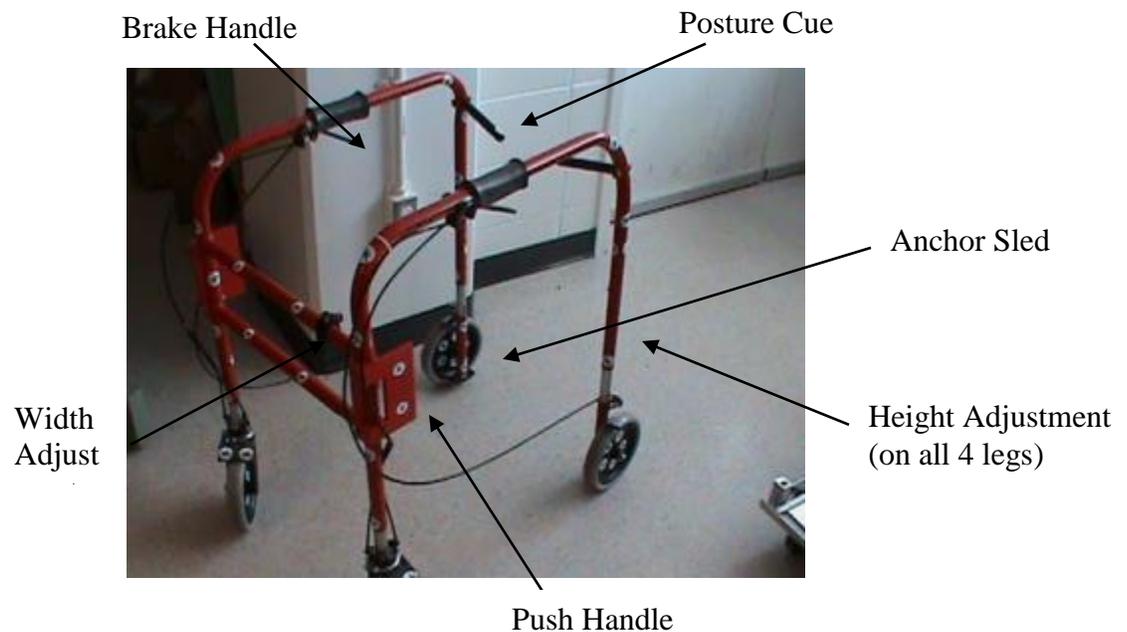


TITLE: Redesigned Walker

GOAL: The goal of this project is to design a walker that has improved balance and weight-bearing functionality for the user.



ABSTRACT:

9.1 million individuals in the United States currently use an assistive device for ambulation. 1.5 million People use walkers in the United States, and 78 percent of them are over 65 years of age. There are a number of reasons an elderly individual may require a walker, but they are most commonly used for balance and support. Despite the benefits of walkers, there are several problems with the design of current walkers. Walkers place increased stresses on the upper extremities which can lead to a heightened risk of injury and may actually increase an individual's fall risk by promoting poor posture, decreasing gait efficiency, and facilitating unwanted destabilizing effects. Based on this research, our team determined that a new walker is needed with a focus on the elderly population that meets the following goals: does not inhibit a normal gait, promotes good posture, and maintains a high amount of stability and safety. During the design process, our project team built physical mockups of 16 different components that we considered including in our design. These mockups were taken to patients who currently use walkers and physical therapists for feedback. Based on their feedback, we decided on a final design that meets our primary goals. Our final design consists of a frame that can adjust vertically and horizontally based on each individual user. There are brakes on all four wheels and they are activated by more comfortable handle grips. Our walker also includes leg cues that help encourage proper posture, and sleds that are automatically activated when the user puts weight through the handles. A prototype was built and tested against our objectives using an obstacle course and survey. Most of our objectives were met, however there are several design improvements we have proposed.