

Leimkuehler ORTHOTIC & PROSTHETIC CENTER, INC.



Specialists in Prosthetics & Orthotics Since 1948

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O&P TRENDS & DEVELOPMENTS

SPRING 2010

The Credentialed Orthotist

Orthotist—A health care professional specifically educated and trained to manage comprehensive orthotic patient care, including patient assessment, treatment plan formulation and implementation, follow-up and practice management.

The term “professional,” regardless of the field, elicits certain expectations—advanced, specialized education; demonstrated skill; proven experience. Professionals are measured by specific standards that help define their capabilities and proficiency for those they serve and with whom they interact. This condition is every bit as true for orthotics and prosthetics as for other health care professions.

Orthotics Today

In 1993, the American Medical Association recognized orthotics and prosthetics (O&P) as an allied health profession, culminating the evolution of the twin disciplines from medical-related craft to true patient care specialty. Yet, O&P has not been subject to mandatory regulation in the U.S. until recently. Currently, 12 states have passed licensure requirements, and several more have legislation in progress.



Courtesy Fillauer, Inc.

Licensure carries the force of law—state agencies determine who may legally provide O&P services to their citizens. In time, many more states may adopt licensure, particularly those with a large elderly population and many practitioners;

but for now, the large majority of states does not require a license to practice this specialty.

Filling that void is an aggressive self-regulation effort centered around individual certification and facility accreditation to certify knowledge, competence and experience for the benefit of physicians, other health professionals, patients and insurers. Two credentialing bodies for orthotists and prosthetists function in the U.S.:

- The **American Board for Certification in Orthotics and Prosthetics (ABC)** was founded in 1948 to protect the public against unqualified providers. ABC practitioner certification is open

to orthotists, prosthetists and technicians who meet well-defined educational and experience requirements and pass a rigorous written examination, written simulation, and two-day clinical exam. ABC's facility accreditation program evaluates practices against exacting standards relating to governance, administration, staff qualifications, patient care, quality assessment, facility management and safety.

- The **Board for Certification/Accreditation, International (BOC)** was established as a second credentialing body in 1984. Like ABC, BOC both accredits facilities and certifies practitioners. Both programs are respected in the industry, but until recently ABC has generally been regarded as having had the more demanding certification requirements.

(Continued on page 3)



The Haiti Aftermath

With estimates of new amputees in earthquake-ravaged Haiti now in the thousands, Leimkuehler Orthotic & Prosthetic Center is joining with our rehabilitation colleagues around the world to respond appropriately to this incredible humanitarian crisis.

We are already collecting new and gently used prosthetic and orthotic componentry and supplies for shipment to entities helping survivors of the 7.0 magnitude tremor.

In addition, John Fabian, CPO and William Leimkuehler, CPO have volunteered to travel to Haiti to do prosthetic fittings as the need arises, once the situation has stabilized and appropriate working facilities have been established.

With donations from our patients and friends, aid from our supply company, PEL Supply, and contributions from O&P manufacturers, we hope to make a difference in this ongoing human tragedy. If you can help, please contact any Leimkuehler O&P office.

A Welcome Alternative to Traditional KAFOs

Providing effective and patient-acceptable orthotic intervention for individuals with knee instability resulting from lower-limb paresis or paralysis has been a long-standing challenge in our specialty.

Patients lacking full voluntary knee control secondary to polio, weak quads, spinal cord injury, multiple sclerosis, stroke and other neuromuscular and/or musculoskeletal disorders have traditionally been fitted with a knee-ankle-foot orthosis (KAFO) incorporating manual locking knee joints to provide stability during stance and thereby prevent knee collapse and resulting falls.



Courtesy Horton Technology Inc.

But knee motion is an essential ingredient of a normal, efficient gait. Ambulating in a traditional locked-knee KAFO produces an awkward, highly inefficient walking pattern in which the wearer must circumduct and/or hike up the braced leg, or vault on the opposite leg, to provide foot clearance and advance the involved limb. This gait is awkward and fatiguing and thus un-

acceptable to many patients, who frequently choose to leave their brace in the closet as a result.

Another common outcome of abnormal compensating biomechanics associated with long-term use of a locked-knee KAFO is pain and loss of motion stemming from soft tissue and joint dysfunction, especially in the hips and lower back.

Fortunately, a relatively new class of componentry called *stance control orthoses (SCOs)* now provides us with a viable alternative. The concept behind these devices—locking the knee during weight-bearing for stability and allowing it to flex more-or-less normally during leg swing—wasn't hard to figure out; but coming up with a reliable design acceptable to users proved elusive for decades. And while no one product among the various options currently available to us will apply generically, we now do have sufficient choices to address different patient needs, even as new and improved designs continue under active development.

Determining whether an SCO will be beneficial and if so which design will be most appropriate for a given individual is as much a function of correctly assessing the patient's physical and cognitive capabilities as addressing the presenting diagnosis. Only some individuals with post-polio

symptoms, for example, have the facility and motivation to succeed with a stance control brace. The same is true with all other relevant diagnoses for this category.

The majority of currently available SCOs are mechanical designs, which employ some feature of the user's gait, such as ankle range of motion, to lock the knee just before commencement of stance phase (heel strike) and unlock it at transition to leg swing. More recent microprocessor-controlled systems extend stance control benefits to individuals with minimal hip musculature that precludes using mechanical SCOs.

Though SCOs have not been around long enough for conclusive long-term outcomes studies, initial research involving some of the early designs suggests significant benefits can be achieved for appropriate patients, notably substantially improved gait biomechanics coupled with less effort and energy expenditure and more normal motion of the affected limb as well as the rest of the body.

On the other hand, stance control KAFOs present certain drawbacks. The current generation of SCO joints tends to be somewhat bulky as compared to their standard cousins, and the newer microprocessor-controlled SCOs tend to be heavy by comparison; some are noisy as well. For the patient, the question becomes, Are these compensations worth the added performance the orthosis provides? In many cases, the answer is a definite Yes!

As with most new and technological advancements, stance control orthoses, particularly those with electronic function, are considerably more expensive than conventional KAFOs for this population.

Moreover, obtaining reimbursement has been problematic; in fact, Medicare's initial reluctance to provide funding for SCOs stymied product development for several years. Now, however, a reasonable code has been issued, and insurance funding for these orthoses can often be obtained with the necessary justification and documentation.

In evaluating patients for possible SCO application, we have learned that those who have worn a



Courtesy Otto Bock Health Care

conventional KAFO typically have more difficulty adapting to and taking full advantage of the stance control features than individuals receiving their first orthosis.

From the increasing number of stance control products now commercially available in the U.S., knowledgeable orthotists can select the one offering the most appropriate mix of attributes for any given patient's unique needs, body measurements, capabilities and activity expectations.

General contraindications to using a stance control KAFO include significant knee spasticity, substantial impairment of patient cognition and/or motivation, knee flexion contractures exceeding 10 degrees, and uncertain prospects for patient follow-up and compliance.

To discuss stance control prospects for a specific patient or to learn more about this class of componentry, we invite you to call our office.



Courtesy Otto Bock Health Care

Credentialing Accord to Help Ensure High-Level O&P Care

(Continued from page 1)

However, a recent historic agreement on minimum education and training requirements for O&P professionals treating Medicare beneficiaries promises to "standardize the standards" for those providing custom orthotic and prosthetic care. Leaders of the five major O&P advocacy, education and credentialing bodies in the U.S., including ABC and BOC, jointly recommended to the Centers for Medicare & Medicaid Services (CMS) minimum qualifications to sit for certification examination as one of the following options:

- a bachelor's degree in orthotics and/or prosthetics as offered by a CAAHEP*-accredited institution;
- a bachelor's degree plus a certificate in orthotics and/or prosthetics as offered by a CAAHEP*-accredited institution; or
- a foreign degree equivalent to a bachelor's degree in orthotics or prosthetics or a foreign degree equivalent to a bachelor's degree, plus a certificate in orthotics and/or prosthetics as offered by a CAAHEP*-accredited institution.

Besides clearing the air for CMS determination of who is appropriately qualified to provide O&P care for Medicare and Medicaid beneficiaries, this agreement is generally seen as helping to ensure a high-level of O&P service delivery across the board.

For further information, including specifics of our staff credentials, we invite you to call our office.



Courtesy Orthomerica Products Inc.

Helping Hands in Haiti

The Jan. 12 earthquake that devastated Haiti is a human tragedy of epic proportions. Beyond the estimated 170,000 killed in the 7.0 magnitude quake, at least 200,000 more are believed to have suffered major injuries. Among these, 2000-4000 are predicted ultimately to undergo limb amputation surgery, many of them children.

From a rehabilitation standpoint, few countries could have been more ill-prepared to cope with this disaster than Haiti. The facility of the primary provider of prosthetic and orthotic care in the capital of Port-au-Prince, Healing Hands for Haiti International, was 80 percent destroyed just as the need for its services was exploding.

But help is on the way, amidst an outpouring of concern from around the world. That is encouraging, but it is vital that this support be organized and focused in the right way. Handicap International, a global network focused on improving the living conditions of people living in disabling situations in post-conflict and low-income areas of the world, is leading the coordination of the rehabilitation effort. Healing Hands for Haiti is involved as a primary provider of services along with similar organizations based in various countries.

At the appropriate time, volunteer prosthetists and orthotists from many nations will travel to Haiti in temporary stints to provide the needed skills and experience largely lacking in the small country's inherent resources. It is important to note, however, that the need for device adjustments and follow-up care will remain long after the volunteers have gone home; thus, the infrastructure to provide that ongoing care must be created essentially from scratch.

Meanwhile, collections of used O&P components and supplies and various patient aids have been organized in many locations for ultimate shipment to Haiti. Many of these items will be helpful, but it is likewise important to note that Haitian amputees are going to need basic, relatively uncomplicated replacement limbs or braces as compared with many of the devices provided to their counterparts in the U.S. Some collected components, such as basic feet and knee units, will conceivably have value as replacement parts, but used prosthetic sockets, liners and high-end components are generally not appropriate.

The O&P response to the Haitian catastrophe is still developing. For up-to-date information, visit the web sites for Handicap International, www.handicap-international.org; Healing Hands for Haiti International, www.healinghandsforhaiti.org; and the U.S. Member Society of the International Society of Prosthetists and Orthotists, www.usispo.org.



Note to Our Readers

Mention of specific products in our newsletter neither constitutes endorsement nor implies that we will recommend selection of those particular products for use with any particular patient or application. We offer this information to enhance professional and individual understanding of the orthotic and prosthetic disciplines and the experience and capabilities of our practice.

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E-Knee
Courtesy Becker Orthopedic



SPL2
Courtesy Fillauer Inc.



Freewalk
Courtesy Otto Bock Health Care



SCOKJ
Courtesy Horton Technology Inc.

*CAAHEP—Commission on Accreditation of Allied Health Education Programs

O&P Trends & Developments

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Stance Control Grows ‘Intelligently’

In the laboratories of rehabilitation technology, new doesn't remain new for long. No sooner does an innovative design or product hit the market than efforts are already under way to improve on it, either through an entirely new approach or improved engineering of the original concept.

Such is the case with stance control orthoses, or SCOs, for which the initial, largely mechanical joint designs have now been taken to a new level of microprocessor control to address the specific needs of a wider range of patients. Two recently introduced products exemplify this new generation of “intelligent” SCO technology.

The E-MAG Active system extends the benefits of a stance control knee-ankle-foot orthosis and provides an added level of safety to patients with no ankle function. In lieu of an ankle sensor or weight-sensing footplate, an on-board gyroscope monitors the affected limb's position within the gait cycle at all times and controls an electro-mechanical knee unlocking mechanism accordingly to enable flexion during swing phase and ensure a stable knee for weight-bearing.



E-MAG Active KAFO

Photos courtesy Otto Bock Health Care

Active can provide auditory feedback to the patient regarding the flexion moment at the knee. This feature is especially helpful during gait training to repeatedly and successfully unlock the knee joint at terminal stance.

A custom KAFO incorporating E-MAG Active knee joints is easy for patients to operate, permits variable cadence, and will accommodate a knee flexion contracture of up to 15 degrees. The system calibrates itself to “know” the user's gait pattern and reacts to provide added safety should a sudden deviation occur. This easy-to-adjust system can be fine-tuned repeatedly as the user's gait changes during the continuum of rehabilitation.

Another innovation: The E-MAG

What's New

The E-MAG knee joint is completely enclosed, preventing clothes from becoming snagged and protecting against external impact and contaminants entering the joint. This system can be used for appropriate patients weighing up to 187 pounds.

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By contrast, the Sensor Walk, can withstand users of up to 300 pounds, most of any stance control KAFO currently available. This heavy-duty orthosis, developed in conjunction with the Mayo Clinic, offers several unique features that provide the benefits of sophisticated stance control to individuals who cannot operate other SCOs.

Sensors in the knee and footplate feed data to the Sensor Walk microprocessor and unlock the knee in late-stance phase when weight has been transferred to the contralateral side and is ready for single limb support.

Gait is frequently more natural than with other SCOs, because a knee extension moment is not required to unlock the joint. After mid-stance but prior to initial contact, the Sensor Walk knee joint will lock at any degree of knee flexion, facilitating stumble recovery.

Unlike other stance control systems, which can take up six months to master, gait training for the Sensor Walk is fast and can be as simple as walking for a time between parallel bars. Many users quickly gain sufficient confidence to climb stairs, change cadence during ambulation, and walk on uneven terrain.

The Sensor Walk can be set to function as a fully locked or free-swinging knee to accommodate changes in the patient's ability and special circumstances. Like the E-MAG Active, the Sensor Walk uses a rechargeable lithium ion battery that gives active wearers a full day of service.

This next generation of SCOs illustrates the exciting future of orthotic limb rehabilitation. Call our office for more information.



Sensor Walk