

JRRD At A Glance Podcast Episode 41

Listen to the JRRD At a Glance Podcast Episode 41: Discussing Powered shoulder prostheses, caregiver burden, wheelchair seating, and more from JRRD Volume 51, Number 8, 2014.

[Johanna Gribble]: This is episode 41 of the JRRD podcast for volume 51, issue 8, produced by the Journal of Rehabilitation Research and Development (JRRD) and the U.S. Department of Veterans Affairs. Hello, I'm Johanna Gribble.

[Ken Frager]: And I'm Ken Frager. You can find more information about the topics we are discussing today, along with detailed Power Point presentations on most of these articles, online at the Table of Contents page for issue 51-8 at www.rehab.research.va.gov.

[Johanna Gribble]: VA researchers in Providence, Rhode Island, led by Linda Resnick, along with colleagues at the Center for the Intrepid at Fort Sam Houston, Texas, discuss the DEKA Arm training protocol they developed that represents a shift away from prosthetic rehabilitation programs routinely used that focus on the prosthesis as an assistive device in this issue's guest editorial. Instead, the researchers focus on the advanced prosthetic as a nondominant limb capable of skilled activities but not to the same level of the dominant limb. This specific VA team, which has been instrumental in the testing and deployment of the DEKA Arm and other advanced devices, hopes to close the information and training gap for future use of these advanced prosthetic devices.

[Ken Frager]: The prevalence of Veterans with dementia in the Veterans Health Administration, generating significant interpersonal, social, and financial costs, is also leading to an inevitable increase in burden among care providers. In analyzing the dimensions of caregiver burden as they relate to neuropsychological functioning, Dr. Jennifer Stinson and her colleagues, in their article "Dependency aspect of caregiver burden is uniquely related to cognitive impairment in

Veterans,” discuss how the aspects of cognitive functioning differentially influence perceptions of caregiver burden. According to the researchers, determining the relationship between cognitive functioning and burden has implications for how to best provide care to an aging Veteran population.

[Johanna Gribble]: In their article “Correlates of pain symptoms among Iraq and Afghanistan military personnel following combat-related blast exposure,” Dr. Kelcey Stratton and colleagues reveal that older age, mild traumatic brain injury characteristics, depression symptoms, and posttraumatic stress disorder re-experiencing symptoms are related to self-reported pain among military personnel exposed to blasts during combat. Clinical interventions frequently target pain and individual symptoms separately rather than together. The authors believe that a better understanding of individual difference factors and comorbid conditions related to pain may be useful for identifying individuals at the greatest risk for developing complex and persistent symptoms following combat.

[Ken Frager]: Dr. William Walker and colleagues assessed how well a commonly used PTSD screening tool, the PTSD Checklist, detects PTSD in blast-exposed servicemembers. Their findings, detailed in the article “Diagnostic accuracy of Posttraumatic Stress Disorder Checklist in blast-exposed military personnel,” should help clinicians and researchers better understand how to measure PTSD in these patients.

[Johanna Gribble]: In the article “Coronal plane socket stability during gait in persons with transfemoral amputation,” Dr. Stefania Fatone and her colleagues present results of their pilot study suggesting that medial tissue loading offers minimal contributions to coronal plane stability and comfort in a well-fitted ischial containment socket and are consistent with classic

theory describing the importance of soft tissue loading along the proximal-medial aspect of the residual limb in sockets without ischial containment.

[Ken Frager]: Individuals who often trip or walk over inclines and uneven surfaces may benefit from the ProprioFoot, a motorized, microprocessor-controlled foot that imitates normal ankle motions of dorsiflexion during the swing phase of gait. In the article “Active dorsiflexing prostheses may reduce trip-related fall risk in people with transtibial amputation,” Dr. Rosenblatt and colleagues note that people with transtibial amputation using the ProprioFoot walk in a way that decreases their chances of tripping over an obstacle compared with wearing other prosthetic feet without the motorized motion.

[Johanna Gribble]: Veterans with lower-limb loss who use a prosthetic limb move with different joint angles and joint forces in their sound and amputated limbs. In the article “Symmetrical kinematics does not imply symmetrical kinetics in people with transtibial amputation using cycling model,” Drs. Childers and Kogler described how they used cycling to define how differences in joint angles and joint forces were related. Their results imply that reducing differences in joint angles does not affect joint loading, as assumed in clinical practice, and they feel clinicians should define an acceptable amount of asymmetry and use that information to improve rehabilitation.

[Ken Frager]: The article “Pilot study of a strap-based custom wheelchair seating system in persons with spinal cord injury” describes the evaluation a custom wheelchair seat made of interwoven straps in three Veterans with spinal cord injuries. Dr. John Ferguson and his colleagues found that seating pressures were not affected following common wheelchair activities, and therapists were able to efficiently customize the strap lengths to obtain acceptable pressure distributions. The authors believe this study may help inform future studies that test the

long-term use of strap-based wheelchair seats and to help identify which individuals would most benefit from rapidly customizable strap-based seating.

[Johanna Gribble]: An effective wheelchair cushion is essential to prevent pressure ulcer development, enabling the individual to achieve optimal mobility function and quality of life. In the article “Effects of conventional and alternating cushion weight-shifting in persons with spinal cord injury,” Drs. Wu and Bogie describe their comparison of alternating-pressure air cushion and independent pressure relief systems and found alternating-pressure to have more sustained positive tissue health effects because it used more dynamic and continuous weight shifting.

[Ken Frager]: In the article “Biopsychosocial functioning and pain self-efficacy in chronic low back pain patients,” Alex Koenig and colleagues discuss the relationship between biopsychosocial functioning and pain severity, evaluating whether pain self-efficacy indirectly affects this relationship. According to the authors, the results indicate that social functioning is an important factor in predicting pain severity and pain self-efficacy, stating their belief that it is necessary to consider social functioning when trying to understand the development of difficulties in patients with chronic low back pain.

[Johanna Gribble]: Dr. Elizabeth Russell Esposito and her colleagues compared energy expenditure in young, active individuals with below-knee amputation and healthy nondisabled individuals during walking. Their findings, described in “Does unilateral transtibial amputation lead to greater metabolic demand during walking?” demonstrate that energy expenditure was not different between groups across a wide range of walking speeds. Despite missing part of a limb, individuals with amputation rated their walking abilities as very high and did not find walking challenging.

[Ken Frager]: Individuals who depend on a wheelchair for mobility are at risk for sitting-acquired pressure ulcers, a common and life-endangering complication. Patients with a spinal cord injury in particular face increased risks because changes that affect the weight-bearing tissues of the buttocks may increase the risk for pressure ulcers. In the article “Computer simulations of efficacy of air-cell-based cushions in protecting against reoccurrence of pressure ulcers,” Ayelet Levy and colleagues describe how they used computational modeling to determine that an air-cell-based cushion is adequately protecting patients with a history of severe pressure ulcers manifested by large, possibly deep, tissue scarring in their buttocks.

[Johanna Gribble]: Dr. James Ford and colleagues surveyed and interviewed staff at four Polytrauma Rehabilitation Centers about the implementation and sustainability of the Family Care Map, a tool used within the centers to maintain family involvement in the care process. Their findings, which are included in the article “Family Care Map: Sustaining family-centered care in Polytrauma Rehabilitation Centers,” indicate that sustainability of the Family Care Map occurs when its principles have been integrated into daily workflow and organizational culture.

[Ken Frager]: The article “Cost of lower-limb amputation in U.S. veterans with diabetes using health services data in fiscal years 2004 and 2010,” was intended to estimate the economic burden of diabetes-related lower-limb amputations in the Veterans Health Administration during a set period of time. According to Heather Franklin and other authors, diabetes, which is highly prevalent in the U.S. population, is especially so among Veterans, resulting in a 10- to 20-fold increased risk for lower-limb amputation. These amputations increase the burden on Veterans and the VHA, both in terms of healthcare costs and for the patient’s quality of life.

[Johanna Gribble]: Many Veterans have problems with balance related to conditions including aging, traumatic brain injuries, amputation, war-related injuries, and concussions that require rehabilitation. In their article “Novel balance rehabilitation and training apparatus to improve functional balance,” the authors Dr. Koceja and Greiwe describe a newly developed apparatus to help individuals improve their functional balance and minimize their fear of falling and fall risk. Their findings suggest the apparatus could be a valuable tool to help rehabilitate individuals with balance impairments and improve their quality of life.

[Ken Frager]: Today’s discussion focused on articles in JRRD volume 51, issue 8. These articles and many others can be read online at www.rehab.research.va.gov/jrrd. Just a reminder that the *JRRD At a Glance* section is available online in English, Spanish, and Traditional and Simplified Chinese! You can submit your comments on this podcast or request articles for us to highlight at vhajrrdinfo@va.gov. You also can “Get Social” with JRRD by “following” us on Facebook at JRRDJournal or on Twitter at JRRDEditor.

[Johanna Gribble]: Our thanks to JRRD’s David Bartlinski for his audio engineering, recording, and editing to make this podcast possible. We would also like to thank all of our listeners for your support. We’d love to hear from you. For JRRD, thanks for listening.