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Transition from a Metal/Leather Leg Brace to a Plastic/Metal Hybrid

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C hortly before my first birthday, I contracted polio in both legs. Only one leg required a full-length leg brace known as a Knee Ankle Foot Orthosis (KAFO). My brace, prescribed for me in the early 1950s, consisted of stainless steel uprights joined by leather-covered steel bands, a leather pad to stabilize the knee, and a shoe attached to the steel uprights. Periodically, I asked my orthotist about advances in leg brace technology, but he was reluctant to recommend a plastic leg brace because of my history of frequent breakdowns and the general difficulty in changing bracing systems for long-time post-polio people. I had used mine for over 50 years.

In 2001, I visited an old friend and fellow college wheelchair athlete, who was elated over his new plastic/metal hybrid orthosis crafted by Beverly Hills Prosthetics & Orthotics, Inc., in Van Nuys, California. His enthusiasm was contagious, and within a few months, I had secured the necessary insurance approval and was on my way to California.

The fitting process of a plastic/metal hybrid orthosis begins by taking a mold of your leg, which is then filled with plaster to create a model used for shaping the polypropylene shells and metal components. (Fiberglass is used by some orthotists.) The next phase of the process, fitting and adjustments, requires patience, trust, commitment, persistence and plenty of positive attitude by the polio survivor and the orthotist. The transition will be expedited if your orthotist can duplicate the position and elevation of the foot as closely as possible with your original orthosis.

My new brace consists of a molded polypropylene shell, stainless steel uprights, a titanium knee joint with spring-loaded cable release, a plastic pretibial shell, and a molded polypropylene foot plate with a double action ankle joint. Springs in the posterior aspect of the double action ankle joint prevent my "drop foot" from dragging. The anterior channels of the ankle joint have steel pins that stop the leg from going forward during ambulation, which helps stabilize the knee. Beverly Hills Prosthetics used the top-of-the-line stainless steel uprights and the Otto Bock[™] wedge lock titanium knee joint to eliminate the breakage that plagued my aluminum brace. Some insurance carriers will not pay for a titanium joint, but I'm very glad I chose it. The extra security and longevity of the joint has been well worth the additional expense.



Major modifications should be tackled before moving on to minor adjustments. Then start wearing your new orthosis for 1-2 hours a day. Keep scheduling appointments with the orthotist (or returning by UPS) until a reasonably accurate fit is achieved.

For information about this bracing system, contact Keith Vinnecour, Beverly Hills Prosthetics & Orthotics Inc., 15230 Burbank Boulevard, Suite 103, Van Nuys, CA 91411, 818-988-0033.

After completing all the necessary adjustments on my new brace and enjoying the many advantages of a modern KAFO, I decided to order a back-up leg brace. If you think you might be interested in ordering a back-up brace, make sure the orthotist saves your leg/foot cast.

I have experienced fewer breakdowns than with my traditional brace, and I believe preventative maintenance is very important. Sheering of copper rivets is the only problem I've encountered thus far. Ask your orthotist to secure both the tibial and thigh shells to the uprights with stainless steel rather than copper rivets. I have my brace checked twice yearly for a thorough inspection of all working parts.

The benefits of my new brace include greater comfort, improved stability and a better fit under my pant leg. The brace is easier to put on and take off, and is considerably lighter. The advantages of my new leg brace more than compensate for the multiple fittings, added expense and temporary discomfort during break-in.

Going to California won't be an option for most of you. Consider giving this article to your orthotist and ask him/her if they are experienced with fabricating plastic/metal KAFOs, if they are willing to incorporate an Otto Bock[™] titanium knee joint, if they will work with you until a comfortable fit is achieved, and if they will stand behind their work.

Have confidence that your leg will adjust to the new orthosis as you wear the brace. Within a few weeks you'll be enjoying a superior bracing system and wondering why you didn't make the change earlier. ●

FAQ of PHI I have the knee jerk reflex. What is the knee jerk reflex and is he correct?

A: The knee jerk reflex is the sudden kicking movement of the lower leg in response to a sharp tap on the patellar tendon, which lies just below the kneecap.

A knee jerk is a normal reflex which requires an intact nerve loop between the sensory nerve which detects the "tap" at the quadriceps tendon below the kneecap, and an intact motor nerve in the spinal cord that sends the reflexive message to the quadriceps muscle to contract and straighten out the knee with a kicking movement.

If polio survivors had involvement of the quadriceps muscle, they usually lost the knee jerk. If they had no lower limb involvement, or specifically quadriceps involvement, then the knee jerk was not lost.

Consequently, you cannot use a single test, like a knee jerk, as indicating the presence or absence of polio involvement overall — or of post-polio syndrome. All that can be said is that if it is absent in a polio survivor, probably that person had involvement of the quadriceps muscle, the muscle that straightens out the knee.

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