

Modified Bicycle Motion Capstone

Team 19

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- Client Contact

- Web Developer

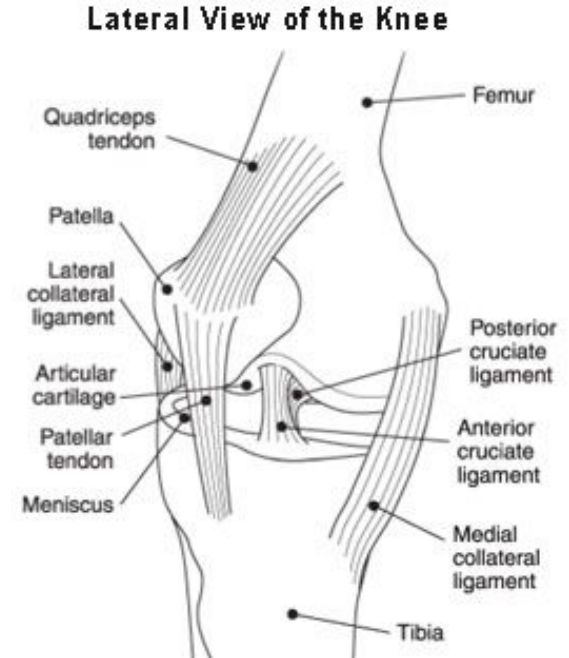
- Project Manager

- Secretary

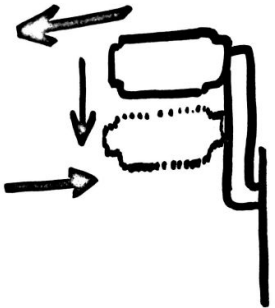
- Budget Liaison

Project Introduction

- Dr. Scot Raab
 - Assistant Professor in Athletic Training
 - Long-time cyclist
- Modified Bicycle Motion
 - Limit Range of Motion (ROM) experienced by the knee
 - Create maximal torque
 - Limit the modifications to existing bicycles



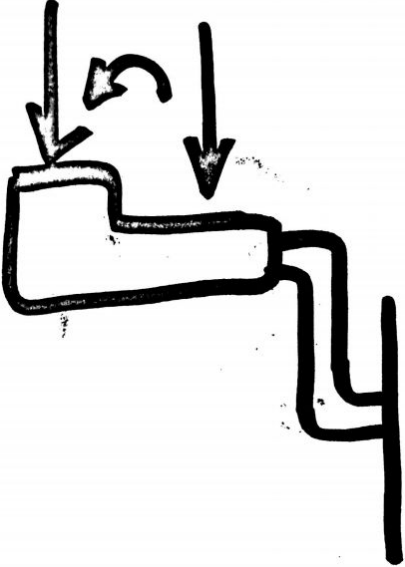
Designs Considered



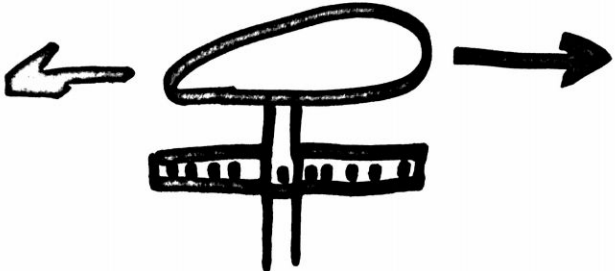
Adjustable Pedals



CVT

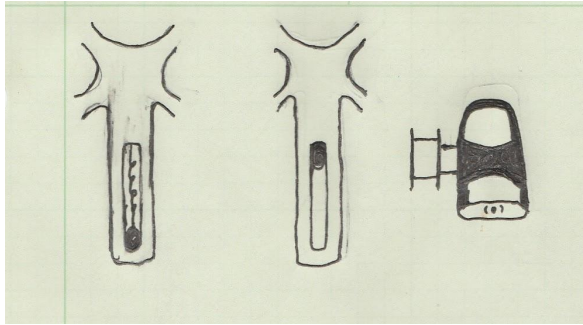


Pedal Shape

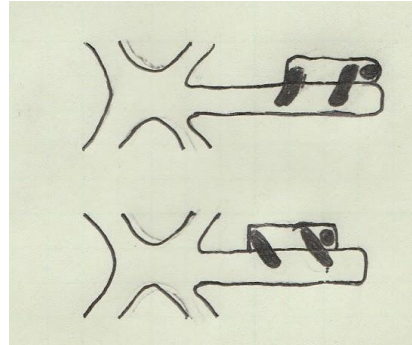


Translating Seat

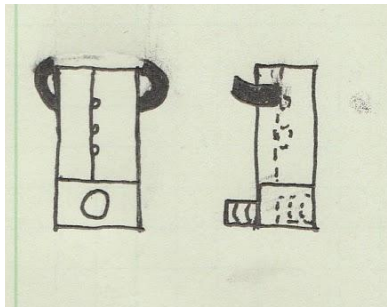
Designs Considered (Cont.)



Crankset Slider



Translating Cranks



Pedal Slider



Q-Rings



Engineering Requirements

- Added weight < 300g
- Design cost < \$250
- Sustain falling weight > 50 lbs at 0.6 ft
- Power generation < 5% difference vs. standard cranks
- Knee > 90°

Design Selected

Customer Requirements:	Weightings:	Designs:									
		Crankset Slider	Translating Cranks	Pedal Slider	4 Chain Rings	Q-Rings	Adjustable Pedals	Translating Seat	CVT	Pedal Shape	Gear Ratios
Durable	4	3	4	3	5	5	4	4	3	4	5
Retrofittable	5	5	5	5	2	4	4	3	3	4	5
Low weight	3	4	3	4	3	4	3	3	3	4	4
Max torque	5	4	3	4	4	4	4	2	4	4	3
Low cost	3	3	3	3	2	3	3	3	2	3	4
Safe	5	4	3	2	4	4	3	4	4	3.5	4
Aesthetics	2	4	3	2	4	3	3	3	3	2	4
Knee angle	4	4	3	4	3	3	4	2	3	4	1
Total Score:		122	107	108	105	119	111	93	100	114.5	116

Schedule and Budget

Schedule

Team Meeting	1d	10/05/2016	10/05/2016	
Concept Generation	10d	10/05/2016	10/18/2016	
Client Meeting 2	1d	10/13/2016	10/13/2016	
Staff Meeting 2	1d	10/18/2016	10/18/2016	11
Team Meeting	1d	10/19/2016	10/19/2016	
Presentation 2	1d	10/25/2016	10/25/2016	11

Budget

- Total budget: \$1500
- No expenditures
- Seek sponsorship
 - Local bike shops

Questions?