



NURERC Hosts State of the Science Meeting in Prosthetics and Orthotics Research

(This work was funded by the National Institute on Disability and Rehabilitation Research (NIDRR) of the U.S. Department of Education under Grant No. H133E030030. The opinions contained in this publication do not necessarily reflect those of the Department of Education.)

More than fifty specialists in prosthetics and orthotics (P&O) and associated disciplines attended the February 28, 2006 State of the Science (SOS) meeting hosted by Northwestern University Prosthetics Research Laboratory (NUPRL) and Rehabilitation Engineering Research Program (RERP). Based on a survey conducted in 2005 by the Northwestern University Rehabilitation Engineering Research Center (NURERC), this SOS meeting was an interactive forum that elicited how RERCs can identify and develop clinically relevant areas of P&O research. A report summarizing the



Kevin Carroll (left) and Margrit Meier (right) discuss lower limb orthoses at State of the Science Meeting 2006

findings from this meeting will be disseminated among researchers, clinicians and funding agencies.

Steven A. Gard, Ph.D., Director of

NURERC, introduced and moderated the meeting. Each session was chaired in tandem by a researcher who provided an overview of published studies and a clinician who discussed



Steven A. Gard, Ph.D., Director of NURERC, moderating the State of the Science Meeting 2006

patient and practitioner concerns. Topic areas included orthotics (lower limb and spinal); upper-limb prosthetics (electric and body-powered); lower-limb prosthetics (foot/ankle mechanisms, sockets, knees and shock absorbers); and CAD/CAM in P&O.

Session highlights included a discussion about lower-limb orthotics by **Stefania Fatone, Ph.D.**, NURERC, and **Tom DiBello, CO**, Dynamic Orthotics & Prosthetics (Houston, TX). Recognizing that no placebo exists in orthotics research and that able-bodied human subjects may parallel animal models in physiology, they recommended developing

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standardized terminology, baseline studies to measure the effect and outcome of orthoses, and the cost effect of fitting stroke patients with orthoses during versus after hospital rehabilitation. Mr. DiBello emphasized the need for better understanding the effect of AFO alignment on gait.

Bryan Malas, MHPE, CO, Children’s Memorial Hospital of Chicago, and **Don Katz, CO, LO, FAAOP**, Texas Scottish Rite Hospital for Children (Dallas, TX), provided a research overview and clinical insights about spinal orthoses. Mr. Malas indicated that most of the literature in this area concerned scoliosis and very little addressed orthotic management of other spine conditions. Mr. Katz identified clinical challenges including how best to apply forces and how to make a spinal orthosis tolerable to the wearer.

Andrew Hansen, Ph.D., NURERC, and **Donald Shurr, CPO, PT, M.A.**, American Prosthetics and Orthotics, Inc. (Iowa City, IA), discussed foot/ankle prosthetic devices. They reported that results of quantitative gait analyses demonstrate few consistent differences in user performance between prosthetic feet; while mechanical testing studies show very

different mechanical properties of prosthetic feet. Future studies should attempt to examine clinical importance of specific mechanical properties, perhaps utilizing experimental feet in which external factors can be closely

Paddy Rossbach, RN, President of the Amputee Coalition of America, makes a point.



John W. Michael, MEd, CPO/L, FAAOP, FISPO, at NURERC State of the Science Meeting 2006.

controlled. Other areas for further investigation include the need for outcome measures specific to lower-limb amputees; the study of interactions among prosthetic

foot/ankle components, socket designs; socket liners and gait; attention to pediatric components; better understanding of the properties of energy-return prosthetic feet; and data sharing among researchers-clinicians and among RERCs.

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Capabilities (ISSN 1055-7156) is published quarterly by Northwestern University’s Rehabilitation Engineering Research Center.

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Subscription is free to all individuals interested in prosthetics and orthotics. Send inquiries about contribution guidelines, advertising, subscription requests and address changes to: *Capabilities*, Northwestern University RERC, 345 E. Superior St., Room 1441, Chicago, IL 60611.

This work is funded by the National Institute on Disability & Rehabilitation Research (NIDRR) of the Department of Education under grant number H133E030030. The opinions expressed in this publication are those of the grantee and do not necessarily reflect those of the Department of Education.

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Margrit Meier, Ph.D., NURERC, and **Kevin Carroll, M.S., CP, FAAOP,** Hanger Prosthetics and Orthotics (Oklahoma City, OK), examined research and clinical observations about sockets, knees and shock absorbers. Their suggestions included the need to test clinical assumptions; establish the value of active dorsiflexion in the prosthetic knee; use gas permeable suspension sleeves to eliminate perspiration; and include force-sensing systems in pylons.

Joshua Rolock, Ph.D., NURERC, and **Michael Brncick, M.Ed., CPO,** Administrative Director of Northwestern University Prosthetics-Orthotics Center (NUPOC), reviewed the state of computer-aided design and manufacturing (CAD/CAM) in P&O. During the animated exchange that followed, practitioners recognized that CAD/CAM could bring consistency to P&O practice; however, most agreed that CAD/CAM in its present form should not be a substitute for the development of good hand skills. Desirable clinical features of CAD/CAM include its potentially immediate, portable and reliable digital measurement and imaging of a patient's limb. Recommendations

George Du, MS, CP, Rehabilitation Institute of Chicago, clarifies a point.



technology.

Richard F. ff Weir, Ph.D., NURERC, and **Troy Farnsworth, CP, FAAOP,** Hanger Prosthetics and Orthotics (Anaheim, CA), examined electric-powered upper-limb prostheses, particularly components (prehension, wrists, elbow, humeral rotation and

shoulder), control interface (myoelectric, force transducers, linear potentiometers and switches), and control strategies (such as one-to-one, sequential and multiple sources).



Tom DiBello, CO, offers insight.

Craig Heckathorne, M.Sc., NURERC, and **Jack Uellendahl, CPO,** Hanger Prosthetics and Orthotics (Scottsdale, AZ), addressed comparable issues relevant to body-powered upper-limb prostheses. In the case of control interface, they examined body harness and kinematic linkage. Evaluating the dearth of research papers about upper-limb prostheses, they urged more and improved published research that identifies outcome measurements and function levels. Ongoing and future research directions may include prehensor designs that improve the ratio of actuation force to grip force and conform to the shape of the grasped object; expanding the controllable range of motion (ROM) through biomechanical modeling of socket and harness designs; and exploration of body-power/electric-power hybrid components to optimize speed/torque characteristics while retaining proprioceptive feedback.

Both upper-limb prosthetics teams advocated restoring the surgeon's role in the clinical prosthetics team. They identified numerous areas for standardization and improvement of upper-limb prostheses, notably in quality of comfort, lightness of weight, durability, cosmesis and reduction of mental loading. Finally, both teams of upper-limb prosthetics experts concluded that no dichotomy exists between electric-powered and body-powered prostheses since broad clinical experience shows that each provides advantages to those who use them.

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Da Vinci Society Honors Dudley S. Childress, Ph.D.

Dudley S. Childress, Ph.D., accepted the 2005 da Vinci Lifetime Achievement Award at the National Multiple Sclerosis Society, Michigan Chapter, on October 21, 2005. The annual "Dinner with da Vinci" recognizes and honors people, organizations and innovations that have empowered and enabled people with physical disabilities to live full, barrier-free lives. The da Vinci Awards identify the most innovative developments in adaptive and assistive technology and research that use the principle of Universal Design. These awards stimulate new funding and creative developments that enable all people to

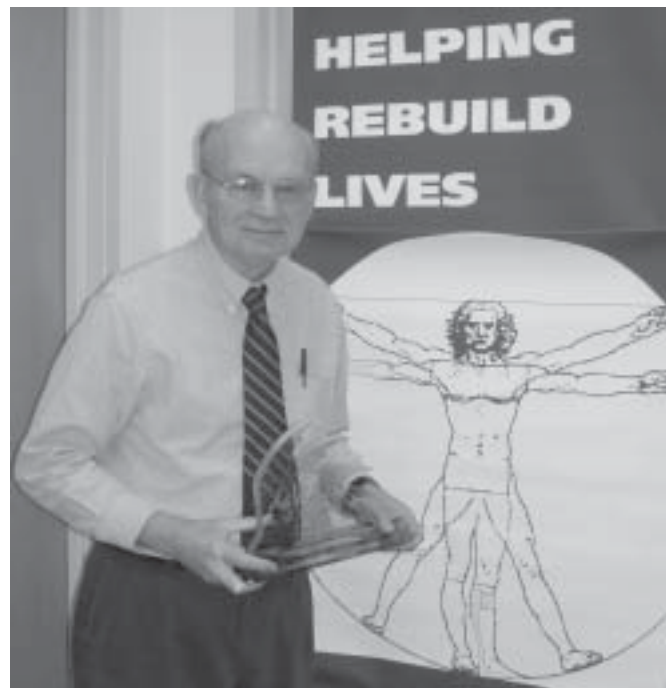
participate in all aspects of society.

The words etched into the award read, "Presented to Dudley S. Childress, Ph.D. LIFETIME ACHIEVEMENT AWARD."



The da Vinci Society conferred its Lifetime Achievement Award on Dr. D. S. Childress for his

creative developments in assistive technology that have contributed significantly to the dignity and autonomy of those with a disability. Dr. Childress is



Dudley S. Childress, Ph.D. holding the award conferred on him by the da Vinci Society. The background shows a redesigned, re-engineered version of da Vinci's "Vitruvian Man." Modifications to the human figure include a lower-limb orthosis and a prosthetic arm.

internationally recognized for his many problem-solving innovations. Two examples among many are his self-contained myoelectric prosthetic arm and the sip-and-puff wheelchair that revolutionized mobility, autonomy and daily life for those with quadriplegia.

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As facilitator and moderator, **Steven A. Gard, Ph.D.**, conducted an Open Forum that engendered fruitful discussion, including recommendations for a better definition of consumer expectations and outcome goals; establishment of predictive modeling of walking with prostheses / orthoses (prescription and training); consideration of whether cadaver studies might be useful; appropriate sample size for meaningful research results; and measurable outcomes necessary to teach evidence-based medicine and achieve scientific consensus.

CONTINUE THE DIALOGUE

A link to our On-line Forum exists on our website. Please continue this vital exchange among researchers and practitioners. Contribute your ideas about P&O areas that deserve greater research attention.

Visit: www.medschool.northwestern.edu/depts/repoc

AAOP Research Council Urges Stronger Links between P&O Researchers and Clinicians

The Research Council of the American Academy of Orthotists and Prosthetists (RCAAOP) seeks to define, prioritize and develop P&O research. Intrinsic to this goal are demands for well-designed studies, adequate numbers of participants, standardization of language, measurable variables, and improved communication among researchers, clinicians and patients-consumers. As mandated in 1994 through Project Quantum Leap (PQL), the Council fosters the development and expansion of P&O research in academic and clinical settings. A major goal of the Council promotes evidence-based practice in P&O by fostering research efforts, providing research education, and enhancing the profession's overall research capacity.

Two NURERC researchers have become members of the RCAAOP. **Steven A. Gard, Ph.D.**, accepted an invitation to serve on the Research Education Committee for the RCAAOP. This committee, together with the National Commission on Orthotic and Prosthetic Education (NCOPE), develops continuing education for P&O professionals and supports research in clinical residencies throughout the United States.

Stefania Fatone, Ph.D., accepted an invitation to serve on the Grants Committee of the Research Council of the AAOP.

NUPOC Launches Education Initiative

Held at Chicago's Hyatt Regency Hotel on March 13, 2006, **Northwestern University Prosthetics and Orthotics Center (NUPOC)** held a Gala Trilogy Fundraiser to celebrate its past and present, and shape its future. The oldest and largest P&O program in the USA, NUPOC has trained nearly half of all Stateside orthotists and prosthetists in the profession. Reminding alumni of NUPOC's commitment to integrating academics, research and clinical practice, the event urged P&O professionals to contribute their

time and resources toward developing a quality, outcome-based, distance education course and master's degree program.

Faculty members recognized for their contributions to prosthetics and orthotics education were: **Dr. Dudley S. Childress, Ph.D.**; **Ms. May Cotterman, M.Ed., PT**; **Mr. Gunter Gehl, CP**; and **Mr. James Russ, CO**. Posthumously recognized were **Mr. Charles Fryer, MS, PT**, and **Mr. Blair Hanger, CP**.

To learn how you can support NUPOC's educational initiative, please contact Ms. Vicki Rachel-Graham, Registrar by E-mail: v-rachel@northwestern.edu by Fax 312-238-1186 or by mail: NUPOC, Room 1712, 345 East Superior Street, Chicago, IL 60611

Ken Akashi, M.D. (1934-2005)

By

R. J. Garrick, Ph.D. and Michael K. Yoshida, M.D.

The death of Ken Akashi, M.D., on November 5, 2005 marked the passing of an era during which his name was synonymous with rehabilitation medicine in Japan. Professor Akashi was recognized for developing and promoting clinical rehabilitation medicine in Japan and for his international contributions to physical medicine and rehabilitation. In 1980 Dr. Akashi was awarded Japan's very first certificate in rehabilitation medicine, just as in 1947 Dr. John S. Coulter of Northwestern University had been awarded the USA's very first certificate in physical medicine and rehabilitation.

During his career, Dr. Akashi attended and organized many symposia where he met with foremost leaders in the field of rehabilitation, rehabilitation engineering, prosthetics and orthotics, and medical education. As Executive Director of the Japanese Association of Rehabilitation Medicine (JARM), Dr. Akashi was Chairman of the 18th Congress of JARM (1981). He was a talented teacher, devoted mentor and caring physician. Friends, colleagues and patients invariably recalled his

benevolent personal characteristics of unpossessing kindness and sincerity.

Dr. Ken Akashi's long time professional colleague and friend, Dudley S. Childress, Ph.D., reflected, "He was such a nice person. Of course, we recall all his professional qualifications

and know he made many contributions, but most of all, he was a genuine and kind person."

In Japan, early proponents of rehabilitation medicine emerged from training in orthopedic surgery and sought a more holistic, humanistic approach to the amelioration or correction of physical disabilities. Dr. Akashi was among a handful of such orthopedists who first attained their medical license in Japan, then studied rehabilitation medicine in the United States. Upon obtaining his medical degree, Dr. Akashi entered the Department of Orthopedic Surgery at Okayama University in 1960. From July 1963, he was trained in Rehabilitation Medicine at St. Francis General Hospital in Pittsburgh; and from July 1964 through December 1966 he worked in what



Ken Akashi, M.D.
(1934-2005)



Ken Akashi, M.D. (left) with Dudley S. Childress, Ph.D. (right) in 1984.

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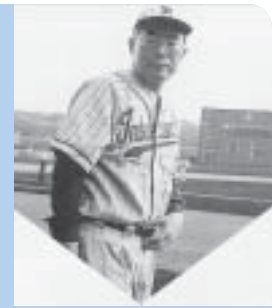
is now the Rusk Institute of Rehabilitation Medicine at New York University. Upon his return to Japan, he resumed work at the Department of Orthopedic Surgery, Okayama University. By 1975, Dr. Akashi launched and directed the Department of Rehabilitation Medicine at Kawasaki Medical School where he continued as Professor and Chair until his retirement in 2000. After his retirement from Kawasaki Medical School, he served as Consultant to the Department of Rehabilitative Medicine, Kurashiki Rehabilitation Hospital and was on the Editorial Board for Topics in Stroke Rehabilitation (Thomasland Publishers, 2006).

Recollections expressed by Dr. Akashi's colleagues and students describe a sincere, collegial person, a physician invariably sensitive to the needs and wishes of others. A humanist and artist, Dr. Akashi loved music and was an accomplished player of both violin and viola. Often Dr. Akashi was invited to perform at medical conferences and other gatherings. One such performance included cellist,

Dr. Hideo Takechi, former Director of Kibi Kogen Rehabilitation Center. Dr. Takechi reflected, *"I feel that Dr. Akashi has FAF. FAF is a German acronym for 'frei aber froh,' which means 'free but happy.'* In *Brahms' Quartet*

No. 2 there are many FAF. This was Brahms' motto, and I believe it also describes Dr. Akashi."

Dr. Akashi leaves an important heritage in rehabilitation medicine among his colleagues, students and patients, most of whom considered him a friend. Approachable and unpretentious, throughout his 40-year career Ken Akashi was a prime mover of rehabilitation medicine in Japan and abroad.



Dr. Akashi played on the rehab department's baseball team, aptly named "Independence."

H. Richard Lehneis, Ph.D., CPO (1933-2005)

A leader in orthotics and prosthetics, H. Richard Lehneis, Ph.D., CPO, died in October 2005. An early proponent of using lightweight, composite materials and molded plastic, Dr. Lehneis helped modernize prosthetics and orthotics. He sought to improve patient mobility by making comfort and function paramount in prosthetic and orthotic fittings.

Research Professor and Consultant at NYU School of Medicine and Director of Orthotics and Prosthetics at the Rusk Institute of Rehabilitation Medicine in New York, Dr. Lehneis tirelessly worked to improve P&O materials, design and

technology. He held eight patents for his innovations. In 1969 he established Lehneis Orthotic and Prosthetic Associates where his three sons joined him in the family business. He also served as engineering consultant to the U.S. Department of Veterans Affairs and Case Western Reserve University in Cleveland, Ohio.

In 1999, he received from the American Academy of Orthotists and Prosthetists the Titus Ferguson Award in recognition of his lifetime achievement and contributions to the profession of orthotics and prosthetics. He made lasting contributions to P&O and will be missed.



NEWS FROM THE DEPARTMENT OF VETERANS AFFAIRS

Polytrauma Rehabilitation Centers: A New Model of Care for Modern Warfare

By

Faiza Humayun, M.D., Steven Scott, D.O.
and Joel Scholten, M.D.

With a Congressional mandate in the spring of 2005, the Department of Veterans' Affairs created four Polytrauma Rehabilitation Centers to provide specialized, intensive, comprehensive rehabilitation care for military Service Members and Veterans who sustained multiple and severe injuries related to combat. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) accredits the VA Medical Centers (VAMC) where the Polytrauma Rehabilitation Centers are located; and the Commission on Accreditation of Rehabilitation Facilities (CARF) accredits the inpatient rehabilitation programs. These four Polytrauma Rehabilitation Centers are located in Minneapolis, MN, Palo Alto, CA, Richmond, VA and Tampa, FL. Each Center offers unique and highly specialized rehabilitation and assembles experts who work individually and as teams to provide innovative, personalized treatment to help the injured Service Member or Veteran achieve optimal function and independence within a community.

Increasingly, Service Personnel are exposed to high-energy explosions and blasts. Difficult to detect and protect against, the blast source may be an improvised

explosive device (IED) used as a car bomb or package bomb encountered in a civilian setting, torpedoes involved in naval warfare, or rockets and mortar shells on the field of battle. As the blast wave causes overpressure in the hollow organs of the lungs, bowels and inner ear, it also rips into the limbs resulting in traumatic amputations. Flying shrapnel fragments tear soft tissues and may penetrate the brain and body cavities. A blast can be strong enough to displace the entire body and associated fire may burn through the full thickness of a soldier's skin. The reality of modern warfare is that blast injuries tend to be multiple and severe, resulting in loss of limbs, traumatic brain injuries, spinal cord injuries, burns, visual impairments, nerve damage, complex orthopedic injuries, hearing disorders and mental health concerns.

Brain injury impacts the rehabilitation of all other impairments. Traditional rehabilitation techniques rely largely on intact thinking, learning, memory, language and visual-spatial skills. For example, prosthetic training with coordination and strengthening of various muscle groups can be challenging, even in the otherwise healthy patient. When the amputee is further limited by visual field deficits, neglect, hemiparesis or inability to carry over learned skills, the task can be considerably daunting. It is for this reason that the four Polytrauma Rehabilitation Centers were established in VAMC with pre-existing CARF accredited Brain Injury Programs.

Returning the Service Member to his or her maximum functional potential often requires the collaborative efforts of an interdisciplinary team of specialists. At the Tampa VAMC / Polytrauma

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Rehabilitation Center, Multidisciplinary Rounds are held every Tuesday and Friday. Specialists in Physical Medicine and Rehabilitation, Spinal Cord Injury, Infectious Disease, General Surgery, Wound Care, Internal Medicine, Social Work, and Neuropsychology address the complex needs of our soldiers at bedside. As the day-to-day needs of the patients unfold, Physical, Occupational and Speech Therapists, Counselors, Audiologists, Neurosurgeons, Orthopedic Surgeons, Psychiatrists, Prosthetists, Dieticians, and Nurses provide a new, advanced model of comprehensive care developed to treat the war's most catastrophically wounded troops.

Staff Sergeant Paul R. Marek is a 34-year-old active duty Service Member who sustained multiple injuries due to IED blast. The explosion left him with cognitive deficits, left hemiparesis, burns, dysarthria, and traumatic amputations of the right forearm and lower leg. His rehabilitation and prosthetic efforts have been complicated by multiple infections, development of abnormal bony growths, phantom and musculoskeletal pain, and impaired skin integrity.

Staff Sergeant Marek's complex prosthetic needs required evaluation and planning by team prosthetists. After adequate wound healing, the skin was prepared for prosthetic wear with emollients. A cosmetic prosthesis for the upper extremity was fashioned to improve body image and, after strengthening the necessary musculature, Staff Sergeant Marek advanced to a body-powered prosthesis. A team of prosthetists assembled and proposed designs for the ideal liner and socket for the right below the knee prosthesis. Complicating factors included burns, a prominent subcutaneous screw from fixation of a tibial fracture, and a poorly healing incision. After fitting,



Blast from explosives can cause severe and complex injuries that are treated comprehensively at VAMC Polytrauma Rehabilitation Centers.

Staff Sergeant Marek slowly built up tolerance to prosthetic wear and already has started to take a few steps with a walker.

The ubiquity of explosive devices used in modern warfare demands a new approach for treating the wounded. The VAMC Polytrauma Rehabilitation Centers have been established to serve the complex needs of our soldiers as they recover and move forward toward a challenging, but hopeful future.

We appreciate Robert M. Baum for coordinating this article. Please contact Mr. Baum with your suggestions for future articles:

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ABC-7 News Features VA Chicago Motion Analysis Lab

Chicago's ABC-7 News Team joined Northwestern Memorial Hospital neurosurgeons **Stephen Ondra, M.D.**, and **Aruna Ganju, M.D.**, when they visited the VA Chicago Motion Analysis Laboratory located at NURERP to observe fluoroscopic images of the reconstructed spine of a former football player. Local ABC Channel 7 spotlighted the work as "Medicine in Motion" on December 21, 2005. "The Role of the Spine in Human Walking" is a project conducted collaboratively by our laboratory and Northwestern University Department of Neurological Surgery.

Suffering from years of increasingly severe back pain with diminished physical ability and unsatisfactory treatment, finally, barely able to stand, the retired athlete selected surgical reconstruction of his spine. To provide comparison, his neurosurgeons examined him in the Motion Lab both before and after his surgery.

Motion analysis is noninvasive and valuable. After placing sensors at key locations on his body, cameras filmed him walking and standing. Details of the former athlete's posture and gait were transmitted to computers where his movements were visible on screen as a stick figure, providing an objective means to measure and compare his pre- and post-surgical posture and gait. Subjectively, the athlete reported significant reduction of pain and return to physical activity; and objectively, physicians and researchers observed measurable improvements in his posture and gait. The objective measurements of motion analysis substantiated the patient's experience.

See the motion analysis film at:

<http://abclocal.go.com/wls/story?section=health&id=3748980>

NURERC News

September 2005

Steven A. Gard, Ph.D., presented "Biomechanics of Lower Limb Function and Gait" at the ISPO course "Orthotic Management and Related Therapies after Stroke" in Arnhem, The Netherlands.

Steven A. Gard, Ph.D., presented "Use of Quantitative Gait analysis for the Evaluation of Walking Performance" at an AAOP State of the Science meeting on Lower Limb Prosthetics Outcome Measurements.

Craig Heckathorne, M.Sc., attended an Otto Bock training course.

November 2005

Angelika N. Zissimopoulos, B. S., presented a paper co-authored with **Stefania Fatone, Ph.D., BPO**, and **Steven A. Gard, Ph.D.**, entitled "Functional Benefits of Stance-Control Orthotic Knee Joints: Preliminary Data" at the 2005 Visiting Professor Program sponsored by Chicago Children's Memorial Medical Center's Motion Analysis Center on November 4, 2005.

Sara Koehler, M.S., completed her Master of Science degree at Northwestern University, Biomedical Engineering. She successfully defended her master's thesis, "An Investigation of Shock-Absorbing Prosthetic Components for Persons with Transfemoral Amputations" on November 7, 2005. Congratulations!

December 2005

Po-Fu Su, M.S., successfully defended his doctoral thesis proposal. Congratulations!

A. Bolu Ajiboye, M.S., attended a National Institutes of Health meeting in Rockville, Maryland in conjunction with his National Research Student Award (NRSA) Fellowship.

January 2006

Ryan Williams, B. S., a first year graduate student in Biomedical Engineering at Northwestern University has begun working at the NURERP laboratory three days per week. Born and raised in Albuquerque, NM, Ryan attended Santa Clara University before he transferred to Northwestern University where he will

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complete his undergraduate degree in Mechanical Engineering. For one year he worked with “Boys Hope Girls Hope,” a non-profit organization where he assisted highly motivated, inner-city high school youth at an educational residence program in Evanston. Currently, he is working on the Masters’ degree component in the Northwestern University biomedical engineering doctoral program. He is working with **Steven A. Gard, Ph.D., Andrew Hansen, Ph.D.,** and **Brian Ruhe, M.S.** to develop an ankle-foot prosthesis capable of walking on slopes. Ryan’s non-academic interests include sports, reading, watching movies and working out.

Steven A. Gard, Ph.D., was an invited speaker at an AAOP State of the Science meeting in Seattle, WA. He presented “Teaching Literature Review to P&O Students.”

Dudley S. Childress, Ph.D., attended an Institute of Medicine meeting in Washington, D.C.

February 2006

Kengo Ohnishi, Ph.D., Visiting Researcher at NURERP during the past year, has returned to Oita University in Kyushu, Japan. We appreciate his contributions and wish him every success.

Alex Ryan, M.D., M.S., from the University of Pittsburgh visited NURERP laboratory for one month. He is considering a graduate degree in Biomedical Engineering.

Stefania Fatone, Ph.D., was invited to present “KAFOs and HKAFOs for Ambulation: Literature Review and Ranking” at AAOP State of the Science Conference #7: “KAFOs for Ambulation” held in Chicago, IL.

March 2006

Steven A. Gard, Ph.D., received a Research Award from the American Academy of Orthotists and Prosthetists (AAOP) at the annual meeting. This award recognizes those individuals who perform outstanding research, and publish or present the results at Academy-sponsored scientific education programs within the prior three years

Stefania Fatone, Ph.D., and **Andrew Hansen, Ph.D.,** were awarded the Howard R. Thranhardt Lecture

Award at the 2006 American Academy of Orthotists and Prosthetists Annual Meeting in Chicago. Program attendees selected their work, “Effect of an Ankle Foot Orthosis on Roll-Over Shape in People with Hemiplegia,” as one of two Thranhardt Award winners. Their presentation was highlighted as a Howard R. Thranhardt Lecture. They will receive a \$500 honorarium.

Dudley S. Childress, Ph.D., was invited to address the Pros-TH-otics Congress held in Wellington, New Zealand from March 24-26, 2006. During the Plenary Session, Dr. Childress spoke on “Shape: The Portal of Entry to Function” and during the Rehabilitation Session, he presented “Books for a Busman’s Holiday.”

Lexyne L. McNealy, M.S., completed her Master of Science degree at Northwestern University, Biomedical Engineering on March 10, 2006. She successfully defended her master’s thesis, which examined “The Effect of Prosthetic Ankle Motion on the Gait of Persons with Bilateral Transfemoral Amputations.” Congratulations!

Kudos to NURERC Personnel

Northwestern University RERC depends on the talents and efforts of many individuals. We wish to congratulate **Dilip B. Thaker, Instrument Maker,** who is recognized for his 15 years of service; **Kerice Tucker, Research Engineer,** who is recognized for his 10 years of service; and **Elizabeth Schreiber, Program Assistant,** who is recognized for her 5 years of service. In addition to our congratulations, we wish to express our heart-felt appreciation to all three for their valuable service.

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ISSN 1055-7156

Northwestern University

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Rehabilitation Engineering Research Program

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