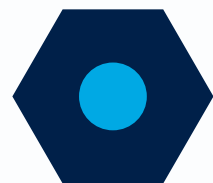


When you need a helping hand: Joncarlos Sanchez, 24, takes steps with assistance from Ability Prosthetics' Brian Kalof.



Ability Prosthetics transforms lives with limbs

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“As Lady Gaga sings, ‘I was born this way!’” says Drew Ammons, speaking of his missing hand. Ammons came into the world without that particular appendage and has spent most of his life functioning despite it. For people with full use of their limbs, it’s tough to imagine what it means to be without a hand: The little, everyday actions most of us take for granted would suddenly be complicated. Even squeezing toothpaste onto your toothbrush might feel Herculean.

Now imagine being a child with a missing hand, a little boy who looks very different from his classmates, but shares their desire to catch and throw a ball, ride a bike, and just be like everyone else.

“I remember growing up watching *The Six Million Dollar Man*,” Ammons says. “I thought that maybe someday [a prosthetic hand] could be a real possibility and not just a ‘hook,’ as they were called back then.”

Today, thanks to a cutting-edge company Ammons was led to by chance, it is.

“I had to get my company logo sewn on shirts,” recalls the Silver Spring resident, working this past summer for a kids’ camp. “I went to the contracted person [to discuss the shirts], and she told me of her grandson who was in the process of getting this robotic hand. She gave me John’s number at Ability, and I called him the following week.”

“John” is John Jacobs, a certified prosthetist orthotist at Ability Prosthetics & Orthotics in Frederick. He works with people young



John Jacobs adjusts Wyzhir Johnson’s prosthesis. Johnson lost his hand in a miter-saw accident on Christmas Eve.



●●● To see [a patient’s] facial expression when they take that first step is very rewarding. They now see that life will go on.”

and old who—because of an accident or birth defect—live with missing arms, legs, hands, or feet. Through hard work, extraordinary skill, and dedication, he’s able to help individuals for whom, just a few years ago, help was impossible.

Jacobs came to his current work from another branch of science.

“I started out in the medical field as a nuclear medicine technician,” he says, “and loved the patient-contact aspect of the job. But after five years, I started looking for a job in medicine that required more hands-on skills and [that] challenged me every day.

“I learned from a patient I worked with about orthotics and prosthetics and, after [consulting with] a local practitioner, knew it was for me.”

Ability Prosthetics, with corporate headquarters in Gettysburg, is on the cutting edge of its field, developing replacement feet that bend at the ankle and balance the walker; limbs that can respond to muscular impulses; articulating bionic hands; and lifelike post-mastectomy prostheses.

It wasn’t so long ago that prosthetic hands were essentially mechanical claws.

But fast forward to today, when Ability (using its own designs or off-the-shelf products) is able to provide Drew Ammons and others in its Frederick or Hagerstown facility with bionic hands that can point with the index finger, retrieve small objects, and offer both a full-wrap grip for powerful lifting and a “key grip” for gently grasping things like CDs or business cards.

Because these futuristic hands respond to muscular impulses, a user can “tell” his hand what to do by using the same arm muscles he’d employ if his natural limb were still there (see sidebar).

“As I worked with John, I realized that this was finally going to happen—that I was going to have 10 fingers to manipulate life with,” says Ammons. “Being able to use a knife and fork to cut a nice juicy rib-eye is a wonderful thing to do!”

The simple pleasures Ability helps

restore, however, belie the complexity of the overall process.

“Because of the myoelectronics involved in this particular device, the testing process had to be pretty exact to [determine if I would] be a good candidate for the ProDigit hand,” says Ammons, adding, “I have to say what a pleasure it was—and is—to know that there are some really amazing folks out there in this line of work.”

But for all the miracles Ability performs, it’s the people they serve, such as 16-year-old Wyzhir Johnson of Mardela Springs, who are the true wonders.

Johnson lost his left hand in an accident with a miter saw on Christmas Eve 2010. Ability gave him his new bionic hand—paid for by the Wicomico County-based John Quinton Foundation—in August 2011. The entire time, the teen has maintained an astonishingly positive attitude, even while struggling to adjust to his new limb.

“My accident hasn’t really changed my life,” he says, “but more so how I live my life—which is not depriving myself of what I need the most: positivity, courage, along with patience. Seeking occupational



The Science of Myoelectrics

BY Ellen McDaniel-Weissler

The technology involved in creating a bionic hand is difficult for the layperson to grasp, but John Jacobs of Ability Prosthetics & Orthotics in Frederick explains it this way: “A myoelectric prosthesis is operated by using the electrical signal of the residual limb’s muscles that are emitted during muscle contraction.”

In other words, the portion of the limb which remains sends out electrical impulses whenever the person flexes or moves the muscles of that limb as if he were moving his missing hand.

“These emissions are measurable on the skin and they are picked up by electrodes that are placed within the socket wall,” adds Jacobs. The socket wall is the connection point between the existing limb and the prosthetic.

“The signal is amplified and sent to a processor, which, in turn, controls the finger movements. This signal does not provide enough power to run the electric motors controlling finger movements, so a rechargeable power source is placed within the socket and charged daily through an outside electrical charging port.”

Certified prosthetists and orthotists like Jacobs work with a patient’s referring physician or surgeon to determine—and then attach—the appropriate prosthesis.

“We provide the prosthesis or orthosis needed to return [patients] to activities of daily living,” he says. “We do this by doing an in-depth evaluation of any physical deficiencies and designing a prosthesis or orthosis that would return them to as near normal function as possible.” ✨

To see footage of Ability patient Drew Ammons with his new myoelectric prosthetic hand, go to www.YouTube.com and search “Andrew Ammons.”



John Jacobs, a certified prosthetist orthotist, works on a prosthetic leg that will give an amputee newfound mobility.

hand therapy along with [my] family’s love and support, I shall overcome this tiny impediment.”

It’s an impressive amount of resilience for a kid not yet out of high school.

The “tiny impediment” of another Ability client, Joncarlos Sanchez, is perhaps even more daunting. Since a car accident in 2006, the Frederick resident has had to cope with the loss of both legs below the knee. His new prostheses are a novel freedom in his life.

“It’s been a positive thing,” he says. “Having the ability to walk again feels like I got my life back. I don’t like being in a wheelchair. I am an active person. I can’t be just sitting and asking other people for help.

“The people at Ability are the best!” continues Sanchez. “I felt very comfortable

since day one. They are simply professionals; they take the time to make adjustments until the prosthetic legs are perfect for you.”

For John Jacobs, the chance to improve the lives of the people he works with—whether by giving back to a patient the ability to walk or fitting someone with a new hand—is immensely satisfying.

“The job gives instant gratification,” he says, smiling. “To see [a patient’s] facial expression when they take that first step is very rewarding.

“They now see that life will go on.” ✨

For more information on Ability Prosthetics & Orthotics, visit www.abilitypo.com. And to learn about the nonprofit John Quinton Foundation, visit www.johnquintonfoundation.org.