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WHY RUNNING?


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Why not? The sport is old, really old, and therefore time-tested. It is as great for your schedule and wallet as it is for your body. Gear-wise, all you need is a good pair of running shoes and a few breathable outfits, and you're good to go. Its convenience is probably one of the main reasons why millions of people go for a run every day. Competitive running is at an all-time high, and advances in technology and training theory have lowered times and increased running's health benefits.
RUNNING IS HERE TO STAY—
AS A SPORT...
A HOBBY...
A FITNESS ACTIVITY...
AN OBSESSION..

THE PUMA RUNNING PHILOSOPHY

Puma is serious about running. Ask Jamaican sprinter Usain Bolt, the 2008 Olympic gold medalist (100m, 200m, and 4x100m) and world's fastest man. Gone are the days of the nerdy, out-of-style runner. At Puma, we believe that in every aspect of life—including running—when you look better, you feel better. And when you feel better, you run better. Then running gets back to what it should be—fun.

Life already has its fair share of unpleasant activities: paying taxes. walking the dog in a snowstorm, emptying crumbs out of the toaster.

Running, however, should be enjoyable. We're doing everything we can to make it that way, combining bleeding-edge technology with cool design. Welcome to Puma Running, the industry's new standard.

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HISTORY

1924

PUMA HISTORY

FOUNDATION OF

GEBRÜDER DASSLER SCHUHFABRIK

(DASSLER BROTHERS SHOE COMPANY)
IN HERZOGENAURACH, GERMANY.

1936

Competing at the Berlin Olympic Games, America's multi-event hero Jesse Owens wins four Gold medals wearing Dassler shoes. During the Games, almost every member of the German football team wears Dassler shoes. In total there are seven Gold and five Bronze medal winners in Dasslers, and track athletes wearing Dassler shoes shatter two world records and three Olympic records.

1948

At the time there are basically two sports in Germany: football and track & field. Rudolph Dassler breaks away from the family business to create his own line of athletic shoes. The company, now widely referred to as Puma, began creating both football boots and track spikes.

1952

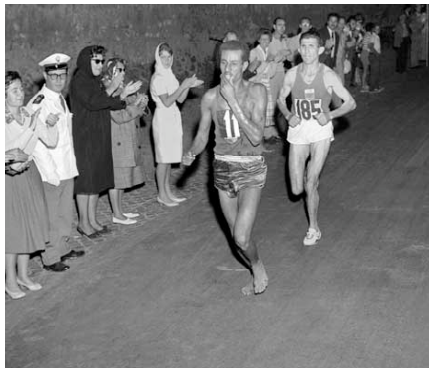
Four short years after Puma's launch, Luxembourg's Josef Barthel wins Puma's first Olympic Gold in the 1500 meter run in Helsinki. Additionally, the United States' women's 4x100-meter relay team captured Olympic gold that year—all wearing Puma.

1954

In Yokohama, West Germany's Heinz Fütterer breaks the 100-meter world record wearing Puma spikes.

1960

BELGIUM'S GASTON ROELANTS (3000M STEEPLECHASE), GREAT BRITAIN'S MARY RAND (LONG JUMP) AND ETHIOPIA'S ABEBE BIKILA (MARATHON) ALL WIN GOLD WEARING PUMA AT THE TOKYO OLYMPIC GAMES.



At the 1960 Rome Olympics, Ethiopia's Abebe Bikila decided a few hours before the start of the marathon that his Adidas spikes were uncomfortable and that he did not want to risk injury. So Abebe runs the 1960 Rome Olympic marathon barefoot, setting a world record time of 2:15 (which would have placed him 12 in the 2004 Athens Olympics).

Four years later, in his much more comfortable Puma shoes, Bikila again wins Olympic Gold and again brokes the world record, becoming the only man to ever repeat as Olympic marathon champion and world record holder.

West Germany's Armin Hary wins the 100m sprint at the 1960 Olympic Games in Rome wearing Puma track shoes. Puma becomes the first sports shoe manufacturer to utilize the technologically advanced vulcanization production technique in its shoes.

1964

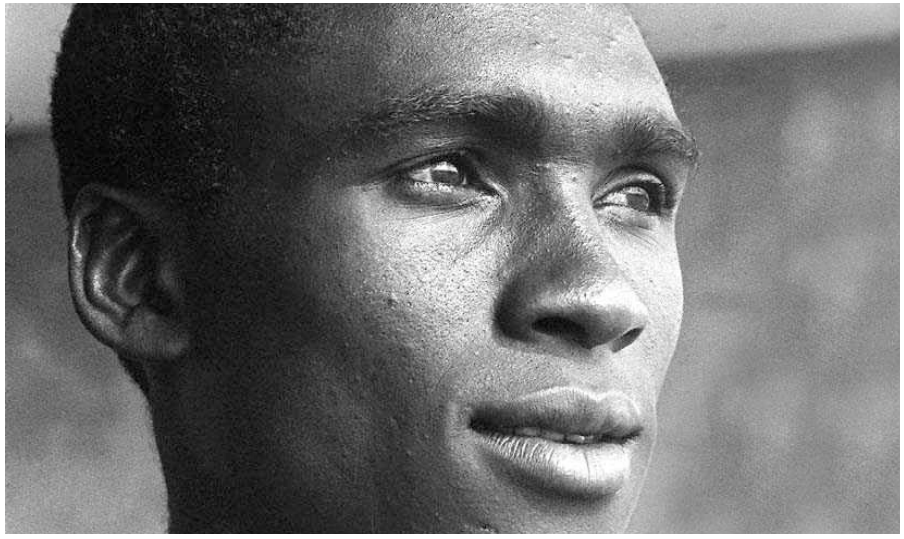
1968

THE PUMA GOLD RUSH CONTINUES AT THE OLYMPIC GAMES IN MEXICO...

with five athletes bringing home the highest honor in track and field: Tommie Smith in the 200m; Lee Evans in the open 400-meter dash and 4x400-meter relay; Willie Davenport in the 110-meter high hurdles; Bob Seagren in the pole vault; and Jim Hines, who became the first human to break 10 seconds in the 100-meter dash.

Smith, who won Gold in the 200 meters, joins teammate and third-place finisher John Carlos in wearing a black glove on the podium protesting the fact that he is winning gold for his country but is not allowed to share the same bus as his white teammates.

1972



At the Munich Olympics, Gold medal winners in Puma shoes include Mary Peters of the USA (pentathlon), John Akii-Bua of Uganda (400-meter hurdles), Randy Williams of the USA (long jump) and Klaus Wolfermann of West Germany (javelin).

In his excitement following his Gold medal in the 400-meter hurdles, Akii-Bua notices a spectator in the stands waving a Ugandan flag. John runs to the stands, grabs the flag, and runs a lap waving the flag. John Akii-Bua not only wins Olympic Gold in Munich, he also invents the "victory lap."

1973-76

WEARING PUMA SHOES, AMERICA'S DWIGHT STONES SETS THREE WORLD RECORDS IN THE MEN'S HIGH JUMP.

1979/81

The United States' Renaldo Nehemiah, wearing Puma spikes, sets three world records in the 110m hurdles.

1983

American track star Sydnee Maree sets a new 1500 meter world record wearing Puma spikes.

1984

At the Los Angeles Olympic Games, Evelyn Ashford of the United States wins two Gold medals (100m/4 x 100m) in Puma spikes.

1992

At the Barcelona Olympics, Puma athletes Heike Drechsler (long jump) and Dieter Baumann (5000m), both of Germany, and Great Britain's Linford Christie (100m) all collect Gold medals.

1993

At the Track and Field World Championships in Stuttgart, Germany's Heike Drechsler, Jamaica's Merlene Ottey, Linford Christie and Colin Jackson (both of UK) together, "Puma's Fantastic Four," all win Gold medals. Colin Jackson (110m hurdles) also sets a new world record of 12.91 sec.

1994

Merlene Ottey and Colin Jackson set indoor world records, over the 50m dash and the 60m high hurdles respectively.

1995

Within one hour of each other, Linford Christie sets two indoor sprint records wearing Puma spikes during the 60m (6.47 sec.) and 200m (20.25 sec.) races.

At the World Championships in Göteborg, Great Britain's Jonathan Edwards clinches Gold and sets a new world record (18.29m, which still stands) in the triple jump. Merlene Ottey takes Gold home in the 200m sprint.

1996

Four years after claiming Olympic Gold in the 100-meter dash in Barcelona, Great Britain's Linford Christie makes headlines in a different way at the 1996 Olympics in Atlanta. Reebok paid 40 million dollars to be the Games' official sponsor and thus banned any logos on shirts or hats at press conferences. So, in a show of extreme brand loyalty, Christie donned contact lenses with Puma logos embossed on them, firing up a branding controversy and introducing "ambush marketing" to the athletic world.

1999

Americans and Puma athletes Colin Jackson (60-meter hurdles) and Jamie Baulch (400m) win their respective races at the IAAF World Championships held in Maebishi, Japan.

Four Puma track and field stars take the title of World Champion in the IAAF World Championships Seville, Spain: Colin Jackson (110m hurdles); Wilson Kipketer, Denmark (800m); Christopher Kosgei, Kenya (3000m steeplechase); Tsiamita Paraskevi, Greece (triple jump); and Noah Ngeny, Kenya, who broke the world record for the 1000m with a time of 2:11.96.

2000

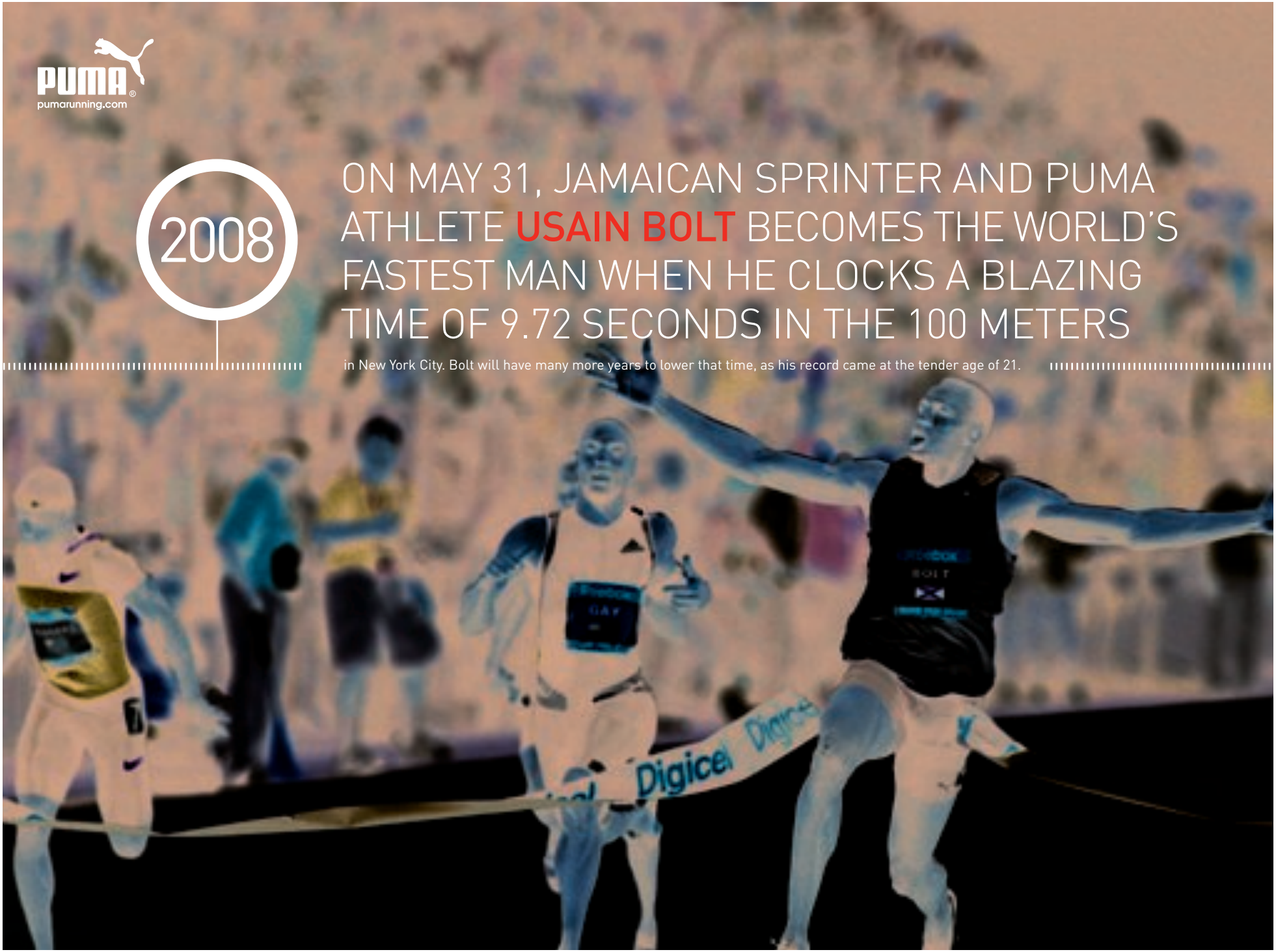
Two Puma athletes win Gold at the Sydney Olympic Games: Greek sprinter Konstantinos Kenteris (200m) and Kenyan mid-distance specialist Noah Ngeny (1500m).

2004

Puma's partnership with the Jamacians pays its biggest reward when, at the 2004 Olympics in Athens, the women's 4x100-meter relay team surprises the world by showing up in the finals in an attractive, one-piece asymmetrical track suit. They shock the world further by taking home the Gold medal.

2006

Puma is, for the first time, one of the main sponsors of the Athletic European Championships in Göteborg, Sweden.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2008
ON MAY 31, JAMAICAN SPRINTER AND PUMA ATHLETE USAIN BOLT BECOMES THE WORLD'S FASTEST MAN WHEN HE CLOCKS A BLAZING TIME OF 9.72 SECONDS IN THE 100 METERS
in New York City. Bolt will have many more years to lower that time, as his record came at the tender age of 21.

EVEN WITH THE WEIGHT OF THREE GOLD MEDALS AROUND HIS NECK, USAIN BOLT IS A DIFFICULT MAN TO CATCH.

Jamaica's Usain Bolt produces a stunning performance, smashing the 100m (9.69) and 200m (19.30) world records. To add icing to his birthday cake (which he celebrated after his second gold), he leads his Jamaican team to another gold and another world record in the 4x100m relay. Usain sums it up best after the race: "Three gold medals. Three world records.


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ANATOMY

WE KNOW ANATOMY IS A DRY TOPIC. WE INTEGRATED IT BECAUSE IT IS THE BASIS FOR A PROPER UNDERSTANDING OF TECHNICAL RUNNING PRODUCTS.

CARDINAL BODY PLANES

Cardinal Body Planes, which divide the human body into equal halves in three different directions, are used to define how the body moves through space. Each human body part has a specific plane, of which there are three types: the sagittal plane, the transverse plane, and the frontal plane.

SAGITTAL PLANE

An imaginary plane that travels from the top to the bottom of the body, dividing it into left and right portions.

Dorsiflexion Dorsiflexion of the foot or any part of it—for example, the big toe—refers to the movement that decreases the angle between the foot and the leg. For example, standing up straight and raising your toes toward your nose is dorsiflexion at the ankle joint.

In gait (a person's manner of walking or running on foot), the foot dorsiflexes in the swing phase, to allow it to clear the ground. People with muscle-wasting diseases experience great difficulty clearing the foot from the ground, often dragging their toes along the support surface. This is because they do not have the muscle strength to achieve dorsiflexion.

Plantarflexion Plantarflexion , the opposite of dorsiflexion, refers to the foot motion away from one's head, increasing the angle between the foot and the leg. Foot plantarflexion is the movement responsible for providing the push-off power during gait.

TRANSVERSE (OR AXIAL) PLANE

An imaginary plane that divides the body into superior and inferior parts. It is perpendicular to the frontal plane.

Adduction Adduction simply refers to the movement of the foot or any part of the foot toward the vertical mid-line of the body. An excessively adducted gait results in what is referred to as the "pigeon toed" walking pattern.

Abduction Abduction occurs when the foot moves away from the vertical mid-line of the body during gait. It is normal for the feet to be slightly abducted, or turned out, during gait.

FRONTAL PLANE

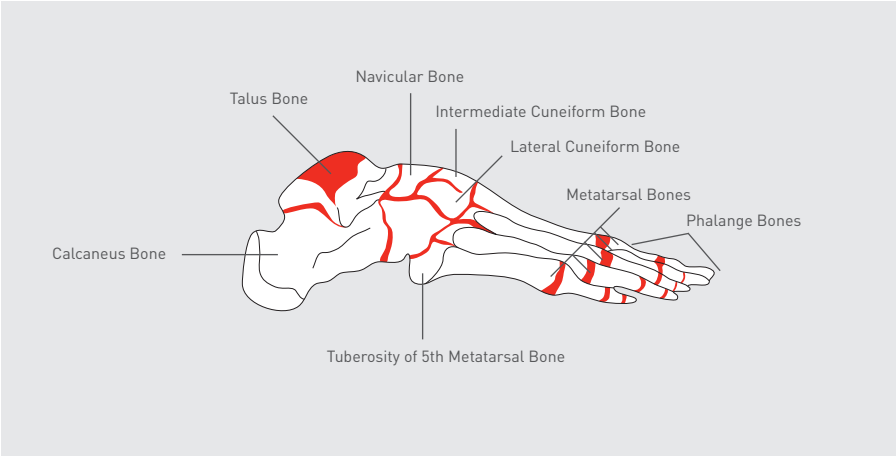
An imaginary vertical plane that divides the body into ventral and dorsal (belly and back) sections.

Inversion When the foot bends so that the sole is tilted toward the mid-line of the body, inversion occurs. The most common sprain is an "inversion sprain," which is when the foot bends abnormally at the ankle, injuring the support ligaments.

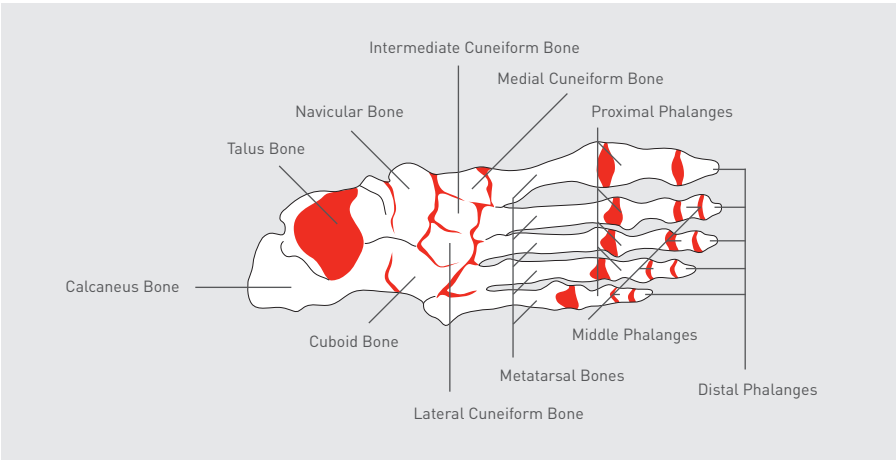
Inversion is the term most often associated with a supination, when the heel bone is visibly tilted away from the mid-line of the body.

Eversion The opposite of inversion, eversion occurs when the sole tilts away from the mid-line of the body. Eversion is commonly associated with abnormal pronation, where eversion is often quite visible.

SIDE VIEW OF FOOT BONES



TOP VIEW OF FOOT BONES



BONES, TENDONES, LIGAMENTS

The human foot is one of the body's wonders. Combining mechanical complexity and structural strength, the foot's ability to not only support the body's weight but propel it forward while running is, well, miraculous. With the ankle serving as foundation, shock absorber, and propulsion engine, the foot can sustain enormous pressure (several tons over the course of a one-mile run), providing great flexibility and resiliency.

The foot and ankle, by the numbers:

- 26 bones (one-fourth of the body's total)
- 33 joints
- 100+ muscles, tendons (fibrous tissues that connect muscles to bones), and ligaments (fibrous tissues that connect bones to other bones); and
- A network of blood vessels, nerves, skin, and soft tissue.

Working together in an awe-inspiring manner, this all-star team of components provide the body with support, balance, and mobility. A structural flaw or malfunction in even one of the team members can develop problems elsewhere in the body. Conversely, abnormalities in other parts of the body can lead to problems in the feet and ankles.

PARTS OF THE FOOT

Structurally, the foot has three main parts: forefoot, midfoot, and hindfoot.

The forefoot bears half the body's weight and balances pressure on the ball of the foot. It is composed of the five toes (technical name: phalanges) and their connecting long bones (metatarsals). Each toe (technical: phalanx) is comprised of several small bones. The big toe (also known as the hallux) has two phalanx bones—distal and proximal. Its one joint is called the interphalangeal joint. The big toe articulates with the head of the first metatarsal, creating the first metatarsophalangeal joint (MTPJ for short). Underneath the first metatarsal head are two tiny, round bones called sesamoids. The other four toes each have three bones and two joints. The phalanges (toes) are connected to the metatarsals (long toe bones) by five metatarsal phalangeal joints at the ball of the foot.

Clear as mud? Good. Let's continue.

The midfoot contains five irregularly shaped tarsal bones, forms the foot's arch, and serves as a shock absorber. The midfoot bones are connected to the forefoot and the hindfoot by muscles and the plantar fascia (arch ligament).

The hindfoot, composed of three joints, links the midfoot to the ankle (talus). The top of the talus is connected to the two long bones of the lower leg (tibia and fibula), forming a hinge that gives the foot its up-and-down

movement. The heel bone (calcaneus) is the largest bone in the foot, connecting to the talus to form what we call the subtalar joint. The bottom of the heel bone is cushioned by a layer of fat. And aren't we all glad about that...

MUSCLES, TENDONS, AND LIGAMENTS

A network of muscles, tendons, and ligaments supports the bones and joints in the foot.

Twenty muscles in the foot give the foot its shape by holding the bones in position, expanding and contracting to impart movement. The foot's main muscles—the muscular all-stars, perhaps—include:

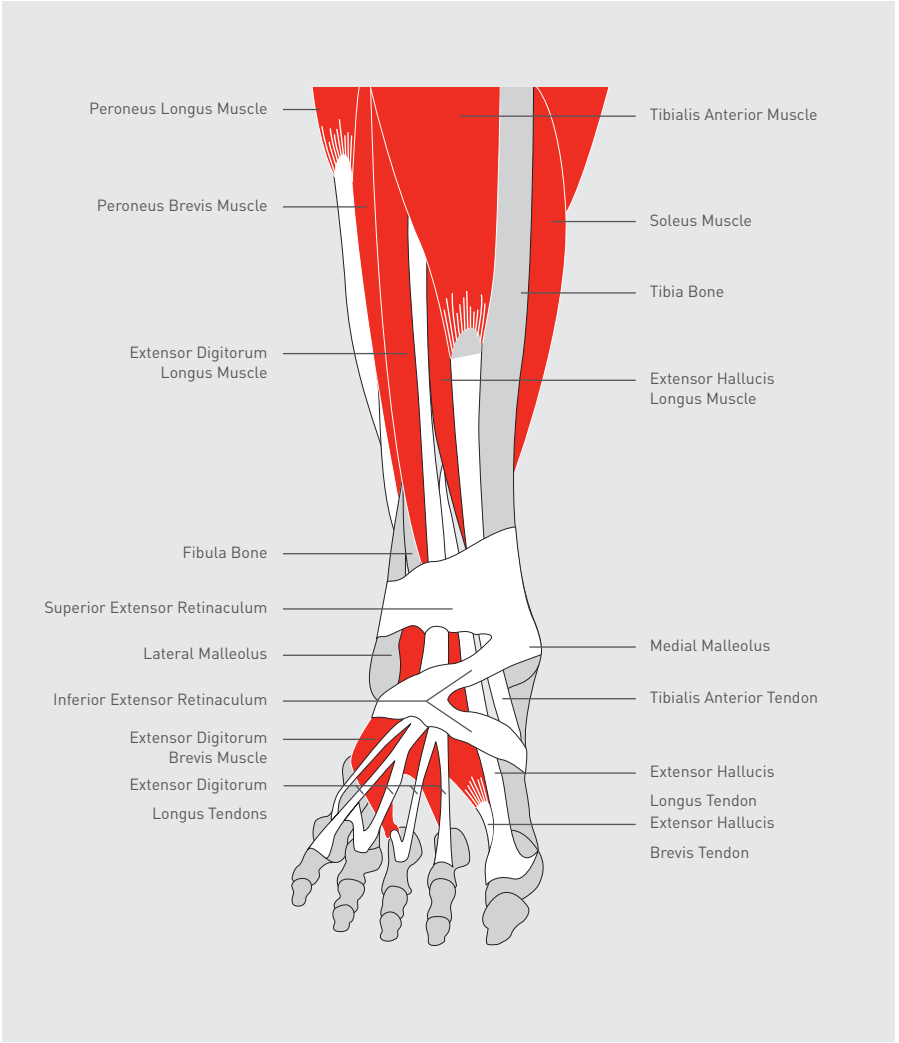
- The anterior tibial, which enables the foot to move upward
- The posterior tibial, which supports the arch
- The peroneal tibial, which controls movement on the outside of the ankle
- The extensors, which help the ankle raise the toes to initiate the act of stepping forward; and
- And last, but not least, the flexors—which help stabilize the toes against the ground.

Smaller muscles enable the toes to lift and curl and usually end up making beer runs for the larger muscles. Life is so unfair sometimes.

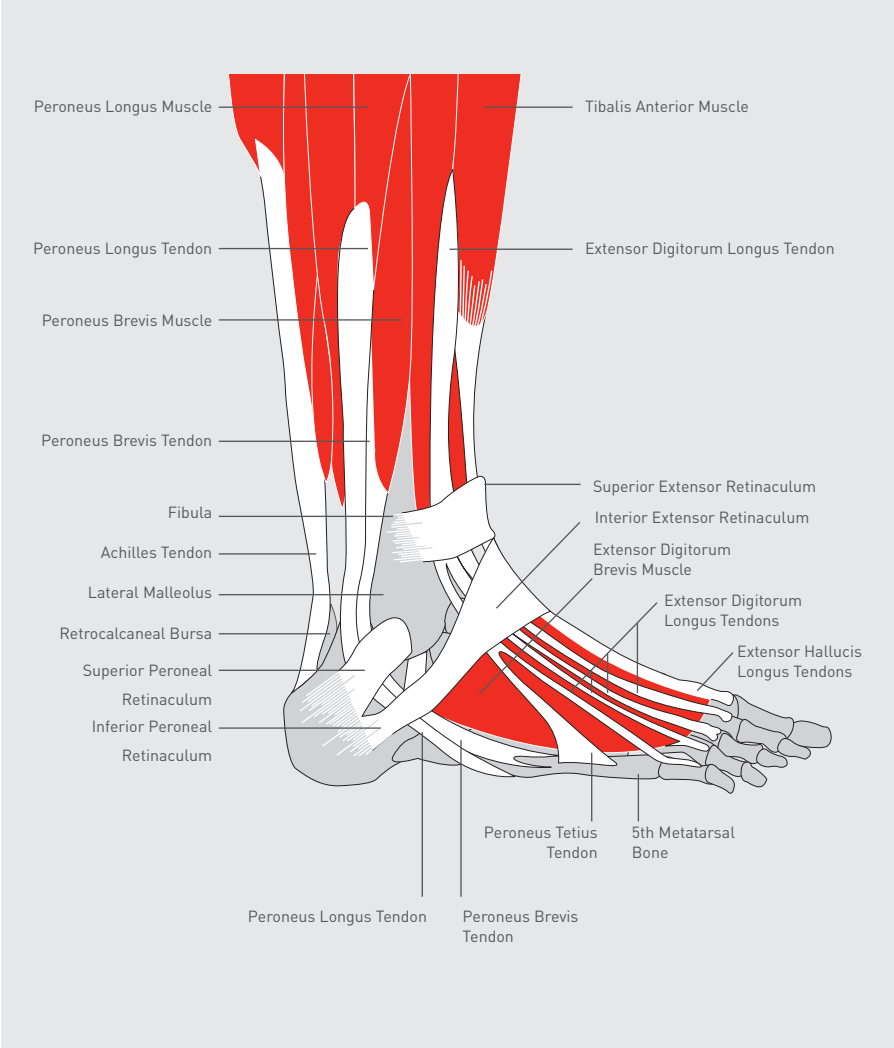
Several elastic tissues (tendons) in the foot connect the foot's muscles to its bones and joints. The foot's largest, strongest and best-known tendon is the Achilles, which extends from the calf muscle to the heel. The Achilles' strength and joint function facilitate running, jumping, walking up stairs, as well as the act of raising the body onto the toes.

Ligaments hold the tendons in place and stabilize the joints, the longest of which—the plantar fascia—forms the arch on the sole of the foot from the heel to the toes. By stretching and contracting, the plantar fascia allows the arch to curve or flatten, providing balance and giving the foot strength to initiate the act of walking. Medial ligaments on the inside and lateral ligaments on outside of the foot stabilize the foot, enabling it to move up and down. Skin, blood vessels, and nerves give the foot its shape and durability, provide cell regeneration and essential muscular nourishment, and control its varied movements.

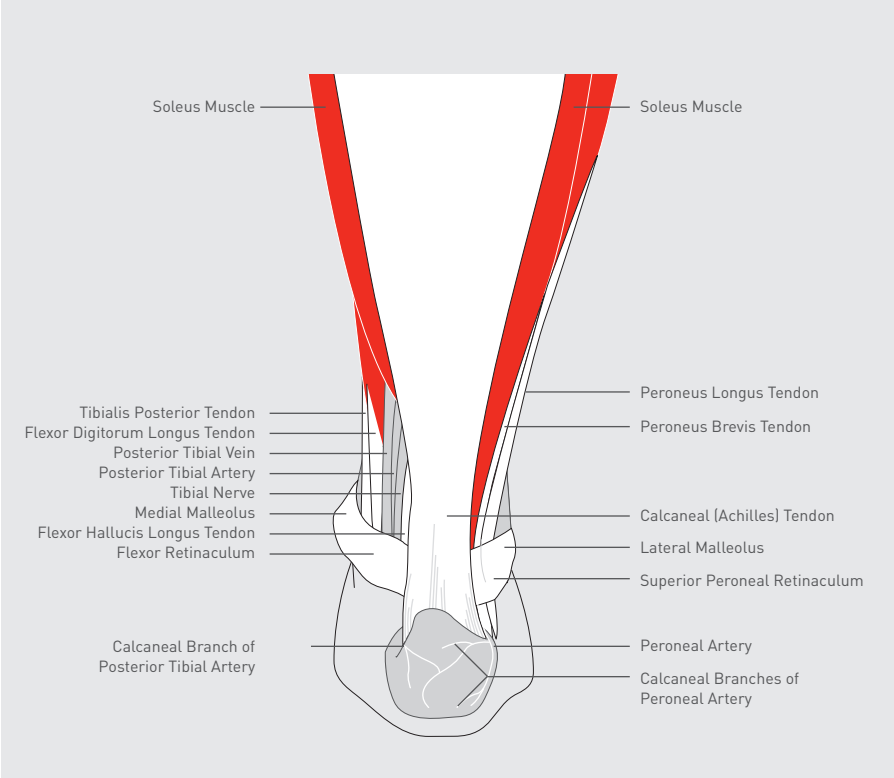
FRONT VIEW OF FOOT MUSCLES



SIDE VIEW OF FOOT MUSCLES



BACK VIEW OF FOOT MUSCLES



ENERGY MANAGEMENT

The metabolic rate during running is around 1 kcal per kg of body weight and km of distance. So an 80 kg runner burns ca. 1,200 kcal per hour while running at a speed of 15 km/h. Two-thirds of that energy is heat conduction. Sweat provides an evaporative heat loss of 600 kcal so that the runner loses between 1 and 2.5 liters of water during an hour-long run. Because the human body can only absorb small amounts of water, it is very important to continuously refuel with fluids while running.

THE FOOT

ITS ANATOMY

THE FOOT CONTAINS NEARLY ONE-FOURTH OF ALL THE BONES IN THE HUMAN BODY...

and can be divided up into three main sections: hind-foot, midfoot, and forefoot. Muscles in the foot provide balance and movement, while tendons connect muscles to bones. Ligaments hold tendons in place and stabilize the joints.

During running, the hind-foot absorbs initial contact, the mid-foot flexes to absorb the shock, and the forefoot grips the surface and helps propel the runner forward.

ITS FUNCTIONS

The foot's key functions are cushioning, stability and flexibility.

Cushioning Cushioning is usually the first function runners ask about when they want to buy a pair of running shoes. The foot already has two natural cushioning elements:

Fat pads:
- Located in the heel and underneath the forefoot
- For shock absorption in the high-impact areas

Arches:
- Two arches: Longitudinal and transversal
- Extremely stable construction
- Vertical load is distributed to both sides

Stability In terms of shape and size, every foot is different. Stability is the most important functionality of the foot for running movement. During every stride the heel, first toe and fifth toe—often called the "force triangle" —are almost solely responsible for stabilizing the foot.

Flexibility Flexibility is the third important functionality of the human foot. When talking about flexibility, one must differentiate between active and passive movements, and where flexibility is needed.

Actively, the foot flexes using the metatarsal joints during the push-off movement. Passively, the torsionability of the foot is important for the pronation movement.

FOOT FACTS

- 25–40% of all Americans have foot problems, mostly caused by improperly fitting footwear.
- 72% of Americans' shoes don't fit, the majority of those are too short or too wide.
- One in three cases of foot problems are treated with surgery, one fifth are treated in other ways and the remainder are untreated.
- So-called "flat feet" is the most common problem perceived, about five times more common than high-arch feet.
- Other common problems vary by age group but include plantar callouses and warts, ingrown toenails, corns, bunions, and hammer toes.
- Other than flat or high-arch feet, other foot problems are rare for those under 15 years of age, suggesting that age and environment are factors in the appearance of these disorders.
- An estimated 4-7% of the adult population have foot problems that require specially prescribed footwear. That amounts to 10-18 million people for whom standard, off-the-shelf shoes may not be adequate.
- 1.2 billion pairs of shoes are sold in the U.S. each year by approximately 200,000 shoe salespeople employed in more than 50,000 shoe stores and departments where footwear in available. However, estimates reflect only 25% of consumers can actually remember the last time they had their feet measured.

FOOT TYPES, DIFFERENT POSITIONS, RUNNING STYLES

FOOT TYPES

Feet are often categorized by arch height, of which there are three: high, normal, and flat. Arches are typically measured using a foot imprint test, where someone wets or inks the bottom of one of their feet and steps on a piece of brown paper.

High-Arched foot When the heel and the forefoot connect with a very narrow band on a foot imprint test, a foot has high arches. High-arched feet are usually more rigid and do not typically pronate enough to effectively absorb shock. For this reason, runners with high arches often need shoes with extra cushioning. High-arched runners often (but not always) supinate in their gait.

Normal Foot A foot is considered to be normal when the size of the arch is moderate or average. A normal foot leaves an imprint that shows the heel and forefoot connected by a wide band. Runners that have a normal foot usually have a semi-flexible arch and have a range of running shoe options.

Flat Foot A foot is flat when there is a very low or no visible arch. A flat foot leaves an imprint that is nearly whole, appearing much like the entire sole of the foot. A flat foot is usually more flexible and more likely to over-pronate. This excess motion can ultimately cause several different types of overuse injuries.

Every time a runner's foot strikes the ground it receives an impact force nearly three times the runner's body weight. As a runner's speed increases, so does the amount of his/her impact on the foot. The body absorbs this impact force by using its muscles to stretch resistively, chiefly stretching the quadriceps (or thigh muscles) during heel strike and the calves during push-off.

The body also uses joint motion to absorb impact forces. During heel strike, the knees flex and the foot pronates. Foot pronation causes internal rotation of the tibia (long leg bone), which in turn facilitates knee flexion, allowing the quadriceps to act as the primary shock absorber during running.

RUNNING STYLES

The running world is replete with dialogue about which style of running is superior. This kit does not seek to rate any of the styles, but simply describe them.

Heel Strike Most long-distance runners (as in normal walking) are heel-strikers. This running style contains the three phases as described in detail on earlier pages. For this reason, most running shoes are designed for heel-strikers. With the help of a cushioning element in the heel, these shoes work to reduce the shock during the heel strike (first peak of ground reaction force).

Forefoot Strike Sprinters, in particular, run on the front of the foot in an effort to minimize ground contact and increase their speed. When running barefoot, forefoot striking is the natural way of running. Initial contact is with the ball area and after a short contact with the mid-foot, the runner pushes off with the forefoot again.

Mid-foot Strike The mid-foot strike is a compromise between the heel strike and forefoot strike, combining the advantages of both. Athletes that run faster than approximately 14 km/h (finishing a marathon in less than 3 hours) will automatically start striking with the entire sole because the heel strike would simply take too long.

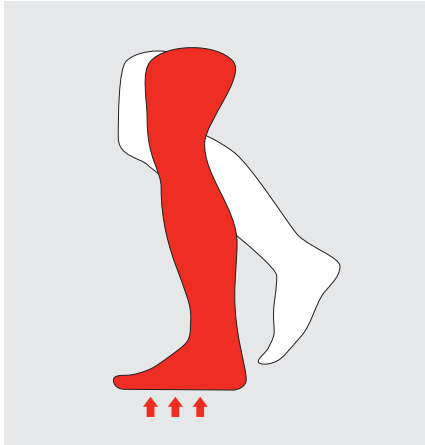
THE GAIT CYCLE

The process that begins when one foot makes contact with the ground and ends when that foot hits the ground again is called the gait cycle. Technically speaking, each cycle begins at initial contact with a stance phase and proceeds through a swing phase until the cycle ends with the limb's next initial contact.

THE STRIKE PHASE

The first stage of the gait cycle is the Strike Phase. This phase begins when the swinging leg is touching the ground. A discussed above you will see Heel striking, midfoot striking and forefoot striking. Depending which part of the foot is touching the ground first. For heel strikers (Heel-striker comprising about 80% of the population.): During the time of the initial ground contact the ankle is in a neutral position and the toes are fully extended. Loading begins the moment a runner's heel comes into contact with the running surface. Gradually, the rest of the foot lowers to the ground, slightly rolling inward to absorb shock. This inward roll, known as pronation, provides a natural cushioning system used to reduce the amount of impact force applied to the body while running.

THE STANCE PHASE



During this second phase the bodies center of gravity travels over the standing leg. The foot having full ground contact. Individual differences in the running style like over-pronation are most visible during this phase.

In this phase the foot changes from a natural cushioning system to a lever, preparing to propel the body forward.

THE PUSH-OFF PHASE

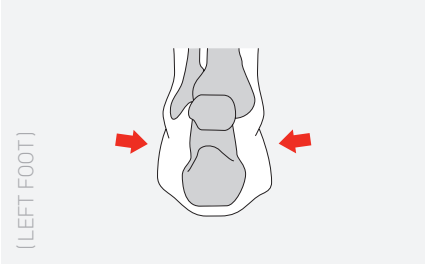
The propulsion (or push-off-phase) phase begins with the heel rising off the ground. The body's mass shifts over the forefoot, and the phase ends in the toe-off. During propulsion the body thrusts itself forward and shifts its weight to the opposite foot.

THE SWING PHASE

The last component is called the Swing Phase, in which the foot is completely airborne.

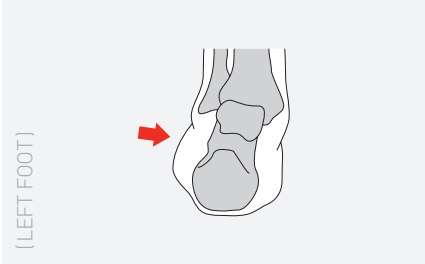
PRONATION— PRONATION VELOCITY, TIMING

PRONATION



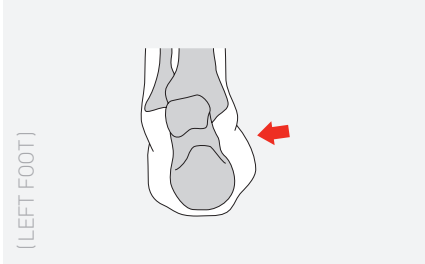
Pronation is simply a normal foot in motion, from foot-strike on the outside of the heel through the inward roll of the foot. Every runner pronates, and the initial pronation is considered an important and healthy response to the intense amount of shock imposed upon the foot. Pronation is also integral in propelling the runner forward. If the foot pronates too much or too little and does so frequently, several biomechanical problems may result that may decrease performance quality and increase the likelihood of injury.

OVER-PRONATION



Over-pronators generally land in a pronated position and continue to roll significantly inward as they go from heel strike to toe off. They exhibit excessive inward motion and are best served with stability or motion-control shoes, which assist in controlling the excessive inward motion of the shoe.

UNDER-PRONATION (SUPINATION)



Under-pronators generally land in a significantly supinated position and experience very little pronation, meaning that from impact to toe-off their foot rolls inward less that the norm. They do not have enough inward motion and therefore can benefit from cushioned-based shoes and lightweight performance shoes, which allow the foot to follow the natural pronation movement. A lot of times Supinators are associated with a more rigid foot (arch) which goes hand in hand with the need for a more cushioned shoe model.

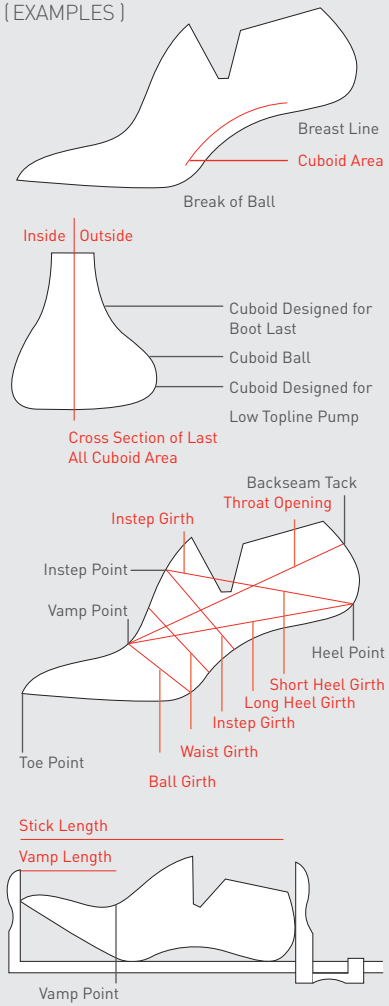
See the Glossary at the end of this book for an A-Z guide to running injuries.

LASTS

SHOE LASTS

All shoes are constructed over a wood or composite form called a "last." The last is the plastic form around which the footwear is built. It is drafted of the natural foot shape because it determines, together with the pattern and the choice of materials, how the finished shoe will fit later on. Knowing this fact, it is quiet obvious why every development of athletic footwear starts with the development of a specific last. With this in mind, Puma has developed different lasts for different foot types and usages.

LAST MEASUREMENTS
(EXAMPLES)



WIDE WIDTH AND NARROW SHOES (FROM 2A TO 6E)

In considering the diversity of human feet, Puma recognizes that properly fitting running shoes means multiple widths, not just multiple sizes. That's why the Puma lineup includes shoe widths for every runner's feet—whether they are wide, narrow, high-arched, hammer-toed, or bunioned. Here's the run-down:

- In general, the standard shoe widths are "D" for men, and "B" for women.
- If the majority of shoes a runner buys fit fine, then these are the widths he/she should select. If the shoes she owns tend to be wide or feel spacious in width, then she should consider selecting a narrower width. Conversely, if the shoes a runner owns tend to be narrow or feel snug in width, he/she should consider selecting a wider width.

WOMEN'S SHOE WIDTHS

AA	Narrow
B	Standard
D	Wide
EE	X Wide
EEEE	XX Wide

MEN'S SHOE WIDTHS

AA	X Narrow
B	Narrow
D	Sandard
EE	Wide
EEEE	X Wide
EEEEEE	XX Wide

KID'S SHOE WIDTHS

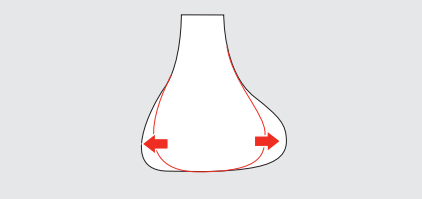
M	Medium
W	Wide
EEEE	X Wide

COMFORT LAST

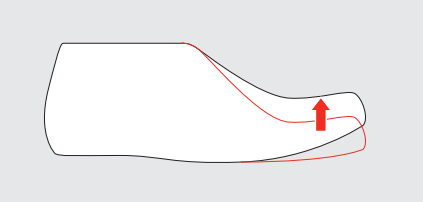
Built to fit the majority of runners, the comfort last is straighter, which provides an easy toe-off, and provides more volume in the midfoot. (New in AW09)

The straight bottom edges make the use of orthotics easier. It also allows for a more accurate assembly process.

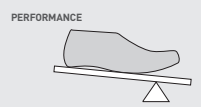
Higher toespring built into the last makes the toe-off phase more natural.

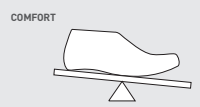


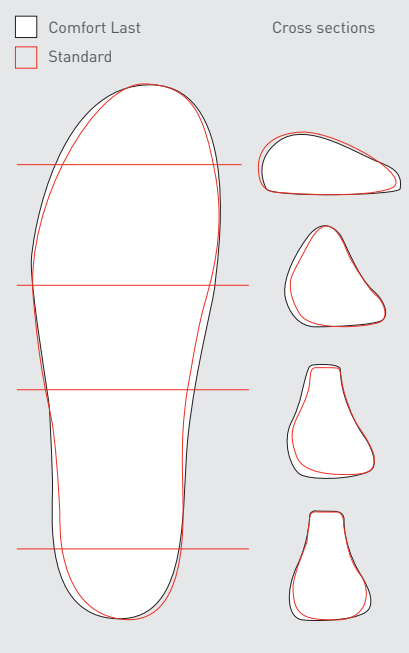
The "turning point" of the last sits further back on the shoe, making the heel-to-toe transition much smoother for heel strikers.



The comfort last has increased volume, especially in the midfoot; this makes the shoe fit a much broader group of runners.

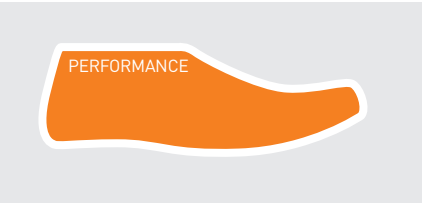






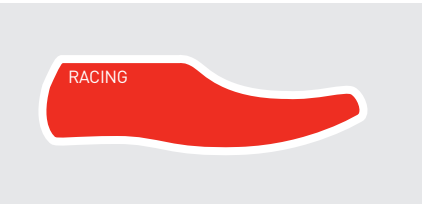
PERFORMANCE LAST

Built to offer more midfoot support, the performance last is semi-curved with a rounded bottom, providing a snug fit.

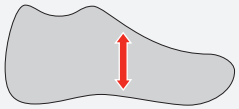


RACING LAST

The racing last is built for just that - racing. It's lower, curved toe-spring provides a very snug fit.



LAST TYPES

	HEEL WIDTH	INSTEP HEIGHT	TOE BOX DEPTH	FOREFOOT WIDTH
				
FOR WOMEN				
Comfort Last	Standard	Standard	High	Wide
Performance Last	Narrow	Standard	Standard	Narrow
Racing Last	Narrow	Low	Low	Narrow
FOR MEN				
Comfort Last	Standard	Standard	High	Wide
Performance Last	Narrow	Standard	Standard	Narrow
Racing Last	Narrow	Low	Low	Narrow

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SHOE CONSTRUCTION

ATHLETIC SHOES HAVE THREE MAIN SECTIONS, WHICH ARE SIMILAR TO THE THREE MAIN SECTIONS OF AN AUTOMOBILE.

UPPER

Protection, ventilation, and style

MIDSOLE (WITH CUSHIONING SYSTEM)

Cushioning and stability

OUTSOLE

Traction and durability

ATHLETIC FOOTWEAR OUTSOLE

The outsole provides durability by resisting wear, providing traction, and absorbing a small amount of shock. Outsole materials provide durability, and the pattern that has been integrated into the outsole gives the running shoe its traction.

A running shoe's outsole needs to be constructed of a durable material to take the wear of a variety of harsh running surfaces. Trail running shoes need additional grip for use on wet and uneven surfaces.

The most common material by far used in running outsoles is carbon rubber.

Using specialized materials, traction patterns, and design features, outsoles are usually made from a combination of synthetic rubber and natural rubber. Natural rubber is softer and provides better traction; synthetic rubber is harder and provides better durability.

Gum rubber is a commonly-used rubber combination yielding softer, stickier traction. Made from 60% natural rubber and 40% synthetic, gum rubber can be altered with additives or processing.

Sometimes rubber, called Brown Rubber, is made less dense by incorporating tiny air pockets. These alterations change the durability and the traction properties of the rubber. Traction patterns are the lines and bumps you see on the bottom of a shoe. Outsoles also have design features to provide other benefits. Some outsole design features make a shoe lighter, others help a shoe flex correctly, and some enhance a shoe's traction and durability properties.

ATHLETIC FOOTWEAR MIDSOLE

Midsoles provide cushioning and stability. Midsoles are generally made from foam-like substances, such as ethylene vinyl acetate (EVA), phylon, and polyurethane (PU).

EVA A resilient foam material that provides shock protection, is often die-cut into shape in a process that looks like using a cookie cutter.

Polyurethane (PU) A firmer, heavier, and more durable foam material than EVA and Phylon. PU is used in midsoles when durability and stability are more important factors in a shoe's design than light weight and cushioning.

Midsoles often contain a cushioning system, such as duo-CELL and Id-CELL, as well as extra devices that provide other benefits. One such device is a Shank Plate, which increases the torsional rigidity of a shoe. This increases a shoes' stability without adding much weight. TPU Shank and ArchTec plates are made from a hard plastic called TPU, or thermalplastic urethane.

ATHLETIC FOOTWEAR UPPERS

The primary function of the shoe's upper is to supply support, protection, and breathability, all while maintaining light weight. Additionally, the upper adds stylistic fun and individuality.

Uppers are often made with a significant amount of a lightweight mesh, drastically reducing the weight of the shoe while providing exceptional breath ability, and increased comfort.

Mesh allows air to circulate through the shoe and allowing moisture to evaporate. Increased moisture creates the conditions for increased instances of blistering.

Mesh is made from nylon or polyester fibers and is preferred in shoes that need to be lightweight and breathable.

Despite its numerous advantages, mesh alone does not provide a running shoe with the stability or support that it needs. Synthetic Leather overlays often provide this support.

Leather and synthetic leathers offer better support, protection, and stability.

The toe box—the upper of the shoe that surrounds the toes—differs slightly from shoe to shoe. Runners who are prone to blistering or who have bunions should make sure the toe box provides enough room for the forefoot and toes to move and flex during running.

The heel counter, which wraps around the back of the heel, provides stability and motion control upon impact. The heel counter is often made from TPU.

TPU:

- Is frequently used in uppers as a lightweight support structure for increased support and protection.
- Can be either suppler or more firm as needed.
- Provides the critical support in a shoe's heel counter, which is the tough insert that reinforces the heel cup of a shoe. TPU anchors the foot in the shoe, preventing slippage and stabilizing the foot during footstrike.

When the upper of a running shoe fits well there should be limited movement of the foot. Excess movement inside a running shoe can irritate or cause injury.

Double-lasting is another important material in the upper. A shoe is double-lasted when the upper is wrapped around the midsole to meet the outsole, usually in the forefoot. Double-lasted shoes create a snug foot to foot-bed relationship for a better fitting leather construction.

THE PROCESS OF SHOE DEVELOPMENT

Because of the diversity and complexity of human feet, a Puma running shoe's development is equally as complex. This is because we set out to provide a perfect-fitting shoe that utilizes the most cutting-edge technologies and stylistic features—for every runner. As one who sells these shoes, you should know how it all works.

PUMA RUNNING DESIGN TEAMS BEGIN WITH A DISCOVERY PROCESS.

ADVANCED RESEARCH

Before an idea for a new running shoe is conceived, teams of experts conduct research into the newest materials, biomechanical questions and breakthroughs in order to launch Puma into the footwear future. These initial research projects and studies are vital in determining what precisely is needed next in an already saturated athletic shoe market.

DISCOVERY

Every Puma running shoe begins with a discovery process. Design teams seek inspiration from any number of places: chats with athletes, consultation from running magazines, and feedback from Puma weartesters, to name a few.

Puma running shoes are designed and modified with the world's best athletes in mind. Puma brings a steady stream of athletes from all over the globe to Puma World Headquarters, studies them, and learns from them. Design teams listen to runners' likes and dislikes in footwear and analyze their findings. Every idea is on the table—what works and what doesn't in athletes' current footwear.

The initial discovery stage also involves a great deal of long-range planning. We ask questions like, "Where is Puma going as a brand?" Our answers determine which products we update when.

The team's research and observations are then compiled into a brief, which helps the team identify a target runner for a specific season. Designers can then begin visualizing an initial footwear design.

DESIGN

Because we believe runners who look better perform better, the design process is a vital component of the shoe construction process. The design phase typically features three rounds: first sketches, form design, and finely detailed digital files. Inspiration for initial sketches can come from anywhere: a sleek sports car, the contour of the human body, a particularly unique building, or a moving sculpture.

From the sketchbook, an initial design morphs into a more technical rendering. A footwear developer (or Puma engineer) then joins the designer to turn the 2D technical drawings and dimensions into 3D models.

They add construction details, select materials and finishes, and identify performance criteria. All this information is sent to the development center to build the first sample based on technical drawings. From here, the "shoe" goes through several rounds of revisions to 3D model print-outs.

The first physical model of the shoe gives development engineers an opportunity to tweak aspects of the shoe's fit and look, and basically perfect the shoe's upper. What began as an idea in a designer's head is now well on its way to becoming the next breakthrough running shoe.

TESTING

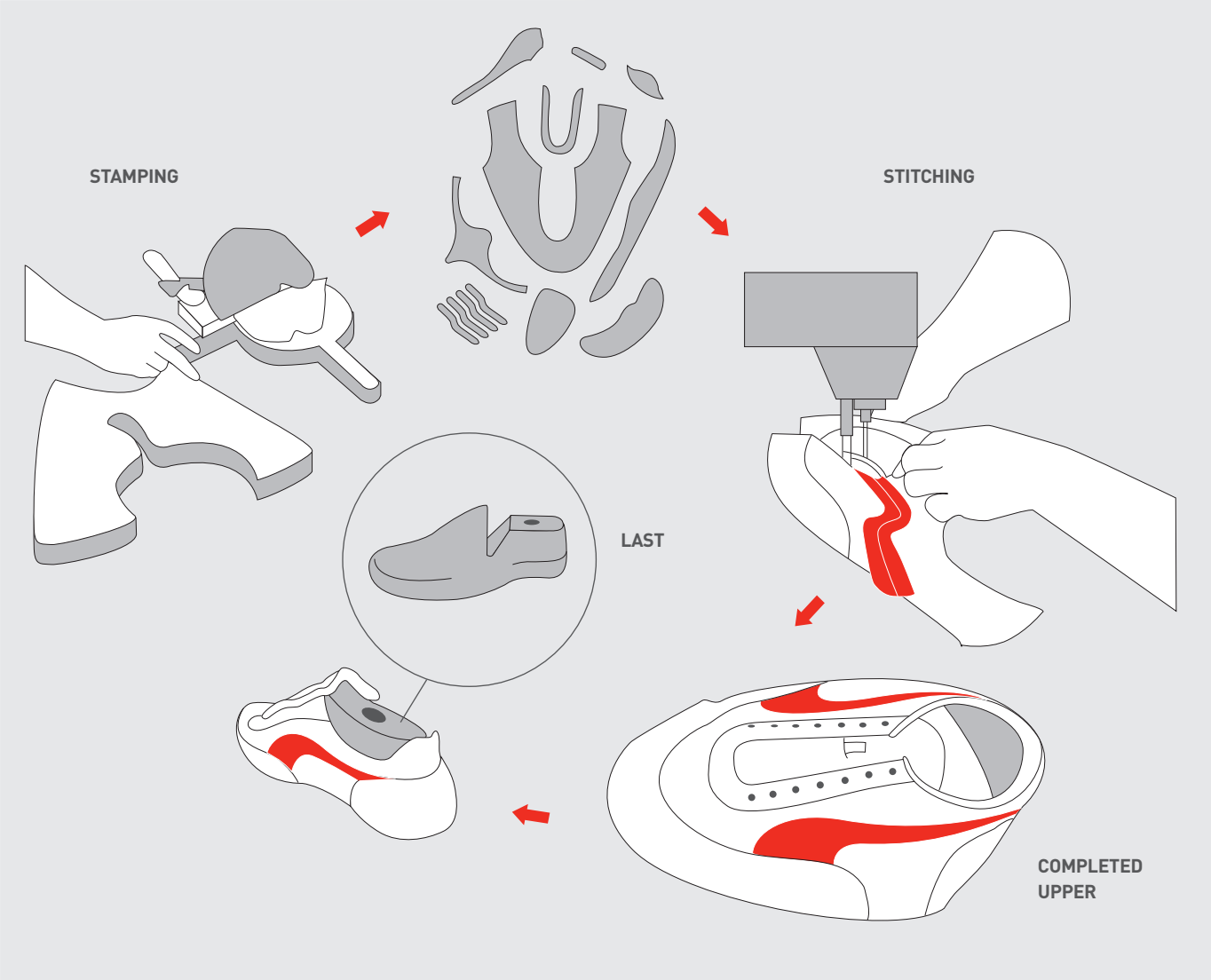
We now have our first "testable" prototype of the new Puma trainer. Testing can take up to 12 months to complete. Initial samples are made and distributed to four different areas for testing:

- the Puma lab
- biomechanical testing
- Athletes and Weartesters
- Specialty running store owners

Design Improvements It's important to remember that at any point along the production timeline, Puma will make major changes in a shoe's design or structure if an improvement can be made. All the data from the various tests are collected and analyzed. Designers and developers review the input and make changes to the shoe design and a new generation of samples is created.

Samples are resubmitted to the lab for specific testing in the areas of change. Athletes are given the updated product.

Testing can be repeated for several rounds as designers fine-tune specific attributes of the shoe. Until a shoe reaches store shelves, it can be altered or scrapped and re-started. Puma stops at nothing to make sure every running shoe is the very best it can be.



PRODUCTION

The final phase of development begins in overseas factories, where a shoe that was once only a sketch is built and reproduced on a larger scale. Puma shoe designers and developers go to the factory to oversee initial production, and as the first few shoes roll off the assembly line, they quickly and personally check the quality of the shoe. Once the footwear passes inspection, any revisions are passed along to the factory, where it where it is cleared for production on a larger scale. The product design is now final, including detailing, colorways, predicted cost, and final materials.

Shipments from factories begin arriving in distribution centers throughout the world. Within the month, the new shoe starts appearing on store shelves.

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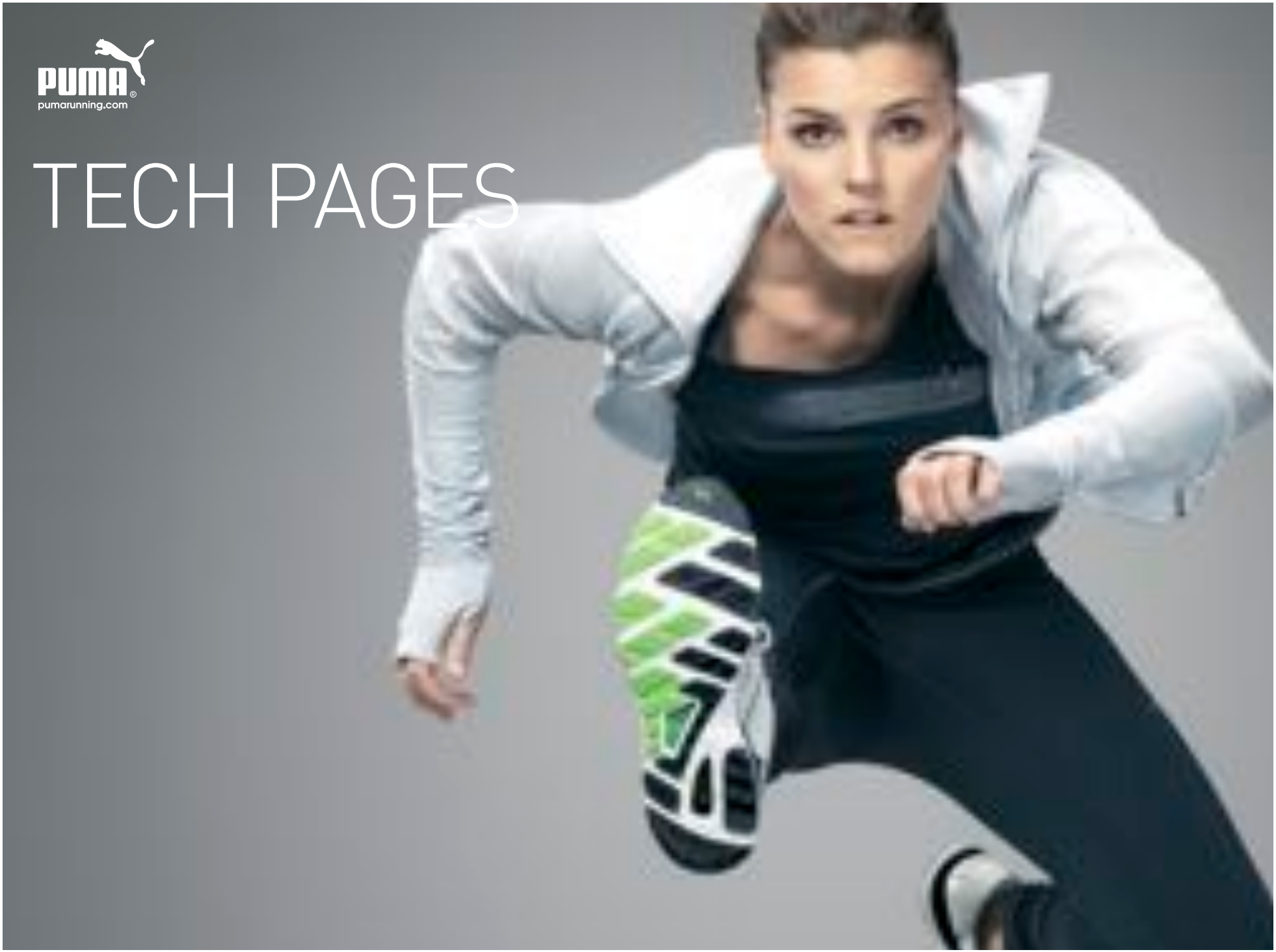
TECH PAGES



ROAD RUNNING

NEUTRAL

These shoes have excellent shock absorption and are usually built with a semi-curved shape on a slip last construction. They are designed to promote normal foot motion, which is good for under-pronators.

Neutral shoes are built for slight- to medium-build runners who may have higher, more rigid arches. The semi-curved construction encourages natural foot motion. Although heavier runners need good cushioning too, they usually require more support from features included in stability shoes.

— Suitable for the efficient runner who does not overpronate and does not need any extra medial support.

Models include Puma Velosis, Puma Phasis, Asics Nimbus, Asics Cumulus, Mizuno Wave Creation; Mizuno Wave Rider: Adidas Supernova Cushion, Adidas adistar CSH Nike Pegasus; Brooks Glycerine; Mizuno Wave Rider; Reebok Premier Ultra DMX; Mizuno Wave Mustang; Nike Vomero; Mizuno Nemesis.

STABILITY

Stability shoes are for the runner with a neutral running style (i.e., no severe motion control issues). These runners require a cushioned shoe with medial support, like M2D in the midsole of Puma shoes (or Duomax for Asics and ProModerator for Adidas), which allows the foot to pronate naturally.

The extra medial support means the shoe compresses at a slower rate and supports the foot better than a shoe without the reinforcement.

Cushioning and stability are not separate shoe characteristics. The amount of support provided by a running shoe is referred to as its stability. Pediatric research indicates that a healthy range of pronation between 12 and 18 degrees should occur during footstrike. Stability devices correct the gait where pronation occurs to a more extreme degree.

A hard midsole increases the velocity of pronation at the loading phase (which is bad) but decreases the maximum degree of pronation during midstance (which is good). Hard midsoles do not deform or collapse during medial loading.

Soft midsoles decrease the velocity of pronation (which is good) but increase the degree of pronation (which is bad). The midsole deforms medially and, in effect, just keeps rolling.

Stability running shoes combine a soft midsole on the lateral side and a harder, denser midsole material on the medial side. This combination, often called medial posting, both reduces the velocity of pronation and limits the degree of pronation.

— Suitable for the average runner who does not have severe motion control problems,who requires a shoe with some medial support.

Models include Puma Complete Vectana, Puma Complete Spectana, Mizuno Wave Nirvana; Adidas Supernova Control; Adidas adistar Control, Asics Kayano; Reebok Premier Road Plus: Mizuno Wave Inspire, Mizuno Elixir, Asics 2130, Asics 1130.

LIGHTWEIGHT

Lightweight shoes are more responsive and, obviously, lighter weight. They're designed for racing and fast-paced training. They provide more cushioning and support than ultra-lightweight competition racing flats and, as such, last longer.

Often in this category the choice of shoe is determined by the runner's comfort and style preferences... or by race performance.

— Not suitable for the heavier runner.

Models include Mizuno Wave Idaten; Adidas Adistar Competition; Adidas Adios Lightstrike; Nike Marathoner.

LIGHTWEIGHT STABILITY

Similar to the Lightweight category, these shoes feature a medial support element (M2D) to emphasize stability. They give an over-pronating runner a smooth, light ride while controlling the velocity and degree of pronation.

Models include Puma Complete Concinnity, Puma Complete Magnetist, Puma Complete Tenos, Adidas Supernova Competition, Asics DS Trainer.

TRAIL

Trail shoes are the equivalent of mud tires. They're built for runners who spend a lot of time off the pavement, on the trails. They have better traction and more durable uppers. Some are even water resistant. Trail shoes are built to fit most of the categories - Neutral, Stability, and Lightweight.

Models include Puma Complete Vectana GTX or WTR, Nike Pegasus TR, Asics 2130 TR, Brooks Adrenaline ASR, Adidas Supernova TR, Adidas Response TR.

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	NEUTRAL	STABILITY	LIGHTWEIGHT STABILITY	LIGHTWEIGHT
	Everyday–Training Built with maximum cushioning in mind for underpronators to mild overpronators. It helps these runners who do not absorb the shock naturally through pronation.	**Everyday–Training** Designed to guide into the natural foostrike for runners who pronate more than normal.	**Raceday–Speed** Lightweight trainer for speed runs or races from 5k to marathon. For lightweight runners with mild overpronation.	**Raceday–Speed** Lightweight trainer or racing shoes for distances from 5K to marathon.
High	**VELOSIS** 	**SPECTANA**	**MAGNETIST 2** 	**EUTOPIA** 
Mid	**PHASIS**	**VECTANA** 	**TENOS 6** 	**CALIBUS 2** 
Entry	**TERONIS**	**KIJANA**	**CONCINNITY 3** 	**ROADRACER 3** 

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VELOSIS

FLEXIBILITY (70)

STABILITY (90)

SHOCK ABSORPTION (90)

RUNNERS WEIGHT (50–85KG)

PROFILE

The all new flagship neutral running shoe in the Range. Offers exceptional fit and comfort while still being very stable due to the wider platform it is built on. Enhanced midsole technologies provide a plush road feel and very smooth transition. The first instep comfort is top of its class due to the choice of highest quality materials like OrthoLite sockliner, stretch lining and EverFoam in the heel. Built for neutral runners and supinators with a low to high arch searching for maximum cushion and comfort for their daily training runs.

MARKET POSITIONING

Shoe sits in the upper price point Neutral trainer segment. Main Competitors are Asics Gel Nimbus, Adidas adistar CSH, Brooks Glycerine, Nike Vomero, Saucony Triumph.

WHAT'S NEW

Completely new for AU2009. First introduction in the NEW Neutral segment. More shoes to follow in the Neutral everyday trainer segment.

COLLECTION	Complete Running
CATEGORY	Neutral
LAST	Comfort
SIZERUN MEN	6.5–14
SIZERUN WOMEN	3.5–10.5
GENDER	Male / Female
MEN COLORS	183969 01 White / snorkel blue / black / silver metallic
	183969 02 Silver metallic / russet orange / black
WOMEN COLORS	183970 01 White / fuchsia purple / black / silver metallic
	183970 02 Silver metallic / dandelion / black
WIDTHS	Men's: D Women's: B
WEIGHT	Men's: 362.87 g. / 12.8 oz. Women's: 294.83 g. / 10.4 oz.
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 120 / Đ 140

FEATURES & BENEFITS

ArchTec Support for the arch of the foot. Increases the functional firmness and saves weight.

Id-CELL EVA based cushioning material for improved shock absorption in the heel crash zone and as a full length top layer.

EVA-Board in the Forefoot Proven EVA replacement for the standard brand-sole for additional comfort and cushioning.

Id-CELL Board in the Heel Proven EVA replacement for the standard brand-sole for additional comfort and shock absorption in the heel.

EverTrack High abrasion resistant rubber. Long lasting rubber composite used in outsole areas with strong wear-off.

KMS Lite Lightweight midsole EVA foam for weight saving while maintaining same cushioning properties.

EverRide Blown outsole rubber for improved forefoot cushioning, roll off and weight saving.

EverFoam in the Heel Special slow recovery foam heel construction for a heel fit which is perfectly adjusting to the heel contour. Locks you in and avoids heel slippage.

SANDWICH-MESH Special upper mesh material with a high degree of breathability. Lowers the risk for blisters.

Reflectives For more security at dawn and night.

OthoLite Sockliner Comfort sockliner consists of two layers for maximum fit and comfort, fast material regeneration, optimized air circulation. Antimicrobial.

duo-CELL Long lasting CELL insert in the heel for improved shock absorption.

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CALIBUS 2

FLEXIBILITY (80)

STABILITY (50)

SHOCK ABSORPTION (80)

RUNNERS WEIGHT (50–85KG)

PROFILE

The lightweight trainer for the light- to midweight runner with a normal to high arch. Excellent cushioning properties, while still having a good feeling for the ground. Feels lightweight and very flexible in the forefoot. Socklike instep feeling.

MARKET POSITIONING

The shoe is positioned in the main midprice lightweight segment. The shoe stands out due to its narrower last shape and more natural heel-to-toe transition.

WHAT'S NEW

Was all new shoe in AU08. Compared to the Phasis it is way more flexible in the midfoot and forfoot area. The volume inside the shoe stays the same compared to the Phasis due to the same last.

COLLECTION	Complete Running
CATEGORY	Lightweight
LAST	Performance
SIZERUN MEN	UK 5-12,13,14,15
SIZERUN WOMEN	UK 3–10.5
GENDER	Male / Female
MEN COLORS	184020 03 White / silver metallic / sweet grape 184019 04 Silver metallic / jasmine green / black
WOMEN COLORS	184020 03 White / silver metallic / sweet grape 184020 04 Silver metallic / dandelion / black- white
WIDTHS	Men's: D Women's: B
WEIGHT	Men's: 294.83 g. / 10.4 oz Women's: 272.15 g. / 9.6 oz
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 95 / Đ 120

FEATURES & BENEFITS

ArchTec Support for the arch of the foot. Increases the functional firmness and saves weight.

Id-CELL EVA based cushioning material for improved shock absorption in the heel crash zone and as a full length top layer.

EVA-Board in the Forefoot Proven EVA replacement for the standard brand-sole for additional comfort and cushioning.

Id-CELL in the Heel Proven EVA replacement for the standard brand-sole for additional comfort and shock absorption in the heel.

EverTrack High abrasion resistant rubber. Long lasting rubber composite used in outsole areas with strong wear-off.

KMS Lite Lightweight midsole EVA foam for weight saving while maintaining same cushioning properties.

EverRide Blown outsole rubber for improved forefoot cushioning, roll off and weight saving.

EverFoam in the Heel Special slow recovery foam heel construction for a heel fit which is perfectly adjusting to the heel contour. Locks you in and avoids heel slippage.

SANDWICH-MESH Special upper mesh material with a high degree of breathability. Lowers the risk for blisters.

Reflectives For more security at dawn and night.

OthoLite Sockliner Comfort sockliner consists of two layers for maximum fit and comfort, fast material regeneration, optimized air circulation. Antimicrobial.

duo-CELL Long lasting CELL insert in the heel for improved shock absorption.

TEXCARE Bamboo Lining

ROADRACER 3

FLEXIBILITY (100) ●●●●●●●●●●

STABILITY (10) ●· · · · · · · · · ·

SHOCK ABSORPTION (40) ●●●●· · · · · ·

RUNNERS WEIGHT (50–85KG) ●●●●●●●· · ·

PROFILE

The update of the Roadracer sits between a pure Racer and a Lightweight trainer. It's meant for runners who are searching for a light shoe to run any race from a 5K to the marathon. The upper is sock-like, yet supportive, meaning the shoe can be worn barefoot. The shoe offers very little stability in the heel and is for lighter runners who don't expect much support in this type of shoe; they need a shoe for their faster training sessions and road races.

MARKET POSITIONING

The shoe is positioned in between the Lightweight trainer and the racing flat category. It has more substance to it than the classical racing shoes, but is less stable than the standard lightweight trainer.

WHAT'S NEW

The update now offers a softer and more flexible ride due to the use of EVER-Lite instead of EverRide (i.e., no more clicking on the road!). The upper has no heel counter making it fit more like a sock. Additionally, having a full airmesh upper allows for more airflow, which helps to keep your feet cool, especially when racing.

COLLECTION	Complete Running
CATEGORY	Lightweight
LAST	Racing
SIZERUN	UK 3-13
GENDER	Unisex
COLORS	183846 04 Blazing yellow / silver metallic / black
WIDTHS	Men's: D Women's: B
WEIGHT	204.11 g. / 7.2 oz.
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 90 / Đ 110

FEATURES & BENEFITS

ArchTec Support for the arch of the foot. Increases the functional firmness and saves weight.

Id-CELL EVA based cushioning material for improved shock absorption in the heel crash zone and as a full length top layer.

EVA-Board Proven EVA replacement for the standard brand-sole for additional comfort and cushioning.

EverTrack High abrasion resistant rubber. Long lasting rubber composite used in outsole areas with strong wear-off.

SANDWICH-MESH Special upper mesh material with a high degree of breathability. Lowers the risk for blisters.

Sockliner Lightweight EVA for weight saving.

EverRide Blown rubber outsole for improved cushioning properties and smooth and quiet roll off.

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VECTANA

FLEXIBILITY (60)

STABILITY (90)

SHOCK ABSORPTION (90)

RUNNERS WEIGHT (50–85KG)

PROFILE

Comfortable and durable this new addition to the newly created Stability segment. This all new daily work-horse for runners with a low to high arch who are searching a stable companion. It offers an exceptional first instep and performance with extra medial stability for runners running with overpronation. It offers all the features which you expect from such a kind of shoe: Arch-Tec, ldCELL, duoCELL, OrthoLIte sockliner, EverFoam you name it. On a price point that makes this the "Go To" shoe for everybody!

MARKET POSITIONING

Shoe sits in the middle price point stability segment. Main competitors are Asics 2130, Adidas Supernova CTL, Nike Structure Triax, Brooks Adrenaline GTS, Saucony Guide. (The Vectana has more tech features than the 2130—OrthLite sockliner vs. EVA, Full layered forefoot ldCELL vs. small gel insert.)

WHAT'S NEW

Completely new for AU2009. First introduction in the NEW Stability segment. More shoes to follow in the Stability everyday trainer segment.

COLLECTION	Complete Running
CATEGORY	Stability
LAST	Comfort
SIZERUN MEN	6.5-14
SIZERUN WOMEN	3.5-11.5
GENDER	Male / Female
MEN COLORS	183972 01 White / silver metallic / Puma red / black 183972 02 Silver metallic / snorkel blue / white 183972 03 Black / silver metallic / Puma red
WOMEN COLORS	183974 01 White / blue mist / silver metallic / black 183974 02 Silver metallic / sweet grape / white
WIDTHS	Men's: D Women's: B
WEIGHT	Men's: 362.87 g. / 12.8 oz. Women's: 294.83 g. / 10.4 oz.
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 95 / Đ 125

FEATURES & BENEFITS

ArchTec Support for the arch of the foot. Increases the functional firmness and saves weight.

Id-CELL EVA based cushioning material for improved shock absorption in the heel crash zone and as a full length top layer.

M2D Firmer midsole EVA foam on the medial side to help stabilize the shoe on the medial side.

Id-CELL Board in the Heel Proven EVA replacement for the standard brand-sole for additional comfort and shock absorption in the heel.

EverTrack High abrasion resistant rubber. Long lasting rubber composite used in outsole areas with strong wear-off.

KMS Lite Lightweight midsole EVA foam for weight saving while maintaining same cushioning properties.

EverRide Blown outsole rubber for improved forefoot cushioning, roll off and weight saving.

EverFoam in the Heel Special slow recovery foam heel construction for a heel fit which is perfectly adjusting to the heel contour. Locks you in and avoids heel slippage.

SANDWICH-MESH Special upper mesh material with a high degree of breathability. Lowers the risk for blisters.

Reflectives For more security at dawn and night.

OthoLite Sockliner Comfort sockliner consists of two layers for maximum fit and comfort, fast material regeneration, optimized air circulation. Antimicrobial.

duo-CELL Long lasting CELL insert in the heel for improved shock absorption.

VECTANA GTX

FLEXIBILITY (60) ●●●●●●●●●·

STABILITY (90) ●●●●●●●●●·

SHOCK ABSORPTION (90) ●●●●●●●●●·

RUNNERS WEIGHT (50–85KG) ●●●●●●●···

PROFILE

Comfortable and durable this new addition to the newly created Stability segment. This all new daily workhorse for runners with a low to high arch who are searching a stable companion in rough terrain and unpleasant weathers. It offers an exceptional first instep and performance with extra medial stability for runners running with overpronation. It offers all the features which you expect from such a kind of shoe: Arch-Tec, ldCELL, duoCELL, OrthoLIte sockliner, EverFoam you name it. On a price point that makes this the "Go To" shoe for everybody!

MARKET POSITIONING

Shoe sits in the middle price point stability segment. Main competitors are Asics 2130 TR, Adidas Wanaka, Nike Pegasus Trail.

WHAT'S NEW

Completely new for AU2009. First introduction in the NEW Stability segment. Compared to the "standard" Vectana it has a modified outsole which is more trial like and offering additional traction in difficult terrain. More shoes to follow in the stability everyday trainer segment.

COLLECTION	Complete Running
CATEGORY	Stability
LAST	Comfort
SIZERUN MEN	6.5-14
SIZERUN WOMEN	3.5-11.5
GENDER	Male / Female
MEN COLORS	184150 01 Black / russet orange / silver metallic
WOMEN COLORS	184152 01 Black / dark shadow / silver metallic / blue mist
WIDTHS	Men's: D Women's: B
WEIGHT	Men's: 430.91 g. / 15.2 oz. Women's: 340.19 g. / 12 oz.
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 120 / Đ 140

FEATURES & BENEFITS

ArchTec Support for the arch of the foot. Increases the functional firmness and saves weight.

Id-CELL EVA based cushioning material for improved shock absorption in the heel crash zone and as a full length top layer.

M2D Firmer midsole EVA foam on the medial side to help stabilize the shoe on the medial side.

Id-CELL Board in the Heel Proven EVA replacement for the standard brand-sole for additional comfort and shock absorption in the heel.

EverTrack High abrasion resistant rubber. Long lasting rubber composite used in outsole areas with strong wear-off.

EverGrip Wet traction rubber outsole in the forefoot for improved traction on slippery grounds.

KMS Lite Lightweight midsole EVA foam for weight saving while maintaining same cushioning properties.

GoreTex Proven Gore-Tex technology is making the shoe waterproof while still keeping it somehow breathable.

SANDWICH-MESH Special upper mesh material with a high degree of breathability. Lowers the risk for blisters.

Reflectives For more security at dawn and night.

OthoLite Sockliner Comfort sockliner consists of two layers for maximum fit and comfort, fast material regeneration, optimized air circulation. Antimicrobial.

duo-CELL Long lasting CELL insert in the heel for improved shock absorption.

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VECTANA TR

FLEXIBILITY (60)

STABILITY (90)

SHOCK ABSORPTION (90)

RUNNERS WEIGHT (50–85KG)

PROFILE

Comfortable and durable this new addition to the newly created Stability segment. This all new daily workhorse for runners with a low to high arch who are searching a stable companion in rough terrain and unpleasant weathers. It offers an exceptional first instep and performance with extra medial stability for runners running with overpronation. It offers all the features which you expect from such a kind of shoe: Arch-Tec, IdCELL, duoCELL, OrthoLIte sockliner, EverFoam you name it. On a price point that makes this the "Go To" shoe for everybody!

MARKET POSITIONING

Shoe sits in the middle price point stability segment. Main competitors are Asics 2130 H20, Adidas Supernova WTR, Nike Pegasus Trail.

WHAT'S NEW

Completely new for AU2009. First introduction in the NEW Stability segment. Compared to the "standard" Vectana it has a modified outsole which is more trial like and offering additional traction in difficult terrain. More shoes to follow in the Stability everyday trainer segment.

COLLECTION	Complete Running
CATEGORY	Stability
LAST	Comfort
SIZERUN MEN	6.5-14
SIZERUN WOMEN	3.5-11.5
GENDER	Male/ Female
MEN COLORS	184149 01 Black / white / russet orange
WOMEN COLORS	184151 01 Gray violet / silver metallic / blue mist
WIDTHS	Men's: D Women's: B
WEIGHT	385.55 g. / 13.6 oz.
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 95 / Đ 125

FEATURES & BENEFITS

ArchTec Support for the arch of the foot. Increases the functional firmness and saves weight.

Id-CELL EVA based cushioning material for improved shock absorption in the heel crash zone and as a full length top layer.

Id-CELL Board in the Heel Proven EVA replacement for the standard brand-sole for additional comfort and shock absorption in the heel.

M2D Firmer midsole EVA foam on the medial side to help stabilize the shoe on the medial side.

EverTrack High abrasion resistant rubber. Long lasting rubber composite used in outsole areas with strong wear-off.

EverFoam in the Heel Special slow recovery foam heel construction for a heel fit which is perfectly adjusting to the heel contour. Locks you in and avoids heel slippage.

EverGrip Wet traction rubber outsole in the forefoot for improved traction on slippery grounds.

KMS Lite Lightweight midsole EVA foam for weight saving while maintaining same cushioning properties.

OthoLite Sockliner Comfort sockliner consists of two layers for maximum fit and comfort, fast material regeneration, optimized air circulation. Antimicrobial.

Reflectives For more security at dawn and night.

SANDWICH-MESH Special upper mesh material with a high degree of breathability. Lowers the risk for blisters.

duo-CELL Long lasting CELL insert in the heel for improved shock absorption.

Thinsulate Lining For added comfort in coolder winter conditions.

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MAGNETIST 2

FLEXIBILITY (60) ●●●●●●○ ○ ○ ○

STABILITY (70) ●●●●●●●○ ○ ○

SHOCK ABSORPTION (70) ●●●●●●●○ ○ ○

RUNNERS WEIGHT (50–85KG) ●●●●●●●○ ○ ○

PROFILE

The Magnetist update is built for people who are searching for a lightweight stability shoe which is low to the ground and flexible in the forefoot. It's a lightweight training shoe for the lightweight to midweight runner with a high to normal arch.

MARKET POSITIONING

Shoe sits in the upper price point lightweight stability segment. The shoe sits lower to the ground than it competitors and has a more flexible ride in the forefoot.

WHAT'S NEW

New upper on the existing bottom unit in SP2009. The upper is using a full airmesh construction which makes it more breathable. The lacing is centered now. No bamboo lining anymore.

COLLECTION	Complete Running
CATEGORY	Lightweight Stability
LAST	Performance
SIZERUN MEN	UK 5-12,13,14,15
SIZERUN WOMEN	UK 3-9
GENDER	Male/ Female
MEN COLORS	183706 04 White / jasmine green / black
WOMEN COLORS	183707 03 Silver metallic / blue mist / black
WIDTHS	Men's: D Women's: B
WEIGHT	Men's: 317.51 g. / 11.2 oz. Women's: 272.155 g. / 9.6 oz.
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 120 / Đ 140

FEATURES & BENEFITS

ArchTec Support for the arch of the foot. Increases the functional firmness and saves weight.

Id-CELL EVA based cushioning material for improved shock absorption in the heel crash zone and as a full length top layer.

EVA-Board Proven EVA replacement for the standard brand-sole for additional comfort and cushioning.

EverTrack High abrasion resistant rubber. Long lasting rubber composite used in outsole areas with strong wear-off.

Memory Foam Heel Fit Special memory foam heel construction for a heel fit which is perfectly adjusting to the heel contour.

SANDWICH-MESH Special upper mesh material with a high degree of breathability. Lowers the risk for blisters.

Spherical Heel Construction Rounded and flared heel outsole/midsole geometry in combination with flexgrooves for a smooth first impact and roll off from heel to toe. Lowers the pronation velocity and the degree of pronation.

Sockliner-2Layer Comfort sockliner consists of three layers for maximum fit and comfort, fast material regeneration, optimized air circulation. Antimicrobial.

Reflectives For more security at dawn and night.

duo-CELL Long lasting CELL insert in the heel for improved shock absorption.

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TENOS 6

FLEXIBILITY (80)

STABILITY (70)

SHOCK ABSORPTION (60)

RUNNERS WEIGHT (50-85KG)

PROFILE

The stability lightweight trainer for the light- to midweight runner with a high to normal arch. With a good feeling for the ground. Feels lightweight and very flexible in the forefoot. Sock like instep feeling.

MARKET POSITIONING

The shoe is positioned in the main midprice lightweight stability segment. People searching for a lightweight stability trainer searching for the right mix of cushioning, stability and still a proper feel for the ground.

WHAT'S NEW

Update of the Tenos IV offering a more flexible forefoot construction plus a more flexible midfoot. Additional blown rubber in the forefoot helps for a softer and smoother roll off.

COLLECTION	Complete Running
CATEGORY	Lightweight Stability
LAST	Performance
SIZERUN MEN	UK 5-12,13,14,15
SIZERUN WOMEN	UK 3-9
GENDER	Male/ Female
MEN COLORS	183844 04 White / black / blazing yellow / silver metallic
WOMEN COLORS	183845 03 White / fuchsia purple / silver metallic
WIDTHS	Men's: D Women's: B
WEIGHT	Men's: 294.83 g. / 10.4 oz Women's: 249.47 g. / 8.8 oz
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 95 / Đ 125

FEATURES & BENEFITS

ArchTec Support for the arch of the foot. Increases the functional firmness and saves weight.

Id-CELL EVA based cushioning material for improved shock absorption in the heel crash zone and as a full length top layer.

EVA-Board Proven EVA replacement for the standard brand-sole for additional comfort and cushioning.

Blown rubber forefoot Lighter and more responsive rubber outsole for a softer ride and toe off.

EverTrack High abrasion resistant rubber. Long lasting rubber composite used in outsole areas with strong wear-off.

Memory Foam Heel Fit Special memory foam heel construction for a heel fit which is perfectly adjusting to the heel contour.

SANDWICH-MESH Special upper mesh material with a high degree of breathability. Lowers the risk for blisters.

Reflectives For more security at dawn and night.

Spherical Heel Construction Rounded and flared heel outsole/midsole geometry in combination with flexgrooves for a smooth first impact and roll off from heel to toe. Lowers the pronation velocity and the degree of pronation.

Sockliner-3Layer Comfort sockliner consists of three layers for maximum fit and comfort, fast material regeneration, optimized air circulation. Antimicrobial.

duo-CELL Long lasting CELL insert in the heel for improved shock absorption.

TEXCARE Bamboo Lining

CONCINNITY 3

FLEXIBILITY (90) ●●●●●●●●●·

STABILITY (40) ●●●●·····

SHOCK ABSORPTION (70) ●●●●●●●···

RUNNERS WEIGHT (50–85KG) ●●●●●●●···

PROFILE

Same name. New shoe. The new Concinnity is built for light to midweight runners with high to normal arches searching for a light and flexible shoe for faster training runs. It can also be used as an everyday trainer for lighter runners. The shoe offers outstanding flexibility and a smooth heel-to-toe transition. It has a small medial post (M2D) in the heel, which makes it suitable for runners who need extra support in the heel, especially on a long run.

MARKET POSITIONING

The shoe sits in the Lightweight trainer segment. Next to one of the most famous shoes in the category. Compared to most shoes in this category it is way more flexible heel to toe, medial to lateral side and offers a more generous fit.

WHAT'S NEW

Blown rubber in the lateral forefoot for a softer ride. Improved heel bevel geometry for a softer touchdown. Visible Arch-tec in the shank. Centered lacing. Full length padded tongue foam. Full airmesh upper for improved breath ability. Softer synthetic materials allover are making the fit more socklike.

COLLECTION	Complete Running
CATEGORY	Lightweight Stability
LAST	Performance
SIZERUN MEN	UK 5-12,13,14,15
SIZERUN WOMEN	UK 3-9
GENDER	Male/ Female
MEN COLORS	183844 04 White / black / blazing yellow / silver metallic
WOMEN COLORS	183845 03 White / fuchsia purple / silver metallic
WIDTHS	Men's: D Women's: B
WEIGHT	Men's: 294.83 g. / 10.4 oz Women's: 249.47 g. / 8.8 oz
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 95 / Đ 125

FEATURES & BENEFITS

ArchTec Support for the arch of the foot. Increases the functional firmness and saves weight.

Id-CELL EVA based cushioning material for improved shock absorption in the heel crash zone and as a full length top layer.

EVA-Board Proven EVA replacement for the standard brand-sole for additional comfort and cushioning.

EverTrack High abrasion resistant rubber. Long lasting rubber composite used in outsole areas with strong wear-off.

Memory Foam Heel Fit Special memory foam heel construction for a heel fit which is perfectly adjusting to the heel contour.

SANDWICH-MESH Special upper mesh material with a high degree of breathability. Lowers the risk for blisters.

Reflectives For more security at dawn and night.

Spherical Heel Construction Rounded and flared heel outsole/midsole geometry in combination with flexgrooves for a smooth first impact and roll off from heel to toe. Lowers the pronation velocity and the degree of pronation.

duo-CELL Long lasting CELL insert in the heel for improved shock absorption.

Sockliner-3Layer Comfort sockliner consists of three layers for maximum fit and comfort, fast material regeneration, optimized air circulation. Antimicrobial.

TEXCARE Bamboo Lining

EUTOPIA

FLEXIBILITY (80)

STABILITY (50)

SHOCK ABSORPTION (80)

RUNNERS WEIGHT (50-85KG)

PROFILE

The premium everyday neutral lightweight trainer for the light- to midweight runner. Excellent cushioning properties, while still having a good feeling for the ground. Feels lightweight and very flexible in the forefoot. Socklike instep feeling for runners with normal to high arches.

MARKET POSITIONING

The shoe is positioned in the highprice Lightweight / Performance segment. The shoe stands out due to different last shape and the more direct and flexible ride, feeling heel to toe.

WHAT'S NEW

All new shoe for SP08. Start for the Puma premium neutral cushion category. Full length ld-CELL foam and duo-CELL in the heel for maximum cushioning.

COLLECTION	Complete Running
CATEGORY	Lightweight
LAST	Performance
SIZERUN MEN	UK 5-12,13,14,15
SIZERUN WOMEN	UK 3-9
GENDER	Male/ Female
MEN COLORS	182813 10 White / Puma red / black
WOMEN COLORS	182814 11 White / blue mist / dark shadow
WIDTHS	Men's: D Women's: B
WEIGHT	Men's: 317.51 g. / 11.2 oz Women's: 249.47 g. / 8.8 oz
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	Men's: $ 110 / Đ 140 Women's: $ 115 / Đ 140

FEATURES & BENEFITS

ArchTec Support for the arch of the foot. Increases the functional firmness and saves weight.

ld-CELL EVA based cushioning material for improved shock absorption in the heel crash zone and as a full length top layer.

EVA-Board Proven EVA replacement for the standard brand-sole for additional comfort and cushioning.

EverTrack High abrasion resistant rubber. Long lasting rubber composite used in outsole areas with strong wear-off.

Memory Foam Heel Fit Special memory foam heel construction for a heel fit which is perfectly adjusting to the heel contour.

Reflectives For more security at dawn and night.

Spherical Heel Construction Rounded and flared heel outsole/midsole geometry in combination with flexgrooves for a smooth first impact and roll off from heel to toe. Lowers the pronation velocity and the degree of pronation.

Sockliner-3Layer Comfort sockliner consists of three layers for maximum fit and comfort, fast material regeneration, optimized air circulation. Antimicrobial.

duo-CELL Long lasting CELL insert in the heel for improved shock absorption.

TEXCARE Bamboo Lining

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TECH MATRIX

	VELOSIS	VECTANA	MAGNETIST	TENOS	CONCINNITY	EUTOPIA	CALIBUS	ROADRACER
EverFoam	X	X	X	X		X		
OrthoLite 1	X	X						
OrthoLite 2 Layer	X	X						
IdCELL Lasting Heel	X		X	X	X	X	X	X
IdCELL Lasting Forefoot	X	X	X	X	X	X	X	X
EVA Lasting	X	X	X	X	X			
IdCELL Fullayer		X		X		X	X	
IdCELL Heel	X	X	X	X	X	X	X	X
IdCELL Layer Forefoot	X	X	X	X	X	X		
duoCELL Small	X	X	X	X	X		X	X
duoCELL Large	X	X	X	X		X		X
ArchTEC external	X	X	X					
ArchTEC internal	X							
EVERgrip								
EVERride								
EVERtrack								
KMSLite Midsole EVA								

TRACK AND FIELD

Is there a more exciting sport on the planet than track and field? The arduous training. The build-up. The thrill of competition in front of screaming grandstands. The joy of victory; the agony of defeat.

THE SPORT IS IN A LEAGUE BY ITSELF.

One of the most exciting aspects of the sport is the diversity among its events. Track and field features three categories of running events: sprints, middle-distance and long-distance. In addition, there are throwing and jumping field events and the two multi-event competitions—the heptathlon and decathlon. Already, we can see that a one-size-fits-all approach to track and field shoes and gear simply won't do.

SPRINTS AND HURDLES

Speed and power are the operative concepts in these events. With distances no farther than 400 meters and the difference between glory and "oh-so-close" determined by milliseconds, these races yield no room for error. From the moment a sprinter explodes out of the blocks until reaching the finish line, he or she has to be "on."

The shortest of the races, the 100-meter dash, has a standard start while the 200- and 400-meter races require a staggered start due to the curving of the track. The hurdle events (100-, 110- and 400-meter hurdles) add a series of 10 hurdles to a set sprint distance. Starting blocks are used for all sprint and hurdle events.

Spiked footwear is required for sprinters and hurdlers. Because sprinters typically propel using their forefoot, their footwear features long spikes near the toe of the shoe and minimal to no traction on the heel. Often times, spikes are able to be screwed in and out for easy replacement and post-race comfort. Sprint spikes also feature a minimalist upper construction for flexibility and lighter weight.

MIDDLE DISTANCES

Middle-distance events test both speed and endurance and are generally considered some of the sport's most difficult competitions. Runners alternate between curves and straightaways, devising strategies—when to lead, when to follow, how fast to start out and how much to save for the end. The 800-meter run begins with a standard start and after 100 meters, competitors break into the inner lanes and jockey for position. In the 1500- and 1600-meter runs, runners begin with a waterfall start, that is, a gently curved white line beginning on the finish line in lane one, then swinging ahead.

Middles distance events include runs of 800, 1500 and 1600 meters. Most middle-distance footwear features spikes from the heel to the forefoot, as runners in these races typically settle into a traditional heel-strike gait cycle.

LONG DISTANCES

If long-distance running was a reality show, it'd be called "Survivor." These events—ranging from the 2000-meter steeplechase to the 3000-, 5000- and 10,000-meter races—test not only endurance, but heart.

To an already grueling track distance, the steeplechase adds additional challenge: three wooden barriers, one of them with a sizeable water pit on the other side. This makes for a
track and field event with perhaps more thrills—and spills—than any other. Most certainly not for the faint of heart.

Because distance runners are running at top speeds for upwards of a half an hour, their race footwear needs are unique and of utmost importance. Distance footwear most often features short spikes spanning the length of the shoe, except in the 10,000-meter races, when athletes may choose to wear a lightweight flat. Breathability, stability, and—in the steeplechase—the ability to dry quickly are the most important features of distance footwear.

RELAYS

The relay events are about teamwork. Four runners unite to finish one distance, each racing a quarter of it. The one leading off will take to the track first, the second and third maintain and the anchor finishes the job. The baton is passed to the next runner at the end of each leg.

The relay events typically include the 4x100- and the 4x400-meter races. Various other relays—including the sprint medley relay, distance medley relay, and shuttle hurdle relay—exist in certain track and field meets, but are more rare.

Sprint spikes are worn in most relay events, except those that feature legs of 800 meters or longer.

JUMPING EVENTS

Competitors explore the outer limits of what it means to jump the highest or longest. The jumping events include the high jump, long jump, triple jump and pole vault.

In each event, the athlete is given three attempts and in the long and triple jump, only the best lengths are recorded. In the high jump and pole vault, the athlete is eliminated after failing to clear the height

after three attempts.

Jumpers and vaulters wear spiked footwear, with some triple jumpers opting for high-top spikes for added stability.

THROWING EVENTS

Throwing is not just about strength—it's about technique. In each of the throwing events, the athlete is given three opportunities to achieve maximum distance throwing a shot (a heavy sphere), a discus (a plate-like object), a hammer (a shot on the end of a chain) or a javelin (a spear-like object). Distance is then determined by measuring from where the object lands back to the front of the throwing area.

The throwing events are: shot put, discus, hammer, javelin. The shot, discus, and hammer require shoes with both traction and the ability to pivot well. Because the javelin run-up is made of the same rubberized material as the track, its footwear features spikes for traction.

MULTI EVENTS

For those that excel at all types of track and field events, there are the multi-disciplined events, a two-day marathon of sheer will. A predetermined number of points are awarded to the winners of each event and the individual with the highest amount of points overall is the champion. The multi-event champion is commonly called the "world's best athlete."

The multi-event competitions include the:

— decathlon for men
— heptathlon for women

The decathlon consists of 10 events for men: 100-meter dash, the long jump, the shot put, the high jump, the 400-meter run, the 110-meter hurdle race, the discus throw, the pole vault, the javelin throw, and the 1500-meter run.

Women compete in the heptathlon, consisting of 7 events: the 60-meter dash, the long jump, the shot put, the high jump, the 60-meter hurdle race, the pole vault, and the 1000-meter run.

Decathletes and heptathletes change their footwear from event to event.

LONG DISTANCE

HARAMBEE

TFX DISTANCE

TF ALLROUND 2

MIDDLE DISTANCE

TFX MILER

SPRINT

THESEUS

TFX SPRINT

FIELD

JUMP

HARAMBEE

PROFILE

Premium long distance spike designed for all distances longer than the mile. Built to be light, cushioned and offer traction.

MARKET POSITIONING

Japan Thunder, Adidas Beijing LD.

WHAT'S NEW

New for SP08.

COLLECTION	Complete Running
CATEGORY	Long Distance
LAST	Performance
SIZERUN	UK 5-12
GENDER	Unisex
UNISEX	183440 02 Puma silver / black / acacia
WIDTHS	Men's: D Women's: B
WEIGHT	181.43 g. / 6.4 oz.
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 70 / Đ 100

FEATURES & BENEFITS

6 steel receptacles on the outer surface of the plate

Full length EVA layer

Full length TPU plate

TPU plate very soft

TFX DISTANCE

PROFILE

Designed having the high school distance runner in mind, this full airmesh entry price long distance spike with all the features you expect from your spike. It has a very sock-like upper with no heel counter. It has a big EVA heel wedge for shock absorption and a full layer of 2mm running full length. The plate is tuned to be the softest in the TFX range.

MARKET POSITIONING

The TFX entry price spikes are positioned against the main competitors. Weather most competitors focus on maximum "blink blink" on the upper of the shoes we designed the shoes around maximum instep comfort.

WHAT'S NEW

All new for SP09.

COLLECTION	Complete Running
CATEGORY	Long Distance
LAST	Performance
SIZERUN	UK 3-15
GENDER	Unisex
UNISEX	183831 01 sky diver / Puma silver / black / blazing yellow 183831 02 Puma red / black / white
WIDTHS	Men's: D Women's: B
WEIGHT	204.11 g. / 7.2 oz.
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 50 / Đ 75

FEATURES & BENEFITS

7 steel receptacles on the outer surface of the plate

Solid rubber outsole

EVA wedge heel

Full length additional EVA layer

Full airmesh upper construction for maximum breathability and comfort

Full length thin padded tongue for extra comfort

Socklike construction

TPU plate very soft

TF ALLROUND 2

PROFILE

This full airmesh entry price middle distance spike with all the features you expect from your spike. it has a very sock-like upper with no heel counter. it has a big eVA heel wedge for shock absorption. The plate is tuned to sit between the distance and the sprint TfX spike. Designed for multi-event competitors who seek the responsive feel of a sprint shoe with the cushioning of a distance shoe. A durable TPU spike plate, eVA midsole, and a synthetic leather upper reinforcements.

MARKET POSITIONING

The TFX entry price spikes are positioned against the main competitors. Weather most competitors focus on maximum "blink blink" on the upper of the shoes we designed the shoes around maximum instep comfort.

WHAT'S NEW

All new for SP09.

COLLECTION	Complete Running
CATEGORY	Long Distance
LAST	Performance
SIZERUN	UK 5-12
GENDER	Unisex
UNISEX	182878 05 high risk / white / metallic silver 182879 06 white / new team royal / black
WIDTHS	Men's: D Women's: B
WEIGHT	181.43 g. / 6.4 oz.
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 40 / Đ 60

FEATURES & BENEFITS

7 steel receptacles on the outer surface of the plate

Solid rubber outsole

EVA wedge heel

Full length additionall EVA layer

Full airmesh upper construction for maximum breathability and comfort

Full length thin padded tongue for extra comfort

Socklike construction

TPU plate very soft

TFX MILLER

PROFILE

This full airmesh entry price middle distance spike with all the features you expect from your spike. It has a very sock-like upper with no heel counter. It has a big EVA heel wedge for shock absorption. The plate is tuned to sit between the distance and the sprint TFX spike. Designed for multi-event competitors who seek the responsive feel of a sprint shoe with the cushioning of a distance shoe. A durable TPU spike plate, EVA midsole, and a synthetic leather upper reinforcements.

MARKET POSITIONING

The TFX entry price spikes are positioned against the main competitors. Weather most competitors focus on maximum "blink blink" on the upper of the shoes we designed the shoes around maximum instep comfort.

WHAT'S NEW

All new for SP09.

COLLECTION	Complete Running
CATEGORY	Middle Distance
LAST	Performance
SIZERUN	UK 3-15
GENDER	Unisex
UNISEX	184191 01 black / azalea / silver metallic 183830 02 white / flame orange / black 183830 03 white / black / blazing yellow
WIDTHS	Men's: D Women's: B
WEIGHT	181.43 g. / 6.4 oz.
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 40 / Đ 60

FEATURES & BENEFITS

7 steel receptacles on the outer surface of the plate

7 spikes pin shape

Wrench

Solid rubber outsole

EVA wedge heel

Full airmesh upper construction for maximum breathability and comfort

Full length thin padded tongue for extra comfort

Socklike construction

THESEUS

PROFILE

Designed for elite sprinters who expect the best from their spikes. Synthetic leather upper for a snug fit. The Pebax plate ensures performance, durability and lightweight. Built for elite sprinters like Usain Bolt.

MARKET POSITIONING

Competitor shoes are the Asics Lite Ning, Adidas DeMolisher.

WHAT'S NEW

All new for SP08.

COLLECTION	Complete Running
CATEGORY	Sprint
LAST	Performance
SIZERUN	UK 4-12
GENDER	Unisex
UNISEX	183442 02 Puma silver / black / accacia
WIDTHS	Men's: D Women's: B
WEIGHT	204.11 g. / 7.2 oz.
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 100 / Đ 120

FEATURES & BENEFITS

8 steel receptacles

8 spikes pin shape

Wrench

Synthetic lether/airmesh upper construction for maximum breathability and support

Full length Pebax spike plate

Enhaces sprinting efficency due to stiffness of material, highly durable

Socklike construction

TFX SPRINT

PROFILE

Designed having sprinters and hurdlers in mind this fleet, versatile spike. A TPU spike plate and solid rubber outsole increase traction and speed. The synthetic leather/mesh upper adds support and comfort.

MARKET POSITIONING

The TFX entry price spikes are positioned against the main competitors. Weather most competitors focus on maximum "blink blink" on the upper of the shoes we designed the shoes around maximum instep comfort.

WHAT'S NEW

All new for SP09.

COLLECTION	Complete Running
CATEGORY	Sprint
LAST	Performance
SIZERUN	UK 3-15
GENDER	Unisex
UNISEX	183829 01 Puma red / black / white 183829 02 black / Puma silver / liquid blue 184190 01 white / azalea / black
WIDTHS	Men's: D Women's: B
WEIGHT	181.43 g. / 6.4 oz.
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 50 / Đ 65

FEATURES & BENEFITS

7 steel receptacles on the outer surface of the plate

Solid rubber outsole

7 spikes pin shape

Wrench

Rubber heel

Full length additionall EVA layer

Synthetic lether/airmesh upper construction for maximum breathability and support

Full length thin padded tongue for extra comfort

Socklike construction

TPU plate firm

JUMP

PROFILE

A premium spike designed for long jumpers, triple jumpers and pole vaulters of all abilities. Features a higher EVA midsole for improved shock absorbtion (triple jump) and take off (pole vault).

MARKET POSITIONING

Positioned against shoes like the Asics Turbo Jump. A more affordable jumping spike.

WHAT'S NEW

Exisisting spike.

COLLECTION	Complete Running
CATEGORY	Field
LAST	Performance
SIZERUN	UK 3-15
GENDER	Unisex
UNISEX	183443 02 Puma silver / black / accacia
WIDTHS	Men's: D Women's: B
WEIGHT	249.47 g. / 8.8 oz.
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 65 / Đ 65

FEATURES & BENEFITS

7 steel receptacles on the outer surface of the plate-

7 spikes pin shape

Wrench

Rubber heel

Full length additionall EVA layer

Synthetic lether/airmesh upper construction for maximum breathability and support

Full length thin padded tongue for extra comfort

TPU plate firm

NGONG XC

PROFILE

The fastest Cross Country spike, spikeless, and spiked is engineered for speed, protection, and stability. With an extremely lightweight and breathable upper and a wider base for greater stability, this versatile shoe is perfect for cross country and track. And it looks as good as it feels. Weight 6.9 ounces.

MARKET POSITIONING

The NGONG XC update is positioned against the main competitors in the game. Nike Waffle Racer, Saucony Kilkenny.

WHAT'S NEW

New upper for AW09. Safes weight improved breath ability due to use of sandwich mesh and a quantum leap in terms of fit make this model a true competitor again.

COLLECTION	Complete Running
CATEGORY	Cross Country
LAST	Performance
SIZERUN	UK 3.5-14
GENDER	Unisex
UNISEX	183981 01 white / silver metallic / Puma red 183981 02 russet orange / dark shadow / black
WIDTHS	Men's: D Women's: B
WEIGHT	204.11 g. / 7.2 oz.
CONSTRUCTION	EVA / Strobel
AVAILABILITY	06/01/09
PRICE	$ 45 / Đ 60

FEATURES & BENEFITS

Compession Molded Midsole EVA for lightweight cushion in the midsole.

EVA insole

6 Steel Receptacles (only spikeless version) For added grip on deeper slippery grounds.

Solid rubber outsole For maximum durability and protection.

Sandwich mesh Upper construction for increased breathability and lightweight socklike fit.

Full length tongue padding For an extra soft fit.

Wrench (only spiked version)

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SELLING FOOTWEAR

Every runner's feet are unique from the next. Imprint this on your psyche when selling running shoes, for this is the most important thing to remember. Pay close attention to any existing conditions as well as the athletic habits of each customer. Investigate details about a customer's level of exertion, athletic experience, past complications, injuries and other problems. Evaluate the entire body—not just the foot. And of course remember that in the end, customers—not you—decide whether the fit and performance of the shoe merits a purchase. Learn to live with their final decision.

I'M IN THE MARKET FOR SOME RUNNING SHOES.

We love this question, because it's what we at PUMA do best. When you hear this question, here's what to do.

ASK QUESTIONS

Interviewing your customers to understand their running needs is just as important as measuring their shoe size. Some questions to ask include:

- How many miles do you run each week?
- Where do you typically run?
- How would you describe your running goals?
- Do you have any foot problems or recent injuries?

The answers to these questions will help you determine the general type of running shoe your customer needs.

Broadly speaking, all running footwear can be classified as either competition or training footwear.

COMPETITION FOOTWEAR

Competition footwear is built for race day and includes track spikes, racing flats and cross-country footwear.

TRAINING FOOTWEAR

Training footwear is by far the most common type of running footwear and can be loosely categorized into four groups, or silos: Neutral, Stability and Motion Control, Lightweight Training, and Trail shoes.

EVALUATE THE FOOT

After you have gathered information on your customer's running needs, evaluate their feet for:

- Foot morphology, or the foot's size and type
- Biomechanical and motion control needs
- and any other special considerations

DETERMINE FOOT SIZE

THE BRANNOCK DEVICE

The Brannock Device is the standard for accurately measuring feet in almost all retail footwear stores worldwide. The device properly measures three basic dimensions of the foot: foot length, arch length, and foot width. All three measurements are needed to provide your customer with the best fit.

Some important tips to remember when using the Brannock Device:

Measure both feet Feet often come in different sizes. Fitting the customer in the larger of the two sizes ensures a more comfortable fit.

- Have the customer remove his/her shoes, but keep their running socks on. Accuracy can be improved by up to 10 percent if the runner's foot is measured while wearing sport specific socks. It's not a bad idea to keep a basket of clean running socks in the store for customers who are not wearing them.
- Manufacturers vary in their sizing, so a size 8 measurement on the Brannock Device does not mean the customer will wear an 8 in every brand or every style.
- Consider the fact that people's feet tend to swell about one shoe size, or 5%, over the course of a day, or during running. Shoes need to be about one finger's width longer than the person's foot to provide adequate room for swelling.

Measure the heel-to-toe length to find the customer's overall foot length and the heel-to-ball length for arch length. Compare the size indicated on the Brannock device for foot length and arch length. The larger of the two sizes is the correct shoe size. Finally, measure the width of the foot.

Instep height and overall foot volume also cannot be measured objectively. Look at your customer's feet for high insteps or overall volume and select shoes that will give them more room and flexibility. Different lacing techniques may also be used to improve the shoe's fit.

ADDITIONAL SIZING TIPS

- If a customer seems to be "between" sizes and can't decide which size to select, suggest that they go with a larger size. They can make adjustments for a better fit with socks, insoles or a different lacing pattern.
- With respect to feel... a runner's heel should fit snuggly with no slipping; the midfoot of the shoe under the arch and over the top of the foot should be snug but not tight; there should always be enough room in the toe box to wiggle one's toes.
- Feet always swell during the day, so encourage runners to try shoes on later in the day when their feet are at their largest.
- People are more than twice as likely to buy a shoe that is too small than too big. Here are some clues that shoes are too small or narrow: a runner's feet cramp while running or just after running; their feet fall asleep while running; they get blisters and calluses between or on the toes.
- PUMA shoes are made to fit directly out of the box (they do not need to be broken in).
- Feet typically get bigger with age. Encourage runners to have their feet measured every year.
- Many times women's feet increase by a half-size (or more) after pregnancy.

The left and right foot may differ in size by as much as a full size. Always measure and try shoes on both feet and buy shoes to fit the larger foot.

DETERMINE FOOT TYPE

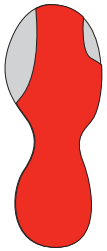
A person's arches can vary greatly—from flat to high. An easy way to determine arch type is to perform a "Wet Test." Wet the bottom of the customer's foot with water or ink, and have them step firmly onto a flat surface and apply their full bodyweight. A brown paper bag or cardboard is a good surface to use.

FROM THE IMPRINT YOU CAN DETERMINE IF YOUR CUSTOMER HAS FLAT, MEDIUM, OR HIGH ARCHES.

		FLEXIBLE	NEUTRAL	RIGID
LOW-ARCHED (FLAT)				
MEDIUM-ARCHED (NORMAL)				
HIGH-ARCHED				

Worn Tread

OVER-PRONATE



NEUTRAL

UNDER-PRONATE

LEFT SHOE, BOTTOM VIEW

FLAT FOOT TYPE: OVERPRONATOR / MOTION CONTROL

Low arch and flexible foot which flattens out leaving a print that looks like the complete sole of foot.

Overpronated foot which strikes on outside and rolls excessively inwards.

Best shoes Motion control shoes.

NORMAL FOOT TYPE: NEUTRAL / STABILITY SHOES

Have a medium arch which leaves a footprint where the forefoot and heel are connected by a broad band.

Foot lands on outside and rolls inwards to absorb shock.

Runner is biomechanically efficient.

Best Shoes Stability shoes with moderate control features.

HIGH ARCHED FOOT TYPE: UNDERPRONATOR / CUSHION SHOES

A high arched and rigid foot often has a high instep showing a footprint with a very narrow band or no band at all connecting forefoot and heel.

The foot is generally supinated or under-pronated.

The foot does not pronate enough and is not an effective shock absorber.

Best Shoes Cushioned shoes which are flexible to encourage foot motion.

ALTERNATIVE METHOD

Another common method to determine footstrike is examining the wear patterns of your customer's old running shoes. This method is not reliable and has become less so in recent years. To determine a foot type or running gait is by looking at one of their used pair of shoes. Place the shoes side by side on a table, toes pointing away from you. Look at the shoes from eye-level and you should be able to see one of three scenarios...

- If the shoes have a slight or significant inward tilt, then the customer exhibits an over-pronation running gait.
- If the shoes have a slight or significant outward tilt, then the customer exhibits an under-pronation (supination) running gait.
- If the shoes appear to be neutral and tilt neither inward nor out, then the customer exhibits a pronation-neutral running gait. Pronation-neutral runners have the full range of shoe options available and typically choose based on individual preference.

DETERMINING BIOMECHANICAL AND MOTION CONTROL NEEDS

As we've seen, a customer's foot type as biomechanical implications for their footstrike. Runners with low arches are more likely to overpronate and runners with high arches typically don't pronate enough.

A good method to determine the runners gait is to have your customer run a short distance and carefully observe the customer's gait from the back for signs of overpronation or supination. Additionally, look for signs off inward rotation (endorotation) and outward rotation (exorotation) of the toes.

Instead, have your customer run a short distance and carefully observe the customer's gait from the back for signs of overpronation or supination.

Signs of overpronation include:

- Heels that tilt inward through the midstance
- Outward rotated running style of feet (exorotation)
- Flat arches
- Large bunions
- Abnormally large calluses under the first, second, and third toes

Supinators have heels that tilt outward and, high, rigid arches. They tend to get calluses along the outer edge of the foot.

RECOMMEND THE RIGHT RUNNING SHOE

Consider these factors before giving your expert recommendation:

- Even a large degree of pronation does not warrant a prescription for motion control footwear.
- A runner with all the classic signs of overpronation may not need motion control shoes, due to the flexibility of the runner's joints. A good indicator the runner needs motion control is the presence of knee pain when running.
- A customer with flat feet who overpronates should wear a stability shoe with a straight last and motion control features that give maximum support to the foot and guide the foot through the footstrike.
- A customer with normal arches and a neutral footstrike should try shoes with a semi-curved last and a blend of cushioning and stability.
- A customer with high-arched feet who underpronates needs a highly cushioned shoe with a curved last and the least amount of medial support.
- An estimated 85% of runners are heels-trikers. If your customer is a midfoot or forefoot striker, recommend shoes that have good cushioning, especially in the forefoot.

TIPS TO REMEMBER

When selling athletic footwear, use these tips:

- Tell the customer that they shouldn't choose a running shoe based on color or design. The physiological elements to a running shoe determine which pair will ultimately fit them the best.
- Bring out more than one box. To reduce the time you spend going back and forth, bring out various sizes and colors.
- Close the box on rejects. When a customer decides they are not interested in one of the styles you brought out, close the box and move it out of the way.
- Stay at the customer's eye level. Kneel when they customer sits and stand when they stand.
- Check for a good fit. Leave about a thumb's width in front of the big toe when the customer is standing in the shoe.
- Try on both shoes. Suggest the customer walk or run around the store in them.
- Make sure you have the right sock. The sock should be the same type of sock they will use. Pointing this out to the customer as you explain what the different materials do will help the customer select the right shoe.
- There's no real trick to determining a customer's shoe width. When it comes to fit, the best rule of thumb is "if the shoe fits, wear it." If there is any question in your mind, measure the customer's foot width with a Brannock device.

HOW TO USE FORMULAS WITH CUSTOMERS

If your customer is looking for a running, walking or women's training shoe,

- Start by asking questions to find out what their stability needs are.
- Have your customer try on shoes with different amounts of cushioning to see what he or she prefers.
- Measure your customer's feet, if necessary, to determine width.

Use common sense with this new system—a customer's personal preference will always take precedence over any formula.

If your store doesn't carry a shoe with the exact formula a customer chose, offer them a shoe with a similar formula based upon what they consider the most important attribute.

FAQS ABOUT USAGE AND CARE OF RUNNING SHOES

With runners of all experience and knowledge levels walking into your store, be prepared to field a variety of questions. For instance, here are some common inquiries relating to running shoe care and usage:

Q: What can I do to extend the life of my running shoes?

A: Take good care of them. Don't store shoes in cold areas (like an unheated garage or porch) during the winter or in direct sunlight during the summer. Also, running shoes should be singular in use, so don't wear your trainers around town or for other sports. After running in wet weather, be sure to dry your running shoes (including the insoles) thoroughly by placing them near a heat source (but not in a dryer).

Q: Will my shoes last longer if I alternate two pairs?

A: Yes, foam needs 48 hours to recover to full height. If you run every day you never let it recover to full height and lose cushion. Shoes are made of foam and rubber, and daily use does significantly affect their durability. Two exceptions: if you run twice a day, or if you frequently get your shoes wet, then alternating them might be a good idea to let each pair dry out better.

Q: I got more than 500 miles out of one pair of shoes but only 375 out of another. What's up with that?

A: Don't sweat it. Because different shoes are made from different materials, some running shoes are more durable than others. More durable shoes are made of more durable materials. This accounts for the different mileage on your shoes.

The two most important components of any shoe are the midsole and outsole. Midsoles are made from either ethyl vinyl acetate (EVA) or polyurethane. EVA is used in most running shoes because it's lighter and has a more cushioned feel than polyurethane. But polyurethane is denser and more durable than EVA. Different companies embed a variety of air bags (duo-CELL), gels, plastic devices and viscous solution in their midsoles; these can also affect midsole durability because they replace midsole foam.

Outsoles are made from either blown rubber or carbon rubber. Blown rubber is lighter, cushionier and less durable than carbon rubber. Several shoes use blown rubber in the forefoot (for added cushioning) and carbon rubber in the high-wear areas of the heel (for better durability).

The most durable shoe has a polyurethane midsole and a carbon-rubber outsole. But don't expect this shoe to deliver maximum cushioning and lightness.

Q: How does a shoe's weight factor into its durability?

A: Generally, a very light shoe (less than 10 1/2 ounces) is less durable than a heavier shoe. That's one reason racing shoes are not nearly as durable as training shoes.

Q: Are there other factors to consider?

A: All the other factors are related to individual running attributes and habits. If you're a big runner who trains primarily on roads, your shoe's midsoles and outsoles won't last as long as those of a light runner using the same shoe who trains primarily on grass and soft trails. Similarly, the more a runner overpronates (when feet roll too far inward upon impact), the more stress they put on the midsole and upper, and the quicker the shoes will break down.

Q: How do I know when its time for a new pair of shoes?

A: For the reasons mentioned above, it's difficult to give an exact mileage guide. But here are some things runners can do: (1) stick a finger into the midsole to see if it feels brittle or compressed; (2) place the shoes on a table and check them for imbalances, such as worn areas or tilting to one side or the other; (3) listen to their aches and pains —they often mean it's time for a new pair of shoes, look for cracks in the midsole and outsole materials.

Finally, it's important to understand that midsoles usually deteriorate before outsoles. In other words, don't stick with a pair of shoes just because the outsoles seem fine. If the midsoles are shot, it's time for new shoes.

Q: What else can I do?

A: Mileage isn't everything, but some runners use their training logs to track how many miles they run in each pair of shoes they own. Not a bad idea. Other runners write the date of purchase somewhere on the shoe. That way, they know when several months have passed and it's time to start thinking about a new pair.

Q: How many miles can I reasonably expect out of my running shoes?

A: Again, there are so many variables. But, you should get at least 350 miles from a solid training shoe, and a regular runner can reasonably expect another 100 or 200 miles. Lightweight trainers will give fewer miles and far fewer from racing shoes. Some runners, particularly those who have efficient running form, get as much as 700 to 800 miles from their training shoes. Alternating shoes and keeping exact mileage records will give a pair of shoes its most efficient lifespan.

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GLOSSARY

RUNNING INJURIES

A

Amenorrhea The absence of menstrual periods.

Anterior Knee Pain Women have a significantly higher incidence of anterior knee pain (patellofemoral syndrome) than male runners.

Anti-blister Blisters occur as a result of friction caused by skin-sock-shoe contact. An Anti-blister sock uses a special friction-free material that allows the foot and shoe to move together, meaning the rubbing occurs between the sock and the shoe rather than the sock and your foot. And its ultra-thin style doesn't add bulk, which makes it perfect for racing or training runs.

B

Black toenails Black toenails are typically caused by repeated impact the toes endure while running, so they are often an inevitable part of life for many runners. The repeated impact causes friction between the runner's toenail and the nail bed, eventually causing a separation. A fluid mixed with blood accumulates in the space between the nail and nail bed. The more fluid that accumulates, the more pressure, which results in additional pain. Properly fitted shoes with at least a half an inch of room in the toebox will significantly reduce the chances of getting a black toenail.

Blisters Blisters form as a result of the repetitive rubbing, or friction, over a small area of the skin, causing the skin layers to separate and create a void that fills with fluid or blood. Correctly-fitted shoes with few seams or areas that rub, as well as Dri-Fit socks that wick moisture away from the foot, will reduce the risk of blistering.

Bone spurs A bone spur is a bony growth or extra bone formed on a normal bone. It is usually smooth, but can cause pain if it presses or rubs on other bones or soft tissues such as ligaments or tendons in the body. Common places for bone spurs include the spine, shoulders, hands, hips, knees, and feet.

Bonk Another term like "hitting the wall"; a state of exhaustion when glycogen stores are depleted, blood glucose (sugar) levels are low and the only exercise that can be performed is slow running; typically occurs at around the 20 mile point in the marathon.

Bunions A bunion is a condition where the big toe angles towards the smaller toes, and the bone at the base of the big toe protrudes outward. The bunion appears to be an enlargement, a bump, or a bone growth, but it is actually an indication of a misalignment or partial dislocation of the joint. Bunions appear for a variety of different reasons, the most common being a person's hereditary foot type (30 percent of the time). Another cause of bunions is faulty foot mechanics (such as over-pronation). The more pressure that the ball of the foot is exposed to the more of a chance a person has in developing a bunion. Ill-fitting shoes, such as shoes that are too tight, do not cause bunions to develop but they can accelerate their growth and cause extreme discomfort to runners with existing bunions. Treatment ranges from simply being fit for orthotics, to a more extreme procedure such as surgery. Wearing shoes with a wider toebox for all running and daily activities can often prevent the condition.

C

Calluses Calluses are thickened areas of skin that form as a result of repeated amounts of pressure and friction. Calluses are the body's way of protecting the foot's skin, and the structures beneath it, from injury. Typically painless, calluses serve more as an annoyance than anything. If persistent, orthotics can be used to redistribute the weight equally, allowing them to heal.

D

Dehydration Lack of sufficient fluids in the body, characterized by extreme thirst, weakness, or sleepiness.

Delayed Onset Muscle Soreness (DOMS) Delayed onset muscle soreness is quite common, especially if you rarely use the affected muscles. DOMS is also quite common after particularly intense runs. The bad news is that worst discomfort generally lasts for two days. The good news is that it usually subsides over the next few.

F

Flat arch height A foot is considered to be flat when there is a very low or no visible arch. A flat foot leaves an imprint that is nearly complete, and looks much like the entire sole of the foot. Typically more flexible and more likely to over-pronate, a flat foot's excess motion can ultimately cause several different types of overuse injuries.

G

Gluteus Medius Strain Many women have significant issues with shoe fit and stability, probably because the female heel is typically more narrow than the forefoot compared to men. This may lead to gluteus medius (butt) strains.

H

Hammertoes Hammertoe is when one or both joints of the second, third, fourth, or fifth (little) toes bends or curls. This abnormal curl can put pressure on the toe when wearing shoes, causing problems to develop.

Hamstring Strain Micro-tears of the large muscles of the back of the thigh; can be treated with ice, stretching and strengthening exercises.

Hip Adduction Women have greater peak hip adduction. This means that the thigh moves toward the mid line of the body.

Hyponatraemia A very dangerous and thankfully rare condition where an individual has either lost too much sodium through sweating or, more typically, has ingested too much plain water (rather than electrolyte-containing solutions) and the blood plasma sodium concentration has fallen to a critically low level. Has led to several runner deaths in recent years.

I

Internal Rotation Women have a greater internal rotation of the thigh and hip than men, and the combination of these factors increases the contact forces on the kneecap. This may explain why women have twice as much anterior knee pain as men.

L

Lactate Threshold The running intensity where lactic acid begins to rapidly accumulate in the blood. Also called anaerobic threshold, lactate threshold speed is a runner's 10K race pace plus 5-20 seconds or a heart rate zone between 85-89% of maximum.

Lactic acid Incomplete glucose breakdown leads to the formation of lactic acid in the muscles. Lactic acid is associated with soreness and muscle fatigue. See "lactate threshold."

Lateral Knee Injury There are several fundamental differences in the shape and structure of women's feet compared to men's feet. This could lead to more iliotibial band (IT Band / lateral knee) injuries for female runners.

Ligament Damage Physiologists believe that higher concentrations of circulating hormones may be a significant factor in ligament injuries in women. The hormone estrogen, which is a soft tissue relaxant, may pre-dispose female athletes to greater ligament damage. As estrogen levels change throughout the month, so does ligament elasticity. This becomes significant to female runners, specifically as the major ligaments in the arch become flatter and less supportive.

Lower Back Pain The result of the narrower heel-forefoot relationship can be heel slippage and reduced stability for women who may be wearing downsized men's shoes. This can cause female runners to have many times more incidences of sacro-iliac (low back) pain as men.

M

Mid-foot The five mid-foot tarsal bones fit together to form a person's arch. While running, the tarsal bones flex to absorb the shock, providing the body with a natural cushioning system. If the bones do not flex, the foot becomes rigid and unstable, and renders the body susceptible to injuries.

Muscle Demand Greater hip abduction angle and velocity place greater demand on the muscles responsible for counteracting these movements. For example, greater loads on the butt muscles, particularly gluteus medius, make it three times as likely to be injured in female runners than males.

Muscle Soreness Pain, stiffness, and discomfort in a muscle due to microscopic tears, or strains, of the muscle. This is usually caused as a result of the muscle doing more work than it is used to be (also called DOMS or delayed onset muscle soreness).

O

Overheating A condition where a runner has been exposed to abnormally high temperatures or has lost an excess of fluid (water) through exercise and is no longer capable of maintaining normal body temperature. This is a potentially very dangerous condition. In most instances selection of the most appropriate running clothing for the day, starting the exercise session fully hydrated and hydrating properly during the session will significantly decrease the probability of over-heating.

Overpronation The excessive inward roll of the foot; overpronation can be controlled through the use of motion control shoes and/or orthotics.

Overtraining Condition in which a runner runs too many miles, too hard, too soon, leading to fatigue, injury and/or burn-out.

Oxygen Debt A state in which the energy demand is greater than what can be provided by oxygen thus inducing heavy breathing to consume more oxygen.

P

Piriformis Syndrome Pain in the buttocks resulting from a tight piriformis muscle pressing against the sciatic nerve; can be treated by stretching exercises for the buttocks.

Plantar Fasciitis Foot injury where micro-tears occur in the arch; especially painful in the morning; can be treated by stretching the arch and calves; massage with hands or rubbing foot on golf ball or a shaving cream can; if untreated, can lead to heel spurs (spur of bone from the heel bone).

R

Runner's Knee Knee pain typically caused by the knee cap not sliding properly during movement; may be related to muscular imbalances within the thigh muscles; can be treated with strengthening exercises for weak muscles (usually the inner thigh muscle).

S

Sciatica Pain which runs from the lower back to the toes related to pressure on the large nerve innervating this area, the sciatic nerve; should be evaluated by physician.

Shin Splints Lower leg injury where there is pain along the shin bone; usually caused by excessive pronation or weak shin muscles; treat with ice and stretching and strengthening exercises; can lead to stress fractures.

Supination When the foot rolls outward at toe-off, supination occurs. If your foot remains on the outside edge instead of pronating, that's over-supination.

T

Turn Out Female feet typically turn out more than men's during the entire stance phase of gait. This means that for athletic footwear, touchdown angle and recognition of the difference between touchdown angle are critical considerations.

Women exhibit greater impact forces than men, and their knees flex less, possibly affecting the knees' role as a shock absorber.

U

Underpronation or supination The lack of sufficient inward motion of the foot; highly cushioned, flexible shoes are recommended to absorb shock and allow the foot to pronate naturally.

W

The Wall or Hitting the Wall A state of exhaustion when your body runs out of glycogen or energy; usually occurs around mile 20 in a marathon (see "Bonk").

Wider Pelvis Women have a wider pelvis than men and a relatively shorter thigh bone. As a result, women have a greater static genu valgum than men, meaning their knees may "knock" during running.

RUNNING TERMS

00

100m Shortest sprint race in outdoor track and field.

10K 10,000 meters; 10 kilometers; 6.2 miles.

1500m 3 3/4 laps of track; called the "metric mile."

15K 15000 meters; 15 kilometers; 9.3 miles.

2 miles Approximately 8 laps of the track; 3,218 meters.

200m Half a lap of the track.

2A Visco-elastic (elastomer) polymer units that absorb shock. (Fila)

3D Torsion Device in shoes that causes the shoe to return to a stable base after allowing the foot to twist in its natural movement during the gait cycle. Differs from Torsion by extending upward into the arch.

3D Ultralite Reebok's Injection-molded mixture of rubber and EVA which eliminates the need for separate midsole/outsole pieces.

3000m 1.864 miles.

40-30-30 Dietary regimen where a runner gets 40% of calories from carbohydrates, 30% from fats and 30% from protein.

400m 1 lap around track, also called a "quarter."

5K 5000 meters; 5 Kilometers; 3.1 miles.

800m Approximately a half-mile; 2 laps around track.

8K 4.97 miles.

A

Abrasion-Resistant Mesh Abrasion-resistant mesh and textiles are highly-breathable and lightweight. These materials are used in footwear when protection from snags and rips is important.

ABZORB Visco-elastic (elastomer) polymer pads to absorb shock. (New Balance)

Archtech Midfoot shank device that causes the shoe to return to a stable base, after allowing the foot to twist in its natural movement, during the gait cycle Comparable to Adidas' Torsion system. (Puma)

Adaptation (plus Overload and Recovery) In order to improve, for example aerobic capacity, the runner must progress the volume/intensity of his/her training at a suitable rate, thus 'overloading' the system. The body 'adapts' to the new demand and a training effect is seen. 'Recovery' is important for 'adaptation' to occur. Exceeding an effective overload level can easily lead to overtraining and potential injury. Conversely, failure to either overload the system or to allow sufficient recovery will lead to ineffective training. Lack of recovery may lead to overtiredness, illness, loss of motivation and injury. Too much recovery and the net benefit may be lost.

Adaptive EverFoam Special memory foam heel construction for a heel fit which is perfectly adjusting to the heel console.

adiPRENE Special process, compressed-injected EVA foam insert (Adidas), also a visco-elastic polymer insert which performs the same function.

adiPRENE + Special process, compressed injected EVA foam insert layer, used in forefoot. (Adidas)

Adjustable drawcord waistband An adjustable drawcord waistband is often made with elastic in pants or shorts for a personalized fit.

Adjustable Straps Adjustable straps in the forefoot and heel create an optimum fit that can be customized to individual feet. Straps secure the sandal on the foot, not allowing any "slippage."

Aerobic With oxygen; usually used to describe exercise of low to moderate intensity.

Aerobic Capacity Also called VO2max; maximum amount of oxygen that can be utilized by the body; also describes a type of training that increases the amount of oxygen that can be utilized, i.e., Aerobic Capacity Intervals.

Aerobic Conditioning Training that improves endurance.

Aeroflo Midfoot ventilation system to allow the cooling of the foot on impact (Fila).

Agion A technology that operates at the surface of a product through the controlled release of silver ions which attack microbes and inhibit their growth in three different ways. Offers a variety of silver-based technologies to suit various manufacturing and product requirements.

AHAR ASICS High Abrasion Rubber. (Asics)

Air Cushion Merrell Chamber that forces air as a cushion.

Air Mesh Upper Provides lightweight breathability.

Air-Sole units Those little bags are based on the following formula: Cu=U+CG (Cushioning equals urethane bags filled with compressed gas). It says that because the gas molecules are larger than the pores in the urethane membrane, air can't escape. The result is our light, protective cushioning. (Nike)

All-Trac Amphibious Rubber All-Trac Amphibious rubber is a compound specifically

designed to provide outstanding "stick" on wet or dry surfaces. It's always used in river sandals and aquasocks.

All-Trac Sticky Rubber All-Trac sticky rubber provides premiere traction when bouldering or running on rough trails and rocky surfaces.

All-Trac Trail Rubber All-Trac Trail rubber compounds are used for durability on rough and abrasive surfaces in Trail Running and Light Hiking shoes.

All-Trac Winter All-Trac Winter outsoles are made of highly-durable carbon rubber compounds that include harder studs mixed among other lugs in a traction pattern for great grip.

Amenorrhea The absence of menstrual periods.

Anaerobic Without oxygen; usually used to describe exercise of high to very high intensity.

Anaerobic Capacity Maximum amount of energy that can be produced without requiring oxygen; also describes a type of training that increases the amount of energy that can be produced, i.e., Anaerobic Capacity Intervals.

Anaerobic Threshold (AT) The object of training is to increase your AT. That way your muscles can use oxygen at higher rates and scare the lactate bogeyman away. AT is sometimes referred to as lactate threshold.

Anthropometry This is the study of body size in respect of, for example, limb lengths and their relative sizes. These factors can affect walking and running technique.

Anti-blister Blisters occur as a result of friction caused by skin-sock-shoe contact. An Anti-blister sock uses a special friction-free material that allows the foot and shoe to move together, meaning the rubbing occurs between the sock and the shoe rather than the sock and your foot. And its ultra-thin style doesn't add bulk, which makes it perfect for racing or training runs.

Arch Panel The arch panel is essential because this is where the sock gets its stability and secure fit around the foot.

ArchTec Lightweight; support for the arch of the foot, increases the functional firmness. A TPU shank device that provides stability and support to the midfoot during the gait cycle while still allowing the necessary torsional freedom and natural rearfoot twist. (Puma)

ATP-CP The 'explosive' energy system capable of supporting high power output for several seconds only. Operates without oxygen and without producing lactic acid.

B

Back Strap A tab or strip of leather/fabric extending above the top of the shoe upper at the back to assist in drawing the shoe on the foot.

Beveled Outsole An outsole that is slightly convex, or curved, to provide better traction and comfort on the uneven terrain of trails.

Bioelectrical Impedance/Infrared Method of determining percent body fat where an electrical impulse or infrared light are put through the body; easy to use but has a likelihood of error of approximately 3–6%.

Biomechanics Study of the function of the body in relation to movement; especially important for repetitive movement sports like running; poor biomechanics can lead to injury.

Black Toenails Black toenails are typically caused by repeated impact the toes endure while running, so they are often an inevitable part of life for many runners. The repeated impact causes friction between the runner's toenail and the nail bed, eventually causing a separation. A fluid mixed with blood accumulates in the space between the nail and nail bed. The more fluid that accumulates, the more pressure, which results in additional pain. Properly fitted shoes with at least a half an inch of room in the toebox will significantly reduce the chances of getting a black toenail.

BioLock Internal strapping system to improve heel fit. (Mizuno)

Blisters Blisters form as a result of the repetitive rubbing, or friction, over a small area of the skin, causing the skin layers to separate and create a void that fills with fluid or blood. Correctly-fitted shoes with few seams or areas that rub, as well as Dri-Fit socks that wick moisture away from the foot, will reduce the risk of blistering.

Blow Molding Gas is injected through an external tube into the injection mold, forcing the plastic into the shape of a mold.

Body Composition Usually relating to the percent of the body comprised of lean tissue (bone, muscle, water, etc.) or fat tissue; 17% or less body fat is recommended for men; 24% or less body fat is recommended for women.

Bone Spurs A bone spur is a bony growth or extra bone formed on a normal bone. It is usually smooth, but can cause pain if it presses or rubs on other bones or soft tissues such as ligaments or tendons in the body. Common places for bone spurs include the spine, shoulders, hands, hips, knees, and feet.

Bonk Another term like "hitting the wall"; a state of exhaustion when glycogen stores are depleted, blood glucose (sugar) levels are low and the only exercise that can be performed is slow running; typically occurs at around mile 20 in the marathon.

Boot Any footwear extending above the ankle.

Brannock Device The Brannock Device is the standard for accurately measuring feet in almost all retail footwear stores worldwide. The Brannock Device can properly measure three basic dimensions of the foot: foot length, arch length, and foot width. All three measurements are needed to provide the customer with the best fit.

Broad Load Distribution Broad load distribution means the moderator plates distribute the impact across the whole heel so that it's absorbed by a larger area, and reducing the shock from impact.

BRS 1000 Durable carbon rubber compound. (Nike)

Brushed or Sanded A brushed or sanded fabric has a special treatment that makes it softer or adds bulk for warmth. Fleece sweatshirts are brushed.

Bunions A bunion is a condition where the big toe angles towards the smaller toes, and the bone at the base of the big toe protrudes outward. The bunion appears to be an enlargement, a bump, or a bone growth, but it is actually an indication of a misalignment or partial dislocation of the joint. Bunions appear for a variety of different reasons, the most common being a person's hereditary foot type (30 percent of the time). Another cause of bunions is faulty foot mechanics (such as over-pronation). The more pressure that the ball of the foot is exposed to the more of a chance a person has in developing a bunion. Ill-fitting shoes, such as shoes that are too tight, do not cause bunions to develop but they can accelerate their growth and cause extreme discomfort to runners with existing bunions. Treatment ranges from simply being fit for orthotics, to a more extreme procedure such as surgery. Wearing shoes with a wider toebox for all running and daily activities can often prevent the condition.

C

Cadence Number of strides per unit time; i.e. stride frequency or leg speed. Together with stride length these two factors determine actual running speed.

Calluses Calluses are thickened areas of skin that form as a result of repeated amounts of pressure and friction. Calluses are the body's way of protecting the foot's skin, and the structures beneath it, from injury. Typically painless, calluses serve more as an annoyance then anything. If persistent, orthotics can be used to redistribute the weight equally, allowing them to heal.

Canvas A heavy, coarse, closely woven fabric of cotton, hemp, or flax, used for tents and sails.

Capris A capri is a bottom with a mid-calf length that helps keep knees warmer and is especially nice during the transition from winter to spring.

Carbo-Loading The dietary practice of eating a high carbohydrate diet (approximately 60–70% of total calories) for the three days leading up to a race to maximally fill the glycogen stores.

Carbon Fiber A material used in midsoles for support. It's stronger than steel, but lighter.

Carbohydrate Essential nutrient of body found in pastas, breads, fruits, vegetables; should comprise the majority of calories in a runner's diet; stored in the body as glycogen in the muscles and liver; overconsumption is converted to fat.

Cardiovascular, CV or Cardio (Training / Fitness) Another word for Aerobic training. Basically, 'CV' fitness may be defined as the ability of the body to deliver blood and oxygen to the muscle.

C-CAP Compression-molded ethylene vinyl acetate. (New Balance)

Cell Hexagonal polyurethane cells of varying size with various amounts of CM-EVA or PU foam for support, with a slower rate of compression or breakdown than foam (Puma).

Chassis A chassis cradles the midfoot and adds torsional rigidity for better lateral stability. Constructed of plastic or nylon, the chassis is shorter on the inner side of the foot so it won't interfere with movement.

Chest Strap A chest strap holds a heart rate monitor around the chest near the sternum. The monitor reads the electrical signals given off by an athlete's heart and relays that information to the watch for real-time feedback. Similar to an EKG, or electrocardiogram, this type of measurement is more accurate than taking their pulse by hand or using a treadmill.

Children's Sizes Children's footwear sizes range from 1–13.5c.

Chromium Picolinate Supplement to help aid in the burning of fat; little scientific evidence to support its claims.

Circuit Training Body weight resistance training to improve general core strength and stability while also serving to develop aerobic and potentially anaerobic fitness.

Cleat A Cleat is a common term that describes the spike or stud. It's made with metal or rubber, that is attached to the outsole of cleated footwear for traction on a variety of surfaces.

Clog A thick-soled, sometimes back-less shoe sometimes with leather upper.

CM-EVA Compression-molded ethylene vinyl acetate foam.

Collar Area around the ankle that's padded for fit and comfort.

Collar Foam The collar of a shoe is the part of the upper that is closest to the ankle. Footwear will often have padding in this

area—collar foam—to provide comfort and a secure fit that's flexible enough for natural movement, but snug enough to protect against debris.

Combination Lasted The use of a fibrous, stabilizing board, glued into the heel when the shoe is being constructed. The combination of the slip-lasted forefoot (for flexibility) with the stabilizing board in the heel gives the shoe more stability and versatility.

Competition Footwear Competition footwear is built for race day and includes track spikes, racing flats, and cross-country footwear.

Competitive Runner Competitive runners are serious about training to compete. They train at least 5 days a week and compete in races. These athletes want the absolute premiere product to enhance performance.

Contoured Footbed Footbed that follows the contours of the foot.

Cool-Down Slow, easy running done after a workout to help you recover more quickly.

Core Stability / Strength Generally viewed as the ability of the torso region of the body to endure the forces developed by the limbs while running. Hence, good core stability may lead to a more efficient and relaxed running action.

Correct Running / Technique By developing a correct running technique the efficiency of the running action will be improved. Biomechanics, core stability and relaxation are key factors here together with development of aerobic capacity.

Counter A piece of heavy leather or other stiffening material inserted between the outside and the lining of the upper at the back part of the shoe. The purpose of the counter is to strengthen the back part of the shoe and to prevent it from sagging and losing its shape.

Crash Pad A stand-alone pad on the heel of your running shoes that minimizes impact pressure.

Creatine Monohydrate Supplement designed to maximally fill the creatine phosphate stores (fuel for explosive movements like sprinting); little scientific evidence of its beneficial effects for distance runners.

Cross-Country Running Training or competition involving running over natural countryside of fields and woodland with very limited climbs. Often performed over the fall and winter and can provide a relief from running on roads.

Cross-Training Activities such as swimming and cycling that are used to increase conditioning and injury prevention for running or as a means of adding variety to workout schedule.

Cruise Intervals Type of workout to improve the lactate threshold; usually repetitions of 800 meters to 2 miles performed at the lactate threshold speed with short recoveries.

Cushioning The ability of a shoe to minimize the shock of running; while all running shoes have cushioning, highly cushioned shoes are usually designed for under-pronators (or supinators) who need additional shock absorption and maximum flexibility.

Cushioning Footwear Cushioning shoes are built for slight-to-medium-build runners who may have higher, more rigid arches. They are typically built on curved or semi-curved lasts to encourage foot motion for better shock absorption. Although heavier runners need good cushioning, they usually require more support from features included in stability shoes.

D

DCS Double Cantilever System; opposing cantilevers which provide cushioning and stability.

Decathlon The decathlon is the men's event, consisting of 10 events: 100-meter dash, the long jump, the shot put, the high jump, the 400-meter run, the 110-meter hurdle race, the discus throw, the pole vault, the javelin throw, and the 1500-meter run.

Decoupled Heel Rounded and flared heel outsole/midsole geometry in combination with flexgrooves for a smooth first impact and roll off from heel to toe. Lowers the pronation velocity and the degree of pronation.

Dehydration Lack of sufficient fluids in the body, characterized by extreme thirst, weakness, or sleepiness.

Detachable Cleat Detachable cleats are made from TPU, metal, or rubber, and come in various lengths that are useful for different field conditions. They are good for athletes who want the versatility of using a longer cleat on wet field conditions or simply need to replace cleats that are worn too low. A detachable cleat is better for all types of grass—hard and dry or wet and soft.

Diagonal Rollbar Outersole design for stability and to prevent overpronation. (Brooks)

Distance Plus High-abrasion rubber. (Ryka)

DMX Connected air bladders exchange air from one end of the system to the other, and back, on impact. (Reebok)

DMX Internal Ambient air-filled, non-visible, multi-chambered bladder transfers air from front to rear and back. Positioned within the EVA midsole, it creates a noticeable cushioning effect. (Reebok)

DMX Lite Ambient air-filled, two-chambered bladder transfers air from front to rear and back. Positioned under the Strobel board, it creates a noticeable cushioning effect. (Reebok; also see Stim-Pac).

DMX-I Pak Two-chambered air bladder, surrounded by EVA, exchanges air from one end of the system to the other, and back, on impact. (Reebok)

DNF Stands for "did not finish" and describes a participant who drops out of a race.

DNS Stands for "did not start" and describes a participant who entered but failed to start a race.

Delayed Onset Muscle Soreness (DOMS) Delayed onset muscle soreness is quite common, especially if you rarely use the affected muscles. DOMS is also quite common after particularly intense runs. The bad news is that worst discomfort generally lasts for two days. The good news is that it usually subsides over the next few.

Double Action 2 Visco-elastic (elastomer) polymer units that absorb shock, denser (red) unit in heel, more elastic (green) unit in forefoot. (Diadora)

Double Lasted The use of two pieces of fabric in the upper. One is sewn in the traditional way—either Strobel slip-lasted or slip-lasted, while the other is kept loose until the midsole is attached. Then it is wrapped under the midsole before the outer sole is attached, thereby covering the midsole and adding support and protection to the shoe.

Double-Lasting When the upper is wrapped around the midsole to meet the outsole, usually in the forefoot. Double-lasted shoes help snug the foot to footbed for a better fit.

DRB Accel Lightweight TPU device for preventing overpronation. (Brooks)

Dual-Density Midsole A dual-density midsole uses PU or Phylon in the midsole with a firmer, denser version in the medial (or inside) side of the heel to help reduce the rate of pronation. Dual Density midsoles can be identified by dual coloring in the firmer material section. Denser material on the medial side is commonly called medial posting.

Dual-Density Polyurethane/Phylon Midsoles that are harder where you need them to be (polyurethane), softer and lighter where you don't (Phylon). (Nike)

Dual-Pressure Max Air Nike Max Air, the maximum in impact cushioning, is designed to take brutal, repetitive impacts and minimize their effects on the body and your performance. Air Max units are made through a technique called blow-molding, allowing for the greatest volume of Nike Air without weakening the Air-Sole unit. Duel-pressure cushioning addresses the need for protection and rear foot stability. The hallmark of the Air Max technology is a visible air unit in the heel.(Nike)

duoCELL duoCELL has been specifically engineered to combine durable cushioning and maximum stability. The CELL layers, made of a super elastomer, greatly reduce the impact forces upon heel strike. The new

independent CELLs support a natural foot motion and slow the foot's inward rotation for optimal footstrike. The result is a long lasting, softer, more responsive cushioning to help prevent injury. (Puma)

DuoMax Denser medial midsole CM-EVA, for pronation control in stability shoes. (ASICS)

Durable Rubber Compound A blend of solid rubber with additives that offer extra durability for rough and abrasive surfaces. DRC is a heavy, dense and very hard material. Compared to other outsole materials, DRC is heavier, but offers increased durability. DRC is mainly used in tennis, walking and outdoor basketball shoes.

Duralon Blown rubber for lightness, with a toughened skin for more durability. (Nike)

Dynamic Fit Sleeve The Dynamic Fit Sleeve is a specially-constructed lining inside the upper that completely wraps around the foot, reducing seams and fitting the foot like a glove!

E

Easy Run A slow run done at a conversational pace.

Eclipse 5000 Closely monitored injection-molded or compression-molded EVA, for applications of durability and cushioning. (Reebok)

Eclipse 6000 Closely monitored injection-molded or compression-molded EVA, for applications of durability and cushioning. (Reebok)

EFR Engineered Forefoot Ride (Adidas); layer of blown rubber, for cushioning, under harder, more durable carbon rubber.

Electrolytes Minerals such as sodium, chloride and potassium that are used for normal bodily functions. These minerals are lost when the body sweats and are replaced through food and fluids.

Elon ICompression-molded compound of rubber and EVA, which is more durable and resilient than standard EVA.

Endorphins Chemicals in the brain which create a feeling of euphoria; said to be the cause of the "runner's high."

Endurance Your ability to run for long periods of time.

Energy Efficiency Energy efficiency means that in the compression phase (when the foot is coming down to the ground) and in the expansion phase (when the foot is off the ground), the columns accept and expel energy better than other materials.

Energy Arrest Padding Energy arrest padding is a thick layer of slow-recovery foam that's laminated to a thin layer of high-density foam for maximum comfort and palm protection.

Energy System Energy can be provided by a number of routes including "aerobic," "anaerobic" and "ATP-CP"

Engineered for Women Based around the fact that women's feet are different from men's, shoe companies engineer shoes that take that into consideration.

EVA Ethylene vinyl acetate (EVA) is a resilient foam material used in footwear midsoles that provides good shock protection. Midsoles can be made by die-cutting EVA into the correct shape just like a cookie cutter.

EVA Board Proven EVA replacement for the standard brand-sole for additional comfort and cushioning.

EVA Sockliner Breathable and antibacterial. Tri-rate sockliner with moisture-wicking top fabric and a memory foam midlayer offers comfort and a structured EVA base for support.

Everdure High-abrasion rubber. (Etonic)

EverGrip A new, stickier rubber compound which provides excellent grip and traction on both wet and dry surfaces through increased slip resistance. Special outsole composite and geometry for improved grip and traction in heavy terrain. (Puma)

EverLite Highly-efficient Puma outsole concept. Saves up to 50% weight, optimized ground contact and grip. High durability. A Puma fabric base material with direct injected TPU/rubber blended lugs that creates extremely lightweight outsoles and great flexibility. (Puma)

EverRide Blown EVERTRACK rubber outsole component with high abrasion-resistant rubber for extra cushioning in the forefoot. Reduces the weight of the shoe. It's used for the Tenos III in the forefoot. (Puma)

EverTrack Puma's rubber compound with higher than average abrasion and wear characteristics. It is used for the Tenos III in the heel. (Puma)

F

Fartlek Swedish word for "speedplay"; workout includes faster running mixed with slower running; adds variety to training and can be performed in any setting.

Fast Twitch Type of muscle fiber (cells which compose the muscles) which contract rapidly and powerfully but fatigue quickly, most commonly utilized by sprinters.

Fat Essential nutrient of body found in oils and meats; should comprise approximately 30% of calories in a runner's diet; overconsumption leads to increases in body fat; can be of three types: saturated, poly-unsaturated, and mono-unsaturated.

Fat-Burning Used to describe an exercise intensity which burns the most fat; science is still debating the appropriate intensity

for maximal fat-burning; note: burning fat at the highest rate does not necessarily correspond to burning calories at the highest rate.

Fat (High) Diet The dietary practice of eating a high fat diet for a minimum of 5 to 10 days leading up to an endurance race which is due to last more than 4 hours. The change in fat consumption serves to increase the proportion of fat used during the event and to eke out the use of vital glycogen stores.

Fitness Runner The Fitness Runner does many activities: aerobics, cardio, weights, and Yoga. Running is a staple of their aerobic workout, whether on a treadmill or outdoors. This runner looks for versatility in their apparel—gear that can be worn to the gym and on the road.

Flat Arch Height A foot is considered to be flat when there is a very low or no visible arch. A flat foot leaves an imprint that is nearly complete, and looks much like the entire sole of the foot. Typically more flexible and more likely to over-pronate, a flat foot's excess motion can ultimately cause several different types of overuse injuries.

Flat-Seamed Flat-seam construction is a sewing technique that results in a smooth or flat seam. It minimizes skin contact and reduces potential irritation.

Flex Grooves Channels strategically placed to help your foot flex while you run.

Flexibility The ability of a muscle or muscle groups to allow or create movement of a joint. Often important in supporting 'correct running' and avoiding injury.

FOM Low-density foam pad for forefoot cushioning. (Avia)

FormStripe Functional logostripe for anatomical foot support in the midfoot, ball-girth and heel. Improves the fit and stability in the shoe. (Puma)

Footbridge A device used in shoes to help slow the rate of pronation. It is inserted between the upper and the midsole. (Nike)

Footstrike Footstrike is the motion of the foot impacting the ground, rolling forward, and lifting up again off the toe. There are three main types of footstrike: neutral, supination, and overpronation. (See also Neutral Footstrike, Supination, and Overpronation)

Footstrike Management Footstrike management is the ability of a shoe to guide the footstrike or the motion of the foot impacting the ground, rolling forward and lifting up again, off the toe. This is also known as Motion Control. (See also Footstrike)

Forefoot The forefoot is composed of five metatarsal bones and the phalanges, or toes. During running, toes grip the surface and help propel the runner forward. The metatarsal bones are connected to the toes by five metatarsal-phalangeal joints, which make the ball of the foot. The forefoot grips the surface and helps propel the runner forward.

Foxing The back part of a shoe upper from shank to heel. This may include only the back part below the vamp line, as in a shoe having a three quarters or circular vamp; or it may include the entire back part of the upper from top edge to sole and from shank to heel, as in many types of low cut shoe.

Fun Run A running event held informally, often over an approximate distance of between 1 mile and 6.2 miles (10km) to introduce individuals to the pleasure of running with a group and having the satisfaction of completing a personal challenge.

G

Gait (Analysis) A particular way or manner of moving a foot or leg. Analysis can reveal areas for possible development for improved action. (See also Biomechanics)

Gait Cycle Despite our common anatomy, the way a person runs, called their gait cycle, varies from one person to another. A gait cycle is all of the events that occur from the initial contact of one foot to the next successive contact of the same foot. A runner's gait cycle can be divided into two distinctive phases: the Stance Phase and the Swing Phase. The Stance Phase is the period of time when the foot is in contact with the ground. The Swing Phase begins when both feet are elevated off the ground and concludes when the foot regains contact with the running surface.

Gaiter Loops Gaiter are devices that can be attached to the shoe around the ankle to stop snow or rocks from getting in. In footwear, gaiter loops are built-in loops of durable material that gaiters attach to.

GEL Encapsulated, semi-solid silicon-like substance for shock absorption. (ASICS)

Gore-Tex Membrane The Gore-Tex membrane is a waterproof innersleeve sewn right inside the upper, so it completely surrounds your foot with breathable protection for the life of the shoe. Its breathable pores are 20,000 times smaller than a raindrop but 700 times larger than a water molecule.

Glucose Basic sugar; form of sugar into which all carbohydrates are first converted and appear in the blood.

Glycogen The form in which carbohydrates are stored in the body; there are two main stores of glycogen—the liver and the muscles; when glycogen stores are depleted athletes fatigue, "hit the wall", "bonk"; stores can be maximally filled by eating a high carbohydrate diet leading up to an event.

Gore-Tex XCR Gore-Tex XCR is an innovative new waterproof technology. XCR stands for Extended Comfort Range and provides complete climate comfort during

high-aerobic activity—on average, 25% more breathability than classic Gore-Tex.

Grade school Grade School footwear is designed for kids ages 7–12 in footwear sizes that range from 3.5y–7y.

GRID Matrix of synthetic strands to absorb shock, like a tennis racquet absorbs and releases shock from a ball. (Saucony)

GS GS is an abbreviation for grade school.

GTO GRID Toe Off; forefoot cushioning system. (Saucony)

GTX GTX is an abbreviation for GoreTex.

Gum Rubber Gum rubber is a material used on the outsole of shoes. It is a combination of more natural and less synthetic rubber, making it soft and sticky for better traction.

Gusseted Tongue A gusseted tongue means the tongue connects to the eyestay area with a thick layer of material to create a "gusset." This keeps dirt and material from creeping into your shoe around the tongue.

H

Half-marathon 13.1 miles; 21.1 kilometers.

Half-mile 804.5 meters; approximately 2 laps around track.

Hammertoes Hammertoe is when one or both joints of the second, third, fourth, or fifth (little) toes bends or curls. This abnormal curl can put pressure on the toe when wearing shoes, causing problems to develop.

Hard midsoles A hard midsole increases the velocity of pronation at the loading phase (which is bad) but decreases the maximum degree of pronation during midstance (which is good). Hard midsoles do not deform or collapse during medial loading.

Hamstring Strain Micro-tears of the large muscles of the back of the thigh; can be treated with ice, stretching and strengthening exercises.

Handicap Run / Walk An event used in training or as a race whereby the time at which individuals start their effort is based on their known current level of performance. The slower individual goes off first and the fastest starts last, "off scratch." If everyone performs to current form then there will be a very exciting "blanket" finish. This motivational event gives each individual an equal opportunity to win.

Heal and Toe Describes the basic foot action of walking and running at slow to intermediate speeds whereby the heal strikes the ground first followed by a rolling action of the foot through to the forefoot.

Heart Rate Contraction of the heart usually measured as beats per minute.

Heart Rate Monitor A device that measures the electrical activity of the heart (heart rate); usually consists of a chest strap and watch-like wrist receiver.

Heel The back part of any covering for the foot. Usually it refers to the solid part projecting downward from the back part of the sole of a shoe.

Heel-Breaking Zone The heel-breaking zone is the ledge area at the front of the heel built up especially deep so it can be used to lock the foot down to the ground on a descent.

Height The height of a shoe upper determines the amount of protection and flexibility it provides.

Heptathlon The heptathlon is a women's track and field event, consisting of 7 events: the 60-meter dash, the long jump, the shot put, the high jump, the 60-meter hurdle race, the pole vault, and the 1000-meter run.

Heel Chassis The heel chassis is a V-shaped piece that gives unbelievable stability by surrounding the ankle without a lot of bulk. The foot still gets great ankle support but maintains its flexibility. (Nike)

Heel Counter A heel counter is the tough insert that reinforces the heel cup of a shoe. It anchors the foot in the shoe, preventing slippage and stabilizing the foot during footstrike. Heel counters can be internal or external.

High-Top Upper An upper that extends up the ankle is considered a high top. It is designed to provide extra support for lateral movements and often used by triple jumpers in track and field and basetball players.

Hind-Foot The seven bones of the hind-foot are responsible for linking a person's midfoot to their ankle. The largest bone in the hind-foot is the calcaneus, the heel bone, essential for absorbing shock at initial contact while running. The joints in the hind-foot allow the foot to move up and down and rotate at the ankle. The hind-foot absorbs initial contact.

Hill Workout A training routine where a runner runs up a hill fast and jogs down then runs up again; helps develop leg power and aerobic capacity.

HPR High-performance rubber. (Brooks)

HydroFlow Divided chamber filled with liquid silicon oil to flow from chamber to chamber under pressure of impact. (Brooks)

Hyponatraemia A very dangerous and thankfully rare condition where an individual has either lost too much sodium through sweating or, more typically, has ingested too much plain water (rather than electrolyte-containing solutions) and the blood plasma sodium concentration has fallen to a critically low level. Has led to several runner deaths in recent years.

I

IAAF International Amateur Athletic Federation; world-wide organization that governs running and track and field.

iCELL Puma cushioning technology consisting of hexagon-shaped TPU honey combs for long-lasting cushioning. Stands for "inner cell." The extended life of the iCELL component provides consistent protection. iCELL walls vary in thickness to address the cushioning needs of each runner. (Puma)

ldCELL EVA-based cushioning material for improved shock absorption. Low-density CELL placed specifically in the heel crash zone and underneath the metatarsal heads to provide smooth heel impact and a well-balanced and comfortable ride. (Puma)

ldCELL LASTING Combined lasting method which uses ldCELL as a strobel lining material for improved heel cushioning and weight saving. Comes in different degrees of hardness depending on purpose of the shoe. (Puma)

IGS Impact Guidance System; integrated cushioning and stabilizing technologies engineered to improve the shoe's ride. (ASICS)

Injection Molded EVA Process that injects ethylene vinyl acetate foam into molds, which makes it a bit more uniform and durable, but is difficult to control as it continues to expand after the injecting process.

Insole The removable inner part of a running shoe that sits on top of the midsole and provides cushioning and arch support.

Integrated midfoot lacing system An integrated midfoot lacing system either wraps the laces under the foot or connects the lacing with the upper material to snug the entire shoe around the foot. The end result is a running shoe with exceptional fit and midfoot support.

Intensity Degree of effort or exertion.

Interlocking PU/Phylon Midsole A combination midsole with firm PU in the heel to provide a good base for those uneven trails and Phylon (Nike's own EVA material) from the midfoot to the toe to supply lightweight cushioning. (Nike)

Internal Six-Spike Forefoot Plate A traction plate in which the spike mounts are imbedded in the outsole of the shoe, so cross country runners won't get imbedded in a wet and sloppy course.

Internal Shank An internal shank is housed inside the midsole material and an external shank is visible outside. (internal ArchTec)

Internal Speed Lacing A speed-lacing system is created with flat loops (or gillys) of durable material that allow the athlete to create a snug fit. The laces move easily through the gillys for fast lock down. Internal speed-lacing system means the gilly is tucked inside the upper for a smooth, sleek look.

Intervals Type of workout where a set distance is run repeatedly with a recovery jog between; for example 6 times 400 meters with a 100-meter recovery jog.

Intervals Training Fast repetitions of 200 to 800 meters followed by slow recovery jogs, meant to build endurance and speed. Not for the undisciplined or for the weekend jogger.

IOC International Olympic Committee, the worldwide organization that governs the Olympic Games.

ISN Independent Suspension Network; articulated lugs to allow shock absorption (Timberland).

Isolated Heel Cleft An isolated heel cleft or decoupled heel is a groove in the outsole near the heel. The isolated heel cleft separates a portion of the outsole (sometimes called a crash pad) to better absorb pressure on impact.

Isotonic Drink A drink preparation containing dissolved solids (particularly salts or 'electrolytes') at a concentration the same as or close to that of the blood. Isotonic fluids are more readily absorbed from the stomach and are generally more effective at re-hydrating the body during and immediately after exercise than plain water. Commercial isotonic drinks may also contain glucose to provide a rapid energy boost.

J

Junk Miles Runs used to reach a weekly or monthly mileage total rather than for a specific benefit.

K

Kick A finishing sprint at the end of a race.

KMS 100 Specific recipe for EVA that is of predictable quality. (Puma)

KMS Lite Midsole material that is 30% lighter than standard Puma EVA and reduces the overall shoe weight up to 30%, yet maintains the cushioning properties and compression set of our regular KMS midsole EVA. (Puma)

KMS Lite Lasting Combined lasting method which uses KMS LITE as a strobel lining material for improved heel cushioning and weight-saving. Comes in different degrees of hardness, depending on the purpose of the shoe. (Puma)

L

L-Carnitine Supplement to help add in the burning of fat; little scientific evidence to support its claims.

Lactate Threshold The running intensity where lactic acid begins to rapidly accumulate in the blood. Also called anaerobic threshold, lactate threshold speed is a runner's 10K race pace plus 5–20 seconds or a heart rate zone between 85–89% of maximum.

Lactic Acid Incomplete glucose breakdown leads to the formation of lactic acid in the muscles. Lactic acid is associated with soreness and muscle fatigue. (See Lactate Threshold)

Lap A lap is any increment athletes establish—a segment within a run or a complete mile in a marathon. This function is designed to measure the time it takes to complete a lap and provide athletes with feedback on their pace or progress. The lap memory on watches is often called out in the name. For example, the Triax Speed 50 records up to 50 laps.

Last Can refer to two different features of a shoe; the first is the construction of the shoe or the way the shoe's upper is attached to the midsole. There are three major types of construction: board lasting, where the upper is glued to a flexible, shoe-length "board"; slip lasting, where the upper is stitched directly to the midsole; and combination lasting, where the forefoot is attached directly to the midsole and the heel is attached to a board. Last can also refer to the shape of the shoe: straight, semi-curved or curved. A curved last turns inward from the heel to toe, a straight last has little or no curve and a semi-curved last is somewhere in between.

Last Shapes Variety of shapes used to accommodate differing foot types. Related to the height of the arch; high-arched feet—curved last, low-arched feet—straight last. These fall into categories of: straight, semi-straight, slightly curved, semi-curved, and curved, though there is no defined parameter for the distinction between shapes.

Lasting The shaping or molding of the upper tightly to the contours of the last and one of the most important operations in shoemaking.

Lateral Referring to the outer side (or little toe side) of a shoe.

Leather The dressed or tanned hide of an animal, usually with the hair removed. Any of various articles or parts made of dressed or tanned hide, such as a boot or strap.

Length-To-Weight Ratio or Drop The length-to-weight ratio of a bat is determined by taking the length and subtracting the weight. A minus 10 size bat is a 30-inch bat (total length) that weighs 20 ounces. Or, a 24-inch bat that weighs 14 ounces

Lightstrike EVA Very fine quality Ethylene Vinyl Acetate foam that is lighter and more durable than lesser forms. (Adidas—though not proprietary)

Lightweight Training Footwear Lightweight Training shoes are for faster-paced training and racing. They provide more cushioning, more support, and last longer than ultra-lightweight competition racing flats. Lightweight training shoes are often a second pair of shoes a runner uses for races and fast training days.

Loading Phase Loading is the first phase in the Stance Phase of the gait cycle and begins the moment a runner's heel comes in contact with the running surface. Gradually the rest of the foot lowers to the ground, slightly rolling inward to absorb shock. The inward rolling, or pronation, is a natural cushioning system that the foot uses to reduce the amount of impact forces applied to the body while running.

Log A record of training mileage and races that helps a runner stay motivated, monitor progress and spot trends.

Long Distance Long-distance events are all about survival. They test not only endurance, but heart. As Pre put it, "A lot of people run a race to see who's the fastest. I run to see who has the most guts." Long-distance races range from the 2000m Steeplechase, to the 3000, 5000, and 10,000 meter races. All begin with a waterfall start. The Steeplechase is either 2000m (5 laps) or 3000m (7.5 laps) and incorporates the use of barriers, such as 4 large hurdles and 1 water hole, per lap. The 3000m is 7.5 laps around the track and begins at the same point as the 200m. The 5000m is 12.5 laps around the track and begins at the same point as the 200m. The 10,000m, the longest race in college, is 25 laps around the track. This is the same as a 10 kilometer, or 10k, distance.

Long-Distance Footwear Long-distance footwear is designed for 3k to 10k track races. These shoes are designed to make the runner feel like they are wearing nothing on their feet. With a comparatively thick midsole and breathable upper, the shoes have both permanent and replaceable pins molded into a full-length plate. Unlike their sprinting counterparts, distance footwear focuses less on traction and more on a shoe that is cushioned, flexible, lightweight, and comfortable. Steeplechase athletes should choose a middle-distance or distance spike that is able to protect them from the repeated impact with the track surface and also have excellent ventilation so spikes can dry quickly.

Long Runs Longest run of the week; usually on the weekend.

Loose Fit Loose fit garments are designed to have a relaxed fit to provide extreme mobility, ease of movement, and are comfortable to wear for a wide variety of activities.

Low-Abrasion Seams Low-abrasion seams are sewn with soft threads to increase comfort.

Low-Cut Upper Low-cut uppers are the lowest of all upper heights and provide the most flexibility in footwear.

LSD Long, slow distance; slow running designed to improve endurance.

Lugs Lugs are raised portions of the outsole that help provide traction by gripping the surface under foot.

Lycra Spandex Lycra is a trademark of E. I. du Pont de Nemours & Co., Inc.

M

Macro-Cycle The overall time from the start to finish of a major training cycle. Often has a major goal toward the end. Typically this comprises a complete season or is one complete year in overall duration and is composed of a series of 'meso-cycles.'

Marathon 26.2 miles; 42.2K.

Master A runner 40 years of age or older.

Maximum Heart Rate (HRmax) The highest number of contractions your heart can make in one minute.

M2D Medial Dual Density; A midsole feature that provides the over-pronating runner with extra support. An inserted piece of firmer EVA on the medial side guides the foot and controls the foot motion to help reduce impact forces.

M2D+ Evolution of the original M2D. Saves up to 30% weight and increases flexibility and the ride from heel to toe.

MD MD is an abbreviation for middle distance.

Medallion The perforated pattern punched in the center of the tip of many styles of shoes.

Medial The inner side (or arch side) of a shoe.

Medial Post Denser midsole material (often gray) added to the medial (or arch side) of the midsole to provide stability and control excessive pronation.

Mesh An open-textured fabric, knitted or woven. For our purposes, if it's got visible holes in it, it's mesh.

Meso-Cycle The overall time from the start to finish of an intermediate training cycle. A series of meso-cycles make up a macro-cycle. Often relates to a focus on one or more specific areas of fitness development and has training-based measurement goals attached to it. Typically several weeks in duration and is composed of a series of 'micro-cycles.'

Metric Mile 1500m, the international racing distance closest to the imperial mile. (See 1500m)

Micro-cycle The overall time from the start to finish of a short training cycle. Often relates to a weekly training program where specific types of session are repeated or developed each week—a long run or a speed session, for example. A series of micro-cycles make up a meso-cycle.

Microfiber A tightly woven fabric that's extremely lightweight and soft; notable for its wind and water resistance, ability to wick moisture and quick dry time.

Mid-Foot The five mid-foot tarsal bones fit together to form a person's arch. When running, the tarsal bones flex to absorb the shock, providing the body with a natural cushioning system. If the bones do not flex, the foot becomes rigid, unstable, and susceptible to injuries. The midfoot flexes to absorb the shock.

Middle Distance Middle distance (MD) events test both speed and endurance. Although they say it's not a sprint, you may not think so if you saw them racing. As they alternate between curves and straight-aways, the runners devise strategies—when to lead and when to follow; how fast to start out and how much to save for the end. The 800m begins with a standard start and after 100m, the runners break into the inner lanes and jockey for position. In the 1500m and 1600m, the runners begin with a waterfall start, that is, a gently-curved white line beginning on the finish line in lane one, then swinging ahead. The 800m is two laps around the track. The 1500m is the "metric mile" and begins at the same point as the 100m. It is 3.75 times around an outdoor track. The 1600m is a mile and is four laps around the track.

Midfoot Shank A midfoot shank is a stability-enhancing midsole device. It provides torsional rigidity (resists twisting motion) while reducing weight by allowing less material overall.

Mid-Foot Support System Any system—internal, midsole or outsole—designed to enhance stability in the mid-foot area.

Midsole The part of the running shoe between the upper and outsole that provides cushioning and support. Most midsoles are made of either EVA (ethylene vinyl acetate) or polyurethane foam. EVA is lighter and more flexible than polyurethane, but it is not as durable. It can come in various densities with gray-colored EVA being denser than white. The denser, gray EVA is usually placed along the medial side of the shoe to provide stability and motion control and is often referred to as a "medial post." Some midsoles have additional cushioning technology such as air, gel, grids, etc.

Midstance phase Midstance is the middle phase of the Stance Phase of a runner's gait cycle where the entire foot has contact with the ground. In this phase the foot changes from a natural cushioning system to a lever, preparing to propel the body forward.

Mile 1,609 meters; approximately 4 laps around track.

Minerals Essential nutrient of body; must be ingested in the correct amounts in the body; aid in the processes which use the other nutrients and compose some of the structures of the body; may be obtained through diet or supplementation; overconsumption can be toxic.

Mobility The complete range of movement around a joint. Often important in supporting good 'biomechanics', efficient and 'correct running.'

Mob Run A traditional inter-club race aimed at involving as many runners as possible. Based on a mass start over an agreed distance—often road, multi-terrain, trail or cross-country. If both teams have the same number of competitors then all runners will count in the final scoring process to decide the winners. The finishing positions of all runners in both teams are totaled and the winning team is that with the lowest score. If teams have different numbers of entrants then the number of counters is normally the number of the smaller team. A development of this to include all the runners from the larger team might be to deduct an agreed number of points from that team's score for each extra runner they field—this would encourage each team to field the bigger team!

Monolite Licensed process of Injection-molded mixture of rubber and EVA that eliminates the need for separate midsole/outsole pieces. (Polo)

Motion Control The ability of a shoe to limit overpronation and provide stability.

Mountain Running Training or competition involving either ascent alone or ascent and descent of hills and mountains, often involving navigational skills. Mountain races are usually classified both by rate of climb (feet/mile or meters/km) and total distance.

Multi-Terrain A route based on a mixture of surfaces e.g. road, track, country, woods and forest trail.

Muscle Soreness Pain, stiffness, and discomfort in a muscle due to microscopic tears, or strains, of the muscle. This is usually caused as a result of the muscle doing more work than it is used to. (also called DOMS or delayed onset muscle soreness)

N

Natural Leathers Natural leathers include full-grain (usually cow) and kangaroo leather. They are soft and supple. (See also Full-Grain Leather)

Ndurance High-abrasion rubber. (New Balance)

Negative Splits Running the second half of a race faster than the first half.

Neoprene Neoprene is a stretchy synthetic material that's often used in wetsuits and amphibious running shoes.

Neutral Footstrike A neutral footstrike hits the ground on the outside of the heel and rolls through to leave the ground off the inside toes. This is also known as natural pronation.

Nike Air Pressurized air pads (some with varied air pressure) to absorb shock of impact. (Nike)

Nitrocel Nitrogen-impregnated CM-EVA sockliner to absorb shock. (Ryka)

Nitrogen Cushioning System Use of nitrogen-impregnated rubber pad above the CM-EVA to absorb shock. (Ryka)

Normal Arch Height A foot is considered to be normal when the size of the arch is moderate or average. A normal foot leaves an imprint that shows the heel and forefoot connected by a wide band. Runners that have a normal foot usually have a semi-flexible arch.

Normal or Neutral Footstrike When running, a normal footstrike begins with the heel landing nearly perpendicular to the ground and the leg angled slightly towards the outside of the heel. From there, the weight is distributed progressively along the lateral side of the foot. As the little toe starts to touch the ground, the arch of the foot should flatten slightly (pronation), shifting the body weight towards the inside of the foot. The heel then should start to lift off the ground, moving the weight to the medial forefoot.

Nubuck An aniline-dyed leather with its finished surface buffed to a slight nap or suede-like appearance

Nylon Known for its strength and durability, Nylon is the first and oldest manmade fiber. One of nylon's great qualities is how easily it blends with other fibers.

O

Olympics Competition held once every 4 years; highest goal for most runners.

Omni-Fit Extended Ghilly lace system. (Merrell)

Open-Weave Mesh A lightweight, breathable material used in the upper that provides a consistent, resilient fit.

OrthoLite Polyurethane and recycled rubber-based formula. Combines long-lasting breathability, cushioning, and durability all in one. Anti-odor and Anti-microbial.

Orthotics Custom-tailored devices specifically crafted to treat and adjust various biomechanical foot misalignments, repositioning the body, heel, arch, muscles, ligaments, tendons, and bones in the feet. Orthotics may be necessary for excessive pronation or supination, as well as low or flat arches. They are also effective in relieving and preventing lower back and hip pain, knee pain, shin splints, heel pain, plantar fascitis, Achilles tendonitis, and bunions.

Outrigger Extensions of the outsole that give a wider base of support and add stability for lateral movements such as lifting and step class. They can be found on the lateral side of the foot.

Outsole The bottom-most layer of most

running shoes; the layer that contacts the ground and provides traction.

Outsole Plate An outsole plate is the part of cleated footwear where the cleats or studs are housed.

Over-Distance The idea of completing a training effort, which is further than the event for which you are training. Has psychological as well as physiological benefits.

Overheating A condition where a runner has been exposed to abnormally high temperatures or has lost an excess of fluid (water) through exercise and is no longer capable of maintaining normal body temperature. This is a potentially very dangerous condition. In most instances selection of the most appropriate running clothing for the day, starting the exercise session fully hydrated and hydrating properly during the session will significantly decrease the probability of over-heating.

Overpronation The excessive inward roll of the foot; overpronation can be controlled through the use of motion control shoes and/or orthotics.

Overtraining Condition in which a runner runs too many miles, too hard, too soon, leading to fatigue, injury and/or burn-out.

Oxygen Debt A state in which the energy demand is greater than what can be provided by oxygen thus inducing heavy breathing to consume more oxygen.

P

Paarlauf A training activity based on pairs of runners taking it in turns to run a set distance or course. Sometimes with static recovery, sometimes taking a shorter route back to the point of 'exchange.'

Pace Measure of the speed of running; usually quantified as minutes taken to run a mile; for example a runner may run a 7: 00 per mile pace for a marathon.

Peak Scheduling your training so that your best performance is timed for a goal race or event.

Pebax® Pebax®, (polyether block amide) is a high-performance plastic belonging to the family of thermoplastic elastomers. Its remarkable mechanical, physical and chemical properties offer great flexibility and make it a key component in the comfort and performance of a large number of sports and leisure items. Pebax® is a registered trademark of Arkema. Information provided by the marketing department of Arkema Group.

Perforations Round, curved, square or diamond-shaped holes punched in the upper leather of a shoe for ornamental purposes.

Period / Periodization Planning the training into a program based on individual requirements or personal goals. A training period may last for several weeks or months and forms part of the overall periodization to achieve the above.

Phylite Created by mixing Phylon and rubber to create a material that has the lightweight benefit of Phylon and the durability of rubber. Phylite can be used to make a single-piece outsole/midsole, eliminating the need for adhesive to hold these two parts of the shoe together. Using Phylite can make the entire bottom unit of a shoe 20% lighter. (Nike)

Phylon Phylon is a compressed foam material used in footwear midsoles for lightweight cushioning. Phylon is produced when EVA has been heated and then molded into a midsole form. (Nike)

Physiotherapist A medical professional—often the first person to consult for diagnosis and treatment when injury strikes or discomfort is being felt—particularly in the musculoskeletal system. The earlier help physiological help is sought after injury the sooner an effective recovery can be started.

Pick-Ups Picking up the pace during a run.

Pinking A serrated decorative edging applied to the vamp, toecap or quarter of the shoe.

Piriformis Syndrome Pain in the buttocks resulting from a tight piriformis muscle pressing against the sciatic nerve; can be treated by stretching exercises for the buttocks.

Plantar Fasciitis Foot injury where micro-tears occur in the arch; especially painful in the morning; can be treated by stretching the arch and calves; massage with hands or rubbing foot on golf ball or a shaving cream can; if untreated, can lead to heel spurs. (spur of bone from the heel bone)

Podular Articulated forefoot design that allows free forefoot movement and flexion. (Brooks)

Polyester Polyester is a human-made fiber that can be made to feel silky smooth or cotton-like. It is easy to care for, has the lowest absorbency, and has better thermal retention than cotton and nylon.

Polyurethane Polyurethane (PU) is a durable foam material used in footwear midsoles. It is firmer, heavier, and more durable than EVA and Phylon. PU is used in midsoles when a shoe's durability and stability are more important than lightweight and extra cushioning. PU is poured into a mold to make a midsole.

Poron Inserts Performance sockliners include Poron inserts in key pressure areas to provide cushioning. Poron is denser than Phylon and holds up better over time. In cleated footwear, the Poron is located in strategic areas to help reduce cleat pressure.

Post (or Medial Post) Firmer density of midsole material added to the inner side of the shoe. A post is designed to reduce overpronation.

Power Sprint Spikes Power sprint spikes are specifically designed for the 100-meter and 200-meter races. They provide a lightweight shoe with great support and traction, and with the ability to lock in the foot to avoid excessive movement. Athletes who run these short sprints typically never let their heels touch the ground. Cushioning is minimal so the forefoot stays close to the ground for stability and responsiveness.

PR "Personal Record" or Personal Best; fastest time a runner has recorded for a given distance.

Preschool Preschool footwear is designed for kids ages 4–7 in footwear sizes that range from 10c–3y.

Pronation The natural, inward roll of the foot; pronation begins when heel contacts the ground, the foot then rolls inward to absorb shock and transfer weight to the ball of the foot as it prepares to push off. It is a natural and necessary motion for running and walking.

Propulsion Phase The last phase of the Stance Phase of a runner's gait cycle, beginning with the heel rising off the ground. The body's mass shifts over the forefoot, and the phase ends in the toe-off. During propulsion the body propels itself forward and shifts weight to the opposite foot.

Protein Essential nutrient of body found in meats, eggs, dairy products, beans and nuts; should comprise approximately 15–25% of calories in a runner's diet; converted into the body's structures-bones, muscles, organs, etc.; overconsumption is converted to fat.

Pyramid A training concept based on increasing the distance in successive efforts before then decreasing it again. Good for introducing variety in pace and awareness of time of running. Can be time based or distance based. (e.g. a series of runs of duration 30s, 1 min, 1.5 mins, 2 mins, 1.5 mins, 1 min and 30s) Alternatively, a series of runs of 100m, 200m, 300m, 400m, 300m, 200m and 100m in length may be completed. Specific distances may not be important in many cases and often runners will, for example, use the distance between streetlights as indicators. Recovery can be held constant or varied depending on distance / time run.

Pyruvate Supplement to help add in the burning of fat; little scientific evidence to support its claims.

Q

Quarters Jargon for a quarter-mile or 400 meters; often used when describing workouts where athletes run 400-meter (or quarter) repeats.

Quarter Lining The upper lining at the back part of the shoe extending forward to the vamp line.

R

Racing Last A curved and rounded last. (See Puma Racing Last)

Radiused Lugs Radiused lugs are lugs in the forefoot of the outsole that angle outward to help with running on a slope, allowing a running shoe to hit the ground at a better angle to prevent tripping. (See Lugs)

Recovery Runs Slow to moderate running to recover from hard workouts or races and/or maintain aerobic conditioning.

Reflectives 3M Scotchlite reflective material is used for all shoes in the Complete Series to make the runner more visible at night.

Regrind Outersole rubber that is recycled from previous running and athletic shoes. (Nike)

Reinforced Toe Box A reinforced toe box is often made with a high-wrapping outsole and additional layering of tough, abrasion-resistant materials.

Relay Events The relay events are about teamwork. Four runners unite to finish one distance, each racing a quarter of it. The one leading off will take to the track first, the second and third maintain, and the anchor finishes the job. The baton is passed to the next runner at the end of each leg. The relay events consist of the 4 x 100m and the 4 x 400m races. In the 4 x 100m, four runners race 100m to complete a lap. The sprinters must stay in their lanes for the entire race. In the 4 x 400m, four runners race 400m to complete a mile. The second leg will break from the lanes at the top of the backstretch.

Repetition Running Type of workout where a set distance is run repeatedly with a timed recovery (complete rest) between; for example 3 times 600 meters with 3 minutes recovery. Distances are often greater than with 'Interval' training. Since a higher heart rate results from the longer effort, full recovery is important for the training effect.

Resistance (Training) Involves efforts against a resistance. This can be gravity—e.g. hill running or using weighted equipment or weights (in a gym). A good introductory form of resistance training for runners is circuit training using body weight alone.

Resting Heart Rate The number of times your heart beats per minute when you are relaxed and still; usually measured first thing in the morning before getting out of bed.

Reversibility of Training Any training benefit will be lost with time and the body will return to where it was before the training started. This means that to have a long-term sustainable benefit a constant or higher level of activity must be maintained. Put quite simply 'if you don't use it, you lose it.' (See also Adaptation)

RICE An acronym for rest, ice, compression and elevation; a procedure for treating certain injuries.

Ride A term used to describe a shoe's ability to smoothly transfer a runner's weight from heel-strike to toe-off.

Road Races Running contests over streets; runners of all levels can participate.

Road Racing Footwear Racing flats are used predominately for all distances of road racing and occasionally for longer distance races on the track (5K and up). Reducing the weight of a runner's racing footwear can provide significant improvements in race times. Research has shown that every 1-ounce weight reduction on a runner's shoe can reduce their mile time by about one second. For example, if a runner trains in a shoe that weighs 12 ounces, and races in a flat that weighs 8 ounces, they potentially can improve their mile time by 4 seconds. That equates to about 12-seconds in a 5k, or 24 seconds in a 10k race. The uppers of racing flats are made of a seamless lightweight mesh, which alleviates chafing and allows the runner's feet to breathe freely.

Rock Shield Plate TPU forefoot plate sandwiched in the midsole for protection against sharp stones or other firm objects. Distributes pressure across the forefoot.

Roll Control Dense EVA for medial stability. (The North Face)

Rollbar Graphite device to prevent overpronation. (New Balance)

RRCA Road Runners Clubs of America; organization to which most running clubs in the US belong; provide information and resources for running clubs.

Runner's High Feeling of euphoria experienced by some runners after a long, hard run or race. (See Endorphins)

Runner's Knee Knee pain typically caused by the knee cap not sliding properly during movement; may be related to muscular imbalances within the thigh muscles; can be treated with strengthening exercises for weak muscles. (usually the inner thigh muscle)

Running Economy The amount of oxygen consumed at a given running speed; a runner who consumes less oxygen at this running speed as compared to another running is said to be more "economical."

Running Shoe Last A last specifically designed for the footstrike characteristics of the running motion. (See Puma Racing, Performance and Comfort Last)

S

Sandwich Mesh Special upper-mesh material with a high degree of breathability. Lowers the risk of blisters.

Sciatica Pain which runs from the lower back to the toes related to pressure on the large nerve innervating this area, the sciatic nerve; should be evaluated by physician.

Sculpted Arches Sculpted arches and contoured heels are used in some soccer cleats to add stability and comfort. (See also Cupped Heel)

Sculpted neckline A sculpted neckline is a rounded or V-shaped silhouette to provide freedom of movement. It also helps provide ventilation when an athlete gets warm.

Seamless A seamless upper is created with one seamless piece of material. This eliminates potential areas of friction or irritation and totally enhances comfort.

Seamless Lining A seamless lining in a shoe means that the inside of the shoe is created with as few seams as possible. This technique creates a smooth interior with minimal irritation for outstanding comfort.

Seamless Upper Upper made of a single piece to increase stability and/or reduce seam abrasion.

Second Wind Feeling of more energy and less effort some runners feel after 15–20 minutes of running.

Secure Wrap Temples Secure wrap temples are designed for eyewear to grip the back of the head for improved stability when an athlete is in motion. They bow in and down slightly to fit the natural curvatures of an athlete's head, without pinching. (Nike)

Self Test or Zone Finder A heart rate monitor tracks workout intensity. A self test, or Zone Finder, is a 15-minute test designed to help athletes determine their ideal heart rate zones.

Semi-Curved Last A shoe with a semi-curve last is designed for the normal foot. It is the most common last for sports. When selling running footwear, a customer with normal arches and a neutral footstrike should try shoes with a semi-curved last and a blend of cushioning and stability. (See also Last)

Sets The number of groups (sets) of repetition runs (reps) to be completed in a training session. For example: 2 sets of 3 reps of 600 meters with 3 minutes recovery between reps and 10 minutes recovery between sets. (May be written in various short-form ways e.g. 2 x 3 x 600m, 3min/10min)

Shank Plate A shank plate is an injection-molded TPU structure that's incorporated into the midfoot area. Many cross training midsoles sport a midfoot shank plate for stability and torsional rigidity—a fancy way of saying it controls twisting movements.

Shin Splints Lower leg injury where there is pain along the shin bone; usually caused by excessive pronation or weak shin muscles; treat with ice and stretching and strengthening exercises; can lead to stress fractures.

Shox Urethane pillars that compress between TPU plates to cushion the ride of the shoe. (Nike)

Singlet A light weight tank top worn by runners.

Skinfold Calipers Process of determining body composition where several folds of skin are measured for thickness and then used to calculate percent body composition.

SL-1 Semi-straight last which is snug from heel through forefoot to fit narrower foot types. (New Balance)

SL-2 Semi-straight last which is snug in the heel with a wider taller toebox for wider feet and to allow for the curved shape of higher-arched feet. (New Balance)

Slip Last Shoe construction method stitches the upper of the shoe that is slipped onto a last, closing the upper with stitches down the center, under the foot, before gluing it to the midsole.

Slow Twitch Type of muscle fiber (cells which compose the muscles) that contract slowly but can perform for a long time. Utilized primarily in mid-to-long-distance runners.

Sockliner Provide even more cushioning. A liner under the foot can add comfort and protection from blisters.

Soft Hand A soft hand is a term used to describe the feel of fabrics that are cool to the touch.

Soft Midsoles A soft midsole decreases the velocity of pronation (which is good) but increases the degree of pronation (which is bad). The midsole compresses medially and, in effect, just keeps rolling.

Sole The sole of the sock is one of the most important components of socks because this is where the cushioning is located. Depending on which type of sock—liner, half cushioned, or full cushioned—the sole's primary purpose is cushion, comfort, and durability.

Solid rubber Solid rubber is a tough combo of synthetic and natural rubbers used on the outsole of footwear.

Spandex Spandex is a manmade fiber. It has excellent stretch and recovery properties. It's ideal for form-fitting garments like bodywear. It can also add comfort and freedom of movement to basic knit tops and woven shorts.

Spat Strap A Spat Strap provides midfoot support and minimizes heel movement it's located in the middle of the foot and it replaces the old "medical tape wrapped around the foot" trick.

Speed Work Short, fast intervals with recovery jogs between; increases your leg turnover and maximizes your stamina and race confidence.

SpEVA Special ethylene vinyl acetate foam with polymers in the microcellular spaces to improve elasticity. (ASICS)

Spherical Heel Construction (See above).

Split Times Denotes the time it takes to run a portion of a total run (often measured at mile markers or other distinctive points along the way); for example, a runner may run a 7: 00 mile split between miles 4 and 5 of a 10K (6.2-mile run)

Sprinting Footwear The speed and power required for sprinting requires a shoe with a perfect balance of flexibility and stability, minimal cushioning, and exceptional traction. Since not all distances are alike, sprinting footwear is divided into three categories: power, sleek, and blend.

Sprints Track and field running events that cover a short distance, from 100 meters to 400 meters.

Stability The ability of a shoe to resist excessive motion; usually used to describe shoes designed for neutral runners or mild over-pronators.

Stability and Motion Control Footwear Stability and Motion Control shoes are designed to slow the rate of pronation in the footstrike and provide good heel stability. They may have various combinations of medial posting, dual-density midsoles, and other design features that provide motion control. These shoes are built on straight or semi-curved lasts.

Stability Web Device in mid-foot that causes the shoe to return to a stable base, after allowing the foot to twist in its natural movement during the gait cycle. (New Balance)

Stable Air Air-filled pads that absorb and deflect the shock of impact. (Etonic)

Stim-Pac Ambient air-filled, two-chambered bladder that transfers air from front to rear and back. Positioned under the Strobel board, it creates a noticeable cushioning effect. (Reebok; Also see DMX Lite)

Stance Phase The Stance Phase is the period of time during the gait cycle when the foot is in contact with the ground. Within the Stance Phase, a runner's foot goes through three different phases: Loading, Midstance, and Propulsion.

Stamina Your ability to combine speed and endurance.

Straight Last A shoe with a straight last is filled in on the inside or the medial part of the shoe. This broadens the base of the shoe that comes in contact with the ground, increasing the amount of stability. The straight last accommodates a flat foot best. When selling running footwear, a customer with flat feet who overpronates should wear a stability shoe with a straight last and motion control features that give maximum support to the foot and guide the foot through the footstrike. (See also Last)

Strength Training Movements against resistance to develop muscular strength; usually weight training.

Stretching Movements designed to increase a muscle's flexibility; best method is still being debated but it appears that consistently stretching is the key to increasing flexibility.

Stride Length Describes the length of each running stride at a given pace. Together with "cadence," these two factors determine actual running speed.

Strides Short, fast but controlled runs lasting 15–45 seconds followed by full recovery; benefits include faster leg turnover and improvements in running form.

Strobel Slip Last A shoe construction method that involves stitching a sole-shaped fabric board to the upper of the shoe that is slipped onto a last, closing the upper with stitches around the perimeter of the sole. The board may be varied from thin flexible materials to thicker stable materials, or a combination of the two stitched together, to improve stability or flexibility.

Suede Leather with a soft napped surface.

Style Not to be confused with technique—which is very important for effective running and walking—'style' is a more personal characteristic which may have no impact whatsoever on actual technique.

Supination When the foot rolls outward at toe-off, that's supination. If your foot remains on the outside edge instead of pronating, that's oversupination.

Synthetic Leather Synthetic leather is a manmade material that is often more durable than natural leather, is usually lighter in weight, and won't stretch out.

T

Tanning, Tumbling or Polishing Leather treatments used to enhance the natural grain of leather and result in a soft, more-durable material.

Taper Reducing your mileage several days to three weeks before an important race to ensure peak performance on race day.

Target Zones Target zones can be set to alert athletes when they're working too hard or not hard enough. This means athletes maximize their workout and overall fitness by exercising at the right intensity.

Target heart rate In order to get the most out of aerobic exercise, runners should know the target range of beats per minute they want to get the ticker cranking. Keeping the pulse below that range probably isn't doing enough. Exceeding that range is going too far and may be fatal.

Tempo Runs Type of workout to improve the lactate threshold; usually consists of 15–30 minutes of running at the lactate threshold speed.

TerraFlex Slotted, flexible, polymer plate for protection and torsional stability on rough ground. (Montrail)

Threshold Runs When you run at or near your anaerobic threshold.

Throat The central part of the vamp just behind to the toe box. The throat is formed by the seam joining the vamp to the quarter.

TNF Trail Grip Rubber formulation for traction on trails. (The North Face)

Toddler/Infant Toddler footwear is designed for kids ages birth to 4 years old in footwear sizes that range from 2c–10c. Baby footwear ranges from 1–4c.

Toe Box The upper of the shoe that surrounds the toes, which is slightly different in each style of shoe. This is a particularly important feature for runners who have bunions or are prone to blistering.

Toe Cap Toecaps are either stitched over or completely replace the front of the vamp and can be made into a decorative features referred to as toe tips.

Tongue The flap of material under the laces or buckles of a shoe.

Torsion Device that causes the shoe to return to a stable base, after allowing the foot to twist in its natural movement during the gait cycle. Differs from Torsion by extending upward into the arch. (Adidas)

Total Exercise Time Total exercise time is a feature designed to save the duration, distance, and average heart rate for a specified workout. This information is easy to review later and is a vital aspect of fitness training.

Total Time Total time refers to the total of all lap times during a race or training.

TPU Chassis The TPU chassis is the part of the upper that surrounds the heel cup and spreads out to the arch of the shoe for torsional rigidity. The TPU chassis also gives the shoe lateral stability for things like weight lifting.

TPU or Thermalplastic Urethane TPU is frequently used in uppers as a lightweight support structure for increased support and protection. TPU can be either more supple or more firm as needed. TPU provides the critical support in a shoe's heel counter. (See also Heel Counter)

Track Measured oval where races of varying distances are contested; usually measure 400 meters around; 4 laps equals approximately 1 mile.

Traction Traction is the ability of a shoe's outsole to keep an athlete from slipping or losing their footing on slick or uneven surfaces.

Trail Runner The Trail runner is a long-term runner who usually runs outdoors on roads and trails. This runner is a good candidate for a full set of running apparel

in all kinds of weather, from the base layer to the outer shell. Trail runners especially value reflectivity, durability, weatherproofing, and moisture management—not just for perspiration but also for precipitation.

Trail Shoes Trail shoes are built for runners who spend a lot of time off of the pavement. Trail runners have better traction, more durable uppers, and may include water-resistant fabrics. They come in different combinations of cushioning and stability.

Training Footwear Training footwear is by far the most common type of running footwear. Training footwear can be loosely categorized into four groups, or silos: Cushioning, Stability and Motion Control, Lightweight Training, and Trail shoes.

Traxion Multi-oriented crescent-shaped studs to provide trail shoe traction in all directions. (Adidas)

TRB Torsional rigidity bar. (Saucony)

Trusstic System Support device that forces the shoe to stabilize after the foot completes its natural twisting motion during the gait cycle. (ASICS)

Tuned Air Two opposing polymer hemispheres that rebound against each other to absorb shock. (Nike)

Tuned Plate Slotted, flexible, polymer plate for protection and torsional stability on rough ground. (Salomon)

Turned Shoe Shoe made inside out with a basic sole between the foot and the ground. The upper and soles of turned shoes are very flexible. The turned shoe last is designed in a single size and then a set is made in the range of sizes and widths in which shoes are to be manufactured. Turned shoes are no longer widely manufactured.

Two-Piece Outsole Outsole design that uses two pieces of carbon rubber instead of one full-length piece. It provides lightweight flexibility while continuing to give durability.

U

Ultra Hexalite Lightweight hexagonal cells encapsulated within the CM-EVA that absorb shock, with a slower rate of breakdown than foam. (Reebok)

Ultra-Marathon Races longer than a marathon. (26.2 miles)

Ultrastrike Two-piece combination of carbon rubber and TPU with polymer to absorb shock. (Adidas)

Underpronation or Supination The lack of sufficient inward motion of the foot; highly cushioned, flexible shoes are recommended to absorb shock and allow the foot to pronate naturally.

Underwater Weighing Process of determining body composition where a person's weight, while submerged in water, is used to calculate percent body composition; considered the best method for calculating percent body fat.

Upper The top portion of the shoe, usually made of leather, synthetic leather or mesh material.

USA Track & Field (USATF) National governing body for running in the US. (USATF.org)

U.S.O.C. United States Olympic Committee; organization that governs the U.S. Olympic Team.

UV Protection UV rays from the sun are invisible to the naked eye, and without proper eye protection, they may cause long-lasting and harmful effects. There are three types of UV rays: UVA, UVB, and UVC. UVC rays are absorbed by the upper atmosphere and are of little health concern to athletes. But, to help keep an athlete's eyes healthy, protection from UVA and UVB rays is important.

V

Vamp The complete forepart of a shoe upper.

Variable-Width Lacing System All size-10 feet are not created equal. Variable width lacing allows you to customize your fit simply by choosing which eyelets you put the laces through.

Vitamins Essential nutrient of body; must be ingested in the correct amounts in the body; aid in the processes that use the other nutrients; may be obtained through diet or supplementation; overconsumption can be toxic.

V02max Also called maximal aerobic capacity; maximum amount of oxygen that can be utilized by the body; higher V02max generally equals better performance; can be improved with training but has a genetic limit.

W

Waffle Grip Hollow, hard rubber waffle studs filled with soft rubber for grip. Originated in the home of legendary University of Oregon coach Bill Bowerman, who poured liquid rubber into a waffle iron to create custom outsoles for his distance runners' racing shoes. (Nike)

"The Wall" or "Hitting the Wall" A state of exhaustion when your body runs out of glycogen or energy; usually occurs around mile 20 in a marathon. (See Bonk)

Warm-Up Slow, easy running before a workout or race that raises your heart rate and prepares you for more intense activity.

Water Essential nutrient of body; runners should drink enough throughout the day to maintain clear urine and enough after a run to return to their pre-run body weights.

Welts The cuff, or top of the sock, is often called the welt. It can be finished in one of two ways: a welt or double-welt top, where the top of the sock is turned in and sewn down, or a conventional top where the stitching ends at the top of the sock without being turned in and sewn down.

Welted Shoe Any shoes using a welt, or strip of material, to join the upper to the sole.

Wet Test A person's arches can vary greatly—from flat to high. An easy way to determine arch type is to perform a "wet test." Wet the bottom of the customer's foot with water or ink, and have them step firmly onto a flat surface—a brown paper bag or cardboard is a good surface to use—and apply their full body weight.

Wicking The ability of a fiber to move moisture from your skin to the surface of the fabric so that it can evaporate and keep you more comfortable.

Width Concept Individual shoe fit for your feet. Width from 2A to 4E.

Windlass Mechanism The Windlass Mechanism is the coordinated action of the layers of muscle, tendon, ligament and bony architecture to maintain arch height and foot rigidity. Without correct windlass function, the foot will not act as an efficient lever, and effective push-off power cannot be achieved at the end of the stance phase.

Women's-Specific Design Women have narrower shoulders and arms, less height and a distinct aversion. Quality running wear accounts for these differences.

Women's-Specific Last Most women's feet are slightly narrower in the heel and toe than most men's feet. Women's arches also tend to be higher and closer to the heel. This is a last that reflects those differences.

Women's-Specific Sockliner A woman's sockliner is specifically designed to mirror the unique contours of her foot. Slightly narrower in the heel and higher in the arch, the sockliner provides a closer fit and more comfortable support.

World Best The best time ever in an event in which world records are not kept formally.

World Championships Running and track and field championships held once every 2 years; almost as prestigious as the Olympics.

World Record Best time or distance ever recorded in an event.

Wovens Wovens are fabrics where yarns are interlaced at right-angles to each other. Wovens are typically more rigid and less wrinkle-resistant, but they shrink less and are more wind-resistant.

X

X-2 Dense foam material inserted into the mid-foot cavity that increases stability and durability of trail shoes. (North Face)

XC XC is an abbreviation for cross country. (See NGONG XC)

XT 600 High-durability rubber. (Saucony)

Y

Youth Runner The youth runner is the track star. This runner runs track or cross country on a team and trains 3–5 days a week. He or she may be looking for fashionable performance apparel: probably longer shorts and a baggier fit for guys, and low-rise shorts for girls.

Youth sizes Youth footwear sizes range from 1–7y.

Z

Zoom Air Very thin air-filled cushions for forefoot or thin-soled uses. (Nike)

PUMA TECHNOLOGY

AgION® On silver ions based textile treatment which acts antimicrobial, antifungus and helps to avoid bad odors.

ArchTec Midfoot shank device that causes the shoe to return to a stable base, after allowing the foot to twist in its natural movement, during the gait cycle Comparable to Adidas' Torsion system.

Comfort Last Special Puma last shaped for maximum fit and comfort while running. Built with running-specific anatomical and biomechanical needs in mind, comfort lasts are built to fit the majority of runners searching for maximum comfort in a running shoe.

Decoupled Heel Construction A heel outsole and midsole geometry that decouples the impact part of the shoe from the rest of the midsole. Combines with flexgrooves for a smooth first impact and roll-off from heel to toe and lowers the pronation velocity and degree of pronation.

duoCELL duoCELL has been specifically engineered to combine durable cushioning and maximum stability. The CELL layers, made of a super elastomer, greatly reduce the impact forces upon heel strike. The new independent CELLs support a natural foot motion and slow the foot's inward rotation for optimal footstrike. The result is a long lasting, softer, more responsive cushioning to help prevent injury.

EVA-Board Proven EVA replacement for the standard brand-sole for additional comfort and cushioning.

EverFoam Special memory foam heel construction for a heel fit which is perfectly adjusting to the heel contour.

EverLite Highly-efficient Puma outsole concept. Saves up to 50% weight, optimized ground contact and grip. High durability. A Puma fabric base material with direct injected TPU/rubber blended lugs that creates extremely lightweight outsoles and great flexibility

EverRide Blown EVERTRACK rubber outsole component with high abrasion-resistant rubber for extra cushioning in the forefoot. Reduces the weight of the shoe. It's used for the Tenos III in the forefoot.

EverTrack Rubber compound with higher than average abrasion and wear characteristics. It is used for the Tenos III in the heel.

EverGrip A new, stickier rubber compound which provides excellent grip and traction on both wet and dry surfaces through increased slip resistance. Special outsole composite and geometry for improved grip and traction in heavy terrain

Formstripe Functional logostripe for anatomical foot support in the mid-foot, ball-girth and heel. Improves the fit and stability in the shoe.

GORE-TEX® XCR® Gore-Tex XCR is an innovative new waterproof technology. XCR stands for Extended Comfort Range and provides complete climate comfort during high-aerobic activity—on average, 25% more breathability than classic Gore-Tex.

i-CELL Unique Puma cushioning technology consisting out of hexagonal CELLs enhances the cushioning and stabilizes. The extended life of iCELL components provides consistent protection. iCELL walls vary in thickness to address the cushioning and stability needs of each runner.

ld-CELL EVA based cushioning low density material for improved shock absorption. The anatomically specific placement is designed to protect and support during the gaitcycle.

ld-CELL LASTING Combined lasting method which uses KMS-LITE as a strobel lining material for improved heel cushioning and weight saving. Comes in different degrees of hardness depending on purpose of the shoe.

KMS-LITE Innovative midsole material that is 30% lighter than standard Puma EVA and reduces the overall shoe weight up to 30%, yet maintains the cushioning properties and compression set of our regular KMS midsole EVA.