

Upgraded Ekso to advance study of mobility in spinal cord injury

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Kessler Foundation has begun testing the upgraded Ekso in individuals unable to walk due to spinal cord injury. Ekso, a wearable, battery-powered robotic exoskeletal device, has been undergoing clinical investigation at Kessler since October 2011, when the research team received the second commercial unit distributed by Ekso Bionics. Gail Forrest, PhD, assistant director of Human Performance and Engineering Research, directs Ekso research at the Foundation, in collaboration with Steven Kirshblum, MD, medical director at Kessler Institute for Rehabilitation.

The upgrade adds important functions, according to Ekso [Bionics](#), which announced the availability of the upgraded Ekso on August 11. Until now, walking in Ekso meant being accompanied by two physical therapists, one of whom triggered each step. Now individuals can gradually progress to independent walking in Ekso by advancing through three levels that enable progressively greater user control. Of interest to researchers is another new feature called EksoPulse. EksoPulse collects usage data for each user and archives it on a secure cloud server, enabling documentation of individuals' progress.

"These upgrades have important implications for clinicians and researchers," noted Dr. Forrest. "Automating data collection and enabling greater independence during therapy are improvements that will advance the pace of our research while enabling greater progress for [study participants](#) with spinal cord injury." Data collection also helps provide the documentation necessary to prove the efficacy of Ekso

therapy for insurers that reimburse for rehabilitative care.

Dr. Forrest's team also collects key data on the impact of Ekso training on [physiological parameters](#) (eg, cardiovascular, muscle activity), quality of life, and chronic pain. "Individuals with spinal cord injury face years of secondary complications, such as pain, [pressure ulcers](#), depression, bowel and bladder dysfunction, and increased risk for cardiovascular disease," noted Dr. Forrest. "That's why we're looking beyond the abilities to stand and walk to the potential long-term effects of these activities on health and well being."

Provided by Kessler Foundation

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