

Development of a comprehensive Blast-Related Auditory Injury Database (BRAID)

Antony R. Joseph, AuD, PhD, et al.

The long-term effects of blast exposures on human auditory systems in combat environments have not been clearly described. Previous studies have been small in sample size and have included non-military subjects and children. Reliable medical surveillance data, such as audiograms, have been collected from U.S. military personnel for decades but have not been applied in studies with expeditionary medical encounter data. We created a database for research on the hearing health status of deployed servicemembers to provide decisive insight about operational readiness, injury prevention, and related medical problems.

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Enhanced vocational rehabilitation for Veterans with mild traumatic brain injury and mental illness: Pilot study

Maureen K. O'Connor, PsyD, et al.

The purpose of this pilot study was to develop and understand the effectiveness of cognitive rehabilitation embedded within vocational rehabilitation services, as offered by the Department of Veterans Affairs, for Veterans with mild traumatic brain injury and mental illness who want to return to the workforce. We found that Veterans who received embedded cognitive rehabilitation were more likely to participate in rehabilitative processes than those who received traditional vocational rehabilitation. Future research is warranted to determine the effectiveness of embedded cognitive rehabilitation as it pertains to improving competitive employment outcomes, cognitive functioning, and abilities in the workplace.

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Usability evaluation of low-cost virtual reality hand and arm rehabilitation games

Na Jin Seo, PhD, et al.

Lower-cost hand and arm virtual reality rehabilitation games have the potential to facilitate recovery of arm and hand movements even after a formal rehabilitation program ends. The games can be used for a variety of populations with upper-limb movement disorders, including those with stroke. Stroke is one of the leading causes of long-term disability in the United States, including among Veterans.

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Implementation of a brief anxiety assessment and evaluation in a Department of Veterans Affairs geriatric primary care clinic

Christine E. Gould, PhD, et al.

This article describes the feasibility of implementing a new anxiety screening measure in a Department of Veterans Affairs (VA) geriatric primary care clinic and the evaluation of the measure's utility. Anxiety disorders are common in older Veterans and accelerate functional decline among older adults, which makes improving the detection of this class of mental health disorders crucial. Two brief self-report measures, the Geriatric Anxiety Inventory (GAI) and the Geriatric Depression Scale, were completed by 50 patients. Findings suggest the GAI may not be appropriate for differentiating anxiety symptoms from depression but is useful and appropriate as a tool for interdisciplinary providers in VA primary care clinics to screen for and monitor anxiety symptoms in older patients. Detection of anxiety likely benefits patients by identifying distressing symptoms and thereby initiating conversations about available treatments.

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Effect of clinical parameters on the control of myoelectric robotic prosthetic hands

Manfredo Atzori, PhD, et al.

Amputation of the upper limb is one of the most severely impairing injuries. Surface electromyography is a promising method to naturally control non-invasive, dexterous, robotic prosthetic hands. The scientific literature proved that the electrical activity of the remnant muscles can be used to recognize a few hand movements performed by subjects with transradial amputation. However the effect of clinical parameters related to the amputation has not been analyzed thoroughly. We show that relationships between several clinical parameters and robotic hand control capabilities exist, thus laying the foundation for innovations in neuroscience and understanding amputation-related clinical parameters, surgery procedures, and prosthetics.

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Effects of high-speed power training on muscle strength and power in patients with multiple sclerosis

Carlos Medina-Perez, PhD, et al.

This study describes the effects of a high-speed power training program of knee extensors on muscular strength and muscle power in patients with multiple sclerosis (MS) without injuries. The researchers wanted to find out if this novel training methodology could be used in MS patients. The results showed that patients who performed the training increased their muscle strength and power. Moreover, no adverse effects attributable to this training regime were noted. Hence, the findings indicate that this training regime could be used by Veterans with MS, and it might contribute to maintaining or improving functional everyday tasks encountered in those patients.

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Impact testing of the residual limb: System response to changes in prosthetic stiffness

Erin Boutwell, PhD, et al.

Shock absorption naturally occurs in nondisabled walking. It is important to restore this function in Veterans who walk with prosthetic limbs since impact forces can potentially cause long-term damage to the skin, soft tissues, and residual joints of both the intact and amputated limbs. We used a shock-absorbing pylon to vary prosthetic stiffness in transtibial prosthesis users and assessed shock absorption using a sudden loading evaluation device. Surprisingly, force transmission and prosthetic-side total limb stiffness were unaffected by changes in prosthetic limb stiffness. This result may be explained by the relatively low stiffness of the residual limb soft tissue.

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Utility of the Validity-10 scale across the recovery trajectory following traumatic brain injury

Sara M. Lippa, PhD, et al.

The Validity-10 scale screens for exaggeration of symptoms in patients with a history of traumatic brain injury. Our study examined how time since injury is related to scores on the Validity-10 scale. We found that overall postconcussive symptom report, Validity-10 scale score, and likelihood of having scores indicating exaggeration of symptoms all increased as time since injury increased. This study supports the use of the Validity-10 scale in the early stages of recovery following traumatic brain injury, as well as across the recovery trajectory.

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Health status and treatment-seeking stigma in older adults with trauma and posttraumatic stress disorder

Anica Pless Kaiser, PhD, et al.

This study compared physical and mental health among groups of older primary care patients (post-traumatic stress disorder [PTSD], partial PTSD, trauma only, and no trauma), many of whom were Veterans. Individuals in the PTSD group had fewer close friends, more stigma concerns related to treatment-seeking, and worse mental health. Individuals with additional diagnoses (e.g., depression) had worse mental health than those with PTSD alone. Findings suggest that older adults and Veterans with PTSD have significant impairments beyond their PTSD symptoms (e.g., relationship difficulty and negative beliefs about treatment-seeking) that might benefit from intervention.

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Development of the Modified Four Square Step Test and its reliability and validity in people with stroke

Margaret A. Roos, PT, PhD, et al.

Many Veterans will experience a stroke with resultant balance deficits, namely problems with obstacle avoidance and moving within a time constraint, which will cause them to be at increased risk for falling. The Modified Four Square Step Test was designed to test these difficult tasks. In this research project, individuals with stroke were timed as they stepped clockwise and counterclockwise over tape placed crosswise on the floor. The Modified Four Square Step Test was shown to be a reliable and valid measure of dynamic balance in people with stroke. This easily administered outcome measure will assist clinicians with early identification of dynamic balance deficits.

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