These findings are clinically relevant and there are no complications of this study. Practitioners could apply these methods to treat clients presenting with chronic plantar fasciitis.

For future research, a longer study may be beneficial to yield remarkable results. Young et al state that unfortunately, the time until resolution (of plantar fasciitis) is often six to 18 months (Young, 2001). Future research is needed to support massage therapy in the treatment of plantar fasciitis.

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Glenda Keller's practice, Gerow Chiropractic and Massage, is located in Picton, Ontario, Canada.

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References

Carlsson, A.M. (1983). Assessment of chronic pain: Aspects of the Reliability and Validity of the Visual Analogue Scale, Pain 16 87-101.

Dyck DD, Boyajian-O'Neill L.A (2004). Plantar Fasciitis. Clin J Sport Med, 14, 305-309.

Furey, J. G (1975). Plantar Fasciitis. The Journal of Bone and Joint Surgery, 57-A NO.5, 672-673.

Katz J, Melzack R. 1999. Measurement of pain. Surg Clin North Am. Apr; 79(2):231-52.

Khan, K.M., Cook, J.L., Taunton, J.E., Bonar, F. (2000). Overuse tendinosis, not tendinitis: a new paradigm for a difficult clinical problem (part 1). Phys Sportsmed; 28:38-48.

Kuhar, S. Subhash, K. Chitra, J. (2007) Effectiveness of Myofascial Release in Treatment of Plantar Fasciitis: A RCT. Indian Journal of Physiotherapy and Occupational Therapy, Vol 1, No. 3.

Lowe, W. (2003) Plantar Fasciitis. Massage Magazine. Issue 105 September-October.

Oloff, L.M. 1994. Musculoskeletal Disorders of the Lower Extremities. Philadelphia: W.B. Saunders Company.

Rattray, F.S. and Ludwig, L.M. 2000. Clinical Massage Therapy: Understanding, Assessing and Treating over 70 Conditions. Toronto: Talus Incorporated.

Roxas, M. ND (2005). Plantar Fasciitis: Diagnosis and Therapeutic Considerations. Alternative Medicine Review. Vol 10(2) 83-93.

Scott, J and Huskisson, E.C., (1976). Graphic representation of pain, Pain 175-184.

Travell, J. G. and Simons, D. 1983. Myofascial Pain and Dysfunction: The Trigger Point Manual. Baltimore: Williams and Wilkins.

Werner. R.A. 2002. A Massage Therapist's Guide to Pathology. Philadelphia: Lippincott Williams & Wilkins.

Young, C.C.; Rutherford, D.S.; Niedfeldt, M.W (2001). Treatment of Plantar Fasciitis. Am Fam Physician. 63:467-474, 477-468.

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