CMS UPDATE
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Cover Story

16 | CMS Updates

By Chris Costantini C.Ped

In our cover article, Chris examines the two most recent rulings they have released that will very likely have a direct effect on your practice. PFA had much to say to CMS about both and Chris gives some insight into what PFA did on your behalf!
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MKT00-6511 Rev A
The Pedorthic Footcare Association’s (PFA) Council on Pedorthic Education (COPE) and the Board of Directors cordially invites you, your staff and your family to come and experience the gold standard at PFA’s 59th Annual Symposium and Exhibition in St. Louis.

The largest educational event in the world solely dedicated to the practice of pedorthics, is also the world’s largest pedorthic networking and exhibiting event.

This year, the Symposium will be held November 15-17, 2018 at the Marriott Grand in the heart of St. Louis.

For updates visit www.pedorthics.org
Features

24 | Risky Business
   By Roni Pidcock
Ms. Pidcock shares her expertise with us regarding preparing your practice for a potential audit, keeping it ready and some of the triggers that will cause the auditors to come knocking. She takes through a primer on the various entities that CMS employs to conduct audits and a little about how each one operates.

32 | The Ills of Heels
   By Melvyn P. Cheskin, MBS., C.Ped, L.Ped
Mr. Cheskin shares his thoughts on high heels and promotes an “if you can’t stop them, help them” outlook on women wearing them. For those who have never been in the fashion industry, Mel gives a rundown of common styles of heels. He covers the biomechanics regarding what changes the foot undergoes when placed into the plantarflexed position of a high heel and then asked to function. He also gives us some great advice on what you can do to reduce the negative effects of persistent wearing of this type of footwear with some fitting tricks.

46 | Modern Theory of the Development of Adult Acquired Flat Foot and an Updated Spring Ligament Classification System
   By Chandra Pasapula and Steven Cutts
Traditionally Tibialis Posterior Insufficiency is still considered the most common cause of acquired adult flat foot. This is still considered as the primary cause and has influenced both treatment and the diagnosis of the condition. The whole classification and the fundamental errors within this that have not been challenged for over 30 years. In this review article Chandra and Steven examine the emerging evidence that suggests a new and alternative pathogenesis to this disease process centered on failure of the spring ligament. This article is eligible for CEU’s through PFA’s continuing education program.

"THERE ARE MANY FACTORS THAT CAN TRIGGER THESE AUDITS. THE WISE PEDORTHIST PREPARES FOR THESE AUDITS AND SO WILL HAVE A MUCH EASIER TIME NAVIGATING THROUGH THEM SUCCESSFULLY."
Hello Everyone!

It would seem that CMS has had a very busy few months. They have released a couple of documents that have significant impact on pedorthic practitioners. PFA fought for inclusion of inserts created directly from digital scans in the types of devices that are eligible for reimbursement when properly dispensed to Medicare Beneficiaries. In response, CMS created a new definition in the regulations regarding this and a new HCPCS code (K0903) was established. PFA continues to fight for increased reimbursement for this code and all HCPCS codes relating to pedorthics. Additionally, CMS released an updated DMEPOS Final Rule on Quality Standards. 

Link on PFA’s Website: http://www.pedorthics.org/?page=DMEPOS_JAN

Along with the significant documentation requirements that have been in them for some time now, CMS added language to cover the new insert for patients with diabetes. We are working hard to influence the decisions that affect all of our practices and be sure pedorthists are included in future legislation.
Plans for the 59th Annual Symposium in St. Louis are moving along nicely. Registration has been open. Take advantage of Early Bird pricing. The discount is significant! You will also note that there is an additional discount available for staying at the host hotel, the Marriott St. Louis Grand. This is to encourage participants to stay at the host hotel. Filling the room block in the host hotel that is set aside for us is necessary to allow us to keep the cost per Continuing Education Unit at a level that represents the best value anywhere. When participants book elsewhere, PFA and ultimately you, end up having to pay for the room nights that are left over. The discount for staying in our room block is our way to try to ensure the room block gets filled and prevent having to pay the penalty. Please, register now and book your room! The hotel is beautiful and reasonably priced for the luxury you will be getting! We are just finishing up putting together the slate of presenters and it is going to be an excellent show. We got the most abstracts ever from people who would like to present at our Symposium and so we got to be quite selective and bring in the best of the best for you! Watch the PFA website and your email for information on the presentations soon!

I am very pleased to announce a new PFA Member Benefit in this issue. It is a program called Ask the Expert (see pg.22). As a member, you will now have the option to call PFA and be connected directly to one of our Board Members or volunteers who has expertise in your subject area. They will answer your questions and help you find a solution that works for you. Subjects can range from clinical to business to education. If we don’t know the answer, we will help you find it! This will be a great resource for our members, a safety net and a friendly person to bounce ideas off of. Please join PFA today if you aren’t a member already and take advantage of this, and the many other, member benefits we offer!

Sincerely,

Chris Costantini

PFA President
FROM THE EDITOR

CHRIS COSTANTINI
PFA President
president@pedorthics.org

Happy almost Spring!

The worst of Winter is over and many parts of the country are already starting to see the temperature warm. With that the shoppers have started to creep out of their homes where they holed up against the weather and come into stores in search of something that isn’t gray. Or at least that is what is happening here in the Northeast!

Welcome to the Business and Practice Management Issue of Current Pedorthics. In this issue we focus on some current affairs that will have impact on reimbursement in your practice and get some advice on readying ourselves for potential audits. To be successful, we have to be disciplined in gathering all of the paperwork necessary to get and stay paid for the good work that we do every day. I hope that you find some information useful and that it confirms that you have done what you can to be prepared or inspires you to get prepared. "An ounce of prevention is better than getting creamed in an audit." Not sure I got that saying right, but you get the idea! Cheers!

Please enjoy the issue!

■ Chris Costantini
Executive Editor
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Christopher Costantini, C.Ped
Chris Costantini entered the retail footwear industry in 1989 and became certified as a pedorthist in 1994. After 19 years of private practice that included retail, wholesale custom devices and direct patient care, Mr. Costantini joined the VA in 2008 where he currently serves as the Prosthetic Chief overseeing the Prosthetic Departments in the Canandaigua, Rochester and Bath VA hospitals in New York. Currently, he Chairs the Commission on Accreditation of Pedorthic Education (CAPE) committee with NCOPE and serves as the current President of PFA.

Roni Pidcock
Roni Pidcock, CEO of R&R MedHealth Consulting, LLC began her career in healthcare focusing on patient intake, medical records, referrals and authorizations. Ms. Pidcock has extensive experience in the areas of revenue cycle management, medical billing, coding & collections, claims reimbursement, claim denial management, administration, consulting and audit & appeal review and assistance.

Networking and hands-on experience with all areas of the insurance and healthcare industries has given Ms. Pidcock the ability to assist various types of healthcare professionals with successfully opening or maintaining an already operational practice or facility, assistance with proper business licensure for specialty or practice requirements, new accreditation status or renew what is already in place, work with various practices to help them obtain and sometimes update and maintain their Policy & Procedure manual and also assist MD’s-DC’s-DPM’s & new startups to apply for DME provider #’s with Medicare.

Consider Writing an Article for Current Pedorthics!
For more details, contact Current Pedorthics magazine at (229) 389-3440 or by email at editor@pedorthics.org for additional upcoming special interest topics, guidelines and other ideas you may want to discuss as topic ideas beneficial to health care, patient care and all areas of interest in the pedorthics practice and other associated industries.
Melvyn P. Cheskin, MBS., C.Ped, L.Ped
Mel Cheskin MBS., C.Ped is originally from England. Mel attended the University of Colorado at Boulder, CO., The School Podiatric Medicine at Temple University in Philadelphia, PA and Ars Sutoria Shoe Design College in Milan, Italy. As author of "The Complete Handbook of Athletic Footwear" and technical / medical writer for Podiatry Management, Current Pedorthics, World Footwear, Runner’s World and World Sports Activewear magazines, Mel is one of the most experienced shoe professionals in the Footwear and Pedorthic fields.

In his career as a Designer and Consultant, Mel has worked for Nike (Cole-Haan), Adidas, Puma, Reebok, Brooks, Bata and Spenco Medical Corp. Mel is a Licensed Pedorthist in South Florida, residing in Boca Raton. Mel is also a member of the Bioelectromagnetic Society in Frederick, MD. and Associate member of the American Academy of Podiatric Sports Medicine.

Chandra Pasapula
Chandra Pasapula is with the Department of Orthopaedics, Queen Elizabeth Hospital in the United Kingdom. His specialties include Biomechanics, Orthopaedics and Trauma Surgery.

Steven Cutts, BSc Hons, MBBS, FRCS (Tr & Orth)
Steven Cutts trained at St Thomas’s Medical School in London and did registrar training in Orthopaedics in the West Midlands. He worked as a locum consultant in Bournemouth and Liverpool before taking up a substantive post at the James Paget Hospital in Great Yarmouth, UK. His specialties include Orthopaedics and Trauma Surgery.
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TORONTO, ONTARIO, CANADA - APRIL 6-8, 2018: This year's theme: Practical Hands-on Pedorthics. Attendees will be able to incorporate skills, information, and techniques learned at the conference into their practices right away. Networking with colleagues and exhibitors will provide even more opportunities for business growth!

Great speakers! Informative sessions! Hands-on practice times! For more information on this event (click the link): https://pedorthicscanada.ca/education/2018pfa-annual-conference/

PFA's 59th Annual Symposium & Exhibition - Save the Date!

SYMPOSIUM WEBSITE IS LIVE! The Pedorthic Footcare Association is announcing the 59th Annual Symposium & Exhibition scheduled for November 15-18th in St. Louis, Missouri.

So save the date! More information will be coming soon! For more information see ad this issue or (click the link to visit symposium website): www.pedorthics.org

PFA introduces "Ask the Experts" Program

EFFECTIVE MARCH 1ST: The Pedorthic Footcare Association is proud to introduce our newest member benefit, our Ask the Experts program! This program allows our membership access to a panel of experts that they can ask questions or advise on a number Pedorthic and clinical topics.

All our experts are experienced business owners and have been in the industry for 10 years or more. To access this member benefit, simply call the PFA office at (229) 389-3440 and select the prompt that best describes your question or concern. (see: ad pg.22)

ABC updates CEU Educational Credits

ABC is pleased to announce that quizzes related to Current Pedorthics magazine articles passed after January 1, 2017 will now be granted two credits! Any quizzes already submitted or added to your ABC record after January 1, 2017 will be retroactively increased to two credits.

Please keep in mind that the current policy allowing you to only receive credit once for any particular online continuing education opportunity is still in effect. Therefore, if you’ve taken a Current Pedorthics article-related quiz in previous years and received the one credit, you may not take the same quiz again to receive the two credits.

Be sure to take advantage of this new opportunity for double credits. We hope this change helps make earning your required CEUs quicker and easier.

PFA's 2018 Media Kit - Available NOW!

For Immediate Release:

Current Pedorthics Magazine / PFA 2018 Media Kit is available now! PFA offers targeted media outlets to help you reach your audience, maximize your return on investment and communicate with the industry. Choose from Current Pedorthics Magazine, PFA E-Blast email announcements & PFA’s website.

For more information and download your copy (click the link): www.pedorthics.org/?page=CurrentPedorthics

Accepting article submissions

Current Pedorthics Magazine is now accepting article submissions on the following subjects: Geriatrics, Pediatrics, Business & Practice Management, Sports Pedorthics, Retail Pedorthics, Education & Research.

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The Centers for Medicare and Medicaid Services (CMS) recently released two items that directly affect pedorthists. They are the establishment of a new HCPCS procedure code for shoe inserts that are milled instead of fabricated over a positive model for patients with diabetes and updated quality standards for suppliers of Durable Medical Equipment (DME), which is how pedorthists are classified. I will tackle each separately.
CMS originally released a ruling that the language defining inserts for patients with diabetes that were allowable to be submitted for reimbursement through Medicare under the A5513 (custom molded) HCPCS code only included those fabricated by direct mold to the patient’s foot or over a positive model of the patient’s foot. The language did not allow for those that were scanned and fabricated through a CAD/CAM process where the insert was made directly from the digital image without the production of a positive model. Generally, this would be a system that milled out a core or shell that served as the base for the insert being dispensed. CMS went on to state that an insert produced in this fashion was not eligible for reimbursement under the A5512 (off the shelf) HCPCS code either. Instead, the insert must be coded as a non-covered device and would be considered ineligible for payment through Medicaid.

PFA contacted CMS and, along with several other sister organizations, expressed our disagreement with this ruling. There were several points to our position on this matter. The first was that there is no evidence that this technology, when properly used, produced a device that was inferior to one produced by other methods. Second, that with the low level of reimbursement for all of these devices it was necessary for the practitioner in the field to be able to employ any suitable strategy to maximize efficiency and remain profitable so that they could continue to service Medicare’s beneficiaries. Additionally, it seemed unreasonable for Medicare to encourage and embrace the same type of technology to

...it was necessary for the practitioner in the field to be able to employ any suitable strategy to maximize efficiency and remain profitable so that they could continue to service Medicare’s beneficiaries.
be utilized in the fabrication of sockets for prosthetic devices and components for custom orthoses while actively discouraging the use of technology to produce this type of insert.

CMS made modifications to the language at issue and on February 2, 2018 released a Medline Matters article announcing that the new code, K0903 direct carved with CAM technology from a rectified CAD model created from a digitized scan of the patient, would be required for use on any devices produced through this technology and dispensed on or after April 1, 2018. The reimbursement amount has still not been finalized for the new code. Initial information received from CMS indicates that it will be 14% below the local rate for A5513 based on the fact that the device is easier to produce. Obviously, PFA disagrees that this stance and is making CMS leadership aware of our concerns. We will publish a follow up to this article, make announcements on our website and send e-blast emails out to our members when the final word comes down on the reimbursement amount.

Here is the Medlearns article:


/// FINAL RULE REGARDING UPDATED DMEPOS SUPPLIER STANDARDS PUBLISHED

CMS published their Final Rule on updated Durable Medical Equipment, Prosthetics, Orthotics and Supplies (DMEPOS) supplier
quality standards with an effective date of January 9, 2018. These were published following modifications to the proposed rule that PFA voiced concerns about during the public comment period held last Fall. The Final Rule includes new language added by CMS in response to those comments. All of the comments CMS received were summarized and released with the Final Rule, along with some new definitions. Primarily, this includes additional language to cover and define the K0903 coded insert discussed in the first part of this article. PFA strongly encourages its members to read this Final Rule carefully.

While much of the language is not new, there are significant requirements concerning capturing and utilizing data for process improvement and other requirements under the Performance Management heading and incident investigation, anti-counterfeiting and other requirements under the Product Safety heading.

We will publish all of the related documents released by CMS. This includes the new definitions relating to this Final Rule, the Summary of Comments that CMS released and the Final Rule in its entirety. -PFA
The Final Rule includes new language added by CMS...PFA strongly encourages its members to read this Final Rule carefully.

Centers for Medicare & Medicaid Services Website
www.cms.gov
The Pedorthic Footcare Association is proud to introduce our newest member benefit, our Ask the Experts program! This program allows our membership access to a panel of experts that they can ask questions or advise on a number Pedorthic and clinical topics. We currently have experts to cover the following topics:

- Clinical Practice
- Business and Business Development
- Government Affairs
- Continuing Education
- Marketing
- Audit Support

We will be adding to our list of experts as we grow the program and find out what areas of interest are important to you, our members. To access this member benefit, simply call the PFA office at (229) 389-3440 and select the prompt that best describes your question or concern. Not sure who to speak with, simply connect with the operator and you will be guided to the appropriate expert. You will be immediately connected to a LIVE person ready and willing to help you get the answers to your questions.

Want to know who your talking too, no problem! See our list of experts and their area of expertise in the image above!

All our experts are experienced business owners and have been in the industry for 10 years or more. They have a wealth of information to share with you, and in the event they don’t know the answers, have a vast network they can reach out too in order to find an answer. So, don’t hesitate! Take advantage of this new member benefit today!!!

Call the PFA office at (229) 389-3440 & Talk to an Expert Today!
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- Don Pierson, CO, C.Ped
V.P. Operations, Arizona AFO

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It seems that in 2017 our industry saw audits on billing for items provided to Medicare patients continue to flourish. Providing shoes and orthoses to these beneficiaries seems to have become quite a risky move that can not only lead to a claim being denied but can also result in reviews or audits from any one of CMS’ contractors. The wise pedorthist prepares for these audits and so will have a much easier time navigating through them successfully.
There are several types of Medicare contractors with the responsibility of auditing records, claims, and payments. Each type of contractor may use different methods to conduct audits, but they must all abide by overarching Medicare guidelines for medical review, denials, appeals, and payment recovery, as set forth by the Centers for Medicare and Medicaid Services (CMS). Below are the contractors you may see a request from.

**MEDICARE ADMINISTRATIVE CONTRACTORS (MAC)**

The MAC deals with minor or isolated billing issues through provider notification or feedback with reevaluation after notification. For serious problems, the MAC has the authority to review claims on a prepayment basis. Usually at the MAC level of review, it is still a “mistake” vs “fraud”. MACs do have the authority to do prepayment and reviews, which are always more difficult for the provider.

**COMPREHENSIVE ERROR RATE TESTING (CERT)**

The (CERT) program was established by the Centers for Medicare & Medicaid Services (CMS) to monitor the accuracy of claim payment in the Medicare Fee-For-Service (FFS) Program. The intent of the CERT program is to protect the Medicare Trust Fund by identifying errors and assessing error rates, at both the national and regional levels. Findings from the CERT program are used to identify trends that are driving the errors, such as errors by a specific provider type or service and assist with allocation of future program integrity resources. The CERT error rate is also used by CMS to evaluate the performance of Medicare contractors, like CGS.

"**MOST ORGANIZATIONS THAT RECEIVE AUDITS ON A REOCCURRING BASIS ARE MORE THAN LIKELY BEING TARGETED FOR NONCOMPLIANCE OR BECAUSE OF PREVIOUS ISSUES.**"
RECOVERY AUDITORS (RAC)

The RAC will request medical records from the provider to determine whether overpayment(s) and/or underpayment(s) have occurred. When medical records are submitted, the process is called a Complex Review. In these cases, the RAC has determined there is a high probability (but not certainty) that the claim contains an overpayment.

ZONE PROGRAM INTEGRITY CONTRACTORS (ZPIC/UPIC)

ZPICs detect, deter, and prevent fraud, waste, and abuse in the Medicare program. ZPICs, unlike RACs, are not paid on a contingency fee basis. Instead they compete for one of the few ZPIC contracts that are awarded periodically. They are also eligible to receive performance bonuses. ZPIC auditors are not limited to only auditing claims paid in recent years or on the number of claims that may be audited. There is also no limit on the amount of documents a ZPIC may request.

SUPPLEMENTAL MEDICAL REVIEW CONTRACTOR (SMRC)

The SMRC evaluates medical records and related documents to determine whether Medicare claims were billed
in compliance with coverage, coding, payment and billing practices.

**PRE-PAYMENT AUDITS**

After conducting a probe audit of a provider’s Medicare claims, a MAC or ZPIC may place a provider on “Pre-Payment Audit,” also referred to as “Pre-Payment Review.” Prior to beginning provider-specific review, MACs and ZPICs should notify providers through written communication. RACs conduct pre-payment reviews under the “RAC Pre-Payment Review Demonstration” on certain types of claims that historically result in high rates of improper payment.

**POST-PAYMENT AUDITS—POST-PAYMENT**

Audits are conducted after the Medicare claims have already been paid by the government. Contractors strictly apply coverage requirements and therefore it is not unusual for them to find that a provider failed to comply with each and every requirement. Depending on the nature of the initial sample, a Contractor may extrapolate the damages in a case, which significantly increases the alleged overpayment. Contractors extrapolate the damages to effectively claim that the “sample” of claims audited are representative of all the claims submitted by that supplier.

There are many factors that can trigger these audits. Most organizations that receive audits on a reoccurring basis are more than likely being targeted for noncompliance or because of previous issues. Some organizations are audited at random based on data analysis and billing patterns. Many providers don’t realize that there are steps they can take to try and prevent being targeted. It is critical to keep abreast of the most recent documentation requirements and be vigilant in completing the steps to obtain the paperwork to remain compliant. If your office and staff are prepared for the worst at all times, an audit won’t paralyze you if and when you should receive one.

Some processes you should enforce and be sure that your staff follows at all times are listed here. Be sure that your entire staff stays up to date on policies, procedures and regulations as well. Keeping them educated on the LCD & NCD documentation requirements is critical if they are in charge of your patient files.

- Review every process your staff follows daily
Know your codes

Avoid data and file discrepancies

Perform in-services to keep staff up to speed

Keep certification and licensure current

Document medical necessity

Avoid copy-and-paste & cookie cutter documentation

Documentation integrity

Maintain financial records

Patient follow up

Review, Review, Review!

You should also be performing in-house audits of random files from time to time. This will allow you to catch mistakes that are being made or find documentation that may be missing from files. Keep in mind, audits by CMS entities will not cease and will more than likely increase. More commercial payers have also begun conducting post-payment reviews.

The best thing you can do is to be proactive. Always have your staff, your files and all compliance paperwork ready for anything, remain vigilant for changes to occur at any moment regarding documentation requirements and always remember that taking the steps to ensure compliance and making a slightly smaller profit is better than losing an audit and taking a big loss.
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THE ILLS OF HEELS

by Melvyn P. Cheskin, MBS., C.Ped, L.Ped

Let’s cut to the chase. No ifs, ands or butts (pun intended!), women are not going to stop wearing fashion heels. Why? Because women like what high heels do for their legs and body and men do, too!
Let’s cut to the chase. No ifs, ands or butts (pun intended!), women are not going to stop wearing fashion heels. Why? Because women like what high heels do for their legs and body and men do, too. Women wear high heels for three reasons: (a) it definitely makes them taller, which increases their stature (b) as an accessory to fashion styling and (c) for the aforementioned reasons of sexual attraction. Where the brand wars in the “sneaker” world are essentially about ‘coolness’ among kids, heels are all about power, status and impressing males. So we, as pedorthists, either fight with women to stop wearing high heels and lose, or take a rational approach to treating and sensibly advising woman patients how to best avoid the many foot conditions and ills that result from wearing fashion heels.

Let’s start by defining the category. Ladies high heels are part of the world of fashion footwear; which has little to do, other than being a foot covering, with aiding or correcting foot function. High heeled shoe models include platforms, stilettos, pumps, court shoes, D’Orsay, sling-backs, open-backs (slides), and high-heeled fashion boots. Here are some common styles and features:

**PLATFORM HEEL**

A high heel where both the heel and sole are very thick. This type of heel can be made either on a steep angled pitched last or a less severe angle, giving the wearer the height but perhaps slightly less pressure on the forefoot.

**STILETTO (OR SPIKE) HEEL**

Infamous for the extremely thin high (usually 3 or more inches) heel design and steeply pitched last shape. The tip or top lift (heel area that touches the ground) catches in metal gratings and pavement cracks quite often.

**COURT SHOE**

The standard classic ladies thin-soled business styled high heel with plain pointed toe.
**The Ills of Heels**

**D’Orsay Heel**
Looks like a court shoe with the middle quarter portion cut out leaving just the heel counter and forepart material.

**The Pump**
The ‘classic’ lower heeled slip-on with more rounded toe. Definitely one of the less “invasive” heels.

**The Sling-back**
Strappy high heel with open strap type heel, also called a halter back.

**The Open Back (or Slide)**
A high-heeled shoe (opposed to a Mule—low heeled) with only a front part. A definite danger to womankind, but oh so sexy!

**High-Heeled Boots**
Full covered shoe with various lengths of leg shaft. Heels can vary from Stiletto to pump height.

**Peek-a-Boo Toe**
Full shoe in various heel heights with the pointed toe area exposed for part of the hallux or hallux and second digit to poke through.

A ‘high heel’, as opposed to a shoe with a lift in the back, is one that raises the seven talus bones (calcaneous, talus, cuboid, navicular and the three cuniforms) or rearfoot above the metatarsal heads and phalanges. How high the calcaneous is raised above the forefoot and at what angle depends on the height of the heel and the pitch of the last. Typically a high heel is raised more than two inches at the heel, causing the metatarsals to slant toward the phalanges an angle of between 40 and 55 degrees. With
little exception, high-heeled shoes are not good for the feet. That’s not to say they cannot be endured, perhaps to the point of tolerance. In fact, research conducted by Howard Dananberg DPM, revealed just how deeply ingrained the “finished look” of high heels is on the woman’s psyche. Some women, with naturally high arched feet, actually insist that three inch heels are comfortable. However, the determining comfort test is to ask “given a choice, would you wear them to run or work out in?” Obviously, the answer is “no” and this is borne out not only in the gyms and on the road race circuits around the country but also by the fact that as women mature they either voluntarily or are forced to reduce their time spent in heels.

Another study conducted by Professor D. Casey Kerrigan, Associate Professor and Director of Research at the Department of Physical Medicine, Harvard Medical School, has found that the pressure that walking in wide-heeled shoes as compared to stiletto-heeled shoes exerts is the same if not more on the foot, which has been linked to knee osteoarthritis. British experts welcomed these findings. “There is a serious message here” Dr. Madeline Devey warns as Secretary for the Arthritis Research Campaign.

There are an endless array of fashion heel designs and heel heights, just as there are toe-box shapes. Some of the higher, thinner heels have names like: Stiletto, Spanish, and Continental. Thicker, high shafted heels may carry names like: Stacked, Setback and Hooded. Popular lower (safer) heels have names such as: Louis, Dutch, and Cuban. High wedges may also be termed as high heels. They are generally more stable than separate heels but they can still place considerable downward pressure on the metatarsal heads and phalanges.

In biomechanical terms, let’s study what happens to the anatomy, legs and feet when they are placed into and subjected to the rigors of high heels. High heels alter the posture of the body requiring the body to tilt forward forcing the knees to keep the body more upright. This squares the shoulders, pushes out the chest and forces the buttocks to contract. A high heel also makes the gastrocnemius muscles more prominent in the calf muscle grouping and shortens the Achilles tendon. But, it’s the resulting pressure, torsion and misalignment on the foot’s 28 bones, 19 muscles and tendons, 4 arches, 107 ligaments and 38 articulations that occur in high heels that specifically interest us. When the foot is flat to the ground the body’s weight distribution is ideally divided evenly.
between the heel and forefoot (Approximately 50/50). The late Dr. William Rossi claimed that in heels, this distribution can change to 90 percent on the forefoot with only the remaining 10 percent of body weight under the heel.

Probably an 80/20 percent ratio is a more accurate figure.

Before we attempt to tackle the specific shoe related conditions caused by heels and what can be done about them. Let’s take a closer look at what happens to the foot when it is forced into an “ice cream” cone shape at the front, raised 3-inches at the heel area only and forced to adapt to static and dynamic situations over several hours. Standing or walking in high heels forces the foot into a continuously plantarflexed position inside the shoe. True, it optically deludes the eye, making the leg appear longer and the foot smaller, but there is a price to pay for this look.
beyond a Manolo Blahnik price in dollars or, even worse, the cosmetic ‘foot-facelift’ surgery.

**STEP SHOCK**

The initial function of the weight bearing foot is to serve as a pronating shock absorber upon landing and midstance. The natural motion of the foot, when flat or slightly raised, is to expand or stretch as it rolls from lateral heel strike, along the lateral border in the pronation phase, across the metatarsal heads to toe off. In typically narrow-shafted high heels, the foot is forced to land as squarely or firmly as possible on the restricted heel area, which is several inches below the actual calcaneus. The resulting pressure sends a spiked shudder or tremor wave up the leg and through the body column. Instead of aiding shock absorption upon landing, the heel’s natural fatty tissue under the calcaneus is minimized. Of course, walking on hard surfaces such tile, pavement or asphalt is worse than resilient surfaces like carpeting. Gait laboratory tests have shown that repeated step shocks (about 200 billion over a lifetime) are believed to have some influence on the aging process. Instead of the
foot adapting to the natural pronation process, the subtalar joint and position of the foot is locked in a plantarflexed position with heel and midfoot pressure minimized and weight transfer immediately shifted to the metatarsal heads and phalanges. To add to the foot trauma, in a closed shoe the toes are compressed into an often shallow pointed or semi-pointed last shape, which adds further pressure on the forefoot and in particular on the 2nd and 3rd rays. In an open toed high-heeled shoe the toes tend to splay and contract in order to support the added body weight.

The trauma doesn’t end there. Forcing the foot into a severely restricted toe box area can easily cause bruising to the dorsal area of the foot or a permanent exostosis, and we have seen the results of Haglund’s disorder, or “Pump Bump” as it is often called, due to the pressure to the back of the Achilles tendon from tightly fitting pumps or court shoes. Worse, bunions and hallux valgus are often the end result of years of walking and standing in pointed high heels. The toes normally serve as the final motion of supination and propulsion in walking and running, if allowed to. However, if the toes are restricted inside the shoe, their natural action and contribution is severely limited or eliminated. This results in the step thrust being generated almost completely from the metatarsal heads, bending the toes backward, which causes soreness and calluses under the ball of the foot, hammer toes, blisters and foot fatigue. Rossi termed this “Foot Stress Pressure”; Dananberg calls it “Repetitive Strain Issue.” Whatever terminology is used, it’s pretty obvious what type of continuous damage, stress and injuries can occur from the constant wearing of high heels. Here are some of the facts and figures:

▶ *Women account for 90% of foot surgeries in the U.S. at an estimated cost of two billion dollars.

▶ *82% of women reported having foot pain.
\*72% of women reported one or more foot deformities.

\*86% of women wore shoes one or two width sizes too small (an average of 1.2cm smaller).

\*In the 20% of women who reported no foot pain, there was only an average of 0.56 cm discrepancy between the width of the shoe and their foot.

\*20% of women had pain in the ball of the foot and 58% in the toes.

\*75% of women had neglected to have their foot measured in more than 5 years.

\*60% noted that their size has increased.

\*Women with size 8 or larger had more pain and deformities than others.

\*50% of women were dissatisfied with their ability to find dress shoes that are fashionable and comfortable, despite the fact that 60% said they paid between $50 and $200 for shoes.

Pedorthists are asked to treat the resulting pressures on the foot imposed by high heels on a daily basis. But, what can be done from the shoe aspect to help the wearer of high-heeled shoes suffer less and to mitigate the pressures of cramming the foot down from three inches off the ground into an “ice cream” cone shaped toe box?

Firstly, let’s consider some common sense alternatives and shoe knowledge to assuage the tide of negativity concerning heels. It really works well if you can talk about high heels as “two hour shoes.” Under the dinner table, at the theatre, driving or even working at the office desk, heels do not have to be worn constantly. They can be kicked off while sitting to offer the foot some respite. Secondly, if high-heeled shoes are bought and fitted at the right time (later in the day), chances are that they can be slipped off and on, allowing the feet to breathe and stretch—secretly out of sight. If shoes are fitted too tightly, edema is often the result and doffing and donning shoes at will become more of a problem. The third common sense suggestion is to select a shoe that conforms as nearly as possible to the shape of your foot and avoiding some of the more treacherous styles such as stilettos, back–less and the ‘haute couture’ styles. Another ‘no brainer’ suggestion is to
discourage young girls from wearing high heels or at least wear sensible heels (below one inch) before their teens.

Advanced pregnancy is another great time to avoid heels altogether. In addition to women’s feet growing an average of one half size during term, pregnancy causes a woman to become unbalanced due to carrying the weight of her unborn baby in front. Adding heels during later pregnancy adds even more weight to the metatarsals and phalanges. After stressing the ‘foot wars’ inherent in wearing heels, the above suggestions are merely first line skirmishes that may lessen the onslaught of the enemy.

**IS A CORRECT FITTING HIGH HEEL AN ANOMALY?**

Not if one initially accepts the fact that the shape of high-heeled shoes are not made to fit your feet; your feet must be made to fit
fashion heels. The foot has a different stance and functions differently inside high-heels versus other shoes. The step or stride is shorter in heels and the vast majority of weight is borne on the metatarsal heads. The toes are virtually immobilized inside a pointed shoe and there is no ‘break’ across the normal flex path of the shoe. Correct fit in a high-heel means at least having some room at the ball of the foot for expansion and possibly some extra padding. Better quality, softer leathers do make a difference in the upper of the shoe. As the toe area is often restricted by a pointed shape anyway, no extra room is necessary in the toe box or the foot will slide forward further. Some slippage at the heel is necessary especially if a metatarsal pad is inserted for comfort at the ball of the foot. A metatarsal pad pushes the foot back and therefore tightens the fitting at the heel. Snug is the word to remember, not loose or tight in the heel area. Because the heel is balanced several inches off the ground the heel counter at the back of the shoe needs to be extra firm to stabilize the heel. To summarize the complicated fit of a high heel, the ball to heel fitting is the key determinant, with room at the ball and not too tight at the back of the heel or Haglund’s deformity may result.

**CAN ADJUSTMENTS BE MADE TO HIGH HEELS?**

For bunions and bunionettes the ball and ring stretcher still works well, even on heels, especially if the upper leather is soft. Widening the forepart of the shoe with a hand or machine stretcher will increase the width at least one full fitting. Any good shoe repair store can do this by first moistening the inside of the shoe with alcohol then inserting the stretcher for several hours. Cushioned heel slip pads can be added to the back of the heel both to prevent heel slippage and to add some cushioning to the stiff topline at the back of the heel. The accepted method of placing the pad(s) in the heel is to cut the elongated pad into two, round off the edges and place one each side of the Achilles tendon area on the heel lining of the shoe.

**LET’S EXPLORE CUSHIONING**

If there is one comfort weapon that can be effectively utilized in the battle to subdue the torture of high heels it would be padding. Cushioned sockliners are becoming more popular in women’s fashion brands. Built-in cushioning is better than adding it after, as the fit is usually altered by adding pads to the shoe in the forepart or heel areas. Latex or EVA
sockliners (very commonly used in athletic brands) help for a short time but they easily break down or take a compression set, which means once they have taken the impression of the plantar surface of the foot the cushioning in minimal. Poron® urethane, which is a closed cell Polyolefin material, retains its softness and flexibility, resisting the tendency of sponge rubber, vinyl sponge, latex foam and solid viscoelastomers to bottom out and take a permanent compression set. Spenco® medical grade neoprene and gel metatarsal pads are another great line of defense against the constant pressure on the balls of the feet.

So long as women, or for as-long-as women, continue to wear high heels there will always be a foot challenge to overcome. The foot and ankle is intended to help balance the foot on the ground, but once the heels are elevated by shoes, the balance is gone. Several companies are making an effort to address the on-going ailments caused by high heels. In our pedorthic practices we treat the resulting foot pathologies and conditions caused by years of insistence and persistence of ladies wearing high heels. Just as a dentist dissuades children from eating candy to prevent tooth decay, a pedorthist should recommend against patients wearing high heels continuously. Candy is still very popular with children, according to confectionery sales results, and high heels will continue to be worn.

"Just as a dentist dissuades children from eating candy to prevent tooth decay, a pedorthist should recommend against patients wearing high heels continuously."
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Modern Theory of the Development of Adult Acquired Flat Foot and an Updated Spring Ligament Classification System

By Chandra Pasapula and Steven Cutts
Abstract

Traditionally tibialis Posterior Insufficiency is still considered the commonest cause of acquired adult flat foot. This is still considered as the primary cause and has influenced both treatment and the diagnosis of the condition. Foot surgeons are now questioning the whole classification and the fundamental errors within this that have not been challenge for over 30 years. In this review article we examine the emerging evidence that suggests a new and alternative pathogenesis to this disease process centered on failure of the spring ligament.

Keywords: Flat foot; Spring ligament; Planovalgus foot; Chopart’s joint

Introduction

AAFD has now become synonymous with the term Posterior tibialis Tendon Dysfunction (PTTD). Our current stance on AAFD (adult acquired flat foot deformity) secondary to tibialis dysfunction is almost entirely influenced by the work of Johnson and Strom. In 1989, Johnson and Strom proposed a sequence of stages with progressive failure of the tibialis posterior through the stages resulting in synovitis, subsequent elongation and tears and eventual rupture of the tendon in Stage–3 deformities [1].

Their classification system which was both anatomic clinical was for the first time able to look at a spectrum of deformities and allow them to be graded and communicated and has now been accepted as the standard to which we base our diagnosis and treatment. They presented a series of clinical findings on the state of the
foot and then related this to the state of the tibialis posterior tendon. They specifically stated that in Stage–2 that there is elongation of the tendon which results in the characteristic planus deformity thus implying that the tibialis posterior tendon is the primary dynamic stabiliser of the medial longitudinal arch. The subsequent assumption has always been that it is the primary dysfunction of this tendon that then results in a cascade of events that leads from a spontaneous primary synovitis and then secondary stretching and tears of the tendon and then rupture causing a sequence of structural changes in the foot with fixed planovalgus deformity being the end point.

At the time of writing this article our understanding of this condition continues to be influenced by Johnson and Strom’s description, but we challenge this fundamentally flawed position and attempt to elucidate the true pathogenesis of this condition.

**Presentation**

Patients can present with a constellation of symptoms and signs. It typically presents with medial foot pain, lateral foot impingement pain and swelling and a sensation of instability. Patients may even complain of an inability to tolerate uneven surfaces and have a progressive collapse of the medial longitudinal arch.

Clinically the patients may have collapse of the medial longitudinal arch and have an inability to single stance leg raise \(^{1,2}\). It is more common in females with high BMI \(^{3,4}\).

**The Traditional Theory for the Plano Valgus Foot**

Traditionally the functional failure of the tibialis posterior tendon was assumed to occur for 2 reasons. Firstly, the tendon becomes a spontaneously synovitic and the secondarily stretches and renders the tendon ineffective in maintaining the medial longitudinal arch. In fact, Johnson and Strom suggested substitution of the tibialis posterior tendon with FDL as part of their treatment protocol in their treatment of Stage–2 disease.

The tibialis Posterior is the primary dynamic support for the arch and functions as a hind foot invertor. It adducts and supinates the foot to lock the midfoot and allow it to progress in stance. It also acts as a secondary plantar flexor of the ankle. Its importance in acting as an antagonist to peroneus brevis in maintaining the balance of the foot is important and its over activity due to the lack of PB is an important cause of pes cavus \(^{5}\).

The Tibialis Posterior muscolotendinous unit is second only to that of the Achilles tendon in its strength in the leg. During locomotion, the tendon moves through a distance of 1 to 1.5 cm and small increases in its length due to synovitis is thought to lead to a significant breakdown in its function. This is thought to make it ineffectual in supporting the medial longitudinal arch of the foot leading to the collapse of the medial arch and AAFD \(^{5}\).

The plantar fascia, plantar ligaments and the spring ligament complex must also fail prior to the collapse of the arch. It is important to remember that the plantar fascia has three fold strength in maintaining the medial arch compared to tibialis posterior.

Some authors believe that intrinsics can also play an additional role in the maintenance of the arch \(^{6}\). The final deformity has several components including planus, hindfoot valgus and forefoot abduction. Fixed joint changes and degeneration are a later stage phenomenon \(^{1,2,5}\).

**The Original Staging of Plano-Valgus Foot**

*Table–1* shows the tibialis posterior insufficiency has four grades.
Challenging the Existing Theory

Within the orthopaedic community, the terms Adult Acquired Flat Foot (AAFD) and tibialis posterior Insufficiency are used interchangeably inappropriately reinforcing our belief that Plano-valgus foot exists only as a consequence to Tibialis Posterior insufficiency.

The role of the spring ligament and its contribution to the medial longitudinal arch have been underrepresented and often ignored as part of the treatment planning [8,9].

In 2001, Yeap et al., published a key paper describing the results of tibialis posterior tendon transfers. These procedures were performed as a treatment for drop foot and in a series of 12 patients. None developed planovalgus deformities that we might have expected [10]. The mean follow up was 90 months (range 24 to 300). Whilst the scale of the study was modest and the age range of the patients significantly different from the more mature population we normally associate with AAFD, the failure of the collapse of the medial longitudinal arch does force us to question traditional view point.

A similar study by Mizel [11] et al., looked at ten patients with complete traumatic common peroneal nerve palsy, with no previous foot or ankle surgery or trauma distal to the knee, who had undergone anterior transfer of the posterior tibial tendon to the midfoot. Six had a transfer to the midfoot and four had a bridle procedure with tenodesis of half of the posterior tibial tendon to the peroneus longus tendon. At 749 months follow-up (range, 18-351 months) all patients’ feet were assessed for muscle strength, the longitudinal arch, and motion at the ankle, subtalar, and Chopart’s joint. Weightbearing lateral radiographs and Harris mat studies were done on both feet. In no case was any valgus hindfoot deformity associated with the lack of the tibialis posterior was found. Their conclusions were that seems that the AFFD associated with a posterior tibial tendon deficient foot will not manifest itself if peroneus brevis function is absent.

In our unit, 10 cases of tibialis posterior transfer for pes cavus and drop foot in both phasic and non-phasic transfer usage have failed to result in a single case of flat foot over a follow up period of 2 to 8 years. Despite the use of lateral translation of the foot as a guide to spring ligament failure/strain, there was no

<table>
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<tr>
<th>STAGE</th>
<th>DEFORMITY</th>
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<tbody>
<tr>
<td>Stage-1</td>
<td>Tenosynovitis of tibialis posterior without foot deformity.</td>
</tr>
<tr>
<td>Stage-2</td>
<td>Flatfoot with forefoot abduction (too many toes sign).</td>
</tr>
<tr>
<td>Stage-3</td>
<td>Flatfoot deformity with rigid forefoot abduction and rigid hind foot valgus (X-Ray shows subtalar arthritis).</td>
</tr>
<tr>
<td>Stage-4</td>
<td>Flatfoot, rigid forefoot and hind foot deformity with deltoid ligament compromise (X-ray shows subtalar arthritis with talar tilt on ankle mortise views).</td>
</tr>
</tbody>
</table>

Stage-4 disease was added later by Myerson [7].

Table 1: The original staging of plano valgus foot.
demonstrable increase in lateral translation in 9 feet and no clinical presence of planovalgus in any foot.

These studies question the essential role of the tibialis posterior and clearly demonstrate that its absence does not necessarily lead to planovalgus foot.

Increasing evidence has emerged establishing the primary pathology of this disease is in fact entirely due to the failure of the static restraints and most importantly the failure of the spring ligament [8,9,12].

Deland et al. [13] in a cadaveric study showed that the planovalgus deformity was recreated by systematically cutting key ligamentous structures. Later, the deformity was corrected by reconstructing the spring ligament alone using a bone/tendinous graft.

Isolated spring ligament failure in the absence of tibialis tendinopathy has been demonstrated. Saxby et al demonstrated cases of spring ligament failure without posterior tibial tendon synovitis leading to planovalgus foot. Orr et al., [14] described 6 patients, all female who presented with isolated rupture of the spring ligament and apparently normal tibialis posterior tendons. All of the patients achieved normal foot positions following surgery to the spring ligament itself and/or bony fusion.

Crucially Jennings et al. demonstrated in 5 cadaver specimens using a 3-dimensional kinematic system and a custom-loaded frame in the in vitro model, and quantified the rotation of the talus, navicular, and calcaneus before and after sectioning the spring ligament complex. They did this whilst incrementally tensioning the posterior tibial tendon [15]. After sectioning the spring ligament complex significant changes in talar, navicular, and calcaneal rotations were demonstrated. Importantly they demonstrated that spring ligament complex sectioning alone created instability in the foot, which crucially the intact posterior tibial tendon was unable to subsequently compensate for. They concluded that the spring ligament was the major stabilizer of the arch during mid-stance. Correctly they concluded that the spring ligament complex should be evaluated and — if indicated-repaired in flatfoot reconstruction.

The classification system presented to us by Johnson and Strom can be criticised on multiple levels. There has never been a study both anatomical and cadaveric which demonstrates the progression of one stage to the other. Yet these assumptions have become part of our traditional thinking. It also focuses upon the tendon erroneously and therefore bypasses the focus from other structures that fail to allow AFFD.

The authors seem to link conclusions regarding the state of the foot with the state of the tibialis tendon. At each stage of the deformity there is a physical change in the state of the foot and yet conclusions drawn from this clinical picture on the state of the tendon which may not always occur. Some of this would be impossible to prove such as the lengthening of the tendon and may be a long standing false assumption.

The Johnson paper also begins with the assumption that the foot begins in a neutral posture which then goes onto planovalgus but a number of authors have described an association of tibialis posterior dysfunction with a pre-existing flat foot [16]. Johnson’s system does not take this into account of the degree of pre-existing planovalgus [17,18]. Jahss noted a pre-existing flatfoot in 100 per cent of his own series. The paper contains no actual data and no subsequent publication has examined the reliability and reproducibility of the Johnson system or indeed how it influences clinical decision taking.

Ultrasound and MRI are increasingly being used to diagnose PTTD. Ultrasound however is more operator dependent. No studies have been able to link
ultrasound findings of the tendon with prognostic evaluation. The foot might also be in planovalgus but have no synovitis around the tendon. It is also not possible to state if the tendon is stretched and no US study has yet been able to prove this.

The classification system finally fundamentally also oversimplifies Stage–2 disease which can be broken down into the loss of 4 components: tarsometatarsal instability, fixed supination deformity, tight gastrocsoleus/tendoachillies and failed spring ligament. These components need to be identified and assessed individually. These can be evaluated clinically and a recent clinical test has also been described for the assessment for the spring ligament complex.\(^8\)

**Towards a New Theory of Plano Valgus Foot**

The authors believe the spring ligament is the most important issue in Acquired Adult Flat Foot and tibialis posterior synovitis occurs as a secondary
synovitis. It is most likely the primary failing structure in the AAFD. Biomechanical factors may influence (poor collagen state and obesity and pre-existing planovalgus foot) its early failure. This then drives a mechanically overload of the tibialis posterior leading to its synovitis/dysfunction. This is akin to peroneal overload/dysfunction in pes cavus where peroneous brevis tendon becomes synovitic due to biomechanical overload. We therefore believe that Stage–2 flatfoot–as described by Johnson et al–cannot occur without spring ligament attenuation and/or rupture. This event would then be followed by the failure of the other ligaments and cause a secondary biomechanical synovitis of tibialis posterior [8,9].

This position is reaffirmed by Singh et al, who showed that patients without tibialis Posterior function iatrogenic transfer of tibialis posterior tendon transfer for neurological feet do not necessarily develop a flat foot, even in the presence of peroneus brevis function [10].

The idea of Stage–1 disease can be challenged as the development of spontaneous synovitis is unlikely. The overall incidence of planovalgus feet in patients who have extensive primary synovitis can be assessed in the rheumatoid population. Patients with rheumatoid arthritis have only 11% incidence of planovalgus in some studies. This suggests that despite inflammation in the tendon and the ligaments the foot fails to constantly develop planovalgus. The tendon is more likely to become synovitic as a result of abnormal biomechanical environment around which it acts [16].

Dyal also showed that 70% of patients with unilateral symptomatic tibialis tendon had a contra-lateral flat foot, implying that the symptomatic foot was probably flat to start with [19]. We believe that this biomechanical profile subsequently allows easier failure of the spring ligament and is the subsequent strain that allow the foot to go from a state of stable to unstable planovalgus. MRI of the symptomatic flat feet show abnormalities in all the spring ligaments as

Figure 2: Flat Foot X-Ray.
well as the tibialis posterior tendon in nearly all feet. Most showed abnormalities in the superficial deltoid, interosseous and talocalcaneal ligaments [19]. Crucially radiographic imaging cannot differentiate the difference between the stable planovalgus foot and the unstable planovalgus foot which is painful. We believe that in the non-painful planovalgus foot the spring ligament has not failed and there is no TMT instability and the foot is statically restrained.

In Table–2, we propose an altered classification. Here, the existing system has now been revisited to centre on the spring ligament.

We believe that if a tendinopathy occurs due to the unstable flat foot, this would suggest that there must be a pre-tendinopathic stage where the Spring Ligament ruptures and the tendon have not yet become overactive or synovitic. Early spring ligament failure can often be difficult to diagnose [17]. Early spring ligament failure can now be isolated and tested for using the neutral heel lateral push test. Pasapula believes that this early failure uses the talonavicular axis and the first ray to amplify the strain that develops in the spring ligament. The spring ligament is largely a medial structure which results in a largely lateral plane deformity far before the development of planovalgus which requires further failure of the medial column in the stretching of the plantar fascia and the development of first TMT instability. Pasapula described this state as Stage 0 disease where the Spring Ligament has failed as detected by excessive lateral translation of the foot but the foot has not yet progressed to a planovalgus state and the tibialis posterior has not become synovitic [8,9]. This initial stage would then be followed by Stage–1 disease in which there is attenuation or rupture of the Spring Ligament with a secondary synovitis around tibialis posterior as described by Johnson and Strom.

Pasapula proposed a reclassification of the Johnson and Stroms 1989 original classification with more focus around the spring ligament. Its aim was to recognize the failure of the spring ligament in the asymptomatic flat foot. Crucially, this new system demonstrates the Asymptomatic Stage or Stage–0 disease [8,9].

Stage–2 disease is a mixture of complex problems with progressive failure of the medial column starting with 4 associated complexities of which the first 3 are progressive deformities.

<table>
<thead>
<tr>
<th>STAGE</th>
<th>DEFORMITY</th>
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<tbody>
<tr>
<td>Stage–0</td>
<td>Spring ligament laxity but no tendinopathy or planovalgus.</td>
</tr>
<tr>
<td>Stage–1</td>
<td>Spring ligament laxity/failure with tendinopathy but normal tendon length and no deformity.</td>
</tr>
<tr>
<td>Stage–2</td>
<td>Spring ligament failure with tendon lengthening and flexible planovalgus deformity.</td>
</tr>
<tr>
<td>Stage–3</td>
<td>Spring ligament failure with tendon lengthening, and fixed planovalgus deformity.</td>
</tr>
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</table>

Table 2: Altered classification.
a. Spring ligament failure (identified by the neutral heel lateral push test)

b. TMT instability

c. TMT instability with permanently dorsiflexed first ray or a fixed supination deformity once the hindfoot has been put back into neutral

d. Primary or Secondary tight gastrosoleus (impossible to differentiate)

This new perspective has implications in the management of AFFD. Earlier recognition of the strain that develops in the spring ligament may lead to earlier intervention and this intervention may lead to the prevention of further failure and instability of more structures in the foot.

The failure to address the spring ligament effectively intra operatively, may lead to high recurrence rates particularly in large corrections. Niki et al reported their results of 25 patients who underwent a calcaneal osteotomy with FDL transfer and showed that just two radiographic parameters improved. In this series, the authors concluded that this procedure alone had limited effectiveness except to treat small corrections

More recently cadaveric work on modelling different reconstruction models of the spring ligament by Pasapula et al has showed that spring ligament
reconstruction is best done through an augmented device such as the arthrex internal brace. This is far superior to a non-augmented reconstruction. He also demonstrated in the biomechanical model that an FDL transfer with load applied fails to improve lateral translation of the foot.[9]

Conclusions

In conclusion we believe that AAFD is primarily a disease of the spring ligament and a failure to address this intra-operatively is essential. Procedures performed on the posterior tibial tendon at an early stage have probably had no effect on the natural history of the disease. Bony fusion is effective but is associated with a loss of dynamic movement in the hind foot and increased pressure on adjacent joints leading to further degenerative changes. The emphasis should be on early detection and repair of the spring ligament and other static restraints. –PFA

References:

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(Includes scanner, tripod and holder)

Learn more at:

www.kiwiorthoticservices.com/prime

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SPONSORSHIP

PFA offers its thanks to these corporate sponsors whose support allows PFA to serve members and the greater pedorthic community.

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UNIQUE OPPORTUNITY

Experience:

We are a well established, independent shoe store located in Lakewood, Ohio, which is within a half hour of Cleveland. We are of retirement age and are looking for a Certified Pedorthist who would like to take advantage of a walk-in opportunity to set up practice.

We take pride in properly fitting our customers, and we carry shoes in a wide range of sizes and widths. In addition, we fit orthotics on a daily basis and cater to troubled feet.

We would welcome the chance to have contact with serious entrepreneurs regarding our store and location. This would be an ideal time to take advantage of a unique opportunity, as we have not yet listed our business with a broker.

Please contact:
cernyshoes@ohiocoxmail.com

To place a classified ad:

Email: classifieds@pedorthics.org
Fax: (888) 563-0945

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PFA IS LOOKING FOR A FEW GOOD PROFESSIONALS

Did you know pedorthic and health care practitioners, who submit an article or research abstract/research paper, are eligible to earn one or more CEU/CEP Credits towards keeping their professional certification current when accepted and published in our magazine?

The Pedorthic Footcare Association (PFA) offers our members and other affiliated healthcare professionals an additional way to earn their mandatory Continuing Education Units/Continuing Education Points. After successful publication of your submitted article or abstract/research paper, our staff or you can report your publication to many of the numerous professional health associations and certification/accreditation organizations that recognize publication as a means to earn your certification credits.*

For more details, contact Current Pedorthics magazine at (229) 389-3440 or by email at: ceu@pedorthics.org.

*Credit value is determined by the certification/accreditation organization, not PFA.

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DO YOU HAVE SOME NEWS? Send your industry news to the editor at editor@pedorthics.org.
This reference guide is intended solely to make it easier for individuals, facilities and companies to locate pedorthic products. Companies listed in the guide are PFA vendor/manufacturer members. Companies may produce additional products beyond those listed, and most companies are pleased to provide additional information on request. As a courtesy to our readers, Current Pedorthics has noted the year the company joined PFA in parentheses after the company’s name. Inclusion in this list does not suggest or imply PFA endorsement of companies or products. Vendor/Manufacturer members are encouraged to keep their listing up-to-date. To arrange changes in your company’s listing, email: info@pedorthics.org.
is the complete bunion treatment package; protective, supportive, comfortable, and not to mention, discreet. Truly one-of-a-kind in the world of bunion treatments. The newest in bunion treatment to help manage your bunion pain and best of all - it doesn’t involve surgery!

San Luis Obispo, CA
Phone: (877) 208-4540
Email: Lisa@BunionBootie.com
Website: www.BunionBootie.com

C.N. Waterhouse Leather Co., Inc. (1998)
Manufacturer and distributor of fine leathers, woolskins, suede pig-skins, sheet goods and adhesives for use in the pedorthic footwear and orthopedic industries.

Hyannis, MA
Phone: (800) 322-1177
Fax: (508) 771-2300
E-mail: info@waterhouseleather.com
Website: www.waterhouseleather.com

Dr. Comfort (2004)
Dr. Comfort manufactures, warehouses and distributes the finest quality extra-depth shoes for diabetics or patients who need quality comfort shoes.

Mequon, WI
Phone: (800) 992-3580
Fax: (262) 244-9300
Email: info@drcomfort.com
Website: www.drcomfort.com

Drew Shoe Corporation (1968)
Men’s and women’s depth and comfort footwear in over 150 sizes.

Lancaster, OH
Phone: (800) 837-3739
Fax: 740-654-4979
Email: customerservice@drewshoe.com
Website: www.drewshoe.com

Finn Comfort (1993)
Luxury comfort footwear. Men’s and women’s walking shoes, sandals and boots featuring removable/modifiable orthopedic footbeds. Hand-crafted in Germany.

Thousand Oaks, CA
Phone: (805) 375-0038
Fax: (805) 375-0848
Email: info@finncomfort.com
Website: www.finncomfort.com

Foot Solutions (2012)
Feet are your foundation for life. At Foot Solutions, we use the most advanced technology combined with a full understanding of biomechanics of feet and gait, along with the highest quality footwear on the planet to fit your unique feet. Through our customized solutions, we will improve your comfort and body alignment and help you achieve better health through your feet.

Marietta, GA
Phone: (888) FIT-FOOT
Fax: (770) 953-6270
Website: www.footsolutions.com

Frankford Leather Company, Inc. (1997)
Frankford Leather Co., Inc., is your single source supplier for your pedorthic shoe repair and shoe store supply needs. In stock, more than 8,000 products are available for immediate shipment. Representing major brands and lines like Vibram, Soletech, Spenco, Powerstep, Pedifix, Pedors, OrthoFeet, Kiwi; shoe care, adhesives, leather and more. Free catalog available.

Bensalem, PA
Phone: (800) 245-5555
Fax: (215) 244-4411
Email: sales@frankfordleather.com
Website: www.frankfordleather.com

Gadean Footwear (2010)
Gadean Footwear is the largest orthopdaedic shoemaker in Australia. Gadean Footwear provides retailers with washable slippers, motion shoes, fashion shoes, depth shoes, removable insole sandals and many more products.

Malaga, Western Australia, Australia
Phone: 61-8-92486533
Fax: 61-8-92486711
Email: info@gadeanfootwear.com.au
Website: www.gadeanfootwear.com.au

Hapad, Inc. (1988)
Hapad is a leading manufacturer of 100% natural wool felt foot products and sports replacement insoles used for conservative management of common, painful foot complaints. Correctly skived and adhesive backed for a quick and easy fit, Hapad products are an affordable alternative to custom made devices or they can be used to make custom modifications.

Bethel Park, PA
Phone: (800) 544-2723
Fax: (800) 232-9427
Email: info@hapad.com
Website: www.hapad.com

Honeywell Safety Products (2013)
NEOS overshoes provide a tough barrier between everyday footwear and the harsh elements of nature. Wear over your favorite, comfortable shoes or boots with confidence that feet and footwear will stay warm and dry.

ING Source, Inc. (2013)
ING Source, Inc. is a consumer health and medical device manufacturer selling products world-wide. Our origins were in design, development, sourcing and marketing consulting. ING Source holds several patents, and is the creator of the innovative OrthoSleeve Branded products of FS6 Compression Foot Sleeve; CS6 Compression Calf Sleeve; KS6 Patella Knee Sleeve; ES6 Compression Elbow Sleeve; and the DermaSox Foot Treatment System. ING Source also offers OEM for compression wear and orthopedic support in sports, rehabilitation and Diabetic Foot Care to numerous premium brands.

NEOS are extremely lightweight and easy to get on and off. With different heights, insulation and traction to offer the right amount of protection, NEOS has you covered.

Smithfield, RI
Phone: (401) 757-2503
Fax: (401) 239-2416
Email: info@ingsource.com
Website: www.ingsource.com

Finn Comfort (1993)
Luxury comfort footwear. Men’s and women’s walking shoes, sandals and boots featuring removable/modifiable orthopedic footbeds. Hand-crafted in Germany.

Guard Industries, Inc. (1996)
Components for shoe care, foot comfort, orthotics and prosthetics. Complete listing of available products will be sent upon request.

St. Louis, MO
Phone: (800) 535-3508
Fax: (314) 534-0035
Email: guard@ihl.net
Website: www.guardmfg.com

Infracare (2017)
Infracare products are the solution for cold feet due to Diabetes, Raynauds, Chilblains, Neuropathy and Acrocyanosis. Infracare supports deliver gentle heat that targets the pain and allow for longer use’s without burning. Heat has been proven to provide relief in Chronic pain conditions.

ING Source holds several patents, and is the creator of the innovative OrthoSleeve Branded products of FS6 Compression Foot Sleeve; CS6 Compression Calf Sleeve; KS6 Patella Knee Sleeve; ES6 Compression Elbow Sleeve; and the DermaSox Foot Treatment System. ING Source also offers OEM for compression wear and orthopedic support in sports, rehabilitation and Diabetic Foot Care to numerous premium brands.

Toronto, ON
Phone: (416) 305-6592
Fax: (416) 239-2416
Email: info@infracare.ca
Website: www.infracare.ca

ING Source, Inc. (2013)
ING Source, Inc. is a consumer health and medical device manufacturer selling products world-wide. Our origins were in design, development, sourcing and marketing consulting. ING Source holds several patents, and is the creator of the innovative OrthoSleeve Branded products of FS6 Compression Foot Sleeve; CS6 Compression Calf Sleeve; KS6 Patella Knee Sleeve; ES6 Compression Elbow Sleeve; and the DermaSox Foot Treatment System. ING Source also offers OEM for compression wear and orthopedic support in sports, rehabilitation and Diabetic Foot Care to numerous premium brands.

Hickory, NC
Phone: (828) 855-0481
Fax: (877) 635-1521
Email: dhiggins@ingsource.com
Website: www.ingsource.com

ING Source, Inc. (2013)
ING Source, Inc. is a consumer health and medical device manufacturer selling products world-wide. Our origins were in design, development, sourcing and marketing consulting. ING Source holds several patents, and is the creator of the innovative OrthoSleeve Branded products of FS6 Compression Foot Sleeve; CS6 Compression Calf Sleeve; KS6 Patella Knee Sleeve; ES6 Compression Elbow Sleeve; and the DermaSox Foot Treatment System. ING Source also offers OEM for compression wear and orthopedic support in sports, rehabilitation and Diabetic Foot Care to numerous premium brands.

Hickory, NC
Phone: (828) 855-0481
Fax: (877) 635-1521
Email: dhiggins@ingsource.com
Website: www.ingsource.com

Shoe modification components, foot comfort products and shoe repair supplies. Products from Aetrex, Spenco, Vibram and Soletech.

**Granite Quarry, NC**

Phone: (704) 279-5568
Fax: (704) 279-5261
Email: jhcook@windstream.net

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**JMS Plastics Supply (1992)**

JMS is the first U.S. company to have Silpure in our nylon top cover on our Neolon. Silpure is an advanced anti-microbial protection that provides proven anti-bacterial properties of silver. Available in 1.5 mm and 3.0 mm sheets. Our Neolon with Bamboo is also deodorizing and anti-bacterial and comes in sheets 40” x 48” or 48” x 80”. Our new J-fab line of prefabs are thin, heat moldable and they come in three styles and three colors.

**Neptune, NJ**

Phone: (732) 918-1131
Fax: (732) 918-2604
E-mail: sales@jmsplastics.com
Website: www.jmsplastics.com

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**Justin Blair & Company (2001)**

Manufacturer of Ralyn Shoe Care and Backroom Supplies and NightCare Foot Care. Distributor for Aetrex, Acor, Darco, Herbal Concepts, Pedifix, Swede-O, Silipos and Therafirm.

**Chicago, IL**

Phone: (800) 566-0664
Fax: (773) 523-3639
Email: orders@justinblairbiz.com
Website: www.justinblairco.com

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**KLM Laboratories (2006)**

An industry leader in the manufacture of foot orthotics and insoles, specializing in custom orthotics, pre-fabricated orthotics, orthotic insoles and orthotic materials.

**Valencia, CA**

Phone: (800) 556-3668
Fax: (800) 556-3338
Email: cservice@klmlabs.com
Website: www.klmlabs.com

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**Klogs-USA (2007)**

KLOGS®, headquartered in Sullivan, MO is a part of the Latitudes, Inc., family of Comfort brands. Utilizing proprietary polyurethane components and slip-last construction, KLOGS® offers premium comfort footwear designed to fit the anatomical features of the foot and provide instant wearability while eliminating a “break-in” period. With removable footbeds to accommodate custom orthotics, a broad range of sizes and widths to ensure proper fit, slip-resistant outsoles and replaceable footbeds, KLOGS® is dedicated to providing “WOW” comfort in every step.

**Sullivan, MO**

Phone: (573) 468-5564
Fax: (573) 468-5560
E-mail: Jennifer@latitudesinc.com

---

**Landis International (2014)**

Landis International Inc. is a world leader manufacturing for new and reconditioned quality machinery equipment for the orthopedic and shoe repair industry. Already the undisputed leader and main supplier for North America and Australia, Landis has steadily increased his international presence over the past few years!

**800, Rossiter
Saint-Jean-sur-Richelieu (Québec) Canada J3B 8J1**

Phone: 1-450-359-8800
Toll-free: 1-800-634-0806
Fax: 1-450-359-9619
Email: info@landisinternational.ca
Website: http://landisusa.com

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**Lord Custom Molded Shoes, Inc. (1994)**

Fashionable custom-molded shoes for men, women, and children. Guaranteed fit and service.

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**Bohemia, NY**

Phone: (800) SHOES11
Fax: (516) 471-3090
Website: www.lordshoes.com

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**Bohemia, NY**

Phone: (800) SHOES11
Fax: (516) 471-3090
Website: www.lordshoes.com

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**mediUSA, LP (2013)**

Our company slogan “medi. I feel better.” reflects our view of ourselves as a partner to everyone who operates in the medical aids market. With our products and technologies, we would like to make people’s lives easier, better and more comfortable. We aim to do this by meeting the different needs of all our customers, every day and throughout the world. “I feel better” is therefore a promise that becomes a reality with medi, because we offer indication-specific and effective product solutions to the highest standards, which, with the help of our pioneering, individual concepts and dense customer service network, can be provided wherever they are needed.

**Whitsett, NC**

Phone: (800) 633-6334
Fax: (888) 570-4554
E-mail: edw@mediusa.com
Web site: www.mediusa.com

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**Mephisto (1998)**

With worldwide headquarters in Sarrebourg, France, MEPHISTO - the WORLD’S FINEST FOOTWEAR, was founded more than 40 years ago by Martin Michaeli. Mephisto has a loyal following and a strong international reputation for comfort and quality. Its high-quality handcrafted footwear styles include sandals, boots, clogs, dress and classic walkers, as well as the ergonomic brand, Mobils. In recent years, the company also introduced the more athletic inspired brand, Allrounder by Mephisto and their latest collection with superior toning technology, Sano by Mephisto.

**Franklin, TN**

Phone: 800-775-7852
Fax: 615-771-5935
E-mail: info@mephistousa.com
Web site: www.mephistousa.com

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**Miami Leather Company (2001)**

Wholesaler to the orthopedic, prosthetic, retail shoe and shoe repair trades. Wide variety of products.

**Miami, FL**

Phone: (305) 266-8328
Fax: (305) 266-8728
Email: sales@miamileather.com
Website: www.miamileather.com

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**Nolaro24, LLC (2015)**

Nolaro24, LLC is the Maker of Quadrastep and littleSTEPS foot orthotics - the first Patented custom to foot type prefabricated foot orthotics for adults and kids, the Next best thing to Custom!

80 Turnpike Drive, Unit 2B
Middlebury, CT 06762
Phone (Toll Free): (877) 792-4669
Website: www.thequadrastepsystem.com
Email: info@thecarestepsystem.com

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**National Shoe Specialties & Biotime Footwear (2014)**

National Shoe Specialties & Biotime Footwear (2014)

For over forty years National Shoe has taken pride on providing exceptional service to our customers by offering:

- Leading, Reputable and Premium Quality Brands
- A Knowledgeable and Professional Sales Team
- Unparalleled Customer Service

Our relationships are built on a foundation of trust, respect and a desire to partner in the continued success of our customers and vendors through innovation and continuous improvement. At National Shoe we offer an extensive material & footwear selection for the Pedorthic/Orthopaedic/Prosthetic, Shoe Store and Repair channels of business across Canada and the United States

**Toronto, ON**

Phone: 800-387-5246
Fax: 800-568-8930
Websites: www.nationalshoe.com
www.biotimefootwear.com
New Balance (1990)
New Balance, headquartered in Boston, MA supports a family of brands including New Balance, Aravon, Dunham, PF Flyer, Warrior and Brine. All brands specialize in sizes and widths across a number of categories including running, walking, training, kids, comfort casual, lifestyle, team sports and apparel.
Boston, MA
Phone: (617) 783-4000
Fax: (617) 783-7050
Website: www.newbalance.com

New Step Orthotics (2015)
At New Step Orthotics our mission is to provide quality orthotics and services that reflect our effort to a quality product with excellent customer service. We offer a 7 day in house turnaround on all custom foot orthotics. We offer free in-bound shipping to our customers and a 1 year product warranty. Family owned since 2004.

Phone: 866-798-7463
Website: www.newsteporthotics.com

PediFix, Inc. (2001)
Foot specialists since 1885, PediFix is the only fourth generation, family-owned business in the pedorthic industry. Choose from more than 150 quality foot treatment products, including a unique OTC line guaranteed to generate cash sales,keystone profits and doctor referrals, an assortment of both traditional and exclusive Visco-GEL foot pads and cushions, new dermatology products, GelStep silicone insoles and orthotics, Diabetic Solutions Socks, PediPlast and more. 15 new products are being introduced this year.
Contact PediFix today for a free color catalog.
Brewster, NY
Phone: (800) 424-5561
Fax: (845) 277-2851
Email: sales@pedifix.com
Website: www.pedifix.com

Propet USA, Inc. (2000)
Leading manufacturer in men’s and women’s comfort walking shoes. Available in up to 5 widths, sizes 5-13 in women’s, 7-17 in men’s. Propet features a vast selection of Medicare A5500 coded footwear with removable orthotics, secure closure and maximum customization.
Kent, WA
Phone: (800) 877-6738
Fax: (800) 597-8668
Email: customerservice@propetusa.com
Website: www.propetusa.com

P.W. Minor, Inc. (1968)
P.W. Minor is the premium brand that provides pedorthically superior, precision-fit footwear for discriminating consumers unwilling to compromise style when preventing or caring for their foot-health needs. Delivering foot-health through precision fit shoes is a brand mission that remains as true and relevant today as it was back in 1867.
Batavia, NY
Phone: (800) 796-4667
Fax: (585) 343-1514
E-mail: info@pwmminor.com
Website: www.pwmminor.com

Complete line of orthotic and prosthetic equipment including finishers/grinders, vacuum pans, pumps, presses, industrial sewing machines, fume busters and more.
Goshen, NY
Phone: (800) 354-6278
Fax: (845) 291-7097
Email: shoesystemsplus@hvc.rr.com
Website: www.shoesystemsplus.com

Spenco Medical Corporation (2013)
Spenco is an innovative healthcare company whose mission is to help people everywhere achieve more comfortably. While Spenco’s core business revolves around producing high quality insole and footwear products, Spenco also provides the most advanced sports medicine and first aid products. Above all else, customer service is Spenco’s focus and we are 100% committed to providing outstanding service as we help you find the solutions for all of

Remington Products (2000)
Insoles and sheet packages, rigid arch supports, viscoelastic heel cups, 3/4 and full insoles.
Wadsworth, OH
Phone: (330) 335-1571
Fax: (330) 336-9462
Email: jwert@remprod.com
Website: www.remprod.com

Renia GmbH (2001)
Specially designed adhesives and components for the shoe industry, shoe repair trade, and O & P industry.
Cologne, Germany
Phone: 49-221-6307990
Fax: 49-221-63079950
Email: info@renia.com
Website: www.renia.com

SAS Shoemakers (1992)
Comfort walking shoes for women and men in a wide range of widths and sizes.
San Antonio, TX
Phone: (210) 924-6561
Fax: (210) 921-7460
Email: barmwood@sas-shoes.net
Website: www.SASshoes.com

STS Company (1997)
Resin-impregnated tubular and fitted socks made to take foot and ankle impressions for custom shoes and foot/ankle orthotic devices.
Mill Valley, CA
Phone: (800) 787-9097
Fax: (415) 381-4610
Email: info@stssox.com
Website: www.stssox.com

SoleTech, Inc. (1994)
SoleTech, Inc., established in 1946, has a full line of cushioning and fabrication materials for the pedorthic footwear industry. Soletech introduced its registered brand Cloud EVA and Soleflex EVA in the early 1980s and is now recognized as the industry leader for materials for the fabrication of custom foot orthotics and AFOs and components for build-ups and modifications to extra-depth and custom footwear. In addition to its presence in the orthopedic market, SoleTech is also a leading supplier of footwear components and materials to the shoe manufacturing and shoe repair industries.
Claremont, NH
Phone: 603-542-8905
Toll Free: 877-825-4949
Fax: 603-542-8909
Email: tom@soletech.com
Website: www.soletech.com

Sole Supports, Inc. (2012)
Sole Supports is an innovative, medical-grade foot orthotics manufacturer. We make custom foot supports that follow your doctor’s prescription in order to provide both immediate pain relief and prevention of any new pains or deformities. Medical practitioners must first be certified to order from us because we offer a completely different type of support than the ones for which they were trained in school and because we must have the best possible cast of your foot to make the best support.
Lyles, TN
Phone: 931-670-6111
Fax: 931-670-6008
E-mail: info@solesupports.com
Website: www.solesupports.com
your health and footcare needs.

Waco, TX
Phone: (800) 877-3626
E-Mail: jeff@spenco.com
Website: www.spenco.com

Spira (2004)
El Paso, TX
Phone: (866) 838-8640
Fax: (915) 838-8641
Website: http://spira.com

Strifeneder USA (1997)
Preformed insoles, diabetic shoes and materials in different hardnesses, especially for diabetics.

Tampa, FL
Phone: (800) 378-2480
Fax: (813) 246-5998
E-mail: euro@eurointl.com
Website: www.eurointl.com

SUPERFEET
Ferndale, WA
Phone: (360) 384-1820
Fax: (360) 384-2724
Email: here@superfeet.com
Website: www.superfeet.com

Tekscan, Inc. (1994)
Broad range of pressure assessment and clinical/research evaluation tools for use in orthotics, brace evaluations, joint biomechanics, and gait analysis.

Boston, MA
Phone: (617) 464-4500
Fax: (617) 464-4266
Email: marketing@tekscan.com
Website: www.tekscan.com

TREAD - LABS
Treadlabs (2017)
Tru-Mold Shoes offers a complete line of contemporary, fully accommodating custom-molded shoes, including the Thera-Medic Shoe package – the most flexible, highest value shoe package for Medicare-eligible patients with diabetes.

Buffalo, NY
Phone: (800) 843-6653
Fax: (716) 881-0406
Email: info@trumold.com
Website: www.trumold.com

Tru-Mold Shoes, Inc. (1980)
Tru-Mold Shoes offers a complete line of contemporary, fully accommodating custom-molded shoes, including the Thera-Medic Shoe package – the most flexible, highest value shoe package for Medicare-eligible patients with diabetes.

Buffalo, NY
Phone: (800) 843-6653
Fax: (716) 881-0406
Email: info@trumold.com
Website: www.trumold.com

TruFit Orthopedic Labs (2013)
TruFit Biomechanics Labs is a full service biomechanics and podiatric company. We manufacture individually engineered CAD/CAM corrective foot orthotics in the USA. We operate multiple chiropractic and podiatric patient-care facilities across Europe. In addition to operating several patient clinics in Europe, we continuously engage in highly funded research and development projects in conjunction with several European government laboratories as joint ventures that have become very successful in developing new patient care evaluation techniques and innovative medical corrective devices.

grounded in science. Our commitment to Research, Development and Innovation is a foremost goal, and we only employ medical, engineering, and computer science professionals who share that vision.

Orlando, FL
Phone: 855-910-2525
Fax: 321-202-2819
E-mail: info@trufitusa.com
Website: www.trufitusa.com

UniStyle Footwear (2017)
Since 2003, UniStyle Footwear has been manufacturing fashionable comfort, orthopedic and custom footwear. UniStyle Footwear provides quality handcrafted footwear according to rigorous quality standards and use the best natural materials, quality leathers, and breathable lining.

North York, ON M3J 2R8
Phone: (416) 638-7000
Fax: (416) 638-7627
Email: oumanskiinc@bellnet.ca
Website: www.unistyleshoes.ca

Value Foam, Inc. (2014)
Value Foam Inc. is devoted to offering our customers high quality, low cost materials commonly used for orthotic and prosthetic devices. Bring us your current invoice, we will be happy to offer you the same type of materials at 10 percent less. Our product lines include high quality EVA, AccuZote (a more economic substitute of plastazote) and PPT/SBR materials at various density and thickness.

South El Monte, CA
Phone: (800) 788-1358
Fax: (800) 788-1358
E-mail: mary@valuefoams.com
Web site: www.valuefoams.com

Ziera Shoes N.Z., Ltd. (Formerly Kumfs Shoes N.Z., Ltd.) (1998)
Ziera Shoes, formerly Kumfs Shoes, are women’s shoes, sandals and boots that are truly orthotic friendly. Ziera Shoes come in a wide range of heeled fashion and walking footwear. We have widths in stock from M through XXW in sizes 34 through 45.

Port Orchard, WA.
Phone: 877 717 0588
Fax: 877 717 0589
Email: craig.taylor@zierashoes.com
Website: www.zierashoes.com

USA - the Quabaug Corporation in North Brookfield, MA.

Concord, MA
Phone: (978) 318-000, ext. 136
E-mail: sales@vibramusa.com
Website: http://us.vibram.com/
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The advertiser index is published for the readers’ convenience. Click on the hyperlink to take you to the advertiser’s website. If you have any questions about advertising, please contact our advertising sales representative:

To contact our Sales Manager:
Phone: (847) 863-5836
Or email: advertising@pedorthics.org

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