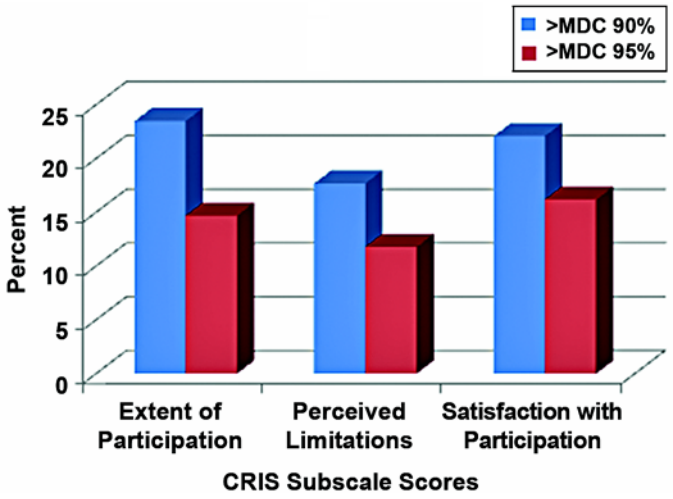
## Measurement of community reintegration in sample of severely wounded servicemembers

Linda Resnik, PT, PhD, et al.

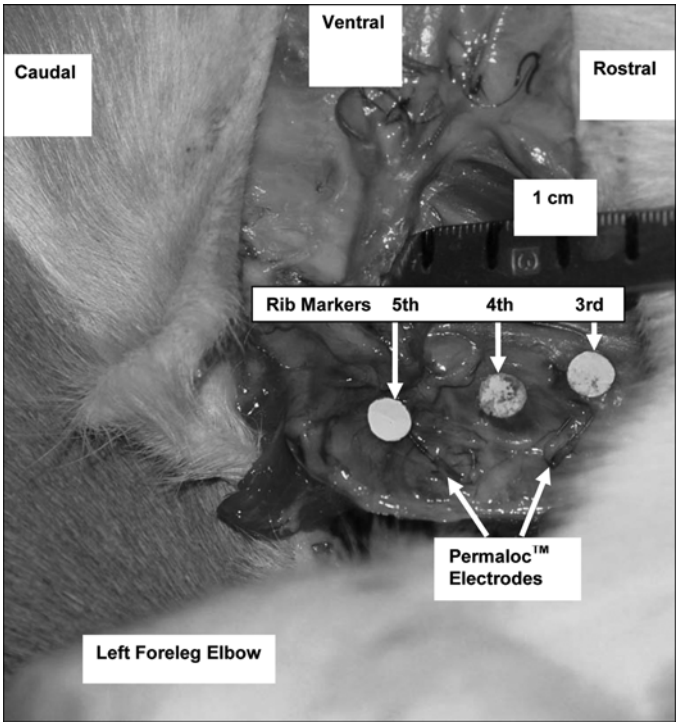



Community Reintegration of Servicemembers (CRIS) is a new measure of community reintegration. Prior to the current study, the measurement properties of CRIS had not been examined in younger veterans or in those with severe injuries. This study tested CRIS with seriously injured combat veterans. We collected data from 68 subjects from the Center for the Intrepid in two sessions 3 months apart. We examined reliability, validity, and responsiveness of CRIS. Results suggest that CRIS is a sound test to measure community reintegration in severely wounded servicemembers.

## Respiratory muscle pacing with chronically implanted intramuscular Permaloc electrodes: A feasibility study

James S. Walter, PhD, et al.

In patients with upper-cervical spinal cord injury, ventilation is maintained with a respirator or by phrenic nerve stimulation. Ventilation can also be augmented by upper-thorax stimulation during inhalation and abdominal-muscle stimulation during exhalation. In the current investigation, we report results with chronically implanted intramuscular electrodes located in the diaphragm, upper thorax, and abdominal muscles. Combined diaphragmatic and upper-thorax stimulation followed by abdominal-




muscle stimulation increased the tidal volumes compared with diaphragmatic stimulation alone. Further studies must develop techniques that ensure stable anchoring of chronically implanted intramuscular electrodes and determine the best location and stimulation parameters to augment ventilation.

## Telerehabilitation assessment using the Functioning Everyday with a Wheelchair-Capacity instrument

Richard M. Schein, PhD, et al.

For many veterans, traveling to a medical center or hospital can be a complicated and sometimes difficult task because of where they live, their diagnosis, or a lack of transportation. The Department of Veterans Affairs has been recognized as a leader in telehealth. Specifically, telerehabilitation allows the delivery of rehabilitation services remotely. In this study, we used videoconferencing technology to allow an expert practitioner to connect with a client and other practitioners more than 100 miles away to examine how individuals functionally operate their wheelchairs and to recommend new wheeled mobility

devices. This technology will decrease travel time and assist with care coordination.

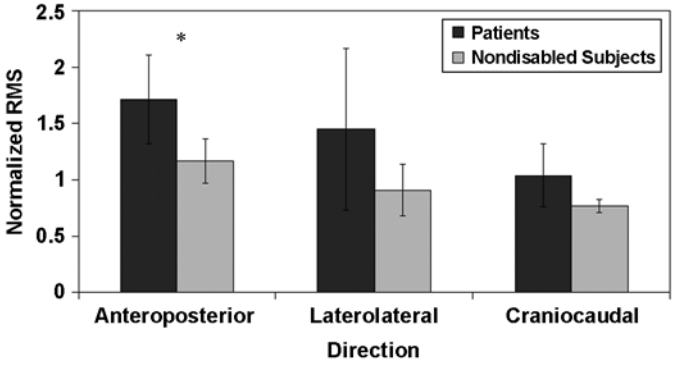
### Medical utilization and cost outcomes for poststroke veterans who receive assistive technology devices from the Veterans Health Administration

Sandra L. Hubbard Winkler, PhD, OTR/L, et al.

This study examined the relationship between provision of assistive technology devices (ATDs) and healthcare consumption and outcomes in a system that does not limit provision of ATDs to in-home use and determined how the provision of ATDs relates to inpatient/outpatient use and costs of services for veterans 12 months poststroke. This retrospective study used Department of Veterans Affairs administrative/workload databases to identify veterans with stroke. We found that providing mobility ATDs to veterans predicts greater functional gain while in the hospital and, most notably, greater outpatient visits, indicating these devices may enable better outpatient healthcare. However, ATD recipients did have longer length of stay.

### Driving electromechanically assisted Gait Trainer for people with stroke

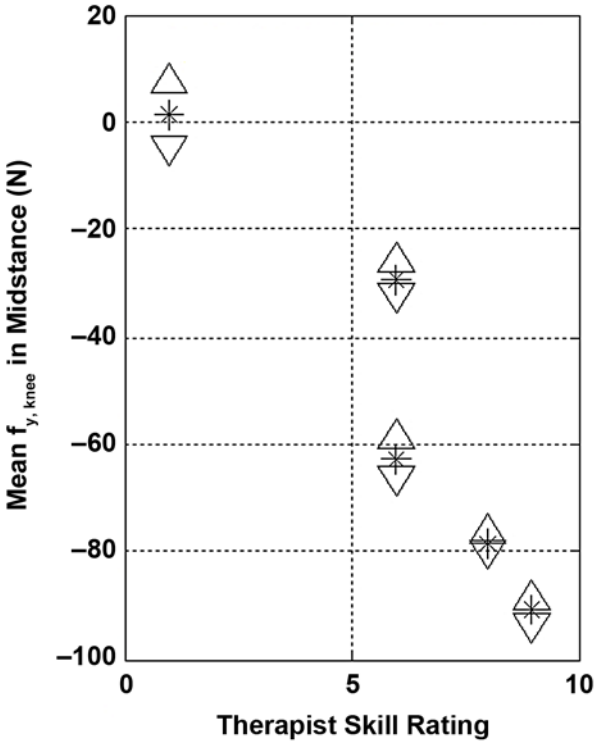
Marco Iosa, PhD, et al.




In the last decade, devices for electromechanically assisted gait training have been developed to allow nonambulatory patients to practice intensive, task-oriented exercise. Our review of this training focuses on body-weight support, walking speed, and harness accelerations. Our original study provides interesting results suitable for properly selecting parameters in electromechanically assisted gait training that can increase the treatment effectiveness for patients with subacute stroke.

### Trainer variability during step training after spinal cord injury: Implications for robotic gait-training device design

Jose A. Galvez, PhD, et al.




Over 2.5 million people worldwide live with spinal cord injury (SCI)-induced paralysis, a condition that affects a large number of veterans. Clinical research has shown that step training with body-weight support on a treadmill (BWST) and manual assistance can benefit people with SCI. Worldwide efforts are being made to automate BWST training with robotic devices. We measured the movements and forces that therapists exerted on patients during BWST training to assess the most effective manual training patterns and to use them to design more effective robotic gait-training strategies.

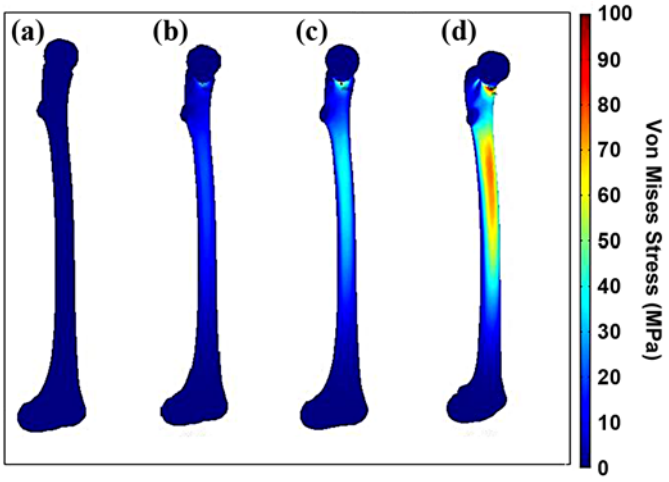
### Effect of prosthetic design on center of pressure excursion in partial foot prostheses

Michael P. Dillon, PhD, BPO(Hons), et al.

Research on the gait of people with partial foot amputation suggests that effective foot length can be restored if the prosthesis has a stiff forefoot, has an above-ankle anterior shell, and restricts dorsiflexion. By independently manipulating these design features of the prosthesis in two participants with partial foot amputation, we showed (using three-dimensional motion analysis) that the prosthesis must include each of these design features to restore effective foot length. When these design features were used at the same time, the participants' gait pattern was more like that of people without limb loss.

### Multiple vibration displacements at multiple vibration frequencies stress impact on human femur computational analysis

Bertram Ezenwa, PhD; Han Teik Yeoh, PhD




Veterans who are bedridden while recovering from injuries will benefit from technology that initiates muscle contraction to improve bone strength when they are unable to engage in physical activities. This article presents the development and pilot test called multiple vibration displacements at multiple vibration frequencies (MVD-MVF) for efficient recruitment of muscle groups while a patient stands on the platform. The advantage of MVD-MVF is that the use of high displacement levels is unnecessary for improving bone strength because of efficient muscle recruitment. Our results from testing MVD-MVF on a veteran subject showed that MVDMVF improved bone strength. We also included the veteran's comments about comfort of use.