Alternative Design One

Assisted Walking Device

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Project for Annalee Hughes
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Alternative Design 1

The first alternative design is the most realistic option for the walking device. This design involves buying a prefabricated medical walker, such as the Drive Clever walker, and modifying it. This type of standard walker provides an ideal platform for modification because the leg braces and support bars can easily be attached to the cross beams of the walker. The chest, hip and arm supports will be attached directly to the frame and the leg braces will be attached off of the hip support. The user’s legs and waist will be held into the device with simple straps. There will be two handles located in the back of the walker that will allow the user to get into the device from a seated position through rear entry. This entry method was used per request of the client. This design will be the most cost effective option because the basic walker can be purchased for a reasonable price and the modifications will require minimal manufacturing.

The purchased walker will be made from a light weight metal with castor wheels to allow for movement on all flooring types. The hip and chest plates will be fabricated from steel sheet metal and will be covered with a neoprene pad that can be removed for cleaning. The leg braces will also be fabricated from the same steel sheet metal and will be covered with a similar pad as they will need to be cleaned on occasion. The boots will be fabricated from preexisting ankle foot orthosis by removing the back section of an off-the-shelf model for easy access by the client. Both sets of handlebars are modeled after bicycle handlebars so there will be little alteration needed.

The leg constraints are the key feature in the design. They will allow for approximately five degrees of freedom in the hip and knee locations. The limited motion was requested by the physical therapist. As stated earlier, the back of the legs will be strapped into the leg braces via Velcro straps. For this design, the walker chosen is not collapsible so it will not be very portable. Also, the designers will have no choice in the dimensions and weight of the walker as it will be purchased commercially. See figures 1, 2, and 3 for the described design.
Figure 1. Technical Drawing of Alternative Design 1

Figure 2. Three Dimensional Model of Alternative Design 1
Figure 3. Leg Restraint Design (Restraint straps not modeled)