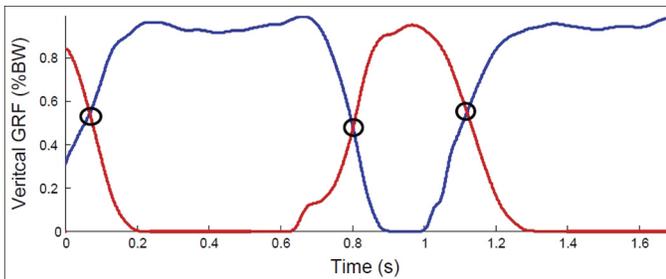


Quantifiable patterns of limb loading and unloading during hemiparetic gait: Relation to kinetic and kinematic parameters

Bhavana Raja, PT, PhD, et al.

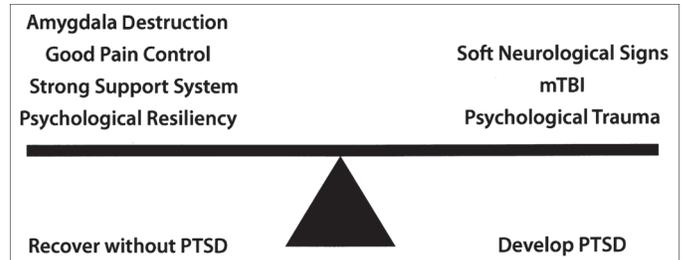


Walking poststroke is characterized by incoordination and asymmetry. While asymmetry in loading and unloading of the legs has been reported in static positions, it is unclear whether the same asymmetries exist during walking. Furthermore, individuals poststroke often make several adjustments in limb loading and unloading and leg position to maintain a steady walking state. In this study, we quantify loading and unloading asymmetry poststroke during walking and its relation to leg kinematics. The magnitude of paretic loading was reduced and was significantly correlated to average leg angle, while nonparetic loading was increased and correlated with average knee angle. Three different patterns of loading and unloading were identified: concave, convex, and linear. Loading deviations were more pronounced with increased lateral placement of the paretic foot and decreased functional gait speed. Characterization of these deviations may inspire new strategies for rehabilitation.

For veterans with mild traumatic brain injury, improved posttraumatic stress disorder severity and sleep correlated with symptomatic improvement

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

We observed 63 Operations Iraqi and Enduring Freedom veterans who had reported exposure to explo-

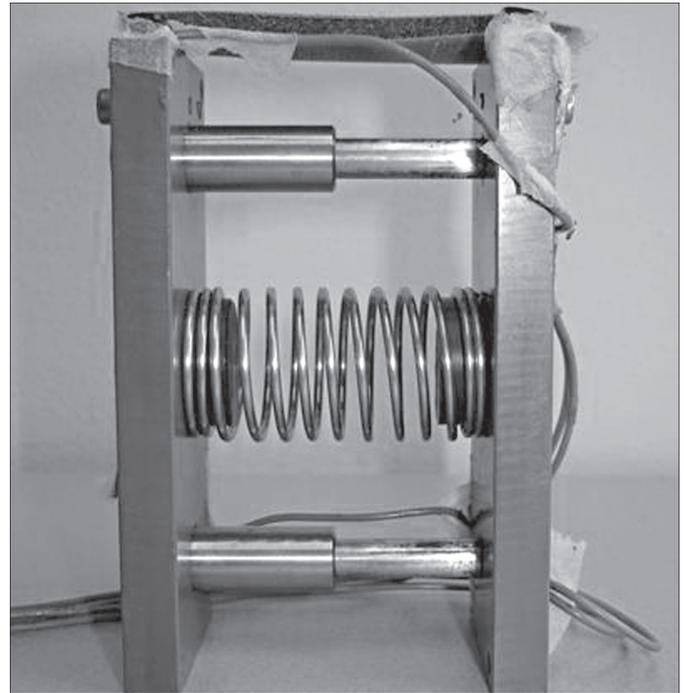


sions that produced mild traumatic brain injury (concussion). All veterans had headaches; posttraumatic stress disorder (PTSD); and neurological problems, usually impaired smell. At the start, they had >13 headaches a month, severe headache pain, increased daytime sleepiness, and mild cognitive impairment. The veterans received sleep hygiene counseling and the drug prazosin at bedtime. After 9 weeks, the veterans had less headache pain, fewer headaches, better cognitive and sleepiness scores, and less severe PTSD, but neurological problems and sense of smell did not change. Six months later, the veterans had further reductions in headache pain, headache frequency, and PTSD severity and improved sleepiness scores but still no change in neurological problems. PTSD severity and impaired sleep are associated with cognitive impairment and headaches due to combat-acquired mild traumatic brain injury.

Transtibial prosthetic suspension: Less pistoning versus easy donning and doffing

Hossein Gholizadeh, MEngSc, et al.

A prosthetic leg should be securely attached to the limb so that the user feels it as part of his or her own body. Different methods have been used to evaluate the pistoning movement of the residual limb inside the socket. The majority of existing research is based on pistoning measurement in quiet standing rather than walking. We introduce a new technique for evaluating prosthetic suspension during walking using a motion analysis system. This study revealed that other factors such as donning and doffing might be more clinically significant in a person with amputation's satisfaction



than pistoning once a reasonable level of pistoning is reached.

Determining skill level in myoelectric prosthesis use with multiple outcome measures

Hanneke Bouwsema, MSc, et al.

To improve upper-limb prosthesis use, it is important to know which aspects of the actions with the prosthesis need to be improved. To gain insight into these aspects, the current study related performance on a clinical test to parameters of movement of the prosthetic arm and hand as well as to parameters of gaze and force control of the prosthetic hand. Overall, prosthesis users scoring high on the clinical test had distinguishing fundamental outcomes regarding their prosthesis actions. Rehabilitation professionals can use these features to achieve the highest skill level possible for each prosthesis user.

Akathisia—rare cause of psychomotor agitation in patients with traumatic brain injury: Case report and review of literature

Janet E. Wielenga-Boiten, MD; Gerard M. Ribbers, MD, PhD

Akathisia is reported to be one of the most common and disabling side effects of antipsychotics and other drugs. Akathisia is a rare cause of psychomotor agitation in patients with traumatic brain injury (TBI). In this clinical note, we describe a case report of akathisia in a 34-year-old woman with TBI; review earlier case studies on akathisia in TBI; and discuss the differential diagnosis, as well as its pathophysiology, treatment, and prognosis.

Effects of customized risk reduction program on cardiovascular risk in males with spinal cord injury

Jonathan Myers, PhD, et al.

Spinal cord injury (SCI) is a common problem in veterans. These individuals generally have heightened risk for cardiovascular disease (CVD); therefore, reducing

CVD risk may reduce concomitant illness and mortality in veterans with SCI. This study aimed to determine the influence of a multidisciplinary risk management program on CVD risk. Over a 2 yr period, we found small changes in body weight, plasma insulin, and blood lipids, but these changes were not consistent across visits. Such programs present more challenges than those in ambulatory persons, and more intensive risk intervention may be required to appreciably reduce CVD risk in SCI.

Regional cortical and trabecular bone loss after spinal cord injury

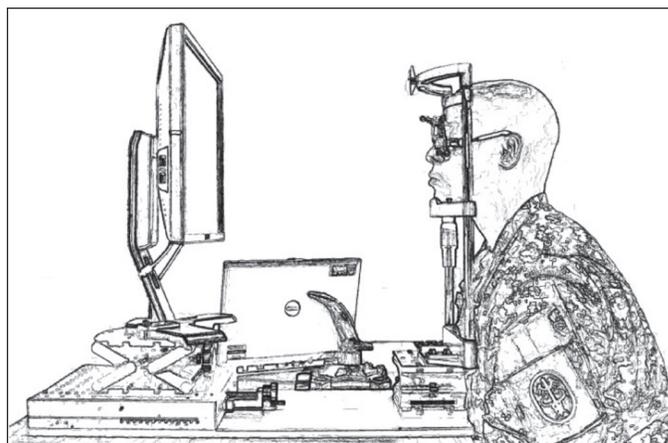
Shauna Dudley-Javoroski, PT, PhD; Richard K. Shields, PT, PhD, FAPTA

Spinal cord injury (SCI) causes declines in bone mineral density (BMD) and cross-sectional area (CSA), increasing fracture risk for people with SCI. This study measured BMD and CSA loss at several previously unexamined sites in people with SCI. Up to 35% of BMD was lost in the first year after SCI. BMD loss continued until about 4 years after SCI, eventually reaching 50% of the BMD value in non-SCI bone. CSA declined more slowly, eventually reaching 65% of the non-SCI value. Rehabilitation personnel should remember this during interventions like standing, muscle electrical stimulation, and aggressive stretching of spastic muscles.

Effectiveness of computerized oculomotor vision screening in a military population: Pilot study

José E. Capó-Aponte, OD, PhD, et al.

The number of warfighters affected by blast-induced mild traumatic brain injury (mTBI) has increased considerably in the recent years as a consequence of the current conflicts. Oculomotor (eye movement) vision problems frequently result from mTBI; however, conventional oculomotor examinations are time-consuming and can only be performed by an eye doctor. This limits the number of military personnel that can be evaluated for oculomotor problems before and after deployment. This study showed that computerized oculomotor vision screening performed by non-eye-care providers can be



an effective means to expedite the identification and management of oculomotor vision problems in patients with or without mTBI.

Comparison of standardized bariums with varying rheological parameters on swallowing kinematics in males

Jacqueline Hind, MS, CCC-SLP, BRS-S, et al.

If untreated, difficulty swallowing (dysphagia) can cause dehydration, malnutrition, pneumonia, and death. Identifying the best treatment strategies for dysphagic patients begins with evaluation of swallowing function. This project compared three liquid barium materials of different viscosities (thicknesses) used during X-ray assessment of swallowing. Frequency of material entering the airway, amount of residue in the throat after swallowing, and patient preferences were compared among the bariums. The results supported the use of a thin honey barium (moderate thickness) because it was characterized by similar movement through the mouth and throat as the traditional honey barium (very thick) during the X-ray assessment and was preferred by patients.

Does a waist-worn ActiGraph accelerometer quantify community ambulation in persons with multiple sclerosis?

Jacob J. Sosnoff, PhD, et al.

Persons with multiple sclerosis (MS) have impairments in walking. It has been proposed that commercially

available accelerometers are capable of measuring walking impairments in persons with MS. This notion is based on the assumption that walking is a primary contributor to the accelerometer readings. In order to test this assumption, persons with MS wore an accelerometer and another measuring device that was capable of determining the type of activity performed. We found that the accelerometer readings were related to the amount and quality of walking. The observations support accelerometers as a way to measure walking impairments in persons with MS.

Can structured data fields accurately measure quality of care? The example of falls

David A. Ganz, MD, PhD, et al.

Electronic health records may help us measure the quality of medical care more efficiently. In this study, we wanted to find out whether care for falls and fear of falling in outpatients 75 years and older could be accurately measured from a special progress note template for falls used in both paper and electronic forms. The reliability of measuring care from the note template was good for some activities, but quality of care measured from the note template did not capture all care provided. For now, an accurate measurement of care provided for falls will still require human review.

In vivo trial results of a novel ultrasonic cough stimulator

Jennifer C. Nitz, PhD, MPhty, BPhty, et al.

The ability to cough to remove lung secretions is often impaired when the patient is unconscious or when neurological pathology presents. Removal of lung secretions requires frequent invasive bronchial suction in these circumstances. This article reports on trials of a novel ultrasonic cough stimulator (CoughStim™) that consistently and comfortably stimulated a moderate to strong cough when applied to the side of the neck of nondisabled subjects and those unable to cough on demand. Results suggest the new ultrasound cough stimulator might be a viable alternative to invasive bronchial suction for removal of secretions in vulnerable elderly adults.

