

NIDRR Projects

Research in the New Millennium

"RERCs are recognized as conducting some of the most innovative and high impact assistive technology research in the Federal Government." --Gian-Carlo A. Peressutti, Associate Director, White House Office of Public Liaison



Technologies for Children with Orthopedic Disabilities, *Los Amigos Research and Education Institute, Inc. (LAREI)* (H133E003001) led by Donald McNeal, PhD and Sam Landsberger, ScD. William Peterson, Project Officer.

Abstract: The goal of this RERC is to improve the lives of children with orthopedic disabilities. The research and development program is focused on three of the most important life activities of children: manipulation, mobility, and play and recreation. Find out more at: <http://www.ranchorep.org>

Smith-Kettlewell Rehabilitation Engineering Research Center, *Smith-Kettlewell Eye Research Institute* (H133E001002) led by John A. Brabyn,

PhD. Richard Johnson, EdD, Project Officer.

Abstract: This project conducts research and development for persons who are blind or who have visual impairments. It also explores novel approaches to graphics access by persons who are blind or who are deaf-blind. An innovative program of vocational and daily living technology development includes intensive interaction with service providers and applications of computer vision. Find out more at: <http://www.ski.org/Rehab>

RERC on Hearing Enhancement, *Gallaudet*

University (H133E010107) led by Matthew H. Bakke, PhD. Richard Johnson, EdD, Project Officer.

Abstract: This RERC develops and evaluates technology to accommodate the needs of people with hearing loss, and disseminates related information in a form that is understandable to consumers, service providers, employers, and community leaders.

Find out more at: <http://www.hearingresearch.org>

RERC on Telerehabilitation, *Medstar Research Institute*

(H133E990007) led by Michael Rosen, PhD. William Peterson, Project Officer.

Abstract: This center conducts research on various models of delivering rehabilitation services at a distance: telerehabilitation. It's development activities focus on exploiting promising technology to benefit people with disabilities.

Find out more at: <http://www.telerehab-nrh.org>

RERC on Mobile Wireless Technologies for Persons with Disabilities,

Georgia Center for Advanced Telecommunications Technology (GCATT) (H133E010804) led by Helena Mitchell, PhD, GCATT and Michael Jones, MD, Shepherd Center and John Peifer, Georgia Tech. William Peterson, Project Officer.

Abstract: This project is dedicated to development of appropriate

and effective applications of wireless technologies to enhance the independence of people with disabilities.

RERC: Improved Technology Access for Land Mine Survivors, *Physicians Against Land Mines Center for International Rehabilitation* (H133E980031) led by William Kennedy Smith, MD and Dudley S. Childress, PhD. Robert J. Jaeger, PhD, Project Officer.

Abstract: This RERC is active in research, development, and demonstration; consumer surveys; education and training; utilization activities; technical assistance; and dissemination relating to improved technology access for land mine survivors.

Find out more at: <http://www.banmines.org>

RERC on Prosthetics and Orthotics, *Northwestern University* (H133E980023) led by Dudley S. Childress, PhD. William Peterson, Project Officer.

Abstract: This program studies human performance as assisted by prosthetic and orthotic systems, with the aim of engineering improved prostheses and orthoses through deeper scientific understanding of their function.

Find out more at: <http://www.repoc.northwestern.edu>

RERC on Ergonomic Solutions for Employment, *University of Michigan* (H133E980007) led by Thomas J. Armstrong, PhD. William Peterson, Project Officer.

Abstract: This Center combines ergonomic interventions, work and worksite modifications, assistive technologies, and medical interventions to facilitate placement of workers with disabilities, and helps prevent development of subsequent musculoskeletal illnesses and injuries.

Find out more at: <http://umrerc.engin.umich.edu>

RERC on Universal Design and the Built Environment at Buffalo, *State University of New York (SUNY) at Buffalo* (H133E990005) led by

Edward Steinfeld, ArchD. William Peterson, Project Officer.

Abstract: The RERC on Universal Design and the Built Environment promotes the adoption of universal design.

Research programs include the Prototype Anthropometric Database Project and The Buildings in Use Project. The Visitability Initiative conducts training and action-research in eight cities to develop visitability demonstration projects.

Find out more at: <http://www.ap.buffalo.edu/~rercud>

RERC on Technology Transfer, *State University of New York (SUNY) at Buffalo* (H133E980024) led by Joseph Lane. William Peterson, Project Officer.

Abstract: This Center improves the quality of life for people with disabilities by: advancing the methods of technology transfer through research, transferring technologies into products through development, and facilitating the commercialization of new and improved assistive devices.

Find out more at: <http://cosmos.buffalo.edu/t2rerc>

As part of the President's "New Freedom Initiative," funding for the Rehabilitation Engineering Research Centers was increased to \$20 million. RehabWire for October highlights the 17 currently funded RERCs and their products featured in REHABDATA.



RERC on Technology for Successful Aging, *University of Florida* (H133E010106) led by William C. Mann, PhD. Margaret Campbell, PhD, Project Officer.

Abstract: The Rehabilitation Engineering Research Center on Technology for Successful Aging (RERC-Tech-Aging) conducts research, development, education, and information dissemination work on technology for successful aging. RERC projects focus on the closely related areas of communications, home monitoring, and "smart" technologies.



RERC on Communication Enhancement, *Duke University* (H133E980026) led by Frank DeRuyter, PhD. William Peterson, Project Officer.

Abstract: This project uses innovative communications technologies to benefit researchers, engineers, rehabilitation service providers, developers, and users of alternative and augmentative communication (AAC) technologies.

Find out more at: <http://www.aac-lerc.com>

RERC on Universal Design and the Built Environment at NCSU, *North Carolina State University* (H133E990002) led by Molly Story. William Peterson, Project Officer.

Abstract: The purpose of the RERC on Universal Design and the Built Environment at NCSU is to improve the accessibility and usability of the built environment and to advance the field of universal design. The major Center research project is developing multidisciplinary environmental assessment tools to evaluate the complex and dynamic relationship between the individual and the environment.

Find out more at: <http://www.design.ncsu.edu/cud>

RERC on Wheeled Mobility, *University of Pittsburgh* (H133E990001) led by David M. Brienza, PhD and Clifford Brubaker, PhD. William Peterson, Project Officer.

Abstract: The RERC on Wheeled Mobility investigates the use of dynamic seating for reducing spasticity and enhancing seating

comfort; investigates the biomechanical characteristics of soft tissue related to the risk of developing pressure ulcers and the relationship between pressure measurements and pressure ulcer incidence; develops and validates the use of outcomes measures for seating and mobility intervention; and investigates the use of the World Wide Web as a seating decision support tool for consumers.

Find out more at: <http://www.lerc.pitt.edu>

RERC on Wheelchair Transportation Safety, *University of Pittsburgh* (H133E010302) led by Gina E. Bertocci, PhD. William Peterson, Project Officer.

Abstract: The primary goal of the RERC is to improve the safety of wheelchair users who remain seated in their wheelchair while using public and private motor-vehicle transportation. RERC tasks investigate and develop new wheelchair tiedown and occupant restraint system technologies.

RERC on Information Technology Access, *University of Wisconsin/Madison* (H133E980008) led by Gregg C. Vanderheiden, PhD. William Peterson, Project Officer.

Abstract: This RERC improves access by individuals with all types, degrees, and combinations of disabilities to a wide range of technologies, including computers, ATMs, kiosks, point-of-sale devices and smartcards, home and pocket information appliances, Internet technologies, intranets, and 3-D and immersive environments.

Find out more at: <http://trace.wisc.edu/itlerc>

RERC on Telecommunication Access, *University of Wisconsin/Madison* (H133E990006) led by Gregg C. Vanderheiden, PhD (Trace) and Judy Harkins, PhD (Gallaudet University). Richard Johnson, EdD, Project Officer.

Abstract: The focus of this RERC is to identify telecommunication access barriers in current and future technologies, work with others in the field to identify solution strategies, test them, implement any necessary standards, and assist industry in transferring the ideas into their commercial products.

Find out more at: <http://trace.wisc.edu/tellerc>

New Research

Selections from REHABDATA

In addition to newsletters available from individual RERCs, the following articles are featured in REHABDATA:

(2001) *Journal of Rehabilitation Medicine and Science*, V2, p1-99. Los Amigos Research and Education Institute, Inc. (LAREI), Rancho Rehabilitation Engineering Program. Accession Number: O13959.

Abstract: This issue presents overviews and news updates from grant-funded clinical research programs at Rancho Los Amigos, including the Rehabilitation Engineering Research Program. Abstracts and reprints of representative research articles from each program are included.

Bertocci, G., Ha, D., Deemer, E., Karg, P. (2001) **Evaluation of wheelchair seating system crashworthiness: "Drop hook"-type seat attachment hardware**. *Archives of Physical Medicine and Rehabilitation*, 82(4), 534-540. University of Pittsburgh. Accession Number: J41787.

Abstract: Study evaluating the ability of commercially available hardware for attaching seat surfaces to a wheelchair frame to withstand a frontal motor vehicle crash. Results suggest that commercially available drop hooks may be unable to withstand loading associated with a frontal crash and may not be the best option for use with transport wheelchairs.

Levitt, H. (2001) **Noise reduction in hearing aids: A review**. *Journal of Rehabilitation Research and Development*, 38(1), 111-121. The Lexington School for the Deaf/Center for the Deaf. Accession Number: J41874.

Abstract: Article on the issues involved in reducing background noise in hearing aids, and providing an overview, in non-technical language, of the various approaches to solving the problem. Topics include fixed filters, adaptive filters, reduction of spread-of-masking effects, spatial filtering, adaptive noise cancellation, and knowledge-based reduction.