

**Effect of sensory and motor electrical stimulation in vascular endothelial growth factor expression of muscle and skin in full-thickness wound**

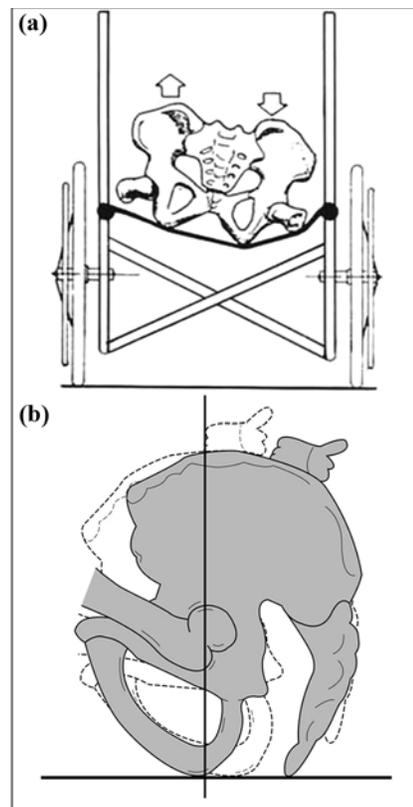
Mohammad Reza Asadi, MSc, et al.



The formation and differentiation of blood vessels, known as angiogenesis, are important in wound healing and occur during the proliferative (rapid growth) phase. A potent direct angiogenic factor is the vascular endothelial growth factor (VEGF), which stimulates migration, proliferation, and/or tube formation of endothelial cells. We evaluated the effect of sensory and motor electrical stimulation (ES) on the release of VEGF in full-thickness wounds of rats (divided into three groups: sensory ES, motor ES, and control groups). We measured VEGF expression in muscle and skin of rats on days 3 and 7 after surgical incision. We found no difference in the values of VEGF among groups on day 3. However, on day 7, the values of skin VEGF in the sensory group were significantly greater than those values of the other groups. We found no difference among groups regarding the values of muscle VEGF on days 3 and 7. Apparently, sensory ES can induce more release of VEGF in skin and may effectively promote wound healing.

**Assessing evidence supporting redistribution of pressure for pressure ulcer prevention: A review**

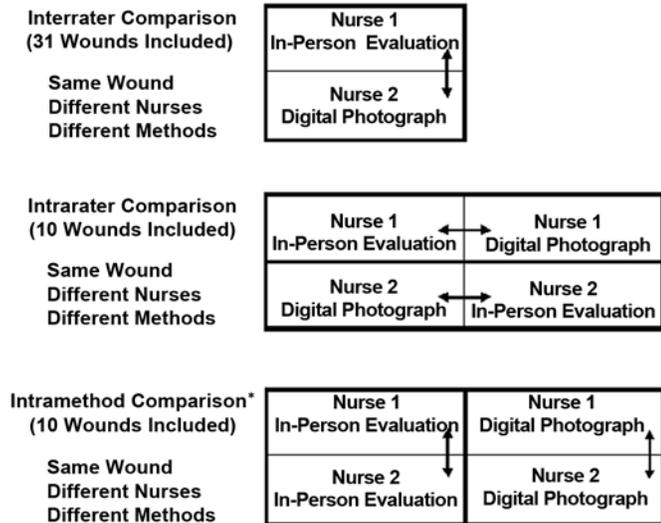
Stephen Sprigle, PhD, PT; Sharon Sonenblum, PhD



Pressure ulcers are an unfortunate complication for many people with poor sensation or mobility. The formation of pressure ulcers is quite complex with multiple influencing factors. However, by definition, pressure ulcers cannot form without forces on tissue. Clinical interventions typically target the magnitude and/or duration of these forces. Magnitude is managed by the selection of mattresses and postural supports. Duration is addressed via turning and weight shifting frequency. This article presents evidence supporting these and other clinical interventions that are commonly used in hospitals, skilled nursing facilities, and the home.

## Comparison of in-person and digital photograph assessment of stage III and IV pressure ulcers among veterans with spinal cord injuries

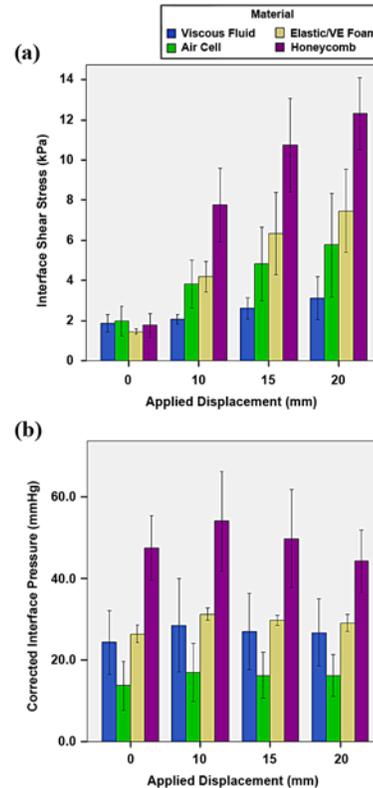
Darcey D. Terris, PhD, et al.



Veterans with spinal cord injuries who develop serious pressure ulcers are now treated over several months in hospital. To reduce costs and allow treatment at home, visiting nurses can take digital photographs of the wounds and use them to monitor treatment. In our study, one nurse used digital photographs of pressure ulcers to evaluate wound characteristics, while another nurse looked directly at the wounds. Using the two methods (photograph and in-person), the nurses agreed on 50% of the wound characteristics. This level of agreement was the same as when both nurses, during their assessments, looked directly at the wounds.

## Interface shear and pressure characteristics of wheelchair seat cushions

Jonathan S. Akins, et al.



Wheelchair seat cushions can provide users comfort, positioning, and protection from pressure ulcers. Users and clinicians have little scientific research on cushion properties and performance to assist them with the cushion selection process. This study provides data on the interface shear and pressure characteristics of cushions, which are two risk factors for pressure ulcer development. Interface shear results from force applied parallel to the skin surface, and interface pressure results from force applied perpendicular to the skin surface. Interface shear and pressure were measured for 21 commercial wheelchair seat cushions using a loading system. Cushions made with viscous fluid had the lowest interface shear stress, and cushions made with air cells had the lowest interface pressure.

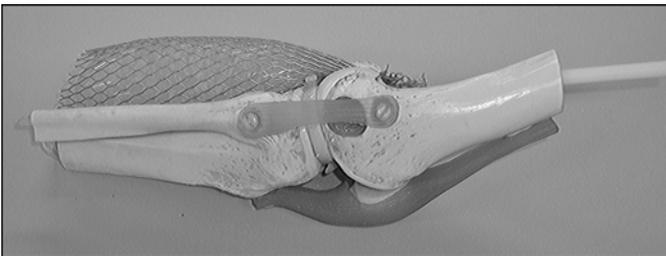
### Long-term cost-effectiveness of screening strategies for hearing loss

Chuan-Fen Liu, PhD, MPH, et al.

Hearing loss is one of the most common chronic conditions in older Americans. Routine hearing screening can identify those who are motivated to seek out and adhere to hearing aid use, thus improving hearing outcomes for older patients. The study results suggest that, in general, screening for hearing loss is inexpensive. Screening with a tone-emitting otoscope is a more cost effective approach compared with screening with a hearing handicap questionnaire or with both screening methods. The tone-emitting otoscope resulted in more hearing aid users with lower costs compared with the other screening methods.

### Design of manikin for testing of residual-limb shape-capture method: Technical note

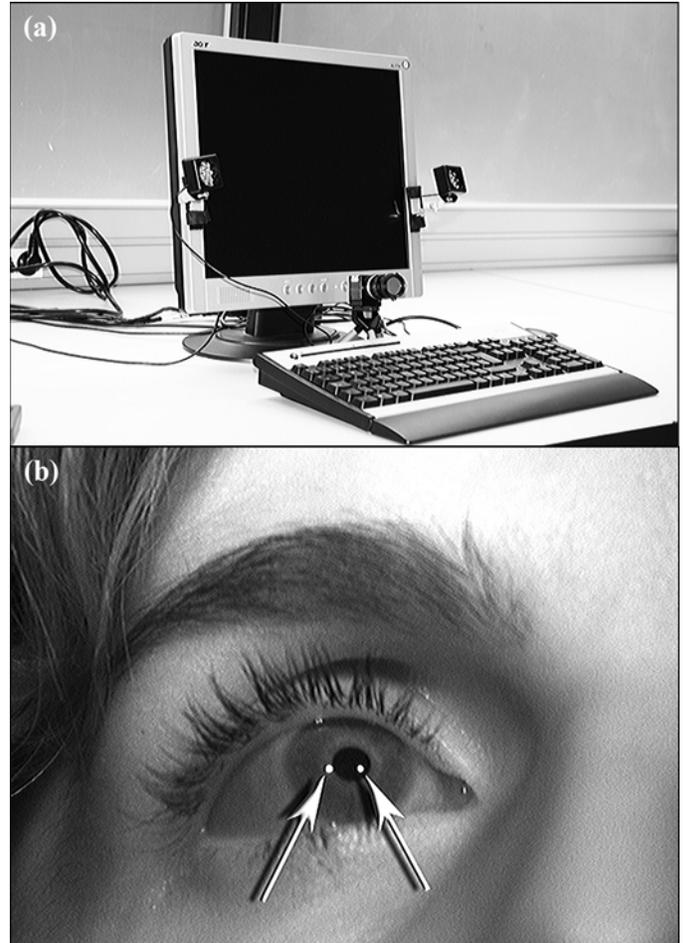
Anthony McGarry, PhD, et al.



To create a prosthetic socket, the residual limb shape has traditionally been captured with plaster of Paris. This shape can now be captured with the use of computer-aided design systems. Systems must be tested to determine the best method for improved prosthetic socket fit. Testing on real patients is difficult because measurements must be taken in the same position each time and because residual limb volume is not stable. Systems may be tested on manikins that simulate the properties of the residual limb. This study reports on a method to produce a manikin of a transtibial residual limb.

### Optimizing interoperability between video-oculographic and electromyographic systems

Javier Navallas, PhD, et al.



Eye-tracking systems determine the direction of a subject's gaze using the images provided by a camera, allowing people who are severely disabled to interact with a computer by moving the cursor to gazed points on the screen. However, detecting the wish of activation ("mouse click") only from gaze information is a well known problem. We propose a system that detects and uses muscle contraction as the source for the click command. In this way, the user will use gaze to move the cursor and then muscle activity to perform a click command.

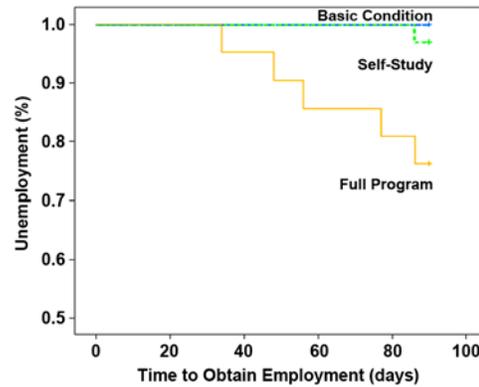
### Relationship between muscle strength and functional walking capacity among people with stroke

Carolina Moriello, MSc, et al.

This study tested how muscle strength is associated with functional walking capacity using the six-minute walk test (6MWT). We evaluated 63 patients with stroke using five muscle-strength indexes. This study demonstrated a large difference in the percentage of muscle weakness in patients' affected sides compared with the less affected sides. Muscle strength contributes to the variability in the 6MWT, supporting the need for task-specific training to increase walking distance and muscle-strength training in different positions for patients with stroke. The indexes assess muscle strength in multiple muscles, determining the relationship between all lower-limb muscles and the contribution of each muscle to walking.

### Effects of structured vocational services on job-search success in ex-offender veterans with mental illness: 3-month follow-up

James P. LePage, PhD, et al.



For ex-offenders, finding employment is difficult. However, no controlled studies have evaluated the best way for clinicians to help them. This study followed 69 veterans assigned to one of three models: (1) basic vocational services, (2) self-study of a special vocational manual, and (3) study of the manual in a group led by vocational staff. All veterans had at least one felony and a mental health or substance dependence diagnosis. The findings indicated that using the manual in a group format successfully helped veterans return to employment. We also observed how the veterans were similar to one another and how they differed from the surrounding community.