

Separating the Buzz from the Biomechanics: A Guide to Athletic Shoe Trends & Innovations

Here's a look at the latest in athletic footwear and how to separate fact from fiction.

By Stephen Pribut, D.P.M and Douglas Richie, Jr., D.P.M.

A recent survey of members of the American Academy of Podiatric Sports Medicine showed that the typical sports podiatrist refers a patient for the purchase of a new pair of athletic shoes between 10 and 50 times per week. America's podiatrists may be prescribing somewhere between 6 and 31 million pairs of athletic shoes annually of the 448 million pairs of athletic shoes sold each year (2003 figures). Clearly, podiatric physicians who treat athletes have recognized the critical role of footwear in the cause, prevention and treat-

ment of injuries to the lower extremity.

Recommending or prescribing footwear can be an intimidating process for the podiatric physician. Over the past 30 years, the subject of footwear has been almost nonexistent in the curriculum of podiatric medical schools. Recently there has been a promising effort to include lectures and even complete courses in pedorthics at the colleges. This has been in response to an increasing trend for podiatric physicians to prescribe therapeutic footwear for diabetic patients over the past 10 years. In-depth lectures on athletic footwear, however, are still a rare occurrence at schools of

podiatric medicine, even though this category of shoes will be the most common one prescribed by any podiatrist in private practice.

The American Academy of Podiatric Sports Medicine has undertaken a number of efforts to educate students and practitioners on various aspects of athletic shoe evaluation and prescription. Each year, several workshops on athletic footwear are offered at schools of podiatric medicine and at the APMA Annual Scientific Meeting. The AAPSM website maintains an updated list of recommended shoes at www.aapasm.org.

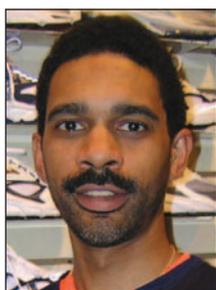
Virtually every patient who

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wears shoes owns a pair of athletic shoes. These shoes may not be used for sport, but are the favorite choice for weekend wear, shopping and travel. In the current \$14.4 billion athletic shoe industry, most experts agree that many of the shoes purchased are not actually used for the sport intended. Fashion often counts as much as function in the choice of an athletic shoe. How many times does a patient tell you they have chosen their shoe based on color or some other stylistic attribute?

Notwithstanding, whether for casual use or for a high performance sport, the choice of footwear can be critical for the comfort, safety and enjoyment of the activity. The general public has a perception that the podiatric physician can provide all the necessary information for the selection of the perfect shoe for any given patient. Yet, in reality, it is almost impossible for the average practitioner to stay abreast of new technologies and changes in the athletic shoe marketplace. Many of these new technologies are merely marketing gimmicks while others have great value for the user.



Shawn Fenty

It is difficult to tell fact from fiction in reading the marketing pieces provided by most athletic shoe manufacturers. Clearly, these companies are trying to push the hot button of the average consumer seeking something new in shoes. Some years back, the cross-training shoe was created more to fulfill a marketing need than an equipment requirement. This shoe, said to be a jack-of-all-trades, is certainly a master of none. The AAPSM supports the policy of sports-specific shoes and advises against the use of cross training shoes for most uses, especially for running. It is clear that one would not want to run in a bicycle shoe or a golf shoe. One should also not undertake distance running using a court shoe or a

cross training shoe.

Many patients will seek advice from their podiatric physicians about some new shoe innovation advertised on television or in a magazine. More often than not, the practitioner is caught off guard, having never heard of the gimmick let alone understanding whether it has true value to the patient. Of more importance to the podiatric physician recommending athletic shoes to patients is general knowledge about shoe construction techniques which have direct implication on function. Memorizing trade names of patented cushioning systems is of little benefit to the clini-

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cian. Understanding what features to look for in a shoe for a particular foot type or treatment of an injury is invaluable.

This article is designed to give an update in trends and innovations in athletic footwear as it pertains to the podiatric physician who recommends these products. We will focus on those characteristics having the most relevance to foot health and injury prevention and review new technologies recently made available.

In Search of the Perfect Fit

Whether evaluating your patient's footgear or referring for purchase of new footwear, proper fit should supercede all other concerns. Yet, the majority of athletic shoes are sold today in high volume chain retail outlets with no trained or committed sales staff to assure proper shoe fitting. It is to your advantage to locate a quality running shoe store with knowledgeable personnel that are well qualified to fit your patients' feet. It



Dr. Romansky

is worth visiting the stores in your area to determine which stores have knowledgeable personnel, and to discuss both your patients' needs and your personal philosophy towards athletic shoes.

Another positive trend in athletic shoes has been the offering of widths in many brands and models. In the past, New Balance was known to be the only athletic shoe company offering a wide range of widths. They have been joined by many other athletic shoe companies that now offer at least three width options (narrow, medium, wide) for many of their popular models. A list of companies and models with multiple width offerings is provided in the accompanying table of running shoes evaluated by the AAPSM. (insert sidebar of running shoes)



Dr. Sharnoff

Who Has the Ultimate Cushioning Systems?

We believe that cushioning systems are far over-rated as the primary shoe feature to help most of our patients. In many categories of athletic shoes, the primary differentiating feature between brands is the cushioning system. Here, a plethora of patented and trademarked technologies provide a mind-boggling number of choices for the consumer. Whether it is the Nike Air®, the Asics Gel® or the Brooks Hydroflow® the consumer appeal of a high-tech cushioning system is enormous. Thus, the primary advertising focus in the athletic shoe marketplace seems to be the cushioning system. This emphasis results from the fact that the average consumer equates cushioning with comfort and prevention of injury. The reality of the situation today, however, is that we really do

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not fully understand how cushioning of shoes affects the athlete and what cushioning characteristics are suited for different foot types.

Early research on athletic shoes showed surprising results when testing impact forces on shoes of varying hardness or cushioning. When running across force platforms, runners did not strike the ground with greater impact when running on shoes with harder midsoles. While extreme examples of hard and soft shoes gave the expected results, the broad range of cushioning commonly found in athletic shoes did not change the net impact in runners' feet. Athletes were found to adapt and modify foot strike depending on hardness of the surface or shoe so that the net impact was the same, regardless of shoe cushioning. Furthermore, shoes with greater cushioning caused increased rearfoot pronation compared to firmer, more rigid shoes. Many researchers have concluded that proprioception and muscle response play a major role in attenuating impact shock.

During the late 80's and through the 90's, there was a general trend in the running and basketball industry to increase the firmness of the midsoles of shoes. In contrast to this, marketers portrayed to the consumer that advanced "cushioning" systems had been developed. Ever since, manufacturers have been on a quest to find the perfect balance between cushioning and support. Today, cushioning systems in athletic shoes are as confusing as ever. Whether one company's system is superior to another is largely speculative. What is important is the fact that companies offer models of shoes in various categories of cushioning, i.e., cushioned trainer vs. motion control which can be very helpful to the prescribing doctor. Companies thus can compare



Dr. Losito

cushioning characteristics within their own product line, but are not able to make good cross-brand comparisons.

Baffling to researchers has been the inability to predict which foot type requires which amount of cushioning to perform optimally. While many still cling to the notion that cavus feet need more cushion than planus feet, there are many exceptions which make systematic prediction of the perfect shoe for a particular patient almost impossible. Adidas has developed their version of a solution to this dilemma using a new technology in the shoe, simply called "1." The Adidas 1 uses a microprocessor controlled system to adjust the shock absorption in the shoe. It has been described as effectively having brainpower somewhere between a



Brooks Ariel

Palm® and a Furby®. This shoe is scheduled to be introduced late fall of 2004.

Biomechanical Research vs. Marketing Research

A good question to keep in mind is how much research affects the production of athletic shoes. While pondering this question you might also wonder if the research that is most heavily relied upon is biomechanical research or market-

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ing research. Consumer surveys are more likely to predict sales and are often used to determine what features consumers are most interested in and will pay most attention to. Consumer profiles are used to determine consumer attitudes toward athletic shoes, brand and price preferences, and future expectations of the industry and consumers.

Marketing is often created with lifestyles in mind. Lee Applebaum, VP of Marketing for Footaction USA was quoted in Brandweek (June 4, 2001) saying in reference to the marketing of basketball shoes, "a lot of these ads are not about performance basketball. It's about the energy of the street and the passion behind basketball, with links to hip-hop, urban culture." Branding, name recognition, and celebrity endorsements and use of the product generate buzz and energy for the product. Why do the Rolling Stones wear Reebok shoes in concert? Is it just for that little Union Jack or is there some money changing hands?

How Much Motion Should We Control?

In addition to the hype and the



Mizuno Waver 3

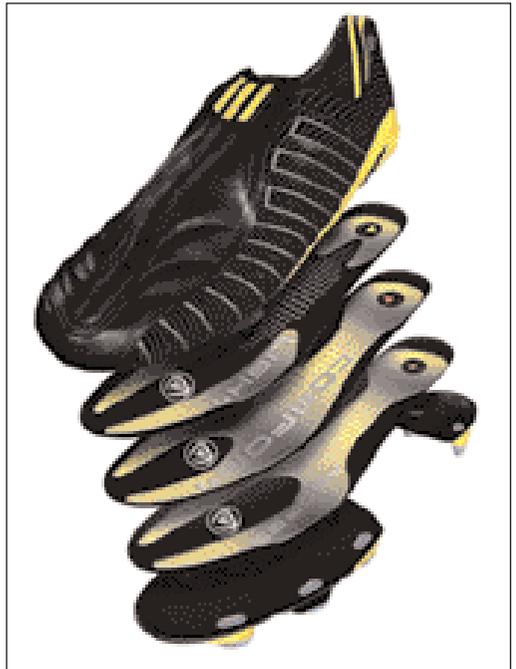
science of shock absorption, running and walking shoes over the past 15 years have improved construction features which limit foot pronation. These features include dual-density midsoles which provide a medial "posting" type effect under the foot. In addition, there is a wide array of trademarked technologies such as the Brooks Progressive Diagonal Roll Bar and DRB

Accel, Asics I.G.S. (impact guidance system) and the Adidas torsion control system. Besides the technology used by Adidas to determine optimal cushioning, the possibility exists that future technology could determine bending moments within the sole. Modifiable longitudinal bands responding to sensor input could be used to increase the stability of a shoe.

Recent research has been emerging from the biomechanics community regarding how shoes and orthotics affect lower extremity function. Research has shown that shoes can affect muscle function in a positive or a negative fashion, depending on the cushioning characteristics. Much recent work has been conducted at the University of Calgary Human Performance Laboratory under the direction of Dr. Benno Nigg, who has proposed the concept that the foot follows a "preferred movement pathway" which is optimal. A shoe or a foot orthotic can enhance or can compromise this preferred movement pattern. In other words, foot orthotics may either over-control or hamper lower extremity function or they may enhance function.

ASICS has incorporated this concept in their new Gel-Evolution™ shoe. This shoe is actually a motion control shoe which is designed to allow a certain amount of "natural foot motion." This shoe is designed to allow contact phase pronation rather than inhibit it. Flexibility is enhanced in this shoe to theoretically improve proprioception. Both of these features are not found in typical motion control shoes, but ASICS believes that in the end, these features will enhance performance and lessen injury.

Nike has gone to an extreme with this concept in the production



Adidas F50 Soccer

of the Nike Free shoe. This shoe is designed to mimic barefoot running as much as possible. One surprising statement made by their head researcher was that they were surprised to find that the limb followed the foot and that the toes moved more out of the shoe than in a shoe. Apparently they had not spent much time watching unshod feet walk and run, nor had they read Dr. George Sheehan in the early 70's declaring that the key to treating runner's knee was though the foot since the knee follows the foot.

Not every trend has improved the control of the severely overpronated foot. Straight last running shoes are being made less often. This may also reflect a trend towards not "over-controlling" the foot. Several companies offer a variety of last shapes designed to enhance natural foot function and fit of shoes. These lasts are similar but are often given fancier sounding names by the manufacturer. An example is Brooks naming their lasts: universal, curved, and linear for semi-curved, curved, and straight. The trend away from control must be tempered by the applicability of this concept to our patients. Is the patient you are treating a lean world class athlete? Does your patient over pronate? Would your patient benefit from limiting excess

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pronation? If so, then you will be looking for more motion control for your patient, but perhaps not the significant control provided by the Brooks Beast. The Brooks Beast is arguably the best motion control shoe available, having a straight last and many anti-pronation features needed by some of our patients.

Shoes and Orthotic Compatibility

Over the past two years some manufacturers have increased the prominence of anti-pronation control devices in their shoes. This may sometimes make it difficult to fit an orthotic device into a shoe. The contour of the arch design of the shoe, an extended counter and a prominent external counter can, in combination, get in the way of the orthotic you are trying to add to the athletic shoe. It is easiest to fit an orthotic into a shoe that has a flat foot bed. While in the past many practitioners would often completely remove an insole from the shoe, we recommend that when not using a full-length orthotic, you should cut the insole so that it is flat (by removing the arch and heel cup of the sock liner) and place it below the orthotic. This will lift the orthotic up above the bulk of the shoe components that interfere with proper seating of the orthotic.

Having discussed all of the challenges of evaluating fit, cushion and motion control, we proceed with caution to describe the new trends in footwear in running, tennis, basketball and cleated sports.

Running Ahead: Advances in Running Shoes

Over the past 5 to 10 years midsole compounds have improved significantly. We have moved forward from merely using dual-durometer heels to complex combinations of materials now lighter in weight and offering a blend of durable cushion-

ing and stability. Flexibility has evolved to be found in the proper biomechanical location in many instances. This is accomplished by a combination of careful placement of materials and flexion grooves.

ASICS has changed their shoes in a variety of ways. The IDS (im-

Understanding what features to look for in a shoe for a particular foot type or treatment of an injury is invaluable.

compact design system), with grooves and notches, allows a better flow of force and a more natural flexion and gait pattern. They have tried to use the biomechanics and anatomy to shape their conceptualization of how to design a shoe.

This design has extended even to their socks, which are now specialized to right and left feet and even for a specific shoe. Adidas began some of the midfoot "force flow/flexion" concepts with their Torsion Control System, which has evolved significantly over the past 12 years since it was first introduced.

Shawn Fenty, manager of Fleet Feet, Washington, DC, feels that 10 years ago most manufacturers did not feel that motion control was important in the women's running shoe marketplace. Their shoe design seemed to be based on the idea that all running women weighed 125 pounds and did not need motion control. This change was driven by the rise in charity events. There are now many more overweight women (and men) participating in running who have not previously been runners. These formerly non-running women are able to participate because the shoes have changed and can now provide them with the support and stability they require.

ASICS previously had the MC+ and Gel Koji as their motion control shoes. These have been eliminated from their product line in keeping with the trend of changing from the strong support they historically offered in a straight last shoe. The ASICS torsion control device, however, has had many modi-

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fications that allow it to meet the needs of a variety of foot types from those that need more rigidity to those that do well with flexibility. With few exceptions the feeling seems to be there is no straight foot to fit into the straight last shoe so they are building support into a semi-curved last shoe. This is a very recent change occurring in the past 2 years. These shoes are well designed for a flexible cavus foot, or in other words, a high-arched foot that "collapses" or over-pronates. This is an important conceptual change that many manufacturers have reached. All podiatric practitioners should recognize this foot type. For the traditional severe over-pronator, Asics has the newly developed Evolution which has a straight last.



Asics Nimbus 3

Mr. Fenty, pointing out the importance of fit in addition to function, says it is "important not to put a square peg into a round hole." The straight foot should not go into a semi-curved last. After fitting tens of thousands of feet Mr. Fenty observes, "When people get hurt they look to cushioning, but foot mechanics is more likely the cause of their problem." He wisely states, "it would be better if people could buy a left and right shoe separately; then they would more likely get the proper fit and size for each foot." After treating tens of thousands of feet, we'd have to agree. Fenty also points out that "when purchasing running shoes, buyers are attracted to particular shoe colors and shiny objects or gadgets on the shoe."

A Look at Shoe Upper Design

Shoe manufacturers have experimented for years with a variety of materials for the shoe upper. For runners, a breathable upper that allows for evaporation and a moisture gradient is important. Manufacturers are now looking to make their breathable fibers somewhat softer. Nike in 2003 briefly brought a stifling synthetic leather upper to the Air Max. This short-lived experiment in failure ended after Running Times declared the shoe to be both dead and reminiscent of a bowling shoe. Nike revived it by using an open, breathable mesh design in the Nike Air Max 2004. Saucony appears to have begun using a new soft and breathable upper in some of their 2004 shoe models. The new material appears to be very comfortable and functionally breathable. Likewise, the

Nike Air Skylon has changed upper materials over the past two years. Now in its third generation, the Skylon has a soft breathable upper, after using a much stiffer and less soft upper in 2003. Brooks also improved its uppers and has begun using a softer material with a more

open, highly ventilated mesh. The new more breathable upper is called "element air mesh" and is found in several of their lines including the Adrenaline GTS and Trance NXG.

Lacing Systems

Lacing systems come and go. Some of the lock systems, such as that used in the Mizuno Wave Legend 2, have been eliminated or remodeled for the better. The lock systems make it harder to use lacing modifications such as "skip lacing" patterns.

Bouncing Forward With Basketball Shoes

We are all aware of the Michael Jordan line of basketball shoes.

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Much biomechanical thought has gone into the shoe line and they have significantly influenced the construction of other basketball and athletic shoes. James Losito, DPM, podiatrist for the Miami Heat, says: "I think that without a doubt, the most significant development (improvement) in basketball shoes is the carbon fiber shank reinforcement. This has allowed for improved shank stability and reduced the weight and bulk of the shoe." Dr. Losito gives this advancement the primary credit for reducing shoe-related injuries such as plantar fasciitis in both the recreational and professional athlete. He goes on to say that "advancement of cushioning methods such as the air-sole and Shox technology is probably the second most important advancement."

Dr. Losito feels that many other developments over the last 10 years are gimmicky and market-driven. The features he considers gimmicks include: mid-foot midsole cut-outs, flexible shanks and uppers, super-light shoes, Achilles tendon notches, and fashion-driven features such as "wild color schemes" and materials such as suede and snake-skin. In basketball, as with other sports, there have been significant advancements in hosiery. Dr. Losito specifically cited the development

and refinement of the acrylic fiber with improved wicking potential and reduced friction as the most significant innovation.

As with other sports, it is difficult to find literature confirming that the improvements in basketball shoes improve performance. Dr. Losito

observes that the athlete feels these changes do help. We do know that these improvements definitely reduce the incidence of injury and increase comfort. Both Dr. Losito and Dr. Michael Lowe, podiatrist for the Utah Jazz, have mentioned that both teams have many players that use custom foot orthotics in addition to sophisticated shoes to reduce the incidence of injury.

The latest Jordan shoe, the Jordan XIX has a number of key features, including improved breath-

TABLE 1

Example Sock Selections

Thick Socks:

Adidas Performance Running Sock: Extra cushioning under ball and heel

Brooks Adrenaline GTS Sock: Anatomical Fit—right and left

Thin Socks:

ASICS Nimbus Low-Cut: Minimalist sock. Multiple densities.

Nike Dry Fit Anti-Blister Low Cut

Pearl Isumi Keirin: Ultra-thin fabric.

bility, which is even incorporated into the lace cover. The sockliner is designed to be both moldable and of dual density. The usual carbon fiber mid-foot shank plate is present and the sole has been redesigned for improved court contact and traction.

Soccer Shoe Advances

Soccer is quite a different sport than road racing. Accordingly the most significant advances in soccer

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TABLE 2

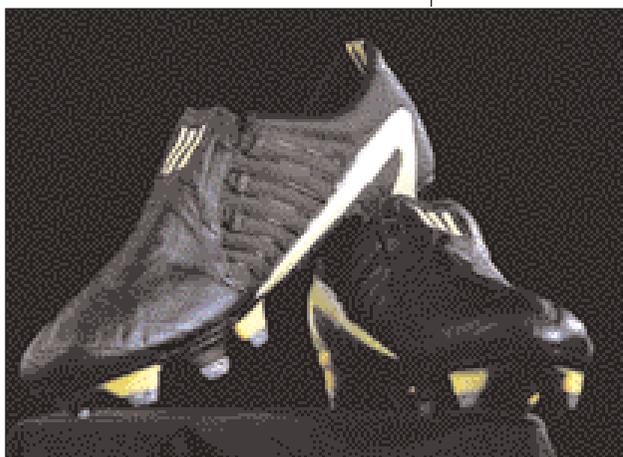
Problem Solving With Shoes

Problem	Cause	Correction
Achilles tendonitis	Excess cushioning	Firmer heel. Heel lift, orthotic.
Plantar fasciitis	Excessive "natural motion" Flexion instability	Anti-pronation devices. Flexion stability
Peroneal tendonitis/ ankle sprains	Excess anti-pronation features	Less "motion control"
Subungual hematoma	Toe-box too narrow	Deeper toe-box
Painful first met-cuneiform joint	Lacing design	Skip lacing
Anterior ankle pain	Lacing over ankle	Eliminate top lace

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shoes have been in the upper and in the sole, rather than in the midsole, as is the case with running shoes. Soccer shoes are also now made of stronger and lighter materials. According to Nick Romansky, DPM, podiatrist for the U.S. national soccer team, "the new uppers are now better mirroring the anatomical contour of the foot. Even the heel counter is contoured for a better fit and the overall new shape helps provide comfort, stability, and better ball handling."

Dr. Romansky also indicated that the newly designed asymmetrical design of the lacing system has decreased the bulk of the lacing sys-



Adidas F50

tem and assists in improving fit which provides better feel and touch for the ball. There are, however, certain problems associated with lacing systems that are placed medially or laterally, rather than centrally. There may be a decrease in the stability of the upper of the shoe which may shift to the side of the lacing system. Furthermore, a lacing system placed in such a manner may interfere with a player's ability to properly put spin on the ball.

Other features that have improved recently include injected midsoles and improved cleat design and placement. Cleats are designed for turf, soft ground and hard ground. Dr. Romansky has found that recent revision of cleat placement has resulted in a decrease in turf toe injury and fifth metatarsal base injuries. "The new cleat designs have maximized trac-

TABLE 3 Evaluation of a Running or Court Shoe

1. Flexion Stability
2. Torsion Stability
3. Heel counter
4. Additional motion control devices
5. Fit
6. Upper stability
7. Upper wear
8. Sole wear

tion, speed, and acceleration." A recent advancement in turf shoe cleat design is the development of the "blade" cleat. The choice of a

proper shoe for the terrain has resulted in improved performance and lower injuries.

Dr. Romansky mentioned two additional developments that are not positive in all cases. He noted that there has been a removal of much midsole material in an attempt to make the shoe lighter. This

has appeared to cause more cases of plantar fasciitis to occur in high-level soccer players. He also noted that some manufacturers have made shoes that sit in varus. While this may make the player "feel faster," it may also make the individual more prone to ankle sprains. Beware of shoes that artificially are canted into varus or valgus.

Tennis Shoe Advances

As in running shoes, there has been a recent improvement in heat and moisture regulation in tennis shoes. Besides the upper improve-

ments, the overall shoes are often made with a "low-to-ground" style which brings the foot closer to the court. Socks made for tennis have additional padding in the forefoot and rearfoot and are now made of materials that enhance wicking of moisture. David Sharnoff, DPM points out that shoes designed to sit close to the ground and made lighter appear to have reduced fatigue. These shoes also give the player a feeling of being faster and more responsive on the court. Dr. Sharnoff feels that there is no need for what seems to be the market-driven technology of Shox technology or air pumps in tennis shoes.

Tennis shoes are carrying over many elements of technology that were originally designed for running shoes. Compression-molded midsole EVA, motion control systems such as the Adidas torsion system, and graphite

rollbars all began with running shoes and are now being modified for use in tennis shoes, which require lateral stability. Sole construction has taken traction into prime consideration. A variety of sole materials are now used, which were first employed for other athletic shoes. PU (polyurethane)

soles are useful for tacky court surfaces. Manufacturers, including Nike and Adidas, are trying to heighten interest in their soles by offering six-month guarantees in certain cases. Many of these shoes employ a variety of sole

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Research has shown that shoes can affect muscle function in a positive or a negative fashion, depending on the cushioning characteristics.

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configurations with a "speed" herringbone pattern rapidly becoming a favorite.

Changing Socks

Over the last decade there have been a number of notable advances in sock construction. Not that long ago cotton athletic socks were considered the ultimate in sports socks. Many patients and some doctors still believe this to be so. Cotton socks hold moisture against the foot and compress when wet. This leads to a loss of cushioning by the sock and an increased likelihood of the development of moisture-related maladies such as blisters and athlete's foot. Coolmax and similar fibers that are hydrophobic and wick moisture away from the foot are now readily available and should be

suggested to your patients. Anyone performing walking or running for 30 minutes or more should be wearing Coolmax® socks and not cotton socks.

New knitting machines in Italy

Over the past two years some manufacturers have increased the prominence of anti-pronation control devices in their shoes.

allow the manufacturing of virtually seamless socks. ASICS has made good use of this technology and leads in designing anatomically correct socks.

The ASICS Kayano sock is made for left and right feet. We often emphasize that it is important that the foot and the shoe (and orthotics if needed) should act as an integral unit. ASICS has carried this one step further and includes the sock in the "unit" concept. Our patients can now choose from natural and synthetic fibers, select various lengths, and varied thickness socks.

Out in the Open: Sport Sandals

Not that many years ago the primary use for sandals in sports was to use waterproof sandals in gym showers. Teva was one of the first companies to make well-designed sandals that could play a role in sports. Recently, Teva has begun making a variety of unsound, poorly designed, flimsy and cheap products including

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AAPSM Running Shoe List

Key

widths readily available in widths (partial listing and subject to change)
si readily available in large sizes (partial listing and subject to change)

Running Shoes—Mild Motion Control

Adidas Cairo III (M/W)
Adidas Calibrate (M/W) widths si
Asics 2080 (M/W) widths si
Asics 2090 (M/W) widths si
Asics Gel Empire (M/W) si
Brooks Adrenaline GTS 5 (M/W) widths si
Brooks Trance NXS (M/W) si
Mizuno Wave Alchemy '03 widths si
New Balance 856 (M/W) widths si
New Balance 765 (M/W) widths si
New Balance 991 (M/W) widths si
New Balance 1220/1221/1300 (M/W) widths si
Nike Air Structure Triax 8 (M/W) widths si
Nike Air Max Moto II (M/W) si
Nike Shox TL si
Nike Air Stasis widths si
Nike Air Kantara '03 (M/W) si
Saucony GRID Omni 4
Saucony Shadow 6000 (Classic)
Saucony Grid Hurricane 6 Running Shoes

Running Shoes—Moderate Motion Control

ASICS Nandi (M/W) Trail Shoe
ASICS Gel Kayano X (M/W) widths si
ASICS Gel-Foundation Plus (M/W) widths si
ASICS Gel Evolution (M/W)(replaces Koji Plus) widths si
Brooks Addiction 6 (M/W) widths si
Mizuno Wave Legend 3 si
Reebok Supreme Control DMX (M/W)
Puma Complete Premise
Saucony: 3D Grid Regulate (M/W) si
Saucony: Grid Stabil MC (M/W) widths

Running Shoes—Maximum Motion Control

ASICS Gel MC+ V (M/W) si
Brooks Beast '02 (M/W) widths si
Brooks Ariel '02 (W) (* note somewhat less control than the Beast) widths si
Mizuno Wave Renegade si
New Balance 1122 (M/W) widths

Running Shoes—Cushioning

ASICS Gel-Cumulus VI widths si
ASICS Gel Landreth si
Brooks Glycerin 3
Mizuno Wave Rider '04 widths
Mizuno Wave Creation '04 si

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Teva flip-flops. Taking up where Teva has left off is the new-comer Bite, which makes well-designed sandals for running, hiking and playing golf. Sandals that are suitable for use in sports have soles that flex at the ball of the foot and are rigid proximal to that point and have straps that keep the heels firmly attached to the sandal itself. When recommending a sandal, you can no longer do so merely by mentioning brand. You will have to review with your patient the characteristics of the sandal or recommend a specific model.

A Good Walk With New Spikes

In addition to the traditional form of golf spikes, golf shoes now come with softer spikes. These spikes often use a quick screw in and locking mechanism. Some golf shoes are spikeless and incorporate the traction qualities into the sole of the shoe. The Nike Q-LOK system accomplishes a secure lock within 1/4 turn and promises that the spike will not damage the grass.

Advancement Results: Freedom of Choice

Choice is one of the hallmarks of athletic shoe selection. From cushioning to varying degrees of promotional control, from straight lasts to curved lasts, from wide to narrow and from the latest and greatest shoes to classic models, we have the largest amount of choices ever available. With so many choices available, steer your patients towards shoes that will fit their foot type and shoes that mesh with their biomechanical structure. There is no longer an excuse for recommending a generic sport shoe rather than a sport-specific shoe. ■

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TABLE 4

Background information

<http://www.sgma.com/press/2004/press1080244356-26089.html>

Sales figures 2003 athletic shoes (in billions)

Mens' \$9
Womens' \$4.4
Children \$2.8
total \$16.354

Pairs purchased in millions

Mens' 197
Women' 126.5
Children 124.7
Total 448.276

Market style (by percent)

Running 28%
Basketball 23.3
Cross training 9.6
Low performance 6.9
Walking 5.4%

Tennis 5.3%
Hiking 4.1%
Sports sandals 1.9%

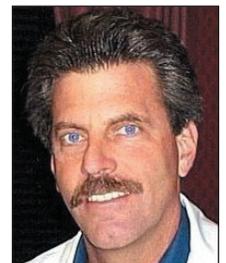
Consumers reported that they purchased 448,276,000 pairs of athletic shoes in 2003, compared to 428,623,000 the year before. Spending for men's shoes rose 2.2% in 2003 to \$9.015 billion from \$8.816 billion in 2002.



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