

# Pelvic Obliquity Trajectory Recording with Robotic Gait Rehabilitation (RGR) Trainer and Lower Body Exoskeleton

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**Abstract** — The Robotic Gait Rehabilitation (RGR) Trainer was designed to address secondary gait deviations in stroke survivors undergoing rehabilitation. Forces generated by an impedance-controlled actuator are transferred to the subject's lower body via a lower body exoskeleton. In this paper we describe the RGR Trainer's position measurement system and the sensing technology in the exoskeleton. We demonstrate the complete system's ability to record the subjects' pelvic obliquity patterns (both normal and hip hiking), which is possible due to the RGR Trainer's highly back-drivable actuation system and the exoskeleton's effective adherence to the pelvic region and lower limbs.



Figure 1: Lower body exoskeleton.

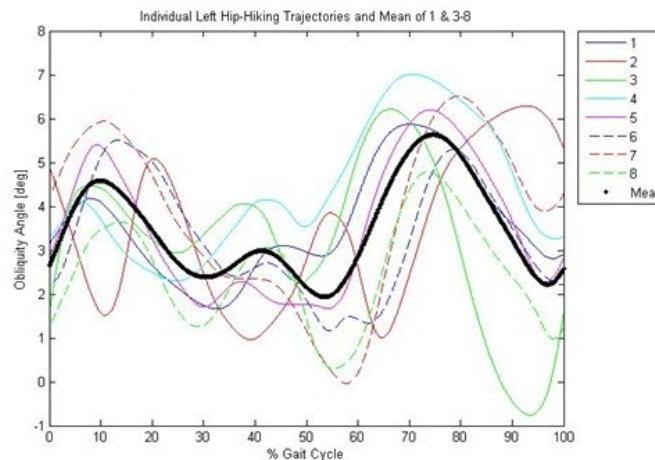


Figure 2: Hip-hiking pelvic obliquity trajectories recorded by the device.