

# Cross-cultural adaptation and face validity of the Wheelchair Skills Test Questionnaire (Version 4.3) for caregivers<sup>1</sup>

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**Abstract:** Introduction: In Brazil, there is a gap of assessment, encompassing the use of assistive technology and functional mobility of wheelchair users and caregivers. The Wheelchair Skills Program (WSP) is an integrated system that includes elements for testing and training wheelchair users, clinicians and/or their caregivers. Objective: Cross-cultural adaptation of the Portuguese-Brazil version of the Wheelchair Skill Test Questionnaire (WST-Q Version 4.3), a component of the WSP, and to examine its face validity. Method: Interactive steps were applied to produce Portuguese-Brazil versions of the WST-Q. The Cultural, Idiomatic, Semantic and Conceptual Equivalences were evaluated by a Committee of Specialists. Fifteen informal caregivers were evaluated with the WST-Q Brazil. Results: Twenty-eight of the 131 sentences were modified for further understanding. Subsequent semantic analysis reached 96.18% agreement, and language equivalence (100%), cultural (99.2%) and conceptual (100%) agreement. The questionnaire was easily understood between caregivers and the expert committee judged the Brazilian version equivalent to Canadian original. Conclusion: Success was achieved in cross-cultural adaptation of the tool, members of the expert committee judged the Brazilian version equivalent to the original Canadian. The WST-Q Brazil version 4.3 for caregivers contemplated 33 wheelchair transfer skills, mobility outdoor and indoor. Keywords: Wheelchair, Assessment, Assistive Technology, Translations.

## Adaptação transcultural e validade face do *Wheelchair Skills Test Questionnaire* (versão 4.3) para cuidadores

**Resumo:** Introdução: No Brasil, existe uma lacuna de ferramentas de avaliação que avaliem o uso da tecnologia assistiva e a mobilidade funcional de pessoas que usam cadeira de rodas e seus cuidadores. O *Wheelchair Skills Program* (WSP) é um sistema integrado que inclui instrumentos para a avaliação e o treino de usuários de cadeira de rodas, cuidadores e profissionais. Objetivos: Realizar a Adaptação transcultural para o Português do Brasil do *Wheelchair Skill Test Questionnaire* (WST-Q Version 4.3) - destinada aos cuidadores, um instrumento componente do WSP, além de avaliar a sua validade de face junto aos respondentes. Método: Foram aplicadas etapas interativas para produção da versão brasileira do WST-Q. Foram avaliadas as Equivalências Cultural, Idiômática, Semântica e Conceitual por um Comitê de Especialistas. Participaram quinze cuidadores informais (n=15), os quais foram avaliados com WST-Q Brasil. Resultados: Vinte e oito, das 131 frases, foram modificadas para maior entendimento. A análise semântica posterior alcançou 96,18% de concordância, e as equivalências idiomática (100%), cultural (99,2%) e conceitual (100%) de concordância. O questionário se mostrou prático e de fácil compreensão entre a

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população alvo e comitê de especialistas. Conclusão: Obteve-se êxito na adaptação transcultural da ferramenta, os membros do comitê de especialistas julgaram a versão brasileira equivalente a original canadense. O WST-Q Brasil versão 4.3 para cuidadores contemplou 33 habilidades em cadeira de rodas de transferência, mobilidade dentro e fora de casa.

**Palavras-chave:** *Cadeira de Rodas, Avaliação, Tecnologia Assistiva, Traduções.*

## 1 Introduction

Population aging and the survival of people with motor disabilities will increase dependent people on assistive technology products such as mobility and transfer equipment, as well as the need for personal assistance from professional or family caregivers (BRASIL, 2012; ORGANIZAÇÃO..., 2014).

In Taylor and Hoenig's (2004) research, the inner or transfer mobility equipment apparently solved difficulties for some older adults, but not all of them. Among the older adults who used equipment, 40% of them experienced residual difficulty<sup>2</sup>. This situation was more common for the transfer activity (47.6%) and this difficulty was related to worse results including increased dependence on personal care and more bed days (TAYLOR; HOENIG, 2004). In Brazil, according to the National Health Survey of 2013, 2.7% of the 3.95 million Brazilians over 18 years old who use some mobility device, experience great difficulty in moving even when using the device (BRASIL, 2014).

Using a wheelchair (WC) does not prevent a person from using his walking skill, but this device may be an option to assist the person to possibly have greater mobility and quality of life (ORGANIZAÇÃO..., 2014). However, besides to WC prescription and availability, skills are needed. If the wheelchair users and their caregivers do not know how to overcome obstacles such as uneven floors, ramps, and steps safely, they can often avoid them (KIRBY et al., 2004).

Wheelchair users who require assistance often depend on family members, and generally, these are members of the immediate family (KIRBY et al., 2004; KIRBY et al., 2009). The training for the caregiver can improve patient care and safe walking skills. The lack of this training in wheelchair skills can also reduce mobility and access to the community (KIRBY et al., 2004). A case study in 2010 of an 11-year-old child with spina bifida and her mother revealed that after four training sessions, the pre and post-training WST 4.1 (capacity) score for

the child was 66% and 69% respectively, and the mother's pre and post-training scores were 69% to 84% (simulating the use of the wheelchair) and 93% and 100% (in the caregiver role). These data suggest that parental training benefits their skills and the abilities of the children with the wheelchair (KIRBY et al., 2008).

Recently, the relationship between the family member and the power wheelchair user was also researched by Kirby et al. (2017). The research analyzed the capacity levels for caregivers' abilities and users of wheelchairs that worked together. There were 75 wheelchair users and 75 caregivers. Caregivers increased wheelchair skills through relative improvements of 18-21% and confidence in wheelchair skills in 22% (KIRBY et al., 2017).

## 2 Wheelchair Skills Program (WSP)

The *Wheelchair Skills Program* (WSP) is a training program to use the wheelchair. It has a set of protocols based on motor learning including the *Wheelchair Skills Test* (WST), the *Wheelchair Skills Test-Questionnaire* (WST-Q), and a training package, with videos and games (KIRBY et al., 2015). The measuring tools (WST and WST-Q) have formats aimed at users and caregivers who use manual WC, power WC and scooter.

The WST-Q for caregivers currently in version 4.3<sup>3</sup>, evaluates the performance, confidence, and frequency of 33 WC skills. It can be self-administered (long format) or applied by a qualified professional as an interview (short version). Its use provides data needed for the intervention due to changes in the type of chair, wheelchair configurations, skills training, environmental modifications or caregiver orientations (KIRBY et al., 2015). The Wheelchair Skills Test Program (WSTP) is a safe, practical, and effective method of improving wheelchair skills by untrained caregivers (KIRBY et al., 2004). Skill improvements are generally kept and are transferred well to the community (KIRBY et al., 2004).

In the Brazil, we identify current research on Assistive Technology tools such as Quebec User Evaluation of Satisfaction with Assistive Technology (QUEST 2.0) that evaluates the satisfaction with the use of AT in several aspects (dimensions, weight, adjustments, safety, durability, ease of use, comfort and efficacy) (DEMERS; WEISS-LAMBROU; SKA, 2000). The *Matching Person and Technology Model* (MPT) classifies and describes characteristics associated with the device, the individual and the environment (SCHERER et al., 2005). The *Assistive Technology Device Predisposition Assessment* (ATD PA) is a tool that evaluates this theoretical model (ALVES; MATSUKURA; SCHERER, 2017). The Functional Mobility Assessment (FMA) evaluates the functionality related to mobility devices (KUMAR et al., 2013). Despite the diversity of tools presented with focus on TA and mobility, none of them evaluates wheelchair functional mobility moved by caregivers. According to Chaves et al (2010), translated and validated tools are still little used and disseminated among occupational therapists and other professionals, the lack of tools has been reported as an obstacle to the practice of data collection for demonstration of results obtained in the therapy. In practice, there is a preference for the informal evaluations such as semi-structured interviews, created by the authors, as well as indirect measures of effectiveness such as the evaluation of performance components and level of independence (BRASIL, 2002; CRUZ; IOSHIMOTO, 2010; AGNELLI, 2012; ALVES; EMMEL; MATSUKURA, 2012; ALVES; MATSUKURA; SCHERER, 2017; LOURENÇO; MENDES, 2015).

The tools for WC skills are important to increase functional mobility at home and external environment, besides favoring the organization of services, communication among practitioners, and measuring the improvement in functionality after a certain period using the device (COOK; POLGAR, 2015; CHAVES et al., 2010).

The WST-Q has a wide citation in the international literature and it has training efficacy, safety, and practicality in the community, good results for content validity, construct and concurrent (WOROBEY et al., 2016; KIRBY et al., 2016; RUSHTON et al., 2013; BEST et al., 2005) and acceptance by the target population. The choice for the WST-Q 4.3 among other available tests was because it is a quick, low cost, high impact test. Thus, the objective of this research was to perform the cross-cultural adaptation and to evaluate the face validity of the Wheelchair Skills Test Questionnaire (WST-Q) version for

caregiver (WST-Q 4.3 Manual WC - Caregiver) for the Brazilian Portuguese language in both available formats (long and short).

### 3 Method

This is a cross-cultural adaptation research of a standardized measuring tool. The process of cross-cultural adaptation was based on the method proposed by Beaton et al. (2000) with the following stages: 1) translation; 2) synthesis; 3) back-translation; 4) analysis by a committee of experts; 5) pre-test. It was chosen because it contains a detailed description of an adaptation process, designed to maximize the achievement of semantic, idiomatic, experiential, and conceptual equivalence between the source and destination tools. The mentioned steps contemplated all the sections of the tool that could affect its application and punctuation. Thus, not only the test items were considered, but its header, the scoring system, as well as the instructions for applying the long and short versions of WST-Q version 4.3.

Therefore, the contact with one of the authors of the WST was initially via email and the translation process was authorized. Subsequently, the research was approved by the Ethics Committee on Research in Human Beings of the Federal University of São Carlos, respecting the prerogatives of resolution 466/12 of the National Commission of Ethics in Research (CONEP) that deals with ethics on research with human beings, under the opinion number 1,254,902.

### 4 Participants: committee of experts

The sample was for convenience with the following criteria: occupational therapists who worked in the area of assistive technology, clinical and/or research, speaking English and Brazilian Portuguese. The contact was established via email, with an invitation and brief contextualization of the research to the members of the committee of experts. There were twelve specialists participating with these criteria.

### 5 Participants: pre-test with caregivers

The selection of potential participants was through contacts in the database of the Functional Analysis and Technical Assistance Laboratory (LAFATec) of

the Occupational Therapy Department of UFSCar. The pre-test version had the inclusion criterion of caregivers as being adults, being literate and being family members or formal caregivers of wheelchair users. With this criterion, 15 participants accepted to evaluate the Brazilian version of WST-Q 4.3 in the pre-test.

## 6 Procedures

For the cross-cultural adaptation, a worksheet for the tool translation was developed by the researchers aimed at making the WST-Q translation process (version 4.3) more practical for long-form and short-form caregivers. The questionnaire was divided into 131 sentences. They were organized in table lines, with additional columns to fill the possible translations and justification for the translation. Along with the table, the original WST-Q was attached for the translator knows the presentation of the tool.

Besides the worksheet, a characterization form was prepared by the researchers to collect the following information: sociodemographic data, caregiver's bond with the wheelchair user, information about the wheelchair (means of acquisition, daily stay, type, who prescribes it, if the caregiver has received training), clinical information (reason that led to the use of the wheelchair and time using the wheelchair by the user).

For the analysis of equivalences, a table was organized so each member of the expert committee would answer whether they agreed or disagreed on the equivalences: 1) semantics, 2) cultural, 3) conceptual and 4) idiomatic of each sentences of the original version, compared with version of the Brazilian synthesis and then they should justify their decision. All the sentences and opinions of the experts were recorded in tables.

During the pre-test, the first author went to the caregivers' house, on the day and time previously combined. All participants received guidelines related to safety in wheelchair mobility and any doubts were clarified as an ethical precept. For face validity, the caregivers answered the Brazilian version of the WST-Q (Version 4.3), and then, they judged whether the understanding of the sentences and words in the tool that is, if item by item had been easy or difficult to understand. The interviewer recorded all the comments and suggestions on a separate paper sheet.

## 7 Data analysis

The data analysis of the translation, synthesis, and equivalence stages between the versions was done in a descriptive way, in tables and quantitatively analyzed by frequency and percentage distributions, in simple descriptive statistics. During the analysis of the committee of experts, the index of agreement of Pasquali (1998) was adopted, given by the formula:

$$IC = (\text{agreement total} \times 100) / \text{Agreements} + \text{Disagreements}$$

All the sentences with a percentage agreement less than 80% were modified according to the experts' suggestions and resubmitted until they were approved by the committee members for a total of 100% per equivalency. For the face validity, all the caregivers analyzed the understanding of the long and short forms of the questionnaire (SCRIPT and FORM). The caregiver was asked if each sentence was easy or difficult to understand, and when he found it difficult to understand, then the researcher was informed, who recorded the comments of each participant. Thus, the clarity and simplicity of the language used in the Brazilian version of the questionnaire were evaluated. During the pre-test with the target population, the caregivers were interviewed with the full reading of long version of the WST-Q. After answering the questionnaire, they analyzed the short version in its understanding, clarity, and simplicity.

## 8 Results

Figure 1 shows all the stages of cross-cultural adaptation and participants for each stage.

Regarding the region of origin of the Committee of Experts, Figure 1 shows that eight of them lived in different regions of the state of São Paulo, one in Pará, one in Minas Gerais, one in Texas-United States and one in Dalhousie-Canada. In this way, the group had a diversity that ensured the quality of the analysis, highlighting possible regional differences in their language.

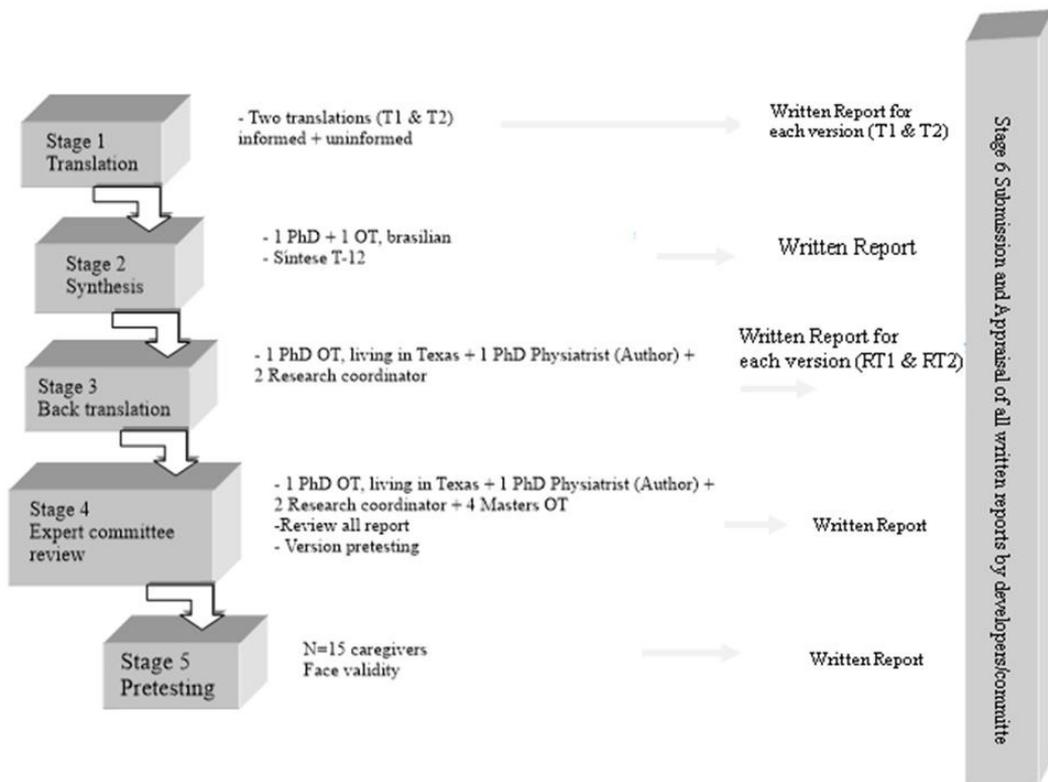
Table 1 shows the stages of translation by independent translators, the synthesis of these translations in a version that had a back-translation and analysis by the committee of experts.

In one hundred and thirty-one (131) sentences, forty-three (43) were translated differently in relation to the meaning and style of translation, being more literal or informal. As for the different styles adopted, the sentence "It will probably take" was impersonal

and one of the translators opted for “We will take 10 minutes to complete the questionnaire”, showing informality and intimacy while the other “It will probably take about 10 minutes for you to complete the questionnaire”, had the impersonal style of the original sentence. The coordinators decided on the sentences that translated the original objective with greater clarity and they considered the suggestions of the author of the Canadian version and the members of the committee of experts, for example, the title of the Brazilian version kept the acronym

of the original version to help in the identification of the adapted tool.

The composition of a multidisciplinary committee with experienced members in the development and validation of questionnaires, including some bilingual experts was recommended (EPSTEIN et al., 2015; BEATON et al., 2000). During the analysis by the committee, the experts disagreed on the semantic equivalence of 28 sentences out of the 131. All the suggestions were analyzed and there were successive modifications. The final semantic analysis had



**Figure 1.** Cross-Cultural Adaptation of the WST-Q - For the caregiver (version 4.3).

**Table 1.** WST-Q 4.3 English to Portuguese translation - for the caregiver.

Item	Original term	T1 Translation	T2 Translation	Synthesis	Justification for changing
1	<i>Wheelchair Skills Test (WST-Q), Version 4.3</i>	Teste das habilidades para Cadeira de rodas Versão 4.3	Teste de habilidade com cadeira de rodas (THCR) Formulário Versão 4.3	Teste de Habilidades em cadeira de rodas (WST-Q BRASIL), Versão 4.3	Keeping the original acronym helps for the identification of the adapted tool.
13	<i>Training Goal? (Y/N)</i>	Objetivo do Treinamento (S/N)	Meta de treinamento? (S/N)	Objetivo do Treinamento (S/N)	Decided by the coordinators
16	<i>Turns while moving forwards</i>	Vira enquanto se move para frente	Vira enquanto se move adiante	Vira enquanto se move para a frente	Decided by the coordinators

1: Y/N = Yes/No; S/N = Sim/Não.

96.18% agreement, and the agreement for idiomatic equivalence (100%), cultural (99.2%) and conceptual (100%). Throughout the tool, five and nine skills of the WST-Q long and short versions, respectively were rewritten for grammatical corrections and clarity, for example: the sentence “Rolls forwards short distance” translated to “*Propulsiona à frente distâncias curtas*” has been corrected to “*Propulsiona à frente em distâncias curtas*”, “Getting the wheelchair up a low curb, for example when entering a building” translated to “*Propulsionaltoca a cadeira de rodas para cima de uma pequena calçada, como por exemplo, ao entrar em um prédio*”. After the analysis of the committee, it was modified to “*Sobe com a cadeira de rodas por uma guia baixa, como por exemplo, quando entra em um prédio*”. In the heading there was a change in “*Relação entre o usuário da cadeira de rodas e a pessoa que o ajuda*” to “*Vínculo entre o usuário da cadeira de rodas e a pessoa que o ajudou*”, and the term “*Habilidade específica*” was changed for “*Habilidade individual*”.

The version produced in the previous stage was applied to the target population of the tool. The characterization of the participants of this stage is shown in Table 2.

The participants helped six adults diagnosed with cerebral palsy (n=6), one with spinal cord injury (n=1), one with lower limb amputation (n=1); one older patient with osteoarthritis on the lumbar spine (n=1) and three did not define the reason that caused their family member to use a wheelchair (n=3). Only one of them had a rehabilitation program (n=1).

The average length of stay in a WC was 5.86 hours, minimum of 2 hours and maximum of 10 hours.

The test was easy to understand. Only four participants had doubts about the issues and proposed changes: regarding the skills, the sentences that focused only on the user and were reformulated highlighting the participation of the caregiver, better description of obstacles and maneuvers. An example of a reformulated skill was: translation “*Aliviar o peso de suas nádegas, uma de cada vez ou as duas juntas*” in the pre-test version was “*Ajudar no alívio do peso das nádegas do usuário, uma de cada vez ou as duas juntas*”. Two family members (C1 and C2) had difficulty understanding the presentation of the questionnaire. In this case, it was explained that there were instructions and the questions only started on the next page. Also, there was difficulty understanding with “*propulsionar*”, “*meta de treinamento*” e “*aliviar*”. All suggestions were considered, resulting in an illustrative supporting material.

It was observed that the pre-test version for caregivers had a user-oriented wheelchair in their text, both in the header and in the skills evaluated. This fact was also in the original English version. Due to the difficulty of the first caregivers to respond, the first researcher contacted the author of the original version of the tool to suggest the modification in the version for the caregiver, as shown in Table 3.

The new version was based on explanations provided during the first interviews, the WSP manual and suggestions from the family members. It was

**Table 2.** Characterization of the caregivers (n=15), São Carlos and 2017.

Pre-test	Gender	Bond	Education level	Hours/day in a WC	Training
C1	F	Wife	Elementary	7h	No
C2	M	Father	High school	10h	No
C3	F	Mother	Elementary	10h	No
C4	F	Occupational Therapist	Complete higher education	10h	No
C5	F	Nurse	Complete higher education	2h	Yes
C6	F	Pedagogue	Complete higher education	2h	Yes
C7	F	Psychologist	Complete higher education	2h	Yes
C8	F	Professor	Complete higher education	5h	No
C9	F	Mother	High school	10h	No
C10	F	Mother	High school	6h	No
C11	F	Mother	High school	4h	No
C12	F	Mother	High school	8h	No
C13	M	Father	High school	8h	No
C14	F	Sister	High school	6h	No
C15	F	Caregiver	High school	2h	Yes

F = female; M = male; WC = wheelchair; h = hours.

sought a constant dialogue with the creator of the original version to avoid possible misunderstandings.

In the face validity, the tool was easily understood in both the long and short versions. Figure 2 shows the level of understanding of the questionnaire, in the long version of each caregiver.

## 9 Discussion

The cross-cultural adaptation requires a careful consideration of equivalence between the original version and the new version, appropriate for the context of each country and providing understanding for the target population. It should be argued that the risks of not carrying out all the stages of the international guidelines is to have a decontextualized translation or with misinterpretations. Therefore, it could be a non-equivalence of content with the original version. The WST-Q 4.3, long and short versions, adapted from the original, followed the stages provided in the international guidelines involving translation, back-translation, and equivalence analysis by a

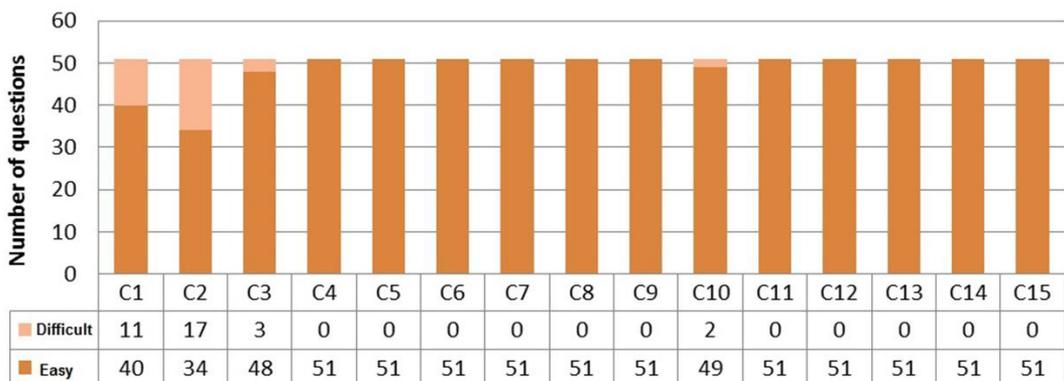
committee of experts and pre-test in the target population (BEATON et al., 2000).

It is important to discuss that the literal correspondence of the term does not always imply the same emotional or affective meaning as the different cultures present (REICHENHEIM; MORAES, 2007). Therefore, the decision by specific sentences that constituted the Brazilian version consider the semantic equivalence, impact, and simplicity of the sentence seeking a balance between these characteristics. The back-translation was fundamental, since the author of the original version being a Canadian, does not know the Portuguese language. This stage is encouraged in the international guidelines, since, in addition to helping the committee to identify translation misconceptions it allows the tool author to participate in the adaptation process, clarifying meanings and concepts.

Participants who composed the expert committee of this study were experienced occupational therapists in postural adequacy and two Brazilian

**Table 3.** Back-translation and analysis by one the authors of the original version.

#	Original	Item of the tool in Portuguese	Back-translation	Agreement Back-Translation
1	Wheelchair Skills Test Questionnaire (WST-Q), Version 4.3 for Manual Wheelchairs Operated by Their Users	Teste de Habilidades em cadeira de rodas (WST-Q BRASIL), Versão 4.3	<i>Wheelchair skills training (WST-Q BRASIL), Version 4.3</i>	<i>Yes, for manual wheelchairs. However, for powered wheelchairs and scooters, the wheelchairs are more "driven" than "propelled."</i>
21	<i>21- Moving the wheelchair a short distance across a soft surface, for example gravel.</i>	21- Propulsiona/toca a cadeira de rodas por uma curta distância em terreno irregular, como pedras pequenas, areia.	<i>"Rolls the wheelchairs through an irregular terrain, gravels, and sand"</i>	<i>"Irregular surface" is not a good equivalent for "soft surface".</i>



**Figure 2.** Face validity of caregivers (n=15).

translators, all fluent in English. The professionals from different regions were carefully invited to form a heterogeneous committee. All were oriented in the same way on how to analyze the material to achieve semantic, idiomatic, cultural and conceptual equivalence between the Canadian and Brazilian versions. As this committee analyzed the translation process, more translation errors and inappropriate language could be identified and corrected. During the analysis, the participants concentrated their comments on the meaning of words, vocabulary, and grammar. According to Wild et al. (2005), the harmonization process carried out during the analysis by the committee of experts, is essential to detect and deal with any translation discrepancies from different versions and guarantee the validity of cross-cultural adaptation as it provides an additional quality control.

The tool was pretested and evaluated as useful and easy to understand by the caregivers. Some caregivers of wheelchair users did not understand the description of some skills that involved “degrau”, “calçada”, “meio-fio” e “inclinações”, but with the explanation by the researcher, such items were simplified. This difficulty of understanding by the caregivers may be associated with the lack of training for the use of a wheelchair. In this way, therapists should try to improve the skills of the wheelchair user and their caregivers, the equipment (through adjustments and configurations), and provide training for its use, improving safety, efficacy and the efficiency of the use of the wheelchair (KIRBY et al., 2015).

The training should be available to anyone who uses a wheelchair regardless of the time they already use it (KIRBY et al., 2016). Considering the participants of our research, 74% of them reported not having received training or guidance on the use of the wheelchair. This result corroborates with the literature, that the use of mobility devices without specialized monitoring by users happens due to the ease of acquisition and repercussions on the misuse, abandonment, financial and time loss and quality of life for users and their family members (KUMAR et al., 2013; OLIVEIRA, 2012).

## 10 Conclusion

The process of cross-cultural adaptation of the WST-Q 4.3 for caregivers was completed and this tool is now called in our country as **Questionário de teste de habilidades com cadeira de rodas (WST-Q Brazil), Versão 4.3 Cadeira de rodas manual**

**propulsionada pelo cuidador**. The questionnaires in the long and short versions are available for free download at site “*Instrumentos de Avaliação das Habilidades com Cadeira de Rodas – IAHCR*” (UNIVERSIDADE..., 2017).

The long and short version questionnaires were easy to understand and maintain the face validity and format of the Canadian version. A report with the pre-final version of the tolls was sent to the committee members without further comments by the tool’s creator. There was consensus among the professionals of the pre-final version of the WST-Q 4.3 Brazil, followed by the evaluation by the target population that judged the questionnaire as useful and easy to understand.

This first contact with the tool and with certain concepts provoked reflections in the caregivers on how they are using the wheelchair, how confident or insecure they are in the execution of skills and the possibility of wheelchair maneuvers being taught.

Finally, it is expected that the WST-Q Brazilian version 4.3 will allow a dialogue with international research and interventions regarding the training of formal and informal caregivers regarding the use of wheelchairs. Further studies are recommended for the evaluation of psychometric properties in different contexts, and to evaluate the impact of its use in training programs in the Brazilian reality.

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## Author's Contributions

Lays Cléria Batista Campos wrote the paper. Vinícius Aparecido Yoshio Ossada participated in data collection and critical review. Viviane de Souza Pinho Costa participated in data collection and critical review. Daniel Marinho Cezar da Cruz Advisor. Substantially contributed to the study's concept and design and approved the final version.

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- <sup>2</sup> Residual difficulty, which is disability that remains even with the use of assistance or equipment (Taylor, Hoenig, 2004).
- <sup>3</sup> The WST and WST-Q materials are periodically updated, because of this for academic purposes, users of the WSP materials should cite the date of the iteration that they use.