Alternative Designs Report: Walker for Thalia

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This design encompasses all of the criteria required for the Thalia's walker. This walker is currently available from Medline and even meets our design requirements including a chair and bonus in-built storage compartment. A braking mechanism is already in use, however it will have to be modified (when the breaks are pressed the wheels are released instead of the current setup). The use of wheels will greatly reduce the friction encountered during operation in comparison to her current walker. This may improve Thalia's posture and ease maneuverability around her home. The current design is for people from 4 feet 10 inches to 6 feet 2 inches tall. Since Thalia is only 3 feet 9 inches tall, sections of the steel tubing will need to be removed and re-connected to accommodate her height. Other than the size modification and altering the configuration of the braking system, this already available design requires very little modification and a low investment cost of one hundred dollars.
This design is closest to what Thalia uses as a current make shift walker. Though this is simply a play school chair, the frictional properties of the plastic material allow her to stop and move as she chooses. Basing a design off of this play chair would ensure Thalia would know how to operate it safely. In addition, height adjustments could be easily made by placing small cup shaped discs on the base of the legs. The height could continually be adjusted as various discs are added below the legs of the chair, ensuring the device would remain usable as she grows. The device also includes a place to sit if she gets tired. The disadvantage of using this design is that the legs (with their flat bases) are prone to get caught if there is any obstacle in the chair's path. The trim piece at the transition point from carpet to tile flooring in the kitchen is a prime example of where the legs of the chair would get stuck. Not only could this cause a problem in maneuverability, it could also lead to tipping and a potential for injury. Clearly this poses a major issue with this design, however it can be remedied by placing a rounded edge on the chair legs which would allow for clearance over smaller obstacles. The low cost of the chair (thirty to fourty dollars) would leave plenty of room for money to be spent on modifications.
Alternative Design #3

This design is essentially the most generic walker available. It is ideal for those with adequate muscular strength in the legs but limited leg mobility. In Thalia's case, she does have some muscular strength in the legs but lacks the ability to coordinate leg movement. The advantages of using this type of walker include a high level of stability and maneuverability in tight spaces. A seat could be added by placing a flat piece of wood in between the two supports as shown in the diagram. Similar to alternative design one, sections of tubing would have to be removed on all four legs to obtain the proper height for Thalia (current Approx user height: 5'4" - 6'2"). The fact that this design already contains two points from which it can be held is ideal as it provides an additional height adjustment as she grows. With a cost of around eighty dollars, this device falls in the middle of the price of alternative designs one and two. The only disadvantage to this design is that it needs to be lifted slightly as each step is taken. Though this is light as it
made from aluminum tubing, Thalia may struggle to completely lift the walker off the ground due to her lack of leg mobility. Testing with the actual device would need to be performed to determine whether or not such a design is feasible given Thalia's capabilities.