Specifications

TEAM 21 - Joshua’s Jumper

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Project for Joshua Bouchard

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Operational Specifications:

This jumping apparatus is to be built with a detachable platform and upper extension. The platform should consist of wheels and a motor to power the device. This motor will be connected to a remote control for the parents to use, and to a joystick for Josh to use when he is able. There will be a switch to change the vehicle from being steered by Josh or his guardians. The platform will have a surface to allow Josh’s feet to stand on so that they do not drag when the apparatus is in motion. Additionally, the platform will have an area with safety straps for Josh’s younger brother, Jonah, to ride with him. Bumpers will be put around the vehicle to ensure corners of the jumper do not cause any damage to the house, pets, younger sibling, etc. Pole supports will be covered in fabric for these purposes as well. Lockable wheels will be used for when the device is to remain still during Josh’s jumping. The wheels must be able to roll on the Bouchard’s hardwood floors, and ideally in the grass and on the pavement outside. A harness will be suspended by elastic bands to the upper extension. This harness will support Josh’s pelvic and torso, including his chest, while keeping his legs free to jump. The upper extension will have the ability to detach from the main frame, in order to be transported, and extend upwards to account for Josh’s growth. The upper extension will have a tarp/sunscreen over it to protect Josh from the sun when he is using the jumper outdoors.

Technical Specifications: (Preliminary Estimated Values)

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**Physical: Stainless Steel Frame**

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**Mechanical:**

Size: 33 x 33 x 64 inches (L x W x H)

Speed: 3-4 m/s

Weight:

Total Structure Weight: 100 lbs

Chassis Weight Capacity: 110 lbs

Harness Weight Capacity: 50 lbs

Turn Angle: 360 Degrees

Incline Capacity: 35 Degrees

Power: 1-2 HP

**Environmental:**

Storage Temperature: 40 - 100 Degrees Fahrenheit

Operating Temperature: 60 - 90 Degrees Fahrenheit

Operating Environment: Indoors (Hardwood floors), Outdoors (Grass/Pavement)

**Electrical:**

Voltage Range: 24 - 48 V

Current Range: 4 - 30 A

Wireless Remote Range: 100 ft

Battery: UNK now

Battery Life: 40 hours

**Software:**

User Interfaces: Remote Control, Attached Joystick

**Safety:**
- Could flip over if used at an improper angle
- Motor could be damaged from overuse

**Maintenance:**

- Recharge or purchase new batteries for the remote control
- Cleaning (especially after outdoor use)