

Attaining Successful Orthotic Outcomes through Functional Foot Typing

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Regardless of whether you are a Certified Pedorthist, Orthotist or Podiatrist, it is inevitable that at times any foot practitioner will find themselves confused by the perplexities of orthotic options. Prefab or custom? Rigid or Flexible? What materials to use? And, most perplexing of all...how do I post this device? It can pose quite a dilemma!

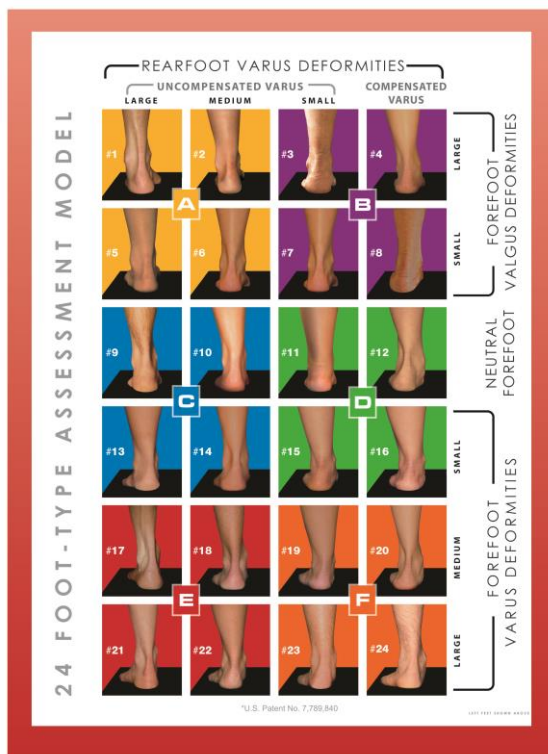
“Dilemma: A problem offering two possibilities, neither of which is practically acceptable...”

If only it were that simple! Two options would be easy, but in the foot world there are many more than two options. So, simply put, orthotic therapy is more than just your average dilemma!! In this article our goal is to propose a systematic approach to organizing the orthotic decision process.

THE PROBLEM:

The first step in solving any problem is identifying what that problem actually is: **Lack of Standardized Protocols for Orthotic Treatment**. Why is it that a patient suffering from visual impairment can go to 10 different optometrists and get the same lens prescription each time? But a patient with a foot problem may see 10 different foot practitioners and end up with 10 completely different orthotics, and often still not have attained proper results?

THE SOLUTION:



The first step in solving this problem is understanding that there are a multitude of various naturally occurring foot types; and, that to attain the proper remedy for the maladies that affect those various foot types, we as practitioners need to understand the unique functioning of each. I have been the owner of a central fabrication foot orthotic lab since 1989 and an educator of foot biomechanics as well. Through these experiences I have had the opportunity to collect and categorize an array of foot images and video gait files on thousands of patients. The outcome of this compilation has been outlined in US patent Nu: 7,789,840: **A System and Method for Foot Classification**. This system shows that there exists a pattern to foot shapes that can be easily categorized. The patent proposes a matrix of 24 foot types that can be sub grouped into 6 “Quads”.

THE PROCESS:

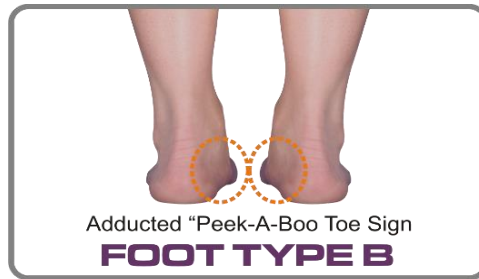
The full technique of identifying each foot type involves a simple 4 step visual assessment process. In actuality, simply identifying the “Quad” can usually be done using only the first two steps of the assessment process. Steps 3rd and 4th will refine your selection to 1 out of the 24 specific foot types. Steps 1 & 2 examine foot morphology; and steps 3 & 4 examine gait and physical findings.

- Step 1: Examine Arch Height
- Step 2: Assess Toe-Sign
- Step 3: Evaluate Gait
- Step 4: Identify Callus Patterns

There are 6 color and letter coded Quads in this system. The image below shows the distinct morphology that occurs by the coupling of step 1 (arch height) with step 2 (toe-sign). For example: the D (green) Quad is a foot that has a low arch and neutral toe-sign.



**High Arch /
Adducted Toe Sign**



**Low Arch /
Adducted Toe Sign**



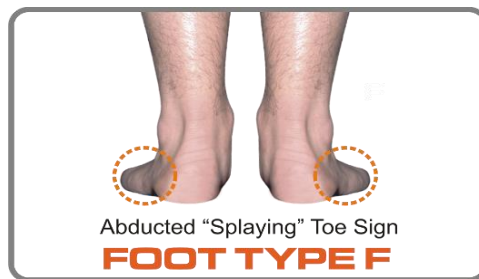
Medium Arch / Neutral Toe Sign



Low Arch / Neutral Toe Sign



**Mildly Pronated Arch /
Abducted Toe Sign**



Flat Arch / Abducted Toe Sign



Step 3 shows that there is a unique gait pattern associated with each of the Quad groups; and Step 4 shows the callous patterns created by the gait style.

Learning about the 6 functional Quads and how they uniquely ambulate will explain why a patient has a particular set of symptoms. For example: The (blue) **C-Quad** walks Toe-Out. This out-toeing comes from compensation at the hip, and therefore C-Quad patients commonly suffer from hip and back pain. **A-Quad** (yellow) patients have Cavus feet with a linear gait (narrow base of support) and have issues such as peroneal tendinitis and ankle sprains.

Each quad is predisposed to a predictable set of maladies that is completely explainable by their distinct way of walking.

ORTHOTIC DESIGNS:

Once you, the examiner, understand that foot morphology (created by step 1 and 2) dictates gait (step 3) and therefore causes a particular set of symptoms and calluses (step 4), then you will find that orthotic designs can easily be de-mystified! Ask yourself, what is this patient's problem? And, when and what are occurring during gait to cause that problem. Once you understand the "what", "when" and "why" of the gait pattern, you will begin to understand how to design an effective orthoses.

In the upcoming issues of Current Pedorthics we will present series of articles that will specifically review each of the Quad Groups, exploring their foot morphology, gait, callus, symptoms, and most importantly – the definitive orthotic design for each. For more immediate information please email: robertanstride@gmail.com.