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"Academic, Research, and Clinical Excellence"

Selecting the Right Running Shoe

The most frequent cause of running injuries is improper training but many problems can be traced to the use of inappropriate shoes, or shoes that are simply worn out. The importance of proper footwear is to help counteract stresses placed on muscles, tendons, and bones, and thereby reduce the risk of injury. The proper running shoe can also make running more enjoyable and let you get more mileage out of your shoes. Runners should have a basic knowledge of shoe and personal foot anatomy to assist in the selection of their running shoes. Because everyone's foot is different there is not a perfect running shoe for everyone. To help ensure you get the right shoe for you - please follow this simple 4-step procedure.

Step #1: KNOW YOUR FEET

- a. **Wet Test.** Wet your bare feet. Step on and off a piece of paper. Match your imprints to the ones below.



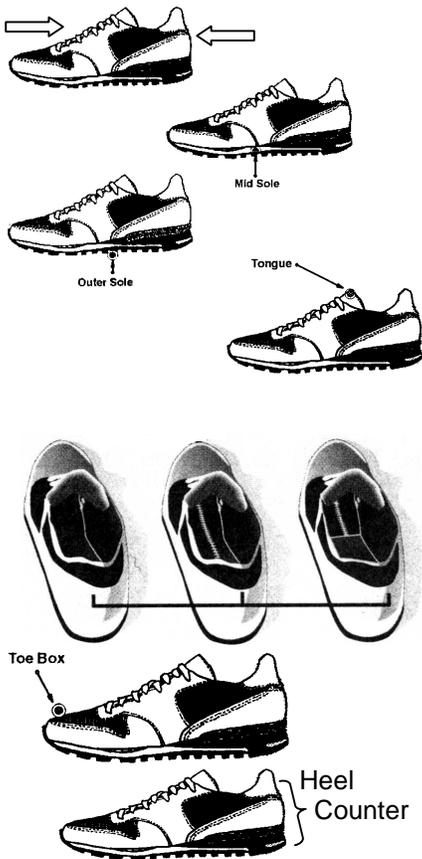
- b. **Shoe Tests.** Take a moment to look at your current shoes
 i. Darkened areas demonstrate wear patterns

Test/Procedure & examples of a normal arch/wear pattern	Most likely a floppy foot (low arch, flat-feet, over pronator) if:	Most likely a rigid foot (high-arch, supinator) if:
Heel Counter Test: Place shoes on a flat surface and look at them from the rear 	Shoes (heel counter) tilt inward. The inward surface is more worn. 	Shoes (heel counter) tilt outward. The outer surface is more worn. 
Tread Test*: Look at the soles of the shoes 	Extreme wear on the inside of the shoe sole 	Extreme wear on the outside of shoe sole 

- c. **Squat Test:** Look in the mirror and bend your knees ½ way. If the kneecaps rotate inward toward the medial arch (big toe) then your feet probably overpronate. If they rotate out toward the little toe, then your feet probably oversupinate.

STEP #2: KNOW YOUR SHOES

a. First, learn the parts of the shoe



UPPER: Made of real or synthetic leather, with mesh that allows the shoe to “breathe.”

MIDSOLE: The heart of a running shoe; a thicker layer of plastic foam (EVA) or polyurethane embedded with various shock-absorbing and supportive materials and devices (air/gel/etc).

OUTSOLE: Where the rubber meets the road. Durable carbon rubber is often used on high-abrasion areas like the heel. Softer blown rubber is often used on the rest of the outsole. Various textures and grid patterns provide traction, along with distinctive footprints.

TONGUE: Padded for comfort and to prevent rubbing on the top of the foot from the laces. Some tongues are now split to allow for foot expansion. A good tongue helps the shoe feel like a snug sock.

LAST: To determine the type of last used in a shoe, peer under the insole. There are typically three types

Board Last – The upper is fastened to a fiber board inside the shoe. That makes for a fairly stiff, stable shoe, good for runners with a low arch.

Slip Last – the upper is stitched in one piece around the last, then the last is slipped out. That makes for a very flexible shoe, good for runners who have high arches or runners with a neutral gait. Sewn together like a moccasin.

Combination Last – Has a board last in the heel for stability and a slip last in the front for flexibility.

TOE BOX: Should be wide enough to let you wiggle your toes, long enough so a space the depth of a thumbnail remains in front of the longest toe. A good toe box can help prevent blisters and black toe nails.

HEEL COUNTER: Cups the heel and helps keep the shoe stable. Usually topped by the Achilles notch, a V-shaped cutout that prevents the heel counter from chafing the Achilles tendon during running

INSOLE: Also called the sock liner. Made of plastic foam that provides some shock absorption and arch support. These should be removable, to allow it to be cleaned or replaced with a thicker insert (i.e. sorbathane) or a custom-made orthosis.

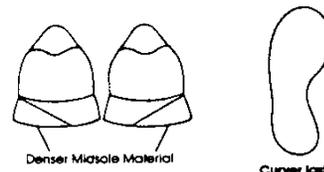
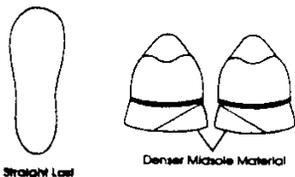
LACES: Some shoes provide extra eyelets so they can be laced up in several patterns, for feet of different widths and shapes.

REFLECTIVE TRIM: Great safety device – it is essential for dusk and nighttime running.

b. Then find the right type of shoe for you! (Read the section that pertains to your foot!)

	Floppy Foot (overpronator, flat feet)	Normal Foot	Rigid Foot (supinator, high arch)
Description (during wet test)	Low arch and leave almost a complete imprint	Normal arch with a wide band between the forefoot and heel	Very narrow band between the forefoot and heel
Foot Attributes	Heel strikes on the outer edge of the heel, but excessively rolls inward (pronates) Most people have this (60%). They have more forefoot pressure with running	Normal foot lands on the outer edge of the heel, then rolls inward (pronates) slightly to absorb shock. The foot then rotates outward (supinates) prior to toe off	Feet are very rigid, and do not turn inward enough to adapt to the ground. There is less mobility, so more stress/force is applied to your body
Typical Injuries	Instability injuries Arch & Heel Cord Pain Shin Pain Knee Pain	Minimal for runners with normal arch, normal weight, and a good training program	Impact Injuries Shin Splints Stress Fractures Heel, Knee, Hip Pain Ankle Sprains

Best Shoe	<u>MOTION CONTROL SHOES</u> Straight or semicurved last Firm Midsole (dual density midsole with firmer surface on the inside) Board/Combination last External Heel Counter Good Arch Support	<u>STABILITY SHOES</u> Semicurved last Two-density midsole Durable outsole appropriate for running surface	<u>CUSHIONED SHOES</u> Curved Last Dual density midsole with the firmer denser portion on the outer edge Flexible Sole Slip Last Elevated Heel
Avoid	Highly cushioned Curved-lasted shoes that lack stability and control Poor Training Regimens	Poor Training Regimens	Motion-Control or Stability Shoes which reduce foot mobility Poor Training Regimens
Examples	Adidas Cairo, Asics Gel-Kayano, Asics Gel-MC Plus, Brooks Beast/Ariel, Diadora Mythos 360, Reebok Supreme Control DMX, Saucony Grid Stabil	Adidas Supernova, Asics GT-2070, Asics Gel-1070, Brooks Adrenaline, New Balance 854, New Balance 715, Nike Air Max, Reebok AzTrek DMX, Saucony Grid Swerve	Adidas Supernova Cushion, Asics Gel-Cumulus, Asics Gel-Nimbus, New Balance 751, Nike Air Max Aware (women), Nike Air Max Elite, Reebok Allure DMX



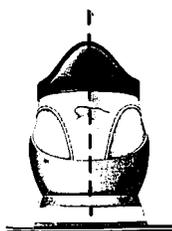
STEP #3: TIPS ON SHOE QUALITY AND SELECTION

- When should I try on shoes?** The key here is that feet swell during the day. Therefore if you only run in the morning - purchase shoes in the morning. If you work-out at different times of the day - purchase shoes in the afternoon when your feet are larger.
- How do I know the shoe I am looking at is a good quality shoe?**

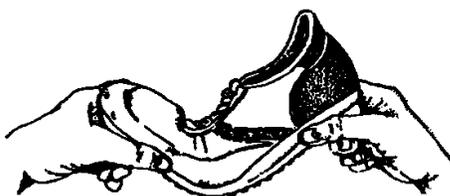
Heel Counter View Test (See picture below)	Place the shoe on a flat surface and view them from the rear. The sole should lie flat and the heel counter should not tilt
Squeeze Test	Squeeze the heel counter. A firm heel counter will prevent your fingers from touching each other. Remember - it should be stiff enough to prevent your foot from rolling.
Bend Test (See picture below)	Hold the heel in one hand and the other hand at the toe box. Lightly bend the shoe. It should bend where your foot bends (at the balls of your feet). It should NOT bend elsewhere (i.e. in the middle of the shoe).
Inspection	Look for defects, feel the seams inside the shoe (they should be smooth, even, and well-stitched), check for loose threads or extra glue spots. Also the tongue should be well padded to protect your foot from the laces.

* Note: Running shoes are specifically engineered for running, whereas basketball, aerobic, or cross-trainers are not.

Heel Counter View Test



Bend Test



c. **How can you tell if the fit is right?**

- Try on shoes with the socks that you normally wear while exercising.
- If you typically wear arch supports/orthotic make sure to try on the shoes with them
- Try on both shoes and stand up to feel the fit
- Rise up on your toes - your heel should not be able to rise out of the shoe and it should not cause any irritation or rubbing.
- Check the length - the distance from your longest toe to the end of the shoe should be not less than one half the width of your thumbnail, nor more than the entire width of the thumbnail.
- Check the width- if the upper (nylon portion) of the shoe is bulging over the sides of the sole - the shoe is too narrow. If you have more than half a finger's width space between the side of your foot (at the ball of your feet) and the side of the shoe it is too wide.
- Remember - every shoe style is made slightly different. Your size may change with both the style of a running shoe and/or the company that made it. If you are questioning if the size is right - always try on the next ½ size.
- Try running in the shoes on a non-carpeted surface (if possible).
- Look at more than one model of shoe.
- The shoes should feel comfortable - there is no such thing as "breaking a shoe in."

d. **I am on a tight budget what can I do?** You should set realistic expectations. Most good running shoes range from \$45.00 to \$130.00. You should expect to pay approximately \$60.00. Pay too little for a shoe and you probably will not get the quality you need; pay too much and you may be paying for a glossy national ad campaign or features you do not need. Even though shoes are pricey, you can make your shoes last longer by only wearing them for running! Do not wear them to the grocery store, to cut the grass, or walk the dog. Every mile you wear the shoe is one less mile they will provide you with the proper support. Also check with your local PX for available brands and their prices before shopping at other stores.

e. **If you need more help selecting a running shoe,** seek out a knowledgeable sales person and ask for advice. You may want to bring an old pair of running shoes for him or her to evaluate. A good source on the Internet is: www.runnerworld.com/shoes/.

STEP #4: KNOW WHEN TO BUY NEW SHOES!

It is time to buy new shoes when the outsole begins to show wear. The average running shoe should last between 400-600 miles. As the shoe ages it loses its shock absorbency. Specifically, after the first 100 miles, 10% of the midsole's shock absorption capability is lost, and 80% is lost between 400-500 miles. Therefore, more force is transferred to your legs. When your feet hit the ground while running, this force is three to five times your body weight. Your feet hit the ground 600 times when you run one mile. Proper running shoes can protect you from many running injuries when training properly. The bottom line is a running shoe only lasts about 400-500 miles or about six months for the average military runner.