

Measurement of tibial translation in dogs with anterior cruciate ligament ruptures

Week 12– November 15th to November 21st

Team Members: Graham Bousley – Team Leader
Alex Bloomquist – Communicator
James Madsen – BSAC
Mike Nonte – BWIG

Client: Peter Muir
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Advisor: Wan-Ju Li
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Summary of Accomplishments:

- 1 Machined the base of the load cell
- 2 Obtained rubber stoppers and Velcro straps for the final device
- 3 Obtained epoxy for the final device.
- 4 Obtained plastic sheet out of which the housing will be made.
- 5 Organized the circuit boards for the final device
- 6 Met as a team on Monday and decided on goals for the rest of the week.

Team Goals:

- 1 Solder Hall Effect sensors onto circuit boards
- 2 Bend more slider pieces
- 3 Cut metal rod into two pieces
- 4 Make the case as small as possible.
- 5 Start attaching needles to sliders and attach the Velcro as well.
- 6 Meet with Peter Muir to discuss direction of the project

Problem Statement:

- 1 Arthritis in canines often leads to joint degeneration and rupture of the Anterior Cruciate Ligament (ACL). Diagnosis of this condition is often difficult because the current methods used are non-quantitative. The aim of this project is to quantify the amount of tibial translation in a canine's leg caused by a known applied force in order to determine the severity of an ACL rupture. Preliminary parts for a device that can accomplish this have been developed and it is the goal of this team to

create and test a working model.

Activities:

Name	Activity	Time spent
James	Team Meeting, made a trip to obtain materials, worked on circuit boards	4+26.5= 30.5 hours
Mike	Team Meeting, made the trip to obtain materials, worked on website	4+27= 31 hours
Alex	Communication with client and Lacey, Worked on foot-holder piece and other parts of the load cell	4+29=33 hours
Graham	Obtained Hall Effect sensors, worked on circuit boards, Team Meeting	4+24=28 hours

Project Timeline:

	September				October				November				December		
Tasks	6	13	20	27	4	11	18	25	1	8	15	22	29	6	13
Project research		█		█	█				█	█					
Brainstorming			█					█	█						
Problem Statement			█												
Prototype testing				█				█							
Ordering								█	█	█					
Midsemester Report						█									
Device manufacturing									█	█	█				
Testing															
Re-designing								█							
Re-testing															
Presentation					█										
Progress report	█	█	█	█	█	█		█	█	█	█				
Website			█	█	█	█	█	█	█	█	█				

Expenses:

18x24 Plastic Sheet- \$6.97
Velcro Straps- \$9.92
Glides-\$2.69
Threaded Rod-\$2.47
HexNuts-\$0.12

Total: \$23.61