

The Hinnant Prosthetics Quarterly

Experience Our Road to Prosthetic Excellence

Summer 2003

Enjoying the Games of Summer

Summertime with its wealth of outdoor recreational opportunities invites attention to the special needs of adult and child amputees who choose not to allow their limb deficiency to get in the way of an active lifestyle.

The prosthetics industry has long been challenged to develop specialized appliances enabling individuals with a single or bilateral upper-limb deficiencies to participate in competitive sports and other recreational activities.

As often happens in our discipline, the leading innovator in this pursuit is himself an amputee who, lacking available componentry to allow him to participate in life fully, decided to take matters into his own hand. Thousands of upper limb-deficient people around the world have been the beneficiary of Bob Radocy's determination and innovation.

A transradial amputee since a 1971 automobile accident, Radocy applied his engineering and biological sciences education and design experience to the creation of specialized body-powered terminal devices. The company he founded, Therapeutic Recreation Systems (TRS), now offers a full line of unique "hands," "Grips," and specialized connectors to allow wearers to join just about any game, foursome or competition they choose.

Swimming—The Freestyle is a recreational accessory designed to be used with a custom swimming prosthesis for those interested in high performance or competitive swimming capability. The design, which mimics a folding wing, re-

duces resistance during stroke recovery but flares open to provide maximum resistance during the power stroke. The device can be rotated to optimize various swimming strokes and styles. The wings can be fixed in a flared position for treading water and water aerobic exercise. The Freestyle comes in an adult size but can be easily modified down to conform to smaller hand displacement.

The TRS Swim Fin Kit is used without a prosthesis, attaching directly to a residual limb, but has the same folding wing design as the Freestyle. This is an economical, simple, lightweight and

reliable swimming device for recreational swimming and exercise.

Golf—The Amputee Golf Grip is designed for a left-hand deficiency. It can

be positioned anywhere on the club grip and uses the "sound" hand's gripping pressure to "lock" the device in place, thus preventing slippage and improving control.

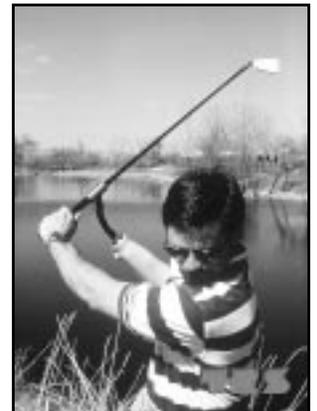
The Golf Pro, designed primarily for persons missing their right hand, slips over the club shaft, then "jams" in place on the grip when pulled up.

Plastic sizing rings can be enlarged to custom fit the user's clubs. Uniform grip sizes on the clubs are recommended.

(Continued on page 4)



Freestyle swimming accessory



Golf Pro

About This Issue

Dear Friends:

Summer is the time of year for enjoying the great outdoors, and that certainly includes for people with physical challenges. This newsletter leads with an article on some innovative terminal devices developed to enable people with upper-limb deficiencies to enjoy specific sports—baseball, fishing, swimming, golf—associated with the warm weather months.

Also in this issue you will find articles on potential changes in Medicare reimbursement policy for prosthetics and managing residual limb contractures.

I am pleased that Hinnant Prosthetics will be hosting the upcoming meeting of the North Carolina Academy, and South Carolina Society, of Orthotists and Prosthetists, Sept. 25-27

at Ballantyne Resort. This professional forum will include speakers and technical workshops exploring the latest developments in our field. Through such presentations, Hinnant practitioners keep abreast of the latest technology and developments within our discipline.

— M. Kale Hinnant, C.P., FRAOP



Kale

— The Essential Prosthetist —

One of the few constants in American health care these days is change. From almost-daily scientific breakthroughs to new federal, state and local legislation and regulation, little remains static in how medical services are delivered in the early 21st century. Certainly that is the case in the prosthetics and orthotics sector.

A particular change that seems to be gaining momentum—and creating heightened concern—within our discipline is increasing liberalization of the once well-defined understanding as to the practitioners and qualifications appropriate and necessary to deliver prosthetic, as well as orthotic, services.

The Conventional Provider

Traditionally, the design and fabrication of prosthetic systems—replacement arm or leg components for an amputated limb or congenital limb deficiency—have been the province of the trained prosthetist, who by virtue of education, experience and technical abilities

possesses a complete skill set for this specialty.

In times past, the prosthetist was the local "limb-maker," a skilled craftsman who typically did not have a great deal of formal education but

was usually quite talented with his hands. Increasingly over the last half-century, prosthetists have added to their skills dedicated education in their discipline, most current practitioners having graduated from one of the baccalaureate level or post-baccalaureate masters or certificate P&O education programs in the U.S.

The hallmark of prosthetist qualification has become individual certification by the American Board for Certification in Orthotics and Prosthetics (ABC). To become an ABC-certified prosthetist (C.P.) or certified prosthetist-orthotist (CPO), a practitioner must have first earned a bachelor's degree in P&O or a bachelor of science degree and one-year postgraduate education certificate in P&O, then complete a one-

year residency program or attain 1900 hours of clinical experience under a certified instructor, and finally pass a rigorous written examination, written simulation, and three-day clinical exam. Every five years, ABC-certified practitioners must renew their credentials. A second credentialing body, the Board for Orthotist/Prosthetist Certification, has similar education, experience and testing requirements.

While it is still possible for uncertified practitioners to deliver orthotic services, most orthotists recognize the value of, and thus pursue, credentialing. In recent years, Alabama, Florida, Illinois, Mississippi, New Jersey, Ohio, Oklahoma, Texas and Washington have embraced licensure of O&P practitioners, several basing their requirements on ABC's certification requirements.

Now, however, certain trends and activities threaten the structure of P&O services delivery, primarily through disruption of the rules and conventions that determine exactly who will provide these services.

Competitive Bidding and 'NegRegs'

In its ongoing campaign to control Medicare expenditures, the federal government is considering two new approaches to the delivery of prosthetic and orthotic services, both of which will affect patient outcomes if enacted.

- *Under competitive bidding*, the Centers for Medicare and Medicaid Services (CMS) would solicit bids for the provision of certain health services, including the provision of as many as a third of all orthotic products, and grant exclusive rights for reimbursement for those products in a given geographic area. The House version of the 2003 Medicare Reform bill would require nationwide competitive bidding for durable medical equipment, "off-the-shelf orthotics" and medical supplies.

- *O&P Negotiated Rule-making (NegRegs)* is a process mandated by Congress to establish criteria for determining who is qualified to deliver and bill for specific P&O products and services with the goal of reduced Medicare fraud and abuse by under- or unqualified providers. A committee composed of national organizations representing

rehabilitation professionals, including prosthetists and orthotists, will recommend standards of competency to be required by CMS for practitioners delivering P&O care to Medicare patients.

While the intent is to curtail abuse by eliminating unqualified providers from the Medicare system, certain interests appear to be trying to use the

NegRegs process to enable licensed practitioners in other disciplines to provide comprehensive O&P services without requiring further educational training or credentialing. If this effort is successful, these practitioners who are not credentialed in either prosthetics or orthotics would be able to deliver the same services as qualified prosthetists and orthotists without meeting the same standards. Certainly that was not the intent of the original legislation.

Our Position

We respect and value our relationship with all providers of clinical rehabilitation services. We also believe that any health professional who seeks qualification for reimbursement or authorization to deliver prosthetic and/or orthotic services should continue to be required to meet appropriate preparation requirements and demonstrate competency based on education, training, and experience by passing a proper examination.

These are important issues, which may well frame the future delivery of prosthetic and orthotic care in America. We welcome your comments and questions.



Resolving Residual Limb Contractures

Thanks to improved post-operative management and heightened appreciation of the need for physical therapy in the first days after surgery, the incidence of soft tissue contractures in joints proximal to new amputation sites has steadily declined in recent years. That's good news—the best way to manage a contracture is to avoid it in the first place.

Unfortunately, prosthetists evaluating new amputees still encounter a fair number of contractures, which left unresolved can seriously complicate successful prosthetic intervention. Advanced hip flexion contractures, in particular, pose serious problems for the management of transfemoral amputees.

If the contracture cannot be corrected, these patients face additional challenges in adapting to a preflexed system, which present certain biomechanical and cosmetic limitations.

Residual limb contractures usually stem from joint immobility, resulting from (1) a reduction in therapy, as sometimes occurs when a patient leaves the hospital for a home setting or a nursing home, (2) when the patient is confused, or (3) in the presence of other, more-serious complications, which rule out continuing therapy to maintain joint mobility. When compounded by inflammation, trauma or impaired circulation, soft tissue around an immobile joint can develop a contracture in as little as three days.

Treatment options for established contractures range from relatively heavy manual stretching of the affected tissue for short periods several times daily, to more-aggressive measures such as surgical release, traction weights with pulleys, and serial casting.

However, an orthotic option, application of low-level tissue stress for

prolonged periods using lightweight dynamic splints, is evolving as a solid cost-effective treatment of choice for knee flexion contractures.

Stretching: How Much? How Long? How Often?

Contractures are the result of shortening and thickening of the muscle and connective fibers within tendons, ligaments, joint capsules and related structures. Attempts to elongate shortened tissues by stretching elicit two opposing properties: an *elastic* response, which promotes recovery of the tissue to its shortened state, and a *plastic* response, which fosters permanent tissue elongation by biochemical reordering of the fibers' connecting points.

Research into the viability of the opposing stretching techniques demonstrates conclusively:

- Short-duration, high-intensity stretching primarily evokes the elastic response, while prolonged, low-intensity stretching stimulates plastic remodeling.
- A direct correlation exists between duration of stretch and the resulting degree of permanent, plastic elongation.
- A further direct correlation exists between intensity of the stretch and the degree of trauma or weakening of stretched tissues.

Dynamic splints maintain relatively mild tension on shortened soft tissues for up to 12 hours a day, and more, in either a gravity-eliminated or minimal-gravity environment. Because that condition is most naturally encountered when recumbent, dynamic splints are typically prescribed to be worn during sleep. Tension is maintained by a spring or other energy-storing medium and usually can be actively overcome to accomplish voluntary joint motion.



Ultraflex dynamic orthosis for transfemoral amputee.

While dynamic splints incorporate adjustable cuffs and thus can be applied off-the-shelf, a still-healing residual limb is typically better protected, and the splint better tolerated, by attaching a molded socket to the distal segment.

This step also may hold some psychological value by suggesting to the amputee that he or she has in fact embarked on the road to getting the new limb, even though the contracture normally is to be corrected first.

The elongation process can take from two to six weeks—whatever deformity remains after six weeks of splinting will be difficult to correct. In such cases, the prosthetic staff can proceed with design and fabrication of a bent-knee prosthesis to accommodate the contracture.

The Prosthetist's Role

When a new amputee must be "stretched out" before initiating prosthetic intervention, our board-certified practitioners are prepared to interact with the therapist and other members of the rehab team to provide a custom-molded dynamic orthosis that will promote continued residual limb healing while countering the contracture to maximize gait potential.

Because dynamic splints supplement daily therapy outside the clinic setting, they represent a cost-effective ally in our ever-more-challenging reimbursement climate. When applied by an experienced practitioner, they fulfill their mission reliably, requiring only periodic adjustment.

For further information on contracture management for your patients, we invite you to call our office.

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.

We gratefully acknowledge the assistance of the following resources used in compiling this issue:

TRS (Therapeutic Recreation Systems) Inc.
Ultraflex Systems Inc.

An Accessory for Every Sport

(Continued from page 1)

Both devices feature a unique, strong, flexible coupling, which duplicates the wrist action required for a smooth, controlled swing. The Amputee Golf Grip and Golf Pro, the only commercially manufactured golf devices available for persons missing a hand(s), enables them to function as a two-"handed" golfer. They are functional and reliable and will allow wearers to improve their drive distances and game in general.

Baseball and Softball—TRS adapters support players both in the field and at the plate. The Hi Fly Fielder is a unique ball-catching device, which looks similar to



Hi Fly Fielder

a lacrosse stick. A flexible mesh pocket allows for either forehanded or backhanded catching, eliminating the need for forearm rotation. A smaller version, the Hi Fly Jr., is designed for use by "T"-ball players. No cable required.

The Grand Slam batting adapter comes in two models for right-handed batters, one for those with left arm deficiencies, one for right. (Left-handed batters are invited to inquire to TRS for options.) Both models are designed to fit aluminum bats

with one-inch-diameter handles (straight or tapered).

A high strength flexible coupling and long cylindrical channel allow for a natural grip and a powerful unrestricted swing and follow-through. The Grand Slam fits all standard body-powered, mechanical prosthetic wrists. No cable required.



Grand Slam batting accessory

Fishing—TRS Grip prehensors enable wearers to perform a wide range of manual functions, from delicate to robust. These devices are highly functional and can provide persons missing a hand with the gripping force and control required to handle a wide variety of fishing equipment and accessories, encompassing spinning, casting and fly fishing. Minor equipment modifications are sometimes required to optimize performance.



Bilateral deficiencies—Dynamic, energy-storing Free-Flex "hands" are super-flexible, durable prosthetic accessories useful in a wide range of bilateral vocational and avocational activities. Anatomically realistic finger features on the outside surface complement the scoop-shaped inside palm surface. Free-Flex fingers extend out or roll over when outside forces are encountered.



Free-Flex "hands"

The soft Free-Flex hands are perfect for ball sports activities such as volleyball and basketball and are safe for child handling and infant care.

They're also ideal for wrestling, roughhousing, and martial arts. Shock- and impact-absorbent polymer materials provide a cushion for skating, aerobics, dance, and floor gymnastics. Free-Flex devices come in different sizes and colors, do not use a prosthetic cable and adapt easily to all body-powered prosthetic arms.

Additional information on the products discussed in this article can be found on the TRS website at www.oandp.com/products/trs/.

Hinnant Prosthetics

Prosthetic Specialists Since 1934



*Experience
Our Road to
Prosthetic
Excellence...*

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