Project Statement

Project 14 – Walker for Sand

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**Statement of Need:**

The purpose of this project is to design and build a walker for Matthew Davies, an eleven year old boy suffering from Cerebral Palsy. When Matthew was born, he was too small and had cranial bleeding, which required the installment of a shunt. Matthew is able to walk and is receptive, and he needs no neck or back support, but due to his condition he does require additional support from a walker or quad-canes to move around. Matthew is 57 inches tall, and weighs 98 pounds. The walker should be designed so that the height is comfortable for Matthew and easy for him to use, and should include some type of back support.

Matthew is in sixth grade and his family visits the Rhode Island beaches for vacation every summer. Providing this walker for Matthew will allow him to move about more freely at the beach, and will help compensate for his limited mobility.

**Intro and Overview:**

This project is to design and build a walker for Matthew that can be used on the beach. The device must be collapsible to allow for its efficient transport. The walker should be able to accommodate for Matthew’s future growth, and should include some form of support for his back, which will help him to maintain an upright posture.

The walker is to be used mainly on the sand at the beach, and Matthew’s mother, Kathleen, has also expressed a desire for the device to be used in the water.

**Realistic Constraints:**

The biggest constraint is the financial one. Due to our budget our design factors will be limited and we may not be able to include additional accessories for the walker. The terrain on which the walker is to be used is also a constraint. In order to be used efficiently on sand we must take into consideration the wheel-size and type of tire. The walker must be strong enough to support Matthew, but also lightweight enough that it can easily be transported to and from the beach. Since the walker is being made for Matthew specifically, it is unnecessary to take into account design factors that would increase the efficiency of mass production. The most important constraint is Matthew’s safety. There will be a braking system to prevent him from falling backwards, and the walker will support Matthew from behind, enabling him to stand straighter and promoting trunk extension. There are no ethical, social, or political constraints to account for.

**Other Data:**

Matthew lives in Cheshire, CT, about an hour southwest of the UConn Storrs campus. His twin brother Jack also suffers from Cerebral Palsy, although his condition is much more severe. Matthew also has an older brother who does not have Cerebral Palsy.

**Questions:**

What is our budget?

How big should the device be? (size, weight)
How well can he control it?

What type of material should the frame be constructed from?

What type/size tires should be used so that the walker is easy to maneuver at a beach?

How many wheels must the walker have?

How will the walker accommodate for Matthew as he grows?

What are the portability requirements? How should the walker collapse for easy transportation?

Does Matthew want any special features for the walker?