



US DEPARTMENT OF DEFENSE

BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

Extremity Trauma Rehabilitation

Establishing Advanced Rehabilitation Methods for the Upper Extremity

Blast injuries can severely impact the function of the upper extremities. Understanding individual hand function can assist therapists with the process of determining relevant treatment approaches and realistic therapeutic outcomes after injury. The Suitcase Packing Activity (SPA) was conceptualized to be an occupation-based functional evaluation measure to allow bilateral and/or unilateral hand function data to be obtained readily within a clinical environment (Figure 1). Researchers from the Extremity Trauma and Amputation Center of Excellence (EACE) at the Center for the Intrepid (CFI; San Antonio, Texas) and Army Baylor University Doctor of Science in Occupational Therapy program worked together to establish the reliability (inter-rater, test-retest) and validity (face, content, concurrent) of this novel assessment measure. The SPA shows promise in contributing to evidence-based practice by providing a quality, low-cost, composite measure of hand function (*Baumann, Cancio, and Yancosek 2017*).

In addition, a systematic review of measures of physical function and activity limitation for persons with upper limb trauma and amputation was conducted with the collaborative efforts of researchers from the EACE (CFI; San Antonio, Texas) and Providence Veterans Affairs (VA) Medical Center (Providence, Rhode Island) (*Resnik et al. 2017*). The study purposes were to (1) identify outcome measures used in research studies of persons with traumatic upper limb injury and/or amputation and (2) evaluate the focus, content, and psychometric properties of each measure. The most highly rated performance measures included two amputation-specific and two non-amputation specific measures. Highly rated self-report measures were not amputation-specific and can be used across both groups. These findings highlight the need for additional research on measurement properties of performance measures of physical function and activity in patients with limb trauma and amputation.

Improvements in function are a key consideration for assistive device development for upper extremity injuries. The DEKA Arm is one such device and researchers from the Providence VA Medical Center (Providence, Rhode Island), EACE (CFI, San Antonio, Texas), James A. Haley Veterans Hospital (Tampa, Florida), New York University (New York, New York), Gold Coast Center of Excellence (Houston, Texas), identified predictors of retention and attrition during the VA Home Study of the DEKA Arm (*Resnik et al. 2018*). This was the first study to examine characteristics of persons with upper limb amputation associated with their completion of a home use study of this advanced upper limb prosthesis. A substantial proportion of persons with upper limb amputation reject using a prosthesis, either initially, or after prescription of a device. Given the anticipated high cost for this device and the intensive training program for clinicians and patients that is required for successful deployment, it is prudent to identify both appropriate and inappropriate device candidates prior to prescription and purchase of a device for a given patient.



