Wheelchair Skills Training: What in the World is Going On!?

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Setting the Stage

• Conflicts of interest: None
• Acknowledgements:
  – Wheelchair Research Team
  – Collaborators
  – Funding bodies
• Caveats:
  – Late starter (2005)
  – Parachute-style experiences
  – Personal opinions
Session Objectives

On completion of the session, participants will be able to describe the complementary aspects of the:

1. Wheelchair Skills Training Program
2. World Health Organization Guidelines
3. International Society of Wheelchair Professionals

• Article 20 – Personal mobility
  – States Parties shall take effective measures to ensure personal mobility with the greatest possible independence for persons with disabilities, including by… Providing training in mobility skills to persons with disabilities and to specialist staff working with persons with disabilities…
Prevalence of Manual Wheelchair Skills Training

• 17% UK children: Whizz-Kidz 2004
• 18% US veterans: Karmarkar AM et al. JRRD 2009;46:567-76
• 66% US paraplegia: Zanca JM et al. Phys Ther 2011;91:1877-91
• 55% Canada: Kirby RL et al. RESNA 2013.
"Low tech, high impact"

This website deals with the Wheelchair Skills Program (WSP). The WSP includes the Wheelchair Skills Test (WST), the questionnaire version of the WST (WST-Q) and the Wheelchair Skills Training Program (WSTP). It is used to assess and train wheelchair users and/or their caregivers and clinicians.

Warning

The wheelchair skills described and illustrated on this website can be dangerous and result in severe injury if attempted without the assistance of trained personnel.
What’s Different About the WSP?

• Evidence-based
• Both assessment and training
• Both wheelchair users and caregivers
• Manual wheelchairs, power and scooters
• The process and sequencing used
• Updated often
• It’s FREE! (“open source”)

Wheelchair Skills Training Program

Process
(How to teach)

Content
(What to teach)

WSTP
Example of motor-learning principles: segmentation and feedback
Example of training tip: backwards method for foot propulsion

Wheelchair Related Publications
by the Dalhousie University Wheelchair Research Team

Wheelchair Skills Publications

17 papers*

*June 4, 2015
Keeler L et al, 2015

<table>
<thead>
<tr>
<th>Study or Subgroup</th>
<th>Experimental Mean [WST Score]</th>
<th>SD [WST Score]</th>
<th>Total</th>
<th>Control Mean [WST Score]</th>
<th>SD [WST Score]</th>
<th>Total</th>
<th>Weight</th>
<th>Mean Difference IV, Random, 95% CI [WST Score]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Best et al. 2005.</td>
<td>78.5</td>
<td>8.3</td>
<td>10</td>
<td>74.2</td>
<td>11.8</td>
<td>10</td>
<td>22.3%</td>
<td>4.30 [-4.64, 13.24]</td>
</tr>
<tr>
<td>MacPhee et al. 2004.</td>
<td>80.9</td>
<td>5.6</td>
<td>15</td>
<td>64.9</td>
<td>13.3</td>
<td>20</td>
<td>28.1%</td>
<td>16.00 [9.52, 22.48]</td>
</tr>
<tr>
<td>Mountain et al. 2014.</td>
<td>83.9</td>
<td>23.8</td>
<td>9</td>
<td>54.8</td>
<td>28.7</td>
<td>8</td>
<td>5.6%</td>
<td>29.10 [3.86, 54.34]</td>
</tr>
<tr>
<td>Ozturk &amp; Dokuztug. 2011.</td>
<td>83.3</td>
<td>12</td>
<td>14</td>
<td>64.7</td>
<td>8.3</td>
<td>10</td>
<td>24.2%</td>
<td>18.60 [10.48, 26.72]</td>
</tr>
<tr>
<td>Routhier et al. 2012.</td>
<td>77.4</td>
<td>13.8</td>
<td>19</td>
<td>69.8</td>
<td>18.4</td>
<td>20</td>
<td>19.8%</td>
<td>7.60 [-2.58, 17.78]</td>
</tr>
<tr>
<td><strong>Total (95% CI)</strong></td>
<td></td>
<td></td>
<td><strong>67</strong></td>
<td></td>
<td></td>
<td><strong>68</strong></td>
<td>100.0%</td>
<td>13.08 [6.62, 19.54]</td>
</tr>
</tbody>
</table>

Heterogeneity: Tau² = 27.77; Chi² = 8.90, df = 4 (P = 0.06); I² = 55%
Test for overall effect: Z = 3.97 (P < 0.0001)
International Classification of Function (ICF)

- Health (Impairment)
- Activities (Disability)
- Participation (Handicap)
- Society
- Whole person
- Organ or tissue

WHO, 2001
Impact of Wheelchair Skills

• Training increases confidence
• Training increases amount of wheelchair use
• Skills correlate with daily wheeled distance
• Skills correlate with return to work
• Skills correlate with participation measures
Levels of Scientific Evidence

I. Large randomized trials with clear-cut results (and low risk of error)
II. Small randomized trials with uncertain results (and moderate-high risk of error)
III. Nonrandomized trials with concurrent controls
IV. Nonrandomized trials with historical controls
V. Case series with no controls

Sackett DL. Chest (2 Suppl) 1989:2S-4S
Web Site: December 31, 2015
(62,971 users in 175 countries)
Wheelchair Skills Program

“Low tech, high impact”

Nenad Kostanjsek, WHO
ICF Conference, 2004
India (Kanpur) 2005
Tanzania (Dar) 2011
Tanzania (Moshi) 2011
India (Jaipur) 2005
Bosnia (Banja Luka) 2008
Nepal (Kathmandu) 2013
Disabilities and rehabilitation

Guidelines on the provision of manual wheelchairs in less-resourced settings

On the occasion of the 21st World Congress of Rehabilitation International, WHO, the US Agency for International Development, the International Society for Prosthetics and Orthotics and Disabled Peoples’ International have launched an important new document: Guidelines on the provision of manual wheelchairs in less resourced settings.

The wheelchair is one of the most commonly used assistive devices for enhancing the personal mobility of people with disabilities. An estimated 1% of the world’s population, or just over 65 million people, need a wheelchair. In most developing countries, few of those who need wheelchairs have access, production facilities are insufficient and wheelchairs are often donated without the necessary related services. Providing wheelchairs that are appropriate, well-designed and fitted not only enhances mobility, but also opens up a world of education, work and social life for those in need of such support.

The guidelines, developed for use in less resourced settings, address the design, production, supply and service delivery of manual wheelchairs, in particular for long-term wheelchair users. The guidelines and related recommendations are targeted at a range of audiences, including policy-makers; planners, managers, providers and users of wheelchair services; designers, purchasers, donors and adapters of wheelchairs; trainers of wheelchair provision programmes; representatives of disabled people’s organizations; and individual users and their families. By developing an effective system of wheelchair provision, Member States support

WHO Wheelchair Provision

1. Design
2. Production
3. Supply
4. Service Delivery

WHO Guidelines 2008, Section 1.7, p 25
WHO Service-Delivery Model

1. Referral and appointment
2. Assessment
3. Prescription
4. Funding and ordering
5. Product preparation
6. Fitting
7. User training
8. Follow-up, maintenance and repairs

WHO Guidelines 2008, Section 3.2.1, p 76
WHO Wheelchair-Provision Service Model

1. Referral and appointment
2. Assessment
3. Prescription
4. Funding and ordering
5. Product preparation
6. Fitting
7. User training
8. Follow-up, maintenance and repairs

WHO Guidelines 2008, Section 3.2.1, p 76
…no research supports the recommended approaches.”
Evidence for WHO Process

The full package vs

Individual steps
The Full Package


The impact of the World Health Organization 8-steps in wheelchair service provision in wheelchair users in a less resourced setting: a cohort study in Indonesia.

Toro ML, Eke C, Peariman J.

Author information

Abstract

BACKGROUND: For people who have a mobility impairment, access to an appropriate wheelchair is an important step towards social inclusion and participation. The World Health Organization Guidelines for the Provision of Manual Wheelchairs in Less Resourced Settings emphasize the eight critical steps for appropriate wheelchair services, which include: referral, assessment, prescription, funding and ordering, product preparation, fitting and adjusting, user training, and follow-up and maintenance/repairs. The purpose of this study was to investigate how the provision of wheelchairs according to the World Health Organization's service provision process by United Cerebral Palsy Wheels for Humanity in Indonesia affects wheelchair recipients compared to wait-listed controls.

METHODS: This study used a convenience sample (N = 344) of Children, Children with proxies, Adults, and Adults with proxies who were on a waiting list to receive a wheelchair as well as those who received one. Interviews were conducted at baseline and a 6 month follow-up to collect the following data: Demographics and wheelchair use questions, the World Health Organization Quality of Life-BREF, Functional Mobility Assessment, Craig Handicap Assessment Recording Technique Short Form. The Wheelchair Assessment Checklist and Wheelchair Skills Test Questionnaire were administered at follow up only.

RESULTS: 167 participants were on the waiting list and 142 received a wheelchair. Physical health domain in the World Health Organization Quality of Life-BREF improved significantly for women who received a wheelchair (p = 0.044) and environmental health improved significantly for women and men who received a wheelchair as compared to those on the waiting list (p < 0.017). Satisfaction with the mobility device improved significantly for Adults with proxies and Children with proxies as compared to the waiting list (p < 0.022). Only 11% of Adults who received a wheelchair reported being able to perform a "wheele". The condition of Roughrider wheelchairs was significantly better than the condition of kids wheelchairs for Children with proxies as measured by the Wheelchair Assessment Checklist (p = 0.019).
The Full Package

Wheelchair Use and Services in Kenya and Philippines: A Cross-Sectional Study

www.jhpiego.org/accelovate, 2015
Figure 8. Wheelchair Service Receipt, Kenya and the Philippines

- **Assessment**: Kenya - 31%, Philippines - 30%
- **Fitting**: Kenya - 34%, Philippines - 26%
- **Training (ever)**: Kenya - 27%, Philippines - 17%
- **Maintenance (ever)**: Kenya - 26%, Philippines - 26%
- **Repair (ever)**: Kenya - 15%, Philippines - 18%
- **Follow-up (ever)**: Kenya - 15%, Philippines - 20%

*www.jhpiego.org/accelovate*, 2015, p 42
Most striking were the associations between successful use of the current wheelchair and two services: (1) ever receiving wheelchair user training, and (2) being fitted while propelling in the current wheelchair.
WHO Content Review

• Need:
  – Less-resourced settings vs global focus
  – Accumulating experience and evidence

• Countervailing forces:
  – Growing investment in process
  – Competing priorities (e.g. GATE initiative)

• Process:
  – WHO 5-year plan
  – Need for funding
The University of Pittsburgh’s Department of Rehabilitation Science and Technology has been awarded a grant from the US Agency for International Development (USAID) to develop the International Society of Wheelchair Professionals (ISWP). ISWP will be built around a federation of regional and international Affiliate Members and Partners which will help ensure ISWP activities are culturally relevant, timely, and focused on the most important wheelchair-related issues.

ISWP will initially be led by a group of wheelchair experts at University of Pittsburgh, with strategic partnerships that have already been established with USAID & The World Health Organization (WHO). ISWP’s mission will be that wheelchair users are provided the best technology with the best service worldwide. This will be accomplished by promoting the WHO Guidelines on the provision of manual wheelchairs in less resourced settings, promoting training and research activities and improving wheelchair design, manufacturing and coordinating services. To that end, ISWP Affiliates will be representative of all of the stakeholders with the addition of research institutions dedicated to improving wheelchair services through evidence-based practice.

The current website is being developed, however we still would like to hear from you as please join our contact list below.
ISWP Organization Chart

• ISWP Central
• Advisory Board
• Working Groups:
  – Advocacy
  – Evidence-Based Practice
  – Membership and Coordination
  – Training
  – Standards
ISWP Training Working Group

• Subcommittees:
  – Competency testing
  – Integration
  – Hybrid (Blended) Course

• Training of Trainers
Emerging Training Issues

• Understudied mobility devices
• Training of caregivers
• Role of peers in training
• New educational methods:
  – Tablet-based applications
  – Virtual reality
  – Asynchronous training
Session Objectives

On completion of the session, participants will be able to describe the complementary aspects of the:

1. Wheelchair Skills Training Program
2. World Health Organization Guidelines
3. International Society of Wheelchair Professionals
“Half the world knows not how the other half lives.”

George Herbert, 1593-1633