



# HERL Newsletter

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 2007

## New HERL VA Pre and Post-Doctoral Fellows

The Department of Veterans Affairs facilitates unique training and mentoring opportunities for researchers dedicated to improving veterans' lives.

VA Rehabilitation Research and Development offers a pre-doctoral fellowship program to foster PhD-level rehabilitation research that directly relates to veterans with disabilities and enhances rehab research capacity within VA. The program gives students a chance to become experts in clinical research and prepare to become leaders in rehab research and clinical care after receiving their doctoral degrees. Many VA pre-doctoral fellows go on to work in VA research.

The VA provides mentored awards for post-doctoral researchers as well. The VA Advanced Spinal Cord Injury Medicine (SCIM) Fellowship provides in-depth education in spinal cord injury medicine practice, research, and leadership. This program takes advantage of the international preeminence of VA's spinal cord injury medicine resources to provide outstanding training opportunities and contribute to the improvement of clinical practice and the scholarly pursuit of spinal cord injury medicine. The program also serves to retain outstanding individuals committed to advancing the quality of care and research for spinal cord injury medicine within the VA.

This year, three investigators joined the legacy of HERL's VA pre-doctoral and post-doctoral fellows. Brad Impink and Ian Rice, graduate students studying at HERL since 2001 and 2002, respectively, were awarded VA Pre-Doctoral Fellowships. Jennifer Yang, MD also joined HERL as a VA Post-Doctoral Fellow. HERL Medical Director Michael Boninger, MD mentors Ian, Brad, and Dr. Yang.

The VA awarded Dr. Boninger a Post-Resident Advanced Fellowship Program in Spinal Cord Injury, allowing him to support and mentor two post-doctoral fellows per year. Dr. Jennifer Yang joined his fellowship program in June 2006. She earned her medical doctorate from the University of the Philippines School of Medicine in 1999. Prior to coming to HERL, Dr. Yang was

Chief Resident at Temple University Hospital's Department of Physical Medicine and Rehab (PM&R) and completed a Spinal Cord Injury Medicine Fellowship at the University of Pittsburgh Department of PM&R. Dr. Yang is investigating Carpal Tunnel Syndrome in manual wheelchair users, wheelchair users with spina bifida, and manual wheelchair propulsion biomechanics during her post-doctoral training.



*New VA HERL Fellows Brad Impink, Ian Rice, and Dr. Jennifer Yang*

Brad Impink earned his B.S. in Bioengineering from the University of Pittsburgh in 2002 and is working towards his PhD in Bioengineering. Brad has been conducting research since 2001 when he was a HERL undergraduate summer intern. He continued to work at HERL as a research associate and eventually a graduate student researcher. Brad has co-authored several peer-reviewed publications regarding wheelchair propulsion biomechanics and upper extremity pathology. Brad has been conditionally funded a VA Pre-Doctoral Fellowship to research

Ultrasonographic Evaluation of the Median Nerve in Manual Wheelchair Users.

Ian Rice is a doctoral student in The Department of Rehabilitation Science and Technology at The University of Pittsburgh. He received a B.S in Psychology from University of Illinois and an MS in Occupational Therapy from Washington University. Ian has competed professionally in wheelchair racing for seven years, racing in over 35 marathons. Ian won the Columbus Marathon, the Chicago Marathon twice, the 10 kilometer road world championships, placed third at the Boston Marathon, and was a member of the 2000 Sydney Paralympics racing team. Ian's pre-doctoral research focuses on Manual Wheelchair Propulsion Training. His goal is to teach people how to propel their wheelchairs based on sound scientific evidence to help reduce pain and injury.

*-Christine Heiner*

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## Rehabilitation of the Combat Amputee: Consensus Conference and Creating a Roadmap for the Future

In order to ensure optimal treatment and rehab of young combat related amputees, the military care community needs a “road map” to provide focus for their efforts and priorities. With this mission in mind, HERL Director Dr. Rory Cooper and LTC Paul Pasquina, MD, Medical Director of the Amputee Care Program at Walter Reed Army Medical Center, organized a three-day symposium entitled “Rehabilitation of the Combat Amputee—Consensus Conference and Creating a Roadmap for the Future.” The symposium was held at the Center for the Intrepid/Brooke Army Medical Center in Fort Sam Houston, Texas from September 17-19, 2007.

The event united VA, civilian and military experts in amputee care and rehabilitation to help establish consensus on standard of care issues, as well as to help identify areas most needed for further clinical, technical, translational and developmental research. The symposium work will be written into a textbook, “Rehabilitation of the Combat Amputee” and published by the Borden Institute as part of their Textbooks on Military Medicine series. Drs. Cooper and Pasquina will edit the textbook. Experts in key research areas also lectured at the symposium, allowing the University of Pittsburgh to provide a maximum of 23 AMA PRA Category 1 Credits<sup>TM</sup>/ 2.3 continuing education credits for the invited attendees.

A total of 18 experts lectured during the 3-day symposium, including engineers, physiatrists, therapists, surgeons, historians, psychologists, neurologists, prosthetists, audiologists, and experts in pain management and veterans benefits. The

speakers came mainly from the VA, the Department of Defense, universities, and private companies and institutions.

Also, the 100-120 symposium attendees broke out into groups organized by specialty—Programs and Systems Practices, Surgical Management and Planning, Special Medical Considerations, Physical

Rehabilitation and Therapeutic Interventions, and Prosthetic Devices and Assistive Technologies. Prior to the conference, attendees were asked to prepare book chapters in their areas on expertise. The breakout groups discussed and edited each chapter, ensuring the written text met consensus opinion.

HERL graduate students Jennifer Mercer, Michelle Sporer, Amol Karmarkar, Garrett Grindle, and Brad Impink were each assigned to a breakout group at the symposium to

transcribe the discussions and facilitate development of the textbook chapters. They will also write the final chapter of the textbook, which will summarize the textbook and recommend future research.

Support staff who organized and attended the symposium were Kathy Rasmussen and COL Rebecca Hooper from the Center for the Intrepid, and Paula Stankovic, Amy Donovan, Jennifer Lee-Hooper, and Christine Heiner from HERL and the University of Pittsburgh Department of Rehabilitation Science & Technology.

Drs. Cooper and Pasquina are working towards a September 2008 publication date for this monumental textbook.

- Christine Heiner



*Dr. Pasquina (top) and Dr. Cooper (right) will edit the textbook on the symposium work. Bottom: MAJ Thank McCann MD lectures on special medical considerations for amputees to the symposium. 100-120 people attended the 3-day*

## CURRENT RESEARCH ABSTRACTS

### Assessing the Mobility Characteristics and Activity Levels of Manual Wheelchair Users

Michelle Tolerico, M.S., Dan Ding, Ph.D., Rory Cooper, Ph.D., Donald Spaeth, Ph.D., Shirley Fitzgerald, Ph.D., Rosemarie Cooper, M.P.T., Annmarie Kelleher, M.S., OTR/L, Michael Boninger, M.D.

Full article published in *Journal of Rehabilitation Research and Development*, pp. 561-572, Vol. 44, No. 4, 2007.

**Purpose of work:** Although research shows that participating in an active lifestyle is beneficial to maintaining quality of life, a majority of wheelchair users are inactive. The goal of this study was to investigate the mobility characteristics and activity levels of manual wheelchair users in the residential setting and at the National Veterans Wheelchair Games (NVWG).

**Procedures:** Fifty-two manual wheelchair users completed a brief survey and their activity was monitored with a custom data logger over a period of 13 or 20 days.

**Results:** We found that the manual wheelchair users traveled an average of 2,457 meters per day at a speed of 0.79 meters per second for 8.3 hours per day



*HERL researchers built dataloggers like the one pictured here to collect data manual wheelchair users' physical activity*

while using their primary wheelchair in the home environment. We also found that participants traveled further and faster and were active for more hours during an average day at the NVWG than in the home environment. We found that manual wheelchair users who were employed were more active than those who were unemployed.

**Relevance to wheelchair users:** Attaining a level of physical activity is important in reducing the risk

of secondary health problems. Results from this study provide a better understanding of the activity levels achieved by manual wheelchair users and insight into factors that may influence this activity.

*-Michelle Tolerico, M.S.*

### Review of Use of Restraints and Lap Belts with Wheelchair Users

Eliana Chaves Ferretti, Ph.D., Rory Cooper, Ph.D., Diane Collins, Ph.D.,

Amol Karmarkar, M.S., Rosemarie Cooper, M.P.T.

Full article published in *Assistive Technology Journal*, Vol. 19.2, pp. 94-107, Summer 2007.

**Purpose of the Work.** The purpose of this study was to conduct a review of available literature from 1966-2006, to identify the risks and benefits associated with lap-belts while seated in wheelchairs.

**Procedures.** Twenty five studies which met the criteria were included for review. Nine studies reported the frequency of asphyxial deaths caused by physical restraints, 9 studies reported the long-term complication and indirect adverse effects of physical restraints and lap belt use and 7 studies reported the benefits of physical restraints and lap-belts with individuals using wheelchairs.

**Results.** Despite the weak evidence, the results suggest a considerable number of deaths from asphyxia caused by the use of physical restraints occurred each year in the US. The majority of the deaths occurred in nursing homes, followed by hospitals and then the

home of the person. Most deaths occurred while persons were restrained in wheelchairs or beds.

**Relevance to wheelchair users.** Caution needs to be exercised when using restraints or positioning belts. In addition, other seating and environment alternatives should be explored prior to using restraints or positioning belts, such as power wheelchair seating options. Positioning belts may reduce risk of falls from wheelchairs and should be given careful consideration, but caution should be exercised if the individual cannot open the latch independently. Also, the duration of use of the physical restraint should be limited. Several factors should be considered when devising a better quality of physical restraints services provided by healthcare professionals. These efforts can lead to improved safety and quality of life of individuals who use wheelchairs.

*-Eliana Chaves, Ph.D.*

## CURRENT RESEARCH ABSTRACTS

### Multi-site Comparison of Wheelchair Propulsion Kinetics in Persons with Paraplegia

Alicia M. Koontz, PhD, RET, Yusheng Yang, PhD, Robert Price, MSME,  
Michelle L. Tolerico, MS, Carmen P. DiGiovine, PhD, RET, Sue Ann Sisto, PhD,  
Rory A. Cooper, PhD, Michael L. Boninger, MD

Full article published in *Journal of Rehabilitation Research and Development*, pp. 449-458, Vol. 44, No. 3, 2007.

**Purpose of Work:** Research is being conducted at three different institutions (HERL, Kessler Medical Rehabilitation Research and Education Corporation, West Orange, NJ (KMRREC), and the University of Washington, Seattle, WA, (UW)) to study manual wheelchair propulsion techniques and the relationship between technique and the development of wrist and shoulder injuries in wheelchair users with paraplegia. Before the problem can be investigated in more detail, it was important to check that the data was consistent across sites so that each site's data could be combined into one large dataset.

**Subjects/Procedures:** Forty-two manual wheelchair users (14 from each site) with paraplegia performed a slow and fast steady-state propulsion trial and an acceleration-brake-coast down trial on a wheelchair roller system while their propulsion forces and moment about the hub were measured using an instrumented wheelchair wheel called the SMARTWheel™.

**Results:** Participants at one institution were discovered to push with less force and torque compared to the other two



*Experimental setup at HERL showing the person and wheelchair secured to the dynamometer and the computer monitor that displays the speed feedback program.*

sites. Further analysis revealed that the wheelchair roller system at this site had lower rolling resistance. A method was developed to correct the data so that one large dataset could be compiled.

**Relevance to wheelchair users:** Our previous Pittsburgh-based work has shown that wheelchair propulsion is partly responsible for the development of wrist and shoulder pain and injury among wheelchair users. We are collecting data from wheelchair users from different geo-

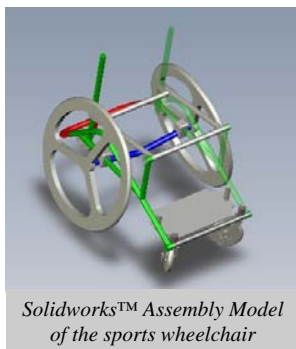
graphical regions to study in more detail the complex relationship between wheelchair and propulsion related factors, user characteristics, and the development of wrist and shoulder pain and injury. Before we can proceed with this investigation we needed to verify that the data collected at the two new sites (KMRREC and UW) was consistent with the data being collected at the HERL site.

*-Alicia Koontz, Ph.D.*

### A Sports Wheelchair for Low Income Countries

Erica Authier, B.S., Jon Pearlman, Ph.D., Ana Allegretti, M.S., Ian Rice, M.S., Rory Cooper, Ph.D.

Full article published in *Disability and Rehabilitation*, pp. 963-967, Vol. 29, No. 11-12, June 2007.



*Solidworks™ Assembly Model of the sports wheelchair*

**Purpose:** Appropriate wheelchairs for basic mobility needs are still not commonly available in low-income countries, although several organizations are working toward this goal. After basic mobility is secured it is important to provide more diverse assistive technology to allow people with disabilities to more completely participate in

society and live healthy lives. Our goal was to design an affordable sports wheelchair that would allow individuals in low-income countries to participate in basketball.

**Methods:** Design requirements established for the sports wheelchair included: removable anti-tippers, adjustable tension backrest, 24" wheels, adjustable seat dump, vari-

able camber, 4" casters, fore-aft axle position, removable bumpers, height adjustable footrest, four wheels, single anti-tipper (pivot), cost less than \$125 without wheels, 16" seat width and backrest height, and nylon upholstery. The wheelchair was designed using 3D modeling, standard materials, and standard tools.

**Discussion:** An affordable wheelchair, versatile enough to be used for a variety of sports and even everyday use, was designed and prototyped successfully. Documentation for the design including step-by-step directions, engineering drawings, and photographs are available at the Human Engineering Research Laboratories website (<http://www.herlpitt.org/intw.htm>). Future work on the prototype should include design refinement including adaptations for other sports and standards testing.

*-Erica Authier, B.S.*

## CURRENT RESEARCH ABSTRACTS

### New Design and Development of a Manual Wheelchair for India

Emily Zipfel, M.S.; Rory A Cooper, PhD; Jon Pearlman, PhD;  
Rosemarie Cooper, MPT, ATP; Mark McCartney

Full article published in *Disability and Rehabilitation*, pp. 949-962, Vol. 29, No. 11-12, June 2007.

**Purpose of the Work.** The most common methods of delivering assistive technology in developing countries are charitable donations and small-scale production workshops. These methods have had varying degrees of success, thus, a vast need for higher quality wheelchairs still remains. This paper describes a new approach to produce wheelchairs for India, a collaboration undertaken by HERL and a manufacturer in India. A main goal of this publication is to provide the design of an adult manual wheelchair free of charge world-wide. The product development, technology transfer process and the final design are described.

**Procedures.** An iterative process was implemented to design and transfer the wheelchair. The process included: identifying design requirements, constructing prototypes, small production runs, ANSI/RESNA testing, material testing and informal trials with wheelchair users in India. The initial design was developed at HERL. It was then transferred to India. Wheelchairs produced in India were tested at HERL. Failures seen were reported to the manufacturer with design recommendations on how to fix the problems. Subsequent prototypes were retested. Several visits were made by HERL engineers to India to ensure technology transfer success.



**Results.** The final product is a manual folding cross-brace design with several points of adjustability; axle position, seat dump, foot rest and backrest angle. Final pre-production prototypes experienced some fastener failures during ANSI/RESNA durability testing, thus certain key fasteners, such as the cross brace pivot bolt were specified as higher grade steel available in India. To date, trial-run production has begun and an ANSI/RESNA wheelchair test lab constructed in India. Subsequent projects include power and pediatric tilt-in-space wheelchairs.

**Relevance to Wheelchair Users.** The new India chair design has so far proven to be more durable, comfortable and usable than most chairs being provided in developing countries. In developing countries, most people who need wheelchairs have few options in terms of the equipment available. We hope that access to an affordable, durable and usable wheelchair will increase the quality of many people's lives, health outcomes and their ability to perform jobs and activities of daily living. The true evaluation of the design is how well the chair performs in the field over years of use. In order to determine the effectiveness of the wheelchair and make improvements where necessary, outcomes studies need to be implemented in India.

-Emily Zipfel, M.S.

### Comparison of Mobility Device Delivery Within the Department of Veterans Affairs for Individuals with Multiple Sclerosis Versus Spinal Cord Injury

Fabrisia Ambrosio, Ph.D., Michael Boninger, M.D. Shirley G. Fitzgerald, Ph.D.,  
Sandra Hubbard, Ph.D. Steven Schwid, M.D. Rory Cooper, Ph.D.

Full Article Published in *Journal of Rehabilitation Research and Development*, pp. 693-702, Vol. 44, No. 5, 2007.

**Purpose of Work:** The purpose of this study was to: 1.) investigate the demographic differences between veterans with Multiple Sclerosis (V-MS) and Spinal Cord Injury (V-SCI) who were issued a wheelchair through the Veterans Health Administration (VHA) and 2.) describe differences in mobility prescription. **Subjects and Procedures:** The VHA National Patient Care Database and the National Prosthetics Patient Database were merged to obtain demographic and wheelchair distribution information for all veterans with SCI and MS in 2000 and 2001.

**Results:** 7076 V-SCI or V-MS received wheelchairs in the three years investigated, 2154 of which had descriptive information about the type of wheelchair issued. Of these 2154 entries, we found that VMS were less likely to receive the higher quality (based on weight and adjustability) wheelchairs (manual or power) when compared to VSCI

**Relevance to wheelchair users:** The disparity in wheelchair prescription within the VA for these two populations may help explain the reported differences in AT satisfaction.

-Fabrisia Ambrosio, Ph.D.

## CURRENT RESEARCH ABSTRACTS

### Longitudinal Assessment of Vibrations During Manual and Electric Powered Wheelchair Driving over Selected Sidewalk Surfaces

Erik J. Wolf, Ph.D., Rory A. Cooper, Ph.D., Jon Pearlman, Ph.D.

Shirley G. Fitzgerald, Ph.D., Annmarie Kelleher, M.S., OTR/L

Full article published in *Journal of Rehabilitation Research and Development*, pp. 573-580, Vol. 44, No. 4, 2007.

**Purpose of Work:** Individuals in a seated position for long periods of time are at risk of injury and pain due to vibration exposure. Wheelchair users fit this description perfectly, however little research on this has been conducted. The purpose of this study was to evaluate the amount of vibrations transmitted to the user during travel of different sidewalk surfaces over three years.

**Procedures:** Ten unimpaired subjects propelled over nine different sidewalk surfaces in a manual wheelchair and a powered wheelchair in three consecutive years. Vibrations were collected at the seat

and the footrest. One surface was a standard poured concrete sidewalk and each of the other eight was a concrete or brick paver of varying bevels.

**Results:** There were significant differences between surfaces and years for both the manual and power wheelchairs.

**Relevance to Wheelchair Users:** Using smaller bevels on pavers exposes individuals using wheelchairs to less vibration. It is possible to provide sidewalks that are made from concrete or brick pavers that are also safe for wheelchair users.

*-Erik Wolf, PhD*

## Student Attends AIMBE Federal Symposium



*Sara Sibenaller*

Through several classes in the Rehabilitation Science and Technology Masters program, I have learned about the impact of public policy on funding for our work as researchers in the health care industry as well as the impact public policy can have on an individual's ability to access necessary medical equipment and medical care. In September, I had the opportunity to see first

hand the importance of interaction between biomedical researchers and the legislative process when I attended the American Institute for Medical and Biological Engineering's (AIMBE) 2<sup>nd</sup> Annual Federal Symposium held on Capitol Hill in Washington D.C. The two day conference reinforced that it is not only my constitutional right as a United States citizen, but as a researcher, to advocate for legislation and funding supporting medical and biological research.

At first, the thought of lobbying for one's position especially in the historic surroundings of the United States Capitol, seemed like a daunting task. However, through the two day conference I learned how important it is for law makers to hear what issues are important to the people who live in their

states in order to make laws that reflect the needs of their constituents. I also learned skills and techniques in talking with and contacting government representatives.

The most valuable part of the conference was the opportunity to actually visit with legislators and their staff. As part of the group of AIMBE representatives from the University of Pittsburgh and Carnegie Mellon we met with the offices of Senators Arlen Specter and Robert Casey and Congressman Michael Doyle to show support of medical and biological research. All representatives appreciated the information we provided and voiced support for medical and biological engineering research.

Advocating for a position can be challenging, but rewarding as well. Here are some suggestions learned from the conference:

- Be clear about who you represent
- Present your goals in a straightforward manner
- Show that your position is "good policy"

Letters to public officials (written frequently) are very effective in influencing the decisions of our leaders

More information, including presentations from the AIMBE federal symposium, can be found on the American Institute of Medical and Biological Engineering website at [www.aimbe.org](http://www.aimbe.org).

*-Sara Sibenaller*

## Want to participate in a HERL Research Study?

If you are interested in participating in any of these studies, please contact the HERL Clinical Coordinators: Annmarie Kelleher, Emily Teodorski, or Michelle Tolerico at 412-365-4850. Please note that these studies are conducted in Pittsburgh, PA

### Attention Manual Wheelchair Users

*The Human Engineering Research Laboratories is looking for manual wheelchair users to participate in a research study.*

If you are between the ages of 18 and 65, use a manual wheelchair as your main means of Mobility, and do not have a progressive or degenerative disability, you may be eligible to participate in a research study. We are investigating the relationship between wheelchair propulsion and nerve and tendon health. If you agree to participate, we will ask you to come to our lab for various evaluations including, a physical examination, completion of a questionnaire, an ultrasound evaluation of your arm, an

evaluation of how you propel your wheelchair, and possibly nerve conduction studies. The testing is expected to take a maximum of 6 hours and you will be reimbursed \$100 for your participation. Your participation in this study is **strictly voluntary**. All information will be kept **strictly confidential**.

*If you would like to participate or have questions please contact one of the Clinical Coordinators: Michelle, Annmarie or Emily, at (412) 365-4850.*

Principal Investigator:

Michael L. Boninger, MD

Human Engineering Research Laboratories

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## New Web Community for Wheelchair Users

Disaboom.com was founded by Dr. J. Glen House, a physician specializing in physical medicine and rehabilitation who is also a quadriplegic. His firsthand knowledge of the challenges faced by individuals with disabilities and those whose lives they touch has driven the Disaboom.com mission: to create the first comprehensive, evolving source of information, insight, and personal engagement for the disability community.

This extremely comprehensive web site has health, dating and living articles, job postings, discussion boards, and hundreds of accessibility reviews of restaurants, hotels, cruises, attractions, and facilities. Users also provide reviews of wheelchairs and other assistive equipment. Clicking the "My Disaboom" link allow users to become members and closely interact among this unique online community. Members can make friends, share their stories, and post photos and blogs, and help others by building Disaboom's resources. The Disaboom social network comes together on the "community" page, where members' bios, profiles, photos, and blogs are posted. Disaboom's "Media Room" contains tons of video, many on adaptive sports (you've got to check out the instructional video on adaptive skydiving!)

Join this new online community by visiting

[www.disaboom.com](http://www.disaboom.com).

## HERL in the Community

HERL walkers formed a team to raise over \$500 for **Easter Seals "Walk with Me"** on July 15, 2007 at the Pittsburgh Zoo. The HERL walkers were Rory and Rosemarie Cooper, Mark and Joan McCartney, Annmarie, Presley, and Kayleigh Kelleher, Harshal Mahajan, and Christine Heiner.

HERL students Padmaja Kankipati, Mike Turkovich, and Elise Ferguson attended the **Disability Pride Rally** on July 26, 2007. Organized by Three Rivers Center for Independent Living and the Kittanning Investigative Group, the event at Waterfront Park in Kittanning commemorated the 17th anniversary of the Americans with Disabilities Act.

HERL sponsored **HOPE Network's 3rd annual Las Vegas Night** on November 2, 2007. The event raised funds to support the Steel City Starz, our local women's wheelchair basketball team in Pittsburgh.

## HERL PUBLICATIONS

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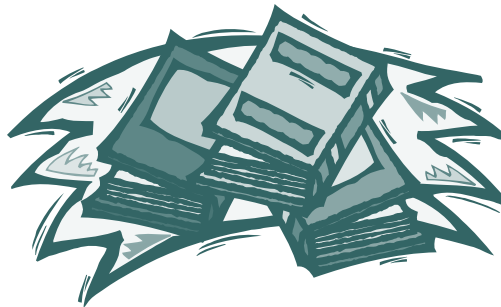
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## ACCOMPLISHMENTS AND AWARDS



*Dr. Rory Cooper received the 2007 da Vinci Lifetime Achievement Award on Sept. 28*

The National MS Society Michigan Chapter formally presented HERL Director **Rory Cooper, PhD** with their da Vinci Lifetime Achievement Award at a gala event at the Ritz-Carlton in Dearborn, Michigan on September 28.

Dr. Cooper also became a Biomedical Engineering Society Fellow on Sept. 28. BMES awards Fellow status to Society members

who demonstrate exceptional achievements and experience in the field of biomedical engineering, and a record of membership and participation in the Society.

HERL Medical Director **Michael Boninger, MD** was appointed Interim Chair of the Department of Physical Medicine and Rehabilitation at the University of Pittsburgh.

**ment of Measurement Tools for Propulsion Training in the Natural Environment.** Project Principle Investigator: Dan Ding, Ph.D. **Project Title: Effects of Handrim Technology on Upper Extremity Musculoskeletal Injury.** Project Principle Investigator: Michael Boninger, MD. National Institute of Disability Rehabilitation Research.

**Manual Wheelchair Propulsion Training.** Principle Investigator: Ian Rice, M.S. Dept. of Veterans Affairs, Rehab Research and Development.

**Development of a Lightweight Durable Adjustable Composite Backrest.** University of Pittsburgh Principle Investigator: Rory Cooper, Ph.D. National Institutes of Health.

**International Training and Research on Assistive Technologies for India and other Low-Income Countries.** Principle Investigator: Rory Cooper, Ph.D. National Science Foundation.

**Effect of Cross Slope on Accessibility for Manual Wheelchair Users.** Principle Investigator: Rory Cooper, Ph.D. U.S. Access Board – Department of Justice .

**Rehabilitation of the Combat Amputee Consensus Conference and Creating a Roadmap for the Future.** Principle Investigator: Rory Cooper, Ph.D. U.S. Army.

**Computer-Based and Virtual Assessments of Power Wheelchair Mobility.** Principle Investigators: Rory Cooper, PhD. and Brad Dicianno, M.D. Dept. of Veterans Affairs, Rehab Research and Development. (conditionally funded)

**Ultrasonographic Evaluation of the Median Nerve in Manual Wheelchair Users.** Principle Investigator: Brad Impink, B.S. Dept. of Veterans Affairs, Rehab Research and Development. (conditionally funded)

**Accessible Website Design for Cognitive Impairment: e.g. Schizophrenia.** Principle Investigator: Armando Rotondi, Ph.D. Co-Investigator: Richard Simpson, Ph.D. Dept. of Veterans Affairs, Rehab Research and Development. (conditionally funded)

## News from the Department of Rehabilitation Science and Technology

The Department of RST at the University of Pittsburgh organized a second **OIF/OEF Community Response Symposium** at Hiram G. Andrews Center in Johnstown, PA, on July 24, 2007. The symposium addressed returning veterans' needs and featured world renowned experts from Walter Reed Army Medical Center, the VA, the Department of Defense, and the Defense and Veterans Brain Injury Center, as well as opening remarks from Congressman John P. Murtha. The speakers covered topics ranging from amputations, brain injury, and post-traumatic stress disorder, and provided valuable information for veterans to connect to service groups such as the US Wounded Warrior Program.

## NEW HERL GRANTS

Rehab Engineering Research Center on Recreational Technology and Exercise Physiology Benefiting Persons with Disabilities, Chicago. **Project Title: Utility of Common Activity Monitoring Devices in Measuring Energy Expenditure in Individuals with SCI.** **Project Principle Investigator: Dan Ding, Ph.D.** National Institute of Disability Rehabilitation Research.

Rehab Engineering Research Center on Spinal Cord Injury, University of Pittsburgh, SHRS. **Project Title: Develop-**

**ment of Measurement Tools for Propulsion Training in the Natural Environment.** Project Principle Investigator: Dan Ding, Ph.D. **Project Title: Effects of Handrim Technology on Upper Extremity Musculoskeletal Injury.** Project Principle Investigator: Michael Boninger, MD. National Institute of Disability Rehabilitation Research.

**Manual Wheelchair Propulsion Training.** Principle Investigator: Ian Rice, M.S. Dept. of Veterans Affairs, Rehab Research and Development.

**Development of a Lightweight Durable Adjustable Composite Backrest.** University of Pittsburgh Principle Investigator: Rory Cooper, Ph.D. National Institutes of Health.

**International Training and Research on Assistive Technologies for India and other Low-Income Countries.** Principle Investigator: Rory Cooper, Ph.D. National Science Foundation.

**Effect of Cross Slope on Accessibility for Manual Wheelchair Users.** Principle Investigator: Rory Cooper, Ph.D. U.S. Access Board – Department of Justice .

**Rehabilitation of the Combat Amputee Consensus Conference and Creating a Roadmap for the Future.** Principle Investigator: Rory Cooper, Ph.D. U.S. Army.

**Computer-Based and Virtual Assessments of Power Wheelchair Mobility.** Principle Investigators: Rory Cooper, PhD. and Brad Dicianno, M.D. Dept. of Veterans Affairs, Rehab Research and Development. (conditionally funded)

**Ultrasonographic Evaluation of the Median Nerve in Manual Wheelchair Users.** Principle Investigator: Brad Impink, B.S. Dept. of Veterans Affairs, Rehab Research and Development. (conditionally funded)

**Accessible Website Design for Cognitive Impairment: e.g. Schizophrenia.** Principle Investigator: Armando Rotondi, Ph.D. Co-Investigator: Richard Simpson, Ph.D. Dept. of Veterans Affairs, Rehab Research and Development. (conditionally funded)

## Quality of Life Summit Deemed a Success

The 1<sup>st</sup> Annual Quality of Life Technology (QoLT) Summit took place on November 7<sup>th</sup> and 8<sup>th</sup>. Organized by Executive Director Jim Osborn and Administrative Associate Melissa Keaton, it was a gathering of stakeholders and thought leaders in the area of using technology to deliver higher quality and more effective and efficient care for older adults and people with disabilities. The Summit brought together over 100 industry professionals, clinicians, researchers and government officials. Included in attendance were 17 technology provider companies and 21 support provider companies. The summit was co-sponsored by the Pennsylvania Department of Community and Economic Development (DCED) and co-organized with PANPHA, the PA Homecare Association, the PA Health Care Association, and the Hiram G. Andrews Center.

The first day focused on panel discussions that addressed independent living, independent transportation, cognitive assistive technologies, and physical assistive technologies. Each panel included technology provid-

ers, support providers, technical and clinical researchers, representatives of government agencies, and other stakeholder organizations. The second day centered on group discussions along the same lines as the panel discussions with similar make-ups of the groups.

Among the government officials in attendance, Deputy Secretary of Aging and Public Welfare Michael Hall, DCED Manufacturing Ombudsman Tom Palisin and PA Senator Rob Wonderling gave keynote addresses regarding policy reform relating to assistive technologies.

Response to the Summit was very positive among the attendees, with most citing it as a unique opportunity to network with a broad, diverse group of stakeholders. The goals of the summit were to develop an outline for a forthcoming QoLT market assessment document, create needs and technology opportunity statements, and establish and foster stronger relationships among QoLT developers and users. All goals were met and documents will be elaborated upon in future summits.

*-Mary Hershberger*

## HERL IN THE MEDIA

**Times Online.com (Beaver County Times and Allegheny Times, April 2007):** Groundbreaking for Vet's New House

[http://www.timesonline.com/site/news.cfm?newsid=18281948&BRD=2305&PAG=461&dept\\_id=478569&rfti=6](http://www.timesonline.com/site/news.cfm?newsid=18281948&BRD=2305&PAG=461&dept_id=478569&rfti=6)

**KPVA Parascope, p. 5, May/June 2007:** Open House Drew a Wide Variety of Guests

**AAP News, pp. 8-9, Summer 2007:** 2007 Annual Meeting Highlights

**Great Games Gazette, p. 2, June 2007:** ADA Medical Research at the Games

<http://www1.va.gov/vetevent/nvvg/2007/docs/2007%20Gazette%20NVWG%20Fri%200622%20Web.pdf>

**Pittsburgh Post Gazette, June 2007:** Thinkers: Wheelchairs Compound Troubles for Some Users

<http://www.post-gazette.com/pg/07176/796910-85.stm>

**Paraplegia News, p. 25, July 2007:** Research Utilization & Dissemination: From Research to the Clinic, Rachel Cowan, MS

**Western PA Hospital News, p. 18, July 2007:** VAPHS Lab Creates Modern Technology to Improve Lives

**Valley News Dispatch, pp. B1-B3, July 2007:** Two Local

Veterans Score Big at National Wheelchair Athletic Competition

**Web Wire, July 2007:** Pitt's Dr. Rory Cooper to Emcee Pennsylvania Disabled Veterans Rehabilitation Vocational Retraining Project: Community Response Symposium II  
<http://www.webwire.com/ViewPressRel.asp?aId=42801>

**What's Happening at the McGowan Institute? August 2007:** Dr. Cooper to Receive Da Vinci Lifetime Achievement Award

<http://www.mirm.pitt.edu/Newsletter/archive/0708newsletter.asp>

**VA Research Currents, p. 5, August/September 2007:** Wheelchair Innovator to be Honored by Multiple Sclerosis Society

[http://www.research.va.gov/resources/pubs/docs/va\\_research\\_currents\\_aug-sept\\_07.pdf](http://www.research.va.gov/resources/pubs/docs/va_research_currents_aug-sept_07.pdf)

**VA Research Advances, September 2007:** Prosthetics/Amputations

<http://www.research.va.gov/resources/pubs/docs/Prosthetics.pdf>

**Mobility Management, pp. 36-37, September 2007:** Q&A With Dr. Rory Cooper

**Paraplegia News, pp. 26-27, October 2007:** People in the News: Dr. Rory Cooper



HERL was honored to host a visit and tour for Dr. Joel Kupersmith, MD, Chief Research and Development Officer for the Department of Veterans Affairs on May 14, 2007. Dr. Kupersmith stopped for a quick photo with Dr. Boninger by the Operation Iraqi Freedom flag in the HERL directors' hallway.

## Upcoming Events

**HOPE Network's 25th Healthsports Ski Classic** will be held from **February 4-5, 2008** at Hidden Valley Ski Resort in the Laurel Mountains of Southwestern PA (about 60 miles from Pittsburgh) For more information or to register for this adaptive skiing event, please contact the Healthsports office at 412-826-2703.



## PVA Magazine Editor Passes Away

Cliff Crase, editor of the Paralyzed Veterans of America (PVA) magazines *Paraplegia News (PN)* and *Sports N' Spokes (SNS)*, sadly passed away on August 15, 2007 at the age of 68 following a courageous battle with pancreatic cancer.



Cliff Crase, 1938-2007

Mr. Crase entertained and enlightened PN's readers for years, first as sports columnist and later as editor (PN, 1978 to present; SNS, 1975 to present. PN is known as "The magazine for wheelchair users—news and information to broaden your horizons and improve your life." SNS Magazine focuses on sports for people with disabilities.

A member of the U.S. Air Force, Cliff was stationed in the Persian Gulf and Mediterranean areas from 1956 to 1959. He sustained a spinal-cord injury in 1959 while an Air Force navigator.

Cliff served as PVA national sports director for ten years, after achieving great success as a national and international wheelchair athlete. He was a gold-medal swimmer on the U.S. Wheelchair Team (1967-70).

He held the world's breaststroke record for 1967 and 1968. He was inducted into the National Wheelchair Athletic Association (NWAA, now Wheelchair Sports of the U.S.A.) in 1973 and is a member of the Upper Michigan Sports Hall of Fame (1979) and the National Wheelchair Basketball Association (NWBA) Hall of Fame (1989). In 2006, he was inducted into the Athletes with Disabilities Hall of Fame (Michigan).

On behalf of PVA, HERL sends our deepest sympathy to Cliff's wife Nancy and their daughter Tori, and to his dedicated team at the PN and SNS, whom he loved and respected dearly. Many of us at HERL knew Cliff personally through PVA, sports, and through his magazines. In addition to his lifelong dedication to PVA, Cliff has helped HERL tremendously by spreading the word about our research in SNS and PN in numerous feature articles over the last decade. Cliff will not be forgotten at HERL.



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VA Center Of Excellence  
For Wheelchairs and  
Associated Rehabilitation  
Engineering



University of Pittsburgh  
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[www.herlpitt.org](http://www.herlpitt.org).

## ARE YOU INTERESTED IN WHEELCHAIR RESEARCH?

The Human Engineering Research Laboratories is recruiting individuals interested in participating in research studies for the **WHEELCHAIR USERS REGISTRY**. If you would like to be notified of Wheelchair related Research Studies for which you may be eligible to participate, contact The Human Engineering Research Laboratories and join the Wheelchair Users Registry. This is an informational resource and notification of a study does not obligate you to participate. You do not need to be located in nor are you required to travel to Pittsburgh in order to participate in research studies. If you are at least 18 years of age, and use a wheelchair or scooter, please contact **Emily, Annmarie, or Michelle** for more information.

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