

Effect of prosthetic ankle units on roll-over shape characteristics during walking in persons with bilateral transtibial amputations

Steven A. Gard, PhD, et al.

Some functions of walking are adversely affected in prosthesis users because of reduced or absent ankle motion. However, combining a prosthetic ankle unit with a particular prosthetic foot could have unanticipated consequences. This study investigated the effect of prosthetic ankle units on the gait of persons with bilateral transtibial amputations. Subjects were tested while walking with and without Endolite Multiflex Ankles. The ankle units were found to increase ankle motion, but the foot-ankle rocker radius was decreased, which could adversely affect gait. Therefore, prosthetists need to carefully consider the effect of combining different prosthetic components on overall walking function.

Effects of type and mode of propulsion on hand-cycling biomechanics in nondisabled subjects

Arnaud Faupin, PhD, et al.

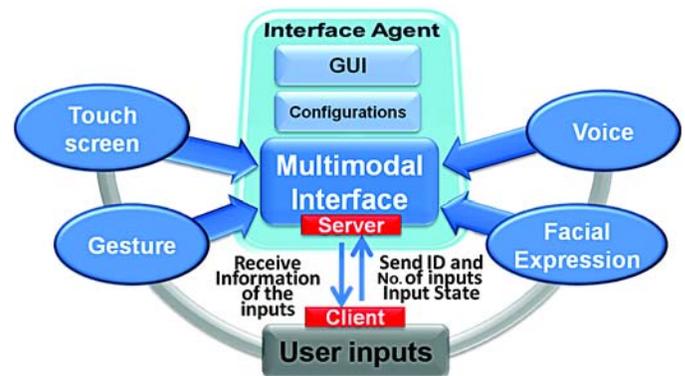


The boom in hand cycling means that this activity has spread to a broader population. We found that body positions on a hand cycle (arm-power [AP] vs arm-trunk-power [ATP] types) and synchronous (SC) versus asynchronous (AC) mode of propulsion must be considered

when user-to-chair interface is optimized. These results suggest more use of trunk movement during hand cycling for ATP type and AC mode. Hence, the different force generation patterns observed in this study between AC and SC modes and AP and ATP types are explained by a difference in trunk action. Researchers should perform future studies using experienced hand-cycle users, especially those with limited trunk function.

IntellWheels: Modular development platform for intelligent wheelchairs

Rodrigo Antonio Marques Braga, PhD, et al.



Intelligent wheelchairs can become an important solution to assist individuals with severe disabilities (caused by paraplegia, cerebral palsy, aging, etc.) and who are unable to perform their daily activities using classic powered wheelchairs. Intelligent wheelchairs are powered wheelchairs provided with some robotic technology to improve the user's mobility, allowing the wheelchair to avoid obstacles and move automatically. This article describes the concept and design of a platform to facilitate the development of intelligent wheelchairs. Preliminary prototype tests have shown that intelligent wheelchairs may effectively reduce a user's limitations, offering them a much more independent life.

Analyzing wheelchair mobility patterns of community-dwelling older adults

Amol M. Karmarkar, PhD, MS, et al.



In this study, we determined and compared wheelchair mobility patterns for older veterans during the 28th National Veterans Wheelchair Games (Omaha, Nebraska), an organized sporting event, and during community use. Of the veterans participating in the study, 39 completed the study. Twenty-six were manual wheelchair (MWC) users and thirteen were power wheelchair (PWC) users. We collected data using wheelchair data-logging devices and veterans' participation in sporting events. Participants using MWCs showed significantly higher wheelchair-related mobility during the games than at their homes in terms of distance traveled and average speed of propulsion. The trend was the same for PWC users. The level of sporting event participation for MWC and PWC users was not significantly different. To develop strategies for improving wheelchair mobility and thus enhancing wheelchair users' overall participation, clinicians need to understand the factors associated with wheelchair use.

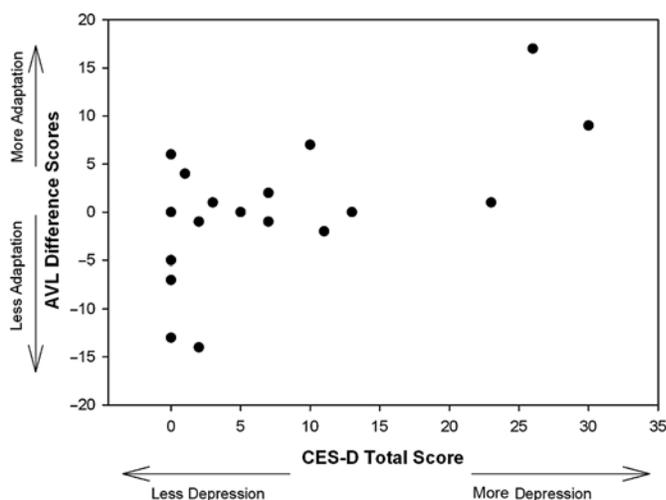
Self-management in neurological disorders: Systematic review of the literature and potential interventions in multiple sclerosis care

Alex D. Rae-Grant, MD, et al.

There is increasing recognition that effective healthcare represents a partnership between patients and their providers. It is important that patients are active and informed participants in their own care process, particularly with respect to chronic illness. This article provides a systematic summary of current evidence supporting the effectiveness of self-management strategies in both multiple sclerosis and neurological illness more generally. Overall, evidence supporting self-management is still emerging but is promising. We discuss self-management strategies and targets and provide suggestions about improving the rigor of future scientific studies.

Effect of depression on actual and perceived effects of reading rehabilitation for people with central vision loss

Patricia Grant, MS, et al.

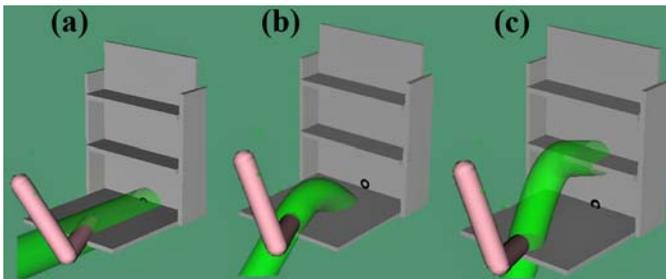


Approximately 160,000 veterans in the United States are legally blind, with age-related macular degeneration being among the most prevalent reasons (37%). Research has suggested a significant relationship between depression and a decline in visual function. Although there are Department of Veterans Affairs services available to assist veterans who are either blind or have low vision to maximize functional ability, questions still exist regarding the interaction of psychological status with successful rehabilitation

outcomes. Our study demonstrates that depression may influence vision rehabilitation outcomes. We believe future research should focus on defining standard methods to assess and remediate depression as part of the rehabilitation process.

Effect of position feedback during task-oriented upper-limb training after stroke: Five-case pilot study

Birgit I. Molier, MSc, et al.



People who have had a stroke often have difficulties using their arm in daily life. Feedback is an important contributing element to motor learning during rehabilitation therapy. In this pilot study, five subjects performed reach movements during 6 weeks of training. A resistive force provided error feedback when subjects deviated from a predefined movement path. We observed a moderate training effect on arm movement ability. This implies that feedback emphasizing errors during reaching contributes to motor learning during rehabilitation therapy.

Complementary and alternative medicine use among veterans with chronic noncancer pain

Lauren M. Denneson, PhD, et al.

Complementary and alternative medicine (CAM) is commonly defined as treatment not generally considered part of conventional medicine and often includes massage, chiropractic care, herbal remedies, and acupuncture. While the Department of Veterans Affairs (VA) has moved toward making some CAM available as treatment options for pain, little is known regarding how many veterans with chronic pain have used and are willing to try CAM. This study addresses this gap and compares characteristics of veterans who have tried CAM with veterans who have not previously tried CAM. Implications for the VA and for clinicians treating veterans with chronic pain are discussed.

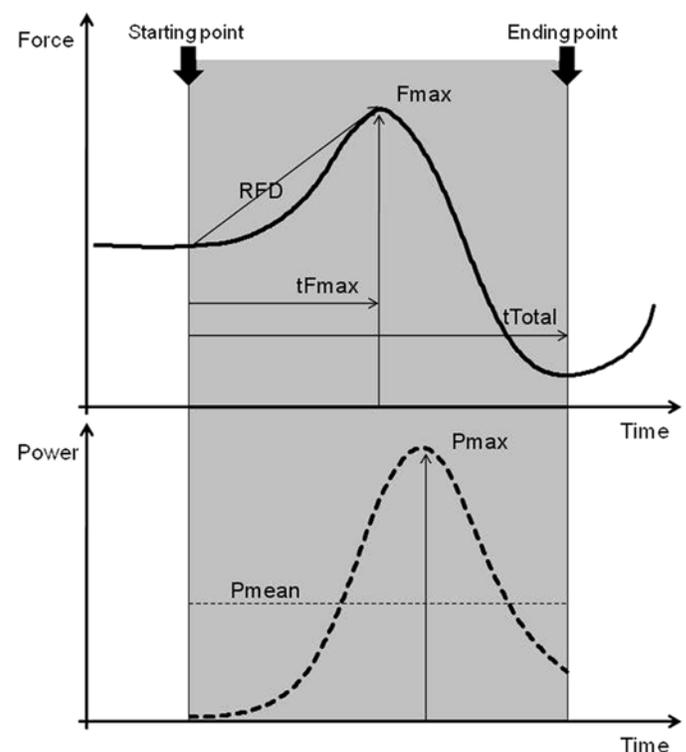
Increasing physical activity in multiple sclerosis: Replicating Internet intervention effects using objective and self-report outcomes

Deirdre Dlugonski, BS, et al.

People with multiple sclerosis are often physically inactive and at higher risk for diseases. The findings of this study support the use of an Internet-delivered intervention to increase physical activity in this population. Over the long term, this approach may help improve the overall health and well-being of adults with multiple sclerosis.

Reliability and validity of trunk accelerometry-derived performance measurements in a standardized heel-rise test in elderly subjects

Stefan Schmid, PT, MA, et al.



The heel-rise movement at the end of the stance phase during normal walking has been repeatedly shown to have a major effect on energy expenditure. Being able to accurately assess calf muscle function is of high clinical importance. Ideally, the optimal method of doing so would be more robust than simply counting heel-rise repetitions and would also use equipment available in a

clinical setting (i.e., not laboratory-based tools). The current study aimed to evaluate the use of trunk accelerometry as a cost-effective and easily applied alternative. The

results showed that trunk accelerometry is a valid and reliable tool for the measurement of force and mechanical power generated by the calf muscles.