

Systematic review of timed stair tests

Elizabeth Jean Nightingale, PhD, et al.

Functional testing has advantages for testing more than one component of the motor system at once and can indicate the effects of aging. Timed stair tests provide a reliable, stable measure of function to give medical and rehabilitation professionals information about patient's progress, comparison to a healthy population, and further practical goals. Because a timed stair test measures a greater range of motion in the lower limb and has greater strength demands and balance requirements, it may have additional benefits for testing patients who are younger or more functional despite their injury.

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Self-reported and performance-based outcomes using DEKA Arm

Linda Resnik, PT, PhD, et al.

The purposes of this study were to examine outcomes including dexterity, performance of daily activities, and prosthetic skill and spontaneity of users of the DEKA prosthetic arm and to compare outcomes using the DEKA Arm and the existing prosthesis. We found that dexterity and activity performance with the DEKA Arm varied by amputation level. Self-reported function and number of activities performed using the prosthesis was similar across levels. Activity performance and spontaneity of use were improved for users of the shoulder configuration level, while use of the prosthesis to perform activities and perceived difficulty performing self-selected tasks were improved for all levels.

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Concordance of clinician judgment of mild traumatic brain injury history with a diagnostic standard

Terri K. Pogoda, PhD, et al.

Mild traumatic brain injury (mTBI) is a common injury among Veterans of Operation Iraqi Freedom/Operation Enduring Freedom. When Veterans experience negative health symptoms after their return from deployment, clinicians are faced with the challenge of determining whether present symptoms are related to an mTBI history or to another health condition. Department of Veterans Affairs clinicians follow a protocol for evaluating mTBI, which is based on standardized diagnostic criteria. In this study, we look at the relationship between clinician judgment of mTBI history and these diagnostic criteria and examine deployment-related and patient factors that are associated with inconsistencies.

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Pilot study: Computer-based virtual anatomical interactivity for rehabilitation of individuals with chronic acquired brain injury

C. Douglas Simmons, PhD, OTR/L, FAOTA, et al.

The number of veterans diagnosed with acquired brain injury continues to increase. Issues with upper-limb motor function and executive functioning can compromise one's ability to complete everyday activities. This article reports on changes in upper-limb motor and executive functioning of 12 adults with chronic acquired brain injury who participated in a pilot study to determine the utility and potential efficacy of using a computer-based motor program. Six participants demonstrated improvement in shoulder, elbow, and wrist movements. Participants demonstrated clinically

relevant improvement in shoulder, elbow, and wrist strength. Finally, nine participants demonstrated noticeable improvements in executive functioning following intervention.

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Anomia treatment platform as behavioral engine for use in research on physiological adjuvants to neurorehabilitation

Diane Kendall, PhD, et al.

The World Health Organization has deemed stroke a worldwide health problem because it is very prevalent; causes disability; and burdens individuals, the community, and society. Many veterans are stroke survivors. A common side effect of certain strokes is a language problem called aphasia. Aphasia is chronic, pervasive, and debilitating, leaving the survivor unable to work. Aphasia behavioral treatment programs may benefit from medicines to enhance treatment effects. This study is an important first step.

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Receipt of employment services among Veterans Health Administration users with psychiatric diagnoses

Kristen M. Abraham, PhD, et al.

Veterans with psychiatric diagnoses have high rates of unemployment, and the Veterans Health Administration (VHA) provides services to help Veterans with psychiatric diagnoses find employment. We used VHA administrative health records to identify the percentage of VHA patients with psychiatric diagnoses who received at least one employment services visit in a given year and examined whether specific patient characteristics were associated with receiving employment services. We found that few VHA patients with a psychiatric diagnosis (4.2%) received employment services within 1 year. VHA

patients with schizophrenia or bipolar disorder were more likely to receive employment services than VHA patients with other psychiatric diagnoses.

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Prospective prediction of functional difficulties among recently separated Veterans

Gerald E. Larson, PhD; Sonya B. Norman, PhD

The goal of this study was to understand what type of information about a servicemember when he or she is getting ready to leave the military might predict problems after leaving. Symptoms of post-traumatic stress disorder predicted problems in many areas, such as work, money, and mental health. The study shows that it is important to get help for post-traumatic stress disorder.

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Toe clearance when walking in people with unilateral transtibial amputation: Effects of passive hydraulic ankle

Louise Johnson, PhD, et al.

This study demonstrated that use of a recently developed prosthetic foot with hydraulically controlled articulating ankle increased the minimum toe clearance during overground walking in people with transtibial amputation. This is important because adequate foot-ground clearance is critical to avoid tripping and hence falling, and people with amputation have been shown to have a higher risk of falling than nondisabled individuals. Although variability in toe clearance also increased on the prosthetic limb, which would increase risk of tripping, this risk was offset by a relatively larger concurrent increase in mean toe clearance.

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Development of inexpensive prosthetic feet for high-heeled shoes using simple shoe insole model

Margrit R. Meier, PhD, et al.

The large majority of prosthetic feet are made for low-heeled shoes. Only a few models allow a heel height of up to 5 cm. However, a survey by the American Podiatric Medical Association indicates that most women wear heels over 5 cm; thus, current prosthetic feet limit most female prosthesis users in their choice. Some prosthetic foot components let the user adjust to different heel heights. However, these feet change only the angle of the ankle without adjusting the shape of the prosthetic foot to match the insole shapes of the shoes. The aims of the study were therefore (1) to develop a model that allows prediction of insole shape for various heel height shoes and different shoe sizes and (2) to develop and field-test low-cost prototypes of prosthetic feet whose insole shapes were based on the new model. An equation was developed for the calculation of insole shapes that is independent of shoe size, thus applicable to all sizes. Field testing of prosthetic feet fabricated based on the equation was successful and demonstrated the practicality of the equation.

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Qualitative assessment of Tongue Drive System by people with high-level spinal cord injury

Jeonghee Kim, MS, et al.

Veterans constitute one quarter of the 250,000 people with high-level spinal cord injury (SCI) in the United States, and there are 12,000 cases of SCI adding to this population every year. These individuals are currently underserved and could benefit immensely from advancements in the field of assistive technologies. We designed a Tongue Drive System (TDS) that allows people with severe disabilities to control their environments using tongue motion with a small magnetic tracer. This study showed that users

were happy with the TDS and many would use such a device if it were made available.

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Effect of dynamic keyboard and word-prediction systems on text input speed in persons with functional tetraplegia

Samuel Pouplin, OT, MSc, et al.

People with disabilities can have difficulty using a computer and may type very slowly. Using 10 subjects with severe disabilities, we tested two systems for improving typing speed based on virtual keyboards. Word prediction improved typing speed for one in two people. A dynamic keyboard (which predicts the next letter) may be useful for people who cannot use a pointing device but not for those who can. Further studies are needed to improve the ergonomic design of the word-prediction system and to test the dynamic keyboard on more people.

<http://dx.doi.org/10.1682/JRRD.2012.05.0094>

Posture-dependent control of stimulation in standing neuroprosthesis: Simulation feasibility study

Musa L. Audu, PhD, et al.

In this article, we describe a method that uses musculoskeletal models and computer simulation to enable us to determine the effect of changing muscle activation on standing balance using functional neuromuscular stimulation. Varying muscle activation reduces the effort exerted by the arms on a walker or other support device. This work is directly applicable to the health and well-being of disabled veterans. Spinal cord injury (SCI) significantly restricts access to life opportunities and compromises the ability to work, engage in social or leisure activities, pursue an education, or assume other roles associated with an independent and productive lifestyle. These issues

are especially important to veterans, who are over-represented in the population with SCI.

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Management of multijoint stiffness of bilateral upper limbs secondary to heterotopic ossification: Case report and literature review

Hong-wei Min, MD, et al.

Heterotopic ossification (HO) may affect some Veterans with traumatic brain injury (TBI) and severely interfere with their activities of daily living (ADLs). This original report describes a patient with multijoint ankylosis secondary to HO in TBI who was treated with a comprehensive rehabilitation management protocol. The patient achieved great improvement in ADLs after the treatment. The protocol deserves clinical application.

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Mixed-method approach to veteran satisfaction with pain education

Erin C. Watson, MA, et al.

The current study is the first known investigation to examine patients' opinion and satisfaction of an empirically supported health education program catered to veterans who experience noncancer pain. "Pain Education School" combines educational, self-management, and technological tools to enhance patients' knowledge about treatment options and uses of medication and to ensure active collaboration in their healthcare needs. Satisfaction and opinion of the current program is invaluable in helping providers improve the existing program for current and future participants who share the same or similar condition and for the providers aiding in the facilitation of the program.

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