

PROJECT CHARTER

Project Name	Arc Wheelchair Swing
Start	Fall 2014
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RIT MSD Project Number	P15010
End	Spring 2015
Project Sponsor	Dan Phillips BME dbpeee@rit.edu x52309
Project Guide	Gerry Garavuso
Revision Date	08/27/2014
Primary Customer	Arc of Monroe County Day Services

BACKGROUND:

Many individuals in the local area are faced with intellectual and/or developmental disabilities requiring specialized programs or services to help them reach their full potential in our community. For over 50 years, Arc of Monroe County has offered these individuals a variety of programs and services including meaningful social development, supported employment, residential community living, and enrichment opportunities. In particular, Arc of Monroe's Day Services program promotes valuable learning opportunities through mental, emotional, and social stimulation. Such stimulation is integral in maintaining a better overall quality of life.

Arc of Monroe's Day Services program can target brain stimulation in individuals through a variety of recreational activities. Specific activities are designed to target sensory stimuli, and in doing so, the vestibular system. The vestibular system includes the parts of the inner ear and brain responsible for processing sensory information associated with controlling balance and eye movements. Additionally, the vestibular system strongly influences muscle tone because it controls how much each muscle must contract in order to counteract downward gravitational force. The vestibular movement of activities such as jumping, spinning, swinging, and walking assist individuals in processing sensory input. The neurological process of processing and integrating sensory information from the body and environment, also known as sensory integration, contributes to emotional regulation, learning, behavior, and participation in daily life. Controlled vestibular input facilitated by an occupational or physical therapist is recommended for individuals with sensory processing disabilities.

PROBLEM STATEMENT:

Individuals that require certain types of sensory stimulation look to the Arc of Monroe County's Day Service Program for assistance. More often than not, members of our community bound to a wheelchair are unable to experience types of mobility supporting a wide range of vestibular movement that those without wheelchairs can experience with ease.

This project focuses on the development and implementation of a mechanism that enables individuals constrained to a wheel chair to experience the motion of swinging without exiting their standard or powered wheelchairs. In addition, the system needs also have an easy switch to a basic platform swing for those who require more intense stimulation and are not in a wheelchair. The goal of this project is to integrate the needs of Arc's Day Services program participants and volunteers into a safe product that can provide the motion of swinging both indoors and outdoors without exceeding a budget of \$2,500. The expected result is an implemented, fully functional dual platform-wheelchair swing prototype that meets or exceeds requirements delivered to the customer no later than May 2015. Furthermore, the design will focus greatly on ensuring that future developments for the product can be done with ease if possible.

At the end of the project the team will deliver a working prototype, a use and maintenance manual, an assembly manual, detailed drawings, executed test plans with documented results, a bill of materials and a technical paper and poster.