

Spider Cage to Support Cerebral Palsy Patient

Client: Mr. Matt Jahnke - mattjahnke@ucpdane.org

Advisor: Joseph Towles - towles@wisc.edu

Team: Kevin Collins - kdcollins2@wisc.edu (Team Leader)
Darcy Davis - darcy.davis@wisc.edu (Communicator)
Sheetal Gowda - sjgowda@wisc.edu (BSAC)
Breanna Hagerty - bhagerty@wisc.edu (BWIG)
Stephen Kindem - kindem@wisc.edu (BPAG)

Date: March 15th - March 28th, 2017

Problem Statement:

A spider cage is a device used by therapists to work with individuals (usually children) who have cerebral palsy. The cage supports the patient's weight with the use of bungee cords that are connected to a custom suit that allows the patient to work on building leg and arm strength. This product is available commercially but it is quite expensive. The client is looking for a design that is relatively inexpensive, transportable via trailer, able to fit through a standard doorway, and customized to meet the needs of one particular person.

Last Week's Goals

- Continue Testing

Summary of Team Role Accomplishments

- *Leader* - Sent progress report to TA, Client and Adviser
- *BWIG* - Uploaded progress report
- *BSAC* - No meetings attended
- *Communicator* - Invited Amanda to campus to help evaluate bungee cord positions
- *BPAG* - Worked with Susan Sauer to initiate the reimbursement process for the base material purchase.

Summary of Accomplishments:

This week the team continued experimental testing. Steve created a stand for a dial indicator to help it cling to the mesh and be better positioned for testing deflection. The team has continued testing with Steve and Kevin and data analysis has begun. A meeting with Amanda has been set for April 4, 2017 at 3:30 pm to let her see the cage and determine if the females in the group should be tested at the same attachment points as the males or if they should be attached lower (on the sides of the cage as opposed to the top). Testing will resume on April 4th after Amanda's feedback.

Activities

Date	Person	Task	Time (hrs)	Weekly Total	Semester Total
3/15/17	Team	Testing	2		16
3/28/17		Testing	2	4	
3/28/17	Kevin	DIY	1	1	18
3/28/17	Darcy	DIY	1	1	16.5
3/28/17	Sheetal	Testing	1.5	1.5	17.5
3/26/17	Breanna	DIY	0.5	2.5	21.5
3/28/17		Testing	2		
3/28/17	Stephen	Testing	2		20

Team Goals

- Continue testing and analyzing data

Individual Goals

- *Kevin*: DIY instructional project

- *Darcy*: Find grommets to apply to the harness to allow for smaller people to use it safely
- *Sheetal*: DIY instructional project
- *Breanna*: Begin looking at DIY project
- *Stephen*: DIY instructional project, update support calculation code to reflect testing connection scheme.

Project Timeline

	January					February					March					April				May
Task	19	26	2	9	16	23	2	9	16	23	30	6	13	20	27	4				
Project R&D																				
Base Support	X	X																		
Harnesses and Bands		X	X	X																
Padding					X	X														
Assembly Tools																				
Fabrication																				
Order Materials				X	X	X														
Create Fastener Hole		X																		
Base Support							X	X	X											
Padding																				
Assembly Tools																				
Testing																				
Slip Test							X	X	X	X										
Deflection Calculations											X	X								
Assembly Directions																				
Redesign																				
Deliverables																				
Progress Report	X	X	X	X	X	X	X	X	X		X									
Individual Presentation				X	X															
Preliminary Presentation				X	X															
Preliminary Deliverables				X	X															
Poster																				
Final Deliverables																				
Meetings																				
Advisor	X		X					X			X									
Client			X																	
Team	X	X	X	X	X	X	X	X		X										
Website																				
Update	X	X	X	X	X	X	X	X		X										

Colored Cells: Projected Timeline
X: Completed Tasks

Expenses

Fall 2016: University Funded Expenses: \$1,702.75

Description	Supplier	Part/Model #	Link to Part	QTY	Date	Price	Total
Price Engineering Cage Materials & Shipping (Itemized BOM in separate file)	Price Engineering	N/A	N/A	1	1/1/2017	\$1,702.75	\$1,702.75
						Total	\$1,702.75

Spring 2017: University Funded Expenses: \$32.94

Description	Supplier	Part/Model #	Link to Part	QTY	Date	Price	Total
19/32 4'x8' OSB	Home Depot (IN STORE)	0000-339-696 5/8 OSB SQ	N/A	2	2/24/2017	\$14.75	\$29.50
TEE NUT ZINC 5/16-18 x 3/8"	Home Depot (IN STORE)	887480023114 TEE NUT	N/A	2	2/24/2017	\$0.98	\$1.96
HEX BOLT 5/16-18 x 3/4"	Home Depot (IN STORE)	AEE 5/16X3/4HBLT	N/A	8	2/24/2017	\$0.16	\$1.28
HEX BOLT 5/16-18 x 1"	Home Depot (IN STORE)	AEE 5/16X1HXBOLT	N/A	8	2/24/2017	\$0.17	\$1.36
						Total	\$34.10

Spring 2017: Client Funded Expenses: \$159.74

Description	Supplier	Part/Model #	Link to Part	QTY	Date	Price	Total
Harnesses	Zoro	Zoro #: G1320821 Mfr #: 1191209	https://www.zoro.com/protecta-full-body-harness-ml-420-lb-redgray-1191209/i/G1320821/?gclid=CON-5on-NECFR61wAodtbMCKg	1	2/9/2017	\$75.86	\$75.86

Resistance Bands	Fitness Insanity	Unsure	https://www.amazon.com/gp/product/B01GCA4BJC?ref=sr_1_7&qid=1486677502&sr=8-7&keywords=Fitness%20Resistant%20Bands&pldnSite=1	4	2/9/2017	\$20.97	\$83.88
						Total	\$159.74

Total UW - Expenses: \$1735.69

Total Client Expenses: \$159.74

Total Expenses: \$1895.43