



US DEPARTMENT OF DEFENSE

BLAST INJURY RESEARCH PROGRAM COORDINATING OFFICE

Orthotics and Prosthetics

Customized 3D-Printed Prosthetic Devices for Wounded Warriors

Advanced prosthetic devices or adaptive attachments allow traumatically injured Service members with limb loss the ability to return to duty and participate in preferred recreational activities and sports. To meet this need, a multi-disciplinary team of clinicians and researchers at the DoD-VA Extremity Trauma and Amputation Center of Excellence (EACE; Fort Sam Houston, TX), and the 3D Medical Applications Center and Department of Rehabilitation at Walter Reed National Military Medical Center (WRNMMC; Bethesda, MD) used 3D printing in combination with computer aided design (CAD) software and 3D scanning technologies to develop custom orthotic and prosthetic devices for injured Service members with limb loss to improve functional capabilities (*Knight et al., 2018*). The devices are highly individualized, taking into consideration the individuals' preferences, activity needs, and abilities.

3D printing enables creation of devices from various materials such as plastic and titanium, allowing for greater tailoring of the device to the individual's needs. To date, over 200 Service members with limb loss have used these 3D-printed prosthetic devices and experienced an improved quality of life. This ongoing work provides a unique approach to develop customized devices for Wounded Warriors suffering from extremity trauma and limb loss and allows for the ability to participate in any and all desired activities.

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REFERENCES:

Knight, A. D., Anderson, P. P., Beachler, M. D., Dearth, C. L., Hassinger, L. M., Hendershot, B. D., . . . Liacouras, P. C. (2018). Customized 3D-Printed Prosthetic Devices for Wounded Warriors. *Am J Phys Med Rehabil.* doi:10.1097/PHM.0000000000001047

