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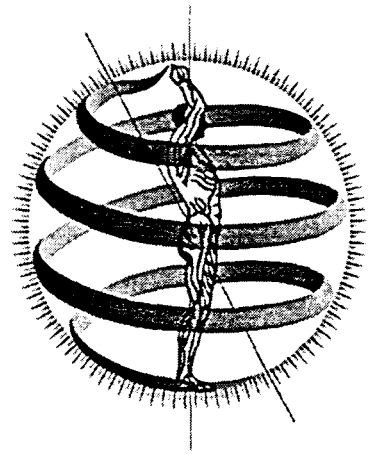

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AN ANALYSIS OF THE HOME ENVIRONMENT ENCOUNTERED BY STROKE PATIENTS

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PURPOSE

For stroke patients, successful independent mobility depends on the capability of the individual, the task requirement, and the effect of the environment. Although intrinsic factors contributing to balance and mobility deficits following stroke are well documented, there is a paucity of research examining environmental issues. Recently a new framework for defining mobility has been proposed whereby environmental factors are the key determinants classifying the level of mobility disability (Patla & Shumway-Cook, 1998). Inherent in the development of this mobility framework is a greater understanding of specific environmental dimensions. It is important to examine the environmental dimensions in the home setting of stroke patients. Not only is it the first place that the stroke patient usually encounters after hospital discharge, but it is also the place they will spend most of their time due to reduced community mobility and an increased risk of falls. Few studies have examined the home environment for any population groups. More importantly the contextual relevance of the person-environment interface has not been explored during mobility tasks. Therefore the aim of this study was to provide quantifiable measures for several dimensions of the environment during commonly performed walking tasks within the home environment of stroke patients.

METHOD

Twenty-two stroke patients (median age = 77years) who had returned to their homes (82% single storey homes) following inpatient rehabilitation (median stay of combined acute and rehabilitation hospitalisation = 41 days) participated in the study. They performed five walking tasks with both indoor and outdoor constraints. The tasks were walking from the lounge room to the following destinations: the kitchen sink, the bed, the toilet, an outdoor chair, and the car. The selected travel paths were examined and descriptive data were obtained for distance travelled, ambient light conditions, terrain characteristics and direction changes.

RESULTS

This study demonstrated that stroke patients rarely walk in open unobstructed situations in the home environment. For the five tasks selected they travelled relatively short distances (median values = 5.87 to 18.27 m for all tasks) whilst performing numerous turns (median values = 2.37 to 3.05 turns per 10 m). Only 3.21% of the total turns performed across all walking tasks were greater than 120 degrees in magnitude. Carpet was the commonest surface encountered (48.3% across all tasks). Numerous surface transitions were required when walking to the sink (2), bed (3), toilet (3.5), chair (8) and car (8)). Many obstacles were also negotiated across all five tasks (2.47 to 4.41 median obstacles per 10 m). Small obstacles (56.2% of total obstacles), such as flooring edges, and mats were the most commonly encountered, followed by medium sized obstacles such as furniture (36.9%). Other barriers encountered in the five tasks included doorways (median values = 1 to 3) and narrow passages (median values = 0 to 1). Stairs and slopes were more common in the two tasks involving going outdoors. This study was performed during daylight hours and demonstrated a large change in ambient light levels during the tasks involving going from indoors to outdoors (median values of 40 lux indoors to 20450 lux outdoors).

CLINICAL IMPLICATIONS

This study is unique in quantifying several environmental dimensions encountered by stroke patients as they performed five mobility tasks in their own home setting. For the tasks selected, the results demonstrated that stroke patients rarely walked in open, unobstructed situations in the home environment. Typically the selected travel paths had short distance requirements, but were characterized by numerous turns, changeable lighting conditions and complex terrain characteristics. As many as three to four obstacles were encountered each 10 metres. The surface condition was not constant with two to three surface transitions encountered for indoor only tasks, and as many as eight surface transitions encountered for the indoor/outdoor tasks. Carpet was the predominant surface in the home setting.

Because of the importance of the environment to skill acquisition (Gentile, 1987), it is important that gait training during rehabilitation includes practice in the type of environmental conditions that will be encountered

at home. Often rehabilitation environments provide wide, open uncluttered spaces with constant lighting and uniform uncarpeted surfaces. Assessment tools in current use in stroke rehabilitation appear to lack content validity when evaluated in relation to the complex environmental conditions found in the home setting. Both training methods and assessment methods need to take into account the complexity of the environment in the home setting so that patients can make a safe transition following discharge from hospital. The data from this study are relevant to a wide range of patients with gait and balance disorders.

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