

Reflections of the 2002 NIDRR Scholar: Allison Boynton, CP

As a certified prosthetist and a recent graduate of Northwestern University's orthotic certificate program, I have been an active member of the P&O community for over five years. Being born with a forearm deficiency, and wearing a below elbow prosthesis on my left arm for over 26 years, I have been a consumer of prosthetics my entire life. Despite all of this experience with P&O I never really understood or appreciated how advancements were made in the field or how to objectively evaluate the devices that I fit to my clients until I became a National Institute on Disabilities and Rehabilitation Research (NIDRR) Scholar at the Northwestern University Prosthetic Research Laboratory (NUPRL).

I initially became interested in P&O when I was ten years old and my prosthetist took me into the laboratory where my prostheses were fabricated. Over the years, I was fascinated with the technology that he introduced me to as he fit me with body powered hooks, myoelectric hands, and specialized devices to help me perform all of the activities that I pursued including cross country skiing, ballet, and rowing on the crew team. After college I received my certificate in prosthetics from the Newington Certificate Program and fulfilled my residency requirements at their clinical facilities. The next year, my former prosthetist, the gentleman who introduced me to the field fifteen years prior, offered me a job and the opportunity to learn from him. Over time, he encouraged me to continue my studies and to pursue my certificate in orthotics; this led me to Chicago and the Northwestern University Prosthetic and Orthotic Center (NUPOC). As an orthotic student I took a research methods class, which Dr. Steven Gard from NUPRL instructed. When the call for candidates for the NIDRR Scholar program was released, he brought it to my attention and then advocated for me to receive the position. Upon receiving my certificate in orthotics, I began my summer internship as a NIDRR Scholar.

Throughout my three months at NUPRL I have participated in various professional events. The first was the State of the Science Symposium, where an interdisciplinary team of prominent researchers, clinicians, physicians, and engineers involved in the field of P&O convened for two days to discuss what is currently being done in the field and to form goals for the future. I also attended the Mid-West Chapter meeting of the American Academy of Orthotists and Prosthetists in Milwaukee, where new stance control orthotic knee joints were highlighted. These knee joints became the subject of my NIDRR research project. In

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June I attended the annual RESNA (Rehabilitation Engineering Society of North America) meeting in Minneapolis, where I learned about Universal Design, seating systems and many non-orthotic/prosthetic devices used to assist the disabled with their every day activities.

Back in Chicago, I worked daily with Stefania Fatone, PhD, P/O (Australia) learning the intricacies of rehabilitation research, motion analysis and the science of orthotics. Together, with the guidance of John Michael, a CPO who consults for Horton Technology, Inc. and trains orthotists to fit and fabricate Knee Ankle Foot Orthoses (KAFOs) incorporating the Horton Stance Control Orthotic Knee Joint (SCOKJ), we fabricated and fit two KAFOs utilizing these new joints. The effect on the function of these joints was of interest to us because they are the first orthotic knee joints to reliably provide stability during stance and flexion for swing. In other words, they will not bend when weight is applied to them, so they are very stable, yet they flex during swing to allow a more natural gait pattern. We made these devices firstly for an able-bodied subject and, then for a polio survivor who normally walks with a locked knee KAFO. Preliminary data from the motion analysis laboratory indicates that these knee joints allow their wearers to walk faster and with less compensatory motions than are seen with the traditional locked orthotic knee joints that are normally given to people who wear KAFOs to compensate for weak knee extensor muscles. These knee joints decrease the energy wearers must expend when walking so they can walk faster, farther, and feel less tired.

Now that my time as a NIDRR Scholar is over, I plan to work as a prosthetist/orthotist at a clinical facility in South Carolina. I will use the skills and knowledge that I have gained at NUPRL to be a more critical consumer of P&O research and to better assess the function and fit of the devices that I provide with the tools that are available to me. I have also come to appreciate the importance of research in the field of P&O. Few clinicians today find the time or resources to advance the profession. In doing so, we restrict the quality of care that we provide and limit technological and scientific advancements made each year. I have learned that as a clinician and prosthetic wearer, my input into research is invaluable and whether I pursue the research independently or assist with projects in RERCs such as Northwestern's my input is important and valuable. In the months to come I hope to stay in touch with Drs. Gard and Fatone to continue analyzing

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and reporting data from our KAFO pilot study. With so few RERC facilities dedicated to P&O research, it is rare that prosthetists and orthotists have the opportunity to learn about them or pursue research with them. I am very fortunate to have had the opportunity to spend three months at Northwestern and appreciate all of the time, generosity and kindness that everyone there has shown me.