

Rehabilitation of patients with stroke and persistent neglect: possible outcomes of the intervention Driving to Learn



Conclusion

The intervention Driving to Learn in a powered wheelchair may improve recovery after stroke with persistent neglect.

Specific practice procedures and strategies assisted the patients' growing awareness of their perceptual deficits, which in turn activated their compensatory behaviors.

More research is needed to confirm and explain observed reduction of neglect symptoms and enhanced occupational performance.

Introduction

Occupational therapists experience difficulties in finding effective interventions for rehabilitation of patients with stroke and neglect syndrome. Recovery after stroke is negatively affected by persistent neglect and cognitive limitations. Driving to Learn in a powered wheelchair is an intervention developed for children and adults with cognitive limitations of diverse origin.

❖ The aim with the studies were to explore possible outcomes of using the Driving to Learn intervention for rehabilitation of patients with stroke and persistent neglect.

Method

The qualitative research project Driving to Learn included three patients with stroke and persistent neglect. Their outcomes initiated a pilot study with five patients with sub-acute stroke and neglect. Practice in a joystick-operated powered wheelchair followed specifically developed procedures. Outcome was evaluated with the Assessment of Learning Powered mobility use (ALP). Follow up of pilot study survivors was carried out after five years.

Results

All eight participants showed increased alertness and attention regulation during practice sessions. Observable signs of neglect faded away or decreased, more in younger age and quicker in sub-acute stroke. Practice procedures combined bottom up and top down strategies that increased awareness of neglect and reduced observable symptoms. Gained compensatory behaviors transferred to other occupational performances and stayed over time.

Results of eight participants with stroke and neglect Outcomes measured with Assessment of Learning Powered mobility use (ALP)
Novice=1 and Expert=8

Projekt	Gender	Age	Time post stroke	Stroke symptoms	Social life & assistance	ALP at start	ALP at end	Outcome wheeled mobility
Driving to Learn	Female	63	> 1 year	Left-sided paresis Perceptual deficits	Single Lived in flat Home service frequent daily	2	7	Improved indoor manual wheelchair use
	Male	86	> 1 year	Left-sided paresis Impaired vision	Single Lived in flat Home service daily	3	7	Improved indoor manual wheelchair use
	Male	74	> 1 year	Right-sided paralysis Aphasia	Married Lived in house Home service daily	3	8	Provided with outdoor powered wheelchair
Pilot study	Female	80	10 days post 2nd stroke	Left-sided paresis	Single Transferred to nursing home	1	4	Not known
	Male	72	10 months	Left-sided paresis	Married Lived in house Home service daily	4	6	Improved indoor manual wheelchair use
	Male	82	2,5 months	Left-sided paralysis	Single Transferred to nursing home	1	3	Not known
	Male	63	2 months	Left-sided paresis	Single Lived in house Home service daily	4	8	Improved indoor manual wheelchair use. Drives 4-wheel cross and a car
	Female	36	21 days	Left-sided paralysis	Single Lived in flat Home service daily	3	8	Provided with outdoor powered wheelchair



Specific practice procedures and strategies for patients with stroke and persistent neglect

- ❖ Start at low speed and increase speed in agreement with the driver; or ask what speed the she/he wants for a specific task.
- ❖ Begin at a simple task level and go to increasingly more complex levels.
- ❖ Frequently shift in-between forward-backward driving, leftward-rightward turning and clockwise-counter-clockwise circling.
- ❖ Allow veering, collisions and other low-risk incidents, but immediately stop the driving at incidents to start a dialogue that facilitates the driver's reflections about the episode by asking questions like: What happened now? Why did it happen? How can you avoid that it happens again? How can you solve the problem?
- ❖ After every dialogue, agree on which speed and level of complexity to go on with; or allow a short stand still in the powered wheelchair before proceeding with driving; or set the speed lower; or select a simpler task.
- ❖ Adjust speed and tasks to provide the driver with the 'just right challenge'
- ❖ Encourage the driver to present own ideas on appropriate, more fun or more difficult tasks, if possible build the session in collaboration and dialogue.

Examples of tasks:

- ❖ Shifting between driving forward and driving backward: for longer distances in a corridor; around corridor corners towards the left and towards the right; and through doorways. Driving in a circle round a big rectangular table in the kitchen with plenty of space around it; or navigating in a circle around a billiard table in a training room with narrow space making navigation more difficult.
- ❖ Examples of increasing level of complexity with regard to the spatial neglect:
 - Driving forward in circles clockwise, with the rectangular table to the right in the movement direction (in the ipsi-lesional visual field).
 - Driving forward in circles counter-clockwise, with the rectangular table to the left in the movement direction (in the contra-lesional visual field).
 - Driving backward counter-clockwise, with the rectangular table to the right in the movement direction (in the ipsi-lesional visual field).
 - Driving backward clockwise, with the rectangular table to the left in the movement direction (in the contra-lesional visual field).