Functional Orthoses: Eight Tips for Better Results

These steps will lead to better clinical results and fewer treatment failures.

BY JEFFREY A. ROOT

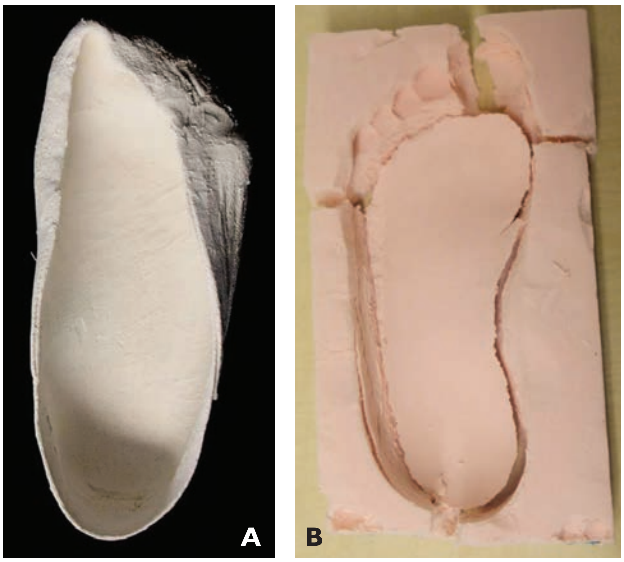

Figure 1 (A-B): Actual casts received by an orthotic laboratory. The plaster cast is an excellent representation of the foot. The impression foam cast was sent to the lab in this condition and was removed from its supporting box in order to be laser scanned for manufacturing purposes. The impression foam cast is not a good representation of the patient's foot.

Introduction

It should be the desire of every practitioner who prescribes custom foot orthoses to achieve the best possible treatment outcome for each patient. In an effort to accomplish this objective, the practitioner must establish an individual treatment plan and set specific treatment goals that can be communicated to the patient and monitored for progress. The patient must be reasonably compliant and needs to communicate with the practitioner so that the treatment plan can be evaluated and if necessary, modified.

Although practitioners should avoid establishing unrealistic treatment goals for their patients, some orthotic-related treatment plans lack the potential for greater success because the treatment plan is poorly designed or because the practitioner prescribes an orthosis that is incapable of achieving better results. The practitioner must have both the knowledge and the confidence to prescribe the proper orthosis for the proper patient.

Practitioners have contrasting opinions about the use and potential benefit of custom foot orthoses. Although the prescription foot orthotic failure rate is unknown, patients who walk into the office carrying their "little bag" of ineffective orthoses clearly demonstrate that failures do occur. This suggests that practitioners and laboratories need to work together to reduce the frequency of treatment failures. Orthotic failure can range from a lack of intended symptom resolution to an inability of the patient to tolerate the orthoses. Prescription foot orthoses must be therapeutic and well tolerated to achieve beneficial results for the patient.

Most practitioners and orthotic laboratories do not guarantee the efficacy of their orthoses but they do typically guarantee their comfort. This practice or policy has resulted in a tendency for practitioners to prescribe, and for laboratories to manufacture, orthoses that err on the side of comfort, often at the expense of their intended therapeutic benefit. It does not make sense to prescribe orthoses that are well-tolerated but clinically ineffective or to prescribe potentially therapeutic orthoses if they cannot be worn comfortably. So how can the practitioner create orthoses that are clinically effective and well tolerated? The answer may lie in how the practitioner tailors the prescription.

Laboratory Standard Specifications

Many prescription foot orthoses are made according to laboratory standard specifications or prescription defaults. These defaults have a tendency to be fairly basic in nature and serve as a baseline for a standard orthotic. Laboratory defaults are appropriate for many patients, but certainly not for all. Strict adherence to laboratory defaults can lead to poor tolerance or sub-optimal clinical results for some patients.

In order to achieve consistently good treatment results, the practitioner must take a good history and conduct an adequate examination of the patient. Only after a diagnosis has been made and etiological factors have been identified can an orthotic prescription that targets the patient's specific pathology or condition be developed by the practitioner.

The orthotic prescription may need to be customized by the prescribing practitioner in order to alter

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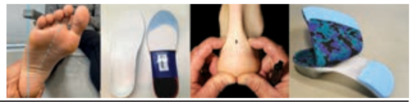

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the patient's level of functional control or to otherwise change the influence of the device. The prescription can be customized in order to address atypical or extreme pathology, to offload or accommodate a portion of the foot, to ensure comfort, to enable the use of specific shoe gear or for a wide range of other purposes. Some laboratories offer pathology-specific orthoses to help the practitioner select an orthotic that the laboratory believes is appropriate for the patient's pathology or condition. Pathology-specific orthoses are also made in accordance with prescription or laboratory defaults that may need to be modified by the practitioner to achieve a successful outcome for some patients.

This article discusses eight orthotic prescription tips to help practitioners achieve better clinical results and fewer treatment failures. Although this article is limited in scope, the concept that customization of the orthotic prescription might lead to better outcomes may inspire some practitioners to change their prescribing habits for the better.

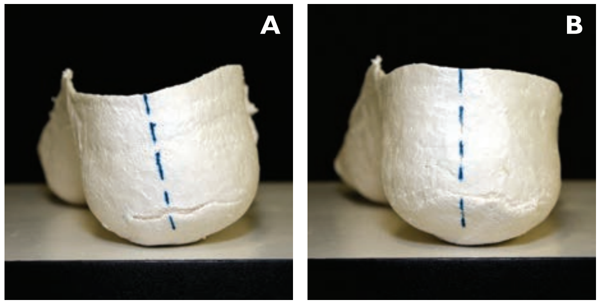

Figure 3 (A-B): Supination of the midtarsal joint resulted in inversion of the forefoot (left cast) causing the negative cast to rest with the heel everted as compared to the same foot when cast with the midtarsal fully pronated (right cast). Only the practitioner can tell for certain if the cast on the left was supinated at the midtarsal joint or if the inverted forefoot position is due to a forefoot varus or a forefoot supinatus deformity.

Tip #1: Casting is Key

The orthotic prescription process actually begins with casting the patient's foot. Although most practitioners send an acceptable quality cast to their laboratories, some casts received by laboratories are a poor representation of the foot (Figure 1). Poor quality casts create an ethical dilemma for the laboratory, especially if the practitioner is not receptive to re-casting the patient or does not seem motivated to improve casting skills for future purposes. The most important thing that the practitioner can do to achieve successful outcomes is to submit a good quality cast to the laboratory.

The most common method for casting the patient's foot is the suspension technique in which the subtalar joint is placed in the neutral position and the midtarsal joint is maintained fully pronated. In some cases, it may be advantageous or even necessary to cast the foot with the subtalar joint in a supinated or pronated position. While supinated casting is the least common of these options, casting the foot with the subtalar joint in a pronated position may be indicated in cases of severe ankle equinus or in the treatment of hallux rigidus, peroneal spasm, or other conditions that may require greater pronation of the foot than would be permitted by a device made from a neutral position cast of the foot.

The relative position of the subtalar and midtarsal joints has a profound influence on the plantar, non-weightbearing contour of the foot. Studies have demonstrated significant variability in casting of the foot by experienced practitioners.[1] When the joints or osseous segments of the foot are not in their intended position or relationship during the casting process, a casting error has occurred.

The position of the joints and

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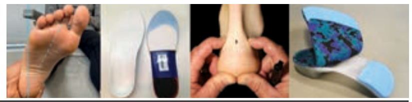
The most common method for casting the patient's foot is the suspension technique in which the subtalar joint is placed in the neutral position and the midtarsal joint is maintained fully pronated.

Figure 2 (A-C): Supination of the midtarsal joint resulted in adduction and plantar flexion of the forefoot on the rearfoot (left cast). The increased lateral, longitudinal arch height is the result of forefoot plantarflexion and is evidence of midtarsal joint supination when comparing the supinated cast (left) to another cast of the same foot (right) that was not supinated at the midtarsal joint.

Below is a cast of a different patient with a cavus foot type. Although the cast might appear supinated at the midtarsal joint, the foot was actually cast with the midtarsal joint in a maximally pronated position. Only the practitioner can determine if the cast was taken in the proper position due to direct knowledge of the patient's foot structure and the ability to compare the cast to the patient's foot at the time of casting.



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segments of the foot is determined by the location, direction and amount of force being applied to the foot during the casting process. When casting errors do happen, they frequently occur at the midtarsal joint because it is a compound, complex joint with significant range and direction of motion. When one of the goals of casting is to place the midtarsal joint in its maximally pronated position, then supination of the midtarsal joint is a casting error. When the midtarsal joint is supinated during casting, the forefoot becomes more adducted, plantarflexed, and inverted relative to the rearfoot than it does when the joint is fully pronated.

The practitioner should attempt to minimize casting errors which can result in poor symptom response and orthotic discomfort. Casting errors can usually be identified by evaluating the negative cast and by comparing the shape of the cast to the patient's foot after casting.[2] The laboratory does not have the benefit of the patient's foot, so it is important for the practitioner to identify and resolve errors at the time of casting. Midtarsal joint positioning errors can often be identified by evaluating the plantar, lateral surface of the foot in the area of the calcaneocuboid joint (Figure 2) or by evaluating the plantar plane of the forefoot relative to the rearfoot (Figure 3).

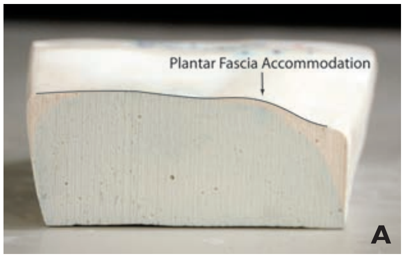

Figure 5 (A-B): Plantar Fascia Accommodation in Casts

These frontal plane sections demonstrate a plantar fascia accommodation in a plaster-of-Paris and a computer-generated cast of the foot. This accommodation enables offloading of the plantar fascia while maintaining support for the surrounding structure.

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Figure 4: How to accommodate for the plantar fascia

1) Place subtalar joint in neutral, and fully pronate midtarsal joint
2) Dorsiflex hallux to resistance
3) Look for bowstringing of plantar fascia
4) Estimate height of fascia at apex of bowstring
5) Palpate fascia for tension (firmness)
6) Mark outer margins of fascia, if prominent
7) Accommodate when prominent, especially if firm (typically 2 to 6 millimeters in depth)
8) Lines will transfer to plaster cast, or can be drawn on cast or Rx form

Tip #2: Reduce Arch Discomfort and Improve Functional Control: Know How and When to Accommodate for the Plantar Fascia.

In an effort to prevent orthotic-induced medial arch irritation, some laboratories have a tendency to use a generous amount of medial arch fill on their positive casts in order to create lower arched orthoses. This is typically a defensive measure by the laboratory because they are concerned that the practitioner will be upset with them if the patient experiences medial arch discomfort from the orthoses. Unfortunately, excessive medial arch filler can reduce the functional influence of the orthosis, which may result in decreased symptom response.

There is some controversy concerning the function of the arch of an orthosis. Some practitioners advocate casting the foot with the subtalar and/or midtarsal joint supinated to exaggerate the height of the medial arch of the orthosis because they believe this will increase functional control of the foot. Other practitioners report good functional control without resorting to supinated casting. It may be possible that some practitioners are altering their casting technique to compensate for poor laboratory technique, or because they are not modifying their prescription defaults to increase functional control.

The arch of the foot is a dynamic structure and it naturally rises and lowers during gait and other activities. As a result, a more flexible orthotic shell material is necessary to allow normal motion of the arch and to prevent irritation of the medial arch when the foot is cast with an exaggerated arch height. A more flexible shell tends to deform under load and may not support the foot in the position in which the foot was cast. The use of a more rigid shell can reduce deformation of the device but tends to produce arch discomfort when the foot is cast with an exaggerated arch height. In order to resolve this dilemma, the practitioner must appreciate the dynamic function of the arch and identify the cause of orthotic-induced medial arch discomfort.

One, if not the most common cause of orthotic-induced medial arch

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discomfort, is orthotic pressure on the medial band of the plantar fascia. Accommodation of the plantar fascia is a prescription option that can be used to reduce the potential for medial arch discomfort. The under-utilization of this modification explains why some orthoses create arch discomfort and why some laboratories feel a need to use additional medial arch filler as a general practice.

A simple clinical examination of the plantar fascia should be conducted on all patients who are being prescribed functional orthoses.

A simple clinical examination of the plantar fascia should be conducted on all patients who are being prescribed functional orthoses. This evaluation will demonstrate when it is advisable to accommodate for the plantar fascia and will help the practitioner show the laboratory the exact location and approximate depth of the accommodation. It is advisable to accommodate for the plantar fascia when it is plantarly prominent, especially

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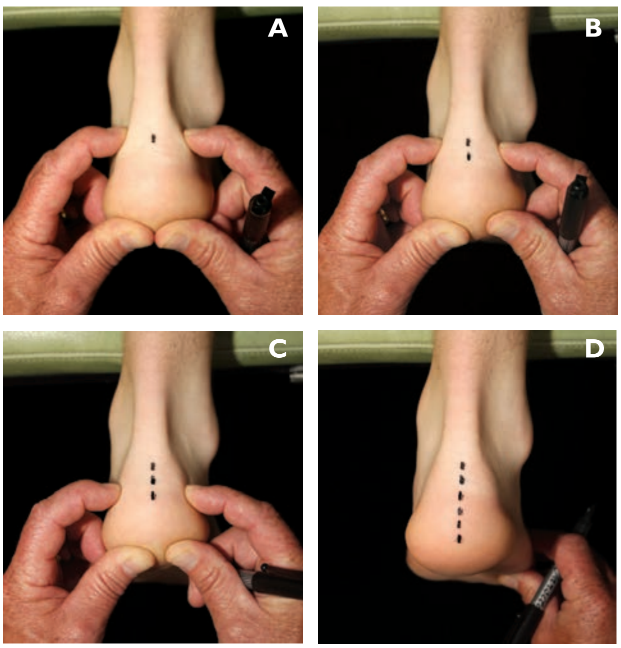
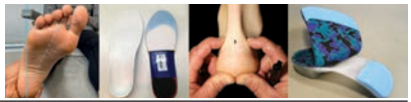


Figure 6 (A-D): Heel Bisection Technique

1) Using palpation, locate the posterior, superior apex of the calcaneus. Simultaneously palpate the medial and lateral margins of the calcaneus with the tip of both index fingers and construct a line segment midway between these two points. (Figure 6-A)

2) Repeat process inferiorly until the upper half of the posterior heel is bisected. (Figures 6-B and C)

3) Extend bisection line to lower half of the heel without further palpation. (Figure 6-D)



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if it feels firm on palpation (Figures 4 and 5).

Tip #3: Improve Accuracy of Heel Bisections for More Precise Control

There is considerable controversy about the reliability and use of heel (rearfoot) bisections for clinical examination of the foot and for purposes of manufacturing custom foot orthoses. One of the reasons for variability in heel bisections results from a lack of standardization and consistency in the technique used by different practitioners to bisect the heel. Some practitioners draw heel bisections based on observation of the posterior surface of the heel, while others incorporate palpation of the calcaneus in their bisection technique. Even among practitioners who use palpation of the calcaneus, there can be significant variability in the manner in which different practitioners palpate the heel. These inconsistencies in technique contribute to variability in their findings.

Heel bisections are extremely important in the manufacture of functional foot orthoses and their accuracy should be of concern to the practitioner and the laboratory. The frontal plane is the only cardinal body plane used to orient the cast during the manufacture of a custom-fabricated, functional foot orthosis. A bisection of the heel is required by the laboratory to orient the cast in the frontal plane in accordance with the laboratory's own default or to comply with the practitioner's individual instructions. The degree of intrinsic forefoot and rearfoot correction incorporated into a functional orthosis is directly related to the relative position of the heel. Unfortunately, the need for accurate positioning of the heel is not appreciated by some laboratories and practitioners. This may explain the cause of some treatment failures and the lack of consistency in clinical findings and orthotic treatment results. This problem is compounded by foam box casting and any foot scanner that does not capture the posterior anatomy of the heel accurately.

Those who might argue that heel bisections are not reliable are still faced with the ultimate dilemma that the practitioner or the laboratory must somehow orient the cast in the frontal plane during the making of a custom orthosis. Rather than accept the conclusion that studies demonstrate poor reliability, clinicians should adopt a standard heel bisection technique in an effort to improve the reliability of the clinical findings that depend on bisection of the heel.

The heel of the cast can be corrected to an inverted, vertical, or everted position. This is another prescription variable that can be controlled by the practitioner. In order for this to occur, the practitioner and the laboratory must use a consistent reference. If the laboratory and the practitioner do not use or agree on a consistent heel bisection, then asking for a specific degree of forefoot or rearfoot correction is pointless because their findings will differ and so too will the corresponding degree of orthotic correction.

Heel bisection reliability is important because it enables the practitioner to more precisely control the degree of correction in their orthoses. Reliability is important for didactic purposes and for the universal application of treatment theories in a clinical environment. Standardization of these techniques is also necessary for the advancement of evidenced-based medicine.

Looking at the practice of prescription foot orthotic therapy, it becomes evident that the heel bisection technique developed by Merton L. Root, DPM was not well described, is poorly understood, or has been intentionally disregarded. The heel bisection technique presented here is that which was developed by Dr. Root and is important in the clinical application of functional foot orthotic therapy.[3] It can be used to evaluate and measure the relative position of

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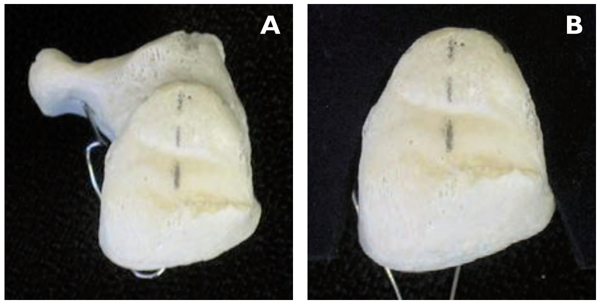

Figure 7 (A-B): An Anatomical Basis for Heel Bisections

The body of the calcaneus has been tented to demonstrate the parabolic shape of the posterior, superior surface of the calcaneus. Only the upper half of the posterior calcaneal surface should be palpated during heel bisection because the inferior portion is asymmetrical. If a Haglund's deformity is present, it should be palpated and incorporated into the bisected area.

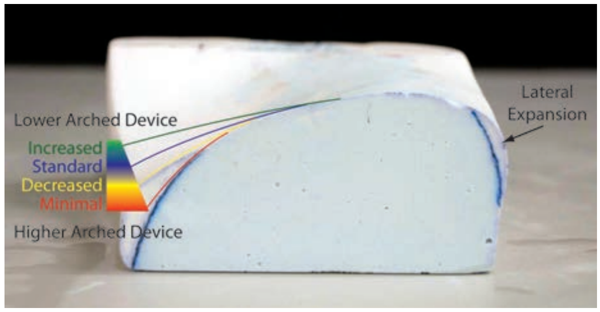

Figure 8: Example of Medial and Lateral Expansions

This cross-section illustrates a positive cast that has decreased medial expansion. An orthosis made from this cast will provide excellent medial arch support. The amount of medial expansion will influence the height of the medial arch of the orthosis. The lateral expansion allows for displacement of soft tissue along the lateral border of the device.

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the forefoot to the rearfoot, the rearfoot to the leg, and to orient the cast in the frontal plane when manufacturing a functional orthosis. The need for accuracy of heel bisections in prescription foot orthotic therapy cannot be overstated (Figures 6 and 7).

Tip #4: Alter Medial, Lateral and Heel Expansions for Fit and Function

The terms medial arch fill and medial expansion are often used interchangeably. The term medial expansion was originally coined to describe the application of plaster in the medial arch area of the cast. This modification

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was intended to effectively bend the medial edge of the orthotic shell away from the plantar surface of the foot to prevent medial edge irritation.

The lateral expansion is a plaster addition designed to bend the lateral edge of the orthotic shell away from the lateral border of the mid- and forefoot. The heel expansion is similar in function but is added in the heel area of the cast to allow for displacement of the plantar fat pad and to help determine the width and contour of the heel cup of the device.

With the development of larger commercial orthotic laboratories in the 1970's, the use of liberal amounts of

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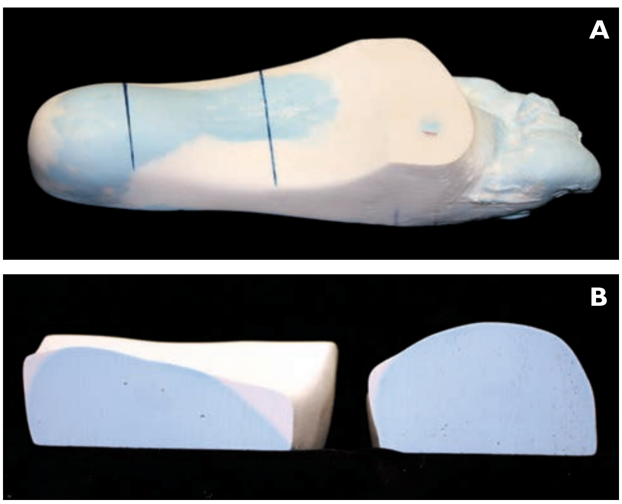
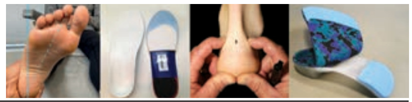


Figure 9 (A-B): Standard Root Type, Functional Cast Corrections

Retention of the plantar, non-weight-bearing heel contour is important for functional control. Medial and lateral and heel expansions should allow for soft tissue displacement but should not be so generous as to compromise essential functional control (cast sectioned in heel and middle of arch per lines). The amount of these modifications can be altered by the practitioner.



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medial arch filler and heel expansion became the norm. This practice likely occurred to compensate for poor quality casts received by laboratories, a lack of prescription-writing knowledge by practitioners, and to enable commercial laboratories to produce custom orthoses on a larger scale with fewer complaints related to tolerance.

Although the quality of the casts received at laboratories is still an issue, many practitioners have developed excellent casting skills. The knowledge and skill level of laboratories has improved dramatically over the years. As a result, the default cast modifications applied by the laboratory can be easily altered by the practitioner to change the fit and function of an orthotic device.

To begin with, the medial arch height of the orthosis can be increased by reducing the amount of medial expansion or medial arch fill (Figure 8). This will increase orthotic reaction force under the medial arch area and proximally near the talonavicular joint, which is a critical area to support in an effort to establish functional control of the subtalar and midtarsal joints. Conversely, additional medial expansion is sometimes required to decrease functional control or to promote greater comfort.

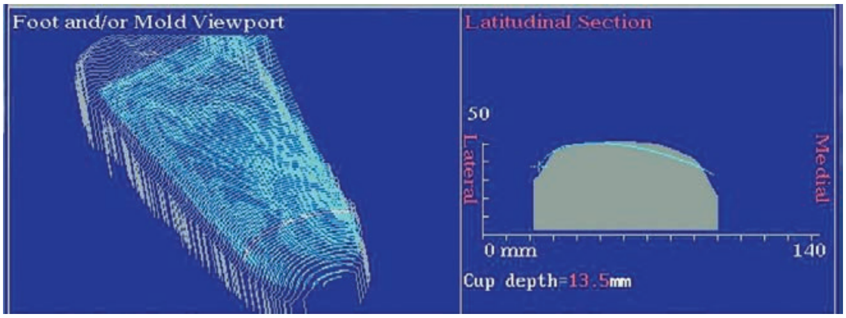

Figure 10: Medial Heel Skive Modification being added with an Automated Orthotic Manufacturing System

Cross-section through heel showing a medial heel skive being added to the cast of a very flat, pronated foot, using a computer-aided manufacturing system.

A functional orthotic should apply force to the foot along the plantar, medial aspect of the heel as it transitions into the medial, longitudinal arch.

The practitioner should consider the patient's individual arch shape and treatment goal to help determine how much medial expansion is required. As a rule, a severely pronated, pes planus foot needs little to no medial arch fill because the arch of the foot is naturally low and the patient needs as much medial arch support as possible. Conversely, a cavus foot may require accommodation of the plantar fascia and additional medial expansion to prevent orthotic-induced medial arch discomfort. An elderly patient with plantar fat pad atrophy and midfoot collapse may require some functional control, but may need more medial arch fill than the laboratory's default. Only the practitioner, who knows the patient's history and treatment goals, can determine how much medial expansion should be applied to the cast.

A true Root-type functional orthotic should not have heel expansion applied on the medial side of the heel of the cast (Figure 9). The medial expansion fill should not extend too far proximally because it then acts like a medial heel expansion. Many laboratories, by default, add expansion around the entire perimeter of the heel. This increases the width of the heel cup and potentially reduces functional control.[4]

A functional orthotic should apply force to the foot along the plantar, medial aspect of the heel as it transitions into the medial, longitudinal arch. This orthotic reaction force is necessary to resist plantarflexion and adduction of the talus, or the talus and navicular as a unit. Unfortunately, too many orthoses are made with heel shapes that do not conform to the non-weight-bearing contour of the heel because they are designed for aesthetic, not functional purposes. Practitioners should consider altering the default expansions or cast modifications to create orthoses that are capable of providing better functional control.

Custom-fabricated, functional orthoses do much more than support the arch. Although reducing the medial expansion can increase support of the arch, some patients may find increased arch support less comfortable and unnecessary for adequate

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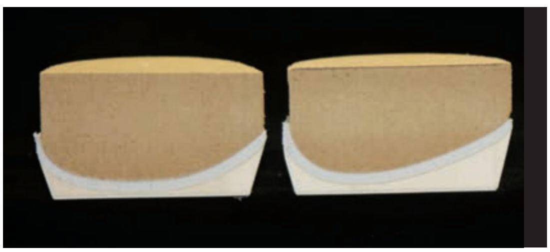
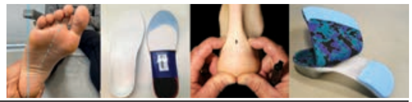


Figure 11: Medial Heel Skive Modifies Heel Cup Shape

A proximal, frontal plane section of a right cast and orthosis demonstrates the varus wedge effect of a medial heel skive (right) as compared to the same cast without a medial heel skive (left).

Figure 12: Default Heel Cups and Rearfoot Posts Can be Modified to Address Pathological Forces

Modifying heel cup heights and using rearfoot post flares can change orthotic influence.



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functional control. The practitioner must find the style of cast modifications that best meet the practitioner's functional expectations and the patient's needs.

Tip #5: Use Medial Heel Skives to Resist Excessive Forces

The medial heel skive was developed by Kevin Kirby, DPM and was described by him in an article published in the Journal of the American Podiatric Medical Association in 1992.[5] A medial heel skive essentially involves planing off the plantar, medial surface of the heel of the positive

Figure 13 (A-B): Better Medial Arch Support Can Be Achieved by Rx Modification

The foot does not need to be cast in a supinated position in order for an orthotic device to provide good support for the medial arch of the foot. Here, a functional orthosis with less medial expansion and a wide arch profile provides excellent support in the medial arch area.

As a rule, the practitioner can increase the medial cup height and add a medial post flare to resist pronation or increase the lateral cup height and add a lateral post flare to resist supination.

cast in order to incorporate an intrinsic varus or triplane wedge into the heel of the orthotic shell (Figures 10 and 11). Medial heel skives are an effective tool in the treatment of pronation-related pathology because they enhance the ability of functional orthoses to resist pronation of the subtalar joint during weight-bearing activity.

Some practitioners utilize medial heel skives in their orthoses on a regular basis, while others use them sparingly or not at all. This discrepancy in how practitioners prescribe may reflect a difference in treatment philosophy, experience, or education. In either case, practitioners who are not satisfied with the level of pronation-control resulting from their orthoses should consider using medial heel skives, when appropriate.

Practitioners who have not utilized medial heel skives before might consider using them in the treatment of pediatric flatfoot. As a rule, a medial heel skive is well-tolerated and efficacious in the treatment of pediatric flatfoot. This experience can give the clinician the confidence to use the modification for other types of patients or for other conditions, such as adult acquired flatfoot or hyper-pronation of the subtalar and midtarsal joints.

Tip #6: Use Deeper Heel Cups and Rearfoot Post Flares to Address Pathological Forces

Modifying laboratory defaults to incorporate deeper heel cups and rearfoot post flares can greatly increase the practitioner's ability to resist excessive subtalar joint pronation, supination, and other pathological forces. Default heel cups are moderate in depth, which enables the devices to be worn in a variety of shoe types. Many casual and most athletic shoes will allow the use of heel cups that are significantly deeper than the laboratory's default.

As a rule, the practitioner can increase the medial cup height and add a medial post flare to resist pronation or increase the lateral cup height and add a lateral post flare to resist supination. It often makes sense to increase both the medial and lateral cup heights, since they can be adjusted down but not up, once the device is manufactured. Even activity-specific devices, such as sports orthoses, and pathology-specific devices can be modified to address the specific pathological, biomechanical,

Figure 14: Comparing Cast Correction

Three casts with different corrections were made from the same scan of the patient's right foot. The bottom cast was corrected with the heel vertical. The middle cast received a medial heel skive. The top cast was corrected with the heel inverted ten degrees and has a medial heel skive. Note how inverting the cast alters the shape of the heel cup and accentuates the height of the medial arch.

or activity-related needs of the patient. For example, a basketball player with a history of inversion ankle sprains could be prescribed an orthosis with a very high lateral heel cup and a lateral post flare to resist the tendency for inversion ankle sprains rather than just being prescribed a standard "basketball" orthosis.

Heel cups become wider as the heel cup height increases until the cup reaches a vertical tangent to the side of the foot. As a result, higher heel cups increase the surface area of the plantar surface of the extrinsic rear-foot post. The plantar surface of the post can also be influenced by in skiving or flaring the post medially, laterally, or both. Post flares increase

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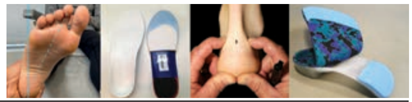

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the lever arm of the rear-foot post to help resist forces that can produce unwanted motion or position of the foot. In some cases, it may be necessary to skive the post to allow for the use of higher heel cups. Heel cups and posts can be tailored to address the individual needs of the patient (Figure 12).

Tip #7: Alter Shape of Orthotic Shell for Functional Purposes

The default shape of the orthotic shell is another aspect of the orthotic prescription that can be modified by the practitioner to address the patient's individual biomechanical needs. Manufacturing the shell with a wide medial arch profile (sometimes called a medial flange or medial clip) increases the surface area of the shell medially and improves support of the medial column of the foot. In addition to increased surface area, a wide arch profile captures more of the slope of the medial arch in both the frontal and sagittal planes and supports the apex of the arch that might otherwise be medial to the orthotic shell (Figure 13).

Other modifications to the shape of the orthotic shell include a first or fifth metatarsal cutout. A first metatarsal cutout can be used to encourage plantar-flexion of the first ray and can help promote the windlass mechanism. A first metatarsal cutout can be used in conjunction with a reverse Morton's extension or a Cluffy Wedge™ to address functional hallux limitus. A short cutout on the shell just proximal to the fifth metatarsal head can be requested alone or with Poron™ fill to offload a symptomatic tailor's bunion. These are just some of the modifications that the practitioner can make to the default shape of the orthotic shell.

Tip# 8: Use Logical Combinations

The use of logical combinations of prescription options will produce the best orthosis for the patient. For example, correcting the cast inverted and using a medial heel skive can create a more controlling orthosis than a standard functional orthosis or than a functional orthosis with just a medial heel skive (Figures 14 and 15). This control can be further increased by using less medial expansion in order to accentuate the height of the medial arch of the orthosis. Therefore, an orthosis that is corrected inverted and has a medial heel skive and less arch filler has three prescription modifications that would not be included in a standard, default device.

The use of logical combinations of prescription options will produce the best orthosis for the patient.

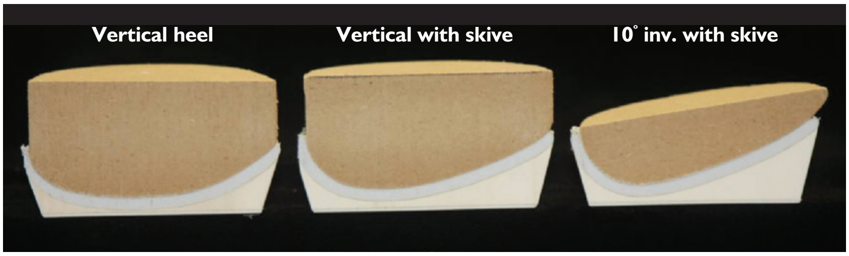

Figure 15: Comparing Frontal Plane Sections in Heel Area

Left to right: A progressive increase in pronation control can be achieved by adding a medial heel skive, or by skiving and inverting the heel of the cast.

There are a significant number of prescription variables that can be determined by the practitioner.

Conclusion

Prescription writing for functional orthoses is a continually evolving process. There are a significant number of prescription variables that can be determined by the practitioner. Only a limited number of prescription options have been discussed in this article. There are a wealth of top cover options, accommodations, and other modifications that have not been discussed here.

Every prescription option should be justified by the patient's symptoms, pathology, diagnosis, biomechanics, treatment goal, etc. Practitioners are under increasing pressure to deliver quality, evidence-based healthcare in an economical and efficient manner. Medical practitioners who distinguish themselves from retail orthotic vendors by producing superior patient outcomes are likely to enjoy an intellectually and financially rewarding future. **PM**

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