

ORIGINAL ARTICLE

Cross-cultural adaptation of the Leisure Functional Rehabilitation Activity Manual to Brazilian Portuguese

Adaptação transcultural do Manual de Atividades de Lazer para Reabilitação Funcional para o Português brasileiro

Adaptación transcultural al portugués de Brasil del Manual de Actividades de Rehabilitación Funcional en el Ocio

Daiane Oliveira Hausen¹

orcid.org/0000-0002-5116-4393

daianehausen@gmail.com

Tatiana Quarti Irigaray¹

orcid.org/0000-0002-3078-4219

tatiana.irigaray@pucrs.br

Régis Gemerasca

Mestriner¹

orcid.org/0000-0001-9837-1691

regis.mestriner@pucrs.br

Received on: 19 dec. 2024.

Approved on: 27 apr. 2025.

Published in: 28 aug. 2025.

Abstract

Objective: This study aimed to (a) develop a cross-culturally adapted Brazilian version of the Leisure Functional Rehabilitation Activity Manual and (b) evaluate its perceived usability among healthcare professionals.

Methods: The study followed a four-phase process: (1) Translation and cultural adaptation – two independent translations of the manual into Brazilian Portuguese were conducted by professionals with distinct backgrounds (one in healthcare, the other in translation studies), followed by a consensus meeting with three research team members to consolidate a final version with culturally adapted images; (2) Expert committee review – five neurorehabilitation specialists from different Brazilian states assessed the synthesized version, evaluating its cultural, semantic, and idiomatic adequacy; (3) Linguistic and semantic equivalence assessment – two independent professionals compared the pre-final version with the original English manual to ensure fidelity in meaning and language; and (4) Perceived usability evaluation – healthcare professionals in neurorehabilitation (who had not participated in earlier phases) provided feedback on the manual's usability. **Results:** The Brazilian version demonstrated strong idiomatic and semantic validity, alongside high perceived usability among healthcare professionals. However, while this study focused on cross-cultural adaptation and usability assessment from the perspective of clinicians, it did not evaluate the manual's clinical applicability with patients.

Conclusions: The Brazilian Leisure Functional Rehabilitation Activity Manual is linguistically and culturally suitable for use by healthcare professionals in leisure rehabilitation. Future clinical trials are warranted to assess its efficacy in practical rehabilitation settings.

Keywords: Rehabilitation; leisure activity; brain injury; cognitive impairment; functionality.

Resumo

Objetivo: Este estudo teve como objetivos (a) desenvolver uma versão brasileira adaptada transculturalmente do *Leisure Functional Rehabilitation Activity Manual* e (b) avaliar sua usabilidade percebida entre profissionais de saúde.

Métodos: O estudo foi conduzido em quatro fases: (1) Tradução e adaptação cultural – duas traduções independentes do manual para o português brasileiro foram realizadas por profissionais com diferentes formações (um da área da saúde e outro da área de tradução). A versão final foi consolidada por consenso entre três membros da equipe de pesquisa, com adaptação cultural das imagens; (2) Revisão por um comitê de especialistas – cinco especialistas em neuroreabilitação de diferentes estados brasileiros avaliaram a versão sintetizada, analisando sua adequação cultural, semântica e idiomática; (3) Avaliação da equivalência



Artigo está licenciado sob forma de uma licença
[Creative Commons Atribuição 4.0 Internacional](https://creativecommons.org/licenses/by/4.0/).

¹ Pontifícia Universidade Católica do Rio Grande do Sul, Brasil.

linguística e semântica – dois profissionais independentes compararam a versão pré-final com o manual original em inglês, garantindo a fidelidade de significado e linguagem; e (4) Avaliação da usabilidade percebida – profissionais de saúde atuantes em neurorreabilitação (que não participaram das etapas anteriores) forneceram feedback sobre a usabilidade do manual.

Resultados: A versão brasileira demonstrou elevada validade idiomática e semântica, além de alta usabilidade percebida entre os profissionais de saúde. No entanto, o estudo não avaliou sua aplicabilidade clínica com pacientes.

Conclusões: O *Leisure Functional Rehabilitation Activity Manual* foi linguisticamente e culturalmente adequado para uso por profissionais de saúde na reabilitação por meio do lazer. Ensaios clínicos futuros são necessários para avaliar sua eficácia em contextos práticos de reabilitação.

Palavras-chave: Reabilitação; atividade de lazer; lesão cerebral; comprometimento cognitivo; funcionalidade.

Resumen

Objetivo: Este estudio tuvo como objetivos (a) desarrollar una versión brasileña adaptada transculturalmente del *Leisure Functional Rehabilitation Activity Manual* y (b) evaluar su usabilidad percibida entre profesionales de la salud.

Métodos: El estudio se llevó a cabo en cuatro fases: (1) Traducción y adaptación cultural – se realizaron dos traducciones independientes del manual al portugués de Brasil por profesionales con diferentes formaciones (uno del área de la salud y otro del área de traducción). La versión final fue consolidada por consenso entre tres miembros del equipo de investigación, con adaptación cultural de las imágenes; (2) Revisión por un comité de expertos – cinco especialistas en neurorrehabilitación de diferentes estados de Brasil evaluaron la versión sintetizada, analizando su adecuación cultural, semántica e idiomática; (3) Evaluación de la equivalencia lingüística y semántica – dos profesionales independientes compararon la versión prefinal con el manual original en inglés, garantizando la fidelidad del significado y el lenguaje; y (4) Evaluación de la usabilidad percibida – profesionales de la salud que trabajan en neurorrehabilitación (que no participaron en las fases anteriores) proporcionaron comentarios sobre la usabilidad del manual.

Resultados: La versión brasileña demostró una alta validez idiomática y semántica, además de una elevada usabilidad percibida entre los profesionales de la salud. Sin embargo, el estudio no evaluó su aplicabilidad clínica en pacientes.

Conclusiones: El *Leisure Functional Rehabilitation Activity Manual* fue lingüística y culturalmente adecuado para su uso por profesionales de la salud en la rehabilitación a través del ocio. Se requieren ensayos clínicos futuros para evaluar su eficacia en contextos prácticos de rehabilitación.

Palabras clave: Rehabilitación; actividad de ocio; lesión cerebral; deterioro cognitivo; funcionalidad.

Introduction

Brain injuries are a leading cause of disability, significantly impacting activities of daily living,

including engagement in leisure activities. These impairments often stem from motor, cognitive, and psychosocial deficits that hinder an individual's ability to participate in meaningful and autonomous recreational pursuits⁽¹⁾. Cognitive dysfunction, loss of balance, body paralysis, fluctuations in consciousness levels, episodes of amnesia, and other neurological alterations are among the factors that reduce engagement in leisure activities⁽²⁻⁶⁾. This scenario significantly contributes to the mental health burden of individuals living with neurological conditions or diseases⁽⁷⁾. Brain injuries can be classified as either congenital or acquired. Congenital brain injuries include conditions such as cerebral palsy and epilepsy, which originate from developmental abnormalities or perinatal insults. Acquired brain injuries, on the other hand, result from events occurring after birth, including stroke and traumatic brain injury (TBI), commonly caused by falls, motor vehicle accidents, and other external forces. Furthermore, additional etiologies encompass anoxic encephalopathies, brain tumors, and injuries secondary to infectious processes affecting the central nervous system, such as encephalitis⁽⁴⁾.

Classifying activities as 'leisure-related' is challenging due to the lack of consensus on the definition of leisure activities. Some authors suggest that it should be personally defined⁽⁸⁾. Leung and Lam⁽⁹⁾ addressed this challenge by creating a standardized classification of leisure activities to facilitate research and rehabilitation in the field. They proposed four categories of leisure activities: 1) Intellectual, such as reading, writing, using the internet, and playing games; 2) Social, such as joining clubs, visiting museums or exhibitions, and participating in spiritual/religious activities; 3) Recreational, such as watching television, listening to the radio or music, cooking, fishing, and gardening; and 4) Physical, such as practicing body-centered activities (e.g., Yoga, Tai Chi), and aerobics (e.g., running, swimming, cycling, playing ball games, dancing).

Engaging in leisure activities is known to improve brain plasticity⁽¹⁰⁾ and self-perceived

quality of life, which may help mitigate the negative impact of brain damage on activities of daily living⁽¹¹⁻¹²⁾. However, standard rehabilitation programs rarely include leisure activities as part of the therapeutic content, typically focusing only on basic and instrumental activities of daily living^(13, 11, 14-15).

The Leisure Functional Rehabilitation Activity Manual, originally published in English, proposes the inclusion of leisure activities as part of functional rehabilitation. These activities are designed to provide pleasure and enhance the self-perception of well-being. The listed activities can be used independently or in combination to meet individual needs⁽¹⁶⁾. Despite the manual's clinical usefulness, no transculturally adapted Brazilian version is available. Additionally, few studies have addressed the use of leisure activities in rehabilitation among Brazilian individuals with brain damage. This gap is critical, as the lack of clinical guidance has led to uncertainty regarding the efficacy of using leisure activities in rehabilitation programs⁽¹⁷⁻¹⁸⁾. Moreover, a Brazilian version of the manual would facilitate international, multicentric studies in this field.

Therefore, this study aimed to: a) cross-culturally adapt the Leisure Functional Rehabilitation Activity Manual to Brazilian Portuguese, and b) assess the perceived usability of the manual among health care workers in Brazil.

Methods

The original manual is published in English and is owned by Lash Associated Publishing, which holds the intellectual property rights for the English version. The rights for distribution and use in Brazil were acquired by Editora Hogrefe, which granted prior authorization to the authors for conducting the present validation study. The Leisure Functional Rehabilitation Activity Manual is intended for use by health workers and lists 56 activities with step-by-step guidance on applying each activity⁽¹⁶⁾. In this study, international recommendations for translation and cross-cultural adaptation measures were followed⁽¹⁹⁻²⁵⁾. The study design is shown in Figure 1.

This study was divided into four stages and the research procedures were approved by the local Research Ethics Committee (CAAEE: 39179220.4.0000.5336, report number 4.348.127). All the volunteers signed a free and informed consent form. All the data were collected using the Qualtrics XM online survey software.

Stage I: Translation

Two independent Brazilian Portuguese versions of the manual (V1 and V2) were made by independent bilingual translators from different professional backgrounds. One held a degree in the health area and had previous experience cross-culturally adapting clinical instruments. The second had a background in English translation but held no health-related academic qualification. The two versions were then combined by three research team members (DOH; RGM) to produce a synthesized version (SV) of the manual. In this phase, any differences between the V1 and V2 were resolved by consensus. All the original pictures from the manual were adapted to meet the Brazilian cultural context.

Stage II: Expert Committee

The expert committee consisted of five professionals specialized in neurorehabilitation, recruited by convenience, from different Brazilian states (Rio Grande do Sul, Minas Gerais, and Rio de Janeiro). To minimize any conflict of interests, they provided their services on a volunteer basis and signed a free consent form prior to participation. The age, gender, professional background, qualification level (specialization, Master, or PhD degree) and years working in the field were recorded to characterize the committee members.

Each committee member received a multiple-choice questionnaire including a field in which they could provide optional comments (for details, see Supplementary Material 1). The questionnaire was designed to assess the appropriateness of the questions in terms of cultural, semantic, and idiomatic aspects of the SV. Afterwards, an individual online cognitive interview, lasting approximately 1 hour and 30 minutes, was

scheduled with each expert committee member using the Zoom platform. During the interviews, the committee members were asked five questions regarding as many of the activities as possible in the given time (the order of the activities was randomized).

Stage III: Idiomatic and Semantic appropriateness of the Brazilian version in comparison with the original manual in English

The feedback from the experts regarding the SV was carefully analyzed by three research team members and a preliminary final version of the manual (PFV) was prepared. These feedbacks were fully discussed, and all the decisions were consensual. After that, the PFV was finally assessed by two independent bilingual reviewers to verify whether the PFV in Brazilian Portuguese was appropriate in comparison with the original English version of the manual. The final concerns were reviewed to generate the final version (FV).

Stage IV: perceived usability among health workers

This stage consisted of a cross-sectional, pilot study designed to assess the perceived usability of the FV in the opinion of a group of health workers in the field of neurorehabilitation (they did not participate in the earlier phases of the study). To participate, these professionals were expected to volunteer and be currently practicing. Sociodemographic data were assessed, including age, degree subject, qualification level and time in practice.

System Usability Scale (SUS)

The usability of the FV was assessed using the System Usability Scale (SUS), which consists of 10 questions designed to identify how individuals perceive the usability of a product or technology⁽²⁶⁻²⁸⁾. The SUS provides a standardized and quick-to-obtain measure of perceived usability. Here, the scale was used to capture whether the manual could be of use in the daily

routine of health care workers. After completing the SUS scale, the participants were offered a field where they could write additional comments regarding the leisure activities in the manual.

Statistical analysis

Quantitative data are expressed using descriptive statistics (mean, standard deviation, or frequencies). The Statistical Package for the Social Sciences (SPSS, version 25) was used in the quantitative analysis. The qualitative data from the cognitive interview were analyzed following the steps proposed by Bardin⁽²⁹⁾, which include: 1) Pre-analysis, when the content of the interviews was screened and the data was codified; 2) Material exploration, the interview content was grouped into different subjects and categories; 3) Results and interpretation, the results of the previous steps were organized and critically addressed. The face validity of the images used in the manual was evaluated considering esthetic presentation and cultural meaning⁽³⁰⁾.

Results Stage I

The comparison between V1 and V2 revealed a high degree of similarity, with the primary discrepancy among evaluators arising from a semantic issue related to verb tense in the Portuguese-translated version. Other differences were minimal, affecting fewer than 10 items, and were resolved through consensus in the synthesized version (SV) of the manual. Following the translation process, 174 modifications were made to the original content to enhance cultural alignment with the Brazilian context. These adaptations included replacing store names with generic product descriptions (e.g., *Burger King* was replaced with *hamburger*), updating temporal references in leisure activities (e.g., *telephone directory* was replaced with *text message*), and adjusting culturally specific elements (e.g., *hunting* was substituted with *walking the pet*; *Jim* was changed to *Carlos*; *country music* was adapted to *sertanejo*).

Stage II: Expert Committee

The expert committee consisted mainly of women (80%), aged 37 ± 5.16 years-old, with the following educational qualifications: specialization (20%), master (40%) and PhD (40%). They have 10.70 ± 4.91 years of training and 9.80 ± 3.76 years of professional practice in the field. Figure 2A shows the experts' opinions regarding the manual's instructions in terms of overall applicability, adequacy of the images and the assessment form.

Figure 3A shows the health care workers' opinions regarding the adequacy of each proposed leisure activity in the manual. Figure 3B shows opinions of the expert committee members regarding the functional domains that each proposed activity is expected to rehabilitate (intellectual, social, recreational, and physical). Leisure activity 35 - Making a sun catcher in the original manual was removed from the Brazilian version because it was unusual in the Brazilian context.

Table 1 shows representative data from the content analysis. The data were organized in four topics and 22 categories. Two references from each category were selected to explain the committee members' point of view. The categories "cognition" and "clinical reasoning" were the most cited topics while "socioeconomic level" and "technological insertion" were the least.

Stage III: Linguistic and Semantic Equivalence of the PFV compared with the original version of the manual in English

The two independent professionals who assessed the semantic and linguistic equivalence of the PFV in comparison with the original manual in English held university degrees (graduation and PhD). They were bilingual, one woman and one man, aged 29.50 ± 4.95 years old. Their evaluation regarding the initial instructions provided in the manual is shown in Figure 2B. When asked whether the Brazilian version of each leisure activity expressed the original semantic and idiomatic meaning in English, all questions were approved, with some concerns regarding activities 27, 34, 37 and 53, which were slightly changed from the original to better reflect the Brazilian

cultural context. Moreover, when asked whether the Brazilian versions of the leisure activities were adequate to be used in the country, the reviewer 1 considered all the activities appropriate while the reviewer 2 raised minor issues regarding activities 45 and 51. The divergences were resolved by consensus and the issues were solved in the FV.

Stage IV: Usability perception in the view of health care workers.

A sample consisting of 19 health care workers, 16 (84.2%) women and three men (15.8%), aged 24 to 71 years old were invited to assess the perceived usability of the FV. They were six psychologists, two physical educators, one nurse, two physiotherapists, two doctors, one pharmacist, one speech therapist, two nutritionists and two nursing assistants. Their practical professional experience ranged from one to 44 years. They were from the states of Rio Grande do Sul, Rio de Janeiro, São Paulo and Mato Grosso, Brazil. Table 2 shows the findings regarding the perceived usability.

Discussion

This study sought to provide a Brazilian cross-culturally-adapted version of the Leisure Functional Rehabilitation Activity Manual. Additionally, we assessed the perceived usability of the manual among health care workers currently acting in different Brazilian states. Thus, the resulting Brazilian version of the manual provides guidance for health care workers when using leisure activities as part of neurorehabilitation programs in Brazil. One advantage of the manual is the possibility of selecting the activities as needed, without following a rigid sequence. Overall, the main findings show the Brazilian version of Leisure Functional Rehabilitation Activity Manual was appropriate regarding the semantic and idiomatic content (stages I to III) and perceived usability (stage IV).

The minor divergences identified in stage I (V1 and V2) were easily resolved, suggesting the language used in the manual was sufficiently clear and precise, which allowed us to begin the next

steps in the cross-cultural adaptation process⁽²⁰⁾.

In stage II, a specialist committee formed of highly qualified professionals with experience in the field is required to make appropriate judgments and decisions regarding the content of the SV⁽²¹⁾. The committee raised some cultural issues regarding the SV and provided suggestions to improve the initial instructions. They also recommended activities 7, 12 and 32 should be reframed to better reflect the Brazilian context. Divergences are common when undertaking the cross-cultural adaptation of clinical guides and instruments⁽¹⁹⁻²³⁾. The version based on the contribution from the specialist committee (PFV) was then submitted to assessment by two independent bilingual assessors who found it to be substantially similar to the original English version in terms of the semantic and idiomatic aspects (stage III). Therefore, our findings indicate the final Brazilian version of the manual is suitable for use in the country.

According to the assessors, most of the activities stimulate more than one leisure domain (intellectual, social, recreational, and physical). For instance, leisure activity 4 was considered to simultaneously stimulate the intellectual, social, recreational, and physical domains, but to varying degrees. This is expected because leisure activities typically involve a between-domain interaction^(1, 8-9).

During the cognitive interview, the most frequent topics raised were the perceived usability of the manual and the context in which the proposed activities are administered. For example, physiotherapists are more likely to understand the leisure activities in terms of the principles of movement rehabilitation⁽³¹⁾. Conversely, psychologists tend to consider the activities in terms of their impact on cognitive rehabilitation⁽³²⁾. The same was found in our study. These differing perspectives have been reported in the literature and probably reflect professional formation and practices⁽³³⁻³⁶⁾. Therefore, when selecting a leisure activity from the manual to be used with patients, the health care worker is likely to be influenced by his/her professional background, as revealed during the cognitive interview.

It is important to mention that, to the best of our knowledge, there are no specific guidelines for the cross-cultural adaptation of manuals, but

only for tests or instruments. Therefore, we adapted some recommendations from the available guidelines to be able to cross-culturally validate the manual using scientific principles. For example, we replaced the traditional back-translation stage with an independent double-review comparing the Brazilian version with the original English version of the manual. Considering the results obtained in this study, we can ensure the original concepts of the leisure activities in the manual were unchanged^(19, 22, 24).

If health care workers are going to use the manual in their clinical routines, it is important to assess its perceived usability. The assessment we performed (stage IV) indicates the manual exhibits good levels of perceived usability. However, the findings also revealed the professional background and expertise of the health care workers may have influenced their opinion regarding the manual's clinical application. The study from Jung et al.⁽³⁶⁾ suggests health care workers working alone are unlikely to consider a broad range of biopsychosocial issues when examining the patients' needs. Consequently, professional background can potentially influence decisions when establishing a rehabilitation plan.

The interdisciplinary nature of the group that took part in all phases involved in producing the cross-cultural adaptation of the manual is an important strength of this study. The Brazilian version of the manual provides a wide range of stimulating leisure activities designed to encourage positive feelings, promote well-being, and thus allow individuals to better cope with the limitation that affect their daily lives⁽³⁷⁾. Having the manual cross-culturally-adapted to various languages and cultures, researchers will be able to conduct multicentric trials to determine the efficacy of introducing leisure activities in rehabilitation programs for people living with brain disorders.

This study has some limitations. Firstly, the absence of consensus regarding the definition of what is a leisure activity may have impacted the opinions of the experts engaged in the cross-cultural validation process. This was particularly evident in the cognitive interview. Secondly, the perceived usability was a secondary outcome in the study and needs to be confirmed with further larger

trials. Finally, the lack of standardized guidelines for the cross-cultural adaptation of manuals may have influenced some research decisions.

In conclusion, this research found the Brazilian version of the Leisure Functional Rehabilitation Activity Manual to be cross-culturally valid for use in Brazil, in terms of its semantic, idiomatic properties, and perceived usability among health care workers. It is hoped the current findings will contribute towards implementing more comprehensive neurorehabilitation programs in the country.

References

1. Smallfield S, Molitor WL. Occupational therapy interventions supporting social participation and leisure engagement for community-dwelling older adults: A systematic review. *Am J Occup Ther* [Internet]. 2018 [cited 2025 May 5];72(4):7204190020p1-p8. Available from: <https://doi.org/10.5014/ajot.2018.030627>.
2. Hildebrand M, Brewer M, Wolf T. The impact of mild stroke on participation in physical fitness activities. *Stroke Res Treat* [Internet]. 2012 [cited 2025 May 5];(1):548-682. Available from: <https://doi.org/10.1155/2012/548682>.
3. Nilsson I, Lundevaller EH, Fisher AG. The Relationship between Engagement in Leisure Activities and Self-Rated Health in Later Life. *Act Adapt Aging* [Internet]. 2017 [cited 2025 May 5];41(2):175-90. Available from: <https://doi.org/10.1080/01924788.2017.1306384>.
4. Mattos DCG, Oliveira DSV, Suzigan E, Neves RN, Braga DM. Caracterização de pacientes com lesão encefálica adquirida submetidos à cirurgia para correção de deformidades nos membros inferiores. *Medicina* [Internet]. 2019 [citado 5 maio 2025];52(1):47-53. Disponível em: <https://www.revistas.usp.br/rmrp/article/view/159628>.
5. Turner GM, McMullan C, Aiyegbusi OL, Bem D, Marshall T, Calvert M, et al. Stroke risk following traumatic brain injury: Systematic review and meta-analysis. *Int J Stroke* [Internet]. 2021 [cited 2025 May 5];16(4):370-84. Available from: <https://doi.org/10.1177/17474930211004277>.
6. Rojas-Gallego IC, Vázquez-Builes S, Escorcia-García CL, Alvarán-Florez L. Fisiopatología del daño cerebral en el trauma encéfalo-craneano. *CES Med* [Internet]. 2018 [cited 2025 May 5];32(1):31-40. Available from: <https://doi.org/10.21615/cesmedicina.32.1.4>.
7. Stein MB, Jain S, Giacino JT, Harvey L, Dikmen S, Nelson LD, et al. Risk of Posttraumatic Stress Disorder and Major Depression in Civilian Patients After Mild Traumatic Brain Injury: A TRACK-TBI Study. *JAMA Psychiatry* [Internet]. 2019 [cited 2025 May 5];76(3):249-58. Available from: <https://doi.org/10.1001/jamapsychiatry.2018.4288>.
8. Wang HX, Xu W, Pei JJ. Leisure activities, cognition and dementia. *Biochim Biophys Acta Mol Basis Dis* [Internet]. 2012 [cited 2025 May 5];1822(3):482-91. Available from: <https://doi.org/10.1016/j.bbadis.2011.09.002>.
9. Leung GTY, Leung KF, Lam LCW. Classification of late-life leisure activities among elderly Chinese in Hong Kong. *East Asian Arch Psychiatry* [Internet]. 2011 [cited 2025 May 5];21(3):123-7. Available from: <https://www.easap.asia/index.php/component/k2/item/180-v21n3-p123-127>.
10. Merims D, Natan MB, Seleznev I. The effect of leisure activities, purpose in life, and spirituality on short-term outcomes of geriatric rehabilitation. *Top Geriatr Rehabil* [Internet]. 2018 [cited 2025 May 5];34(3):207-12. Available from: <https://doi.org/10.1097/TGR.0000000000000196>.
11. Iizuka A, Suzuki H, Ogawa S, Kobayashi Cuya KE, Kobayashi M, Takebayashi T, et al. Can cognitive leisure activity prevent cognitive decline in older adults?: a systematic review of intervention studies. *Geriatr Gerontol Int* [Internet]. 2019 [cited 2025

- May 5];19(6):469-82. Available from: <https://doi.org/10.1111/ggi.13671>.
12. Reeves MJ, Thetford C, McMahon N, Forshaw D, Brown C, Joshi M, et al. Life and Leisure Activities following Stroke or Transient Ischaemic Attack (TIA): An Observational, Multi-Centre, 6-Month Follow-Up Study. *Int J Environ Res Public Health* [Internet]. 2022 [cited 2025 May 5];19(21):1-15. Available from: <https://doi.org/10.3390/ijerph192113848>.
 13. Norlander A, Iwarsson S, Jönsson AC, Lindgren A, Månsson Lexell E. Participation in social and leisure activities while re-constructing the self: understanding strategies used by stroke survivors from a long-term perspective. *Disabil Rehabil* [Internet]. 2022 [cited 2025 May 5];44(16):4284-92. Available from: <https://doi.org/10.1080/09638288.2021.1900418>.
 14. McGlinchey MP, James J, McKevitt C, Douiri A, McLachlan S, Sackley CM. The effect of rehabilitation interventions on physical function and immobility-related complications in severe stroke-protocol for a systematic review. *Syst Rev* [Internet]. 2018 [cited 2025 May 5];7(1):1-8. Available from: <https://doi.org/10.1186/s13643-018-0870-y>.
 15. Hatem SM, Saussez G, Della Faille M, Prist V, Zhang X, Dispa D, et al. Rehabilitation of motor function after stroke: a multiple systematic review focused on techniques to stimulate upper extremity recovery. *Front Hum Neurosci* [Internet]. 2016 [cited 2025 May 5];10(442):1-22. Available from: <https://doi.org/10.3389/fnhum.2016.00442>.
 16. Messenger BA, Ziarnek N. *Leisure Functional Rehabilitation Activity Manual*. [Youngsville, NC]: Lash & Associates Publishing/Training; 2004.
 17. Jolliffe L, Lannin NA, Cadilhac DA, Hoffmann T. Systematic review of clinical practice guidelines to identify recommendations for rehabilitation after stroke and other acquired brain injuries. *BMJ Open* [Internet]. 2018 [cited 2025 May 5];8(2):e018791. Available from: <https://doi.org/10.1136/bmjopen-2017-018791>.
 18. Lopes e Santos LEL, Pereira FC, Oliveira CS. *Panoramas Metodológicos em Reabilitação Neuropsicológica No Brasil: Da Teoria À Prática*. *Perspect Online Hum Soc Apl* [Internet]. 2017 [citado 5 maio 2025];7(20):1-10. Disponível em: <https://doi.org/10.25242/887672020171246>.
 19. International Test Commission (ITC). *The International Test Commission Guidelines for translating and adapting tests* [Internet]. 2nd ed. Hemel Hempstead: ITC; 2017 [cited 2025 May 5]. Available from: <https://www.intestcom.org/>.
 20. Borsa JC, Damásio BF, Bandeira DR. Adaptação e validação de instrumentos psicológicos entre culturas: algumas considerações. *Paidéia* (Ribeirão Preto) [Internet]. 2012 [citado 5 maio 2025]; 22(53):423-32. Disponível em: <https://doi.org/10.1590/1982-43272253201314>.
 21. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine* [Internet]. 2000 [cited 2025 May 5]; 25(24):3186-91. Available from: <https://doi.org/10.1097/00007632-200012150-00014>.
 22. Cassepp-Borges V, Balbinotti MAA, Teodoro MLM. Tradução e validação de conteúdo: uma proposta para a adaptação de instrumentos. In: Pasquali L. *Instrumentação psicológica: fundamentos e práticas*. [Porto Alegre]: Artmed; 2010. p. 506-20.
 23. Castillo-Díaz M, Padilla JL. How Cognitive Interviewing can Provide Validity Evidence of the Response Processes to Scale Items. *Soc Indic Res* [Internet]. 2013 [cited 2025 May 5];114(3):963-75. Available from: <https://doi.org/10.1007/s11205-012-0184-8>.
 24. Gjersing L, Caplehorn JR, Clausen T. Cross-cultural adaptation of research instruments: language, setting, time and statistical considerations. *BMC Med Res*

- Methodol [Internet]. 2010 [cited 2025 May 5];10(13):1-10. Available from: <https://doi.org/10.1186/1471-2288-10-13>.
25. Ryan K, Gannon-Slater N, Culbertson MJ. Improving Survey Methods With Cognitive Interviews in Small- and Medium-Scale Evaluations. *Am J Eval* [Internet]. 2012 [cited 2025 May 5];33(3):414-30. Available from: <https://doi.org/10.1177/1098214012441499>.
26. Brooke, J. SUS: a retrospective. *J Usability Stud* [Internet]. 2013 [cited 2025 May 5];8(2):29-40. Available from: https://www.researchgate.net/profile/John-Brooke-6/publication/285811057_SUS_a_retrospective/links/5ee5c4a792851ce9e7e38a75/SUS-a-retrospective.pdf.
27. Brooke J. SUS: A "quick and dirty" usability scale. In: Jordan PW, Thomas B, Weerdmeester BA, McClelland AL, organizers. *Usability Evaluation in Industry*. [place unknown]: Taylor and Francis; 1996. p. 189-94.
28. Tenório JM, Cohrs FM, Sdepanian VL, Pisa IT, Marin FH. Desenvolvimento e avaliação de um protocolo eletrônico para atendimento e monitoramento do paciente com doença celiaca. *Rev Inform Teór Apl* [Internet]. 2010 [citado 5 maio 2025];17(2):210-20. Disponível em: https://seer.ufrgs.br/index.php/rita/article/view/rita_v17_n2_p210.
29. Bardin L. *Análise de conteúdo*. [local desconhecido]: Edições 70; 2009.
30. Manzi-Oliveira AB, Balarini FB, Marques LAS, Pasian SR. Adaptação transcultural de instrumentos de avaliação psicológica: levantamento dos estudos realizados no Brasil de 2000 a 2010. *Psico-USF* [Internet]. 2011 [citado 5 maio 2025];16(3):367-81. Disponível em: <https://www.redalyc.org/pdf/4010/401036087013.pdf>.
31. Aguiar LT, Nadeau S, Britto RR, Teixeira-Salmela LF, Martins JC, de Moraes Faria CDC. Effects of aerobic training on physical activity in people with stroke: protocol for a randomized controlled trial. *Trials* [Internet]. 2018 [cited 2025 May 5];19(1):1-8. Available from: <https://doi.org/10.1186/s13063-018-2823-0>.
32. Lee GJ, Bang HJ, Lee KM, Kong HH, Seo HS, Oh M, et al. A comparison of the effects between 2 computerized cognitive training programs, Bettercog and COMCOG, on elderly patients with MCI and mild dementia: a single-blind randomized controlled study. *Medicine* [Internet]. 2018 [cited 2025 May 5];97(45):1-5. Available from: <https://doi.org/10.1097/MD.00000000000013007>.
33. Gassert R, Dietz V. Rehabilitation robots for the treatment of sensorimotor deficits: a neurophysiological perspective. *J Neuroeng Rehabil* [Internet]. 2018 [cited 2025 May 5];15(1):1-15. Available from: <https://doi.org/10.1186/s12984-018-0383-x>.
34. Lewthwaite R, Winstein CJ, Lane CJ, Blanton S, Wagenheim BR, Nelsen MA, et al. Accelerating stroke recovery: body structures and functions, activities, participation, and quality of life outcomes from a large rehabilitation trial. *Neurorehabil Neural Repair* [Internet]. 2018 [cited 2025 May 5];32(2):150-65. Available from: <https://doi.org/10.1177/1545968318760726>.
35. Fontoura DR, Tisser L, Bueno O, Bolognani S, Frison T. *Teoria e prática na reabilitação neuropsicológica*. [São Paulo]: Vetor Editora; 2020.
36. Jung JH, Kang JY, Ko CH, Ko JY, Lim JY. Effect of Communication and Education within the Rehabilitation Team: Therapists' and Nurses' Views. *Ann Geriatr Med Res* [Internet]. 2021 [cited 2025 May 5];25(4):301-8. Available from: <https://doi.org/10.4235/agmr.21.0085>.
37. Pressman SD, Matthews KA, Cohen S, Martire LM, Scheier M, Baum A, et al. Association of enjoyable leisure activities with psychological and physical well-being. *Psychosom Med* [Internet]. 2009 [cited 2025 May 5];71(7):725-32. Available from: <https://doi.org/10.1097/PSY.0b013e3181ad7978>.

Daiane Oliveira Hausen

Psychologist. Master in Biomedical Gerontology, School of Medicine, Pontifical Catholic University of Rio Grande do Sul (PUCRS), Porto Alegre, RS, Brazil.

Tatiana Quarti Irigaray

Psychologist. PhD in Biomedical Gerontology. Professor. School of Health and Life Sciences, Pontifical Catholic University of Rio Grande Do Sul (PUCRS), Porto Alegre, RS, Brazil.

Régis Gemerasca Mestriner

Physiotherapist. Specialist in Gerontology. PhD in Physiology. Professor. School of Health and Life Sciences and School of Medicine. Pontifical Catholic University of Rio Grande Do Sul (PUCRS), Porto Alegre, RS, Brazil.

Endereço para correspondência**Daiane Oliveira Hausen**

Avenida Ipiranga 6681 Prédio 6, Building 40, 8th Floor, Porto Alegre, RS, 90619-900, Brazil.

Tatiana Quarti Irigaray

Avenida Ipiranga 6681 Prédio 6, Building 11, 9th Floor, Porto Alegre, RS, 90619-900, Brazil.

Régis Gemerasca Mestriner

Avenida Ipiranga 6681 Prédio 6, Building 40, 8th Floor, Porto Alegre, RS, 90619-900, Brazil.

Os textos deste artigo foram revisados pela Texto Certo Assessoria Linguística e submetidos para validação dos autores antes da publicação.

Table 1 - Summary of the content analysis.

Topic	Categories	Frequency	R1	R2	R3	R4	R5	Mention
Using the manual	Cross-cultural adaptation	11	0	7	0	0	4	Reviewer 2: "(...) Wouldn't it be better to use a Portuguese word like 'exercícios' or perhaps 'saúde' (exercises or health, respectively) instead of fitness in the Portuguese translation." Reviewer 5: "(...) you've used the expressions 'more expensive item' and 'less expensive item', but this is not the way we usually say it (...). I would change the expression to 'the cheapest item' (...)"
	Domain categorization	10	0	7	1	0	2	Reviewer 2: "(...) so, I would say it (the activity) is more like a leisure activity than the other domains, but we can use it to stimulate other (functional) domains as well". Reviewer 3: "(...) it (the activity) may be used for socialization through leisure, but it can also be used as a cognitive task that someone is going to do. (The person) will do it like... catalog these games and put somewhere, like in the bedroom."
	Clarity of leisure activities	14	3	3	3	2	3	Reviewer 1: "this (the activity) is clear to me, very straightforward. It says exactly what has to be done, it is very clear". Reviewer 4: "(...) so, I think the text is very clear and what comes to my mind is an interesting checklist to test the assessment of the (leisure) activities over time."
	Understanding how to use the manual	11	2	2	1	4	2	Reviewer 3: "(...) I have doubts about this activity's goal, but it all depends who's going to do it, doesn't it?" Reviewer 4: "(...) maybe some technical information will be lacking regarding how the collected data would be used to get more effective leisure rehabilitation, don't you think?"
	Identification of the health care worker with the activities	9	2	3	0	2	2	Reviewer 2: "(...) this manual is cool because you think about things that are nice for you. I believe this creates an engaging context when undertaking the (leisure) activity". Reviewer 4: "(...) I believe this (leisure) activity makes the person calmer (...) It makes me calmer, at least this is what I feel. A jigsaw puzzle requires patience, it will take time, sometimes you will spend a whole day doing it".
	Images	7	1	3	1	1	1	Reviewer 3: "(...) I am looking here... it looks like the plan of a house. It shows a house, right? But I think the image needs some improvement". Reviewer 4: "(...) I do not feel the title matches the image (...). Perhaps, we can insert a 'thought bubble' (in the image) where there is a person saying, there is an image of Rio de Janeiro, with Christ the Redeemer, Sugar Loaf mountain (...)
	Similarity of the activities	2	1	1	0	0	0	Reviewer 1: "(...) I think it refers to that activity about people's interests, doesn't it?" Reviewer 2: "(...) this is that activity... I remember now there is painting, collage, we have some activities using this stuff".
	Activity systematization	8	3	5	0	0	0	Reviewer 1: "(...) Take it, cut it, glue it, anyway... But what I thought the most interesting think about the activities is the ideas to be used. So, the health care worker will have an idea about where to start work". Reviewer 2: "(...) It is very important to have this model on hand. Otherwise, you will have to build ideas from zero, without any idea about the patient interests, right?"

Topic	Categories	Frequency	R1	R2	R3	R4	R5	Mention
Target audience	Definition of the target audience, orientation, and method of using the manual	9	0	3	1	1	4	<p>Reviewer 4: "(...) I think, if the activities in the manual were listed according to difficulty levels, like A, B, C... with C being the most difficult, it would be great. So, if this classification is feasible in the manual, I would do it".</p> <p>Reviewer 5: "(...) If the activity is performed by only one person, it is one thing, but if it is performed with other people, the activity takes on other leisure aspects than originally thought".</p> <p>Reviewer 5: "(...) this depends on socioeconomic class, because when I worked in the private sector, I saw people who usually went to restaurants, it was part of their daily lives. So, they would probably know the names of restaurants, they would know how to look at some of the things you asked in this activity. Now, I am working in the public sector and people are not in the same situation. If I ask them to choose a restaurant to visit, there will be some people who don't know the name of any restaurant. So, I suggest finding out whether the person is in the habit of going to restaurants. If this is not the case, the health care worker may offer that person alternative possibilities (...)"</p> <p>Reviewer 5: "(...) this activity will probably be leisure for people with higher schooling levels, who are more likely to prefer indoor activities, right?"</p>
	Socioeconomic level	2	0	0	0	0	2	
	Motivation and engagement		6	3	2	0	1	0
		10	2	2	0	3	3	<p>Reviewer 1: "(...) but we could use that (leisure) activity involving choosing a place to visit in the community with going to the supermarket. And after doing the activity together. I think so".</p> <p>Reviewer 5: "(...) I was wondering whether the provided instructions should contain clear alternative possibilities. For example, if I don't have board games at home, I would list mobile phone games".</p>
Material relevance	Innovation in using activities in the manual							<p>Reviewer 1: "(...) yes, it is clear. The most interesting aspect of the social media is that it is easy to access. Most people read the social media".</p> <p>Reviewer 2: "(...) I think it's cool to talk about the website because nowadays we don't read magazines as much anymore, right? Anyway, some people still subscribe to magazines, my parents still subscribe to them, I've never subscribed to any kind of magazine, I see everything on the internet (...)"</p>
	Using technology							
	Relevance of the manual	2	1	1	0	0	0	<p>Reviewer 2: "(...) you don't have to use all the activities that are there (in the manual), you can choose. Today I want to use this one for that purpose, I want to use two, three, five or all (leisure activities) (...)"</p> <p>Reviewer 5: "(...) you have several activities involving painting in the manual. I think we have this one and others before and after, right? They might all be pleasurable (...) all of them easily able to provide leisure (...)"</p>
		16	2	8	1	2	3	

Topic	Categories	Frequency	R1	R2	R3	R4	R5	Mention
Material usability	Basic daily living activities (BDLA)	5	4	0	0	0	1	<p>Reviewer 1: "(...) this is a very cool activity, it promotes engagement, and stimulates manual activities, I think this is good, right?".</p> <p>Reviewer 5: "(...) It's a type of activity that is usually pleasant for people, it's dealing with painting, dealing with artistic expression in general (...) it can be done by people with different degrees of impairment, depending on how it's done, right? I imagine even a person with cerebral palsy, exhibiting severe impairment, might be able to use the box."</p>
	Instrumental daily living activities (IDLA)	11	6	0	1	4	0	<p>Reviewer 1: "(...) instrumental activities of daily living, everyday things, going to the park, bakery, things the person will need to do."</p> <p>Reviewer 4: "(...) (the leisure activity) rehabilitates leisure in the most active and functional possible way, it is simulating a situation of leisure requiring commitment, and components of instrumental daily activities".</p>
	Patient self-perception	15	4	1	3	4	3	<p>Reviewer 1: "(...) first, this is intended for someone who likes reading, I don't think it would encourage someone to read if the person is not in the habit of reading, or may be give it as a gift for someone, right?"</p> <p>Reviewer 3: "(...) this activity is pleasurable, it will show a planning capacity, may be something that a person would like to do, but hasn't done yet".</p>
	Cognition	21	4	1	7	7	2	<p>Reviewer 1: "(...) I believe so. It is a way of passing time and it stimulates the person's cognition."</p> <p>Reviewer 3: "(...) attention, memorization. You can exercise critical thinking, right? But it will be dependent of the goals (you have) when doing the activity".</p>
	Imagination and/or creativity	5	3	0	2	0	0	<p>Reviewer 1: "(...) it is all about creativity, drawing, pasting something, making your own book in your own way. I thought it was really cool."</p> <p>Reviewer 3: "(...) "this activity is very creative, it is a good activity, I would use it (with my patients). It is relevant enough to be part of the manual and they should keep it. It is well prepared."</p>
	Social interaction	9	3	1	1	2	2	<p>Reviewer 3: "(...) not necessarily, right? It (the leisure activity) may be performed in a group. There will be social interaction, the person will like doing it, it is pleasant."</p> <p>Reviewer 4: "(...) It is a very good activity, particularly in terms of social issues, right? It (the leisure activity) will lead the individuals to, perhaps, challenge themselves and stay in a position where they will have to interact with others to be able to organize themselves, ask proper questions and follow a script."</p>
	Clinical reasoning	20	2	2	2	9	5	<p>Reviewer 3: "(...) they (the leisure activities) can address several issues, the delivery of the activity will depend on the health care worker."</p> <p>Reviewer 4: "(...) there will be different kinds of people, different professionals nearby, right? It may be challenging to deviate from an obstacle. Or maybe someone is sleeping, so I am not going to enter the room right now (...)"</p>
	Regionality	4	1	1	0	0	2	<p>Reviewer 2: "The types of food (...) and I didn't know it at the time either, I had to Google it."</p> <p>Reviewer 5: "The adjustment I saw was the regionalism you've already noticed, like see if these things have the same names where you intend to use your manual, but otherwise it's pretty clear."</p>
Total		207	47	53	24	42	41	

Source: table developed by the authors.

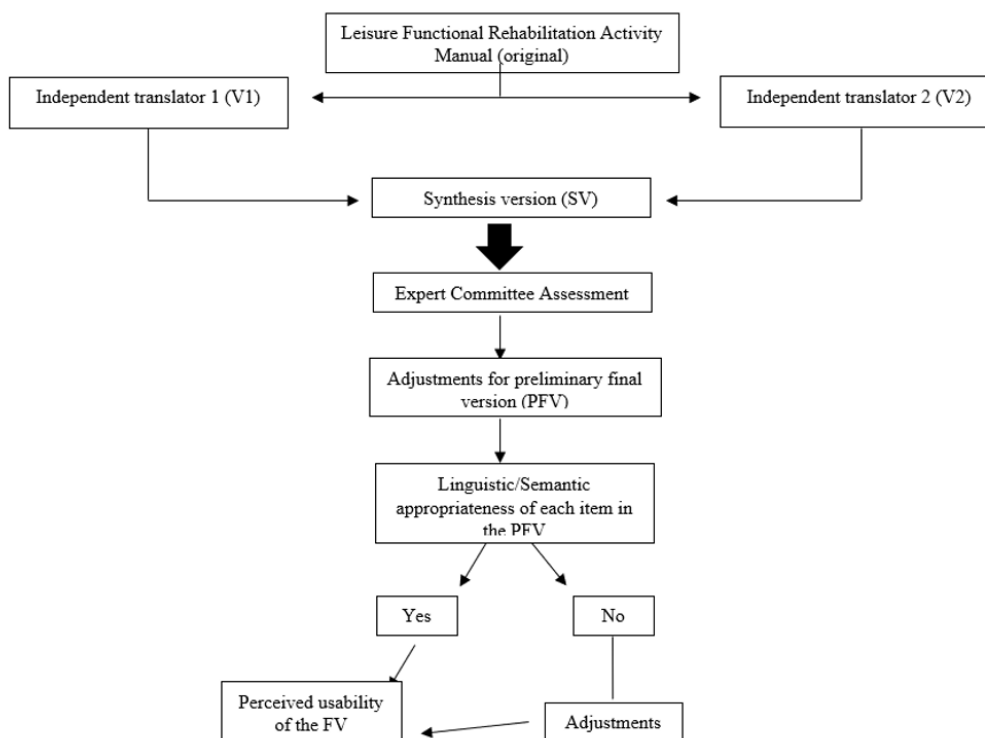
Table 2 - Perceived Usability of the Brazilian Version of the Manual Using System Usability Scale (SUS) Among Health Care Workers.

SUS scale item	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
I think I would like to use this manual frequently.	42.1	31.6	26.3	0	0
I found the manual unnecessarily complex.	0	10.5	10.5	36.8	0
I thought the manual was easy to use.	42.1	42.1	15.8	0	0
I think that I would need the support of a technical person to be able to use this manual.	0	10.5	10.5	42.1	36.8
I found the various functions in this manual were well integrated.	42.1	47.4	0	10.5	0
I thought there was too much inconsistency in this manual.	0	0	5.3	15.8	78.9
I would imagine that most people would learn to use this manual very quickly.	31.6	52.6	15.8	0	0
I found the manual very cumbersome to use	0	0	0	36.8	63.2
I felt very confident using the manual.	42.1	42.1	15.8	0	0
I needed to learn a lot of things before I could get going with this manual.	0	15.8	5.3	42.1	36.8

Note: SUS: System usability scale.

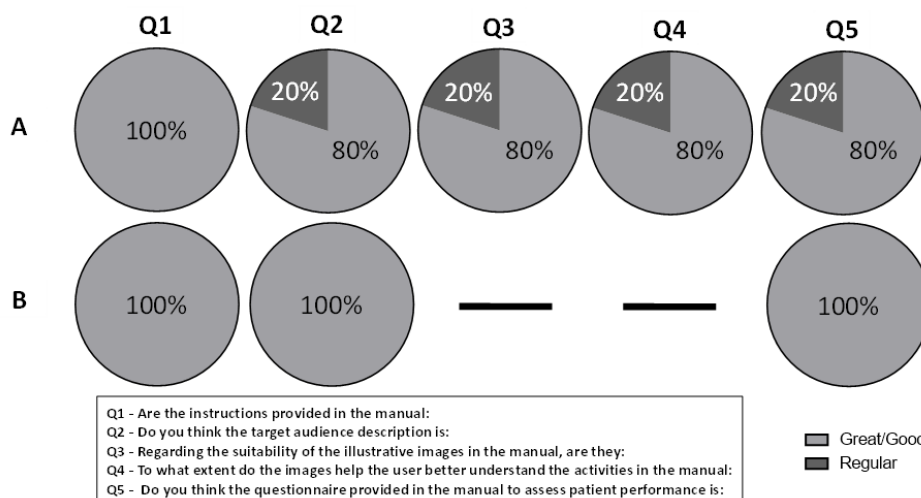
*Results reflect the perceived usability of the Brazilian version of the manual among 19 health care workers with professional experience in the field.

Figure 1 - Flowchart and Design of the Study.

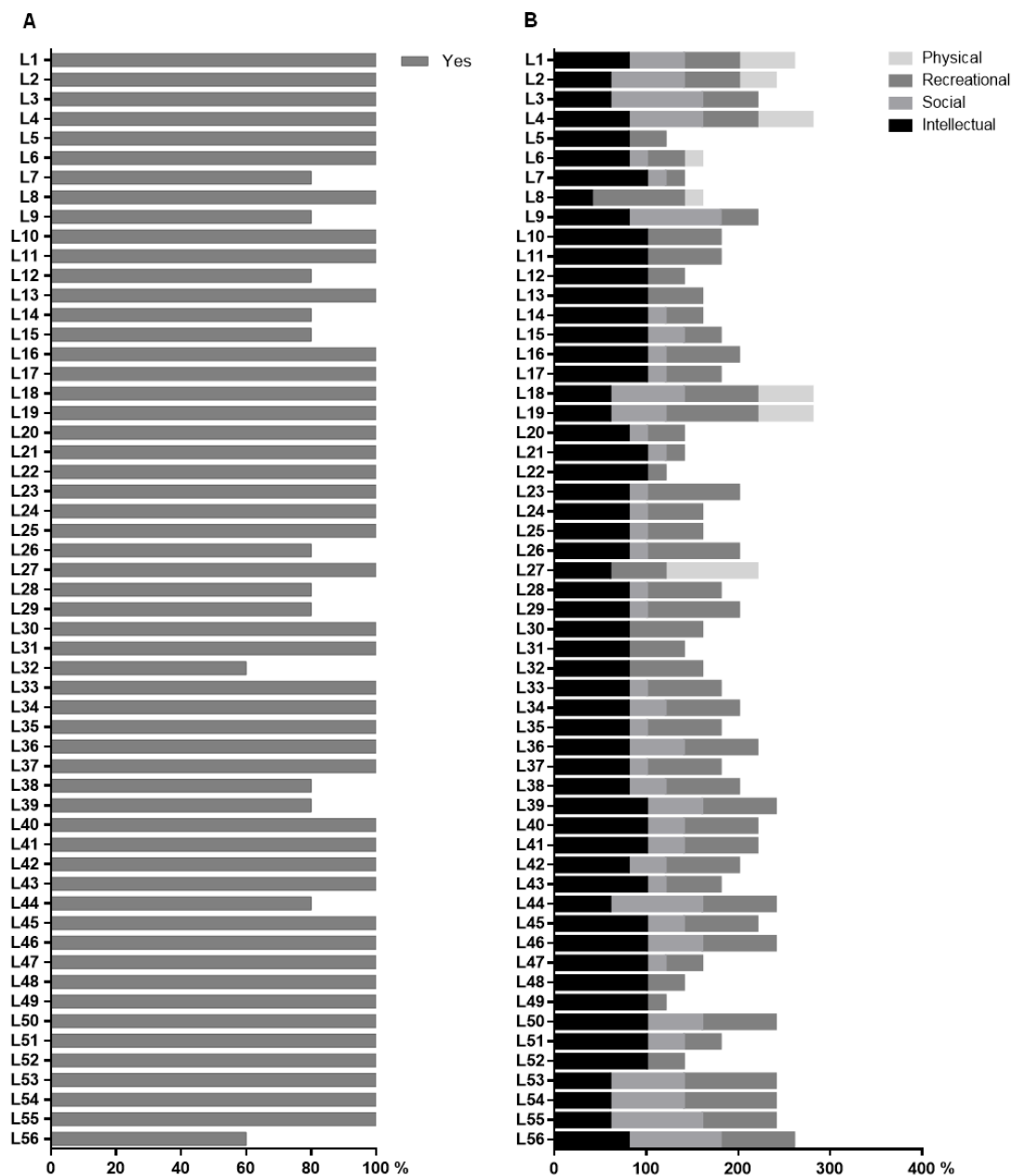


Note: V1: Brazilian version provided by translator 1; V2: Brazilian version provided by translator 2; SV: synthesized version produced by combining V1 and V2; PFV: preliminary final version was obtained after incorporating the feedback from the expert committee when assessing the SV; FV: final version was obtained after comparing the PFV with the original version of the manual in English. The FV was used to assess the perceived usability of the Brazilian version of the manual among health care workers with experience in the field.

Figure 2 - Analysis of the Instructions.



Note: A. Analysis of the instructions provided in the Leisure Functional Rehabilitation Activity Manual – Brazilian version by the expert committee. B. Analysis of the instructions in terms of semantic and idiomatic equivalence in comparison with the original version in English (stage III). Q: question. The possible answers were: Great; Good; Regular; Bad; Very bad. Dark bars represent those questions were not assessed in stage III.

Figure 3 - Opinion of Expert Committee Members.

Note: A. Appropriateness of leisure activities in the opinion of expert committee members. "Yes" is the percentage of appropriateness of each proposed leisure activity in Brazilian Portuguese. B. Opinions of the expert committee members regarding the functional domains that each proposed leisure activity is expected to rehabilitate (intellectual, social, recreational, and physical). The members were allowed to select one or more domains based on their understanding regarding what each activity can rehabilitate, thus, the 'x axis' exhibits a limit of 400% - in the case all members of the expert committee consider a leisure activity could rehabilitate the four mentioned domains. L: leisure activity number.