JRRD at a Glance

Systematic review of effects of current transtibial prosthetic socket designs—Part 1: Qualitative outcomes

Mohammad Reza Safari, PhD; Magrit Regula Meier, PhD

The prosthetic socket remains the number one priority for persons with lower-limb amputation because a user's comfort depends on the socket fit. This review analyzes the effect of current prosthetic socket designs, focusing on patient-reported outcomes measures, with the aim to provide a basis for socket prescription. Results from the 19 included studies show that total surface bearing sockets can provide greater activity level and prosthesis satisfaction for younger and/or more active persons with amputation and those with a traumatic cause of amputation, a result that is of particular interest to Veterans. However, the type of socket liner used influences the results considerably.

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Systematic review of effects of current transtibial prosthetic socket designs—Part 2: Quantitative outcomes

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We analyzed 27 articles to find possible effects of current transtibial prosthetic socket designs on quantitative outcomes. Based on the findings, we highlighted possibilities for future research. A trend shows that vacuum-assisted suction sockets have the best suspension, improve gait symmetry, control residual limb volume fluctuations better, and result in healthier residual limbs than other socket designs. Although hydrostatic sockets may produce more consistent results, there were no differences in biomechanical outcomes when they were compared with patellar tendon bearing or total surface bearing sockets. Future research should be directed toward understanding effects that socket fit alterations have on related biomechanical outcomes.

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Understanding contextual influences of community reintegration among injured servicemembers

Brent L. Hawkins, PhD, LRT/CTRS, et al.

The transition from military service to home and community living (i.e., community reintegration) is a difficult process, especially for injured servicemembers. We interviewed nine injured, community-dwelling servicemembers to understand how personal and environmental factors influence community reintegration. Interview themes indicated the essential roles of social support and personal factors (i.e., self-efficacy, motivation) and the important role of adapted sports, recreation, and other social programs; rehabilitation programs and therapists; school, work, and volunteering; and organizations and policies in developing social supports and personal factors. Results support the importance of addressing personal and environmental facilitators and barriers during and after rehabilitation services.

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Effect of antipronation foot orthosis geometry on compression of heel and arch soft tissues

Declan Sweeney, BSc (Hon), et al.

Antipronation foot orthoses are special insoles that practitioners use to help people with problems associated with excessive amounts of foot movement (rolling and lowering of the foot arches). Little is known about the effects the orthoses have on soft tissue structures situated between the orthotic surface and the underlying foot bones. Using ultrasound, our study showed that sections of the antipronation orthosis affect soft tissues

under the foot in different ways. This is important because soft tissues located under the foot bones will affect how the orthosis transmits force and influence its ability to change foot/ankle movement in walking or running.

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Metabolic and body composition changes in first year following traumatic amputation

Carly S. Eckard, MS, RD, et al.

The purpose of this study was to evaluate changes in energy needs, body fat, and lean mass following traumatic amputation. The findings in this study and future research in this area will assist Veterans with amputations in understanding physical changes for better prosthesis fit, rehabilitation, and prevention of chronic diseases related to increases in body fat. This research will also help healthcare providers tailor recommendations for diet and physical activity.

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Impact of comorbid depression on quality of life in male combat Veterans with posttraumatic stress disorder

Phillip A. Raab, MA, et al.

Veterans with posttraumatic stress disorder (PTSD) also frequently have symptoms of depression. Both PTSD and depression can reduce a Veteran's quality of life, and in this study of 158 Veterans with PTSD, we examined the influence of PTSD and depression on several areas of Veteran quality of life. We found that depression and PTSD emotional numbing symptoms had strong negative connections with Veteran satisfaction with achievement, self-expression, relationships, home, neighborhood, and community. This study suggests that treating depression and negative emotion in Veterans with PTSD may improve quality of life.

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Foot placement control and gait instability among people with stroke

Jesse C. Dean, PhD; Steven A. Kautz, PhD

Every year, approximately 15,000 American Veterans experience a stroke. Within this population, gait instability commonly limits functional mobility, decreasing quality of life. Despite the importance of deficits in gait stability, the mechanisms underlying this problem are presently unclear. Uninjured humans consistently use a stabilization strategy of adjusting their foot placement location based on the mechanical state of their body. This strategy was disrupted among people with stroke who were classified as having an increased risk for falls using a standard clinical measure. Interventions focused on restoring foot placement strategy may hold promise for improving poststroke gait stability.

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Characterizing effects of mild traumatic brain injury and posttraumatic stress disorder on balance impairments in blast-exposed servicemembers and Veterans using computerized posturography

Joanna R. Wares, PhD, et al.

One-hundred and sixty-six servicemembers and Veterans with combat exposure in the Gulf wars were assessed for balance using computerized posturography. Balance was deficient in unique patterns for participants having mild traumatic brain injury (mTBI) or posttraumatic stress disorder (PTSD) when compared with those with neither diagnosis, and these deficits were amplified for participants diagnosed with both conditions. Computerized balance assessment offers an objective technique for examining the physiologic effects of and provide differentiation between participants with combat-associated mTBI and PTSD.

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Impact of Michelangelo prosthetic hand: Findings from a crossover longitudinal study

Martina Luchetti, et al.

This study explores the potential effect of the Michelangelo prosthetic hand on a sample of transradial prosthesis users (6 men). Amputation- and prosthetic-related factors, along with psychological and social factors, were assessed over a 6 mo period. Although the sample included highly functional participants, improvements in practical tasks and activities of daily living were observed after 3 mo of device home use. From clinical interviews at 6 mo, the Michelangelo prosthetic hand appeared to further restore hand function and natural appearance, easing social interaction with others. However, concerns about dimension, noise, and weight were also expressed by a few participants.

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Geographical diffusion of prazosin across Veterans Health Administration: Examination of regional variation in daily dosing and quality indicators among veterans with posttraumatic stress disorder

Thad E. Abrams, MD, MS, et al.

Posttraumatic stress disorder (PTSD) is a common and disabling illness for many of our returning Veterans. Prazosin is an innovative and effective therapy that is not considered a conventional psychiatric treatment; thus, examining prazosin diffusion can potentially serve as an indicator for diffusion of innovation and as an indicator of PTSD treatment more broadly. This article demonstrates the current regional pattern of diffusion and examines prazosin distribution compared with quality indicators in order to examine whether there are regional disparities in PTSD pharmacotherapy. Prazosin utilization and dosing remain disparate across the geographic bands outside of Puget Sound, Washington, yet do not appear to reflect a quality prescribing gap more broadly.

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