

ELDER WHEELCHAIR

The overall purpose of this project was to design manual wheelchair technology that can meet the unique needs of aging users across the continuum of residential environments while addressing the needs of family caregivers and facility staff.

Design input:

This project is built upon two needs assessment studies, one targeting elders living at home and the other of elders living in assisted living and long term care facilities. Input was sought from users, caregivers, nurses, aides, and facility administrators.

Community-living wheelchair users

- 50% reported difficulty in propelling a wheelchair
- 30% reported difficulty in transferring to and from a wheelchair
- 50% reported difficulty in performing tasks inside the home
- Nearly 100% used their wheelchair outside of the home with 50% using it for medical appointments
- Curbs and doorways were the most often cited environmental barriers

Nursing home residents

- Spend on average 8 hours in their wheelchairs per day; some spend up to 12 hours a day
- About 50% propel with foot & hand; 35% Hand only propellers; 15% Foot only propellers.
- Many residents do not use a cushion in their wheelchair. Administrators only purchase cushions for those with problems.

Nursing Home administrators

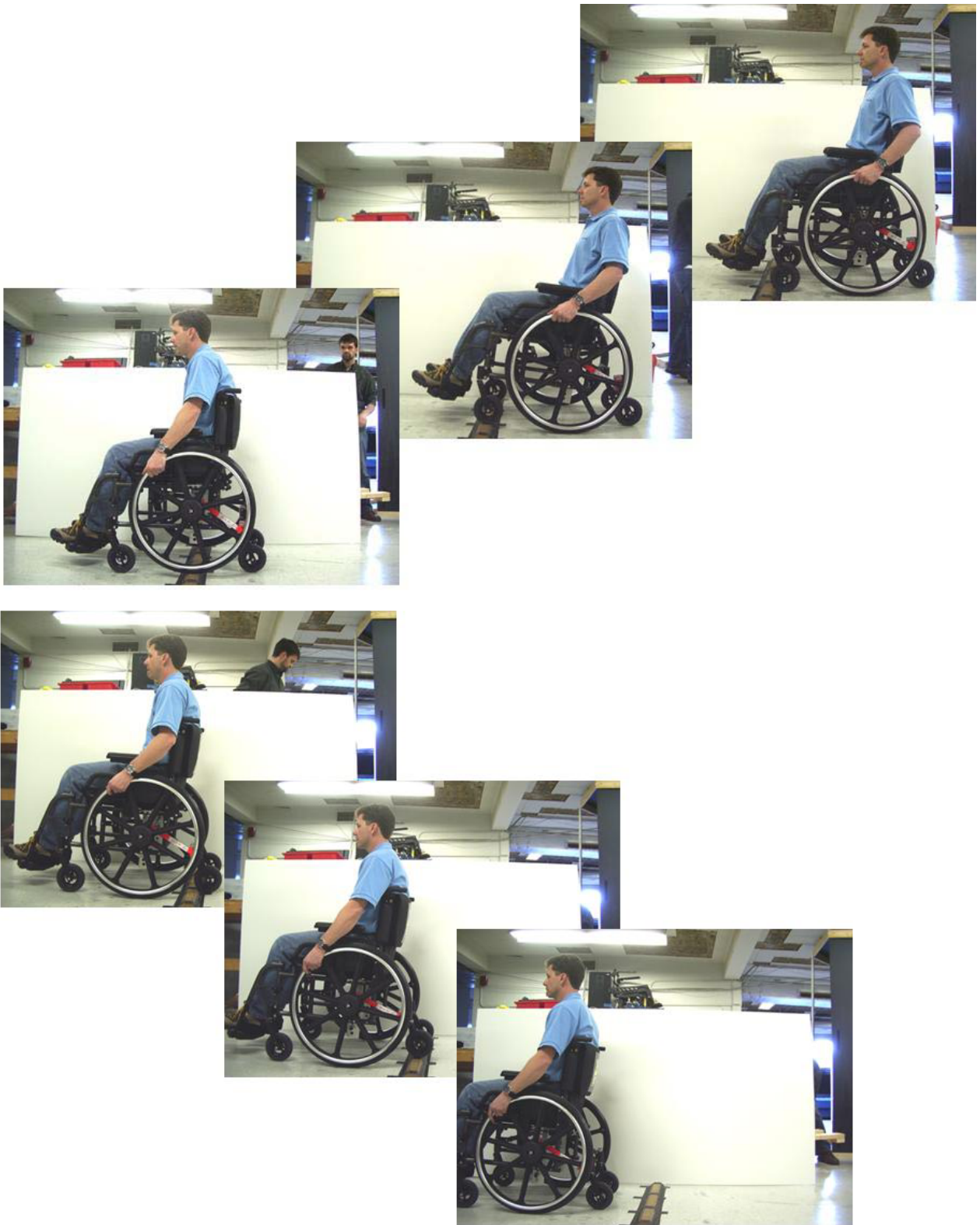
- Cost of a typical wheelchair - \$150 to \$200.
- Price they would be willing to spend on a new wheelchair - \$400.
- Safety was the most important issue the administrators identified for their residents.

Elder wheelchair design goal and rationale:

Create a wheelchair that offers more efficient propulsion and has increased maneuverability. The limited Range of Motion of the upper extremity lessens the ability to propel.

Elder Wheelchair Features

- The wheelchair moves the main drive wheel in a forward position similar to a sports wheelchair. This location permits increased contact on push rims during propulsion
- Locating the drive wheel near the CG of the occupied wheelchair also improves maneuverability .
- The use of 2 rear casters mounted on off-set pivot swing arms increases stability
- The resulting wheelchair configuration has a reduced overall length, thereby increasing maneuverability



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