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Effects of Plantar Fasciitis on Health

Cheng Guangxin[1], Yang Hechong[2]

[1]School of Physical Education, Southwest University, Chongqing, 400715, China
[2]School of Physical Education,Shandong University of Technology, Shan dong, 255000, China

Absract
Purpose: Plantar fasciitis is a common condition. Despite the lack of a clear cause for this condition, it could be linked to excessive exercise and standing periods over time, as well as muscle strain from stress and obesity. This study aims to lower the prevalence of plantar fasciitis and enhance patients' plantar function by comprehensively understanding the clinical symptoms, risk factors, diagnostic and treatment options, and the most recent information on prevention of plantar fasciitis. In order to offer specific reference plans for the clinical treatment of individuals suffering from plantar fasciitis, with a focus on middle-aged and older patients as well as athletes.
Methodology: There was a search conducted through PubMed, Embase, Web of Science, and the Cochrane Database of Systematic Reviews for published systematic reviews and meta-analyses up until February 25, 2024.
Description of state of knowledge: The band of tissue known as the plantar fascia, which runs from the heel to the toes, is crucial for preserving the structure of the foot, supporting the arch, and absorbing shock. Overuse, trauma, or inflammation of the plantar fascia are the usual causes of plantar fasciitis. Plantar pain is the primary symptom, which is followed by stiffness, increasing pain, and an irregular gait. It is especially aggravated after waking up in the morning, prolonged standing, or exercise, and is relieved by walking a few steps or pulling.

[1] Cheng Guangxin, e-mail: 942022264@qq.com, ORCID: https://orcid.org/0009-0003-9376-1000
[2] Yang Hechong, e-mail: 671718783@qq.com, ORCID: https://orcid.org/0009-0008-1709-1128

Conclusions: Plantar fasciitis is a sterile infection, with multiple factors influencing its clinical presentation. Its management requires a multidisciplinary approach that includes surgical treatment, pharmacologic management, physical factor therapy, and lifestyle changes. Early diagnosis, as well as appropriate treatment, is essential to optimize the patient's prognosis and maintain physical function.

Keyword: plantar fasciitis; chronic heel pain; plantar fasciopathy; systematic review

Introduction

Heel discomfort is often caused by a common foot condition called plantar fasciitis, which is more common in obese or active individuals as well as those with limited ankle flexion[1]. It not only severely hinders the affected people's ability to go about their everyday lives, but it also puts a heavy financial and resource strain on them as well as on healthcare systems around the world[2, 3]. Because of the disparity in lifestyle and health between the sexes, the PF, which has a lifetime global prevalence of 10%, lowers quality of life and is more common in women than in men[3, 4]. Plantar fasciitis is more common in the UK (7.5%), Australia (3.6%), India (59%), and Saudi Arabia (57.8%) in people aged 40 to 50. The prevalence rates for physicians are 8.14%, nurses are 13.11%, and athletes range from 5 to 18%[5, 6]. Plantar fasciitis is primarily characterized by superficial lower heel discomfort that starts in the heel bone's posterior medial area and progressively moves to the medial dome of the foot. Usually, the pain's primary symptom is worse in the morning or after being inactive for a while.As a person walks, their first few steps are the most uncomfortable, but they gradually get better. However, the pain might quickly return with continued weight-bearing activity[7-12]. According to certain matched case-control studies, plantar fasciitis is associated with a body mass index (BMI) greater than 30 kg/m^2, protracted weight bearing, and a reduction in the range of ankle dorsiflexion[11].

The conservative therapy are the main PF approaches with high success rates in patients who comply well. The non-steroidal anti-inflammatory drug (NSAID) corticosteroid injections, shoe inserts, footwear modification, acupuncture, soft tissue massage, taping, extracorporeal shock wave therapy, low-level laser therapy, cold application, and heat application are some examples of these conservative treatments[13, 14].

Plantar fasciitis has been the subject of more studies, although there are fewer complete and systematic evaluations of the condition; also, the majority of studies on the condition concentrate on specific therapeutic aspects and meta-analyses. This study aims to provide an overview of the most recent findings regarding the diagnosis, treatment choices, and prevention of plantar fasciitis. In order to provide certain reference protocols for the clinical management of patients with plantar fasciitis, particularly in the middle-aged and elderly as well as in the athletic patient population, it is imperative that the primary causes of this condition be understood in order to effectively manage and reduce the risk of plantar fascia injuries and to maintain healthy physical activity.

Materials and methods

Search Strategy

For systematic reviews and meta-analyses published up until February 25, 2024, the following databases were searched: PubMed, Embase, Web of Science, and the Cochrane Database of Systematic Reviews."Fasciitis, Plantar" OR plantar heel pain OR plantar fasci*AND "meta-analysis" OR meta*OR "systematic review" OR systematic were among the search terms.

Inclusion Criteria

Criteria for inclusion of all literature related to plantar fasciitis included papers written in English, original research, Meta-analysis, clinical studies and review papers.This literature was then evaluated and screened for relevance for inclusion in this paper.

Exclusion Criteria

Criteria for exclusion of literature included non-English language papers, papers not published within the date range, case reports, irrelevant papers, reviews and letters.

Review

Clinical presentation

Characteristics of the different stages of plantar fasciitis

A cute, subacute, and chronic phases make up the typical clinical course that plantar fasciopathy follows[15].

-A cute Phase: Patients typically present with a well-defined past medical history of trauma, such as a forefoot-first landing during a height fall, which results in a rip or full rupture of the plantar fascia, or an injury to the metatarsal tendon membrane from a brief period of time of prolonged, overexercised (strenuous) exercise, which results in aseptic inflammation.

-Subacute Phase:The stage between the acute and chronic phases is easily overlooked and develops into chronic plantar fasciitis.

-Chronic Phase:Repetitive small injuries to the plantar fascia over an extended period, like engaging in long periods of walking or running or other weight-bearing sports, cause prolonged tension in the plantar fascia. This tension strains the plantar muscles and fascia, resulting in inflammation of the metatarsophalangeal tendon membrane. The majority of cases of plantar fasciitis fall into this category.

Table 1. Characteristics of the different stages of plantar fasciitis

Stage	Duration	Clinical presentation	Position	Recovery time	Painful sensation
A cute Phase	<4 weeks	plantar inflammation	plantar and inner heel	short	acute
Subacute Phase	4-12 weeks	inflammation weakening	plantar and lateral side of the heel	medium	hidden pain
Chronic Phase	>3 months	inflammation is replaced	plantar and heel bones	long	depends on activity level

Risk factors for plantar fasciitis

Plantar fasciitis (PF) is a prevalent ailment among persons who engage in physical activity.The precise histology of plantar fasciitis remains uncertain[8, 14, 16-18].Although numerous research have investigated the different inherent and external risk factors linked to the cause of plantar fasciosis[3]. The absence of consensus regarding the cause of PF complicates treatment and underscores the significance of comprehending risk factors for proactive interventions[19].The primary factors contributing to plantar fasciitis include flat feet, diabetes, limited ankle dorsiflexion, a body mass index exceeding 30 kg/m2, improper shoe habits, extended periods of standing, intense walking or running, weak intrinsic foot muscles, and inadequate lower extremity flexibility[3, 8, 17, 20, 21].

(1)Flat feet and high arched feet

Patients with flat feet have low and flat arches, there is no arch cushioning, when walking the soles of the feet will be twice as much pressure as ordinary people, the plantar fascia will be subjected to excessive loads, for a long time, chronic strain, while high arched feet may cause limited foot function, foot deformity leading to joint instability or muscle imbalance, which will affect the normal shape of the foot and cause plantar fasciitis.

(2)Ankle dorsiflexion mobility

It has been claimed that a decrease in the angle of ankle dorsiflexion, along with stiffness in the calf muscles, is one of the contributing causes to the development of plantar fasciitis.Patients with PF exhibited a notable decrease in the angles of dorsiflexion and inversion of the forefoot in relation to the hindfoot segment. The plantar flexion angle of the forefoot in relation to the hindfoot segment, as well as the dorsiflexion and inversion angles of the hindfoot in relation to the tibial segment, tend to increase. The alterations in foot motion across multiple segments can lead to functional deficiencies and be a factor in the development of notable clinical symptoms or other impairments in individuals with plantar fasciitis[12].Reduced ankle mobility is more likely to occur in PF compared to uninjured individuals, and tightness of the calf triceps may increase plantar flexion and extension during the running gait cycle, as plantar fascial tension is positively correlated with Achilles tendon loading[19].

(3)Body mass index(BMI)

Plantar fasciitis is more likely to occur in those with a high body mass index[22], as an increased body mass index is connected with an increased chance of acquiring this condition[23].LHigher levels of body mass index will exert increased tensile forces on the suction structures of the plantar surface. This should be taken into

account when designing prevention and treatment programs for plantar fasciitis[19].The Body Mass Index (BMI) showed a moderate connection with both pain and disability levels during the initial presentation. Patients with a higher Body Mass Index (BMI) had a tendency to report higher levels of pain at the end of the day , higher average levels of heel pain , higher scores on the Foot Function Index-Revised pain subscale , and higher scores on the total disability/dysfunction scale of the FFI-R.Participants who had higher degrees of pain on the FFI-R painsubscale also showed a correlation with a narrower base of gait[24].Among the participants in the present investigation, 35 individuals (88%) who were overweight shown a susceptibility to plantar fasciitis[25].The length of obesity in obese patients may play a significant role in the onset of heel pain in these individuals[3].

(4)The shoes don't fit

Inappropriate footwear is also a significant contributing factor to the development of plantar fasciitis. Firstly, the shoes are deficient in providing adequate support, especially in terms of arch support. This can result in excessive stretching and heightened pressure on the plantar fascia, hence increasing the likelihood of developing plantar fasciitis. Furthermore, shoes that have inadequate cushioning or rigid soles are unable to adequately minimize the impact of walking. As a result, the plantar fascia is subjected to prolonged excessive pressure, which can easily lead to irritation. Ultimately, shoes that are extensively worn or deformed might alter the support and distribution of pressure on the foot, hence heightening the likelihood of sustaining a plantar fascia injury. Selecting appropriate footwear is essential for the prevention of plantar fasciitis.

(5)Standing for long periods of time, walking or running a lot

Plantar fasciitis is a frequently observed ailment characterized as a biomechanical overuse injury resulting from jogging or prolonged standing. This activity causes small tears at the calcaneal enthesis[26].Changes in the way the lower extremities move, such as too much bending, straightening, and inward rotation of the thigh and knee, can cause too much pressure on the legs. This can result in excessive inward rotation of the shin bone and tilting forward of the foot, which can damage the plantar fascia[23].Prolonged standing is one of the main causes of plantar fasciitis, leading to adhesions in the local surrounding tissues and overstretching of the foot muscles, which causes fascial inflammation, pain in the soles of the feet, and limitation of movement.

(6)Weak foot strength

Foot weakness heightens the susceptibility to developing plantar fasciitis. Insufficient muscular strength in the arch might result in reduced foot support, hence elevating the likelihood of plantar fascia damage. The weakness of the dorsal muscles of the foot plays a crucial role in maintaining the stability and support function of the foot. Inadequate strength in the dorsal muscles of the foot heightens the probability of plantar fascia injuries, hence elevating the danger of developing plantar fasciitis. The foot's weakness results in diminished muscular and ligamentous strength around the ankle, compromising foot stability and raising the risk of plantar fascia injuries. Hence, it is crucial to uphold the robustness and steadiness of the muscular groups in the foot to effectively avert plantar fasciitis.

Diagnosis

The diagnosis of plantar fasciitis relies on the patient's medical history and a thorough clinical examination[17].There is currently no universally recognized diagnostic or definitive benchmark for diagnosing PF[3].The main diagnostic methods are as follows.

(1)Physical examination

A physical examination for plantar fasciitis is primarily done by the doctor through symptomatic questioning, palpation examination, testing, and gait analysis to determine if the patient has plantar fasciitis or what stage it is in. The patient is first counseled about the location of the pain in the foot, the nature of the pain, and the duration of the pain. The pain is then initiated by touching the plantar area with a hand or an object. Following the initial inquiry and examination by the doctor, they may do movement tests, including particular foot extension and flexion motions, to evaluate the intensity of pain and alterations in position. This is done to determine whether the pain is associated with plantar fasciitis.In clinical practice, the assessment of plantar fasciitis typically include inquiring about the patient's symptoms and performing a comprehensive physical examination involving palpation of the affected region. Additionally, motion testing and gait analysis are performed to comprehensively evaluate the patient's condition. Prompt identification and intervention for plantar fasciitis are crucial to prevent prolonged worsening of symptoms and a decline in the patient's overall well-being.

(2)X-rays Examination

Radiography is typically not the preferred diagnostic method for plantar fasciitis. However, in certain situations, a physician may suggest an x-ray to eliminate other potential causes, such as weight-bearing foot x-rays to exclude a heel fracture or other abnormal bone changes, and to identify heel spurs. When imaging shows

a heel spur, it typically suggests that plantar fasciitis has been present for a minimum of 6 to 12 months, regardless of whether the patient is experiencing symptoms or not. Weight-bearing radiographs can also detect anomalies in arch morphology, as well as assess the dimensions and integrity of the plantar adipose tissue, which is also a causative component in heel discomfort. In general, X-rays are not essential for diagnosing plantar fasciitis, although they may be employed as a supplementary tool to eliminate other potential reasons in certain instances.

(3)Magnetic resonance imaging ,MRI

Plantar fasciitis is a soft tissue inflammatory disease. MRI has high soft tissue resolution and can comprehensively examine the tendons, bones, and surrounding tissues of the affected foot and ankle, etc.MRI can offer highly intricate soft tissue imaging, enabling precise assessment of the size and position of plantar fascia lesions. Furthermore, MRI can provide precise information regarding the thickness of the plantar fascia, detect any signal alterations, and accurately diagnose the extent of soft tissue swelling around the fascia and the level of edema in the heel bone marrow.Through MRI examination, doctors can more accurately diagnose plantar fasciitis, provide a more scientific diagnostic basis for the early treatment of the disease, and formulate a personalized treatment plan accordingly.MRI also helps doctors monitor the effectiveness of the treatment to assess the inflammation and relief of inflammation. MRI can also help doctors monitor the effect of treatment and assess the relief of inflammation. MRI can also help doctors monitor the effects of treatment and evaluate the relief of inflammation. However, because of its high cost, doctors will choose the most appropriate imaging method based on the patient's symptoms and test results.

(4)Ultrasonography

Ultrasonography is not only useful for assessing and monitoring the severity of plantar fasciitis, but it can also provide a conclusive diagnosis by ruling out other conditions such as plantar fascia fibromatosis, characterized by a swelling shaped like a spindle below the starting point of the plantar fascia, and heel pad contusions, which occur on the surface above the plantar fascia[8].Ultrasound pictures depict the anomalies identified by MR imaging.The plantar fascia exhibits an augmented thickness with a superior to inferior dimension exceeding 4.5 mm. Moreover, the absence of the usual reflecting structure and disruption of the normal ligament architecture are significant indicators strongly associated with plantar fasciitis[17].measures were conducted at 4 weeks and 12 weeks after the initial Extracorporeal Shock Wave Therapy (ESWT) or Corticosteroid Injection (CSI) procedures. These measures were taken by a radiologist utilizing ultrasonography.Consequently, every patient received six ultrasonography measurements[27].The study determined that ultrasound efficiently confirmed the clinical diagnostic and categorization criteria of either insertional , non-insertional , or mixed disease PF[28].

Treatment

The most effective treatment for plantar fasciitis is currently unknown[20].The majority of individuals with plantar fasciitis see recovery within a few months through the implementation of conservative treatment.Patients are unlikely to find satisfaction in data that demonstrates the ailment is self-limiting, and the majority are likely to insist on receiving treatment for their symptoms[3].Plantar fasciitis can be effectively treated using known methods such as orthopedic devices, shockwave therapy, and manual release.Corticosteroid injections are indicated when physical therapy and non-hormonal drugs prove to be unsuccessful[13, 14].

(1)medication

Patients can receive treatment with oral nonsteroidal anti-inflammatory medications or cyclooxygenase-2 inhibitors, which can decrease localized pain and alleviate intense localized inflammation. Patients can use corticosteroids to suppress inflammation and pain caused by prostaglandins, allowing them to function well in chronic inflammatory disorders. The hormones can disrupt the growth of fibroblasts, leading to a notable enhancement in effectiveness.

The use of non-steroidal anti-inflammatory drugs (NSAIDs) to treat plantar fasciitis is common, despite doubts about their effectiveness because plantar fasciitis is not an inflammatory condition. When combined with other treatments, NSAIDs or pain relievers can provide temporary relief from pain[29].This drug is specifically prescribed for those who have chronic plantar fasciitis.

(2)surgical treatment

Patients who do not respond to conservative treatments generally need to have surgery. However, this procedure is known to have lengthy recovery periods and may potentially lead to extended time off work and a delay in returning to sports activities[30].If the patient continues to have long-lasting and notable symptoms that do not get better with nonoperative treatment for a duration of 6-12 months, it could be required to direct them to an orthopaedic surgeon for surgical intervention[8].

-Minimally invasive endoscopic release

Endoscopic fasciotomy has become a routine surgical procedure.Several traditional endoscopic techniques exist, with the suprafascial approach using medial and lateral incisions being the most widely used. This procedure has demonstrated favorable clinical outcomes[31].Endoscopic surgery has several benefits including reduced tissue damage, decreased risk of complications, accelerated recovery, diminished postoperative discomfort, and shorter hospitalization duration[32].

-plantar fasciotomy

Plantar fasciotomy, in combination with endoscopy, is a minimally invasive procedure that has emerged as a significant technique for treating stubborn cases of plantar fasciitis[33].To relax the fascia, the skin can be incised or a transverse cut can be made in the medial region of the metatarsal fascia, around one-third to one-half of the way from the heel bone stop, using endoscopy. Partial incision of the plantar fascia is the traditional surgical procedure and the least risky form of treatment. However, open surgery is prone to many complications, including localized infection, nerve damage, arch collapse, and scar formation. After surgery, patients are asked to limit their activities for 3 weeks and to progress to weight bearing within 3 months.Ultimately, both endoscopic methods are successful in treating stubborn plantar fasciitis. The use of the lateral double incisions method resulted in a reduced occurrence of nerve damage[34].

(3)stretching therapy (medicine)

The American Society of Foot and Ankle Surgeons has established practical guidelines that recommend a low-risk and cost-effective intervention as the most feasible method[21].Research has shown that stretching techniques specifically aimed at the plantar fascia and Achilles tendon are effective in reducing pain in persons suffering from plantar fasciitis. Although there is debate over the specific benefits of combining stretching exercises for both the plantar fascia and Achilles tendon compared to isolated stretching of just one component, it is generally believed that stretching both structures is advantageous and commonly recommended[17].

Stretching the plantar fascia and calf muscles is a cost-effective and easily acquired skill.Extensive research has shown that the plantar fascia-specific stretch is superior to the solo Achilles stretching regimen[35].A domiciliary stretching regimen proved to be a successful intervention for alleviating pain and improving muscular strength in both the external and internal foot muscles of individuals with plantar fasciitis.The study's results demonstrated that a stretching exercise program conducted at home effectively reduced discomfort and improved the function and strength of both extrinsic and intrinsic foot muscles in patients with PF.Therapists can utilize this exercise to enhance the condition of patients with PF, addressing issues like as discomfort, functionality, and muscular strength[12].

That is why stretching is the most appropriate treatment, with methods that are simple, safe, convenient, and effective, thus sustainably improving plantar fascia performance and avoiding recurrence.

(4)Kinesio taping,KT

Kinesiotaping (KT) is a breathable, highly elastic fiber patch that has the ability to reduce swelling, relieve pain, and increase proprioception. In recent years, KT has been widely used in various diseases, especially in sports injuries, and it plays an analgesic role by correcting the biomechanical abnormality of the foot in patients with PF.Therefore, KT can serve as a fundamental therapy for PF, upon which further therapeutic approaches can be employed to alleviate pain and enhance foot biomechanics.

(5)Orthopedic insoles

Orthopedic insoles are made according to each person's different plantar morphology and special physiological curvature of the foot arch, which can change the distribution of the patient's plantar pressure, gradually correct the body's abnormal biologic lines of force, and support the foot arch.Orthotics, such as heel cups and insoles that support the plantar fascia, have been proven to effectively alleviate the pain caused by plantar fasciitis. Moreover, an opening that allows the swelling to rest inside the orthotic device can be incorporated to lessen the direct force that the ground applies to the enlarged plantar fascia.Semi-rigid orthotics with modifications specifically targeting the plantar fascia, along with apertures, can be beneficial in this regard[8].Applying plantar orthoses based on solid biomechanical principles is a successful conservative approach to alleviate pain in people suffering from plantar fasciitis[36].

A total of 43 studies were incorporated, assessing 2837 patients. Applying mechanical treatment to plantar fasciitis seems to be advantageous in alleviating symptoms related to the condition[14].As a result, it can effectively relax the muscles in the sole of the foot and alleviate the strain on the connective tissue, facilitating the reduction and absorption of inflammation. This, in turn, leads to a decrease in pain and promotes the healing process of the connective tissue in the sole of the foot.

(6)Night splints

The patient experiences nocturnal spasms of the plantar fascia, which directly result in plantar pain upon waking. This condition can be alleviated by using a dorsiflexion splint during the night[8].Night splints, similar to orthotic insoles, can be targeted to improve biomechanical abnormalities in the feet of patients with PF. It prevents plantarflexion of the ankle during sleep by immobilizing the foot and ankle in a neutral 90° position, which reduces plantar fascia contractures and improves plantar fascia pain when used alone, but even better when orthotics are used in conjunction with a night splint.

(7)Extracorporeal shock wave therapy ,ESWT

Extracorporeal shock waves use mechanical and cavitation effects to promote tissue repair and vascular regeneration, loosen tissue adhesions, and analgesia. Because it is non-invasive, safe, and effective, it is widely used in sports injuries and bone and soft tissue diseases.

Extracorporeal shock wave therapy (ESWT) is being considered as a possible treatment for individuals with chronic disease, allowing them to continue bearing weight without interruption[30, 37].Nevertheless, compelling evidence indicates that Extracorporeal Shockwave Therapy (ESWT) has a considerable impact on both short-term and long-term pain and functionality[25, 38].Extracorporeal shockwave therapy (ESWT) is a secure and efficient treatment for chronic plantar fasciitis that does not respond to nonoperative treatments.Significant pain reduction was observed 12 weeks after treatment with ESWT. The available research indicates that this enhancement is sustained for a duration of 12 months[30].The effectiveness of this is satisfactory and consistent. Therefore, we highly advise the use of ESWT for adult patients suffering from plantar fasciitis for a duration of more than 6 months, and who have not experienced any improvement with conservative therapy, as a potential alternative to surgical interventions[20].

(8)plantar injection

For patients with PF, platelet-rich plasma (PRP) therapy is a novel treatment option[39, 40],It helps to stimulate new cell growth, and the components are autologous source substances with the potential to stimulate tissue regeneration.Platelet-rich plasma is administered via injection into the thickened plantar fascia. PRP, which contains growth factors and proteins, facilitates the healing process of the plantar fascia and alleviates pain sensations. Therefore, it should be regarded as an appropriate therapy for degenerative illnesses. Research has demonstrated that PRP is more effective than steroid injections and does not have any notable side effects or problems[40].

Aside from research indicating that the combination of corticosteroid injection and exercise is the most effective treatment, there are also articles suggesting that platelet rich plasma is more effective than steroid injection in the long run[9, 41].Localized platelet-rich plasma injections have demonstrated significant potential and seem to be a secure treatment option.Nevertheless, the Ministry of Health, Singapore, has not yet granted approval for the use of this method in treating plantar fasciitis[42, 43].

There is limited and unreliable evidence suggesting that local steroid injections may have a small effect in reducing heel pain for up to one month, but not beyond that period[44].Corticosteroids are mainly employed to alleviate pain and eradicate inflammation. However, there is also evidence suggesting that short-term injections can provide relief from the pain caused by plantar fasciitis. On the other hand, repeated injections of glucocorticoids can result in the shrinking of the fat pad in the sole of the foot and the tearing of the plantar fascia. Therefore, it is advisable to refrain from repeated injections if symptoms do not improve[8].

(9)Chinese medical treatment

Clinical fumigation + acupuncture therapy can effectively relieve the pain caused by plantar fasciitis. Acupuncture points such as Taixi, Rangu, Jinmen, etc. can have blood circulation and eliminate blood stasis, dissipate cold, and relieve pain.

Acupuncture is a viable alternative therapy for PHP. While current guidelines do not mention it, there is an increasing body of evidence to support its utilization. The previous systematic review thoroughly evaluated the quality of eight comparison trials and demonstrated that acupuncture can be efficacious in treating PHP[45].The results demonstrated a significant decrease in pain levels among patients with plantar fasciitis who underwent acupuncture, as assessed using the visual analogue scale and the Plantar Fasciitis Pain/Disability Scale. The observed benefits were documented within a therapy period of four to eight weeks, with no additional significant decrease in pain observed beyond this timeframe.The study revealed that the occurrence of side effects was negligible[13].

While acupuncture has shown short-term pain reduction in cases of plantar fasciitis, additional research is necessary to determine its long-term effectiveness.

Prevention and Daily Care

The importance of preventing plantar fasciitis should not be overlooked, as it is a common foot condition that, if not prevented and managed in a timely manner, may cause ongoing pain and inconvenience to the patient, seriously affecting the quality of life.

(1) Wear appropriate shoes: Choose shoes with good support and fit, and avoid high heels or overly abrasive shoes to minimize inflammation caused by uneven forces on the soles of the feet.

(2) Take appropriate breaks: Avoid standing or walking for long periods of time, especially on hard surfaces, and take timely breaks or change positions to reduce plantar pressure.

(3) Proper warm-up and stretching: Proper warm-up activities and foot stretching before playing sports can help reduce the risk of plantar fascia injuries.

(4) Weight control: Maintaining a healthy weight and reducing the load on the feet can help reduce the incidence of plantar fasciitis.

(5) Foot massage: Regular foot massage can improve blood circulation and relieve plantar pain and fatigue.

(6) Regular exercise: Appropriate foot strengthening exercises, such as plantar fascia stretching and foot massage ball rolling, can help enhance foot muscle strength and flexibility.

If plantar pain or discomfort occurs, prompt medical attention and treatment and rehabilitation training as recommended by your doctor can help avoid the occurrence and recurrence of plantar fasciitis.

Limitations

(1) Only Pubmed data were searched, which, limited by the scope and time of literature search, may not include all relevant studies, resulting in limited comprehensiveness and representativeness of the review.

(2) The search was conducted in English, and due to language barriers or geographical restrictions, some important research results may be missed, affecting the breadth and depth of the review.

(3) Certain studies may not have disclosed data or methods, limiting the in-depth analysis and evaluation of these studies in the review.

Conclusions

Plantar fasciitis has a considerable impact on physical health, presenting challenges such as pain, restrictions in functionality, mental health problems, decreased quality of life, and hindered performance in work and exercise. It is crucial to comprehend the risk factors associated with plantar fasciitis, accurately diagnose and treat the condition, and implement effective preventive measures and daily care to alleviate symptoms, enhance quality of life, prevent complications, and minimize treatment expenses.

Disclosure:

Authors' contribution:

Conceptualization: Cheng Guangxin,Yang Hechong
Methodology: Cheng Guangxin
Check: Yang Hechong
Formal Analysis:Cheng Guangxin
Investigation:Cheng Guangxin,Yang Hechong
Resources: Cheng Guangxin,Yang Hechong
Data Curation: Yang Hechong
Writing-Rough Preparation: Cheng Guangxin
Writing-Review and Editing:Cheng Guangxin,Yang Hechong
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