

**Differences in myoelectric and body-powered upper-limb prostheses: Systematic literature review**

Stephanie L. Carey, PhD, et al.

This systematic literature review describes the differences between myoelectric and body-powered prostheses in terms of control, function, feedback, cosmesis, and rejection. U.S. servicemembers with amputations from Operation Iraqi Freedom and Operation Enduring Freedom or vascular-related diseases may benefit from this review by learning about upper-limb prosthesis prescription and training options. This review may also encourage clinicians to emphasize the prosthetic preference and experience of the individual veteran throughout the prosthetic care process. This review also suggests a lack empirical evidence regarding functional differences in upper-limb prostheses, which may help prosthetic researchers focus.

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**VHA Multiple Sclerosis Surveillance Registry and its similarities to other contemporary multiple sclerosis cohorts**

William J. Culpepper, PhD, MA, et al.

The Veterans Health Administration (VHA) has provided important contributions to our understanding of multiple sclerosis (MS); however, the characteristics of the modern VHA MS population have not been adequately characterized. The purpose of this study was to characterize the modern VHA MS population and compare the demographic and clinical characteristics of the MS population in the VHA with that published from several other large MS cohorts in the United States. Based on these comparisons, we found some expected differences (VHA had more men and they were a little older), but the clinical characteristics were very similar across these cohorts. Based on these findings, the VHA MS popu-

lation appears to be representative of the general MS population. Combining the extensive VHA health services encounter data with the data collected in this study provides a rich and unique cohort for future studies.

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**Effects of repetitive low-level blast exposure on visual systems and ocular structures**

José E. Capó-Aponte, OD, PhD, et al.

The number of servicemembers injured by blasts has increased considerably in recent years as a consequence of current conflicts. Marines are repetitively exposed to low-level blasts during breacher training. Such occupational blast exposure has the potential to produce occult injuries to the eye or damage parts of the brain that control eye movement. This study showed that current levels of blast exposure used during Marine breacher training appear to be safe. However, the fact that some tests indicated slight visual changes over time, or compared with controls, emphasizes the importance of getting a comprehensive eye examination after blast exposure even in the absence of classical visual symptoms.

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**Pressure ulcer risk of patient handling sling use**

Matthew J. Peterson, PhD, et al.

Patient handling slings reduce the risk of injury for healthcare providers. However, no evidence exists of their safety with respect to pressure ulcers for vulnerable populations, specifically persons with spinal cord injury. Pressure mapping was used to evaluate various slings and to identify at-risk tissue areas. Pressures were greatest while suspended for all slings and highest along the sling seams (edges). The at-risk tissue areas while suspended in seated

slings were the posterior upper and lower thighs and in supine slings, the sitting area tissues. The amount of time spent in or on slings, especially while suspended, should be limited.

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### **No association between body composition and cognition in ambulatory persons with multiple sclerosis: A brief report**

Brian M. Sandroff, MS, et al.

There is evidence that body fat might be associated with cognitive functioning in healthy adults, perhaps due to inflammation. The potential body fat/cognition relationship might be larger in the presence of an inflammatory disease such as multiple sclerosis (MS). The current investigation examined objective measures of body composition and cognitive functioning in 60 persons with MS. Measures of body fat were not associated with cognition. Lean body mass was associated with cognition, although this association was minimized when controlling for disability status. This suggests that body composition might not represent a target of interventions for improving cognition in MS.

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### **Efficacy of simple integrated group rehabilitation program for patients with knee osteoarthritis: Single-blind randomized controlled trial**

Flávio S. da Silva, MS, et al.

Knee osteoarthritis often results in muscle weakness, pain, and decreased range of motion. The goal of clinical treatment is to improve the patient's health condition, and one major conservative intervention involves physical activity. However, exercise protocols are commonly established by therapist personal preferences and availability, which hinders the elucidation of what rehabilitation techniques are actually positive for osteoarthritis rehabilitation and patient adherence. In this study, we examined the efficacy

of a simple integrated group rehabilitation program consisting of general health orientation and exercises for subjects with knee osteoarthritis. Our findings indicate that this group exercise program was able to decrease pain and improve quality of life and function in patients with knee osteoarthritis.

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### **Effects of Kinesio Tape application to quadriceps muscles on isokinetic muscle strength, gait, and functional parameters in patients with stroke**

Timur Ekiz, MD, et al.

We studied the effects of Kinesio Tape (KT) application to thigh muscles in patients with stroke for the first time. We measured muscle strength, balance, gait, mobility, and quality of life. All patients participated in the same conventional rehabilitation program five times a week for 4 weeks. In addition, we applied KT to quadriceps muscles bilaterally to patients in the KT group. Our results indicate that KT application to quadriceps muscles combined with conventional exercises for 4 weeks is effective on muscle strength on both the paretic and nonparetic sides. We did not find a significant effect on functional parameters as a result of KT application.

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### **Performance of a pedometer to measure physical activity in a U.S. cohort with chronic obstructive pulmonary disease**

Valery A. Danilack, MPH, PhD, et al.

Objective assessment of physical activity (PA) in chronic obstructive pulmonary disease (COPD) is important. Simple monitoring devices are needed. We examined use of the Omron HJ-720ITC pedometer in COPD. One-hundred seventy-six persons with stable COPD wore the Omron and the StepWatch Activity Monitor (SAM) during an in-clinic walk and in the field. The Omron captures steps from purposeful, continuous walking, while the SAM captures all

steps. Omron-steps were compared with manually counted steps in the clinic and to SAM-steps in the field. The Omron accurately and reliably measured purposeful, continuous walking in COPD. The Omron may be ideal for interventions that promote PA through walking.

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### **Auditory difficulties in blast-exposed Veterans with clinically normal hearing**

Gabrielle H. Saunders, PhD, et al.

After returning from combat, many blast-injured Operation Iraqi Freedom/Operation Enduring Freedom Veterans report symptoms such as headache, dizziness, poor memory, and difficulty concentrating. In addition, many report hearing problems and yet have clinically normal hearing. This study shows that these Veterans often perform poorly on tests measuring ability to understand speech in noise, to combine input from both ears, to process fast sounds, and to separate out sounds. We also show that scores on these tests are correlated with reported difficulties on tasks that require these abilities. This provides data that ultimately will help clinicians document the hearing of blast-injured Veterans with normal hearing.

<http://dx.doi.org/10.1682/JRRD.2014.11.0275>

### **Effects of physical therapy delivery via home video telerehabilitation on functional and health-related quality of life outcomes**

Charles E. Levy, MD, et al.

This article describes a program for delivering physical therapy to Veterans at home through the use of the Internet and associated computer-based technology. The investigators wanted to find out whether this new method of providing therapy (referred to as “telerehabilitation”) was a possible alternative to traditional methods that require the Veteran to travel to a medical center or clinic. Veterans who received telerehabilitation showed functional improvement, expressed high levels of satisfaction with the program, traveled fewer miles to receive therapy, spent less time driving to receive therapy, and saw large savings in travel-related expenses. The results indicate that telerehabilitation shows promise as a method to deliver physical therapy to promote mobility and independence.

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