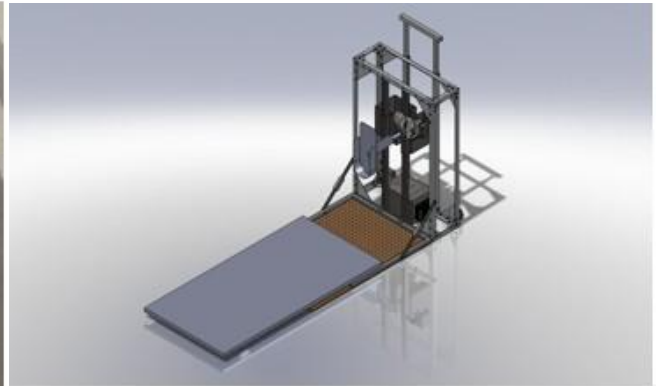
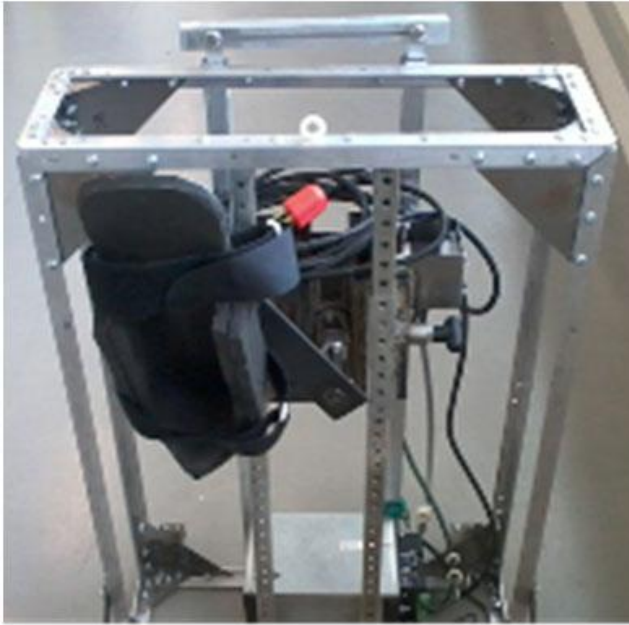


TITLE: Passive Continuous Hip Circumduction

GOAL: The goal of the project was to design a device that will accurately replicate the passive hip circumduction motion to assist in the therapy of patients.



ABSTRACT:

Last year, approximately 30,000 individuals in the United States underwent surgery to repair a torn acetabular labrum. The acetabular labrum is a ring of fibrocartilage that forms a ring around the acetabulum of the pelvis. Acetabular labral tears are severe injuries that require surgery to repair. Without surgery, patients are unable to return to their previous levels of activity. There is a labor-intensive rehabilitation routine post-surgery, comprising several interventions, which facilitates the healing process. As students in the Rehabilitation Engineering Capstone course, our multi-disciplinary team focused on designing an assistive device to provide the passive hip circumduction intervention. Circumduction is defined as moving the joint in a circular motion. Passive motion means that the patient is not actively contracting any muscles during the intervention. A caregiver performs hip continuous passive motion daily for two to four weeks, post-operative. Passive circumduction is physically demanding on the caregiver and leaves the patient dependent on this person to expedite the healing process. Currently, this intervention requires assistance from a physical therapist or a caregiver because no assistive device exists on the market, which motivates us to construct our assistive device design. Our goal was to design a device and build a functional prototype that will accurately replicate the passive hip circumduction. We have achieved our goal in building a functional prototype. Later, we tested our device with clinical and engineering evaluation methods to ensure that it met our design specifications.