

Group Wheelchair Skills Training – Setting and Achieving Goals

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Abstract

The number of wheelchair users has grown and many lack skills crucial for independence, safety and upper limb preservation. 3-5 hours of 1:1 wheelchair training can improve wheelchair skills test scores by 20%. Unfortunately, individualized training is becoming increasingly difficult with the length of time individuals are in rehabilitation after injury shortening. More efficient methods of teaching these skills are needed in both inpatient and outpatient settings. We will discuss the logistics of a group wheelchair skills training as a potential solution including the following: goal setting, scheduling, space and supply needs, group dynamics, and accommodating users with different baseline skill levels. We will present the effectiveness of a multi-site randomized control trial utilizing this intervention and case examples. We will also provide an overview of a pragmatic trial underway to integrate wheelchair skills training into four healthcare systems across the country.

Background

Despite the pivotal role that wheelchair skills play in quality of life and participation, many wheelchair users report being unable to negotiate curbs, uneven terrain, and other common obstacles that are encountered as part of community access.^{1,2} The effectiveness of one-on-one training has been demonstrated among clinicians, students in health care professions, and wheelchair users.³⁻⁹ Clinicians most often cite timing and resources as barriers to delivering wheelchair skills training.¹⁰ The goal of this study was to evaluate the effectiveness of a group training intervention to improve wheelchair skills among individuals with spinal cord injury as well as meet their individually set goals.

Methods

Intervention

This group training intervention was delivered to a cohort of individuals across 4 different sites (Pittsburgh, Miami, Chicago, West Orange). In a double-blind randomized control study, participants were randomized to receive either a wheelchair skills intervention or active control group. The active control group attended 2 classes on the topics of aging and weight management/nutrition. Pairs of clinicians provided 1-hour weekly training sessions over 6 weeks with 2 make-up classes to the wheelchair skills group. Group size ranged from 6-10 participants. This first cohort of individuals was highly skilled at baseline, as such the study design was modified for a second cohort in a single-blinded randomized control trial where the intervention was revealed to participants who were randomized to either an immediate or wait-list control group (WLCG). Additionally, individuals with a WST-Q score greater than 90 were excluded from the study. The WLCG received the intervention with a 6-month

delay. This group also had fewer intervention sessions (4 classes with 1 makeup) that were longer in length (90 minutes). Data collection is ongoing for the second cohort and results to date are presented. Finally, a pragmatic trial is also underway through which the four sites are integrating wheelchair skills into their continuum of clinical care.

Outcome Measures

Participants in each iteration of the study completed a Goal Attainment Scale (GAS) with individualized goals of wheelchair skills they wanted to improve. Trainers recorded whether participants were successful with their goals (yes, no) at the end of the intervention. A score was calculated for each participant as number of goals met/number of goals set x100%.

For the first and second study cohorts, the wheelchair skills test questionnaire (WST-Q) was completed at baseline and 1-month, 6-months, and 1 year after training. The WST-Q consists of 32 individual skills that are group into subcategories of indoor, community and advanced skills. It asks both about capacity (WST-Q[C]), can you complete the skills, and performance (WST-Q[P]), how often the skills are performed – daily, weekly, monthly, yearly, never.^{19,22} Total and subscore WST-Q scores were calculated as total raw score/possible raw score x 100%.

Results

Cohort 1 consisted of 114 individuals, complete data for cohort 2 includes 54 individuals to date. Participants were on average 39.1±12.1 and 40.0±12.3 years old and had been using a wheelchair for 12.4±11.4 and 17.0±17.1 years since injury for cohort 1 and 2, respectively. More than 70% of participants had paraplegia in both cohorts.

Participant listed goals in order of most to least common can be found in Table 1. Additionally, skills that were covered in greater than 1 and 3 classes are noted. ThOf all the skills, the most time was dedicated to wheelies in our intervention. Greater than 75% of participants (range of 83-100%) was achieved for 15 of the 23 categories of skills. Lack of goal achievement was attributed to poor attendance, declining to attempt the skill, or being able to achieve the skill with assistance but not independently. A greater number of goals was achieved among those who attended more classes (R=0.531, p=0.001).

Table 1: Participant Goals In Order of Most to Least Common

1	Descend stairs*	13	Turn in wheelie position#
2	Ascend stairs*	14	Get through hinged door*
3	Ascend high curb*	15	Transfer between surfaces
4	Stationary wheelie #	16	Moving wheelie#
5	Transfer floor to chair*	17	Roll on soft surface
6	Down high curb*	18	Folds and unfolds wheelchair
7	Ascend 10 degree incline #	19	Transfer chair to floor*
8	Wheelie incline descent#	20	Ascend 5 degree incline#
9	Efficient wheelchair propulsion*	21	Roll across side slope
10	Ascend low curb#	22	Reach high object*
11	Wheelie curb descent#	23	Pick up object from floor
12	Descends steep incline#		

Average number of classes spent on the skill indicated by * for >1 class and # for >3 classes. Shading indicates >75% participants achieved their goal for the skill.

WST-Q results for cohorts 1 and 2 are shown below in Figure 1. It is worthwhile to note that the baseline scores were lower for the second cohort for capacity as compared to the first. Improvements were demonstrated after training for the intervention group in total and advanced capacity subscores ($p=0.033$ and $p=0.004$, respectively) as well as advanced performance subscore ($p=0.028$).

Challenges to providing the training listed by trainers included managing groups of varying skill levels as well as allocating spotters for skills that required spotting. Attendance was also a challenge of this intervention with some participants attending less than 2 sessions. The skills intervention used a combination of indoor obstacles (curbs, ramps, gaps) as well as naturally occurring obstacles in the environment (stairs, ramps, soft surfaces, cross slopes, curbs).

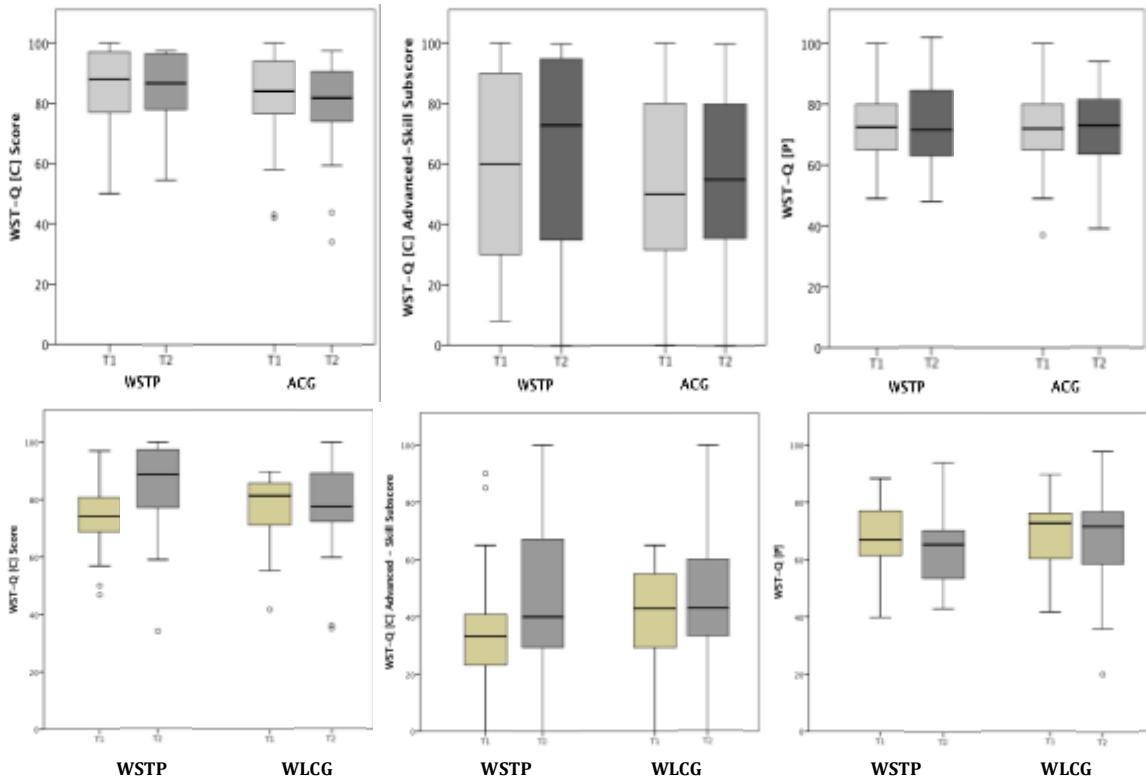


Figure 1: Wheelchair Skills Test Questionnaire scores at baseline and follow-up for cohort 1 (WSTP and ACG) and cohort 2 (WSTP and WLCG)

Discussion

The effectiveness of group training was demonstrated among wheelchair users, the majority of whom had greater than 10 years of experience using a wheelchair. Stairs, curbs and wheelies were the most commonly listed goals which matches previous reports of skills with low proficiencies among community dwelling wheelchair users. These are all advanced wheelchair skills and improvement on the GAS matches improvements seen in the WST-Q[C] advanced subscore. Excluding individuals with high baseline WST-Q scores and unblinding the trial to inform participants of the content of the intervention allowed the study to better mimic clinical application and produced greater improvements in WST-Q scores. These studies demonstrate the effectiveness of group wheelchair skills training. For clinical

applications, group training may provide greater efficiency for practical delivery of skills in clinical settings as less 1:1 time is required.

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