



The Hope

Midpoint Presentation

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PRESENTATION ITINERARY

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Project Description

- The Project is a device that should help specific foot paralyzed individuals to walk normally again.
- The project contains three main supports that will allow targeted individuals to walk easily.
- Two supports will be used in along both legs and the third support will be more for balance.

Project Overview

- Hope Device
- Assistive device to help people walk
- Adjustable crutches with leg support to decrease required strength of the individual
- Decrease pain from the bars against underarms



Figure1: Hope device

Project Updates

Since the last presentation

- Changed the design
- Changed the device
- Added the third support for the leg
- Changes based on the new analytical analysis

New Analytical Analysis

- Comparing aluminum and carbon fiber:
 - Safety
 - Strength
 - Weight
 - Cost
- Third Support Analytical
 - Human Force
 - Best Angels and Materials

Left in Manufacturing

- In-depth analysis on Solidworks.
- Analytical analysis results might lead to more changes.
- Connect third support with harness base.

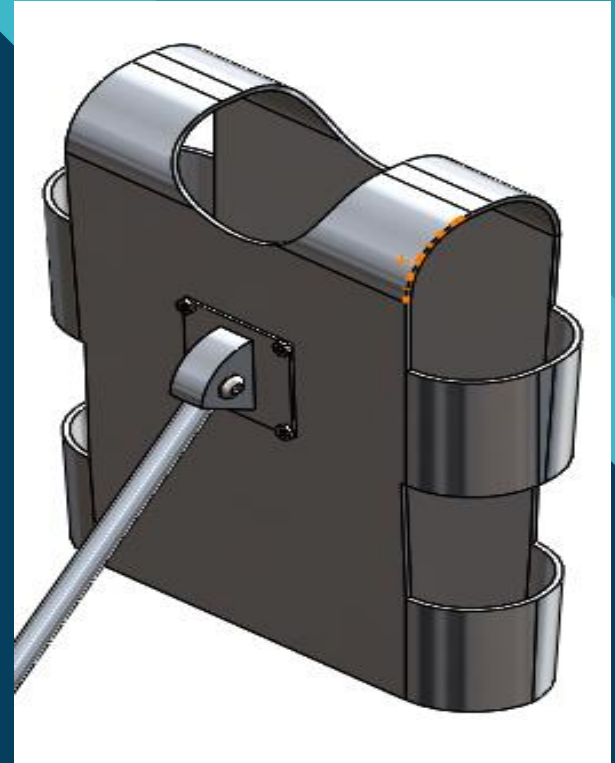


Figure 2: Harness base

Manufacturing Plan

Depends on dimensions of the pipes to cut it in appropriate sizes.

Connecting parts with screws.

Request pipes from machine shop in case of not finding the appropriate pipes.

Implementation Parts	Quantity	Estimated Time of Manufacturing
Cuffs	6	2 hours
Bended Underarm Stick	2	1 hour
Bended Arm stick	2	1 hour
Stick	2	1 hour
Lower Stick	2	1 hour
Hand Grip	2	1 hour
Underarm	2	0.5 hour
Underarm Foam	1	0.5 hour
Hand Grip foam	2	0.5 hour
Leg Base	2	1 hours
Supporter Base	1	6 hours
Bracket	1	1 hour
Tires	2	0.5 hour
Wheel	2	1 hours
Break	1	3 hours
Break Rubber	1	1 hour
TOTAL HOURS		22 Hours

Testing Plan

Two ways of testing:

Theoretically: By hand calculations or Finite Element Analysis.

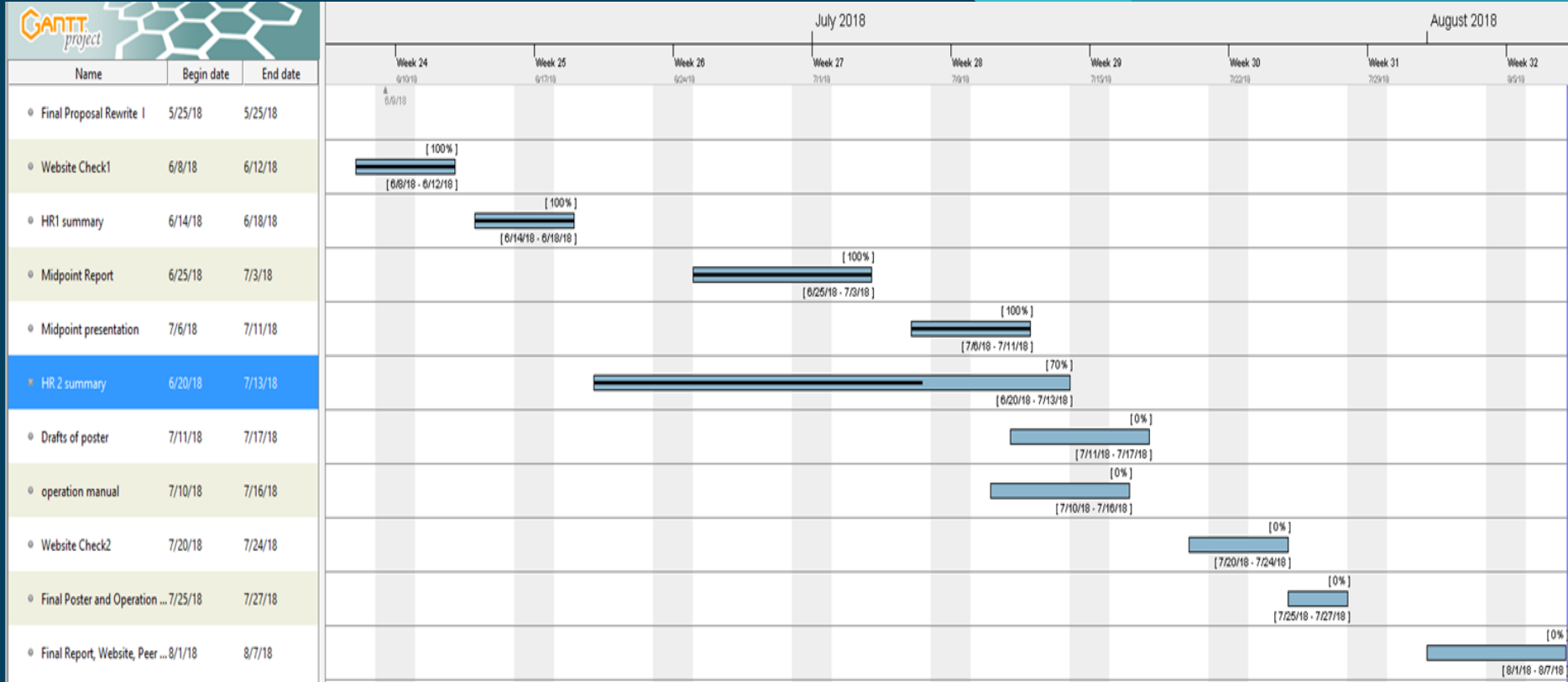
Practically: let a paralytic person who meets the engineering requirements test the device.



Figure 3: Paralytic testing

Moving Forward

Gantt Chart



Budget

Cost per piece and Material:

Aluminum 250\$

Lower stick	2	\$30
Stick	4	
Bended Underarm Stick	2	\$50
Bended Arm stick	2	\$40
Underarm	2	\$30
Leg Base	2	\$20
Supporter Base	1	\$5
Bracket	1	\$15
Wheel	2	\$20
Break	1	\$10

Foam 25\$

Hand Grip	2	\$10
Underarm Foam	1	\$5
Hand Grip foam	2	\$10

Rubber 90\$

Cuffs	6	\$60
Tires	1	\$20
Break Rubber	1	\$10

Total Budget= \$365

<https://www.grainger.com>

Hardware Review 2

- System is working because:
 - No motors or electrical circuit
 - Adjustable
 - Safe

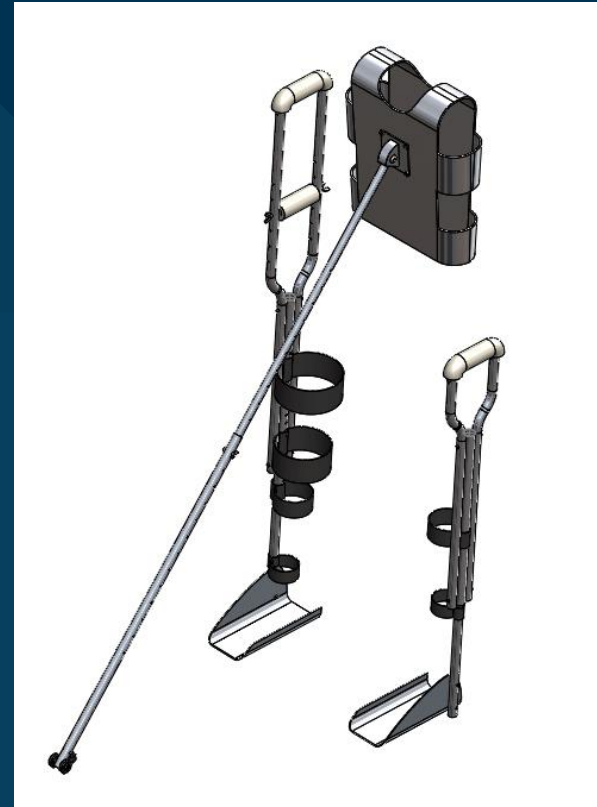


Figure 4: device system

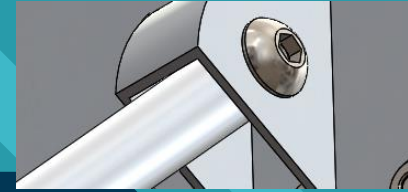
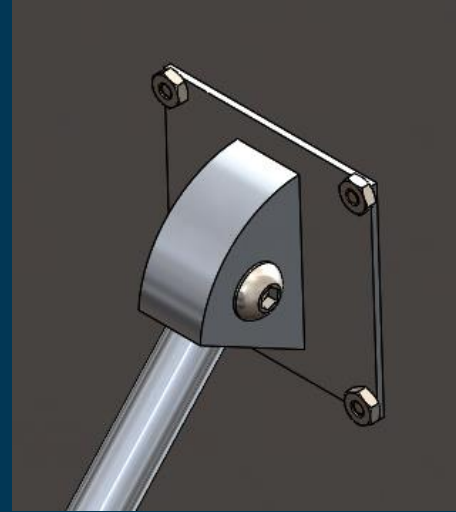
How it works

- Major control by hands, minor control by chest.
 - Move a leg at a time the balance on the other leg.
 - While moving a leg, body weight and balance on the other leg.
 - Supporter used when needed for balance.



Figure 5: device work process

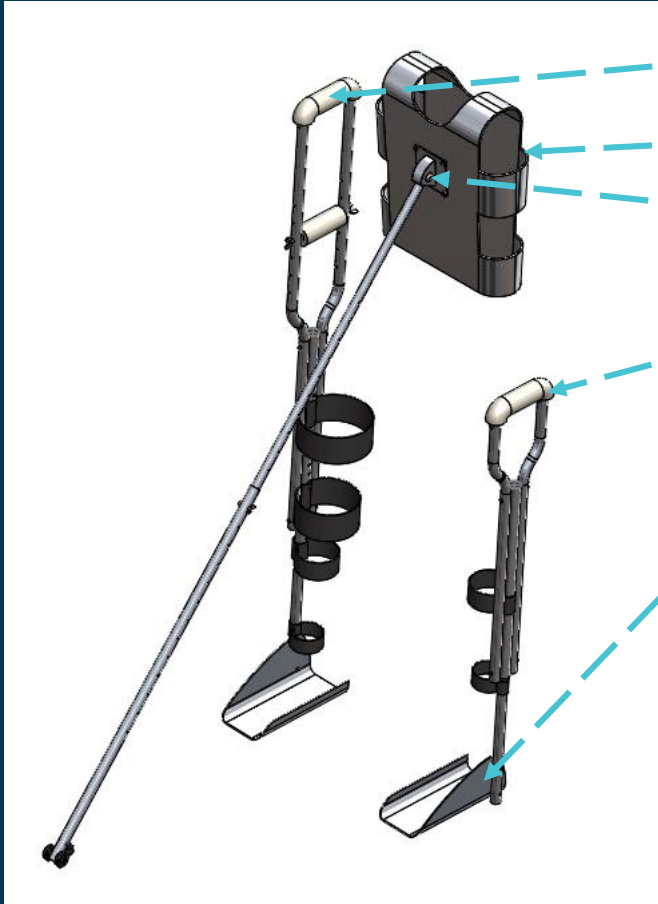
- Supporter holds user from falling.
 - In specific angle, The supporter stop rotating.



- Brake system works in specific angle



● Key Subsystems



Underarm Crutch

Supporter

Supporter base

Handgrip Crutch

Leg base

The image features a diagonal split between a light blue upper-left section and a dark blue lower-right section. A thick, dark blue diagonal line separates the two colors. Centered in the dark blue area is the text "Appreciate your listening" in a white, sans-serif font, arranged in two lines.

**Appreciate your
listening**