

## TITLE: Seating and Mobility Toolkit

**GOAL:** The goal of this project is to create an evaluation manual wheelchair that can be used during clinical evaluations to reduce the time and money needed to provide a properly fitting wheelchair for manual wheelchair users.



### ABSTRACT:

The current wheelchair fitting process consists of multiple visits, to measure the client, trial current devices, and final fitting of the client into the chair. Overall, the current wheelchair fitting process can be time consuming, inconsistent, and difficult to perform precisely. For this project, we will design and fabricate an evaluation wheelchair for use by clinicians to improve the fitting process. The evaluation wheelchair will be highly adjustable so that clients that fall within a large range of anthropometric measurements can “test drive” a wheelchair in a clinical setting before actually ordering their own.

The final design of our evaluation wheelchair is an all-inclusive, highly adjustable chair that will be easy to use and will provide the patient with the ability to “test drive” their fitted chair in a simulated clinical environment. The design will allow adjustments to the following features: seat depth, seat width, axle location, caster position, back angle, back height, brake position, seat height, wheel camber, and footrest position. These adjustable features were evaluated on an individual and then comprehensive level to insure optimum adjustability and functionality. Analyses were performed to determine success of the wheelchair design from an engineering and a clinical standpoint. The results showed a 92.5% decrease in adjustment time and showed our wheelchair could perform functionally similar to other wheelchairs. The combination of these adjustments on a single wheelchair offers clinicians and clients a tool to test a wheelchair and make adjustments before purchasing; improving the overall fit of the final wheelchair and thus the clients’ quality of life.