The 2007 RERCs

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.

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 to restore 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-rerc.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) the 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.


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.


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 various options, and the accessibility of programs, economic, regulatory and public 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.


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.


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.


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) analysis of the Survey of User Needs.
Rehabilitation Engineering Research Center on Wheelchair Transportation Safety, University of Michigan

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RERC on Wheelchair Transportation Safety, University of Michigan

National Center for Accessible Public Transportation, Oregon State University

RERC on Wheelchair Transportation Safety, University of Michigan

RERC on Wheelchair Transportation Safety (T2RERC), State University of New York (SUNY) at Buffalo

RERC in Prosthetics and Orthotics, Northwestern University

RERC on Telehealth, Georgia Institute of Technology

RERC on Technology Transfer (T2RERC), State University of New York (SUNY) at Buffalo

RERC on Children with Orthopedic Disabilities, New Jersey Institute of Technology

RERC: Development 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


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 durations and directions. 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.


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 accelerations than the lighter rigid wheelchairs during 5 cm curb descents. However, when the Quickie XTR suspension wheelchair was removed from the analysis, 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.


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