

retrospective in memory of Margaret C. Pfrommer, and outreach and educational activities conducted by NURERC researchers. It also includes NURERC program news, and news from the Department of Veterans Affairs.

(2008) **Wireless RERC**. NARIC Accession Number: O17173. Project Number: H133E060061.

Abstract: Quarterly newsletter provides information about the Wireless RERC to the wireless industry. This issue provides updates on the following RERC projects: (1) Deaf 911, a project conducted to develop software to ensure that people with hearing impairments can communicate with the 911 safety system during an emergency; (2) field testing of the wireless emergency communications (WEC) emergency alerts; (3) WEC weather service alerts; and (4) an analysis of the Survey of User Needs.

Mitchell, H. (2008) **Comments of the rehabilitation engineering research center for wireless technologies (wireless RERC)**. NARIC Accession Number: O17177. Project Number: H133E060061.

Abstract: Presents comments of the Rehabilitation Engineering Research Center for Wireless Technologies (Wireless RERC) submitted to the Federal Communications Commission regarding: (1) service rules for the 698-746, 747-762, and 777-792 MHz bands; (2) revision of the Commission's rules to ensure compatibility with enhanced 911 emergency calling systems; (3) Section 68.4(a) of the Commission's rules governing hearing aid-compatible telephones; (4) amendment of Parts 1, 22, 24, 27, and 90 to streamline and harmonize various rules affecting wireless radio services; (5) former Nextel Communications, Inc. upper 700 MHz guard band licenses and revisions to Part 27 of the Commission's rules; (6) implementing a nationwide, broadband, interoperable public safety network in the 700 MHz band; (7) development of operational, technical, and spectrum requirements for meeting federal, state, and local public safety communications requirements through the year 2010.

(2008) **First report: Findings of the survey of user needs (SUN)**. NARIC Accession Number: O17178. Project Number: H133E060061.

Abstract: Report presents initial findings from the 2001-2006 Survey of User Needs (SUN) and the first 1,200 responses received for the 2007 SUN. It also summarizes the findings of a longitudinal comparison of 165 individuals who participated in both the 2001-2006 and the 2007 SUN, allowing researchers to identify trends among long-term wireless customers with disabilities.

Baker, P., Moon, N. (2008) **Access to wireless technologies for people with disabilities: Issues opportunities and policy options**. NARIC Accession Number: O17179. Project Number: H133E010804; H133E060061.

Abstract: Report presents the results of a policy Delphi to probe key stakeholders' opinions of what constitute the most significant issues surrounding the adoption and use of technologies by people with disabilities, as a precursor to the development of new policy approaches. Specifically, the Wireless RERC conducted a policy Delphi that asked participants to assess the reliability of forecasts, importance of issues, desirability of goals, and feasibility of proposed options, in four key areas: access and awareness, economic, regulatory and policy, and technology. Participants assessed the reliability of forecasts related to the future of wireless technologies, ranked the importance of key issues and barriers to increased wireless accessibility, and provided input for the subsequent development of potential policy initiatives to increase access to these technologies. Drawing on the results of three rounds of polling, the Wireless RERC developed a set of policy options and "fine-tuned" them using participating stakeholders from the disability community, wireless industry, and policymakers. In addition to the specific policy options developed, one of the goals of the Wireless RERC has been to use the products of its research to generate policy recommendations and other research initiatives that will increase the accessibility of wireless technologies and services for persons with disabilities.

NARIC is operated by HeiTech Services, Inc., for the National Institute on Disability and Rehabilitation Research under contract number ED-05-CO-0007.

Head, L. (2008) **Technology and disability policy highlights 8.01: December 2007/January 2008**. NARIC Accession Number: O17185. Project Number: H133E060061.

Abstract: Newsletter summarizes legislative and regulatory activities, highlights recent technological and policy advances, and tracks emerging issues related to universal access to wireless technologies for individuals with disabilities. In this issue: (1) House drafts accessibility amendment to the Telecom Act, (2) Senators resurrect the Wireless 411 Privacy Act, (3) Virginia lawmakers contemplate ban on texting while driving, (4) Supreme Court denies cell phone tax case, (5) Federal Communications Commission (FCC) begins auction of coveted federally-owned wireless airwaves, (6) FCC releases results of Section 504 triennial review, (7) comments filed with FCC over hearing aid compatibility, (8) groups petition FCC to prohibit discrimination against text message content, (9) studies and reports, (10) other items of interest, (11) international activities, and (12) upcoming events.

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News from the National
Rehabilitation Information
Center

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NIDRR Grantees on the Cutting Edge

RERC on Rehabilitation Robotics and Telemanipulation Machines Assisting Recovery from Stroke Rehabilitation Engineering Research Center (MARS-RERC), *Rehabilitation Institute of Chicago* (H133E070013) led by W. Zev Rymer, MD, PhD Thomas Corfman, Project Officer.

Abstract: This project designs and implements a program of research and development, centered on the use of robots for restoration of function in hemispheric stroke survivors. The focus is on the application of new approaches that improve functional outcomes of the entire body during either upper extremity reach-and-grasp activities or full body locomotion activities. The broad objective is to develop devices that assist the therapist in providing rationally based, intensive, and long duration stroke treatments. Such devices also monitor progress, and help to improve the functional performance of stroke survivors, with the intent that there is a greater likelihood of their return to community and to work.

Find out more at: www.mars-lerc.org

Rehabilitation Engineering Research Center on Spinal Cord Injury, *University of Pittsburgh* (H133E070024) led by David M. Brienza, PhD Kenneth D. Wood, PhD, Project Officer.

Abstract: This center conducts research, development, and evaluation of innovative technologies and approaches that will improve the treatment, rehabilitation, employment, and reintegration into society of persons with spinal cord injury (SCI). Research and development activities address tissue integrity management, upper extremity musculoskeletal injury prevention, and bladder function. Specific projects address: (1) the development of computational models of inflammation and healing for assessment of person-specific interventions and for general technology/intervention evaluations for pressure ulcer prevention and detection, (2) evaluation of the effects of support surface active cooling and low shear followed by development and evaluation of a novel seat cushion incorporating these features, (3) the development and evaluation of tools for manual wheelchair propulsion training, (4) the evaluation of novel manual wheelchair propulsion devices for preventing shoulder injury, (5) the evaluation of a weight shifting approach for preventing pressure ulcers, and (6) the development of preliminary computational models of inflammation and healing for evaluating bladder function and musculoskeletal injury status.

The Rehabilitation Engineering Research Centers (RERCs) produce an extraordinary amount of publications, including journal articles, conference proceedings, curricula, and patient education materials. REHABDATA includes nearly 1,400 abstracts!

Please note: These abstracts have been modified. Full, unedited abstracts, as well as any available REHABDATA citations, are available at naric.com.

Thousands of additional resources on these topics are available from NARIC's resource pages at www.naric.com/public

While their research may span employment, independent living, and technology., the RERCs as a group fall in the Technology for Access and Function priority.

Rehabilitation Engineering Research Center on Workplace Accommodations *Georgia Institute of Technology, Center for Assistive Technology and Environmental Access (H133E070026)* led by Karen Milchus Shelley Reeves, Project Officer.

Abstract: The Workplace Rehabilitation Engineering and Research Center (RERC) identifies, develops and promotes new assistive and universally designed technologies that maximize independence and participation of people with disabilities in the workplace. It focuses on the application of universal design (UD) concepts to improve the utility of workplace tools and devices for all workers through research, development, training, and dissemination. Research activities investigate five topics identified by current RERC research: user needs, longitudinal cost/benefits of accommodations, strategies used by aging workers, the impact of policy on access to and utilization of accommodations, and the effect of accommodations on employee participation in the workplace. Several development activities create and validate new workplace assessment tools for use by practitioners and employees. Other development activities design, prototype, and evaluate new workplace accommodations. Universally designed workstations and human-computer interfaces are being developed. In addition, the Work RERC develops technology for workers with identified and unmet accommodation needs, including prompting aids for employees with developmental disabilities and accommodations for employees with communication disabilities. Finally, Work RERC training activities include both instruction and evaluation of training outcomes and will target VR professionals, workers with disabilities, and students interested in design and engineering. Find out more at: www.workrerc.org

Rehabilitation Engineering Research Center on Recreational Technologies and Exercise Physiology Benefiting Persons with Disabilities (RERC RecTech), *University of Illinois at Chicago (H133E070029)* led by James H. Rimmer, PhD Thomas Corfman, Project Officer.

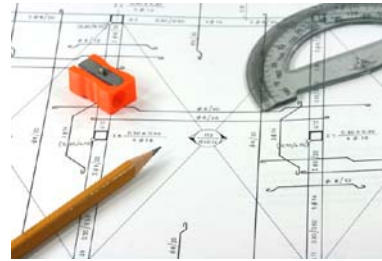
Abstract: This center includes a coordinated set of research, development, capacity building, and dissemination projects focused on facilitating and promoting healthier, more active lifestyles for people with disabilities. The key target areas for the research and development projects are improving access to recreation and exercise venues and equipment, increasing opportunities for participation by people with disabilities in beneficial exercise, using technology to support greater adherence to regular exercise, and promoting better health and function for people with disabilities through active lifestyles. The research and development agenda of the RERC provides the context for a growing capacity building effort targeting not only the next generation of leadership in engineering, research, and clinical practice but also infusing rehabilitation engineering concepts and principles into the curriculum of related disciplines. A broad and active dissemination program makes effective use a non-profit organization advocating for inclusive recreation and exercise opportunities for people with disabilities: The Inclusive Fitness Coalition (IFC - www.incf.it.org) currently has 53 member organizations representing the recreation and fitness industry, fitness and exercise science professionals, researchers, disability organizations, professional organizations, rehabilitation centers, and others united by a common goal of furthering inclusive opportunities for people with disabilities to participate in recreation and exercise in their own communities.

Find out more at: www.rectech.org

NIDRR currently funds a total of 25 RERCs. For more information on these projects and their activities, visit www.naric.com

RERC on Hearing Enhancement, Gallaudet University
National Center for Accessible Public Transportation, Oregon State University
RERC on Universal Interface and Information Technology Access, University of Wisconsin/Madison
RERC on Technology Access for Landmine Survivors, Center for International Rehabilitation
RERC on Communication Enhancement, Duke University

Photo credit: Vangelis Tomaidis, Greece



Rehabilitation engineering is the systematic application of engineering sciences to design, develop, adapt, test, evaluate,

apply, and distribute technological solutions to problems confronted by individuals with disabilities.

-Wikipedia entry for rehabilitation engineering (en.wikipedia.org/wiki/Rehabilitation_engineering)

Where Can I Find More?

A quick keyword search is all you need to connect to a wealth of disability and rehabilitation research. NARIC's databases hold more than 75,000 resources. Visit www.naric.com/research to search for literature, current and past research projects, and organizations and agencies in the US and abroad.



The Rehabilitation Engineering and Assistive Technology Society of North America (RESNA) hosts its annual conference in Crystal City, VA from June 26-30. The RERCs will be there, presenting workshops and posters and exhibiting in "RERC Row." For more information on this conference, visit www.resna.org/Conference.

RERC on Technology Transfer (T2RERC), State University of New York (SUNY) at Buffalo
RERC in Prosthetics and Orthotics, Northwestern University
RERC on Wheeled Mobility, Georgia Institute of Technology
RERC on Telerehabilitation, University of Pittsburgh
RERC on Telecommunication Access, University of Wisconsin/Madison
RERC for the Advancement of Cognitive Technologies (RERC-ACT), University of Colorado
RERC (RERC) on Universal Design and the Built Environment at Buffalo, State University of New York (SUNY) at Buffalo
RERC on Children with Orthopedic Disabilities, New Jersey Institute of Technology
RERC: Develop and Evaluate Technology for Low Vision, Blindness, and Multi-Sensory Loss, The Smith-Kettlewell Eye Research Institute
RERC for Wireless Technologies, Georgia Institute of Technology
RERC on Wheelchair Transportation Safety, University of Michigan

Current Literature - Selections from REHABDATA

Shaw, G. (2008) **Investigation of large transit vehicle accidents and establishing appropriate protection for wheelchair riders.** *Journal of Rehabilitation Research and Development (JRRD)*, 45(1), 85-108. [NARIC Accession Number: J54139](#). Project Number: H133E010302.

Abstract: Study reviewed the literature on injury-producing events aboard large transit buses to better understand the potential crash risks and protection required for wheelchair users. Results indicated that few injuries and fatalities occur on large transit buses. Examination of the relatively few injury-producing events provides an understanding of these events in terms of acceleration/deceleration magnitude and direction. Low acceleration/deceleration, or low-g, events such as those involving abrupt braking or turning occurred frequently and were associated with about half of the onboard passenger injuries. Most of the injuries involved the bus rapidly decelerating because of frontal impacts with another vehicle or roadside object. The actual frequency of high-g events was not determined. Further research is recommended to determine the magnitude and frequency of high-g events.

Kwarciak, A., Cooper, R. (2008) **Curb descent testing of suspension manual wheelchairs.** *Journal of Rehabilitation Research and Development (JRRD)*, 45(1), 73-84. [NARIC Accession Number: J54140](#). Project Number: H133E990001.

Abstract: Study investigated the ability of suspension manual wheelchairs to reduce seat accelerations during curb descents of various heights. Sixteen manual wheelchairs were tested: four suspension, four folding, four rigid, and four rigid titanium. Suspension wheelchairs transmitted significantly lower peak seat acceleration than folding wheelchairs during the five centimeter (cm) curb descents and significantly lower frequency-weighted peak seat accelerations during the 5 and 10 cm curb descents. However, when the Quickie XTR suspension wheelchair was removed from the analysis, the suspension wheelchairs were not significantly different from the non-suspension wheelchairs. When weight was considered, the suspension wheelchairs had significantly lower peak seat accelerations than the lighter rigid wheelchairs during 5 cm curb descents.

Garrick, R. (Ed.). (2008) **Capabilities**, 16(1). [NARIC Accession Number: O17153](#). Project Number: H133E030030.

Abstract: Quarterly newsletter highlights research, news, and events at Northwestern University's Rehabilitation Engineering Research Center (NURERC). This issue features articles on bionic arms and human performance, step length modulation in able-bodied persons, a 10-year