

Physical Function Testing Apparatus for Monkeys

Client: Dr. Ricki Colman

Advisor: Dr. Elizabeth Meyerand

Team: Benjamin Ratliff bratliff@wisc.edu (Team Leader)
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Date: February 3 to February 10, 2017

Problem Statement

We are looking to have equipment designed/developed that will allow us to test physical function, specifically muscle strength in macaque monkeys. For over 25 years we have been studying the effects of diet on aging in rhesus monkeys. We have learned that like humans, rhesus monkeys lose muscle mass with advancing age. We have shown that long-term intake of a reduced calorie diet can delay this decrease in muscle mass. While we have the ability to measure muscle mass, we are not currently able to measure muscle function or strength, our true outcome variable of interest. We can often use equipment that has been designed for humans with our monkeys. In this case, we are concerned that the muscle strength testing equipment that is commercially available requires the patient to willingly perform at their maximum level. Ideally we would have equipment that would entice the monkeys to perform at their maximum and allow us to determine muscle strength for both hind limbs and fore limbs separately.

Last Week's Goals

- Begin brainstorming design ideas to improve design from last semester
- Look into getting TB tests as a part of gaining access to working with the monkeys
- Research the automatic reward system used
- Update Literature Review and consider beginning to purchase some supplies to begin second prototype

Summary of Team Role Accomplishments

- Naren – Attended BSAC meeting, conducted materials research, researched the automatic reward system
- Eli – Set up meeting with client, conducted materials research
- Ben M. – Conducted materials research, used SolidWorks to create our 3 designs
- Ben R. – Conducted circuits research, made circuit budget, made circuit design matrix
- Team - Decided on 3 designs, used design matrix to analyze these three designs

Summary of Design Accomplishments

- We have decided on the design we plan to fabricate moving forward
- Eli and Naren were able to visit Scott and see the cages in person

- Our client got back to us on the paperwork we need to begin to gain access to the facilities

Activities

Date	Person(s)	Task	Time (hrs)	Weekly Total	Semester Total
2.5.2017	Ben R.	Circuit Research	1		
2.8.2017		Circuit Design Matrix	1	2	3
2.5.2017	Eli	Materials Research	1.5	1.5	3
2.5.2017	Ben M.	Materials Research	1		
2.9.2017		SolidWorks to create 3 design ideas	2	3	4
2.5.2017	Naren	Reviewed Last Semester's Work	1	1	2

Statement of Team Goals

- Finish the mid-semester presentation
- Begin to accumulate list of materials needed for prototype
- Work on paperwork for facility access

Individual Goals

- Ben Ratliff: Send Eli Materials List, Go over circuit budget with client
- Ben Myers: Finish SolidWorks
- Eli Stanek: set up meeting with client next week
- Naren Chaudhry: attend BSAC meeting

Difficulties

- None

Project Schedule

- We need to assemble our materials list for the prototype and begin to work on the PowerPoint presentation

Expense

Date:	Item:	Cost:	Comments:
9/9/2016	LabArchives Team Notebook	\$10.00	One time purchase for team

Total Cost: \$10.00