



AOPT SIG

ACADEMY OF ORTHOPAEDIC PHYSICAL THERAPY, APTA

FOOT & ANKLE



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Foot & Ankle SIG News & Updates

- Combined Sections Meeting in San Diego, CA is right around the corner!
 - **Friday, February 24th, 6:30 AM – 7:15 AM FA SIG Membership Meeting:** Come to network with your fellow foot and ankle PTs, hear an update on all FA SIG initiatives, and potentially consider becoming more involved in moving foot and ankle care forward.
 - **8:00 AM -10:00 AM (OR-14077)** Person-Specific Care for Individuals with Foot and Ankle Dysfunction: A Roadmap Beyond Localized Tissue Damage.
 - **11:00 AM – 1:00 PM (OR-14325)** Tarsal Therapeutics: Remedies for Troubled Feet.
 - Saturday, February 25, 11:00 AM – 1: 00 PM (OR-15260 Orthopaedics Platform Session 7) and 3:00 PM – 5:00 PM (OR-15261 Orthopaedics Platform Session 8). Poster presentations throughout the conference.
- Check out the newest **FA SIG Infographic: Metatarsalgia (PT and Patient versions)**. Thank you to our Practice Chair, Ashley Waite PT, DPT and Stephanie Albin PT, DPT, PhD, OCS, FAAOMPT for leading this effort.
- The leadership team at FASIG has been working towards completion of the Description of Fellowship Practice for the foot and ankle specialists. The technical report and DFP are undergoing the final touches in preparation for submission to ABPTRFE.

Meet the new FASIG Student Team!



Andrea Rose is a 1st year DPT student at the University of Delaware. Originally from the Chicago suburbs, Andrea loves playing soccer, endurance events, and building meaningful patient relationships!

Adwaita Bhagwat is a first year DPT student at University of Delaware. By being involved in the Foot & Ankle SIG group, she is looking forward to expanding her knowledge while building a strong network!



Jessica Glauber is a student physical therapist at East Carolina University in North Carolina. In her free time, she enjoys traveling, running, teaching yoga, and taking adult ballet classes!

Tyler Arl is a 1st year physical therapy student and Rosalind Franklin University of Medicine and Science. His history with performing and coaching gymnastics drew him to this profession.





Member Spotlight **Featuring RobRoy Martin, PhD, PT, CSCS**

Where are you originally from?

Alden - a small town outside Buffalo New York

What type of setting do you work in?

Full-time Professor in Rangos School of Health Sciences at Duquesne University
Clinician at Centers for Rehab Services in University of Pittsburgh Medical Center/
Center for Sports Medicine

What sparked your interest in the foot and ankle?

I found the complex function of the foot fascinating.

What is your current research interest? How did you become involved in research/academics?

Related to the foot and ankle, I am involved in writing the Clinical Practice Guidelines.

In 1992, I started working with a surgeon who wanted to do research. After realizing neither of us knew what we were doing, I started taking statistic and research classes. One thing led to another, and I ended up in a PhD program which opened the opportunity to teach at a university.

What other activities/hobbies do you enjoy outside of physical therapy?

I enjoy working out, coaching lacrosse, and drinking beer

- Adwaita Bhagwat, SPT

FA SIG Updates

Member Spotlight –
RobRoy Martin, PhD, PT,
CSCS

Physical Therapy and
Plantar Fasciitis

Citation Blast – Plantar
Fasciitis

Physical Therapy and Plantar Fasciitis

Plantar fasciopathy (PF), often referred to as plantar fasciitis, is the most common cause of plantar heel pain in the US. It impacts at least 10% of the population and is a common pathology treated in orthopedic physical therapy clinics.¹ The plantar fascia is a dense connective tissue that aids in longitudinal arch support, as well as shock absorption during the loading phase of gait.² This pathology can occur in those with increased activity levels, such as runners, and typically presents as pain in the morning or following periods of inactivity. It is also common to have tenderness at the medial calcaneal tubercle where the plantar fascia originates on the heel, or around the calcaneal fat pad. Exercise can alleviate the pain within a recommended dosage; however, symptoms can reappear following activity.

The treatment of PF can be difficult due to the various risk factors as well as the lack of agreement on etiology of this condition. Meta-analysis results of PF studies in physically active individuals found that common risk factors include increased body mass, increased BMI, and increased plantar flexion range of motion (ROM) when compared to controls without PF. These risk factors, specifically in a more active population, can lead to an increased tensile load on the force-absorbing structures of the plantar aspect of the foot, leading to pain and tenderness. Although there are numerous risk factors that may be associated with PF, treatment of the condition does not typically vary based on the etiology.

There are various aspects to treatment of PF in which a physical therapist can play a large role. Conservative, non-pharmacological treatment has been shown to be effective in treating plantar heel pain. Based on the clinical practice guideline for PF determined by the Orthopedic Section of the APTA, interventions with the most impact (A: strong level of evidence) include manual therapy, stretching, taping, foot orthoses, and night splints. Manual therapy may include joint and soft tissue mobilization, while stretching focuses on the gastrocnemius and soleus. Foot orthoses should focus on supporting the medial longitudinal arch and can also cushion the heel, while night splints can be worn for 1-3 months for those having consistent symptoms of pain in the morning.¹ Additionally, a loading program of plantar surface structures may be a good starting point for treatment to improve activity or occupational tolerance.³ Other interventions such as ultrasound, phonophoresis, and electrotherapy are not shown to have high levels of evidence for effective treatment of PF.¹

Although dry needling for PF is not recommended in the clinical practice guidelines as an intervention, there are additional studies showing benefits of dry needling in conjunction with standard interventions such as exercise and manual therapy. In a randomized, single-blinded,

multi-center, parallel-group trial, those who had electrical dry needling in addition to other interventions (which were consistent between the control and experimental groups) experienced significantly greater improvements in first-step morning pain intensity, resting heel pain, pain during activity, function, related-disability and foot health-related quality of life, and decreased medication intake.⁴ Additional studies found that dry needling of the soleus, short toe flexors, and abductor hallucis muscles significantly reduced pain intensity in participants, compared to the controls.³ Therefore, dry needling may play a role in augmenting the rehabilitation process, however, further research is required before it can be considered a higher level of evidence for intervention methods.

Overall, there are numerous interventions to consider for plantar fasciopathy treatment. Consider patient response and etiology when implementing interventions discussed above in conjunction with one another.

-Jessica Glauber, SPT, East Carolina University

References

1. Martin RL, Davenport TE, Reischl SF, et al. Heel pain—plantar fasciitis: revision 2014. *J Orthop Sports Phys Ther.* 2014;44(11):A1-A33. doi:10.2519/jospt.2014.0303
2. Hamstra-Wright KL, Huxel Bliven KC, Bay RC, Aydemir B. Risk factors for plantar fasciitis in physically active individuals: a systematic review and meta-analysis. *Sports Health.* 2021;13(3):194173812097097. doi:10.1177/1941738120970976
3. Salvioli S, Guidi M, Marcotulli G. The effectiveness of conservative, non-pharmacological treatment, of plantar heel pain: a systematic review with meta-analysis. *Foot (Edinb).* 2017;33:57-67. doi:10.1016/j.foot.2017.05.004
4. Dunning J, Butts R, Henry N, et al. Electrical dry needling as an adjunct to exercise, manual therapy and ultrasound for plantar fasciitis: a multi-center randomized clinical trial. *PLOS ONE.* 2018;13(10):e0205405. doi:10.1371/journal.pone.0205405
5. Whittaker GA, Munteanu SE, Menz HB, Tan JM, Rabusin CL, Landorf KB. Foot orthoses for plantar heel pain: a systematic review and meta-analysis. *Br J Sports Med.* 2017;52(5):322-328. doi:10.1136/bjsports-2016-097355

Citation Blast – Plantar Fasciitis?

Monteagudo M, de Albornoz PM, Gutierrez B, Tabuenca J, Álvarez I. Plantar fasciopathy: A current concepts review. *EFORT Open Rev.* 2018;3(8):485-493. Published 2018 Aug 29. doi:10.1302/2058-5241.3.170080

Authors in this review found a significant correlation between plantar fasciopathy and decreased dorsiflexion and gastrocnemius tightness. There are many treatment options including orthoses, shockwave therapy, laser therapy, steroid injections, taping, and medications. According to the review, 90% of patients with plantar fasciopathy are treated non-operatively, with the most accepted non-operative treatment being plantar fascia loading and stretching. If conservative treatment does not suffice and pain continues past 9-12 months, a common surgical intervention is plantar fasciotomy. Isolated proximal gastrocnemius release has become more popular in the recent years but more studies are needed to support this.

Yu T, Xia J, Li B, Zhou H, Yang Y, Yu G. Outcomes of platelet-rich plasma for plantar fasciopathy: a best-evidence synthesis. *J Orthop Surg Res.* 2020;15(1):432. Published 2020 Sep 21. doi:10.1186/s13018-020-01783-7

Platelet-rich plasma (PRP) is an accepted treatment for patients with plantar fasciopathy involving plasma volumes with higher-than-average levels of platelets. This review looked at studies that compared PRP treatments to corticosteroid injection and placebo groups. Although some studies found an advantage for PRP over corticosteroids, high-quality double-blind studies did not. The lack of homogeneity in testing methodology and results make it difficult to conclude which treatment is more beneficial between PRP and corticosteroids. On the other hand, PRP unanimously was more effective than a placebo.

Johannsen FE, Herzog RB, Malmgaard-Clausen NM, Hoegberget-Kalisz M, Magnusson SP, Kjaer M. Corticosteroid injection is the best treatment in plantar

fasciitis if combined with controlled training. *Knee Surg Sports Traumatol Arthrosc.* 2019;27(1):5-12. doi:10.1007/s00167-018-5234-6

This study assessed if whether adding corticosteroid injections to stretching and strength training would be advantageous in treating plantar fasciopathy compared to each treatment independently. 90 participants were randomized into three groups: one group receiving fascia stretching and strength training, a second group receiving corticosteroid shots, and a third group receiving both treatments concurrently. After 3 months of treatment, patient reports of pain and foot function on the visual analog scale and foot function index improved significantly in all groups. However, the combination of training and corticosteroid injection showed the highest amount improvements, indicating that it might be the superior treatment option.

Wu CH, Lin YY, Chen WS, Wang TG. Sonoelastographic evaluation of plantar fascia after shock wave therapy for recalcitrant plantar fasciitis: A 12-month longitudinal follow-up study. *Sci Rep.* 2020;10(1):2571. Published 2020 Feb 13. doi:10.1038/s41598-020-59464-8

Extracorporeal shock wave therapy (ESWT) is a non-invasive treatment for various musculoskeletal conditions utilizing a series of low-energy shock waves administered to an injurious site. This is an accepted treatment for chronic recalcitrant plantar fasciopathy to reduce pain and improve tissue regeneration. Researchers found that while heel pain intensity statistically decreased throughout a 12 month period, plantar fascia thickness only decreased significantly after 12 months. Plantar fascia stiffness decreased significantly in the first month and thereafter increased significantly to a higher stiffness than baseline. This evidence indicates long-term tissue healing and

morphological changes with ESWT and care needs to be taken in the first few weeks to prevent a recurrence of symptoms when the fascia may temporarily be softer and weaker.

Lai TW, Ma HL, Lee MS, Chen PM, Ku MC.

Ultrasonography and clinical outcome comparison of extracorporeal shock wave therapy and corticosteroid injections for chronic plantar fasciitis: A randomized controlled trial. *J Musculoskelet Neuronal Interact.* 2018;18(1):47-54.

Given a lack of research comparing the efficacy of ESWT and corticosteroid injections for treating plantar fasciopathy, researchers studied 110 patients who had persistent pain after one month of stretching or shoe modification during a 12 week study. Researchers measured pain via the visual analog scale and 100-points scoring system and fascia thickness via ultrasound at 4 and 12 weeks. The study found an increase in fascia thickness at 4 weeks but a decrease back to baseline at 12 weeks. Pain decreased significantly at both 4 and 12 weeks, but more so with ESWT than with corticosteroid treatment suggesting that ESWT is a more effective treatment for a duration of 12 weeks.

Bishop C, Thewlis D, Hillier S. Custom foot orthoses improve first-step pain in individuals with unilateral plantar fasciopathy: a pragmatic randomised controlled trial. *BMC Musculoskelet Disord.* 2018;19(1):222. Published 2018 Jul 18. doi:10.1186/s12891-018-2131-6

While foot orthoses are a common form of treatment for plantar fasciopathy, the question remains if custom made inserts for the shoe are truly helpful in changing kinematics to relieve plantar fasciopathy. In this study, researchers investigated the effect of custom foot orthoses vs new shoes vs a sham insole inserted into existing footwear on reducing first-step pain. Secondly, researchers also measured plantar fascia thickness and 24-hour reports of pain. Results from 60 participants over 12 weeks showed significant decreases in pain in all groups, with most decrease in the custom orthotic group. Plantar fascia thickness significantly decreased in the orthotic

group and the 24-hour pain ratings decreased similarly in the orthotic and new shoes group. Thus, custom foot orthoses appear to be effective for mid-term treatment of first step pain and plantar fascia thinning in individuals with plantar fasciopathy.

Mulvad B, Nielsen RO, Lind M, Ramskov D. Diagnoses and time to recovery among injured recreational runners in the RUN CLEVER trial. *PLoS One.* 2018;13(10):e0204742. Published 2018 Oct 12. doi:10.1371/journal.pone.0204742

Running is a common form of exercise for many people, however, the prevalence of running related injuries and their associated recovery times is somewhat elusive. From a total of 839 recreational runners in Denmark, researchers found 140 sustained injuries and of those injuries medial tibial stress syndrome accounted for 16%, Achilles tendinopathy accounted for 9%, patellofemoral pain accounted for 8%, iliotibial band syndrome accounted for 7%, and plantar fasciopathy accounted for 7%. The incidence of these five injuries is in line with prior studies that found these injuries to be the most prevalent running injuries. The overall median recovery time regardless of injury type was 56 days, with the shortest median recovery of 35 days was observed for plantar fasciopathy.

- Andrea Rose, SPT