Modular Flip-Chair for Parallel Bars

Overview

Space in physical therapy clinics is often very limited, especially with the parallel bar apparatus. The current method of moving a wheelchair in between bars for seating when a patient grows tired is awkward and tedious for therapists to complete and risky for the patient. The goal of this project was to design, engineer and manufacture a chair to attach to parallel bars as a replacement for the wheelchair method.

Objectives

The project objective is to create a modular flip chair that will hold a load of 300lbs, is height adjustable, has a small footprint, is easily attached to various parallel bar dimensions and is an easier alternative to the wheelchair.

Approach

- First, the team gathered customer needs and determined engineering specifications based off of them
- Using these specifications, the team generated multiple concepts and weighted them against the customer needs
- The team then took these concepts to the sponsor for review and to determine how exactly the chair would be used and chose the concept that would move forward
- Once the final design was chosen, it was modelled in Solidworks and FEA was performed
- The team then created two alpha prototypes and a beta prototype
- The beta prototype was tested in a physical therapy clinic to determine if there are any changes that need to be made before mass manufacturing

Outcomes

- Since there is no existing product in this market, Kinetic Revolutions stands to profit from this endeavour
- This project increased efficiency for physical therapists, allowing them to spend more time with the patient