

**Central nervous system and musculoskeletal medication profile of a veteran cohort with blast-related injuries**

Dustin D. French, PhD, et al.

Little is known about the use of central nervous system (CNS) and musculoskeletal (MS) medications in Operation Iraqi Freedom/Operation Enduring Freedom (OIF/OEF) veterans with blast-related injuries. A group of 133 OIF/OEF veterans with blast-related injuries was identified from trauma registries and verified with electronic medical records. Use of multiple CNS and MS medications was common and demonstrated the medical complexity of these patients. By providing some benchmark data on the medication profiles of patients with blast-related injuries who are transitioning from the hospital to the community, we may help clinicians make decisions about CNS and MS medication usage.

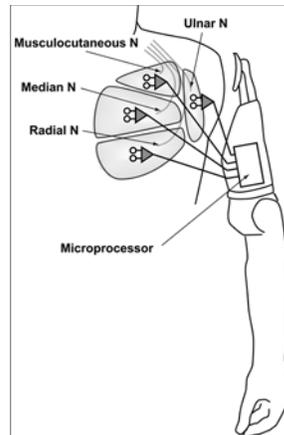
**Development of CRIS: Measure of community reintegration of injured service members**

Linda Resnik, PhD, PT, OCS, et al.

This research developed a veteran-specific measure called the Community Reintegration for Service Members (CRIS) and conducted tests of validity and reliability. Earlier research identified challenges in community reintegration postdeployment. Studies of 126 veterans were conducted. The results showed that the CRIS scales were reliable and valid. Employed subjects had better CRIS scores than unemployed subjects. Subjects with posttraumatic stress disorder, substance abuse, or mental health problems had worse scores than subjects without these diagnoses. We conclude that the CRIS could provide a way to monitor community reintegration outcomes of vulnerable veterans. Routine assessment of community reintegration for injured service persons could enhance patient assessment and targeting of referrals to services such as mental health, social services, and benefits.

**Occupational therapy protocol for amputees with targeted muscle reinnervation**

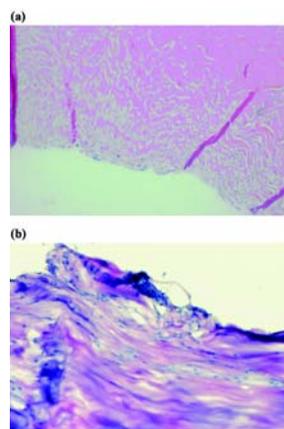
Kathy A. Stubblefield, OTR/L, et al.



When an arm is amputated above the elbow, prosthesis control is complicated and awkward. Targeted muscle reinnervation (TMR) is a surgical procedure aimed at making myoelectric prosthesis control easier for people with high-level amputations. Ten service members previously fitted and trained using conventional prosthesis control have benefited from this revision. This article describes the recommended therapy regimen for occupational therapists working with patients who have undergone TMR. The patients learn to use the reinnervated muscles to control the prosthesis more easily, naturally, and quickly than with the more conventional prosthetic fitting.

**Tissue-engineered intrasynovial tendons: Optimization of acellularization and seeding**

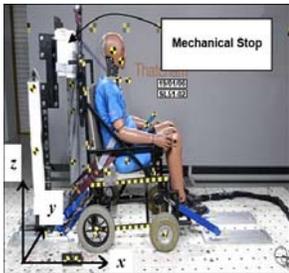
Andrew Y. Zhang, MD, et al.



When the tendon of the hand is injured or missing from severe trauma, patients cannot use their hands normally and their lives are much harder. To fix the problem, a surgeon usually borrows tendon from other parts of the body to replace the damaged tendon. Our work involves creating new tendon without using tendon from other parts of the body. Our idea is to use the patient's own cells to repopulate a donor tendon that has been treated to have no cells, whereby creating a tendon that is the same as the patient's own.

### Rear-impact neck protection devices for adult wheelchair users

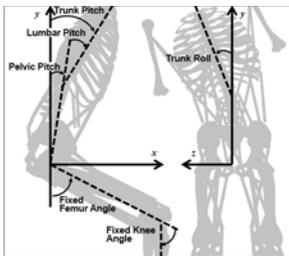
Ciaran K. Simms, PhD, et al.



Many wheelchair users remain in their wheelchairs during transport in adapted passenger cars or minivans. They therefore do not benefit from some safety features available to motor vehicle seat occupants. The wheelchair and user are secured within the vehicle with wheelchair tie-downs and a seat belt system. Head restraints are often also fitted to protect the neck in a rear-end collision, but their effectiveness needs further evaluation. This article presents results of nine rear-impact sled tests of a crash dummy representing an occupant seated in a wheelchair with and without a head restraint. Two head restraint designs were tested: one was a new prototype and the other was commercially available from Rolko location. Both head restraints effectively protected the head, but the Rolko is lighter and easier to use.

### Musculoskeletal model of trunk and hips for development of seated-posture-control neuroprosthesis

Joris M. Lambrecht, MS, et al.

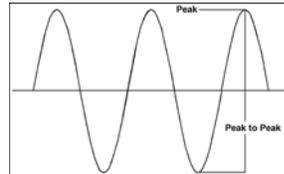


The paralysis resulting from spinal cord injury severely decreases mobility, causing an increased risk of pressure sores, unhealthy postures, and difficulty breathing. Paralysis of the back and hip muscles also limits a person's ability to perform

reaching tasks with both hands. We have developed a mathematical model to study the muscles involved in seated-posture control. Using this model, we have determined which muscles to electrically stimulate to restore the most function. This information may be used to develop an implantable system to improve seated posture, allowing users to reach farther and be more confident and independent.

### Whole-body vibration as potential intervention for people with low bone mineral density and osteoporosis: A review

Julia O. Totony de Zepetnek, MSc(c), et al.

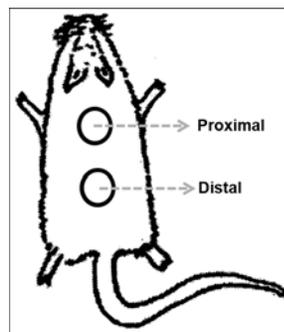


Muscle atrophy and decreased bone density are common among older adults, postmenopausal women, and individuals with physical impairments. Low bone density or osteoporosis can

lead to fractures among these populations, resulting in substantial morbidity and possibly mortality. Exercise and other interventions to improve osteoporotic conditions may be difficult or not practical for these populations. Whole-body vibration has been examined as a potential intervention for maintaining or improving bone mass, because it may imitate the mechanical strains seen during normal daily activities.

### Low-level laser therapy with pulsed infrared laser accelerates third-degree burn healing process in rats

Ali Ezzati, MD, et al.



Burn injury is a constant source of morbidity and mortality in the military environment. Recent research indicates that the burn wound is a dynamic structure of which its ultimate extent is modifiable by manipulations of the local anatomic and molecular environment. Low-level laser therapy (LLLT) has been used

successfully to accelerate wound healing in nonhealing defects. However, optimal parameters of LLLT for burn healing are still discussed. Hence, our study compared effects of different energy densities of LLLT at 890 nm in rats.