

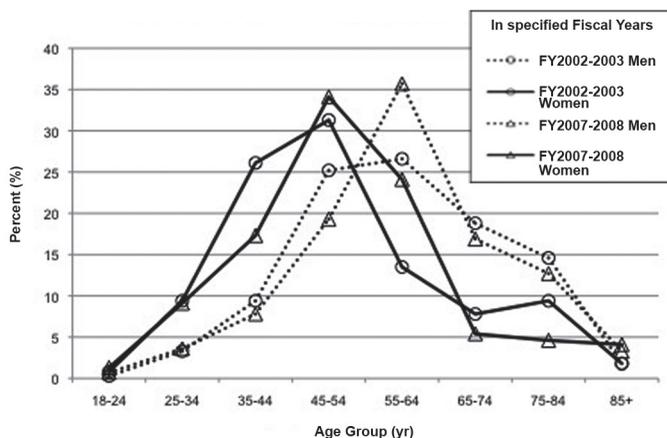
## Preventive services in veterans in relation to disability

Alyson J. Littman, PhD, MPH, et al.

Veterans with disabilities may be at increased risk of diseases, yet those with a disability may be less likely to receive preventive healthcare such as vaccinations and screening tests. We determined whether Veterans with a disability were less likely to receive preventive services than Veterans without a disability. We generally found that Veterans with a disability were as likely or even more likely to receive preventive healthcare services. Among Veterans, having a disability did not appear to be a barrier to receiving appropriate preventive healthcare.

## Who are the women and men in Veterans Health Administration's current spinal cord injury population?

Catherine M. Curtin, MD, et al.



The Veterans Health Administration is committed to providing comprehensive care to Veterans with spinal cord injury (SCI), and this population is changing. They are living longer, which has brought new medical challenges such as arthritis, osteoporosis, and cardiovascular disease. Also, new injuries from recent wars and the increased entry of women into the Armed Forces have

affected the SCI Veteran population. This study seeks to characterize current Veterans with SCI, with emphasis on healthcare utilization and women SCI Veterans. This information should assist with resource allocation for optimal healthcare for this complex population.

## Plasma variations of biomarkers for muscle damage in male nondisabled and spinal cord injured subjects

Sandra Loerakker, MSc, et al.

Pressure ulcers cause much suffering to veterans and their family members. Early detection of this potentially long-standing condition would improve chances for successful treatment. This study attempts to identify the concentrations of biochemical markers, collected from blood samples, that will indicate early tissue damage. The results suggest that there are considerable differences between individuals, which must be considered when screening for the presence of deep tissue injury.

## Insulin growth factors may explain relationship between spasticity and skeletal muscle size in men with spinal cord injury

Ashraf S. Gorgey, MPT, PhD, FACSM; David R. Gater, MD, PhD

Veterans with spinal cord injury are at a life-long risk of increasing obesity and continuing metabolic disorders such as glucose intolerance, insulin resistance, and dyslipidemia due to deterioration in body composition. Understanding factors that could prevent these conditions may improve these veterans' longevity and reduce their burdens. Our group has previously investigated the effects of spasticity (increasing muscle tone) on muscle size, fat mass, and carbohydrate and lipid profiles. In this work, we further expand on previous findings to determine how spasticity exerts protective effects in people with spinal cord injury.

### Impact of adding artificially generated alert sound to hybrid electric vehicles on their detectability by pedestrians who are blind

Dae Shik Kim, PhD, et al.



Quieter vehicles (hybrid electric, 100% battery electric) on the roadways may affect blind pedestrians' ability to travel safely since they often rely on hearing vehicles to successfully navigate and cross streets. In the current study, a hybrid electric vehicle equipped with an artificially generated alert sound was detected at a significantly farther distance than the hybrid electric vehicle without such a sound and at a similar distance as a comparable internal combustion engine vehicle. The findings of this study may help blind pedestrians understand how adding an artificially generated sound to a hybrid electric vehicle could affect their orientation and mobility tasks.

### Standard task set for evaluating rehabilitation interventions for individuals with arm paralysis

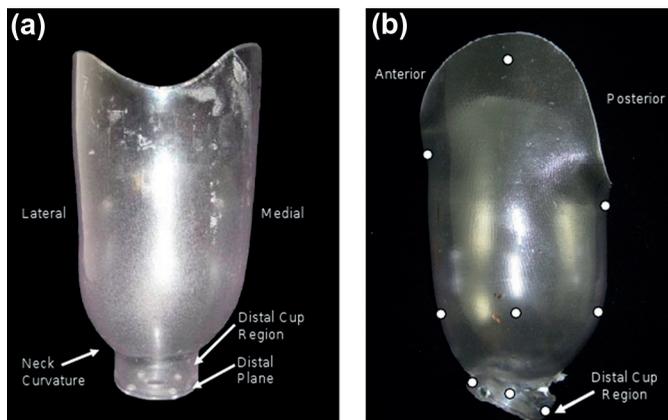
Andrew S. Cornwell, PhD, et al.

Because there are very few rehabilitation options available for people with arm paralysis from, e.g., spinal cord injury, there has never been a way to assess their functional ability. Functional electrical stimulation (FES) is a way to restore functional movements to these

individuals by applying small amounts of electricity to muscles in the arm. This article details the creation of a list of tasks feasible for someone using an FES system in one arm that can be used to evaluate this and other rehabilitation interventions. The selected tasks are touching the face, drinking from a mug with a straw, eating with fingers from a plate, retrieving an object from a countertop, and pressing an elevator button. These five tasks are important by themselves, but were also selected because they represent many more important activities of daily living.

### Strength evaluation of prosthetic check sockets, copolymer sockets, and definitive laminated sockets

Maria J. Gerschutz, PhD, et al.



Prosthetic sockets are the connecting feature between a person with amputation and his or her prosthesis. However, we have limited knowledge on the strength of these sockets and no accepted standard to test them. This article evaluates the static strength of prosthetic check sockets, copolymer sockets, and definitive laminated sockets obtained from nine facilities (central fabrication, private practice, and military). The results demonstrated that socket strength was not consistent and varied between and within facilities. This article provides information about the quality of prosthetic sockets, insights on improving patient care, and a way to evaluate future technologies.

### Validity of method to quantify transtibial amputees' free-living prosthetic wearing times and physical activity levels when using suction suspension sockets

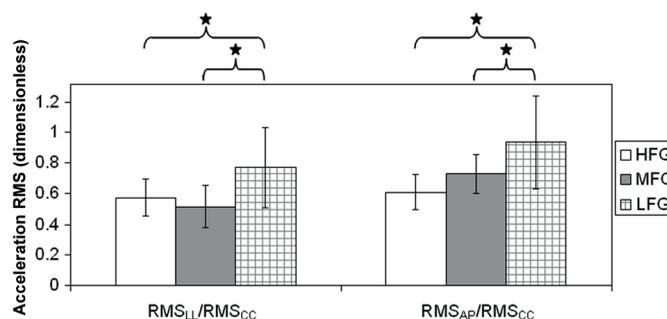
Kit Tzu Tang, EngD, et al.



Prosthetic lower limbs are prescribed to enhance an individual's mobility. It is difficult to assess how much physical activity an individual performs when wearing a prosthesis. In this study, we detail a new method of monitoring amputees' wearing times and activity when wearing a prosthesis. Accurate step count and characterization of on/off times are demonstrated. This information could be used to assess the suitability of a prosthesis for a person and help determine the prosthesis configuration most likely to be used and, therefore, most likely to benefit the person's cardiovascular health.

### Assessment of upper-body dynamic stability during walking in patients with subacute stroke

Marco Iosa, PhD, et al.



In recent years, the use of accelerometers for quantitative assessment of dynamic balance during walking has been increasing. However, clinical applications of this technique have been limited by issues that have not been addressed with respect to the computation of the accelerometric parameters and their dependency on walking speed. We concentrated on these problems by analyzing the accelerations of 15 inpatients with subacute stroke who were able to walk autonomously, 15 age-matched nondisabled people, and 15 younger nondisabled adults. We highlighted key problems and possible solutions. Our findings are an important step toward transferring accelerometry from human movement analysis laboratories to clinical settings.

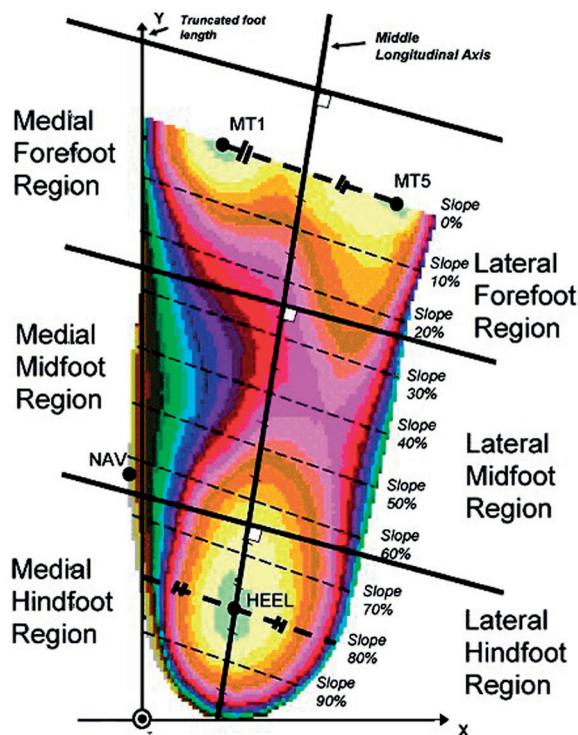
### Single session of brief electrical stimulation immediately following crush injury enhances functional recovery of rat facial nerve

Eileen M. Foecking, PhD, et al.

Our research has exciting clinical implications for patients with facial nerve paralysis following injury to the facial nerve. Our results show that a single 30 min session of electrical stimulation applied immediately following a facial nerve injury is sufficient to significantly improve the recovery time from facial nerve paralysis. Since no nonsurgical therapy exists to date that can reduce the recovery time after facial nerve injury, electrical stimulation applied directly to the nerve may potentially be the first treatment candidate to significantly improve recovery in a noninvasive manner.

### Is it important to position foot in subtalar joint neutral position during non-weight-bearing molding for foot orthoses?

Winson C. C. Lee, PhD, et al.



A foot orthosis is usually used to treat people with foot problems, which commonly occur in veterans. There are different methods of making a foot orthosis. This article suggests how different factors would affect the quality of a foot orthosis.

### Accelerometer output and its association with energy expenditure in persons with multiple sclerosis

Brian M. Sandroff, et al.

Interest in the study of physical activity among people with multiple sclerosis is increasing. Accurate measurement is critical when the relationships between physical activity and beneficial outcomes linked with disease progression, symptom management, and rehabilitation are being examined. Accelerometry is one way of objectively measuring physical activity in people with multiple sclerosis. The current study examined associations between rates of accelerometer counts and energy expenditure during walking in persons with multiple sclerosis and nondisabled controls. A strong linear relationship was found between accelerometer counts and energy expenditure, allowing for better quantification of physical activity behavior and its consequences in people with multiple sclerosis.