Orthotics and Prosthetics

Selective Laser Sintered Versus Carbon Fiber Passive-Dynamic Ankle-foot Orthoses: A Comparison of Patient Walking Performance

In a study published in the *Journal of Mechanical Engineering*, researchers at CRSR at USUHS examined the degree to which biomechanical measures during gait differ between Carbon Fiber (CF) and stiffness-matched SLS passive-dynamic AFOs (PD-AFOs). Selective laser sintering is a well-suited additive manufacturing technique for generating subject-specific PD-AFOs. However, the mechanical properties of SLS PD-AFOs may differ from those of the more commonly prescribed CF PD-AFOs. Subject-specific SLS PD-AFOs were manufactured for 10 individuals with unilateral lower-limb impairments. Minimal differences in gait performance occurred when individuals used the SLS versus the CF PD-AFOs. These results support the use of SLS PD-AFOs to study the effects of altering design characteristics on gait performance. Using SLS can produce PD-AFOs that are tailored to individuals and their needs, greatly assisting in the rehabilitation of Service Members.