

Headaches among Operation Iraqi Freedom/Operation Enduring Freedom veterans with mild traumatic brain injury associated with exposures to explosions

Robert L. Ruff, MD, PhD, et al.

Mild traumatic brain injury (TBI), also called concussion, is a common injury type among returning Operation Iraqi Freedom (OIF)/Operation Enduring Freedom (OEF) veterans. Headaches are the common pain consequence of TBI. However, little is known about the character of post-traumatic headaches in OIF/OEF veterans with mild TBI. We evaluated headache patterns among a group of 126 OIF/OEF veterans who reported suffering at least one concussion episode caused by exposure to an explosion. Eighty veterans had impairments on neurological examination or neuropsychological testing that we attributed to persisting TBI sequelae. The veterans with persisting deficits were more likely to have headaches, and their headaches, occurred more often and were more intense. This group of veterans was more likely to have posttraumatic stress disorder (PTSD) and impaired sleep with nightmares and reported being exposed to more explosions. We believe that PTSD and impaired sleep likely contribute to the increased frequency and severity of headaches among veterans with persisting deficits. We also believe that optimal treatment of these veterans is to treat all their problems rather than to focus on their headaches.

Quality of medical care provided to service members with combat-related limb amputations: Report of patient satisfaction

Paul F. Pasquina, MD, et al.

Healthcare professionals and service members with limb amputations and their families would benefit from reading this article. We surveyed 158 service members who had lost one or more limbs from combat in Iraq and Afghanistan to determine how satisfied they were with the healthcare they received from injury until discharge from Walter Reed Army Medical Center. Of these participants, 96 percent were men, 77 percent were white, 89 percent were enlisted soldiers, and most had leg amputations. Participants were most satisfied with their therapy, peer visitors, and medical care. Older participants were more satisfied with

their medical care than younger participants. Among participants with upper-limb amputations, those with amputations at shoulder level were most satisfied with their care but not significantly. Overall, satisfaction did not change for different races, military ranks, or kinds of amputations.

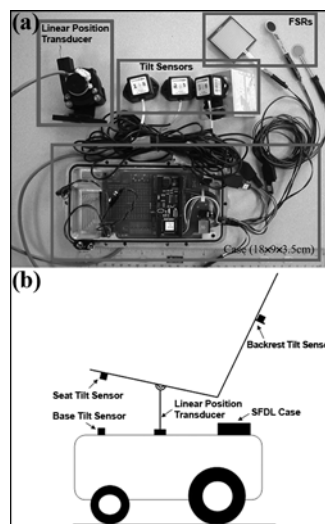
Prosthesis use in persons with lower- and upper-limb amputation

Katherine A. Raichle, PhD, et al.

People who have had a lower- or upper-limb amputation may benefit from this study. We examined what variables are related to how much one uses a prosthesis, such as age, sex, education, and pain and how one obtained an amputation. We also studied how using a prosthesis can worsen phantom limb pain and residual limb pain. This study is important because it draws attention to factors related to how often one wears a prosthetic device and the effect that these factors may have for those with an upper- versus lower-limb amputation.

Usage of tilt-in-space, recline, and elevation seating functions in natural environment of wheelchair users

Dan Ding, PhD, et al.



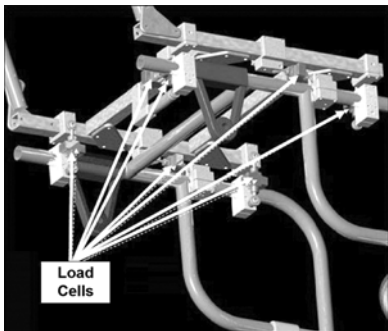
Clinicians usually prescribe wheelchair users powered seat functions, such as tilt-in-space, backrest recline, and seat elevation, to help posture change for seat pressure management, comfort, and/or to assist activities of daily living (ADL). This study described the usage and effectiveness of powered seating functions among a group of wheelchair users during their typical ADL. Twelve individuals who use a power wheelchair with

seating functions participated in the study. They drove their own wheelchair and used the seating function as

needed in their community environment for about 2 weeks while seating function usage was recorded with a portable device. We found that subjects occupied their wheelchair for about 11.8 each day. They consistently accessed the seating functions throughout the day and spent most of their time in tilted and/or reclined positions. Time spent in positions of different seating pressures varied among subjects. Most did not reposition themselves as frequently as recommended in the clinical practice guideline. Clinicians and wheelchair users need to know the real-world usage patterns and the effectiveness of these seating functions. This information will help clinical practice of wheelchair provision, resulting in better compliance with clinical instructions and appropriate use of seating functions among wheelchair users.

Effect of rear suspension and speed on seat forces and head accelerations experienced by manual wheelchair riders with spinal cord injury

Philip S. Requejo, PhD, et al.



We examined whether rear wheelchair suspensions can reduce the shocks and vibrations experienced by manual wheelchair users with varying levels of spinal cord injury (SCI). We used instrumented wheelchairs and accelerometers to measure the forces transmitted from the seat and the head accelerations experienced by riders while on a vibration simulator. We determined that seat force and head accelerations were highest in the nonsuspension-type wheelchair and lowest in the spring-type suspension-frame wheelchairs; subjects with higher level SCI preferred slower speeds than subjects with lower level SCI. Suspension systems may benefit wheelchair users by reducing vibrations, especially for people with higher level SCI and less control over their posture.

Feasibility of combining gait robot and multichannel functional electrical stimulation with intramuscular electrodes

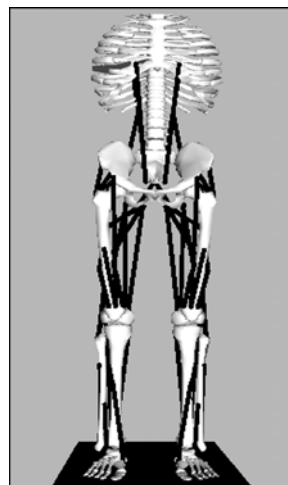
Jessica P. McCabe, MPT, et al.



After stroke rehabilitation, many stroke survivors still have walking difficulties. We tested the feasibility of combining a multichannel percutaneous functional electrical stimulation system using intramuscular electrodes (FES-IM) and a gait robot for gait training. Six subjects 6 months after stroke received 30-minute intervention sessions of FES-IM and a gait robot combined for 4 days/week for 12 weeks. Combining FES-IM and a gait robot proved feasible. The combination was advantageous for practice of a subset of gait components. This study provides guidance for the use of two new and sophisticated technologies that help improve walking for veterans after stroke.

Selection of optimal muscle set for 16-channel standing neuroprosthesis

Steven J. Gartman, et al.



The Case Western Reserve University/Department of Veterans Affairs 8-channel lower-limb neuroprosthesis uses functional electrical stimulation to restore standing to selected individuals with paraplegia. The second generation of this system will include an additional 8 channels of stimulation. This study used a model of the human legs and trunk to determine which muscles to target with these additional channels in order to maximize the range of postures that can be supported with the system. Maximizing this range of postures should help ensure that the system can maintain standing as the user's posture changes.

Prevention of secondary stroke in VA: Role of occupational therapists and physical therapists

Arlene A. Schmid, PhD, OTR, et al.

People who have had a stroke are at risk for a second stroke. Department of Veterans Affairs/Department of Defense stroke rehabilitation guidelines indicate that secondary stroke prevention should be part of stroke rehabilitation. We surveyed rehabilitation therapists to assess whether they work with veterans to reduce the risk of a second stroke. We found that only half the therapists were aware of the guidelines and only half discussed secondary stroke prevention and often referred patients to other healthcare providers for such information. Therapists spend a lot of time with patients after stroke helping them to regain their highest level of function and thus have the opportunity to engage patients in health promotion activities that will decrease the risk of a second stroke.

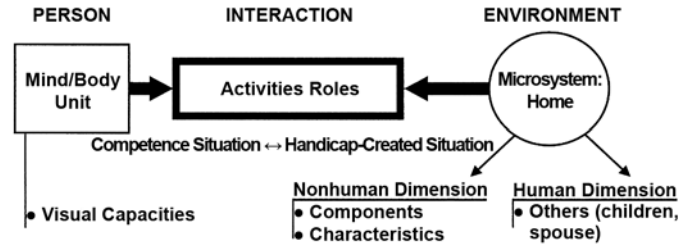
Geographic variation in poststroke depression among veterans with acute stroke

Huanguang Jia, PhD, MPH, et al.

In this study, we examined and compared patterns of poststroke depression (PSD) detection among veterans with acute stroke in eight U.S. geographic regions. Department of Veterans Affairs (VA) medical and pharmacy data as well as Medicare data were used. International Classification of Diseases-9th Revision depression codes and antidepressant medication dispensing were applied to define patients' PSD status 12 months poststroke. Geographic variation in PSD detection 12 months poststroke depended on what data were used; if VA medical data alone were used, we found no significant variation; if VA medical data were used along with Medicare and VA pharmacy data, we observed a significant variation after adjusting patient demographic and clinical variables. These findings suggest that VA clinicians need to understand their stroke patients' PSD that is diagnosed outside the VA system to improve care quality and functional recovery of their patients poststroke. They also suggest that VA policy makers need to consider the use of services outside the system by enrollees with stroke when conducting program evaluation and that future research on PSD among veteran patients should use the VA medical data in combination with Medicare and VA pharmacy data to obtain a comprehensive understanding of patients' PSD.

Content validity of a home-based person-environment interaction assessment tool for visually impaired adults

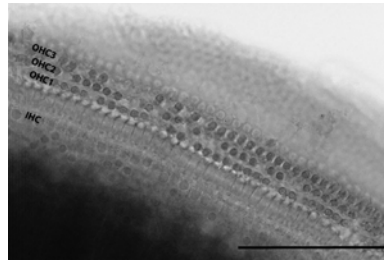
Mathieu Carignan, OT(C), MSc, et al.



Visually impaired persons experience difficulties with reading, cooking, or traveling, even if they wear glasses. They often ask a caregiver for help. Rehabilitation professionals can help these people in their daily living tasks. This article presents a new assessment tool that helps professionals better understand the needs of visually impaired clients and their caregivers.

Lipoic acid and 6-formylpterin reduce potentiation of noise-induced hearing loss by carbon monoxide: Preliminary investigation

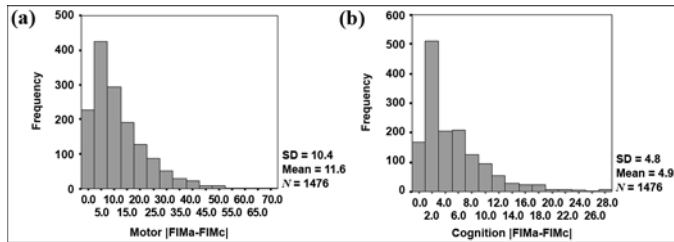
Benoît Pouyatos, PhD, et al.



This research aims to develop new treatments that will reduce hearing loss. We have studied two antioxidant drugs, 6-formylpterin and lipoic acid, to see if they block hearing loss from exposure to noise and carbon monoxide in rats. Both of these drugs were successful in blocking hearing loss in experimental rats that received noise combined with carbon monoxide. The two test drugs cannot be used to treat hearing loss after it has occurred, and so they do not offer treatment for deafness. However, they may help us design new protective drugs that can be given immediately after a severe noise or noise and chemical exposure.

Validation of FIM-MDS crosswalk conversion algorithm

Ying-Chih Wang, PhD, et al.



Patients move between hospitals and nursing homes. These settings use different tests. How can we determine whether the patient has improved? How can we determine whether the outcomes of one setting are better than another? While many hospitals use the Functional Independence Measure (FIM), skilled nursing homes use the Minimum Data Set (MDS) to evaluate patients. This study validated a previously developed crosswalk, a way to translate a score on the FIM to a score on the MDS and vice versa. By improving our ability to follow patients and compare healthcare settings, we find that crosswalks should increase the quality of care for veterans.

How humans walk: Bout duration, steps per bout, and rest duration

Michael S. Orendurff, MS, et al.

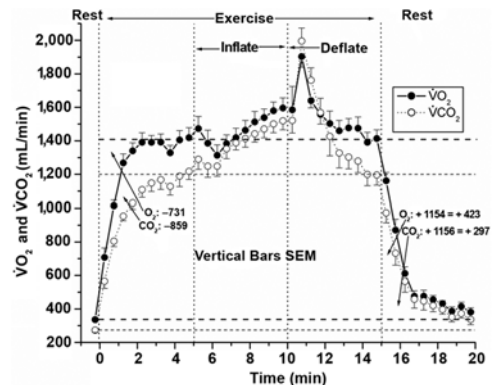


Patients often successfully complete gait rehabilitation during an inpatient stay only to experience substantial challenges in transferring this walking ability to home and community mobility. Perhaps rehabilitation strategies should focus on the type of walking behavior used most often by nondisabled individuals? To define this typical walking behavior, 10 nondisabled individuals wore a small device on their ankle to count steps. The number of steps in a row, how long these walk-

ing behaviors lasted, and the length of time individuals did not walk were recorded. Based on this information, nondisabled individuals take many very short walking trips, stop often for short periods, and start walking again. Of all walking, 40 percent was less than 12 steps in a row, and then people stopped walking. Seventy-five percent was less than 40 steps in a row before they stopped walking. Perhaps gait training should include more stopping and starting and not concentrate on taking so many steps in a row. A study should be undertaken to determine if patients trained with lots of stopping and starting do better in the community than patients trained with long-duration walking behaviors.

Effects of acute leg ischemia during cycling on oxygen and carbon dioxide stores

Jack A. Loeppky, PhD, et al.



While restricting blood flow to an exercising limb (ischemia), regular light exercises can increase exercise endurance. This study measured the changes in body oxygen (O_2) and carbon dioxide (CO_2) stores that occur during restriction of blood flow to exercising legs while cycling with thigh pressure cuffs inflated. Breathing was greater during exercise with cuffs inflated, depleting CO_2 as the legs used O_2 . After exercise stopped, metabolic by-products from the legs returned to the central circulation and kept breathing elevated, which gradually repaid O_2 and kept CO_2 below normal long after the exercise.