

## *Therapeutic Spider Cage for Muscle Development*

**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)

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Breanna Hagerty - bhagerty@wisc.edu (BWIG)

Stephen Kindem - kindem@wisc.edu (BPAG)

**Date:** April 19th - 26th, 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**

- Reassemble cage for instructions
- Work on assembly instructions

### **Summary of Team Role Accomplishments**

- *Leader* - Send progress report to client, TA, and adviser.
- *BWIG* - Uploaded progress report
- *BSAC* - No meetings attended
- *Communicator* - Sent rough draft of BME Excellence award to Dr. Towles

- *BPAG* - No additional expenses

**Summary of Accomplishments:**

This week the team coated both of the baseboards with a latex paint to prevent any liquid from damaging them. The team was also able to reassemble the cage. During reassembly, pictures and notes were taken for the assembly instructions that will be delivered to the client. Options for carabiners were also explored this week.

**Activities**

Date	Person	Task	Time (hrs)	Weekly Total	Semester Total
4/23/17	Team	Reassemble cage with pictures	1	3	21.5
4/25/17		Work on poster	2		
4/20/17	Kevin	Paint base	1.5		
4/25/17		Work on Poster	1.5	3	25.5
4/20/17	Darcy	Worked on assembly instructions and graphics	1.5		
4/25/17		Made poster images higher res, converted poster into acceptable format for printing	1.5		
4/26/17		Fixed file format issues and submitted poster for printing	0.5		26
4/20/17	Sheetal	Paint base	1.5		

4/23/17		Final report	1		
4/25/17		Poster and final report	3	5.5	25.5
4/20/17	Breanna	Paint base	1.5		31.5
4/21/17 -4/23/17		Work on report	4		
4/25/17		Mark test setup locations on solidworks model	0.5		
	Stephen				23

### Team Goals

- Finish assembly instructions
- Final report and poster
- Test new carabiners

### Individual Goals

- *Kevin*: Test new carabiners and present on Friday.
- *Darcy*: Tweak assembly instructions to reflect Sunday's cage re-assembly
- *Sheetal*: Begin final report/presentation
- *Breanna*: Continue working on report
- *Stephen*: Fix current issue with the cage and work on the report

## Project Timeline

Task	January	February	March	April	May											
Project R&D	19	26	2	9	16	23	2	9	16	23	30	6	13	20	27	4
Base Support	X	X														
Harnesses and Bands		X	X	X												
Padding					X	X										
Fabrication																
Order Materials				X	X	X										
Create Fastener Hole		X														
Base Support						X	X	X								
Padding											X	X	X	X		
Testing																
Slip Test							X	X	X	X	X	X	X			
Deflection Calculations									X	X	X	X	X			
Assembly Directions													X	X		
Deliverables																
Progress Report	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Individual Presentation				X	X											
Preliminary Presentation				X	X											
Preliminary Deliverables				X	X											
Poster														X		
Final Deliverables														X		
Meetings																
Advisor	X		X					X		X		X				
Client			X							X						
Team	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Website																
Update	X	X	X	X	X	X	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)	AFE 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	<a href="https://www.zoro.com/protecta-full-body-harness-ml-420-lb-redgray-1191209/i/G1320821/?qclid=COOn-5on-NECFR61wAodtbMCKg">https://www.zoro.com/protecta-full-body-harness-ml-420-lb-redgray-1191209/i/G1320821/?qclid=COOn-5on-NECFR61wAodtbMCKg</a>	1	2/9/2017	\$75.86	\$75.86
Resistance Bands	Fitness Insanity	Unsure	<a href="https://www.amazon.com/gp/product/B01GCA4BJC?ref=sr_1_7&amp;qid=1486677502">https://www.amazon.com/gp/product/B01GCA4BJC?ref=sr_1_7&amp;qid=1486677502</a>	4	2/9/2017	\$20.97	\$83.88

			<a href="#">&amp;sr=8-7&amp;keywords=Fitness%20Resistant%20Bands&amp;pldnSite=1</a>				
						Total	\$159.74

**Total UW - Expenses: \$1735.69**  
**Total Client Expenses: \$159.74**  
**Total Expenses: \$1895.43**