

**WHEELCHAIR SKILLS PROGRAM (WSP)[®]
VERSION 4.1**

GENERAL INTRODUCTION

For further information

See contact information on www.wheelchairskillsprogram.ca.

General Introduction:

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The importance of wheelchairs and problems with their use

The wheelchair is arguably the most important therapeutic tool in rehabilitation. The prevalence of use is high (2.3M in the United States) and rising. Yet, despite the importance of wheelchairs, they are far from perfect in their functionality and safety. Many wheelchair users suffer from acute or chronic injuries due to wheelchair use. Inaccessibility and cognitive impairment (in some populations) further restrict the usefulness of wheelchairs for some users.

Tradeoffs between safety and performance

Improvements in safety often come at the expense of performance and vice versa. For instance, a highly stable wheelchair may be less likely to tip over, but will create problems when the wheelchair user attempts to unload the casters to overcome obstacles. There are at least three approaches that can be used to overcome these tradeoffs – improved accessibility, improved wheelchair design and improved wheelchair skills training.

The wheelchair-provision process

An appropriate wheelchair-provision process can help to address the latter two solutions. The manner in which people receive wheelchairs varies widely. At the “commodity” end of the spectrum, a wheelchair can be purchased without any clinical input, “over the counter” at the corner drugstore. Optimally, there is a care pathway that includes assessment by professionals, the development of a prescription with the involvement of the wheelchair user and family, assistance (if needed) with the organization of funding for the wheelchair, proper fitting and adjustment of the wheelchair, training of the wheelchair user and caregiver in maintenance and handling skills, and long-term follow-up for refinements, routine servicing and periodic replacement.

The Wheelchair Skills Program (WSP)

One important element in this care pathway is wheelchair skills training for wheelchair users and their caregivers. Using methodology based on the extensive motor-learning literature, beginning in 1996, the Wheelchair Research Team at Dalhousie University and Capital Health, in Halifax, Nova Scotia, Canada, began developing the Wheelchair Skills Program (WSP). The WSP is a set of assessment and training protocols related to wheelchair skills. The WSP includes the Wheelchair Skills Test (WST), the Wheelchair Skills Training Program (WSTP) and related materials.

What’s different about the WSP?

There are excellent manuals and textbooks that deal with the subject of wheelchair skills. What’s different about the WSP in comparison with many available sources are the focus on both the wheelchair user and the caregiver; the inclusion of both manual and powered wheelchairs; the attempt to incorporate the latest evidence on motor skills, biomechanics and ergonomics; the process and sequencing of the training; the ongoing evaluation of the WSP with as much scientific rigor as possible; and the fact that it’s free.

Who are the intended beneficiaries of the WSP?

The focus of the WSP is on both wheelchair users and their caregivers.

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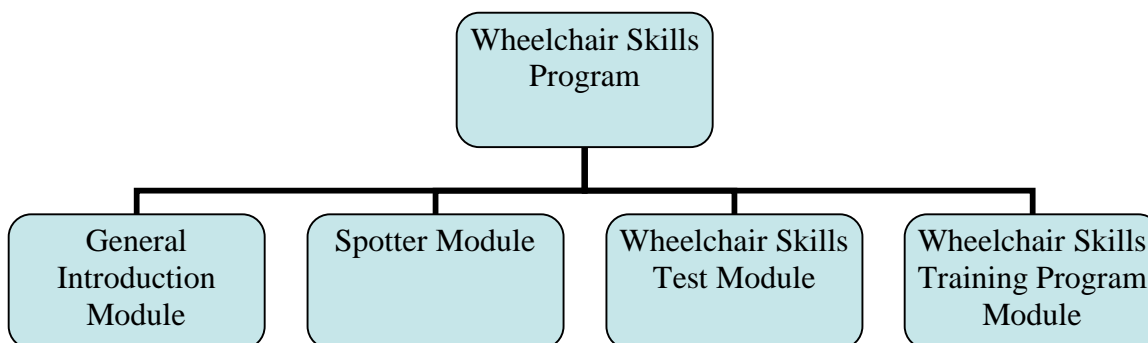
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What types of wheelchairs are included in the WSP?

The WSP is relevant for users of either manual or powered wheelchairs.

Organization of the WSP

As shown in the figure below, the WSP is organized into four modules. This document is part of the General Introduction Module.



Spotter Module

The Spotter Module deals with issues affecting safety during WSP activities, both assessment and training. The focus is on the types of risks that can occur during WSP activities and how the spotter can minimize them without unduly interfering with the activity.

Warning: The wheelchair skills described and illustrated in the WSP can be dangerous and result in severe injury if attempted without the assistance of trained personnel.

Wheelchair Skills Test (WST)

The WST is a standardized evaluation method that permits a set of representative wheelchair skills to be objectively, simply and inexpensively documented. The WST is intended to test a specific person in a specific wheelchair in a standardized manner.

For clinical purposes, the WST may be used early in the course of a rehabilitation program as a diagnostic measure, especially to determine which (if any) skills need to be addressed during the rehabilitation process (e.g. by training or wheelchair changes). By repeating the test on completion of the rehabilitation phase (or later during follow-up), the WST can be used as an outcome measure. The WST may also be used for program evaluation, to answer research questions and to assist in wheelchair design.

The measurement properties of the Wheelchair Skills Test (WST) have been documented.^{1,2} In these studies, the WST was found to be safe, practical, reliable, valid and useful. The WST has been used as a screening or outcome measure in a number of studies. Further study is needed to evaluate the measurement properties of the WST as it evolves, and in different settings. The relationships between the objective WST and the questionnaire version of the WST (WST-Q) have also been reported.^{3,4} The correlations

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between the total WST and WST-Q scores were found to be excellent, although the WST-Q scores were slightly higher.

Wheelchair Skills Training Program (WSTP)

The WSTP uses the WST skill set and training methodology based on the literature. To date, we have completed two randomized controlled trials on wheelchair users, one on wheelchair users admitted for initial rehabilitation⁵ and one on wheelchair users in the community.⁶ In both, we found that the WSTP was safe, practical and resulted in significantly greater improvements (2-3 fold) in wheelchair skills performance than standard care. In a third randomized controlled trial, on occupational therapy students, we found that the WSTP resulted in significantly greater improvement (2-3 fold) in wheelchair skills than a standard undergraduate occupational therapy curriculum⁷ and that these skills were retained 9-12 months later.⁸ Finally, in a pilot study in a rehabilitation centre,⁹ we provided less than 50 minutes of training on wheelchair-handling skills to caregivers of wheelchair users. We found that the WSTP was an effective way to improve caregiver skills and that these skills were retained. Studies of the safety and effectiveness of the WSTP in other settings are planned.

The circle of education

The WST and the WSTP are both elements in the classical circle of education. In this circle, one begins with an assessment (the WST) to identify the learner's starting point. From this, the educational objectives are individualized. This is followed by the curriculum (the WSTP), aimed at meeting these objectives. This is followed by another assessment (the WST) to confirm that the objectives have been met.

Evolution of the WSP

The WSP has evolved over time, in response to feedback and our experience with it. Four versions of the WSP – Versions 1.0, 2.4, 3.2 and 4.1 – have been reported on since its inception. Version 4.1 of the WSP was released for use on April 13, 2007. The Manuals are periodically updated in response to questions from users and our experience with it.

Cost-effectiveness of the WSP

Although no formal studies of cost-effectiveness have yet been conducted, we do have some basis for concluding that the WSP appears to be a highly cost-effective program. The WST requires an average of about 30 minutes to conduct. The training studies to date suggest that improvements in capability can be accomplished in a total of 4 hours of training or less. No equipment is required, only trained personnel. For personnel, we generally recommend occupational or physical therapists. However, we have also had good results when using trained students or research assistants as trainers. Learning a new skill lasts a lifetime, unlike strength or endurance training that requires ongoing efforts to maintain benefits. For all of these reasons, the WSP can accurately be described as a “low tech, high impact” intervention.

Languages

The WSP was originally developed in the English language. It has since been translated into French (www.wheelchairskillsprogram.ca/fre). Translation into other languages is

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encouraged and we are aware of some initiatives in other countries to do so. Because some of the WSP materials (i.e. the photographs and videotapes) are independent of language, we have posted welcome messages on the web-site in as many languages as possible, generally introducing the WSP and directing viewers to the Image Gallery.

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Acknowledgements

This work would not have been possible without the excellent papers, textbooks and training manuals that have been published by others. This literature is too extensive to cite here, but has been more specifically acknowledged in the reference sections of our papers published about the WSP (see web site).

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The WSP was developed for research purposes at Dalhousie University and for clinical use in the Clinical Locomotor Function Laboratory of the Queen Elizabeth II Health Sciences Centre. We are grateful for the assistance of the patients, occupational therapists, physical therapists and physiatrists of the Queen Elizabeth II Health Sciences Centre. A number of individuals have provided advice and assistance in the development of the Wheelchair Skills Program. Funding support has been received from a number of local, regional and national funding agencies. We have avoided naming individual colleagues and funding agencies in this document, because the list is constantly growing. However, the names of these people and agencies are noted in specific published papers, listed elsewhere.

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