

Comparison of Two Methods of Moving A Manual Wheelchair Short Distances on Leveled and Inclined Surfaces

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Abstract

The aim of this study was to determine, which method is more effective while moving a manual wheelchair short distances on four and rear wheels over two surfaces (leveled and inclined) for the attendant or caregiver. It was an observational study design consisting of normal healthy male [N=30] subjects, aged 20-30 yrs. Subjects used both methods i.e. moving a manual wheelchair first on four and then on rear wheels over leveled and inclined surfaces. Distance of 10 m was used. After completion of both trials, subjects used 10 cm Visual Analog Scale (VAS) to quantify, how they perceived, (i) the ease of use (ii) efficiency and (iii) back discomfort. Paired 't' test for all the variables between four and rear wheels over the two surfaces shows significant difference with p- value <0.05. This concludes moving the wheelchair on four wheels over the two surfaces is faster, easier, efficient and more comfortable for the back than on rear wheels.

Key Words: Wheelchair, Leveled Surface, Inclined Surface, Four Wheels, Rear wheels

Introduction

A personal caregiver is an important element for many people with activity restrictions, in the rehabilitation process. Wheelchair users who require assistance most frequently depend on family members. As a result of the burden of providing assistance, some caregivers may neglect themselves and are at a higher risk of physical harm when providing care (*Kirby et al, 2004*). Moving a manual wheelchair is a common task performed by health care workers and caregivers as the wheelchair is among the most common and important of rehabilitation devices (*Woolfrey & Kirby, 1998*). Wheelchairs are an integral component of medical rehabilitation, their use ranges from short-distance propulsion within the home to long-distance marathon racing.

However, wheelchairs can be difficult to manage and there is potential for acute or overuse injuries to the wheelchair user and/or the caregiver.

Lack of wheelchair skill training may also lead to decreased mobility and reduced community access (*Kirby et al, 2004*). If wheelchair users and their caregivers do not know how to overcome obstacles such as rough ground and curbs safely, they may perform this task in poor posture which may lead to back discomfort.

Most commonly, caregivers propel wheelchair from few to several metres per day. The average time spent working with a bent or twisted position of the back like stooped work posture was found to contribute to the prevalence of back pain or discomfort. The other risk factors include heavy physical work, monotonous tasks, sudden maximal physical effort and forceful movements (*Burdorf et al, 1991*). This strongly suggests that job-related rather than personal characteristics are the major predictors of back injury in health care workers and caregivers (*Venning et al, 1987*).