

Successful Bracing Requires Experience, Sensitivity

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Conventional metal and leather KAFO.



A polymer system KAFO.

I experienced polio in 1953 at age 2 that resulted in right lower limb paralysis. I have worn a KAFO (knee ankle foot orthosis) my entire life. An “orthotic” device is a brace or splint for support, immobilizing or treating muscles, joints or skeletal parts that are weak, ineffective, deformed or injured. A Certified Orthotist is a healthcare professional skilled in evaluation, design, fabrication and fitting of orthoses (braces) and other devices to straighten or support the body and/or the limbs.

Like most polio survivors who use assistive devices due to lower limb paralysis, I am well-acquainted with the need to find quality practitioners or orthotists. This presents a unique challenge to both groups.

The effects of aging, muscle overuse, joint pain and soft tissue damage, weight loss or gain for polio survivors require constant adjustments to their braces. Sometimes this results in a doctor’s prescription for a new leg brace. Often, the polio survivor is faced with the challenge of trying newer materials and technologies to “correct” weight-bearing realignment issues. Some people want what they have always been comfortable with, even if it means rejecting an upgraded leg brace because it might require

a painful “breaking-in” period and getting used to a “new normal.” Some people might prefer the orthotist to “accommodate” their preferences with an exact duplicate of the braces they have grown up with over the years.

Having worked with many, I think a good orthotist should be experienced and sensitive. Over the years my orthotists have been a diversified group. The one quality that I consistently admire is their genuine desire to fabricate what would be the best orthosis for the patient’s unique situation – a real challenge in the older polio survivor. Most importantly, I look for orthotists whose goals and mine are the same: a brace that makes me feel secure and comfortable.

Joe Ramicone, the orthotist I have seen for the last four years, fits that criteria, and I asked him some questions that may be useful to other polio survivors who find themselves in need of orthoses.

PHI: Do you find that most polio survivors have fairly definite preferences about trying upgrades? Are they willing to leave the old behind? How do you best approach polio individuals who have worn KAFOs all their lives?

JR: Most polio survivors have a good idea of what they want in a new orthosis. The most common request

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The American Board for Certification in Orthotics, Prosthetics and Pedorthics is the accrediting agency for Certified Orthotists and Certified Prosthetists. Those certified have a strong science background and formal instruction in biomechanics, kinesiology, pathomechanics, material science and gait analysis. Practitioners must have a minimum of a bachelor's degree in orthotics and prosthetics or a bachelor's degree in another field and have completed a 12-month accredited residency program. To check out the credentials of an orthotist, go to www.abcop.org.

is to see what is new and then to be fit with a device similar to what they've had. At this point in my career, when it comes to the polio survivor, I change very little in a new orthotic design. Most of my trials with new technology have not ended up with a better outcome. I believe that polio individuals want a newer technology, but also like the familiar feeling of their existing KAFO.

One example is the use of a polymer KAFO to replace a conventional, or metal and leather, KAFO. The polymer system is a more modern approach to fabricating an orthosis. It has the advantages of being lighter and easier to adjust or change over time. Most of the polio survivors that I have tried to convert feel that the polymer system is too hot and not as rigid as their metal and leather design. I am always willing to try new technology, but in the case of a long-time user, I will express what I have learned from previous experience and need to hear from them that they are willing to make a change.

PHI: What do you teach new orthotists treating polio survivors for the first time? How do you help them therapeutically differentiate between fabricating a “textbook” KAFO, versus a uniquely customized bracing system that fits the patient's needs for familiar comfort?

JR: I instruct the resident orthotist to observe the patient walking with and without their orthosis. We perform a muscle and range of motion test and then observe

their bodies looking for redness, callusing or other signs of excessive pressure that may be caused by their existing orthosis. We want to insure that the new orthosis fits comfortably. We will also evaluate the person's upper extremity dexterity and cognitive ability to insure that the patient can independently don and doff the orthosis.

I then ask the resident to listen to what the individual expects from the new orthosis. We discuss the functional deficits that we see and the orthotic modalities to treat those deficits. For example a polio individual may need to have a KAFO with a locked knee for stability when walking. There are many different joints that will accomplish this goal. Some require two hands to use, and others will employ a trigger release that can be activated with one hand. We then solicit the person's input regarding vocational and recreational goals and urge him or her to play a role in the design of the new orthosis.

PHI: Have you fabricated braces for a polio survivor who has never worn a brace before – someone who has been ambulating independently for years, but is now experiencing new muscle weaknesses and fatigue due to post-polio syndrome? What type of bracing do you recommend for the first-time brace wearers, and how has this experience played out for them?

JR: Yes, I have fit “first braces” on polio survivors. The design is based on their pathomechanics and muscle weakness. We want

to control the joints and motions that lead to instability and at the same time allow motion that is beneficial. The usual design is a polymer design. Most first-timers do well with this polymer, also known as a plastic system.

PHI: How has your volunteer experience with disabled athletes strengthened your ability to assess orthotic needs as people are faced with the challenge of improving mobility in their lives?

JR: The key to a successful outcome is to design an orthosis with the least amount of control and restriction that still accomplishes the goal. I tell resident orthotists to manage only what needs to be managed, and leave the rest alone, which is easier said than done.

Each individual has a different vocational and recreational activity level. For example, an individual who does not do sports, but just wants to be able to move about at home or office may do well with an all-aluminum KAFO. It is lighter than a steel design but not as durable. A very active individual may require a carbon fiber orthosis. This material is light and strong but not easily adjustable.

Some people may also be able to adapt to part of their deficit or not require orthotic management during specific activities. It is important to review the rationale for the orthotic design with each person and allow them to tell you what they need the orthosis to do. ▲