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Pediatric Manual Wheelchair Skills Handbook

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Vanderbilt Pediatric Seating and Mobility Clinic

Mission of Monroe Carrel Jr. Children's Hospital at Vanderbilt:

“Through the exceptional capabilities and caring spirit of its people, Vanderbilt will lead in improving the healthcare of individuals and communities regionally, nationally and internationally. We will combine our transformative learning programs and compelling discoveries to provide distinctive personal care”

Goal of Vanderbilt Pediatric Seating and Mobility Clinic:

“to improve positioning and promote functional independence”

Identified Needs

Wheelchair clinic provides initial evaluation to acquire mobility devices for children in the first visit. The client's second visit is to acquire the equipment and at that time they receive brief training in wheelchair skills. Like many other physical skills, refinement of wheelchair skills takes practice and instruction. To date, wheelchair clinic has not provided a manual wheelchair skills training program for children under the age of 18. Though wheelchair skills training resources are available for the adult population³, there is a lack of resources to instruct children in proficient wheelchair skills management.

Children are assessed and taught very basic propulsion skills, but there is no follow through to see if skills continue beyond initial introduction of the wheelchair and if they are adequate for the individual to have functional mobility across environments. There is a need, but no structured approach for a manual wheelchair skills program at One Hundred Oaks Pediatric Clinic.

Content Development

- Reviewed literature on wheelchair skill assessment development^{1, 2}
- Reviewed Dalhousie Wheelchair Skills Program³
- Aided in completion of formal and informal community assessments of accessibility at parks, museums, and restaurants.
- Developed firsthand experience in community mobility through upwards of 50 hours of manual wheelchair use.
- Explored multimedia sources to understand the lived experience of wheelchair users^{4, 5, 6}

Skills

Beginner Group

- Safety skills: wheel locks, seat belt, spatial awareness
- Propels forwards/backwards
- Turns: in place; while moving
- Opens automatic doors
- Stops on demand
- Safely ascends/descends slopes

Advanced Group

- Reviews beginner skills
- Rolls on soft ground
- Picks up objects from the floor
- Safely performs wheelie
- Safely utilizes wheelie to get over an object
- Ascends/descends curbs with and without curb cuts
- Asks for/declines assistance

Activities Associated with Skill Acquisition

Each skill has associated activities to facilitate refinement through practice. Activities were chosen as the form of practice to support play based learning in children.

Examples:

- Stopping on demand: Red light, green light.
- Picking up objects from the floor: Bowling, bean bag toss, basketball.
- Spatial awareness: how close can you get to an object without touching it?

Recommended Assessment for Outcome Measures

Adapted version of the Utrecht Pediatric Wheelchair Mobility Skills Test^{1, 2}

Skill	Parameters	Ability	Time
Propulsion forward	10m	Yes/No	_____ seconds
Propulsion backwards	5m	Yes/No	_____ seconds
Rolls of soft surface (mat)	2m	Yes/No	_____ seconds
Turns 90° while moving forward	Left Right	Yes/No Yes/No	_____ seconds
Turns 90° while moving backward	Left Right	Yes/No Yes/No	_____ seconds
Turns 180° in place	Left Right	Yes/No Yes/No	_____ seconds
Sudden stop		Yes/No	_____ seconds
Opening/closing a door	Open toward Open away	Yes/No Yes/No	_____ seconds
Figure-of-8-shape		Yes/No	_____ seconds
Holding a wheelie	30 seconds	Yes/No	_____ seconds
Slope ascent	20%	Yes/No	_____ seconds
Slope descent	20%	Yes/No	_____ seconds
Platform ascending	5 cm 10 cm	Yes/No Yes/No	_____ seconds
Platform descending	5 cm 10 cm	Yes/No Yes/No	_____ seconds
Doorstep	2 cm	Yes/No	_____ seconds

Manual Wheelchair Skills Group Handbook

by
Brooke Edwards

A culminating capstone project submitted to Belmont University in partial fulfillment of the requirements for the degree of Doctorate in Occupational Therapy.

Belmont University
Nashville, TN
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Capstone Outcomes

- Created a manual wheelchair skills handbook for children.
- Created instruction materials for skill acquisition.
- Created activities for refinement of skills.
- Contributed to a grant to secure funding for skills group.
- Completed ISWP Online Wheelchair Service Training Series – Basic Level.
- Advanced practice skills in wheelchair skills provision.
- Learned roles and responsibilities of wheelchair service professionals.
- Facilitated IPE event with 100+ Belmont PT, OT, and interior design students on accessibility.



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References available upon request