

Foot Measurement, Shoe Fitting and Selection Criteria

Using foot measurement tools and choosing appropriate footwear for the diabetic foot.



When the shoe fits...

Nearly 80% of the population is wearing the wrong size shoes; it is no different for people with diabetes.

Fitting is an *art* not a science.

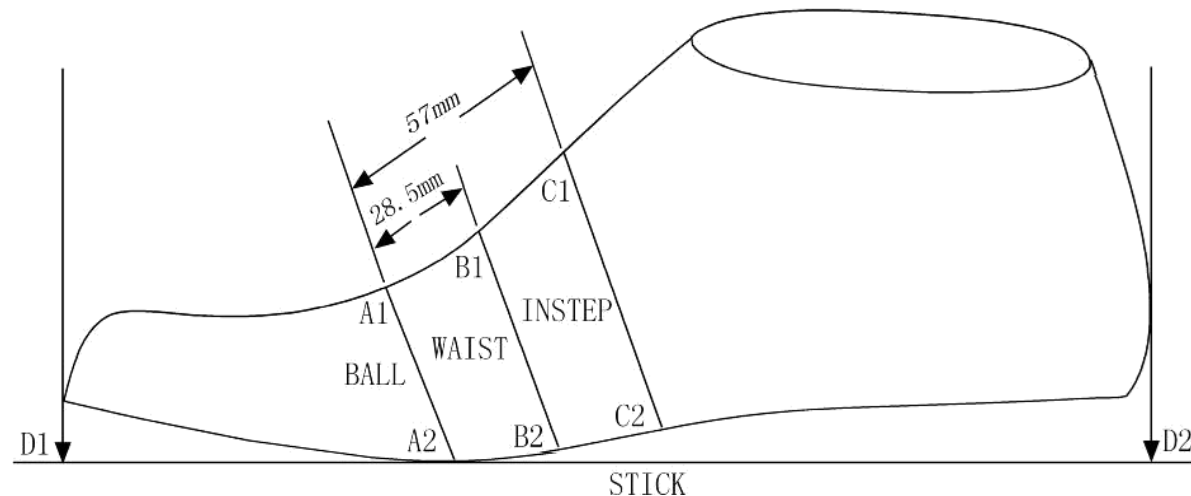
No standardization of shoe sizing in the United States.
(A 7 is not always a 7)



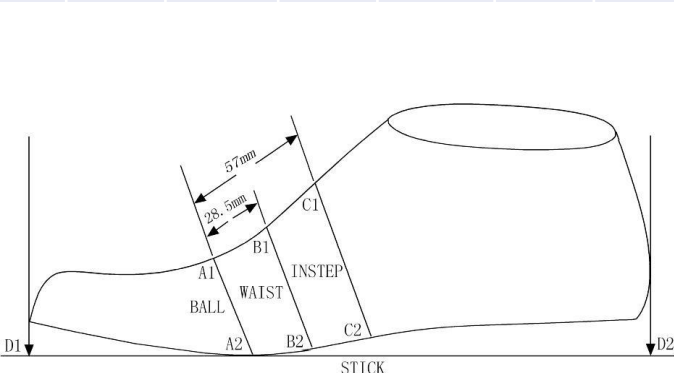
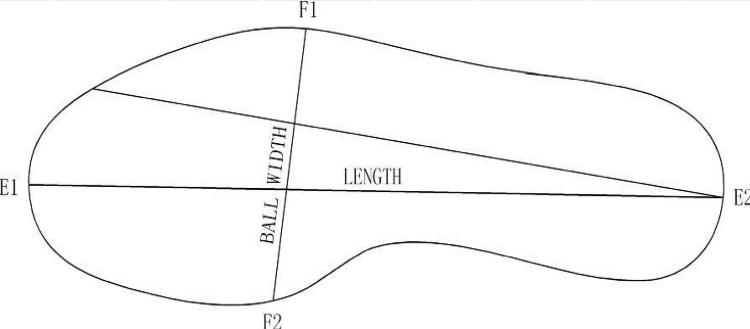
Differences in Sizes and Widths

A difference of $\frac{1}{3}$ " (8.4mm) between full sizes and $\frac{1}{6}$ " (4.2mm) for half sizes. This applies to men's, women's and children's shoes.

The difference between each "letter" width is $\frac{1}{4}$ " (6.3mm) For each change in width, there is a $\frac{1}{4}$ " change in circumference at the ball of the foot.



Last Measurements

LAST GRADING SPECIFICATIONS																
STYLE: MEN EVA MEDIUM		GRADING:8.46*6.35						SIZE:6-15								
ITEM & SIZE	6	6.5	7	7.5	8	8.5	9	9.5	10	10.5	11	11.5	12	13	14	15
Stick Length (D1-D2)	257.1	261.35	265.6	269.81	274	278.27	283	286.73	291	295.19	299.4	303.65	307.9	316.3	324.8	333.3
INSOLE PAPER LENGTH (E1-E2)	255.12	259.35	263.58	267.81	272.04	276.27	280.5	284.73	288.96	293.19	297.42	301.65	305.88	314.34	322.8	331.26
BALL WIDTH (F1-F2)	90.64	91.7	92.76	93.82	94.88	95.94	97	98.06	99.12	100.18	101.24	102.3	103.36	105.48	107.6	109.72
BALL GIRTH (A1-A2)	239.5	242.63	245.8	248.98	252.2	255.33	259	261.68	264.9	268.03	271.2	274.38	277.6	283.9	290.3	296.6
WAIST GIRTH (B1-B2)	243.5	246.63	249.8	252.98	256.2	259.33	263	265.68	268.9	272.03	275.2	278.38	281.6	287.9	294.3	300.6
INSTEP GIRTH (C1-C2)	246.95	250.125	253.3	256.475	259.65	262.825	266	269.175	272.35	275.525	278.7	281.875	285.05	291.4	297.75	304.1
SPRING	28.5	29	29.5	30	30.5	31	31.5	32	32.5	33	33.5	34	34.5	35.5	36.5	37.5
 																

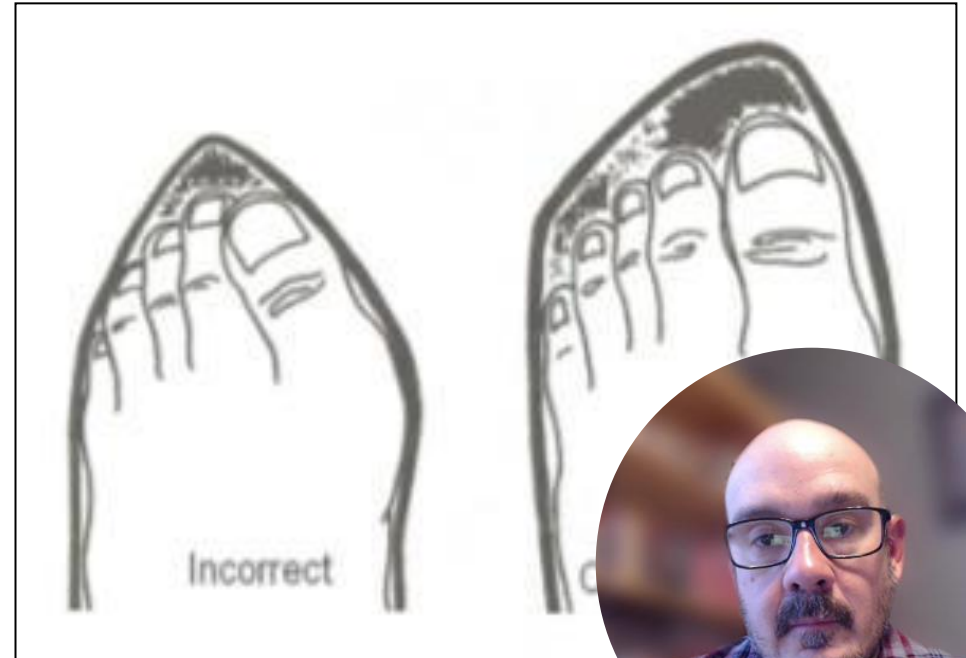


Proper Shoe Fit

Professionally fit

Fit the shoe to the foot, not the foot to the shoe

Shoe/last shape considerations



Proper Shoe Fit

Feet should be measured each time shoes are purchased.

Foot size changes with age, weight changes, and other factors.

Correctly fitted footwear can prevent long term foot problems.

Take time to fully lace and tie the shoe properly.





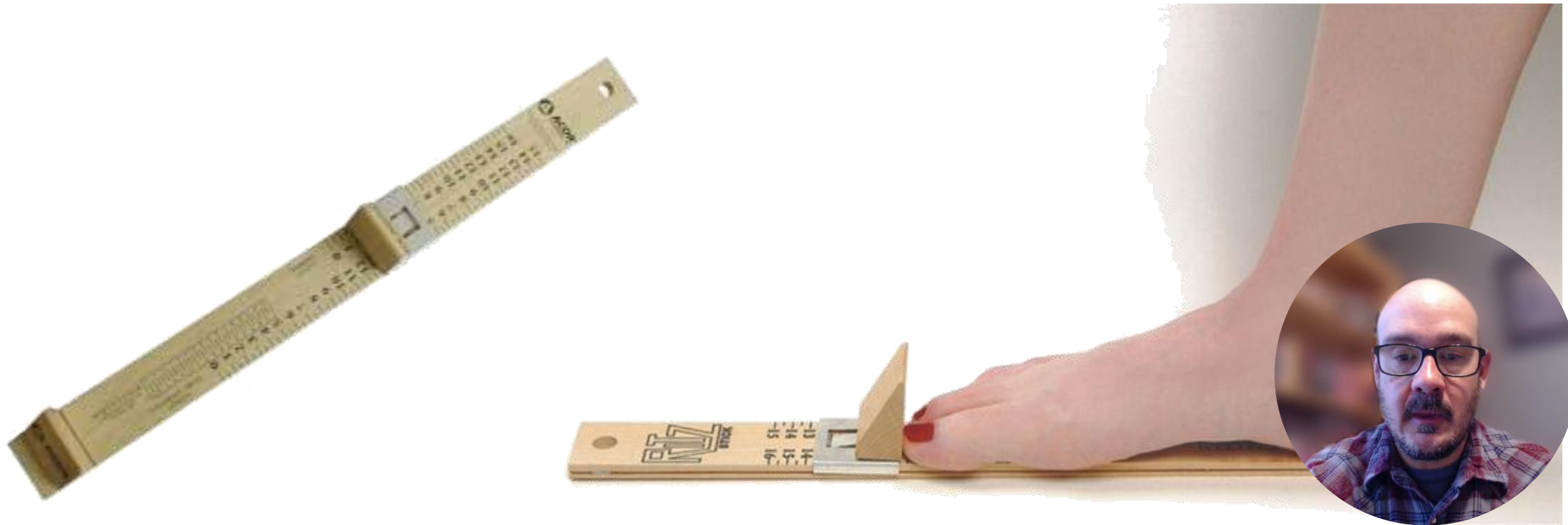
- As a Supplier of therapeutic shoes for Medicare beneficiaries, you are obligated to fit the patient in the most medically appropriate footwear.
- This means it is NOT ok to compromise.
- It's okay to say



Ritz Stick

Measuring device used to measure heel-to-toe length and width

Although the Ritz stick is simple to use, you are not able to measure one of the most critical measurements - the arch length

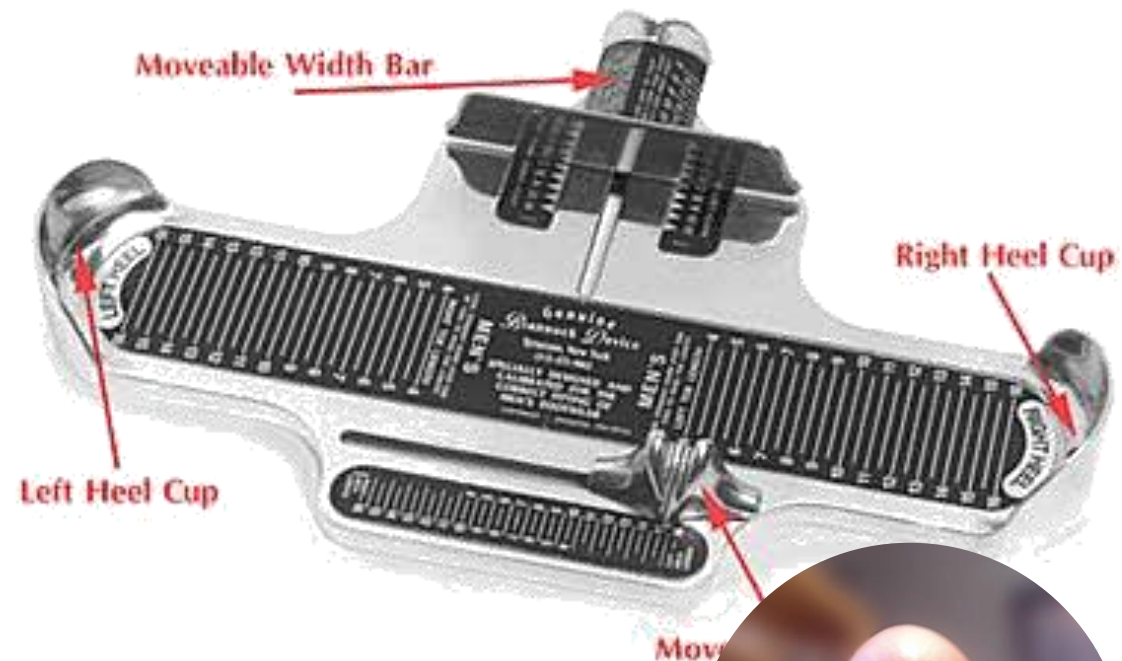


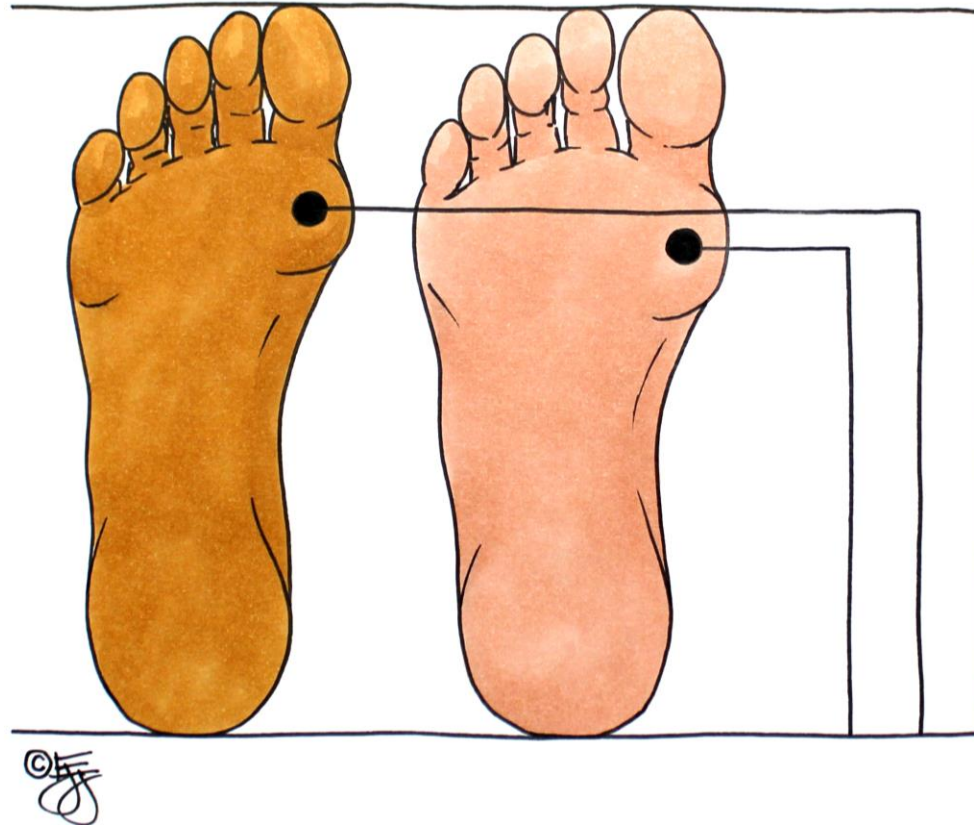
Brannock Device

Most-used and most accurate tool because it measures three aspects of the foot—toe length, width and arch length.

Each manufacturer's Brannock is made to their own specifications to match their last sizing.

Originally patented by Charles Brannock in 1926

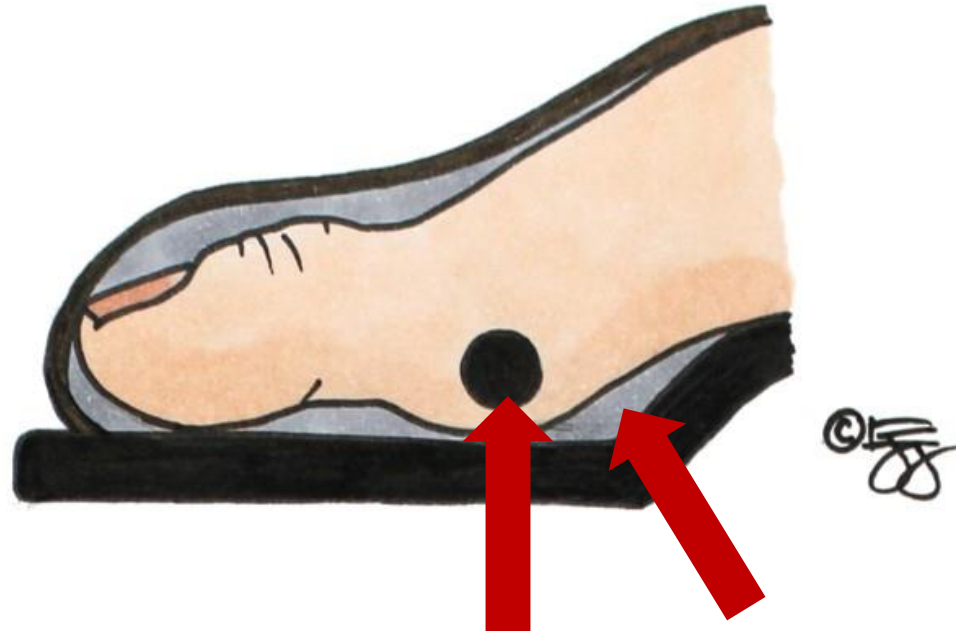




Why Heel-to-Ball Is Essential

This illustration shows two feet which are the same length, but each require different shoes. Proper shoe-fitting incorporates not only overall length (heel-to-toe measurement) but also arch length (heel-to-ball measurement). **Shoes are designed to flex at the foot.** Correct fitting properly positions the ball of the foot in the shoe and provides adequate room for the toes.

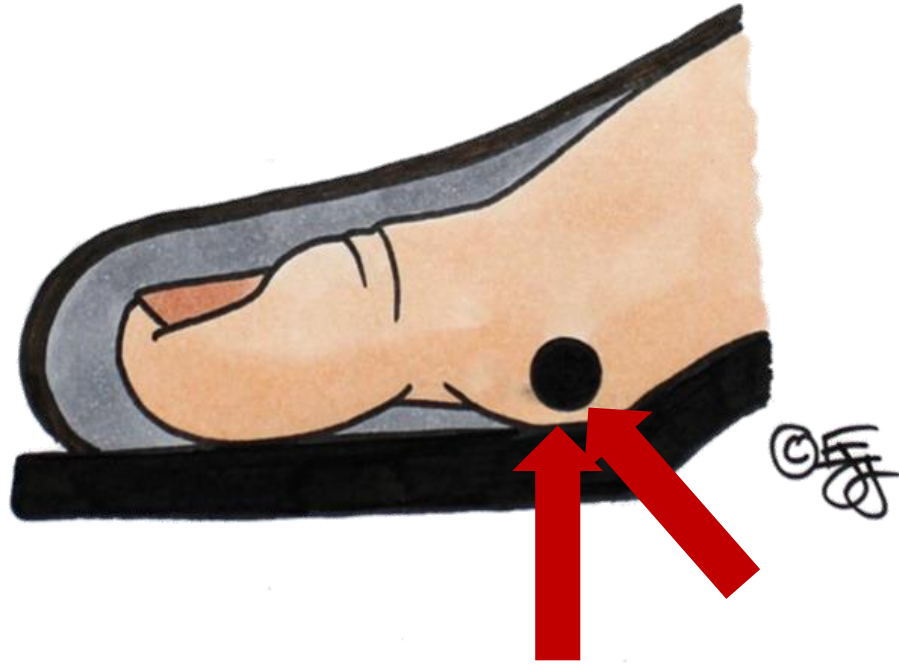




Without Utilizing Heel-to-Ball Measurement

Improperly fitted shoes can cause a variety of foot problems in addition to general discomfort and shoe breakdown. **If the arch of the foot is not positioned properly in the shoe, the foot will become fatigued and uncomfortable.**





Utilizing Heel-to-Ball - Proper Foot Placement

The breakpoint of the shoe and ball of the foot meet at the same point. The foot is correctly positioned in the shoe. **The foot and shoe bend at the same location, with the arch fully supported, allowing the toes to remain straight.** This will ensure correct fit and comfortable shoe which will keep its shape.



Foot Measurements

As part of the in-person assessment, Medicare requires measurements to be completed and documented annually for every patient



SHOE FITTING FORM

(KEEP THIS FORM IN PATIENT FILE)

Patient Name _____

Current Size & Width _____

Date of Fitting _____

	Right Foot	Left Foot	Comments
1. Heel to Toe			
2. Heel to Ball			
3. Midpoint of 1 & 2			
4. Width			
5. High Instep/Internal Brace	Yes / No	Yes / No	
6. Ankle Instability**	Yes / No	Yes / No	
7. Hammertoes/Bunions***	Yes / No	Yes / No	
8. Swelling****			

Consider the Sever's X, Lucis X, Douglas, William X or Maggy X *Consider the Ranger, Viper, Boss, Ruby or
****Consider the Annie, Brian, Mary Jane uppers or Rite uppers ****Consider the Annie, Maria, Brian, Center

Midpoint Measurement is the size that is half way between heel to toe and heel to ball measurement. It is not a full or half size, but never more than one full size greater than heel to toe measurement. Use midpoint to determine width size. Try a shoe on closest to this measurement.

Refer to Quick Reference Guide for Sizing Options

Pairs of Inserts 0 ☐ 1 ☐ 2 ☐ 3 ☐





SHOE FITTING FORM

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Patient Name _____

Current Size & Width _____

Date of Fitting _____

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1. Heel to Toe			
2. Heel to Ball			
3. Midpoint of 1 & 2			
4. Width			
5. High Instep/Internal Brace	Yes / No	Yes / No	
6. Ankle Instability**	Yes / No	Yes / No	
7. Hammertoes/Bunions***	Yes / No	Yes / No	
8. Swelling****			

Consider the Severe X, Lute X, Douglas, William X or Meggy X *Consider the Ranger, Viper, Bass, Ruk, Core
****Consider the Anna, Brian, Mary Jane, Lynn or Pats Lynn *****Consider the Anna, Maria, Brian, Center and any "X" shoes

Midpoint Measurement is the also that is half way between heel to toe and heel to ball to the closest full or half size, but never more than one full size greater than heel to toe measurement. Use the midpoint to determine width also. Try a shoe on closest to this measurement (midpoint and width).

Refer to Quick Reference Guide for Sizing Options

Pairs of Inserts 0 ☐ 1 ☐ 2 ☐ 3 ☐

Line 3 - Midpoint of 1 & 2*

***USE ONLY WHEN HEEL-TO-BALL IS LONGER!**





SHOE FITTING FORM

(KEEP THIS FORM IN PATIENT FILE)

Patient Name

Heel-Ball longer

Current Size & Width

10M

Date of Fitting

	Right Foot	Left Foot	Comments
1. Heel to Toe	9	9½	
2. Heel to Ball	10	10½	
3. Midpoint of 1 & 2	9½	10	
4. Width	M	M	
5. High Instep/Internal Brace*	Yes / No	Yes / No	
6. Ankle Instability**	Yes / No	Yes / No	
7. Hammertoes/Bunions***	Yes / No	Yes / No	
8. Swelling****			

*Consider the Douglas, Edward X, Maggy X, Lucie X, or William X **Consider the Boss, Cara, Ranger, Ruk or Vigor
Consider the Annie, Brian, Flute Lycra® or Merry Jane Lycra® *Consider the Annie, Brian, Carter, Marla, or any "X" shoes

Midpoint Measurement is the size that is half way between heel to toe and heel to ball to the closest full or half size, but never more than one full size greater than heel to toe measurement. Use the midpoint to determine width size. Try a shoe on closest to this measurement (midpoint and width).

Refer to Quick Reference Guides in the Catalog for Sizing Options

Pairs of Inserts 0 ☐ 1 ☐ 2 ☐ 3 ☐

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SHOE FITTING FORM

(KEEP THIS FORM IN PATIENT FILE)

Patient Name

Heel-toe longer

Current Size & Width

10½ M

Date of Fitting

	Right Foot	Left Foot	Comments
1. Heel to Toe	10	10½	
2. Heel to Ball	9	9½	
3. Midpoint of 1 & 2	N/A	N/A	
4. Width	M	M	
5. High Instep/Internal Brace*	Yes / No	Yes / No	
6. Ankle Instability**	Yes / No	Yes / No	
7. Hammertoes/Bunions***	Yes / No	Yes / No	
8. Swelling****			

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Be Sure To Measure

Both feet

With socks or stockings

While standing

Feet shoulder width apart

Foot all the way back to the heel cup

At the end of the day if possible

Length, width, and arch length



Trial Fittings

A helpful method of evaluating fit to determine appropriate size



Other Considerations When Determining Proper Shoe Size

Edema

Hosiery

Severity of deformities

Shape/design of shoe

Shoe upper material

Brace (AFO)



Confirming Proper Fit

Length – 3/8" to 1/2" between longest toe and end of the shoe

Ball Width & Vamp – should fit snugly over the vamp and not overlap the sole of the shoe

Heel-to-ball (arch length) – ball of the foot fits snugly into the pocket of the shoe

Heel – snug fit; malleoli do not rub the topline

Lacing – normal distance

Tread – balanced and stable when standing and walking



Assess Fit During Ambulation

Foot and shoe interaction (wobbling or stable)

Shoe and ground interaction (proper weight transfer)

Patient balance (enhances or hinders stability)

Heel slippage (minor movement or cause for concern)



Foam Impressions

Three-dimensional negative impression of the patient's foot used to fabricate custom inserts

Must be performed each year



****Custom inserts
practice of a CFTs.**



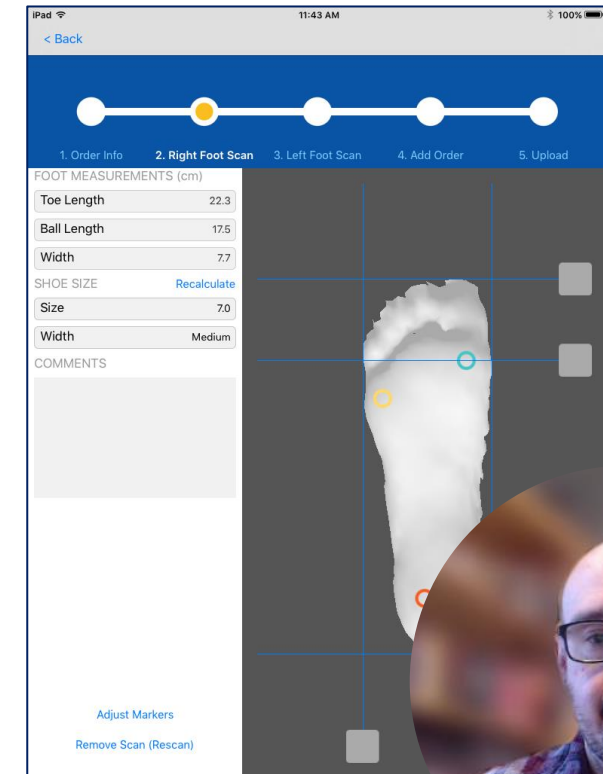
Digital Scanner

May be used as an efficient and accurate alternative to foam impressions

Ease of ordering

Improved turnaround time

Must be performed each year



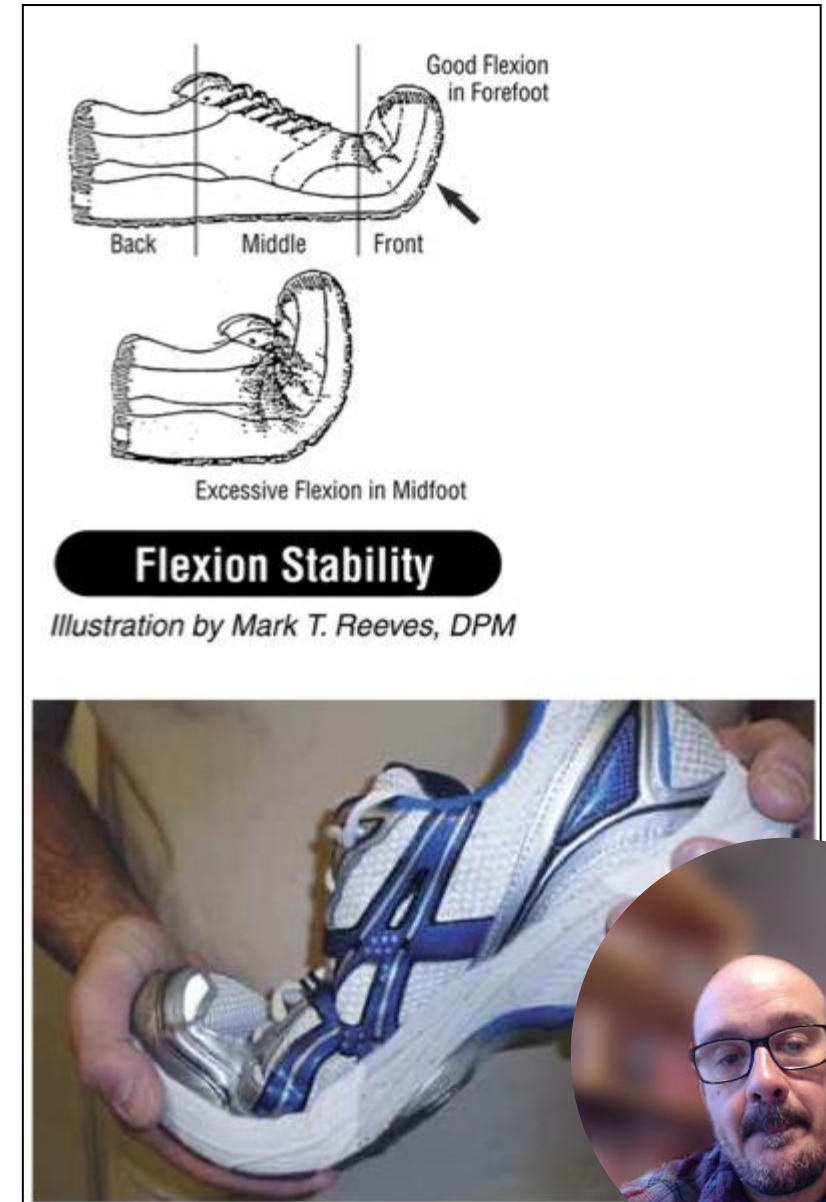
In-person Delivery Patient Instructions

- Don and doff shoes (consideration should be taken prior to dispensing)
- Fasten shoes (lace, hook and loop, quick tie)
- Comply with break-in instructions (includes replacing inserts)
- Properly care for the shoes and inserts
- Discontinue use and contact provider if problems arise



Structural Integrity of Shoes

Flex Test—by pushing down on the shoe, the breakpoint, should be firm and provide minimal resistance. The breakpoint of the shoe is under the met heads.



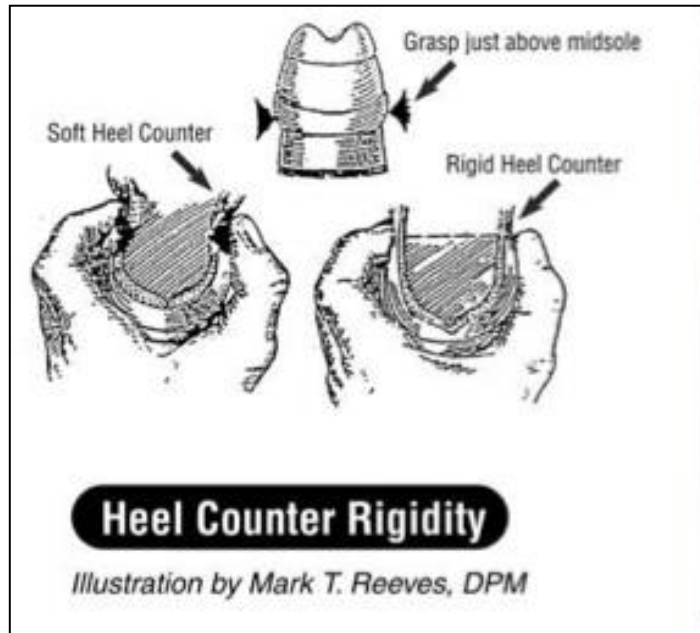
Structural Integrity of Shoes

Torsion Test—by twisting the shoe in opposite directions, this will check the stability of the soling. If the shoe twists over on itself, inadequate support.



Structural Integrity of Shoes

Counter Test—by grasping the heel of the shoe, apply pressure to the heel counter with you finger. If the counter collapses with little/no resistance, the shoe is not supporting the heel.



Style, Comfort and Cost

Style—If the shoes are accommodating *and* appealing, the patient is more apt to wear the shoes.

Comfort—It does not matter how many tests it passes, if the shoe is not comfortable, nobody will wear them.

Cost—Often a determining factor of why a patient chooses particular pair of shoes.



Shoe Selection

Foot type/deformities

Activity level

Occupation/leisure activities

Environmental considerations

Age

Balance and proprioception

Refer to Quick Reference Guide

MEN'S COLLECTION	Ankle Instability	Bunions	Charcot	Diabetes	Edema	Hammertoes	High Instep	Internal Brace	Plantar Fasciitis	Pronation/Supination	Stability
Boss	***	**	*	***	**	**	**	**	**	*	***
Brian/X	**	***	***	***	***	***	***	***	**	**	**
Carter	*	***	**	***	***	***	**	***	**	*	*
Chris	**	**	**	***	***	***	**	*	***	*	*
Classic	**	**	*	***	**	**	*	*	**	**	**
Collin	*	**	*	*	*	**	**	*	***	*	*
Connor	*	**	*	*	*	**	**	*	***	*	*
Douglas	**	***	***	***	***	***	***	***	**	**	**
Easy	*	**	*	**	**	**	**	*	**	*	*
Edward X	**	***	***	***	***	***	***	***	***	***	**
Endurance	**	***	*	***	**	***	*	**	***	***	**
Endurance Plus	**	***	*	***	**	***	*	**	***	***	**
Fisherman	**	**	**	***	**	**	**	**	**	**	**
Frank	**	**	*	***	**	**	*	*	**	*	*
Gordon/X	**	***	***	***	***	***	***	***	***	***	**
Jack	**	**	**	***	**	***	*	*	**	*	*
Jason	**	**	**	***	***	***	*	*	**	*	*
John	**	**	**	***	**	**	*	*	**	*	*
Justin	**	**	**	***	**	**	*	*	**	*	*
Mike	*	**	**	***	**	**	*	*	**	*	*



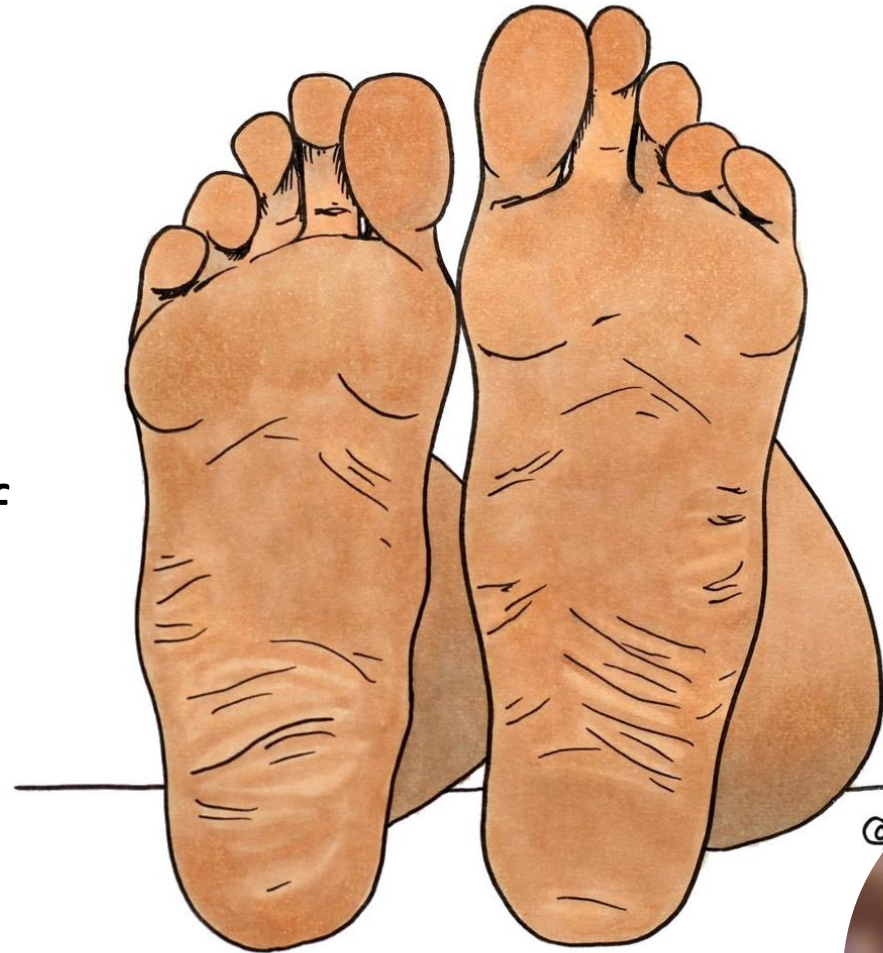
Split Pairs/Mismates

What should you do with a patient with different sized feet?

Nothing...unless there is a difference of 1½ sizes or more.*

One size or less difference is easily accommodated.

(*Additional charge applies)

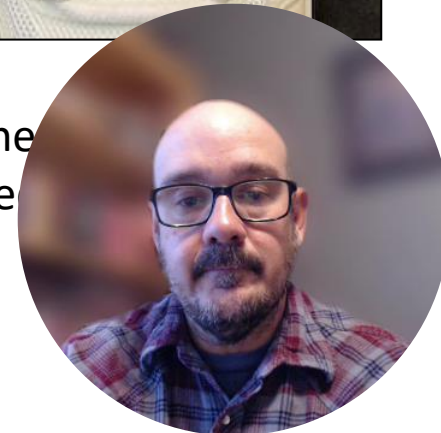


Pro Shoe Fitting Tips

Lacing techniques allow shoes to further accommodate various challenging feet with problems like specific dorsum pain, toe problems, or heel fit issues.

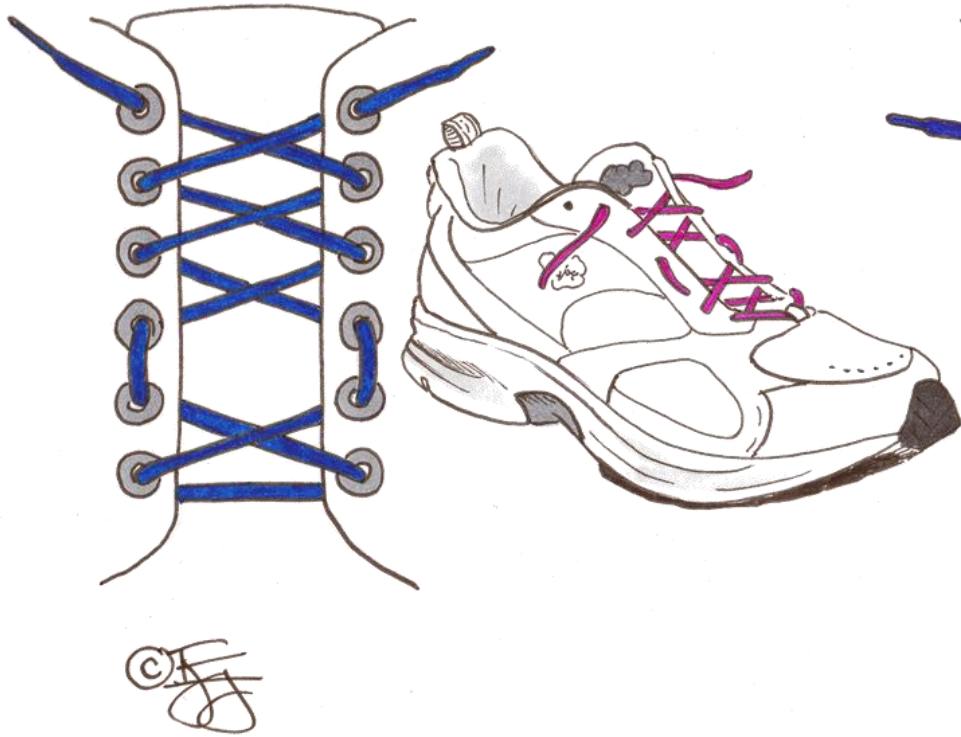


Lacing from the inside out allows the shoes to be more easily adjusted.

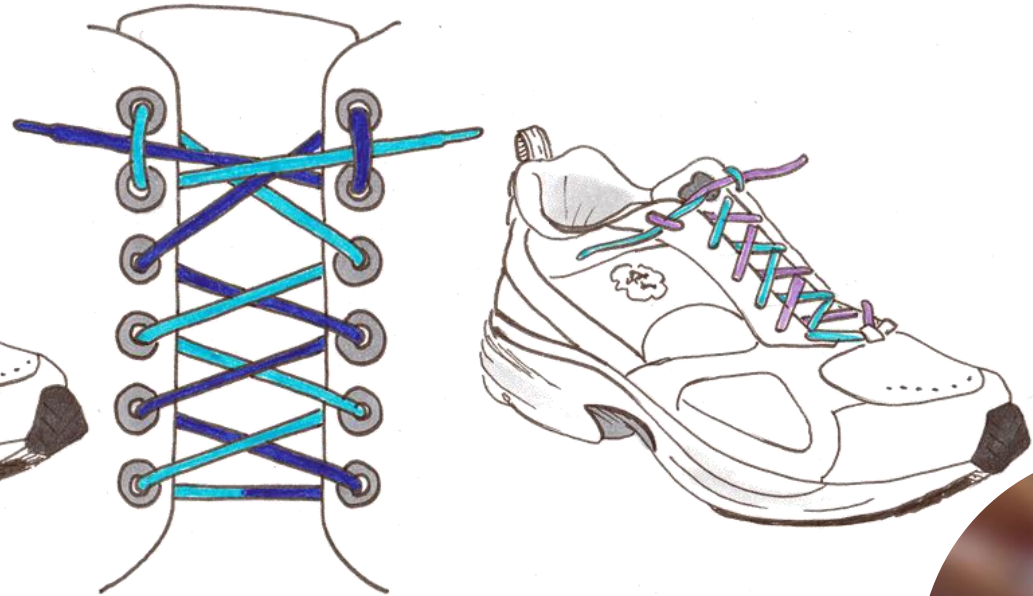


Pro Shoe Fitting Tips

Gap or Skip lacing reduces pressure over the dorsum of the foot



Lock lacing tightens firmly and reduces heel slippage



Pro Shoe Fitting Tips

A ball-and-ring stretcher is used to provide relief in a specific spot on a shoe. Commonly used to relieve pressure over bunions or hammertoes.



Pro Shoe Fitting Tips

Shoe stretchers can be used to stretch the overall width of a shoe, reducing tension in specific areas like a bunion.



Pro Shoe Fitting Tips

An *insert spacer* has multiple uses. It can accommodate for edema or different sized feet; and may be used to help with heel slippage, and offloading.



Pro Shoe Fitting Tips

Self-adhesive *tongue pads* may be placed on the underside of the tongue for padding and to help prevent heel slippage.





Specialized Depth Footwear

Made of “suitable material” —Lycra®

Soft vamp shoes

Great for severe digital deformities
like cross-over toes, bunions, or
hammertoes



Specialized Depth Footwear

Fully adjustable vamp with hook and loop straps

Surgical-style opening

Suitable for patients with more severely deformed feet, high instep, excessive swelling, lower limb bracing



Specialized Depth Footwear

Extra, *extra* depth shoes

Provides additional depth and volume

Use for patients with edema, high volume feet, Charcot deformities, or bulky AFOs or inserts.



Specialized Depth Footwear

Provides ankle support, additional stability
Available in a steel toe



Specialized Depth Footwear

Durable, washable shoe

Lightweight, stretchable

Some styles suitable for incontinence





Specialized Depth Footwear

Athletic shoes

Shoe selection for active lifestyles

Promote physical activity



Specialized Depth Footwear

Dress shoes

Various styles for dress occasions

Professional occupations



Specialized Depth Footwear

Super-Depth Comfort Shoes

Triple depth shoes with three removable layers of inserts
Suitable for patients with more severely deformed feet; also
available in extreme sizes and widths



Custom Shoes

Constructed over a positive model of patient's foot

Used for patients with severe foot deformities

Accommodates feet that cannot be properly fit with commercially available shoes



A5501: Not in CFts scope of practice



Shoe Modifications

Sole Lift

External lift of the shoe for limb length discrepancies

Have a physician measure for the discrepancy



Shoe Modifications

Heel Lifts

Address limb length deficiency or equinus deformity



Shoe Modifications

Strap Extension

Additional material added to fully secure the shoe



Shoe Modifications

Rocker Bottom Soles

Limit the motion of a joint

Replace lost function of a joint

Offload forefoot



Shoe modifications are not in the scope of practice of a CFTs

Shoe Modifications

Medial Arch Fill

Provides medial stability

Can be used for severe pes planus, tibial tendon deficiency and other diagnoses that may require additional medial stability.



Shoe Modifications

Lateral Flare

Additional lateral stability for ankle instability and other foot conditions



Shoe Modifications

Toe Skater

Smooth piece added to the end of the shoe to assist a patient with drop foot



Sock Considerations

“Diabetic” socks should be knitted with appropriate moisture wicking materials (not 100% cotton)

Anatomically correct with at least 5 varying sizes

No prominent seams



Hosiery Considerations

Hosiery useful to control Edema

Various materials based on allergies, temperature, length, condition

Multiple levels of compression to treat different conditions



Around the House

Slippers (non-billable)

Durable outsole for indoor/outdoor use

Removable inlay to accommodate inserts



Thank you!

