

Therapeutic Rocking Chair Mechanism Design: Assisted Rocking for Pediatric Spinal Injury Patients

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Abstract

Pediatric patients with spinal cord injuries face a range of therapeutic challenges. Our solution is to harness the benefits of a rocking chair for these patients, by incorporating an automated power-assist mechanism. The repetitive motion of the rocking chair can be utilized to activate the trunk, or central core, of patients, and improve range of motion. The system allows for quantifying and monitoring the patient's capabilities (how they start and maintain a rocking motion) over time, and the data collected can be analyzed to track their progress. Our automated power assist mechanism design to assist patient unable to initiate rocking activity is part of larger therapeutic and diagnostic smart chair for these patients. Our mechanism does not interfere with intentional rocking and the desired rocking magnitude can be adjusted while the system is in use. Eventually the system will be programmed to transfer the rocking motion to the patient as the capacity to rock improves.

Biography of Presenter (in 12 Pt Ariel Font)

Cassidy Caid is a graduate student in the Mechanical Engineering department at UofL and a Research Assistant at the Louisville Automation and Robotics Research Institute (LARRI). He has been working at the LARRI lab for a year and his research is focused on the use of robotic arms in non-planar additive manufacturing.

