Plantar Fasciitis Treatments

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Coverage Policy

For information on the use of splints/foot orthoses associated with plantar fasciitis, refer to the Cigna Coverage Policy Lower Limb Orthoses and Shoes.

Each of the following interventions is considered experimental, investigational or unproven for the treatment of plantar fasciitis:

- acupuncture
- autologous platelet-derived growth factors
- coblation® (e.g., Topaz™)
- electron-generating devices
- extracorporeal shock wave therapy (ESWT), including extracorporeal pulse activation therapy (EPAT®)
- intracorporeal pneumatic shock therapy (IPST)
- laser therapy
- low-load prolonged-duration stretch (LLPS) devices (e.g., Dynasplint System®, Ultraflex, Pro-glide™, Dynamic ROM, Advance Dynamic ROM®)
Overview

This Coverage Policy addresses various minimally invasive treatments for plantar fasciitis.

General Background

Plantar fasciitis is an overuse injury resulting in inflammation of the plantar fascia, which connects the heel to the toes. It is a common cause of heel pain in adults. Symptoms usually start gradually with mild pain at the heel, pain after exercise and pain with standing first thing in the morning. On physical examination, firm pressure will elicit a tender spot over the medial tubercle of the calcaneus. Risk factors for plantar fasciitis may include: obesity, age, being female, limited dorsiflexion of the ankle joint, prolonged weight bearing, and an increase in the amount of walking or running. Heel spurs are not necessarily associated with plantar fasciitis; heel spurs may be found in asymptomatic patients. Early treatment generally results in a shorter duration of symptoms.

First-Line Treatment

The mainstay of nonsurgical treatment and the standard of care for initial treatment is a program of stretching exercises, ice, activity modification, weight loss in overweight patients, recommendations for appropriate footwear, arch taping, nonsteroidal anti-inflammatory medications and shock-absorbing shoe inserts or orthoses. Prefabricated orthoses have been shown to be adequate for the majority of patients with various heel pain syndromes.

Iontophoresis is also an accepted noninvasive therapy for plantar fasciitis. Iontophoresis is the use of electric impulses from a low-voltage galvanic current stimulation unit to drive topical corticosteroids into soft tissue structures. The effectiveness of iontophoresis combined with traditional modalities has been demonstrated in randomized controlled trials (RCTs) (Osborne and Allison, 2006; Gudeman, et al., 1997). Iontophoresis may be tried as part of a first-line physical therapy program.

Second-Line Treatment

In the event early treatment fails, night splints, steroidal anti-inflammatory injections or a walking cast are the next level of the standard of care.

A night dorsiflexion splint allows passive stretching of the calf and the plantar fascia during sleep. In theory, it also allows healing to occur while the plantar fascia is in an elongated position, thereby creating less tension with the first step in the morning. A night splint can be molded from plaster or fiberglass casting material or may be a prefabricated plastic brace (Young, et al., 2001). A number of studies support the efficacy of night splints (Roos, et al., 2006; Crawford and Thomson, 2003; Barry, et al., 2002; Berlet, et al., 2002; Powell, 1998).

Evidence on the effectiveness of steroid injections in reducing pain in patients with plantar fasciitis includes a systematic review of randomized and quasi-randomized controlled trials (Crawford and Thomson, 2003). In general, the studies that compared steroid injections with placebo substances showed initial significant improvement; however, studies that included follow-up after one month showed no difference in outcome at that time. This suggests that the effectiveness of steroid injections is short-term. Risks of steroid injection into the heel include rupture of the plantar fascia and fat pad atrophy.

The use of a short-leg walking cast for several weeks is a standard of care as a final conservative step in the treatment of plantar fasciitis.

Surgical Intervention
Surgical intervention should be considered only for intractable pain which has not responded to 6–12 months of proper conservative treatment. Plantar fasciotomy can be conducted using open or endoscopic techniques. Endoscopic plantar fasciotomy is a less invasive technique requiring an incision of less than one-half inch in length and utilizing an arthroscope to visualize and release the fascia. It has been proposed as an improvement over open plantar fasciotomy, resulting in less trauma and improved recovery times. There are a substantial number of retrospective studies supporting the use of endoscopic plantar fasciotomy. Based on the large number of reports of relief of heel pain from a series of nonrandomized trials, endoscopic plantar fasciotomy appears effective in the treatment of plantar fasciitis (Urovitz, et al., 2008, Boyle and Slater, 2003; O’Malley, et al., 2000; Lundeen, et al., 2000; Benton-Weil, et al., 1998).

Unproven Therapies for Plantar Fasciitis

There are many therapies that have been suggested for treatment of plantar fasciitis that are not proven in the literature and not accepted as standard of care.

**Acupuncture:**

Acupuncture is a method of producing analgesia or treating disease by stimulating anatomical locations on the skin by the penetration of needles. The overall body of evidence in general is of poor quality, consisting of few controlled studies, case series and case reports.

Thiagarajah (2016) performed a systematic review of the evidence to determine the effectiveness of acupuncture in reducing pain due to plantar fasciitis. The review included RCTs that compared acupuncture with standard treatments (n=3 studies) or had real versus sham acupuncture arms (n=1 study). The number of participants ranged from 23–53, and the type of controls used varied. Study results suggested that acupuncture significantly reduced pain levels in patients with plantar fasciitis, as measured on the VAS and the Plantar Fasciitis Pain/Disability Scale between four and eight weeks of treatment, with no further significant reduction in pain beyond this duration. Side effects were found to be minimal. Limitations of this review include short duration of follow-up in studies and the lack of meta-analysis of the data. Although benefit was demonstrated in the short term, it was concluded that there is insufficient evidence for a definitive conclusion to be drawn regarding long-term effectiveness.

There is a paucity of evidence supporting the efficacy of acupuncture for the treatment of plantar fasciitis.

**Autologous Platelet-Derived Growth Factors:**

Autologous platelet-derived growth factors (APDGF) also referred to as autologous platelet concentrate, platelet-rich plasma (PRP), platelet-rich concentrate, have been proposed for the treatment of multiple conditions to enhance healing. In addition to hard and soft tissue wound healing, purported benefits of this treatment include reduced inflammation, decreased blood loss, and reduced postoperative narcotic requirements. Several centrifuges are designed to concentrate platelet-enriched plasma from small amounts of autologous blood at the point of care. The platelet concentrate can then combined with other substances to form a gel for patient application. Outcomes have been documented using APDGF injection for a wide range of indications, including musculoskeletal conditions. APDGF injection has been evaluated as a treatment for plantar fasciitis in few randomized controlled trials (RCTs) showing no significant improvement when compared to a control group.

Yang et al. (2017) performed a meta-analysis (n=9 RCTs/430 patients) to evaluate the current evidence concerning the safety and efficacy of PRP as a treatment for plantar fasciitis compared to steroid treatments. RCTs or prospective cohort studies that compared PRP to a control (e.g., steroid treatment) in patients diagnosed with plantar fasciitis were included. Studies were excluded in which subjects had a traumatic disease, a history of surgical interventions, or systemic disorders such as rheumatoid arthritis. Outcome measurements included the visual analogue scale (VAS), the Foot and Ankle Disability Index (FADI), American Orthopedic Foot and Ankle Society (AOFAS) scale, and the Roles and Maudsley Score (RMS). Follow-up times were divided into short periods (two–four weeks), intermediate periods (four–24 weeks), and long periods (≥24 weeks through 48 weeks). No significant differences in the VAS scores were observed between the two groups in the short term and intermediate term, however, PRP demonstrated better long-term efficacy than steroid treatments (p=0.03). No significant differences in the FADI and AOFAS Scale were observed between the groups after 12 weeks. Similarly no significant differences in the RMS were between groups was found after six months. Limitations of this meta-analysis include small sample size and heterogeneity between studies. Additional well-designed, long-term studies are needed to establish the role of PRP as a treatment for plantar fasciitis.
A Directory Report published by Hayes reviewed the available literature on Platelet-Rich Plasma for Ligament and Tendon Injuries. The review of RCTs (n=19 studies) and nonrandomized controlled studies (n=3) provided mixed and inconclusive evidence regarding the accelerated healing or improvement of outcomes after PRP injection in patients who have tendon or ligament injuries. For Achilles tendon injuries, examined in two RCTs, PRP injection did not result in improved healing or function. No serious complications were reported in any of the studies (Hayes, 2012; 2016).

Monto (2014) published results of a single-blinded, prospective, randomized, longitudinal study (n=40) of patients with chronic plantar fasciitis to compare the effectiveness of autologous PRP and corticosteroid injection. Chronic refractory plantar fasciitis was defined as those patients who had experienced at least four months of heel pain despite a standardized trial of conservative treatment including rest, physical therapy. Group 1 received a single ultrasound-guided injection of cortisone, and group 2 was treated with a single ultrasound-guided injection of autologous PRP. Follow-up occurred through 24 months following injection treatment. The difference between the post-treatment pain scoring results of the cortisone and PRP groups was clinically significant in favor of PRP (p = 0.001) at all follow-up evaluations. An acknowledged primary limitation of this study is the single-blinded design. Study results suggest that PRP may provide improved pain control compared to cortisone injection. However larger well-designed, controlled studies are needed to validate this finding.

A comparative study (n=60) by Akşahin et al. (2012) evaluated patients with chronic plantar fasciitis treated with corticosteroid injection versus platelet rich plasma injection. Satisfactory results were achieved with both treatment methods. There were no significant differences in pain scores at three weeks and six months following injections (p>0.05). Study limitations include small patient population, short-term follow-up, and lack of randomized design.

de Vos et al. (2010) conducted a systematic review (n=11 studies) of the evidence on autologous growth factor injections of whole blood or platelet-rich plasma for chronic tendinopathy. Chronic tendinopathy in this study included wrist extensors, flexors, plantar fasciopathy and patellar tendinopathy. There were six observational, non-controlled studies and five controlled clinical trials, two of which were determined to have appropriate randomization. The mean number of subjects was 40, with a range 20–100. Patients with chronic plantar fasciopathy were treated in three studies (n=218 subjects). Outcome measures included measurements of pain and function. The review found strong evidence that the use of injections with autologous whole blood should not be recommended. No high-quality studies were found on platelet-rich plasma treatment (de Vos, et al., 2010).

Lee and Ahmad (2007) conducted a prospective, randomized, controlled, observer-blinded study (n=64) to compare the efficacy of intralesional autologous blood with corticosteroid injection for plantar fasciitis. Data were complete for 61 patients, 30 patients in the autologous blood group and 31 patients in the corticosteroid group. Over the six-month follow-up period, a significant reduction in pain levels was noted in both groups (p<0.0001). At six months after treatment, patients who had received the corticosteroid injection had lower average levels of pain than those who had received the autologous blood injection, but the difference was not significant (p= 0.094). Acknowledged limitations of this study include its short-term follow-up and the lack of a control group that would show the natural history of the disease without intervention.

Kiter et al. (2006) evaluated the efficacy of autologous platelet injection for plantar fasciitis in an RCT (n=45). The 45 patients were treated for heel pain using either the peppering technique (n=15), autologous blood injection (n=15) or corticosteroid injection (n=15). In the peppering technique group, after infiltration of one milliliter (ml) of 2% prilocaine, the needle was inserted, withdrawn and redirected 10–15 times without emerging from the skin. At six-month follow-up, clinical improvement was evaluated using a VAS. Improvements in VAS scores were reported to be 68%, 68% and 65% for the peppering technique, autologous blood injection and corticosteroid injection groups, respectively. Larger, well-designed RCTs are needed to further define the role of autologous blood injection in the treatment for plantar fasciitis.

There is insufficient evidence in the published peer-reviewed medical literature to support the use of autologous blood injection for the treatment of plantar fasciitis.
Coblation®: Coblation, also referred to as cold or controlled ablation, has been proposed as a therapy for plantar fasciitis. Coblation bipolar technology uses radiofrequency energy to excite the electrolytes in a conductive medium, such as saline solution, creating precisely focused plasma. The plasma particles are then able to break molecular bonds within tissue, causing the tissue to dissolve at relatively low temperatures. It is theorized that this plasma radiofrequency-based microsurgery may promote an angiogenic healing response. Because the current does not pass directly through tissue, there is minimal thermal injury to any surrounding tissues.

Coblation technology can be delivered via a number of different wands, hand pieces and other electrosurgical systems. The ArthroCare Topaz™ MicroDebrider™ (ArthroCare Corporation, Sunnyvale, CA) was granted marketing approval by the FDA via the 510(k) process on March 5, 2006, because it is considered to be substantially equivalent to another device already on the market. The 510(k) summary stated that the orthopedic system is substantially equivalent to the ArthroCare Topaz™ ArthroWands. Under the FDA 510(k) approval process, the manufacturer is not required to supply to the FDA evidence of the effectiveness of the Topaz MicroDebrider prior to marketing the device. According to the FDA, the Topaz MicroDebrider is indicated for debridement, resection, ablation, and coagulation of soft tissues and hemostasis of blood vessels in orthopedic and arthroscopic procedures.

A prospective, double-blind RCT (n=80) to evaluate the effectiveness of Coblation-based fasciotomy using the Topaz MicroDebrider is currently underway. The primary outcome measure for this study will be pain relief. Secondary outcomes will include a comparison of postoperative complications and an assessment of function and quality of life by the SF-36 questionnaire. Studies in the published peer-reviewed literature assessing the effectiveness of Coblation-based fasciotomy for relieving pain associated with plantar fasciitis are lacking. Therefore, Coblation technology for this indication is unproven at present.

Electron-Generating Devices: There is no evidence to support the use of electron generating devices in the treatment of plantar fasciitis (Crawford and Thomson, 2003).

Extracorporeal Shock Wave Therapy (ESWT): ESWT, also called orthotripsy, is a noninvasive treatment that involves delivery of 1000–3000 shock waves to the painful heel region, and has been introduced as an alternative to surgery for patients with chronic plantar fasciitis that has not responded to medical therapy. The mechanism by which ESWT might work to relieve pain associated with plantar fasciitis is unknown. It has been hypothesized that the shock waves may reduce transmission of pain signals from sensory nerves in the plantar fascia, and/or may stimulate healing (Huang, et al., 2000).

A number of ESWT devices for the treatment of plantar fasciitis are currently approved by the U.S. FDA including the OssaTron® lithotripter (HealthTronics, Marietta, GA); the Epos™ Ultra high-energy device (Dornier Medical Systems, Germering, Germany); the Orthospec™ (Medispec, Ltd, Germantown, MD); the Orbasone Pain Relief System (Orthometrix, Inc., White Plains, NY); and the EMS Swiss Dolorclast® (Electro Medical Systems [EMS], North Attleboro, MA).

Literature Review: The safety and effectiveness of ESWT for the treatment of plantar fasciitis have been evaluated in technology assessments, meta-analyses, and randomized controlled trials (RCTs). A number of RCTs (n=45–272) have compared ESWT to placebo for the treatment of plantar fasciitis with conflicting results. A greater reduction in heel pain for patients treated with ESWT has been reported in some studies (Ibrahim, et al., 2010; Gerdesmeyer, et al., 2008; Kudo, et al., 2006; Malay, et al., 2006; Theodore, et al., 2004; Rompe, et al., 2003), while similar improvement rates for both treatment and placebo groups have been reported in other studies (Haake, et al., 2003; Buchbinder, et al., 2002).

Sun et al. (2017) performed a meta-analysis of RCTs (n=9 studies/935 subjects) to compare the effectiveness of general ESWT, focused shock wave (FSW), and radial shock wave (RSW) to placebo for chronic plantar fasciitis. RCTs were included that investigated ESWT without anesthesia with sham therapy as control. Therapeutic success in studies was defined as a decrease in visual analogue scale (VAS) score from baseline larger than 50% or 60%, or VAS score of less than 4cm after intervention. Overall, ESWT was found to have higher improvement or success rates than placebo (p<0.00001). A subgroup analysis of FSW and RSW therapies indicated that FSW therapy had greater improvement or success rates than placebo (p<0.0001). Data regarding reduction in pain scale was reported in 4/9 trials. Of these trials, three compared FSW therapy to
placebo, and one assessed RSW therapy compared to placebo. Significant heterogeneity was observed in the comparisons of reduction in pain scale. ESWT was found to have greater reduction in pain scale than placebo (p<0.05). No serious adverse events were reported. Limitations of the analysis include the lack of comparison to established treatment methods. The authors concluded that FSW may be associated with higher success rate and greater pain reduction compared to sham therapy in chronic plantar fasciitis patients. However, additional high-quality clinical trials and systemic reviews are needed to demonstrate the efficacy of ESWT (e.g., FSW, RSW therapies) and determine whether RSW therapy is an ideal alternative therapeutic method to conservative treatment and surgery (Sun, et al., 2017).

A Directory Report published by Hayes reviewed the available literature on focused ESWT for Chronic Plantar Fasciitis. The review included randomized controlled trials (RCTs) (n=17 studies), with studies comparing ESWT to sham treatment (10 RCTs), or to other active treatments (6 RCTs), and one RCT comparing full-dose ESWT to low-dose ESWT. Sample sizes ranged from 54 to 293 patients. Outcome measures in studies were patient-rated pain on visual analog scale (VAS), pain threshold, functional measures, quality of life (QOL), overall treatment success, and complications. Follow-up occurred through five years. Some evidence was found suggesting that ESWT may decrease patient-reported pain and increase functional outcomes in the short term for patients with plantar fasciitis, however study results were conflicting. Most of the complications reported were transient and consisted of swelling, bruising, and pain or discomfort associated with treatment. The overall body of evidence evaluating ESWT for plantar fasciitis was described as large in size and moderate in quality. The authors noted that despite some positive findings, placebo-controlled trials did not consistently demonstrate statistically significant differences in outcomes between ESWT and sham treatment. It was concluded that additional controlled, blinded long-term safety data from well-designed trials on ESWT for plantar fasciitis are needed further evaluate the technology (Hayes 2016a).

Another published Hayes Directory Report reviewed the available literature on radial ESWT for chronic plantar fasciitis. The review included RCTs (n=10 studies), with studies comparing radial ESWT to sham treatment (4 RCTs), or to other active treatments (5 RCTs), and one RCT comparing radial ESWT with focused ESWT. Sample sizes ranged from 25 to 252 patients. Outcome measures in studies were patient-rated pain on VAS, pain threshold, functional measures, QOL, overall treatment success, and complications. Follow-up ranged from two months to 24 months. Although some of the moderate-size body of evidence suggested that radial ESWT may decrease patient-reported pain and increase functional outcomes in the short term for patients with plantar fasciitis, results were conflicting. When reported, complications were primarily transient and consisted of swelling, bruising, and pain or discomfort associated with treatment. The overall quality of the evidence was low with a small amount of long-term safety data available. Limitations of the evidence includes methodological weaknesses of individual studies such as lack of long-term follow-up, confounding due to secondary treatments, and high loss to follow-up. Similar to the findings with focused ESWT for the treatment of plantar fasciitis, it was concluded that additional controlled, blinded long-term studies are needed to assess the safety and effectiveness of radial ESWT (Hayes 2016b).

A 2016 report issued by the Canadian Agency for Drugs and Technologies in Health (CADTH) reviewed evidence (n=7 systematic reviews) on the effectiveness of shockwave therapy for pain associated with lower extremity orthopedic disorders. Studies included adults with chronic pain associated with lower extremity orthopedic disorders treated (e.g., plantar fasciitis or heel pain; patellar tendinopathy or knee pain; medial tibial stress syndrome, or shin pain) with shockwave therapy or a comparator. Outcomes in studies were pain reduction, reduced need for opioids, and adverse events. Articles comparing different types of SWT without a non-SWT arm were excluded, as well as studies on fracture, cancer pain, arthritis pain, and back pain. The report concluded that there is some suggestion that SWT is an effective treatment option in comparison to placebo for plantar fasciitis. Limited evidence was found to suggest that the effectiveness of SWT is comparable to platelet rich plasma injection, corticosteroid injection or surgery. Adverse effects reported with SWT included skin reddening, bruising at the site of application, and local swelling and pain. Studies demonstrated inconsistent results for SWT used to treat greater trochanteric pain syndrome, patellar tendinopathy, and medial tibial stress syndrome. It was concluded that more evidence is needed to determine whether SWT is more clinically effective than surgery for pain associated with lower extremity orthopedic disorders (CADTH, 2016).

Yin et al. (2014) performed a systematic review and meta-analysis of randomized placebo or active-treatment controlled trials (n=7 RCTs/550 subjects) to assess the efficacy of ESWT for chronic recalcitrant plantar fasciitis.
Studies were eligible for inclusion if they were trials that used only one intervention as a control compared with ESWT. Studies that compared different types of shockwave therapy (e.g., radio shockwave therapy, focus shockwave therapy), lacked reporting of successful treatment standards, or for which outcome measures for heel pain could not be separated from the data were excluded. The primary outcome was success treatment rate assessed 12 weeks after intervention. The treatment intensity of ESWT was divided into two levels: low intensity (energy <0.20mJ/mm²) and high intensity (energy >0.2mJ/mm²). Function was the secondary outcome measured by the Roles and Maudsley score, which is used to evaluate pain in relation to daily activities. Follow-up in studies ranged from three to 12 months. In terms of the overall success rate, for the low-intensity group (n=5 trials), ESWT was found to be more effective than control treatment (p<0.001). For the high-intensity group, the pooled data showed that there was no significant difference in the overall success rate between the ESWT and control groups (p<0.001). The high-intensity group was found to have superior pain relief relative to the control group in one trial only. In the subgroup analysis of short-term function using the Roles and Maudsley score, only low-intensity ESWT was significantly superior over the control treatment. Adverse event-related outcomes were reported in 2/7 trials. No severe adverse events occurred.

Study results in this review indicate that low-intensity ESWT for the treatment of refractory plantar fasciitis may be more effective than sham treatment. However, study limitations of heterogeneity and short-term follow-up make it difficult to draw conclusions regarding efficacy.

Aqil et al. (2013) conducted a meta-analysis of prospective RCTs (n=7 studies/663 subjects) to investigate whether there was a significant difference in the change of pain scores from baseline when treated with ESWT (n=294 subjects) and placebo (n=369 subjects). Inclusion criteria for studies were adult patients who continued to be symptomatic despite a minimum of three months of conservative treatments. At 12-week follow-up, patients who received ESWT had better composite pain scores (p = 0.02), and greater reduction in their VAS pain scores (p<0.001) compared to placebo. There was no significant difference in overall success rate of heel pain improvement between ESWT and placebo (p= 0.10). Limitations of the review include short-term follow-up and inconsistency in the types of shock waves administered in the included trials.

Dizon et al. 2013 conducted a systematic review and meta-analysis of clinical trials (2002-2010) to evaluate the effectiveness of ESWT in treating chronic plantar fasciitis. RCTs (n=11studies1287 patients) were included if they compared ESWT to placebo or standard care. The primary outcome measure of interest was overall pain reduction assessed 12 weeks after intervention. Other primary outcome measures considered were pain during the first few steps in the morning and during activity. Other pain outcomes such nocturnal pain and pain at pressure were not included in the meta-analysis because these are not typical characteristics of pain in plantar fasciitis. Compared to placebo control, ESWT was more effective in reducing morning pain (p=0.004). There was no difference between ESWT and control in decreasing overall pain, (p= 0.06), however moderate-intensity ESWT was more effective in decreasing overall and activity pain (p<0.00001). There was no significant difference in the effectiveness of decreasing activity pain (p= 0.07). Both moderate- and high-intensity ESWT were more effective in improving functional outcome (p= 0.0001). The adverse effects that were seen more in ESWT were pain on the calcaneal area and calcaneal erythema. Acknowledged study limitations include the lack of consistency in outcome measures, specified dose intensities, and follow-up (Dizon, et al., 2013).

An RCT (n=102) by Rompe et al. (2010) reported significantly greater changes in the Foot Function Index sum score for patients managed with plantar fascia-specific stretching (n=54) than for those managed with shockwave therapy (n=48) (p<0.001) two months after baseline.

An RCT (n=32) by Greve et al. (2009) compared radial shockwave treatment (n=16) and conventional physiotherapy (n=16) for plantar fasciitis and found ESWT to be no more effective than conventional physiotherapy three months after the end of treatment. An RCT (n=149) by Wang et al. (2006) found that patients who received ESWT showed significantly better pain and function scores compared to those who received conservative treatment (p<0.001).

A technology assessment of RCTs evaluating the safety and efficacy of ESWT for the treatment of chronic plantar fasciitis was performed for the Canadian Agency for Drugs and Technologies in Health (CADTH). Ho (2007) concluded “the lack of convergent findings from these randomized trials of ESWT for plantar fasciitis...
suggests uncertainty about its effectiveness. The evidence reviewed does not support the use of this technology for this condition” (Ho, 2007).

Thomson et al. (2005) performed a systematic review and meta-analysis to investigate the effectiveness of ESWT and to provide a precise estimate of the likely benefits of this therapy. A total of eleven RCTs met inclusion criteria for review. Conclusions were based on a pooled analysis of six RCTs (n=897). The meta-analysis was statistically significant in favor of ESWT for the treatment of plantar heel pain, but the effect size was very small. A sensitivity analysis including only the four trials of highest quality did not produce evidence of a statistically significant benefit. The authors stated that this systematic review does not support the use of ESWT for the treatment of plantar heel pain in clinical practice (Thomson, et al., 2005).

A Cochrane review by Crawford and Thomson (2003) found some indirect evidence that patients’ heel pain improves spontaneously. Patients with heel pain in all trial arms improved spontaneously, regardless of their treatment allocation, demonstrating that the condition is self-limiting in some patients. ESWT was evaluated in five RCTs using different doses, with no consensus reached regarding variation of range of energy (i.e., high versus low), number of pulses, or number of treatment sessions. The results of the meta-analysis found the effectiveness of ESWT for plantar fasciitis unclear.

Ogden et al. (2002) conducted a meta-analysis of eight prospective RCTs evaluating the effectiveness of ESWT for plantar fasciitis (n=840). Treatment success was variably defined as complete or substantial relief of pre-procedure symptoms, activity limitations, or both. Success rates for five studies using low-energy shock waves ranged from 58–88% (Rompe, et al., 1996; Rompe, et al., 1997; Krischek, et al., 1998; Dahmen, et al., 1995; Buch, et al., 2000). For the three studies that utilized high-energy shock waves, the success rates ranged from 81–87% (Ogden, et al., 2001; Chen, et al., 2001; Wang, et al., 2000).

Numerous studies have investigated the efficacy of ESWT for plantar fasciitis. However, in general, these studies have limitations such as small sample sizes, short-term follow-up, along with variability in results that limit the generalizability of their results. As such, ESWT for this indication remains unproven.

Extracorporeal Pulse Activation Therapy (EPAT®): More recently a variation of ESWT, referred to as EPAT and also known as extracorporeal acoustic wave therapy, has been proposed for orthopedic conditions and soft tissue inflammation. EPAT is described as low-energy pulse-activated shockwave that may propose tissue healing.

U.S. Food and Drug Administration (FDA): The D-Actor Vibration Massager System (Storz Medical AG, Tagerwilen, Switzerland) was granted marketing approval by the FDA via the 510(k) process on June 27, 2008. The D-Actor 200 is described as “a vibrating percussion massage system that operates by compressed air to perform pulse activation therapy on target muscles and tissues.” The device was intended to be used for the temporary increase in local blood circulation to relieve minor muscle aches and pains (FDA, 2008), but has since been recalled (FDA, 2009; 2017).

Literature Review: Limited data exists in the published peer-reviewed literature that is specific to the safety and effectiveness of EPAT. A case series (n=60) by Saxena et al. (2011) examined the use of EPAT for Achilles tendinopathy and reported an overall pain improvement rate of 78% at one year follow-up.

There is insufficient evidence to support the use of EPAT for the treatment of any orthopedic condition. Evidence in the form of randomized controlled studies with long-term follow-up is needed to determine safety and efficacy of this type of shockwave therapy.

Insoles with Magnetic Foil: The theory behind magnet therapy is that magnetic fields create an electrical current that interrupts the transmission of pain signals in the central nervous system as well as increasing blood flow to an area, boosting the flow of oxygen and other nutrients, ultimately reducing pain and swelling. Two RCTs comparing magnetic versus sham insoles for reducing pain have demonstrated that there is no difference between the therapies in patients with plantar fasciitis (Winemiller, et al., 2003; Caselli, et al., 1997). The limited evidence found in the published peer-reviewed literature does not support the use of magnetic insoles for the treatment of plantar fasciitis.
**Intracorporeal Pneumatic Shock Therapy:** Intracorporeal pneumatic shock therapy (IPST) using a pneumatic lithotripter has also been proposed for the treatment of chronic plantar fasciitis. Lithotripsy with this device is commonly used to treat kidney and bladder stones.

Few studies exist in the published peer-reviewed medical literature evaluating the safety and effectiveness of IPST for the indication of plantar fasciitis. Dogramaci et al. (2010) conducted an RCT (n=50) in which patients were assigned to treatment with IPST (n=25) or to a placebo group (n=25). At six months of follow-up the rate of successful outcomes (i.e., pain, function) in the treatment group were significantly higher compared to the control group ((p<0.001). No complications caused by the procedure were observed during the study. Study limitations include small sample size and short-term follow-up.

There is insufficient evidence in the published peer-reviewed medical literature to support IPST for the treatment of plantar fasciitis.

**Laser Therapy:** Laser therapy, also called low-level laser therapy (LLLT) is a form of phototherapy which involves the application of low-power monochromatic and coherent light to injuries and lesions to stimulate healing. LLLT is used to increase the speed, quality and tensile strength of tissue repair, resolve inflammation, and give pain relief.

Ulusoy et al. (2017) reported the results of an RCT (n=60) comparing the effectiveness of low-level laser therapy (LLLT), therapeutic ultrasound (US) therapy, and extracorporeal shock wave therapy (ESWT) using magnetic resonance imaging (MRI). Inclusion criteria were symptoms of a chronic recalcitrant plantar painful heel for six months unresponsive to 6 weeks of conservative treatment (e.g., nonsteroidal anti-inflammatory drug, home exercise program, and standard insoles). Exclusion criteria included previous local trauma, foot surgery, local steroid injection within the previous three months, diabetes mellitus, and plantar fascial rupture. Patients were randomized into three treatment groups: Group 1 underwent 15 sessions of LLLT; group 2 underwent 15 sessions of continuous US; and group 3 underwent 3 sessions of ESWT. The primary outcome was defined as a 60% decrease in heel pain for two VAS measurements. Secondary outcome measures were a functional response to treatment and a reduction in plantar fascial thickness on MRI. Data from 54 patients were analyzed for the primary outcome and 52 for the MRI evaluations. At six-week follow up, the VAS score had significantly decreased and the AOFAS scale scores had significantly improved after treatment in all three groups (p<0.05). In the comparison, LLLT and ESWT were found to be more effective than US therapy, with no significant difference found between LLLT and ESWT in the success rate (VAS score 60%). A significant decrease was found in fascia thickness in all three groups after treatment. No statistically significant difference was found between the groups in the reduction of the fascia thickness measured on MRI. Side effects were not observed in any patient. Study limitations include small patient population and short follow-up timeframe. Study results suggest that LLLT and ESWT may be superior to therapeutic US in decreasing pain associated with chronic recalcitrant plantar fasciitis. However additional well-designed studies with sample sizes are need to draw conclusions on treatment effectiveness for this indication.

Macias et al. (2015) performed a placebo-controlled, randomized, double-blind, multicenter study to evaluate the clinical utility of low-level laser therapy for the treatment of unilateral chronic fasciitis. Patients were included who had a primary complaint of heel pain on weight-bearing after a period of rest; chronic heel pain that persisted 3 months with no evidence of acute trauma to the heel; average self-rating pain score of 50 using a 100-point visual analog scale (VAS) after taking some initial steps following a period of rest both on the day of study qualification and at baseline; and heel pain that was unresponsive to any conservative form of plantar fasciitis care (i.e., rest, taping, stretching, orthotics, shoe modifications, night splinting, casting, physical therapy, prescription NSAIDs when taken for a minimum period of two weeks, or local corticosteroid injections). Exclusion criteria included mechanical posterior heel pain categorized as insertional Achilles tendonitis or bursitis; neurologic or arthritic heel pain; type 1 diabetes; sensory neuropathy; or peripheral vascular disease. Participants were treated twice a week for three weeks and were evaluated throughout eight weeks. Pain ratings were recorded using a VAS. At the final follow-up, the treatment group demonstrated a statistically significant improvement (p<0.001). in heel pain compared to the placebo subjects. No adverse events were reported. Study results are limited by small sample size and short-term follow-up period.
In a randomized, double-blind, placebo-controlled trial (n=25), Kiritsi et al. (2009) compared the effect of low-level laser therapy (LLLT) (n=15) versus placebo (n=10) on plantar fasciitis. Outcomes were documented by ultrasound of the plantar fascia and reported pain scores. Enrolled patients had unilateral plantar fasciitis, so the contralateral asymptomatic fascia was used as control. Pain levels were reported to be significantly improved after LLLT compared to the placebo group (i.e., after night rest [p=0.006], with daily activities [p=0.01]). The small sample size of this study limits the generalizability of results.

Basford et al. (1998) conducted a randomized, double-blinded, placebo-controlled clinical study of 32 subjects comparing dummy versus active laser therapy over four weeks using relief of pain as the endpoint. No significant differences were found between the groups in pain scores either during treatment or at one-month follow-up.

The available data regarding the efficacy of laser therapy for the treatment of plantar fasciitis is limited.

**Low-Load Prolonged-Duration Stretch (LLPS) Devices:** LLPS also referred to as dynamic splinting uses a prolonged duration stretch with calibrated, adjustable tension to increase time at end range of motion and thereby reducing contracture. Stretching with dynamic splinting has been proposed as a treatment for plantar fasciitis because the tension can adapt to changes in the plantar fascia. Available LLPS/dynamic splinting devices include:

- Dynasplint System® (Dynasplint Systems, Inc., Severna Park, MD)
- Ultraflex (Ultraflex Systems, Pottstown, PA)
- Pro-glide™ Dynamic ROM devices (DeRoyal®, Powell, TN)
- Advance Dynamic ROM® devices (Empi, St. Paul, MN)

Studies in the published peer-reviewed medical literature evaluating the safety and effectiveness of include an RCT (n=60) by Sheridan et al. (2010). All patients received nonsteroidal anti-inflammatory drugs, orthoses, and corticosteroid injections as needed. The experimental group (n=30) also received dynamic splinting worn at night to obtain a LLPS with dynamic tension. A significant difference was found in the mean change from baseline in Plantar Fasciopathy Pain/Disability Scale scores of experimental over control patients (p<0.0001).

Although the results of one RCT suggest that dynamic splinting may be effective in reducing the pain of plantar fasciopathy, additional well-designed randomized controlled clinical trials with adequate patient populations and follow-up are needed to support the safety and efficacy of this intervention. There is insufficient evidence in the published peer-reviewed literature to support the use of LLPS/dynamic splinting for plantar fasciitis.

For additional information, refer to the Cigna Stretch Devices for Joint Stiffness and Contractures Coverage Policy.

**Microwave Diathermy:** Microwave diathermy uses microwave radiation to create heat within the tissues. There is no evidence supporting the efficacy of this modality in the treatment of plantar fasciitis (Crawford and Thomson, 2003).

**Percutaneous Ultrasonic Ablation:** Percutaneous ultrasonic ablation is also being investigated as a treatment for refractory plantar fasciitis. Ultrasonic ablation devices break up degenerative soft tissue via ultrasound guidance so that the damaged tissue can be aspirated or removed. According to the manufacturer, “the Tenex Health TX® combines conventional ultrasound imaging for visualization with the advanced TX MicroTip® for rapid and precise cutting and removing of diseased soft tissue in the plantar fascia” (Tenex, 2017). The Tenex Health TX System ® (Tenex Health, Inc., Lake Forest, CA) was granted marketing approval by the FDA via the 510(k) process on March 3, 2016, because it is considered to be substantially equivalent to another device already on the market. The 510(k) summary stated that the system is substantially equivalent to the TX1 Tissue Removal System. Under the FDA 510(k) approval process, the manufacturer is not required to supply to the FDA evidence of the effectiveness prior to marketing the device. The system consists of a console that houses user functions (e.g., irrigation and aspiration pumps), ultrasonic hand piece, inflation cuff, and foot pedal which controls the device functions. The FDA states that the Tenex Health TX System is indicated for use in surgical procedures where fragmentation, emulsification and aspiration of soft tissue are desirable, including general surgery, orthopedic surgery, laparoscopic surgery and plastic and reconstructive surgery (FDA, 2016).
There is a paucity of studies investigating the safety and efficacy of ultrasonic ablation for plantar fasciitis consisting of few case series with small patient populations (Sanchez, et al., 2017; Patel, 2015). A Hayes Search and Summary report reviewed abstracts and in general found insufficient published evidence to assess the safety and/or impact on health outcomes or patient management of the Tenex Health TX Procedure for treatment of tendon pain’ (Hayes 2015; 2017). Based on the lack of published data, the procedure is considered unproven for the treatment of chronic plantar fasciitis.

Pulsed Radiofrequency Electromagnetic Field (PREF) Therapy: Pulsed radiofrequency electromagnetic field (PREF) is noninvasive modality that delivers electromagnetic energy into soft tissue, generating an electric field that is thought to facilitate a therapeutic effect. The exact mechanism by which PREF interacts with cells to initiate a therapeutic effect is not fully understood (Rawe, 2012). PREF has been investigated for indications such as postoperative pain control, wound healing, soft tissue injury and more recently for treatment of plantar fasciitis therapy.

There is paucity of evidence in the published peer-reviewed medical literature evaluating the safety and effectiveness of PREF for plantar fasciitis. A double-blind, multicenter, randomized, placebo-controlled study (n=70) was used to evaluate a small, wearable, extended-use PREF device worn overnight. The primary outcome measure was morning pain. A significantly different decline was reported between the study and control groups (p=0.03). Although the results of this small study are positive, there is currently insufficient evidence demonstrating safety and efficacy of PREF for the indication of plantar fasciitis.

Radiotherapy: Radiotherapy for plantar fasciitis treatment has been well-established in Germany for many years. The exact radiobiological mechanisms of the effect of ionizing radiation on plantar fasciitis have not been completely investigated and understood.

Canyilmaz et al. (2015) conducted an RCT (n=128 patients) comparing radiation therapy (n=64) to local steroid injections (n=64) for plantar fasciitis. Patients age 40 or older were included if they had symptoms longer than six months and a clinical diagnosis of a painful heel spur. Patients who had previous radiation therapy, trauma to the foot, severe psychiatric disorders, rheumatic and/or vascular diseases, or were pregnant or breastfeeding were excluded from the study. The primary endpoint was pain reduction measured by several pain scales including the visual analog scale (VAS). The median follow-up period for all patients was 12.5 months (range, 6.5-18.6 months). At six-month follow-up, the mean differences in VAS scores after treatment compared with the values before radiation therapy was 2.7 in the radiation therapy arm and 4.6 in the steroid injection group. There was a statistically significant difference in favor of radiation therapy (p<0.001). Results in the short-term indicate that radiation therapy has a greater analgesic effect on pain from plantar fasciitis than steroid injections. However long-term study results are needed to support this finding.

An RCT (n=66) by Niewald et al. (2012) assigned patients with painful heel spur/plantar fasciitis to receive a standard dose versus a low dose of radiation therapy. Follow-up continued through one year. After three months the results in the standard arm measured by visual analogue scale were significantly improved compared to those in the low-dose arm (p=0.001). At 12 months’ follow-up significant fewer patients were re-irradiated in the standard arm compared with the low-dose arm (p<0.001). Patients who had a favorable result after three months showed this even after 12 months.

Miszczyk et al. (2007) evaluated the effectiveness of radiotherapy and assessed the impact of fraction dose (fd) compared to total dose (TD) in the treatment of 856 patients with plantar fasciitis. Outcome measures included pain relief level, period of anesthetic effect preservation after treatment, presence of pain and the timing of its appearance, and analgesia use. Complete follow-up data were available for 327 patients. The mean follow-up period was 74 months. After treatment, a lack of pain was reported by 48% of the patients. Pain relief greater than 50% was reported by 21% of patients and 17% reported pain relief less than 50%. The mean pain relief duration was 72 months. The last follow-up, 25% of these patients reported having pain at rest and 32% had pain while walking. A dose-effect relationship was not found. This study is limited by its retrospective, nonrandomized design and loss to follow-up.
Further research is needed to demonstrate the safety and efficacy of radiotherapy for the treatment of plantar fasciitis.

**Stereotactic Radiofrequency Thermal Lesioning:** Stereotactic radiofrequency thermal lesioning, or radiofrequency lesioning, is a minimally invasive procedure, in which a probe the size of a needle is placed through the skin in the heel in the area of pain. While the patient is under intravenous (IV) sedation, the tip of the probe heats up to 87° Celsius (189° Fahrenheit), and is kept there for 90 seconds. The proposed mechanism of action is desensitization of the nerve endings. In a retrospective study of 39 patients, Sollitto et al. (1997) found that 92% of patients experience resolution of symptoms. This study is limited by the lack of a control group and randomization; a more rigorous design is needed.

**Trigger-Point Needling and Infiltration:** Trigger-point needling for plantar fasciitis is the needling and infiltration of anesthetic into the myofascial trigger points at the proximal portion of the medial gastrocnemius muscle. He et al. (2017) performed a meta-analysis (n=7 RCTs/417 patients) to evaluate the effect of dry needling of myofascial trigger points (MTrPs) in patients with plantar heel pain. The number of participants in studies ranged from 20-108. Subjects were adults diagnosed with plantar heel pain (plantar fasciitis), with interventions of dry needling/acupuncture of the MTrPs compared to placebo or other treatment as control. Outcome measures included visual analog scale (VAS) score, success rate for pain, and adverse events. Success for pain was defined as a minimum decrease of 50% in VAS scores. Follow up occurred through 12 months. Pooled results showed that MTrP needling significantly reduced the VAS score (p<0.001) compared to control. No significant differences were found between the two interventions in terms of success rate for pain and the incidence of adverse events which were transient. Acknowledged limitations of the analysis include the small sample sizes and substantial heterogeneity of studies. Larger well-designed RCTs are needed to support safety and efficacy of MTrP needling for plantar fasciitis.

Cotchett et al. (2014) published their results of a parallel-group, participant-blinded RCT (n=84 patients) of patients with plantar heel pain for at least one month. The mean duration of plantar heel pain was 13.6 months. Subjects were assigned to receive real or sham trigger point dry needling. The treatment consisted of one treatment per week for six weeks. The follow-up period was 12 weeks. Primary outcomes included first-step pain measured with a visual analog scale (VAS), and general foot pain. The secondary outcome measures included foot function and general foot health. The primary end point for predicting the effectiveness of dry needling for plantar heel pain was six weeks. A total of 81 subjects (96.4%) completed the six-week follow-up, and 79 subjects (94.0%) completed follow-up at 12 weeks. At six weeks of follow-up, both groups showed decreased pain but there were significant between-group effects that favored real dry needling over sham dry needling. At six and 12 weeks, there were no significant differences in health-related quality of life between groups. The most common delayed adverse event was bruising, followed by an exacerbation of symptoms. These results suggest that dry needling is more effective than sham for first-step plantar heel pain. However the study results are limited by the single-blind design, relatively small sample size, and short-term follow-up which preclude generalizability.

Cotchett et al. (2010) conducted a systematic review to evaluate the evidence for the effectiveness of dry needling and/or injections alone or in combination with acupuncture. Outcome measures of pain and function were assessed. A total of three quasi-experimental trials (n=53 patients) matched the inclusion criteria: two trials found a reduction in pain for the use of trigger point dry needling when combined with acupuncture and the third found a reduction in pain using 1% lidocaine injections when combined with physical therapy. The methodological quality of the three trials was found to be poor. A meta-analysis was not conducted because substantial heterogeneity was present between trials.

Imamura et al. (2003) conducted a randomized, controlled study of 64 subjects comparing conventional physical therapy to physical therapy plus injection of 1% lidocaine to the taut band at the proximal portion of the medial gastrocnemius muscle of the involved limb. Statistically significant reduction of pain and improvement in function were found in both groups without difference between them. However, the time required to achieve the same improvement was significantly less in the injected group than in the control group. Post-injection soreness and local hematoma were found in 30% of the patients receiving trigger-point needling. Additional studies are needed to support the effectiveness of this therapy.
Professional Societies/Organizations
According to a practice guideline from the American College of Foot and Ankle Surgeons (ACFAS), tier one treatment options for plantar heel pain associated with plantar fasciitis include foot padding and strapping, therapeutic orthotic insoles, cortisone injections, and Achilles and plantar fascia stretching for a period of six weeks. Second tier treatment options include continuation of tier one treatments, with consideration for additional therapies, including the use of night splints to maintain an extended length of the plantar fascia and gastrosoleus complex. The guideline states that ESWT may be considered as an alternative to traditional surgical approaches for recalcitrant plantar heel pain (Thomas, et al., 2010).

Use Outside of the US
The Therapeutic Goods Administration (TGA) is part of the Australian Government Department of Health and Ageing, and is responsible for regulating therapeutic goods including medicines, medical devices, blood and blood products. Any product for which therapeutic claims are made must be listed, registered or included in the Australian Register of Therapeutic Goods (ARTG) before it can be supplied in Australia. The following devices are included in the ARTG listing:

1. Orthopaedic extracorporeal shock wave therapy system (Dornier MedTech GmbH, Wessling, Germany) as of September 9, 2010; intended use is for treating musculoskeletal disorders (e.g., tendinopathies and soft tissue pain near bones, plantar fasciitis, epicondylopathy) and other related muscle pain syndromes
2. Electromechanical orthopaedic extracorporeal shock wave therapy system (Richard Wolf GmbH, Knittlingen, Germany) as of February 11, 2012; intended use is for the elimination of chronic pain using focused, extracorporeal shock wave therapy and trigger point shock wave therapy

In January 2013, the National Institute for Health and Clinical Excellence (NICE) issued an interventional procedure guidance stating that the evidence on autologous blood injection for plantar fasciitis raises no major safety concerns. However the evidence on efficacy is inadequate in quantity and quality. Therefore, this procedure should only be used with special arrangements for clinical governance, consent and audit or research (NICE, 2103).

According to a NICE guidance on the use of ESWT for refractory plantar fasciitis a review of the evidence raises no major safety concerns; however, current evidence on the efficacy of ESWT for this indication is inconsistent. Therefore, the procedure should only be used with special arrangements for clinical governance, consent and audit or research (NICE, 2009).

Coding/Billing Information

Note: 1) This list of codes may not be all-inclusive.
   2) Deleted codes and codes which are not effective at the time the service is rendered may not be eligible for reimbursement.

Considered Experimental/Investigational/Unproven when used to report any of the above therapies for the treatment of plantar fasciitis:

<table>
<thead>
<tr>
<th>CPT® Codes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20552</td>
<td>Injection(s); single or multiple trigger point(s), 1 or 2 muscle(s)</td>
</tr>
<tr>
<td>20553</td>
<td>Injection(s); single or multiple trigger point(s), 3 or more muscle(s)</td>
</tr>
<tr>
<td>20999</td>
<td>Unlisted procedure, musculoskeletal system, general</td>
</tr>
<tr>
<td>28890</td>
<td>Extracorporeal shock wave, high energy, performed by a physician or other qualified health care professional, requiring anesthesia other than local, including ultrasound guidance, involving the plantar fascia</td>
</tr>
<tr>
<td>28899</td>
<td>Unlisted procedure, foot or toes</td>
</tr>
<tr>
<td>77401</td>
<td>Radiation treatment delivery, superficial and/or ortho voltage, per day</td>
</tr>
<tr>
<td>97024</td>
<td>Application of a modality to 1 or more areas; diathermy (eg, microwave)</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
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<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>97139</td>
<td>Unlisted therapeutic procedure (specify)</td>
</tr>
<tr>
<td>97799</td>
<td>Unlisted physical medicine/rehabilitation service or procedure</td>
</tr>
<tr>
<td>97810</td>
<td>Acupuncture, 1 or more needles; without electrical stimulation, initial 15 minutes of personal one-on-one contact with the patient</td>
</tr>
<tr>
<td>97811</td>
<td>Acupuncture, 1 or more needles; without electrical stimulation, each additional 15 minutes of personal one-on-one contact with the patient, with re-insertion of needle(s) (List separately in addition to code for primary procedure)</td>
</tr>
<tr>
<td>97813</td>
<td>Acupuncture, one or more needles; with electrical stimulation, 15 minutes of personal one-on-one contact with the patient</td>
</tr>
<tr>
<td>97814</td>
<td>Acupuncture, one or more needles; with electrical stimulation, each additional 15 minutes of personal one-on-one contact with the patient, with re-insertion of needle(s) (List separately in addition to code for primary procedure)</td>
</tr>
<tr>
<td>0101T</td>
<td>Extracorporeal shock wave involving musculoskeletal system, not otherwise specified, high energy</td>
</tr>
<tr>
<td>0232T</td>
<td>Injection(s), platelet rich plasma, any site, including image guidance, harvesting and preparation when performed</td>
</tr>
</tbody>
</table>

**HCPCS Codes**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>E1815</td>
<td>Dynamic adjustable ankle extension/flexion device, includes soft interface material</td>
</tr>
<tr>
<td>E1816</td>
<td>Static progressive stretch ankle device, flexion and/or extension, with or without range of motion adjustment, includes all components and accessories</td>
</tr>
<tr>
<td>P9020</td>
<td>Platelet rich plasma, each unit</td>
</tr>
<tr>
<td>S8948</td>
<td>Application of a modality (requiring constant provider attendance) to one or more areas; low-level laser, each 15 minutes</td>
</tr>
</tbody>
</table>


**References**


49. Lee TG, Ahmad TS. Intrallesional autologous blood injection compared to corticosteroid injection for treatment of chronic plantar fasciitis. A prospective, randomized, controlled trial. Foot Ankle Int. 2007 Sep;28(9):984-90.


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Medical Coverage Policy: 0097