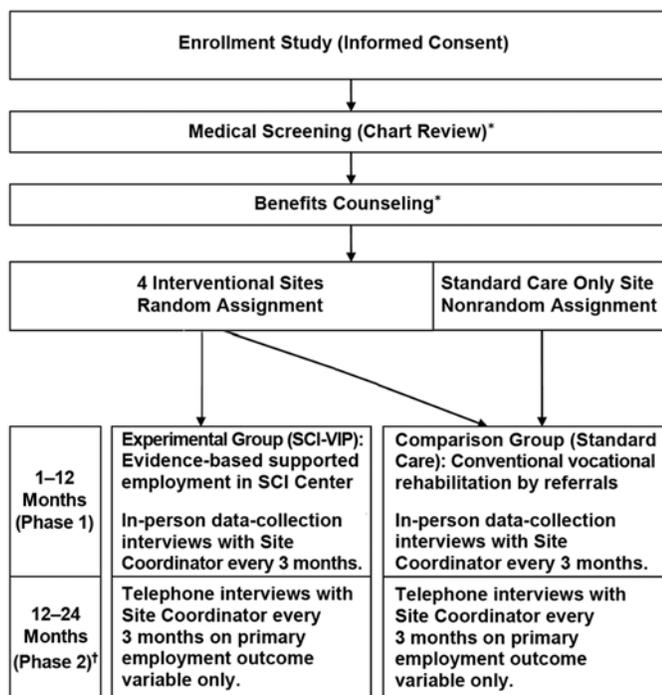


## Methods of a multisite randomized clinical trial of supported employment among veterans with spinal cord injury

Lisa Ottomanelli, PhD, et al.



More information about the best ways to help veterans with spinal cord injury return to work is needed. Supported employment is a type of vocational rehabilitation that helps persons with disabilities get paying jobs in the community. This type of vocational rehabilitation has not been widely used and has never been tested among persons with spinal cord injury. This article describes a research study that will compare supported employment to conventional vocational rehabilitation among veterans with spinal cord injury. Veterans who participate in supported employment are expected to have more success in returning back to work than veterans who receive conventional vocational rehabilitation.

## Evaluation of wheelchair tire rolling resistance using dynamometer-based coast-down tests

Andrew M. Kwarciak, MS, et al.

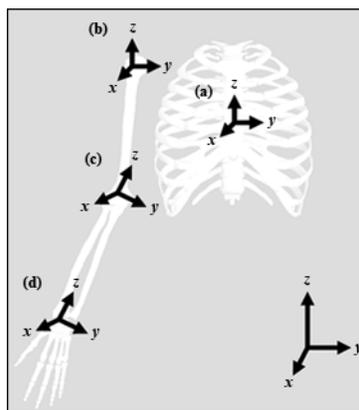


This study determined how wheelchair tire composition and tread affect rolling resistance. Five different pairs of tires were tested on a manual wheelchair secured to a roller system. Three sets of weights were added to the seat to simulate different users. Coast-down tests revealed that the pneumatic (air-filled) tires

had smaller rolling resistances and were less affected by increased weight than the solid tires. Within the two types, tires that were harder and had less tread rolled more easily. Given these and previous findings, the impact of tire type must be considered when selecting a tire.

## Upper-limb joint kinetics expression during wheelchair propulsion

Melissa M. B. Morrow, BS, et al.

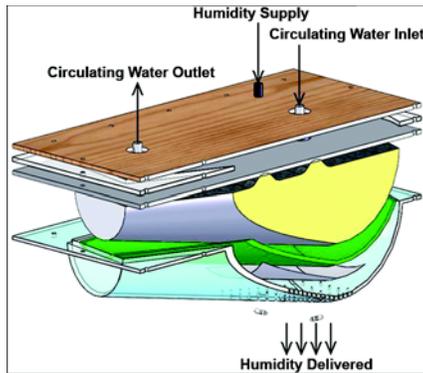


The majority of people who use manual wheelchairs will experience some form of joint pain or injury of the upper limb during their lifetime. Researchers have spent almost 15 years studying the loads on the upper limb during wheelchair activities to improve the lives of manual wheelchair users.

Directly comparing results between groups in the wheelchair literature has been difficult because data are represented differently. This article explores the data representation of the past and suggests a standard with which to better serve the manual wheelchair population.

**Thermodynamic rigid cushion loading indenter:  
A buttock-shaped temperature and humidity  
measurement system for cushioning surfaces under  
anatomical compression conditions**

Martin Ferguson-Pell, PhD, et al.

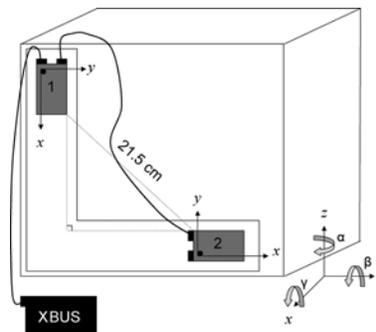


As the wheelchair cushion industry matures, the focus on prevention of decubitus formation shifts from tissue loading to the contributing factors in sore formation. Two of the factors believed to contribute to tissue

stress and ultimately ulceration are elevated skin temperature and moisture trapped in the body/cushion interface microclimate. A range of commercial wheelchair cushions was tested, representing a broad sample of materials of construction and contour to the body. The results show that the measurement system is highly repeatable and sensitive to differences between cushions. The results have allowed us to cluster the cushions into two distinct groups: those with higher heat dissipation (cooler) and higher moisture build-up and those with lower heat dissipation (warmer) but lower moisture build-up. We believe that this new test method will ultimately reliably measure a wheelchair cushion's impact on the heat and moisture characteristics of the microclimate created by the close association of a body with a cushion.

**Effect of mobility devices on orientation sensors  
that contain magnetometers**

Cynthia Kendell, BSc; Edward D. Lemaire, PhD



Motion analysis is often used to measure progress in rehabilitation. Current techniques are limited to laboratory and clinic settings so measuring how persons move is difficult, or how much they move, once they return to the

community. This article evaluates a new instrument for motion analysis that may be useful for measuring community mobility in rehabilitation patients. Accurate assessment of community mobility would allow health practitioners to make more informed decisions regarding patient treatment, directly improving the quality of patient care provided.

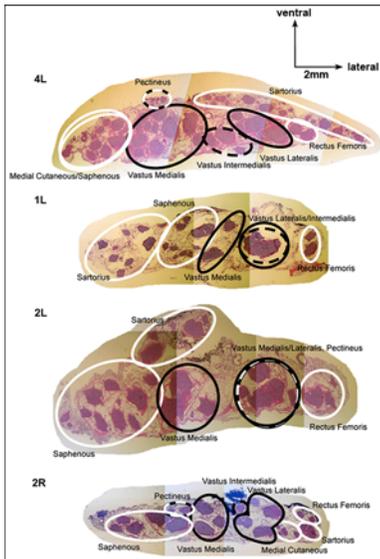
**Pain and pain-related interference in adults with lower-limb amputation: Comparison of knee-disarticulation, transtibial, and transfemoral surgical sites**

James Behr, MD, et al.

More than 100,000 lower-limb amputations are performed each year in the United States. Most of these amputations are either transtibial or transfemoral, with knee-disarticulation surgeries being relatively uncommon. Pain is well known to be a significant cause of disease and secondary disability in both the general and amputee populations. Therefore, when one is evaluating the outcomes of various levels of amputations, assessment of both pain and pain-related interference is particularly important. Our study systematically compared people with knee-disarticulation amputations to people with transtibial and transfemoral amputations in terms of pain, pain-related interference, and prosthesis use.

## Fascicular anatomy of human femoral nerve: Implications for neural prostheses using nerve cuff electrodes

Kenneth J. Gustafson, PhD, et al.



Electrical stimulation of the femoral nerve can help people who have lost control over their legs to stand or walk. We must better understand the nerve anatomy to design better nerve cuff electrodes. We traced nerve fascicles from branches of human femoral nerves to create fascicle maps. Femoral nerve branches were consistently represented as individual fascicles or distinct groups

of fascicles in the femoral nerve. Femoral nerves were relatively flat. Intraoperative measurements in six subjects were consistent with cadaver results. Selective

stimulation of individual muscles is therefore possible with a single nerve cuff electrode and may improve standing function.

## Can pacing self-management alter physical behavior and symptom severity in chronic fatigue syndrome? A case series

Jo Nijs, PhD, PT, et al.

Chronic fatigue syndrome (CFS) is a serious illness with high disability levels. This study examined whether physical behavior and health status of patients with CFS improve in response to an activity self-management program. Activity self-management for people with CFS involves encouraging the patients to pace their activities and respect their physical and mental limitations. It involves encouraging the patient to achieve an appropriate balance between activity and rest in order to avoid exacerbating symptoms. Seven patients with CFS were observed for 7 consecutive days prior to and following the activity self-management program. Following treatment, patients experienced less severe symptoms, improved daily functioning, and displayed different physical behavior.

