

Ten Years of Lifenhanced: The Way Forward

I am honored to celebrate the tenth anniversary of Ability Prosthetics & Orthotics. From the beginning, Ability has been seeking ways to improve upon the established orthotics and prosthetics (O&P) patient care model. We've achieved our success largely by embracing new and better methodology and technology—two concepts that go hand in hand.

For example, on pg. 4 you will see the story of James Jackson, one of the first Ability patients to receive the new BiOM powered foot-ankle system. James' extraordinary dedication to his recovery revealed his potential for an extraordinary level of function. With our outcomes protocol, we were able to accurately assess that the BiOM would help him to achieve it.

Not only are outcome protocols helping us provide the optimal device for each patient, but they are also contributing to the advancement of the O&P profession's body of knowledge and standard of care, as you will see in "Measuring the Importance of Outcome Measures" on pg. 6. Standardized outcome measures, I believe, are not only a factor of our current success, but they are also the way forward in O&P clinical practice nationwide.

I wish to thank my colleagues at Ability, our healthcare partners, and most of all, our patients. It is Ability's patients who have embodied the meaning of "Lifenhanced" for the past ten years and will continue to do so for many more.

Sincerely, Jeffrey Brandt, CEO, CPO Founder, Ability Prosthetics & Orthotics, Inc.









Meet Tyler Dunham, CPO

ABILITY LOCATION:

Charlotte, North Carolina

INTERESTS: Rock climbing and backpacking

PETS: Cassius, a six-year-old black lab mix

FAVORITE THINGS ABOUT CHARLOTTE:

"Patients have large support systems in this area, and people are truly there for one another in times of need."



ADVICE TO FELLOW CLINICIANS:

"Communication is everything. If you can't articulate a plan clearly and empower the patient through involvement in the plan, then you might as well throw the textbooks out the window."

During what he calls his soul-searching years as an engineer, Tyler Dunham, CPO, met a prosthetist, and that encounter prompted him to enter the O&P profession. "It was the first time I really identified with any of the engineering disciplines, and I immediately knew that it was right for me," he says.

Tyler earned a bachelor's degree in biomedical engineering from the University of Iowa, Iowa City, in 2009. He then worked as an O&P technician in Iowa City and shadowed practitioners to gain experience. In 2011, he completed his master of science in O&P at the Georgia Institute of Technology, Atlanta, and then returned to his hometown of Chicago, Illinois, to complete his orthotics residency.

Tyler joined Ability Prosthetics & Orthotics' patient care facility in York, Pennsylvania, in 2012. After completing his prosthetics residency there, he accepted a position at Ability's Charlotte, North Carolina, location as an American Board for Certification in Orthotics, Prosthetics & Pedorthics (ABC)-certified orthotist and board-eligible prosthetist. Tyler became an ABC-certified prosthetist in February 2014.

In addition to practicing in Charlotte, Tyler has volunteered in Belize and Haiti where he provided prosthetic care to underserved patients. He has also been active in professional organizations, serving as a member of the American Academy of Orthotists and Prosthetists (the Academy) Student-Resident Committee and as a regional residency liaison for the National Commission on Orthotic and Prosthetic Education (NCOPE). Tyler says he sees young practitioners taking a more proactive role in shaping the profession, and he supports the increased implementation of scientific evidence in O&P practices.

Tyler is inspired by people with amputations, particularly Paralympic athletes and returning soldiers who are changing society's perceptions of the functional capabilities of amputees, and he works to help patients realize their greatest potential. "Better motion leads to better function, better function leads to more independence, and more independence leads to a greater self-worth," he says. "As a practitioner, I get a front-row seat to watch that cascade of events every day."

On the cover: Ability Mechanicsburg, Pennsylvania Right: Eric Shoemaker, MS, CPO, with Ability patients.

Ability Practitioners Present at O&P Symposia

In its continuing effort to share knowledge about the use of outcome measures and data in O&P care, Ability Prosthetics & Orthotics practitioners presented at two O&P-and physical rehabilitation-related symposia in early 2014:

The Academy Annual Meeting

The American Academy of Orthotists and Prosthetists (the Academy) 40th Annual Meeting & Scientific Symposium was held February 26–March 1, in Chicago, Illinois. The international event drew more than 1,600 O&P professionals and offered more than 100 continuing education credits. Two Ability practitioners presented on February 28 as part of the meeting's educational program.

Nikki Hooks, CO, from Ability's Greenville, South Carolina, patient care facility, was one of the speakers for the session, "Outcome Measures: Learn How to Administer, Interpret, and Incorporate Results into Your Clinical Practice." The session discussed methods of applying outcome measures to O&P practice management. Hooks co-presented alongside Bob Gailey, PhD, PT; Jim Wynne, CPO, FAAOP; and Chris Robinson, MS, MBA, CPO, ATC, FAAOP. During the session, Hooks demonstrated the use of the Timed Up and Go (TUG) test with an orthotics patient and explained how to record the results to form clinical aggregate data as well as to provide documentation for referral sources.

Speaking in a separate session was **Brian Kaluf, BSE, CP,** managing practitioner at Ability Greenville and Ability's clinical outcome and research officer. Ability conducted a retrospective chart review of its prosthetics patients' data last July to determine the effectiveness of the outcome measures that were implemented company-wide beginning in May 2012. Kaluf presented the results of the review in his session, "Evaluation of Amputee Mobility through Routine Adoption of AMP and PEQ-MS in a Clinical Practice: Initial Six-Month Retrospective Chart Review." (Note: For more information on







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this chart review, see "Measuring the Importance of Outcome Measures" on pg. 6.)

Engineering a World Class Rehabilitation Center Symposium: From One to Run

Ability participated in the Third Annual Engineering a World Class Rehabilitation Center Symposium: From One to Run. The regional event was held March 28 at the Hamner Conference Center in the North Carolina Biotechnology Center in Durham. It was sponsored by the Rehabilitation Engineering Center (REC), a joint venture between the North Carolina State University (NCSU) College of Engineering and the University of North Carolina (UNC) School of Medicine. REC is a research center that designs, develops, and promotes improved care and function for individuals with short- and long-term rehabilitation needs.

Chris Baughman, CP, BOCO, managing practitioner of Ability's Raleigh, North Carolina, patient care facility, contributed content to the symposium. Hooks and Kaluf, along with several Ability patients, participated in a panel discussion on patient care for individuals with amputations. Ability's founder and CEO, Jeffrey Brandt, CPO, says that Ability was honored to participate at the event, adding, "We look forward to collaborating with REC on future projects."



Coapt System Now Available at Ability
Ability is now offering the
Coapt COMPLETE CONTROL System, an interface that uses pattern recognition to enhance the function of myoelectric upper-limb prostheses. Ability is currently one of only a few Coapt providers in the United States.

Ability Raleigh to Celebrate Grand Opening

On May 1st, Ability's Raleigh, North Carolina, patient care facility will hold a grand opening ceremony. Managing practitioner Chris Baughman, CP, BOCO, and other Ability staff will welcome the public with refreshments, facility tours, and technology demonstrations.

Ability Patient Participates in Climb-A-Thon

Tommy Lyon, a patient at Ability's Exton, Pennsylvania, patient care facility participated in and helped raise funds for the Adaptive Climbing Climb-A-Thon, which was held March 16 in Brooklyn, New York. The Climb-A-Thon is an indoor rock climbing clinic open to people with disabilities.

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+ AchieveAbility

JAMES JACKSON: MAXIMIZING POTENTIAL

James Jackson, 32, doesn't see limb loss as a disability but rather as "a new beginning." He is seeking to enter law enforcement and ultimately become a homicide detective. He took a major step toward achieving this goal in December 2013 when he graduated from Greenville Technical College, South Carolina, with an associate degree in criminal justice, which he had been working toward since 2007. He finished his coursework while recovering from an accident that claimed his left foot.

Jackson was working as a truck driver for his current employer delivering equipment and supplies to construction sites. In January 2013, he was helping to unload a six-ton piece of equipment when his left foot slipped and got caught beneath it. The injury required the amputation of his left leg below the knee.

A week after Jackson's amputation reconstruction surgery, his surgeon and his case manager referred him to **Brian Kaluf**, **BSE**, **CP**, managing practitioner of Ability Prosthetics & Orthotics' patient care facility in Greenville.

"Since the first day we met, James has had the highest level of motivation to maximize his [functional] potential," Kaluf says. Because Jackson used to compete in several sports—football, baseball, basketball, and track—he was accustomed to strength conditioning and said that his physical therapy felt as if he was "getting back into a workout."

As part of Ability's standardized outcomes protocol, Kaluf measured Jackson's functional potential to ambulate with a prosthesis using the Amputee Mobility Predictor (AMP) test. Jackson's goal was to earn a perfect AMP score, and although he was one point shy of the mark, Kaluf says Jackson achieved the highest AMP score of any of his patients to date.

The same motivation that helped Jackson maximize his functional potential also helped him return to work a mere six months after his accident, albeit in a different capacity. He currently trains new company employees to transport the construction equipment as he continues to pursue a career in law enforcement.

Jackson's preparatory prosthesis included a hydraulic foot, but given his high functional level, he was interested in a more technologically advanced

interested in a more technologically advanced prosthesis. Ability had been evaluating the new BiOM powered foot-ankle system and in November 2013 invited Jackson to test the device at its patient care facility in Charlotte, North Carolina, during the company's quarterly practitioner meeting. Ability assessed Jackson's ability to ambulate with the BiOM using a

timed walk test; he exhibited increased walking speed and stability while

wearing the new device. Jackson says the BiOM feels so much like a natural ankle that there was no learning curve involved in its use. "I put it on and started walking like normal," he says. He then asked Kaluf about getting a BiOM of his own.

Kaluf says that one of the keys to providing advanced devices like the BiOM is documenting the benefits that the new technology presents to the patient and communicating those benefits to the rest of the healthcare providers and administrators invested in the patient's rehabilitation. "Outcome measures are paramount to this process," he says, adding that all of Ability's prosthetics patients are evaluated with consistent outcome protocols to ensure that they receive the most appropriate devices for their

Jackson received his BiOM on January 16. "It feels like I never lost a limb," he says of wearing the device. The hydraulic foot didn't give him the push-off during gait that a natural limb would, and the BiOM system supplies this momentum. He also reports having increased confidence walking on inclines and uneven terrain. With the previous foot, Jackson says, he would occasionally experience pain in his right knee due to

functional levels.

the increased exertion needed to balance his gait. He reports that the BiOM relieves significant stress on his sound side and has eliminated this pain.

Jackson says he typically walks 2,000 steps a day, and some of those steps are taken on the bowling lanes and during outings in the park with his fiancée and their three children. Because he turns the BiOM off during driving or prolonged sitting, he is able to get a full day's charge out of a single battery.

As he returns to his favorite activities and looks ahead to new career possibilities, Jackson says he is thankful to God, his family, his friends, and his church community for "being there in a rough time" in his life. He adds that thriving after limb loss means never giving up on your goals. "Never think that you can't achieve the things that you want to achieve... because you actually can."





Jackson displays his BiOM foot-ankle system.



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Measuring the Importance of Outcome Measures

By Laura Fonda Hochnadel

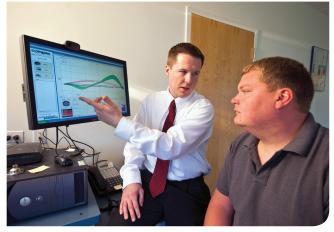
While physicians are tasked by the Centers for Medicare & Medicaid Services (CMS) to assign K-level functional classifications to lower-limb amputee patients, some turn to prosthetists for guidance. Compassion, and even profit margin, can drive prosthetists to suggest to the physician that he or she assign a lower-limb amputee patient with a higher K-level based on potential rather than reality. If that occurs, the patient has to live with the consequences, be it a device that is too cumbersome or perhaps too heavy. Conversely, if the K-level determination errs on the side of caution and the patient is provided a lower-functioning technology, then his or her performance will be limited, says Brian Kaluf, BSE, CP, managing practitioner of Ability Prosthetics & Orthotics' Greenville, South Carolina, patient care facility and Ability's clinical outcome and research officer. To address the ambiguity surrounding support for K-level assignment, reduce subjectivity, and better serve its patients, Ability, headquartered in Exton, Pennsylvania, instituted a policy whereby all prosthetics patients who visit any of its ten patient care facilities are evaluated using prosthetics outcome measures.

Patient comorbidities, motivation, muscle strength, and sometimes body weight and age can all factor into K-level assignment and inform the prosthetic prescription, Kaluf explains. So what looks like a "cookie-cutter approach" to K-levels can be far from that. "For each K-level, there are a few sentences of descriptors and a few factors that Medicare uses to differentiate among patients who have different K-levels, and they end up being overgeneralized and in some ways very specific," Kaluf says. "For instance, 'varied cadence.' What defines varied cadence, and how are you sure that your patient does walk with varied cadence?"

Often when new protocols are instituted, "the final check is to look back and basically learn a little bit," Kaluf says. Thus, last July, the company conducted a retrospective chart review of its prosthetics patients' data to determine if the outcome measures used were indeed beneficial and useful in determining K-levels. On February 28, Kaluf presented the results of the initial six-month retrospective chart review at the American Academy of Orthotists and Prosthetists (the Academy) 40th Annual Meeting & Scientific Symposium, held in Chicago, Illinois. In March, he was named chair of the Academy's Outcome Research Committee.

(Right) Taffy Bowman, CPO, assesses a patient's gait. (Below) Thomas Martin, MS, CP, BOCO, explains gait analysis data to a patient.





Assessing Clinical Relevance

Kaluf joined Ability in September 2011. When he took over operations at the Greenville office in March 2012, he began piloting the use of outcome measures with his prosthetics patients and proposed implementing the measures companywide to Ability CEO and founder **Jeffrey Brandt**, **CPO**. Kaluf received approval and was given the title of clinical outcome and research officer.

"Some subjectivity is appropriate and necessary in the medical field...," Brandt says. "[H]owever, you have to put some science in it...." He has always been interested in measuring outcomes, and the pull to implement them has grown. "[I]n the last few years it became more and more obvious to me that we needed to replace what we were doing

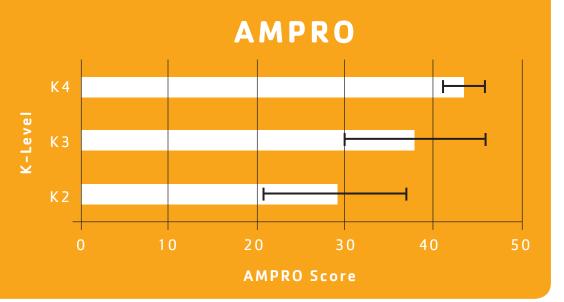


Figure 1: Amputee Mobility Predictor with Prosthesis (AMPPRO) mean scores +/- 1 standard deviation for the different K-levels. The black lines indicate the standard deviations; they show that there is overlap in the groups. For example, a patient may have an AMPPRO score that is higher or lower than the mean for his or her assigned K-level.

in the room with the patient," he says. "If a brand new patient walked into our office, why weren't we going through a protocol with them no [differently than how] a doctor goes through a protocol with a patient?"

The protocol that Kaluf instituted is a trio of outcome-based measures: The Amputee Mobility Predictor (AMP), the Prosthesis Evaluation Questionnaire-Mobility Scale (PEQ-MS), and Orthocare Innovations' StepWatch™ Activity Monitor (SAM), or simply StepWatch. Each was chosen, Kaluf says, based on its psychometric properties and ability to help prosthetists best document mobility and support K-level assignment.

The AMP, a series of 20 tasks that measure a patient's potential to ambulate, was the first measure Kaluf says he chose to use because it is one of the most published and accepted measures in prosthetics and was validated by gait training expert Robert S. Gailey, PhD, PT, and his colleagues. (Gailey, R. S., et. al, "The Amputee Mobility Predictor: An Instrument to Assess Determinants of the Lower-Limb Amputee's Ability to Ambulate," *Archives of Physical Medicine & Rehabilitation*, Vol. 83, May 2002.) The AMP is particularly helpful, Kaluf stresses, because it is the only outcome measure that can assess ambulatory potential of lower-limb amputee patients with a prosthesis (AMPPRO) and without a prosthesis (AMPPRO). Results can be quantified.

The PEQ-MS, on the other hand, is a patient self-report measure. It consists of 12 questions and was designed to assess a patient's locomotor ability while using a prosthesis. Ability's decision to use the PEQ-MS was based on similar reasoning as its decision to use the AMP: Its validity has been proven, and it is reliable, widely recognized, and well published.

The final outcome measure, admittedly not used on all prosthetics patients, Kaluf says, is the StepWatch, which, with Orthocare Innovation's Galileo software, can record, document, and assess the subject's gait.

Applying the Measures

"Each measure has instructions that tell you when and how they are appropriate to use," Kaluf says, explaining that Ability clinicians administer the standardized outcome measures during the initial evaluation for a new prosthesis, socket replacement, or new prosthetic foot component. At periodic follow-up intervals, he adds, the clinician may administer a measure to see if the patient has progressed or regressed in his or her mobility. "So a new amputee would only have an AMPnoPRO score. But a mature amputee receiving an update in prosthetic foot technology or a new socket would have AMPPRO, PEQ-MS, and perhaps StepWatch data."

By applying multiple outcome measures and reviewing results against published studies, in addition to subjective information in the patient's chart, the prosthetist can make a better-informed K-level assessment, Kaluf explains.

He provides an example of administering the AMP and PEQ-MS to a patient whose test scores show that she is at the higher end of the K2 spectrum. "Then you can go back to all the other subjective and objective information from that patient's chart, and you have a better idea where the patient currently is. If [her scores are on the higher end] of the K2 range compared to published data, and you see that she is improving in her condition, and she has the strength to hop with the walker and is actively participating in therapy and rehab, that gives you a clear assessment that this patient will improve." With improvement, he says, comes increased strength and stability, "which allow the prosthetist to confidently recommend a potential K3 classification for the patient and cite patient-specific outcome data to support the assignment."

The Results are In

The decision to conduct the retrospective chart review was essentially a quality assessment of the new protocols—to determine if they are useful and important outcome measures to use with the lower-limb amputee population, Kaluf says.

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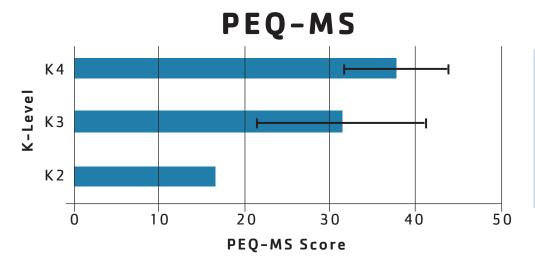


Figure 2: Prosthesis Evaluation Questionnaire-Mobility Section (PEQ-MS) mean scores +/- 1 standard deviation for the different K-levels. The black lines indicate the standard deviations; they show that there is overlap in the groups. For example, a patient may have a PEQ-MS score that is higher or lower than the mean for his or her assigned K-level.

The results, which have been published in the April issue of the *Journal of Prosthetics and Orthotics*, provide a real-world clinical setting for these measures.

To begin the chart review, Kaluf separated the data of 57 patients into two groups, those with a transfemoral amputation and those with a transtibial amputation. He applied a statistical analysis and found that the AMPPRO and PEQ-MS scores were not statistically different among these two populations.

He then separated the patients into groups based on their clinician-assigned K-level. He compared the mean PEQ-MS scores of each K-level group using two different statistical analyses, which indicated that the K3 and K4 groups scored significantly higher on the PEQ-MS than did the K2 group. "My data shows that K2 patients have lower perceived mobility than K3 and K4 patients," Kaluf explains, adding that while it may be obvious, it must nevertheless be measured,

continued on page 10



Celebrating 10 Years of Lifenhanced!

Founded in 2004 in Gettysburg, PA, Ability Prosthetics & Orthotics' mission is to provide patients with the most advanced and innovative prosthetic and orthotic care and devices available in an efficient, outcomesbased, patient-centered practice model.

To learn more, contact your local Ability office or visit us online at **AbilityPO.com**.

Ability is a proud and exclusive provider of many prosthetic and orthotic devices.



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documented, and thoroughly understood to manage prosthetic care. "This tells us that the PEQ-MS can differentiate K2 from K3/K4 patients."

So what do these results mean? "My one-sentence conclusion is that both the PEQ and the AMP are able to differentiate K3 and K4 patients from K2 patients," Kaluf says. "Ability Prosthetics & Orthotics has found that use of standardized outcome measures as a routine part of our evaluation of patient mobility has improved our skill in assigning patient K-level, and this was supported in the findings of the retrospective chart review."



official record. The documentation could even be provided to the physical therapist to show how the patient is progressing or where there are gaps in the patient's progress, Brandt says.

"If we are going to provide a \$20,000 leg, then let's provide \$20,000 documentation," Brandt says. "It is just about producing quality."

"Without quantitative data from standardized outcome measures to support K-level decisions, patient access to prosthetic technology and

their potential mobility relies heavily on the perceptions, preconceived notions, and varied experience of the individual clinicians," Kaluf says. "We are absolutely trying to continue to lead the field and provide an example of the level of care and the level of understanding of patients' mobility that can be achieved."

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Applying the Results

Treating the patient according to the appropriate K-level is one of the most important decisions a prosthetist must make with a new patient—and using the wrong functional level, and thereby providing a patient with the wrong prosthesis, can hinder potential mobility. The value of outcomes documentation is further increased because it is objective, quantifiable data that can be provided to referral sources to show why a patient might, for example, need an Ottobock C-Leg, and thus why the physician should enter the prosthetist's chart notes as the

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Ability Prosthetics & Orthotics provides state approved Continuing Education Courses for PT's, OT's, Worker's Comp. Case Managers and Payers.

Prosthetic & Orthotic technology and treatment protocols are changing rapidly. In an effort to create awareness and raise the clinical standard of care within the industry, Ability practitioners offer six CEU courses for health care professionals and payers. The courses range from outcomes based practice to amputee post op management to rehabilitation overviews to ambulation.

If you are interested in increasing your O&P knowledge base by bridging the gap between device and clinical outcomes, please contact your local Ability practitioner today to schedule a course for your facility.



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