Kessler Foundation study shows neuromechanical effects of exoskeleton-assisted walking in spinal cord injury

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East Hanover, N.J. (PRWEB) September 20, 2017 -- Kessler Foundation researchers have recently published findings of a study examining the effects of exoskeleton-assisted walking on gait parameters and neuromuscular activity in able-bodied individuals and individuals with spinal cord injury (SCI). The article, "Neuromechanical adaptations during a robotic powered exoskeleton assisted walking session" (doi:10.1080.10790268.2017.1314900) was epublished ahead of print on April 20, 2017, in the Journal of Spinal Cord Medicine. The authors are Arvind Ramanujam, Erica Garbarini, Rakesh Pilkar, and Gail Forrest of Kessler Foundation, and Pierre Asselin and Christopher M. Cirnigliaro of the James J. Peters VA Medical Center. This is the first original research journal article published by Kessler Foundation researchers in the field of robotic exoskeleton training. The article’s link is http://tinyurl.com/jwg466c.

In the U.S., robotic exoskeletons are being used for rehabilitation and community use by individuals with SCI. Scientists at Kessler Foundation are interested in evaluating the effects of exoskeleton-assisted walking on locomotion, as well as the changes in neuromuscular profiles. In this study, researchers measured the effects of exoskeleton-assisted walking under the “Max Assist” condition during a single session on gait parameters, including the 3-D kinematics of ankle, knee and hip motion, and muscle activation patterns in four individuals with SCI and four able-bodied individuals. The “Max Assist” setting provides the participant with maximum amount of motor assistance to the lower limbs while walking through a predefined walking pattern. For the able-bodied group, data were also collected during overground non-exoskeleton-assisted walking. Participants walked in robotic devices from Ekso Bionics (Richmond, CA).

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“Understanding how robotic exoskeletons modify locomotor function is fundamental to optimal use during rehabilitation to improve gait pattern, postural stability, and mobility,” said Gail Forrest, PT, PhD, Associate Director of Human Performance & Engineering Research at Kessler Foundation. “This study is an important step towards understanding the potential for exoskeleton-assisted walking to induce changes in neuroplasticity.
in individuals with motor complete and incomplete spinal cord injury.”

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About Kessler Foundation
Kessler Foundation, a major nonprofit organization in the field of disability, is a global leader in rehabilitation research that seeks to improve cognition, mobility and long-term outcomes, including employment, for people with neurological disabilities caused by diseases and injuries of the brain and spinal cord. Kessler Foundation leads the nation in funding innovative programs that expand opportunities for employment for people with disabilities. For more information, visit KesslerFoundation.org.
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