How to Recommend the Proper Athletic Footwear

Your input can make a big difference in both your patients’ foot health and their athletic performance.

BY MARC HASPEL, DPM

At the forefront of athletic performance worldwide is the importance of athletic footwear. Choosing the proper footwear (both shoes and socks) is vital to athletic success. Podiatric physicians can certainly provide strong guidance in helping athletes make these important decisions. Whether it be providing recommendations for patients who have sustained repetitive injuries such as plantar fasciitis, stress fractures or turf toe, to advising others considering running in minimalist versus maximalist footwear, to counseling more and more aging baby boomers seeking to stay fit through walking, podiatric physicians can play a key role in delivering helpful information to everyday athletes about proper footwear.

Recognizing this central role podiatric physicians have in advising their patients on proper athletic footwear, Podiatry Management has assembled an experienced panel of expert backgrounds include range of expertise in athletic footwear, sports medicine and barefoot training. Joining this month’s panel: Mel Cheskin, MBS., CPed., is originally from England. He is a former British Olympic runner, USTA tournament tennis player (Level 5.0) and USGA member (Golf). As author of The Complete Handbook of Athletic Footwear and a 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. Robert Eckles, DPM is dean of Clinical and Graduate Medical Education, associate professor of Orthopedic Sciences at the New York College of Podiatric Medicine and is residency director at Metropolitan Hospital Center. Brian Fullem, DPM is in private practice in Clearwater, FL. He is a board member of the American Academy of Podiatric Sports Medicine. Dr Fullem competed in track and cross country at Bucknell University where he ran 14:25 for 5K. Jonathan Moore, DPM is board certified by the American Board of Podiatric Medicine. He is a managing partner, Cumberland Foot and Ankle Centers of Kentucky, fellowship director, Central Kentucky Diabetes Management Fellowship, fellow and member of the board of trustees, Continued on page 92

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American Academy of Podiatric Practice Management and adjunct faculty member, Kent State University School of Podiatric Medicine.

Emily Splichal, DPM, is a noted human movement specialist, who actively treats patients out of Gramercy Park Podiatry in Manhattan, NY. In addition, Dr. Splichal is the founder of the Evidence Based Fitness Academy and creator of the Barefoot Training Specialist, BarefootRx and BARE’ Workout Certifications for health and wellness professionals. With over 15 years in the fitness industry, she has dedicated her medical career towards studying postural alignment and human movement as it relates to foot function and barefoot training.

Douglas Richie, Jr., DPM, is a fellow and past president of the American Academy of Podiatric Sports Medicine. He is an associate clinical professor at the Western University School of Podiatric Medicine. He has practiced podiatric sports medicine for 34 years in Seal Beach, California.

PM: What tips can you offer to ensure that your patients receive the proper athletic shoes when shopping retail?

Splichal: I think the most important thing for patients to know when buying athletic footwear is their foot type and the demands or concerns associated with them. I advise them not to rely solely on shoe stores to type their feet, but rather have qualified professionals such as podiatrists accurately determine if they have excessive subtalar joint eversion, navicular drop, etc. Based on this information, the patients can go in knowing if they really need a motion-controlled shoe or if they can try the more minimalist athletic footwear lines.

I also think it is important for patients to understand the different features of shoes such as a stiff heel counter or midsoles, and how these features may be of benefit or hindrance to their foot function. If patients are looking specifically for more minimal shoes, it is important for them to understand the different heel toe drops and understand that minimal does not necessarily equate to a zero drop shoe. Knowing when a transitional drop (4mm–8mm) is appropriate can greatly reduce the risk of injury, especially in patients with an injury history or over-pronated foot type.

The final tip that I would give them would be to emphasize the importance that shoes must match the activities. I see too many patients wearing running shoes for cross-training and vice versa. The soles of different athletic shoes are designed uniquely with function in mind. For example, patients who run in cross-training shoes which have treads on the sole can actually block forward/sagittal movement, which will alter their running pattern and can increase their risk of injury.

Eckles: The best purchase outcomes arise from an informed perspective with a healthy amount of self-evaluation and skepticism about new unproven designs or materials. Athletes who review their history and understand what worked and didn’t usually make good choices. Podiatrists can steer athletes clear of unsuitable designs, but in the end, the shoes just have to be comfortable. They should not be purchased if they seem like they need to break in (they won’t) and successful athletes should never make a substantial change in what they wear unless there are really valid reasons to do so. New is not always better.

Moore: I recommend planning to spend a minimum of twenty minutes shopping. Fit and function of shoes is vital. As all feet function and foot needs, or what categories of shoes they need, then they can narrow down to the individual fit characteristics of each brand.

Fullem: Most importantly, I try to make sure that patients go to a local running specialty store as I find that at the bigger chain stores, the employees are not as knowledgeable, and may be more financially motivated. I know of one chain that always tries to sell my patients an additional OTC arch support with every pair of shoes.

Richie: I take a different approach. I write a fairly detailed shoe prescription outlining the footwear requirements for the individual patient. I try not to simply list a brand and model. Rather, I will specify a category, e.g., “neutral”, and specific requirements such as firm midsole or wide toe box.

PM: What shoe recommendations would you make for an athlete sustaining the following frequently seen injuries: plantar fasciitis, stress fractures, turf toe?

Eckles: My first advice here is that shoe prescriptions should follow carefully considered evaluations of Continued on page 93
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the causes of the problems. Shoes can support solutions to all these problems, but will rarely be the one thing that works. Overuse injuries such as plantar fasciitis, and possibly stress fracture also require podiatrists to be part athletic trainers. I would offer that no therapy can be successful if the athletes repeat bad choices.

Plantar fasciitis requires shoes that provide some stability, an average to high heel offset, and complement whatever mechanical solution the podiatrist has recommended, whether it be a temporary or more permanent foot orthosis.

Stress fracture history has to be carefully evaluated. I would prescribe nothing until I know why the injury developed. If the cause is biomechanical, the shoe prescription may only be supportive with a custom device engaged to provide an appropriate protective effect. Certainly, training history and the potential for metabolic bone disease, as well as nutritional deficiency, have to be evaluated and eliminated as causes.

Turf toe is amenable to any modality that reduces dorsiflexion forces across the forefoot. Most shoes have crafted flexion points; however, these may not always be friendly. Foot orthoses or rigid inlays can be very effective in reducing stress, and will help athletes heal, but the fundamental cause of turf toe is friction; the use of high friction outsoles on artificial turf is unavoidable for most field athletes.

Cheskin: For plantar fasciitis, my recommendation is for the shoe to have firm longitudinal arch support and heel lifts to relieve pressure. I feel that women ought to find a shoe with a moderate heel to help relieve pain. Compression anklets to support the plantar fascia are also helpful in relieving pain and speeding healing. For stress fracture, I recommend rest and off-loading. Initially, a surgical off-loading shoe should be recommended. When the athlete is ready to resume training, a supportive well-cushioned shoe is preferable. If I believe the stress fracture is shoe-related, perhaps a change of model or brand should be recommended. Finally for turf toe, I order a graphite Morton’s extension plate. I would recommend any shoe that elevates the mid-foot and forefoot (negative heel shoe).

Fullem: I have been often recommending shoes with prominent rocker-type soles which can help those athletes with injuries such as plantar fasciitis and turf toe. Personally, shoes with extra cushioning allow me to run more with my cartilage damage in my left knee. I have also been recommending shoes with wide lasts for those with width issues such as bunions or neuromas.

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Richie: The shoe requirements for turf toe and plantar fasciitis in the forefoot are almost identical: stiffness to limit extension of the hallux. In the rearfoot, the requirements may be opposite: plantar fasciitis requires a higher heel height, while turf toe may respond better to a lower drop or even zero drop heel height.

For metatarsal fractures, the footwear should focus on reducing dorsiflexion (bending) moments across the metatarsals. Again, a stiff outsole and midsole combined with a rocker design, would be preferred.

Splichal: For patients who frequently experience plantar fasciitis, I would first look at foot type, then determine the appropriate athletic footwear. In over-pronated patients with frequent plantar fasciitis, I would go one of two ways: first, either a motion controlled shoe with a transitional to traditional heel toe drop (8mm—14mm) depending on the severity of the pronation; or second, a minimal shoe with transitional heel toe drop (4mm—8mm). The way I would determine the shoe would be to evaluate patient compliance.

I treat plantar fasciitis as an impact-related injury secondary to foot weakness. Research has shown that foot strengthening and increased intrinsic muscle activation, as seen in more minimal footwear, can actually decrease foot pain such as plantar fasciitis. Therefore, many of the patients I treat seek out a more minimal shoe for athletics, as that reinforces more foot mobility and foot stimulation from the ground.

I actually approach stress fractures the same way with my preference being towards strengthening the foot, coupled with a shoe that allows more foot activation and stimulation secondary to ground reaction forces. The transition to a more minimal shoe in the patient with a history of stress fractures must be progressive, but if I can ultimately restore intrinsic foot strength, decreased risk of stress fractures will follow. In patients who may not have the patience or compliance to do the foot strengthening and want the shoes to do the work for them, this is where I would look at the shock absorbing shoes.

For turf toe, I actually shift away from the minimal shoes as the increased flexibility and decreased cushion can actually increase the stress to the great toe joint in these patients. In an acute setting, like many podiatrists, I would emphasize stiff soles and/or graphite extensions until inflammation is decreased. Upon return to activity, I recommend stiffer athletic shoes with an eventual return to minimal shoes over a period of several months.

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PM: What advantages and disadvantages do you see in running/playing sports with minimalist versus maximalist footwear?

Splichal: I am much more in favor of minimal footwear over maximal footwear for all activities and sports outside of ultra-marathons and endurance sports. The minimal footwear is associated with less cushion, no midsole, no heel counter, and torsional flexibility. This translates to more plantar proprioceptive feedback and neuromuscular stimulation of the foot and surrounding tissues. In a patient who can control this range of motion and plantar stimulation, this can be seen as a performance advantage. The human foot is designed to respond to the plantar proprioceptive information and is designed to control dynamic movements without restrictions of shoes. Unfortunately, years of supportive footwear use can lead to weakening of the foot and a delayed response to plantar proprioceptive information, making humans dependent on these shoes for function. This is why we can see a high injury rate as people transition from traditional shoes to minimal shoes. Thus, this transition must be gradual.

Maximal shoes have maximum cushion, which blocks plantar proprioceptive information and absorbs a lot of the impact during dynamic movements. Originally designed for ultra-marathons, these shoes are very sport-specific, and I would not recommend them for activities outside ultra-endurance sports as their features do not match most activities.

Some of the disadvantages to minimal shoes are lack of support for the patient who has extreme over-pronation, such as one with a high-grade posterior tibial tendon dysfunction. Wearing minimal shoes when having this severe pronation increases the risk of injury greatly.

Eckles: I see no advantages in wearing minimalist shoes for sports (most sales seem to end up as walking shoes). The data now show that there is no benefit to minimalist footwear. Injury rates in large cohorts of runners are no different between

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Maximalist footwear have been a welcome solution to capsulitis, metatarsalgia, hallux rigidus, and metatarsal stress fractures. The primary drawback is lower drop in the rear foot, which might be a problem for the Achilles tendon and plantar fascia.

Moore: Both minimal and maximal shoe styles have some advantages. Probably the biggest advantage that minimal shoes brought to the shoe market was that runners started to look at form as it became essential to accommodate the minimalist style shoe (i.e., minimal shock absorption beginning to gain acceptance, and there is still some disagreement as to what constitutes a maximalist shoe. Just as with minimalistic shoes, maximalist shoes have no coherent meaning as a defined category of footwear. I think most people associate minimalistic ones with a lack of cushion, and maximalist ones with a lot of cushion, but with a really thick midsole the shoe can become unstable or too soft. If the shoe doesn’t control motion around the foot, it can create a whole new wave of problems to the lower body. In addition, a shoe that is too soft can be very hard to run, walk, or exercise in.

Running barefoot offers little advantage other than to strengthen the feet.—Cheskin

PM: What are your thoughts on barefoot running versus traditional footwear running?

Cheskin: Running barefoot offers little advantage other than to strengthen the feet. If runners find it stimulating and enjoy the variation in their training routine, barefoot running should be performed on soft sand or on a manicured grass surface. Running barefoot promotes greater risk of injury both topically and structurally to runners. Running on hard man-made surfaces is unnatural for the human body and the use of optimally cushioned supportive footwear should always be recommended.

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Eckles: This conversation is over; the lawsuit has been settled. Many people can run in anything, or nothing, but that does not mean they should. If individuals have successfully run in minimalist shoes, and there still remains a small percentage of runners who do, I would not recommend they change, but for the rest of the running population, my advice is that in order to run faster or longer, runners should see podiatrists to understand and resolve chronic injuries, seek professional advice from certified trainers to create sustainable pathways to success, build strength away from running, eat well, train fast to race fast, and not expect shoes to make it easy.

Richie: I agree that the barefoot fad is almost over. Just about every expected benefit of running barefoot has been disproven over the past five years by very good peer-reviewed research. Even though I practice in a beach community in Southern California, I see very few, if any, people running outside barefoot. The offshoot of barefoot running, i.e., changing foot strike patterns, continues to be a controversy in my area. Many runners and triathletes continue to try to change their running style to forefoot or midfoot expecting to increase efficiency. Research again has shown that this simply is not true. While barefoot running has not caught on, runners continue to believe the myth that changing foot strike pattern will reduce injury and improve performance.

Splichal: I get asked this question a lot and the real question is strike pattern, i.e., a midfoot strike versus a heel strike pattern during running. In trying to answer this question, I have found that the research goes both ways. My conclusion after reviewing, and re-reading, all of the research recently is that it is not the pattern that we need to decide which is better, but the overall strength of the foot and neuromuscular relationship that a runner has with the ground. Some research has shown that the midfoot strike is more efficient and, accordingly, I will switch some of my patients from running with a heel strike pattern to a midfoot strike pattern. I will switch patients when they have recurrent injuries secondary to poor control of deceleration or loading response. All patients that I switch are guided with a barefoot running coach.

Fullem: If someone is not having any injury problems, then I do not see any problems with barefoot running. If one of my patients seeks advice on transitioning to barefoot running, then I recommend a gradual transition, using the shoes in daily activities to help the foot adjust and I also stress the importance of strengthening the intrinsic foot muscles. I think doing some barefoot strides on a grass field two to three times per week after a run is a good place to start. I would not recommend runners turn to barefoot running unless they are unable to run in shoes due to injury problems.

Moore: Barefoot running is not something I recommend, but clearly some small percentage of the population may have the biomechanics to run in this fashion, although these numbers must be very low. Truthfully, we live in a world of concrete and asphalt, and when a bare foot strikes, the body has a very difficult time attenuating the shock impact from these surfaces. The only good that I have seen come from any of these styles is that many people have looked at their running form and made appropriate corrections to their running style in order to survive running without shoes on their feet.

Richie: Just looking at injury patterns in my own practice has verified the important role that footwear plays in running injuries. Having practiced sports medicine for over thirty years, I see definite trends and injury patterns which are footwear-related. With the current popularity of minimalist type shoes, we are seeing a surge in plantar fasciitis and Achilles tendinopathy. Also, the super-flexible forefoot feature of minimalist shoes has caused a marked increase in capsulitis and plantar plate pathologies at the metatarsophalangeal joints.

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PM: Please discuss the several reasons why inappropriate shoes can be the source of running injuries.

Cheskin: There is no substitute for properly fitted shoes to avoid running injuries. With extreme minimalist and maximalist running models available at most retail outlets, it is important to select the correct size and category of running shoe (e.g., stability, motion control, etc.) for the athlete’s gait pattern. Width fitting is also essential for the optimal fitting shoe.
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at the right set of shoes to solve their problems.

Shoes that don’t offer enough control can cause excessive torque on the plantar fascia and cause problems there or to the Achilles tendon. Moreover, shoes without shock absorption cause inflammation and stress injuries.

Again, it is most important to be in the right shoe for one’s foot type and to replace them before they are worn out. Most of the better shoe companies recommend that a shoe be replaced after 400 miles or six months. Shoes may look fine, but once the midsoles become compressed, they no longer can do what they were designed for.

**PM:** Discuss the importance of choosing the right socks (in terms of materials, moisture management, blister prevention, proper fit, antibacterial properties, etc.) for your active patients. And why or why not would you recommend compression socks and/or sleeves to that patient population?

Cheskin: The sock is the singular largest selling item of foot covering on the planet. The interface between a shoe and the skin is critical in preventing blisters, callusing, and wicking moisture away from the foot. Socks are changed and washed regularly, as opposed to shoes which are not, therefore antibacterial, antimicrobial prevention is better controlled with an acrylic content sock inside the shoe. Subjectively, I do not recommend footies or socks that fall below the ankle line. They are cosmetic and often slip down causing discomfort. True athletic socks are sized; I usually recommend one size larger to account for shrinkage after washing. Compression sleeves have become popular of late. They do help conditions such as plantar fasciitis and Achilles tendonitis. They do not offer the wicking properties, comfort, and protection of a sport-specific sock.

Splichal: Having the proper socks is important, especially for patients who play sports with a lot of stop and go, change of direction movements such as soccer, or repetitive foot strike patterns such as running. My recommended socks for patients are nylon-based.

Anti-microbial property is another great feature in socks, which are often found in the dri-fit nylon or wool socks. In patients with hyperhidrosis, this feature is of particular importance as the excessive sweating can lead not only to blisters, but foot odor.

As far as compressive sleeves, these are great for both recovery and in the prevention of shin splints. I like compressive sleeves and garments, particularly with endurance athletes where rapid recovery is key. Research has shown that the compression garments or sleeves accelerate lactate removal post-workout, reduce soft tissue vibrations, and increase cardiovascular return.

Eckles: Socks are more functional than athletes know. Hi-tech fiber innovations in the concept writing of DuPont scientists in the ’20s was later modified and renamed Coolmax®, a polyether hydrophilic construction. This material that is hydrophobic and used in outer layer. Coolmax®, a polyether hydrophilic construction.

Research has shown that the compression garments or sleeves accelerate lactate removal post-workout, reduce soft tissue vibrations, and increase cardiovascular return. We have spun off from the core sock business as additional advancements in four areas: wicking materials, materials with decreased moisture management, moisture evacuation, moisture management, and a robust economy in the ‘80s.

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**PM:** As baby boomers age, there’s an ever-growing population of seniors for whom walking is their primary or sole athletic activity. Some of them have special issues (arthritic, PVD, neuropathic, stability, etc.). What goes into your recommendations for walking shoes for this patient population?

Richie: Having devoted a large part of my professional career to studying athletic hosiery, it is indeed rewarding to see how far healthcare professionals and consumers have come in recognizing the important role of socks in promoting foot health and preventing skin injury during sports. I rarely have to convince patients that cotton socks are not healthy. At the same time, it is easy to make runners understand that a $15 investment in a good pair of socks is as important as buying the best pair of running shoes. This did not happen 20 years ago. I think the main feature that should be emphasized in selection of athletic hosiery is protection of the foot from soft tissue injury. The fit of the sock and construction with high performance fibers will assure reduction of pressure and shear. Moisture management is important, but is optimized by the fibers used by most high tech running socks. The anti-microbial features of socks has more consumer hype than benefit, in my opinion.

Compression, whether in the sock upper or under the arch and midfoot, has proven of benefit, which is just now being recognized by runners and healthcare professionals alike. It is difficult to describe any patients who would not benefit from lower leg compression while running long distance. The benefits of arch compression both during running and recovery are just now being reported, primarily from anecdotal evidence, but the results are very impressive. I believe we are just begin-
to eliminate pain while optimizing foot function. As much as I’d like to put every baby boomer patient in a minimal shoe, this just is not a reality. In those patients in which diffuse foot pain is present, I emphasize a supportive shoe with a Plastazote or memory foam type insert. This is always coupled with foot strengthening and mobility work, which, upon improvement, may allow them to shift out of the overly-supportive shoe and into a more minimal shoe. Otherwise, I may want to keep them in the supportive shoe and accommodative insoles, while continuing the foot strengthening exercises.

Cheskin: There is nothing better than sport-specific walking or running shoes for seniors. Walking category shoes are designed biomechanically for walking only. Running shoes may be used for walking or running. Running shoes offer more specific pronation or supination control and stability options for geriatrics. They are also generally a lighter weight, more breathable choice. Specific Plastazote-covered orthotics are available for diabetics or patients with peripheral neuropathy. Color is the biggest obstacle in persuading a senior to wear a good running shoe. As running shoes become more flamboyant in both color and design, it is difficult, for even the most insistent physician, to visualize a senior in a purple or fluorescent orange running shoe. The best one can offer, if the shoe fits well and is comfortable, is to say, “don’t look down.” Good quality extra-depth comfort shoes are the next best choice.

Fullem: In my opinion, the most important factor in recommending a shoe to seniors for walking should be based on the distance they are walking. If patients are walking less than a mile daily, then traditional walking shoes can work well. On the other hand, if these people are walking more than that, then I recommend running shoes as they are typically lighter and made with better cushioning and support than traditional walking shoes.

Moore: The most vital part of helping seniors pick out the right shoes is understanding what seniors need in order to maintain stability and healthy activity. Among the top causes of falls among seniors are muscle weakness and gait deficits. It is essential that one assess, and correct, any gait abnormality either through shoes and/or orthoses.

First, shoes that are too heavy and bulky can cause tripping, falls, and inactivity. Conversely, if shoes have no stability or integrity (such as house shoes or slippers), patients may become more likely to fall or lose their balance. As seniors are trying to be more active and less sedentary, it is the role of podiatric physicians to guide them towards shoes that are lightweight yet maintain some midfoot stability and a stable heel counter. For patients who rely on walkers or canes, I prefer a Velcro Lycra style shoe with adequate tread.

For more active seniors, I recommend a firm midsole and a solid heel counter with a soft-topped semi-flexible orthotic.

Eckles: Walking and walking speed are positively correlated to longevity, or at least decreased morbidity. Recently, I saw an 83-year-old woman who had been claudicating for years and also had signs of cardiac disease. That expected connection aside, the only reason she was still alive was that she was walking more than five miles a day. Podiatric medicine has a unique opportunity to enable life-saving ambulation, and that is only the physical benefit. Elderly people who become homebound become depressed, and we can change this. We can recommend for fit, provide accommodative tissue-supplementing insoles, and improve stability and balance with foot orthoses. There is huge potential for podiatry in this area. The ideal shoe is roomy, cushioned, has a significant heel offset, and an outsole pattern that matches the planned walking surface, i.e., at a gym, doing mall walking, on footpaths, golf courses, etc. Of course, we should be careful about over-cushioning shoes; patients do need proprioceptive feedback from their shoes to stay safe.

Dr. Haspel is senior editor of this magazine and past-president of the New Jersey Podiatric Medical Society. He is a member of the American Academy of Podiatric Practice Management.