HERL Newsletter
News from the Human Engineering Research Laboratories
Vol 18, No 1 · January 2019

HAPPY 25th ANNIVERSARY, HERL!

2019 marks the 25th anniversart of the founding of the Human Engineering Research Laboratories. HERL founder and director Dr. Rory Cooper sent out an email to all HERL staff at the beginning of the year looking back at HERL's past and forward to HERL's future. We are reprinting it here.

On Friday, 7 January 1994, in the aftermath of one of Pittsburgh's most brutal snow storms, two rental moving trucks arrived at Building 4 of the Highland Drive VA Medical in Pittsburgh, Pennsylvania. Those trucks were driven by Steve Albright and David VanSickle. Rory and Rosemarie Cooper joined the convoy carrying equipment in their van. The equipment was unloaded by this small team into a vacant locker room and storage area that was to be transformed into HERL. Since the space had not yet been renovated to be useful, it was unpacked in phases as rooms became available. HERL had a small office in Building 2 to work from, where the ACOS For Research offices were, until space could be made available. In addition, some of the labs were set-up in the Cooper's home.

Dr. Michael Boninger had an office in the Kaufman Building, and was partially supported by a NIDRR (now NIDILRR) ARRT Grant. In addition, Dr. Cooper was able to bring a VA Merit Review Grant with him related to the development of a digital version of the SMART-Wheel, and was awarded a new VA Merit Review Grant related to measuring "road-loads" on manual wheelchairs in the real world and on the multi-drum tester. VA Merit Review Grants remain *(Continued on p. 7)*

LEFT: A very early photo of HERL. **BELOW:** HERL in late 2018.

Pittsburgh to Host International Seating Symposium

The University of Pittsburgh Department of Rehabilitation Science and Technology Continuing Education Program is proud to be hosting the 35th International Seating Symposium. The symposium will be March 20-22, 2019 at the David L. Lawrence Convention Center. Pre-Symposium Workshops will also be available March 18-19.

The ISS is the world's leading educational conference and exhibition on the topic of Wheelchair Seating, Mobility, and Associated Assistive Technologies. Attendees will have the opportunity to earn up to 1.7 CEUs. There will be over 140 sessions including pre-symposium workshops, plenary sessions, instructional courses, papers, and posters. The 127,000 square foot exhibit hall will house exhibits from over 130 exhibitors including wheelchair and equipment manufacturers, educators, family-owned, non-profit and advocacy groups. To find out more information or to register for ISS please visit:

http://iss.pitt.edu

Current Research Abstracts

Dicianno BE, Joseph J, Eckstein S, Zigler CK, Quinby E, Schmeler M, Schein R, Pearlman J, Cooper RA, The Voice of the Consumer: A Survey of Veterans and Other Users of Assistive Technology, Military Medicine, pp. e518-e525, Vol. 183, No. 11-12, November 2018.

Introduction: A total of 3.6 million Americans and over 250,000 veterans use wheelchairs. The need for advancements in mobility-assistive technologies is continually growing due to advances in medicine and rehabilitation that preserve and prolong the lives of people with disabilities, increases in the senior population, and increases in the number of veterans and civilians involved in conflict situations. The purpose of this study is to survey a large sample of veterans and other consumers with disabilities who use mobility-assistive technologies to identify priorities for future research and development.
Materials and Methods: This survey asked participants to provide opinions on the importance of developing various mobility-assistive technologies and to rank the importance of certain technologies. Participants were also asked to provide open-ended comments and suggestions.
Results: A total of 1,022 individuals, including 500 veterans, from 49 states within the USA and Puerto Rico completed the survey. The average age of respondents was 54.3 years, and they represented both new and experienced users of mobility-assistive technologies. The largest diagnostic group was spinal cord injury (SCI) (N = 491, 48.0%). Several themes on critical areas of research emerged from the open-ended questions, which generated a total of 1,199 comments.
Conclusion: This survey revealed several themes for future research and development. Advanced wheelchair design, smart device applications, human–machine interfaces, and assistive robotics and intelligent systems emerged as priorities. Survey results also demonstrated the importance for researchers to understand the effects of policy and cost on translational research and to be involved in educating both consumers and providers.

SUMMARY: Survey reveals priorities for future assistive technology research and development.

Bellon JE, Bilderback A, Ahulja-Yende NS. Wilson C, Altieri Dunn SC, Brodine M, Boninger ML, University of Pittsburgh Medical Center Home Transitions Multidisciplinary Care Coordination Reduces Readmissions for Older Adults, Journal of the American Geriatrics Society, pp. 156-163, Vol. 67, 2019.

Objectives: To compare rates of 30- and 90-day hospital readmissions and observation or emergency department (ED) returns of older adults using the University of Pittsburgh Medical Center (UPMC) Health Plan Home Transitions (HT) with those of Medicare fee-for-service (FFS) controls without HT.
Design: Retrospective cohort study.
Setting: Analysis of home health and hospital records from 8 UPMC hospitals in Allegheny County, Pennsylvania, from July 1, 2015, to April 30, 2017.
Participants: HT program participants (n=1,900) and controls (n=1,300).
Intervention: HT is a care transitions program aimed at preventing readmission that identifies older adults at risk of readmission using a robust inclusion algorithm; deploys a multidisciplinary care team, including a nurse practitioner (NP), a social worker (SW), or both; and provides a multimodal service including personalized care planning, education, treatment, monitoring, and communication facilitation.
Measurement: We used multivariable logistic regression to determine the effects of HT on the odds of hospital readmission and observation or ED return, controlling for index admission participant characteristics and home health process measures.
Results: The adjusted odds of 30-day readmission was 0.31 (95% confidence interval (CI) = 0.11–0.87, P = .03) and of 90-day readmission was 0.47 (95% CI=CI = 0.26–0.85, P = .01), for participants at medium risk of readmission in HT who received a team visit. The adjusted odds of 30-day readmission was 0.29 (95% CI = 0.10–0.83, P = .02) for participants at high risk of readmission in HT who received a team visit. The adjusted odds of 30-day observation or ED return was 1.90 (95% CI = 1.28–2.82, P = .001) for participants at medium risk of readmission in HT who received a team visit.
Conclusion: The HT program may be associated with lower odds of 30- and 90-day hospital readmission and counterbalancing higher odds of observation or ED return.

SUMMARY: At-risk Older Adults show fewer hospital readmissions with Home Transitions program.

Collinger JL, Gaunt RA, Schwartz AB, Progress towards restoring upper limb movement and sensation through intracortical brain-computer interfaces, Current Opinion in Biomedical Engineering, pp. 84-92, Vol. 8, December 2018.

Bidirectional brain-computer interfaces (BCIs) make use of neural recordings to restore movement while conveying somatosensory information back to the user through direct stimulation of the nervous system. Decades of research on motor control have enabled impressive demonstrations of brain-controlled arm and hand movements in people with paralysis. Furthermore, recent efforts to restore somatosensation have shown that intracortical microstimulation of somatosensory cortex can generate focal, graded, and digit-specific sensations after chronic spinal cord injury. Non-human primate work suggests that restored somatosensation can be used to improve BCI task performance. The combination of BCI-enabled motor control and sensation is an area of recent investigation for human clinical studies, and the interplay between these two domains represents an opportunity for scientific discovery. Here we review recent progress towards the development of bidirectional BCIs.

SUMMARY: Recent progress in the restoration of limb movement using brain-computer-interfaces is outlined in this article.

Current Research Abstracts

Besemann M, Hebert J, Thompson JM, Cooper RA, Gupta G, Brémault-Phillips S, Dentry SJ, Reflections on recovery, rehabilitation and reintegration of injured service members and veterans from a bio-psychosocial-spiritual perspective, Canadian Journal of Surgery, pp. S219-S231, Vol. 61, No. 6, December 2018.

Medical interventions regarding trauma resuscitation have increased survivorship to levels not previously attained. Multiple examples from recent conflicts illustrate the potential return to high-level function of severely injured service members following medical and rehabilitative interventions. This review addresses the goals of rehabilitation, distills hard-won lessons of the last decade of military trauma and rehabilitation, and recommends the use of a bio-psychosocial-spiritual approach to care that can be applied at all tiers of the health care system. Questions on enabling participation in meaningful life activities include the following: Why do some patients do well and others do not? What elements contribute to positive outcomes? What factors relate to suboptimal results? Lessons learned revolve around the importance of considering the physical, psychosocial and spiritual aspects of a person's well-being; empowering patients by fostering self-efficacy; and helping patients find meaning in life events and set high-level goals. A bio-psychosocial-spiritual model from the rehabilitation medicine literature — the Canadian Model of Occupational Performance and Engagement — is proposed as a guide to the provision of person-centred care and the maximization of a person's functioning posttrauma.

SUMMARY: This study recommends a bio-psychosocial-spiritual approach to rehabilitation.

Daveler B, Gebrosky B, Grindle GG, Cooper RA, Development of the PneuChair: Pneumatic Powered Wheelchair, Technology and Innovation, pp. 11-19(9), Vol. 20, No. 1-2, November 2018.

The lead-acid batteries currently used in powered wheelchairs are heavy, costly to replace, and require long recharge times. Although alternative battery chemistries are available that address some of these issues, they are more expensive and raise concerns about their safety, reliability, and compatibility with powered wheelchairs. Prototypes using alternatives such as solar power, fuel cells, and super capacitors have been developed, yet the feasibility of such devices being commercialized is low. This study focused on using pneumatic power as an alternative energy source in a powered wheelchair called the PneuChair. A participatory action design approach was applied throughout the study, where two sets of focus groups gathered feedback from end-users and mobility device professionals about the conceptual design of the PneuChair and their experiences using the PneuChair at a wheelchair accessible waterpark. The PneuChair was also tested using applicable ANSI/ISO Wheelchair Standards tests. The PneuChair features a tubular aluminum frame driven with a pneumatic joystick. A manufactured prototype passed the applicable ANSI/ISO Wheelchair Standards tests, and the results were equivalent to those of Group 2 electric-powered wheelchairs. As a result, pneumatic power is a feasible alternative energy source for powered wheelchairs that is safer, lighter weight, waterproof, and capable of being quickly recharged in 10 minutes.

SUMMARY: Describes the development of the PneuChair wheelchair that runs solely on compressed air.

Yu D, Parmanto B, Dicianno B, An mHealth App for users with Dexterity Impairments: Acessibility Study, JMIR mHealth and uHealth, e202, Vol. 7. No. 1, 2019.

Background: A mobile health (mHealth) system called iMHere (interactive mobile health and rehabilitation) was developed to support individuals with chronic conditions and disability in their self-management regimens. The initial design of iMHere, however, lacked sufficient accessibility for users with a myriad of dexterity impairments. The accessibility of self-management apps is essential in ensuring usability.
Objective: This study aims to increase the usability of the iMHere system for users with dexterity impairments by increasing the app's accessibility.
Methods: We targeted the accessibility redesign by focusing on the physical presentation and the navigability of the iMHere apps. Six participants presenting with dexterity impairments were included in the usability study of the original and redesigned apps.
Results: We observed a lower number of touches needed to complete tasks (P=.09) and time to complete individual tasks (P=.06) with the redesigned app than with the original app; a significantly lower time for users to complete all tasks (P=.006); and a significantly lower error rate (P=.01) with the redesigned app than with the original app. In fact, no errors occurred with use of the redesigned app. Participant-reported overall average usability of the redesigned app (P=.007) and usability of individual modules (P<.001) were significantly higher than that of the original app due mostly to better ease of use and learnability, interface quality, and reliability.
Conclusions: Improved usability was achieved using a redesigned app. This study offers insight into the importance of personalization in enhancing the accessibility and also identifies strategies for improving usability in app development.

SUMMARY: Development of a mobile health app for smartphones and redesign for users with dexterity impairments.

VA Seal of Approval: HERL funded through 2024

On September 7, 2018, HERL investigators, joining with leadership from the University of Pittsburgh and the VA Pittsburgh Healthcare System (VAPHS), hosted a special Site Visit team from the U.S. Department of Veterans Affairs to present evidence for the continued funding of the Center for Wheelchairs and Robotics Engineering (WARE). WARE is the VA-funded Research Center within HERL that provides the majority of HERL's funding.

Representing the VA's Rehabilitation Research & Development (RR&D) team were Dr. Patricia Dorn, Director of VA RR&D; Karen Siegel, Deputy Director, VA RR&D; Dr. David Boone, Founder and Chief Technology Officer of OrthoCare Innovations, LLC; Dr. Frances M. Weaver, Director of the Center of Innovation for Complex Chronic Healthcare (CINCCH) at Hines VA Hospital; Dr. Brian Schulz, Scientific Program Manager, VA Rehabilitation Engineering and Prosthetics/Orthotics Program; Dr. Timothy Brindle, Scientific Program Manager, VA Musculoskeletal Disorders and Medical Comorbidities Program; Dr. Shirley Groer, Scientific Program Manager, VA Social Reintegration and Mental Health Program; and Christoper Drabik, Technology Transfer Specialist, VA Tech Transfer Program.

Representing VAPHS were Karin McGraw, Director; Dr. Ali Sonel, Chief of Staff; and Dr. Steven Graham, Associate Chief of Staff for Research and Development. Representing Pitt was Dr. Evan Facher, Vice Chancellor for Innovation and Entrepreneurship and Director of the Innovation Institute.

The VA Rehab R&D Center Site Visit was a resounding success. At the exit interview, we were informed that we would be funded for an additional five years at the end of the current grant. Simply put, our VA Center will be fully funded through 01 July 2024.

Dr. Cooper writes:
"The renewal of the Center was a team effort, and everyone pulled together to achieve this success. The site-visit team was very laudatory, and noted that HERL is rare among Centers in that it has continuously improved and has not only grown but become better with time. It was also noted that HERL remains dynamic, forward thinking, and has a remarkably talented and dedicated team. The diversity of the HERL team was noted, as well as the obvious strong commitment to and record of accomplishment of elevating the mobility, function, quality of life and improving the health and wellness of Veterans and all people with disabilities.

"The unwavering and strong support of the VA Pittsburgh Health Care System and VISN-4 were noted as strengths, as was the collaboration with the University of Pittsburgh Innovation Institute and the VA Office of Technology Transfer, and other divisions of VA and Pitt. In addition, the partnerships with Veteran Service Organizations, and advocacy organizations were highlighted. The resource utilization and allocation was identified as being exemplary. Here's to many more years of working together and to making a real positive difference!"

Dicianno co-authors new Spina Bifida guidelines

HERL Medical Director and Chief Operating Officer Dr. Brad Dicianno also fills several important other roles: Director of the UPMC Adult Spina Bifida Clinic; Associate Medical Director and Chair of Spina Bifida Association's Professional Advisory Council; and Spina Bifida Association Guideline Steering Committee Co-Chair. Dr. Dicianno was instrumental in producing the new 4th edition of the Spina Bifida Association's Guidelines for the Care of People with Spina Bifida, released October 2018.

Spina Bifida is the most common permanently disabling birth defect in the United States. Spina Bifida is a birth defect, occurring in the womb, caused by the incomplete formation of the spinal cord. 8 babies are born every day with Spina Bifida. People with Spina Bifida have mobility issues and other disabilities.

People with Spina Bifida often struggle to find appropriate medical care, which is why the Guidelines are so important. According to the Spina Bifida Association, "[t]he Guidelines were developed to provide every health care professional - from generalists to specialists - a road map of the best evidenced-based and expert treatment available from birth through adulthood." The Guidelines were developed over three years by a team of over a hundred experts from around the world, and represent the most up-to-date thinking internationally on the treatment and care of people with Spina Bifida.

The Guidelines cover 25 topics ranging from bowel management to sexuality to physical activity and more. You can find the Guidelines on the United Spinal Association's website at **http://spinabifidaassociation.org/guidelines/**.

New Faculty and Advisory Teams

HERL is pleased to annouce our Affiliate Faculty and our Global Affiliate Faculty members. Affiliate Faculty members are Rosemarie Cooper (Center for Assitive Technology, UPMC), Dan Fisher (Rehabilitation and Technology, Pitt), Katya Hill (Communication Science and Disorders, Pitt), Annmarie Kelleher (Wheelchair Seating and Power Mobility, VA Pittsburgh Health System), Bradley Nindl (Neuromuscular Research Laboratory/ Warrior Human Performance Research Center, Pitt), Bambang Parmanto (Health Information Management, Pitt), and Pamela Toto (Occupational Therapy, Pitt). Apply to become a HERL Affiliate Faculty Member at **http://www.herl.pitt.edu/staff/affiliate-faculty**.

Global Affiliate Faculty members are Eliana Ferretti (Federal University of São Paulo, Brazil), Jongbae Kim (Yonsei University, Republic of Korea), Hisaichi Ohnabe (Niigata University of Health & Welfare, Japan), Lucas HV van der Woude (University of Groningen, the Netherlands), and Jue Wang (Xi'an Jiaotong University, People's Republic of China).

HERL also debuted a list of Internal Advisors. Internal Advisors are: Anthony Delitto (Dean, School of Heath & Rehabilitation Sciences, Pitt), Evan Facher (Director, Pitt Innovation Institute), Steven Graham (Associate Chief of Staff for Rehabilitation R&D, VA Pittsburgh), Edwin J. Hernandez (Director, Pitt Office of Veteran Services), Rob A. Rutenbar (Pitt Senior Vice Chancellor for Research), Sanjeev Schroff (Chair, Department of Bioengineering. Pitt), Gwendolyn Sowa (Chair, Department of Physical Medicine & Rehabilitation, Pitt), and James E. Taylor (Chief Diversity, Inclusion and Talent Management Officer, UPMC).

The HERL Advisory Board is composed of the following members: David Algood (Permobil), Bruce Doll (Uniformed Services University of the Health Sciences), Fred Downs (Fred Downs LLC), Leah R. Gray (Disability Options Network), Bryan McCormick (Bureau of Vocational Rehabilitation Service), Ashli Molinero (UPMC), Laurie Paquet (Kinova), Paul F. Pasquina (Uniformed Services University of the Health Sciences), and Dan Standage (Student Veterans of America).

2018 Employee of the Year

Congratulations to HERL's Program Support Assistant **Terence Washington**, who is the 2018 HERL Employee of the Year.

Terence is a graduate of Edinboro University of Pennsylvania with a BA in Liberal Arts. His major was in Criminal Justice with a minor in Speech Communication. He served for 4 years in the United States Air Force as a member of the USAF Security Forces (Military Police). Stationed in Tampa, Florida at MacDill AFB as a member of the 6th Security Forces Squadron, Terence was deployed to Iraq, the United Arab Emirates, and Africa.

Terence finished in Third Place for his age group in the 2018 Beaver Falls Tiger Trot.

Terence has been with HERL since 2015. He is from Beaver Falls, Pennsylvania, and currently resides in Zelienople with his wife and two children.

Staff Notes

HERL congratulates Machinist **Mark McCartney** on his retirement! He has been with HERL since January 1997.

HERL welcomes our new staff members **Christine Biegert, MS** (Clinical Research Assistant), **Connor Himich, BS** (Assistant to the Director), and **Dan McCoy, BA** (Research Coordinator); our new faculty member **Gina McKernan, PhD** (right); and our new post-doctoral researchers **Jonathan Duvall, PhD** and **Mike Urbin, PhD**.

Congratulations to HERL Advisory Board member **Dan Standage** on his promotion within Student Veterans of America to Vice President of Diversity and Inclusion!

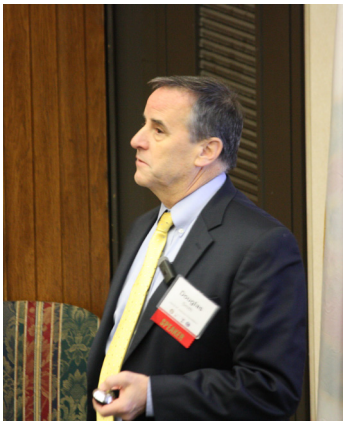
State of the Science Symposium, 16 November 2018
Then and Now: Advances in Wounded Warrior Rehabilitation Care

The State of the Science Symposium on Promoting Successful Community Reintegration After Trauma was held in Sanford Auditorium at the Uniformed University of the health Sciences in Bethesda, Maryland on Friday, November 16, 2018. The symposium was presented by the Center for Rehabilitation Science Research; the Department of Physical Medicine and Rehabilitation at the Uniformed Services University of the Health Sciences; the Department of Rehabilitation, Walter Reed National Military Medical Center; the University of Pittsburgh, School of Health and Rehabilitation Sciences, Department of Rehabilitation Science and Technology; the Human Engineering Research Laboratories, VA Pittsburgh Healthcare System; the University of Pittsburgh School of Medicine Center for Continuing Education in the Health Sciences; with generous support from the Paralyzed Veterans of America.

Presentations at the Symposium:

Introduction and Opening Remarks - Dr. Paul Pasquina and Dr. Nelson Hager, Uniformed University of the Health Sciences

A Vietnam Soldier's Introduction to Prosthetics, 1968 - Fred Downs, Paralyzed Veterans of America

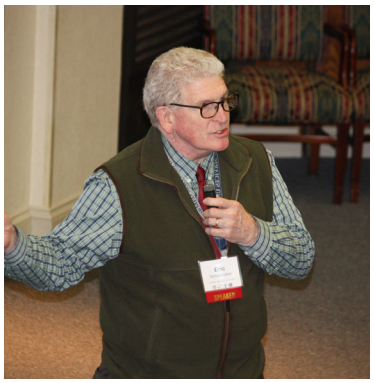


Changes in Surgical Management in Limb Salvage - Dr. Douglas G. Smith, University of Washington

DOD Amputation and Extremity Trauma Rehabilitation: Then and Now - Stuart Campbell, PT, MPT, US Army MEDCOM

Army Occupational Therapy: Then and Now - COL Stanley Breuer and CPT Michelle Luken, Walter Reed National Military Medical Center

Pain Management Advances and Retreats - LTG (Ret) Eric B. Schoomaker, MD, PhD, 42nd Army Surgeon General and Former Commanding General, US Army Medical Command



Regenerative Treatment of Spinal Conditions - Dr. Gerry Malanga, Rutgers School of Medicine/ Kessler Institute

The State of the Science: Regenerative Treatments for Osteoarthritis - Dr. Alfred Gellhorn, Weill Cornell Medicine

History of Musculoskeletal Ultrasound in Rehabilitation Medicine - Dr. Scott Primack, Colorado Rehabilitation and Occupational Medicine

Dr. Rory Cooper and Dr. Paul Pasquina signed coipies of their book *Promoting Successful Integration* at lunchtime.

Videos, presentations, and photos from these symposia, along with biographies of all speakers, are available on the HERL website at **http://herl.pitt.edu/education-outreach/symposia**. Videos and presentations from *Then and Now: Advances in Wounded Warrior Rehabilitation Care* at **http://herl.pitt.edu/rehab-care**.

New Yorker article features HERL researchers

The story of Jan Scheuermann, the Pittsburgh woman with spinocerebellar degeneration - a rare ailment that destroys the lines of communication between the brain and the spine - who learned to control a robotic arm with her mind is the subject of a "longread" story titled "Degrees of Freedom: How to Control a Machine with Your Brain" on the New Yorker website at **https://www.newyorker.com/magazine/2018/11/26/how-to-control-a-machine-with-your-brain.**

Awareness of Wheelchair Related Technologies and Clinical Guidelines

We are looking for volunteers who...

- are 18 years of age or older and
- use one or more assistive devices for mobility, such as a cane, walker, manual wheelchair, power wheelchair, scooter, or lower extremity prosthesis

Researchers at the Human Engineering Research Laboratories want to know what you know about assistive technology.

Complete a brief research questionnaire that will ask for information about yourself, the types of assistive technology that you use, what you know about specific devices, and what sources you use to get your information.

To access the questionnaire, go to: https://is.gd/wheelchairtech

If you would like to participate but don't have access to the internet, please contact one of our Clinical Coordinators.

Following completion of the questionnaire you may choose to be entered into a drawing to win $100.

Principal Investigator: Rory Cooper, PhD

Human Engineering Research Laboratories
Bakery Square, 6425 Penn Avenue, Suite 400
Pittsburgh, PA 15206 ~ 412-822-3700

If you have questions or are interested in learning more about the study, please contact our Clinical Coordinators at (412) 822-3700.

Discovering Provider Awareness of Assistive Technologies and Clinical Guidelines

You may be eligible to participate if:

- You are 18 years of age or older
- You currently work to provide, maintain or develop mobility related assistive technology

Researchers at the Human Engineering Research Laboratories want to know what you know about assistive technology

If you decide to participate, you will be asked to complete a brief research questionnaire pertaining to what you know about specific assistive devices and what sources you use to obtain your information. You will also be asked to provide basic demographic and employment information.

To access the questionnaire, go to: https://is.gd/providerawareness

Principal Investigator: Rory Cooper, PhD

Human Engineering Research Laboratories
Bakery Square, 6425 Penn Avenue, Suite 400
Pittsburgh, PA 15206 ~ 412-822-3700

If you have questions or are interested in learning more about the study, please contact our Clinical Coordinators at (412) 822-3700.

HERL's 25th Anniversary

(cont. from p. 1) at the core of the support for HERL's Research and Development work - and HERL has had 25 years of continuous VA Merit Review funding. Partnerships between HERL and the University of Pittsburgh and the US Department of Veterans Affairs, along with other key supporters such as Paralyzed Veterans of America, FISA Foundation, Disabled Veterans National Foundation, the Center for Rehabilitation Science Research, UPMC, and others were and are key to HERL's success.

Highland Drive VAMC remained the home of HERL until 2011, when we had the good fortune to move to our current location in Bakery Square. From these humble beginnings HERL has grown to be one of the world's premier Rehabilitation Engineering Research, Development, and Training organizations. Nearly a thousand people have received some portion of their training in HERL, and millions of people have benefitted from our work.

Despite the many changes that have taken place, and the tremendous growth that HERL has experienced, HERL's core values of Integrity, Service, Dignity, Inclusion, Excellence, Creativity, Impact, and Team remain as relevant today as they did in 1994.

Walt Disney famously said, "When you're curious, you find lots of interesting things to do. And one thing it takes to accomplish something is courage."

Here's to remaining "curious" and "courageous." Thank you for contributing to 25 years of success for HERL and especially the Veterans, Service Members, People with Disabilities, and Older Adults that we serve.

Happy Birthday!

Human Engineering Research Laboratories

VA Center for
Wheelchairs and Associated
Rehabilitation Engineering

University of Pittsburgh
School of Health & Rehabilitation Sciences
School of Medicine

University of Pittsburgh
NIDILRR Model Center on
Spinal Cord Injury

National Science Foundation
Advanced Technology
Education Center

Rory A. Cooper, PhD
Director

Brad Dicianno, MD
Medical Director

Michael L. Boninger, MD
Senior Associate Medical Director

Alicia Koontz, PhD, RET
Associate Director for Research

Garrett Grindle, PhD
Assistant Director for Engineering

Stacy Eckstein, BS, MT (ASCP)
Assistant Director for Clinical & Regulatory Affairs

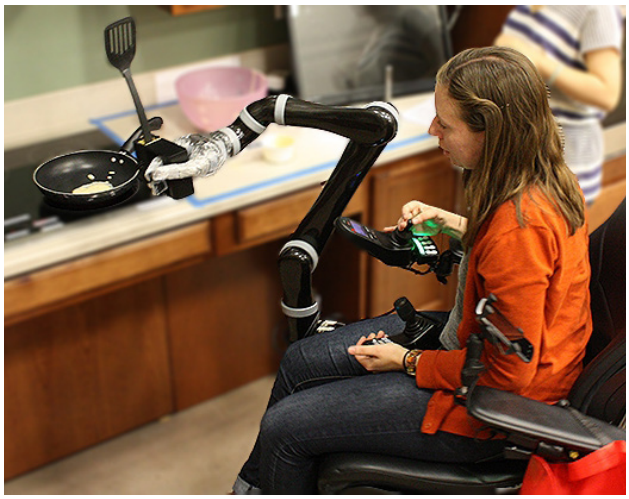
Randy Williams, BA, MBA
Assistant Director for Education & Outreach

Andrea Bagay, BS, CRA
Assistant Director for VA Finance & Research Administration

6425 Penn Avenue, Suite 400
Pittsburgh, PA 15206-4022
Phone: 412-822-3700 ~ Fax: 412-822-3699
herl@shrs.pitt.edu ~ http://herl.pitt.edu/

Give the gift of your time!

VOLUNTEER!



HERL is always on the lookout for people to participate in our research studies!

Check out our current studies at

http://herl.pitt.edu/volunteer

including:

- Effectiveness of Online Transfer Training Materials
- Participatory Evaluation of Assistive Technologies
- Field Validation of Wearables for Detecting Activity Patterns in Wheelchair Users
- Manual Wheelchair Virtual Coach User Study
- Awareness of Wheelchair Related Technologies and Clinical Guidelines
- Assessment of an Experimental Robotic-Assisted Transfer Device: Phase II

INTERESTED? For more details, visit the website. Contact us at 412-822-3700.

Contact us!

Email **michael.lain@pitt.edu** or call **412-822-3700**
To subscribe to the electronic mailing list: **http://herl.pitt.edu/subscribe**
Check us out on Facebook at **http://www.facebook.com/herlpitt**

Editor: Michael Lain § Other content: Connor Himich