

# Most essential wheeled mobility skills for daily life: an international survey among paralympic wheelchair athletes with spinal cord injury

Fliess-Douer O, Vanlandewijck YC, Van Der Woude LH (2012) Most essential wheeled mobility skills for daily life: an international survey among paralympic wheelchair athletes with spinal cord injury. *Archives of Physical Medicine and Rehabilitation* 93:629-635. (Abstract prepared by Sara Edwards)

## Aims

To (i) determine the most essential wheeled mobility (WM) skills in people with spinal cord injury (SCI) in order to create a hierarchical list, and (ii) compare participant perceptions of WM skills gained during and following clinical rehabilitation.

## Introduction

Approximately 80% of individuals with SCI will be reliant on using a manual self-propelled wheelchair (Post et al 1997) and need to acquire a variety of WM skills in order to increase their functional independence. Currently, a range of outcome measures with components of WM skills are used in practice. A valid and reliable standardised tool needs to be developed to (i) guide the rehabilitation process of manual wheelchair users, (ii) assist in decision making regarding the timing of training WM skills, and (iii) assist in evaluation of clinical interventions. A survey population of Paralympic athletes with SCI was chosen; it was assumed that this population would demonstrate the best wheelchair skill performance and therefore set the benchmark for optimal WM skills. A previous pilot study of recreational athletes with SCI and non-sporting people with SCI was conducted in 2008; the results were compared with those of the current study to determine whether the most essential skills are similar between groups and could therefore be generalised.

## Methods

During the 2008 Beijing Paralympic games, questionnaires (translated into French, Spanish, Dutch, Chinese and Hebrew) were distributed to individuals with SCI. Participants were asked to rate the essentiality of 24 pre-determined WM skills (1-not essential, 5-extremely essential) and to state where, when and with whom they learned to perform each skill. Additionally, participants were asked to mark their level of WM skills during and after clinical rehabilitation on three visual analogue scales (VAS). A total of 250 questionnaires were distributed; however, 171 had not been sufficiently completed meaning that 79 were included in the analysis. Participants consisted of 49 men and 30 women (mean age 33, standard deviation 8) from 18 different countries, including 64 with paraplegia and 15 with tetraplegia.

## Results

The most essential skill identified by the participants from both the pilot study and current study was transferring into/out of a car (mean 4.7, standard deviation -0.7) and the least essential skill was a one-handed wheelie (mean 1.9, standard deviation 1.3). Of all the participants, 57% stated that they had learnt the most essential skills during the early rehabilitation phase and 40% after inpatient rehabilitation. With regard to who taught participants WM skills, 42% of participants stated that they learned the most essential skills by themselves, 42% learned

from a professional instructor and 13% learned from a peer. Analysis of the VAS demonstrated that present WM skills were significantly higher than WM gained during rehabilitation and that participants with tetraplegia perceived lower WM abilities than participants with paraplegia.

## Conclusion

This study provides a hierarchical list of WM skills in athletes with SCI, with the authors recommending that the most essential skills should be incorporated into clinical rehabilitation for people with SCI. It would be beneficial to investigate a broader demographic to review the more essential WM skills in different SCI populations.

## Commentary

It is well recognised in the literature that there is a positive relationship between wheelchair skill performance and participation in people with SCI (Kilkens et al 2005). Therefore, it is vital to include development of WM skills as part of clinical rehabilitation. Currently there is no one universally recognised and standardised assessment tool for assessing WM skills in people with SCI, nor is there a global pathway for training of WM skills. Generic outcome measures with components of WM skills are currently used to measure WM skills in people with SCI. Often, health professionals develop the outcome measures, and therefore choose the WM skills that are assessed (Fliess-Douer et al 2010). Alternatively, this study looks more closely at the opinions of elite athletes who are experienced manual wheelchair users to compile a hierarchical list of MW skills. It is credible that a tool of this kind may be developed with significant input from experienced manual wheelchair users who are proficient in using a wheelchair in a variety of settings.

WM skills are often taught to people with SCI during their inpatient clinical rehabilitation and, to some degree, following discharge. During inpatient rehabilitation there are numerous goals that need to be achieved and WM skills are only one component of these. This study demonstrated that a significant proportion of people with SCI learnt their skills after discharge, with some learning from a peer, and others (in the pilot study) acquiring their WM skills in sport. It is not unusual for spinal cord injured individuals to learn WM skills in community settings such as these. This is one reason, amongst others, that we as clinicians should encourage patients with SCI to become involved in adaptive sports and activities as well as peer support programmes.

This study has made a promising start in gathering information that is essential for developing a standardised assessment tool for WM skills. It has demonstrated that there is consistency within one demographic (elite athletes) with SCI, in terms of opinions on essential WM skills, and some comparison with non-elite athletes. However, it has highlighted that a number of further investigations are required in different SCI populations in order to gather data for the development of a valid assessment tool.

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