

Translation and cross-cultural adaptation of the Habitual Physical Activity Questionnaire

Tradução e adaptação transcultural do Questionário de Atividade Física Habitual

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Abstract

Background: There has been a growing scientific interest on the interface between exercise and psychiatric disorders. However, there is a lack of self-report instruments to assess levels of physical activity adapted to Brazilian Portuguese. **Objective:** To translate, assess the semantic equivalence of the Habitual Physical Activity Questionnaire and perform a non-psychometric pre-test with subjects (n = 30) from the Brazilian population, with different educational backgrounds. **Methods:** The cross-cultural adaptation process consisted of two translations and back translations performed by two independent evaluators; an evaluation of the versions and the development of a synthetic version; and a commented pretest of the questionnaire. **Results:** For each item of the instrument, the results of the four stages are reported. Most of the participants (91%) did not present any difficulties comprehending the items of the instrument. Further studies should be addressed to determine the adequacy of using this instrument in the less-educated population. We recommend that less instructed subjects be supervised while responding the questionnaire. **Discussion:** The use of two translations versions, their critical appraisal and the assessment of the target population conceives more safety to the process of semantic equivalence.

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Key-words: Cross-cultural adaptation, physical activity, exercise, semantic equivalence, translation.

Resumo

Contexto: Atualmente há na literatura um crescente interesse na interface entre exercício físico e transtornos psiquiátricos. Apesar disso, ainda há uma deficiência de instrumentos de autorrelato para medir os níveis de atividade física dos pacientes. **Objetivo:** A tradução, a aferição da equivalência semântica e uma aplicação piloto (n = 30), sem pretensão psicométrica, do Questionário de Atividade Física Habitual, visando sua utilização na população brasileira de diferentes níveis de escolaridade. **Métodos:** O processo envolveu duas traduções e retrotraduções realizadas por avaliadores independentes, avaliação das versões seguida da elaboração de uma versão síntese e pré-teste comentado. **Resultados:** A maioria dos participantes (91%) não apresentou dificuldades de compreensão com o questionário. Para cada item do instrumento, apresentam-se os resultados das quatro etapas. Mais estudos são necessários para determinar a adequação para populações de baixa escolaridade. Os autores recomendam que sujeitos menos instruídos sejam supervisionados ao preencher o questionário. **Conclusões:** A utilização de duas versões de tradução e retrotradução, a discussão sobre a versão síntese e a interlocução com a população-alvo proporcionam maior segurança ao processo de equivalência semântica.

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Palavras-chave: Adaptação transcultural, atividade física, exercício, equivalência semântica, tradução.

Introduction

Regular exercise is associated with a range of health benefits, and its absence can have harmful effects on health and well being, such as increasing the risk for certain cancers, diabetes, hypertension, obesity and coronary heart disease¹. It has also shown to be a significant indicator of health and to have protective effects for various causes of morbidity and mortality².

Physical inactivity may also be associated with the development of mental disorders. Studies have shown associations between physical activity and symptoms of depression and anxiety³. There is also abounding evidence on the serotonin-system mediated improvement in humor due to regular exercise practice in depressed and healthy

subjects⁴. Lately, exercise has been tested as treatment for certain anxiety disorders, such as panic disorder, with promising outcomes⁵. More recently, evidence emerged on the acute anti-panic effects of exercise⁶. Although the empirical evidences of association are presently well established, multiple questions are still to be responded, as the physiological mechanisms involved and the existence of a potential dose-response relationship.

Due to its wide impact on global health and well-being, measurement of physical activity is often found to be important in research, especially in the area of cardiovascular disease and obesity. However, after the discoveries of the effects of physical activity in mental health, assessing the levels of activity on psychiatric patients has started to be a theme of interest also for mental health professionals.

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Energy expenditure may be accurately assessed by both direct and indirect techniques, but these are not applicable to large scale epidemiological studies, which are frequent in the psychiatry field⁷. In this sense, reliable self-report instruments can be considered a useful tool for measuring levels of physical activity in this setting.

Since the development of an instrument is a demanding task, cross-cultural adaptation is a reliable way of using foreign self-report instruments, presenting advantages as by using an instrument already developed, validated and systematically used, researchers save efforts, time and financial resources⁸. The adaptation also provides the possibility to compare the results between different samples as well as cross-cultural data⁹. More recently, various authors have opted to culturally adapt foreign instruments to the Brazilian population¹⁰⁻¹⁵.

One of the processes included in the cross-cultural adaptation is the assessment of the semantic equivalence between scales¹⁶. Despite the lack of consensus regarding the best methods to conduct it, the most commonly used and recommended approach includes translation followed by back translation performed by two independent translators¹⁷. In this method, the bilingual person translates from the source to the target language, and another person, "blind" to the original instrument, translate it back to the source. Later, comparisons between the translations and back-translations are made to identify discrepancies between the source and the target, followed by discussions with the original bilingual translators to identify possible issues with the cross-cultural equivalence and to achieve a synthetic version¹⁸.

The Habitual Physical Activity Questionnaire (HPAQ)⁷ is a 16-item likert-scale type measure that assesses patterns of physical activity in a long-term timeframe. Global score reflects three indexes of physical activity from different contexts (work, sports and leisure time). The main strength of this questionnaire is the evaluation of all types of physical activities, including items that directs the subject to think about aspects of life that involves physical effort, but that are usually not considered when one think of physical activities limited as to exercising.

Methods

The process of cross cultural adaptation of the HPAQ included four steps. The first three steps refer to the translation process: translation, back-translation and the assessment of the semantic equivalence of the preliminary Brazilian Portuguese version. The later step consisted in a pilot study where 30 subjects, from different academic backgrounds were asked to fill in the questionnaire and to point out whether there were any difficulties in answering or suggestion to improve the clearness of the items.

Two English-speaker Brazilian psychologists independently performed two different translations of the original English instrument to Brazilian Portuguese. Each of the collaborators had advanced studies in English language. Translators were blind to each other and not familiar with the original version of the questionnaire, but familiar with the constructs used in the instrument. They were informed about the target population of the questionnaire and asked to pay attention to the semantic consistency of the terms and constructs used, instead of simply literally translating the items from English to Portuguese. After this step, back translations into English were made of each one of the two translations, by two English-speakers Brazilian health professionals, independent and blind to the original scale.

At stage three, the assessment of the semantic equivalence was performed by the authors (AS, ML and AE) and a synthetic Brazilian Portuguese version was elaborated, based on the two translations made (Table 1). At first, the authors assessed the equivalence between the original instrument and the back-translations, than the items of the original instrument were compared to its correspondents in each Brazilian Portuguese version. To compose the synthetic version, some items were incorporated from one of the two versions, integrally or modified, whereas the others stemmed from the combination of the two versions, with slight modifications to better meet the criteria of semantic equivalence. At the end of this process, a preliminary

Brazilian Portuguese version of the HPAQ was elaborated and ready to be tested.

A pilot-test was performed with the synthetic version and 30 adult subjects, selected from a convenience sample of the university students and staff. Participants were asked to fill in the questionnaire and to report if each of the items were clear enough and if there were any suggestions to improve the comprehension of the instrument.

Regarding the large cultural differences observed in the Brazilian population, in order to assure the comprehension of the questionnaire by a larger number of people, the sample was selected based on their educational level. Participants were placed in three categories: elementary school (eight years of education or less), high school (eight to eleven years of education) and superior (undergraduate degree or higher).

Participants had no history of mental disorders. To exclude the possibility of a psychiatric diagnosis, subjects were openly interviewed by the authors and answered the Structured Clinical Interview for DSM-IV. All participants commented the synthetic version, pointed out the difficulties and suggested words or terms more easily understood. Considering these suggestions, it was elaborated a final Brazilian Portuguese version of the HPAQ.

Results

The original instrument, the translations (T1 and T2), their respective back-translations (B1 and B2) and the synthetic version (before the alterations of the pre-test) can be seen in table 1. The version performed by both translators only coincided for items 3 and 7. All other items presented small to significant differences. In the synthetic version, sometimes a version had priority over another, or both were combined, or even the authors included or excluded terms that we felt filled better the semantical target of the item.

Item 1 is an open question about the main occupation of the subject and the Portuguese version was a literal translation of the phrase in English. For item 2, "At work I sit", the authors opted to use a more commonly used grammatical form of expressing the present form of the verb "to sit", "fico sentado", in order to respect the idea of behavioral pattern. Among the possible answers, there is a lack of exact translations for terms of frequency in English, such as "seldom" or "often", which promoted discrepancy between the two translations. The synthetic version brings the expressions in Portuguese that seemed to be more usual.

Despite the different terms used in T1 and T2 for expressing "to walk", both back-translations for item 4 were into "walk". In this sense, we chose the most colloquial word, in order to enhance comprehension by a larger number of subjects. Item 5 was quite controversial, once T2 made a literal translation and T1 adapted the phrasing for a commonly used expression in Portuguese. Because of that, back-translation B1 was semantically distant from the original meaning. In this case, a merging of the two translations was adopted to better adapt the idea in English to the expression used in Portuguese. Again in item 6 little differences in word used by T1 and T2 were adequately back-translated. However, the authors decided to include the idea of feeling tired rather than to be tired in order to better adapt to most used expression.

Item 8 and 10 presented insignificant discrepancies from the two translators that did not interfere with the sense in back-translation. It was necessary to adapt the use of the idea of "more" and "less" to "bigger" and "smaller" due to the grammatical construction in Portuguese for physical activity. Item 9 consisted of open questions and scoring is established in the original version in cut-points with different values that can be found in attachment 2. For this item there were also minor translation discrepancies.

Items 11 to 15 have simple literal translations into Portuguese and were well back-translated. The only significant difference found between T1 and T2 was the translations for "leisure time", which appears in the synthetic version as "momentos de lazer", even if B1 back-translated it into "moments of leisure". In the same way, in item 15, the exact translation for "cycle" would be "pedalar", which

Table 1. Original version, translations, back translations and the synthetic version of HPAQ

Versão original	Traduções	Retraduções	Versão sintética
1. What is your main occupation?	T1. Qual a sua ocupação principal? T2. Qual a sua ocupação?	B1. What is your main occupation? B2. What is your occupation?	1. Qual a sua ocupação principal?
2. At work I sit: Never/Seldom/Sometimes/Often/ Always	T1. No trabalho, eu fico sentado: Nunca/Poucas vezes/Às vezes/ Frequentemente/Sempre T2. No trabalho eu sento: Nunca/Raramente/Algumas vezes/ Frequentemente/Sempre	B1. At work, I stay sitting down: Never/A few times/Sometimes/ Frequently/Always B2. During work, I am sitting down: Never/Rarely/Occasionally/Frequently/ Always	2. No trabalho, eu fico sentado: Nunca/Raramente/Às vezes/ Frequentemente/Sempre
3. At work I stand: Never/Seldom/Sometimes/Often/ Always	T1. No trabalho, eu fico em pé: Nunca/Poucas vezes/Às vezes/ Frequentemente/Sempre T2. No trabalho eu fico em pé: Nunca/Raramente/Algumas vezes/ Frequentemente/Sempre	B1. At work, I stand: Never/A few times/Sometimes/ Frequently/Always B2. During work, I am standing: Never/Rarely/Occasionally/Frequently/ Always	3. No trabalho, eu fico em pé: Nunca/Raramente/Às vezes/ Frequentemente/Sempre
4. At work I walk: Never/Seldom/Sometimes/Often/ Always	T1. No trabalho, eu caminho: Nunca/Poucas vezes/Às vezes/ Frequentemente/Muito frequentemente T2. No trabalho eu ando: Nunca/Raramente/Algumas vezes/ Frequentemente/Sempre	B1. At work, I walk: Never/A few times/Sometimes/ Frequently/Very frequently B2. During work, I walk: Never/Rarely/Occasionally/Frequently/ Always	4. No trabalho, eu ando: Nunca/Raramente/Às vezes/ Frequentemente/Muito frequentemente
5. At work I lift heavy loads: Never/Seldom/Sometimes/Often/Very often	T1. No trabalho, eu pego peso: Nunca/Poucas vezes/Às vezes/ Frequentemente/Muito frequentemente T2. No trabalho eu levanto cargas pesadas: Nunca/Raramente/Algumas vezes/ Frequentemente/Sempre	B1. At work, I lift weight: Never/A few times/Sometimes/ Frequently/Very frequently B2. During work, I lift heavy loads: Never/Rarely/Occasionally/Frequently/ Always	5. No trabalho, eu levanto muito peso: Nunca/Raramente/Às vezes/ Frequentemente/Muito frequentemente
6. After working I am tired: Very often/Often/Sometimes/Seldom/ Never	T1. Após o trabalho, eu fico cansado: Muito frequentemente/Frequentemente/ Às vezes/Poucas vezes/Nunca T2. Depois do trabalho eu estou cansado: Muito Frequentemente/Frequentemente/ Algumas vezes/Raramente/Nunca	B1. After work, I am tired: Very frequently/Frequently/ Sometimes/A few times/Never B2. After work, I feel tired: Very Frequently/Frequently/ Occasionally/Rarely/Never	6. Depois do trabalho, eu me sinto cansado: Muito Frequentemente/Frequentemente/ Às vezes/Raramente/Nunca
7. At work I sweat: Very often/Often/Sometimes/Seldom/ Never	T1. No trabalho, eu sudo: Muito frequentemente/Frequentemente/ Às vezes/Poucas vezes/Nunca T2. No trabalho eu sudo: Muito frequentemente/Frequentemente/ Algumas vezes/Raramente/Nunca	B1. At work, I sweat: Very frequently/Frequently/ Sometimes/A few times/Never B2. During work, I sweat: Very Frequently/Frequently/ Occasionally/Rarely/Never	7. No trabalho, eu sudo: Muito frequentemente/Frequentemente/ Às vezes/Raramente/Nunca
8. In comparison with others of my own age I think my work is physically: Much heavier/Heavier/As heavy/ Lighter/Much Lighter	T1. Em comparação com outras pessoas da minha idade, eu acho que meu trabalho é fisicamente: Muito mais pesado/Mais pesado/ Igualmente pesado/Mais leve/Muito mais leve T2. Em comparação a outros com a minha idade eu acho que meu trabalho é fisicamente: Muito mais pesado/Mais pesado/Tão pesado quanto/Mais leve/Muito mais leve	B1. In comparison with other people my age, I think my job is physically: A lot heavier/Heavier/Equally heavy/ Lighter/A lot lighter B2. In comparison to other people in my age group, my job is physically: Much more challenging/more challenging/as challenging as/less challenging/much less challenging	8. Em comparação com outras pessoas da minha idade, eu acho que meu trabalho é fisicamente: Muito mais pesado/Mais pesado/ Igualmente pesado/Mais leve/Muito mais leve
9. Do you play sport? Yes/No If yes: Which sport do you play most frequently? How many hours a week? How many months a year? If you play a second sport: Which sport is it? How many hours a week? How many months a year?	T1. Você pratica esportes? Sim/Não Se sim: Que esporte você pratica mais frequentemente? Quantas horas por semana? Quantos meses por ano? Se você pratica um segundo esporte: Que esporte é esse? Quantas horas por semana? Quantos meses por ano? T2. Você pratica esporte? Sim/Não Se sim: Qual esporte você pratica mais frequentemente? Quantas horas por semana? Quantos meses por ano? Se você pratica um segundo esporte: Qual esporte? Quantas horas por semana? Quantos meses por ano?	B1. Do you practice sports? Yes/No If yes: Which sport do you practice most frequently? How many hours a week? How many months a year? If you practice a second sport: Which sport is that? How many hours a week? How many months a year? B2. Do you practice any sports? Yes/No If yes: Which sport do you practice frequently? How many hours per week do you practice that sport? For how many months per year? If you practice another sport Which one? How many hours per week do you practice this other sport? For how many months per year?	9. Você pratica esporte? Sim/Não Se sim: Qual esporte você pratica mais frequentemente? Quantas horas por semana? Quantos meses por ano? Se você pratica um segundo esporte: Qual esporte? Quantas horas por semana? Quantos meses por ano?

Versão original	Traduções	Retrotraduções	Versão sintética
10. In comparison with others of my own age I think my physical activity during leisure time is: Much more/More/The same/Less/ Much less	T1. Em comparação com outras pessoas da minha idade, eu acho que minha atividade física durante os momentos de lazer é: Muito maior/Maior/Igual/Menor/Muito menor T2. Em comparação com outros da minha idade, eu acho que minha atividade física durante o tempo de lazer é Muito maior/Maior/A mesma/Menor/ Muito menor	B1. In comparison with other people my age, I think my physical activity during leisure moments is: A lot bigger/Bigger/The same/Smaller/ Much smaller B2. In comparison to other people in my age group, I believe that my physical activity during my free/leisure time is: Much greater/Greater/Same/Less/ Much less	10. Em comparação com outras pessoas da minha idade, eu acho que minha atividade física durante os momentos de lazer é: Muito maior/Maior/Igual/Menor/Muito menor
11. During leisure time I sweat: Very often/Often/Sometimes/Seldom/ Never	T1. Durante os momentos de lazer, eu sudo: Muito frequentemente/Frequentemente/ Às vezes/Poucas vezes/Nunca T2. Durante o tempo de lazer eu sudo: Muito frequentemente/Frequentemente/ Algumas vezes/Raramente/Nunca	B1. During moments of leisure, I sweat: Very frequently/Frequently/ Sometimes/A few times/Never B2. In my free time, I sweat: Very Frequently/Frequently/ Occasionally/Rarely/Never	11. Durante os momentos de lazer, eu sudo: Muito frequentemente/Frequentemente/ Às vezes/Raramente/Nunca
12. During leisure time I play sport: Never/Seldom/Sometimes/Often/Very often	T1. Durante os momentos de lazer, eu pratico esportes: Nunca/Poucas vezes/Às vezes/ Frequentemente/Muito frequentemente T2. Durante o tempo de lazer eu pratico esporte: Muito frequentemente/Frequentemente/ Algumas vezes/Raramente/Nunca	B1. During moments of leisure, I practice sports: Very frequently/Frequently/ Sometimes/A few times/Never B2. In my free time, I practice sports: Never/Rarely/Occasionally/Frequently/ Always	12. Durante os momentos de lazer, eu pratico esportes: Nunca/Raramente/Às vezes/ Frequentemente/Muito frequentemente
13. During leisure time I watch television: Never/Seldom/Sometimes/Often/Very often	T1. Durante os momentos de lazer, eu assisto à televisão: Nunca/Poucas vezes/Às vezes/ Frequentemente/Muito frequentemente T2. Durante o tempo de lazer eu assisto à televisão: Muito frequentemente/Frequentemente/ Algumas vezes/Raramente/Nunca	B1. During moments of leisure, I watch television: Very frequently/Frequently/ Sometimes/A few times/Never B2. In my free time, I watch television: Never/Rarely/Occasionally/Frequently/ Always	13. Durante os momentos de lazer, eu assisto à televisão: Nunca/Raramente/Às vezes/ Frequentemente/Muito frequentemente
14. During leisure time I walk: Never/Seldom/Sometimes/Often/Very often	T1. Durante os momentos de lazer, eu caminho: Nunca/Poucas vezes/Às vezes/ Frequentemente/Muito frequentemente T2. Durante o tempo de lazer eu ando: Muito frequentemente/Frequentemente/ Algumas vezes/Raramente/Nunca	B1. During moments of leisure, I walk: Very frequently/Frequently/ Sometimes/A few times/Never B2. In my free time, I take walks: Never/Rarely/Occasionally/Frequently/ Always	14. Durante os momentos de lazer, eu ando: Nunca/Raramente/Às vezes/ Frequentemente/Muito frequentemente
15. During leisure time I cycle: Never/Seldom/Sometimes/Often/Very often	T1. Durante os momentos de lazer, eu ando de bicicleta: Nunca/Poucas vezes/Às vezes/ Frequentemente/Muito frequentemente T2. Durante o tempo de lazer eu pedalo: Muito frequentemente/Frequentemente/ Algumas vezes/Raramente/Nunca	B1. During moments of leisure, I ride a bicycle: Very frequently/Frequently/ Sometimes/A few times/Never B2. In my free time, I cycle: Never/Rarely/Occasionally/Frequently/ Always	15. Durante os momentos de lazer, eu ando de bicicleta: Nunca/Raramente/Às vezes/ Frequentemente/Muito frequentemente
16. How many minutes do you walk and/or cycle per day to and from work, school and shopping?	T1. Quantos minutos você caminha ou anda de bicicleta por dia para ir ou voltar do trabalho, escola, shopping? T2. Quantos minutos você anda e/ou pedala por dia em direção ou vindo do trabalho, escola e shopping?	B1. How many minutes do you walk or ride a bicycle to or from work, school, the mall? B2. How many minutes do you walk/cycle per day going to or coming from work, school and other daily activities?	16. Quantos minutos você caminha e/ou anda de bicicleta por dia para ir ou voltar do trabalho, escola e shopping?

is quite unusual, specially for the less instructed populations, and was transformed into “andar de bicicleta” (“ride a bicycle”), without compromising the original sense. Item 16 also presented only minor differences and the synthetic version consisted of a mixing of the two translations.

In the pilot testing of the questionnaire with the subjects from our sample, the purpose was to test the comprehension and eventually modify any term or sentence that might be difficult to be understood, and to verify the possibility to use the questionnaire in a larger range of individuals, with different cultural and educational backgrounds. The sample used in this study was composed by 11 males and 19 females, with ages ranging from 20 to 76 years. Descriptive statistics and frequencies of this sample are presented in table 2.

Table 2. Demographic characteristics of the sample from the pilot study

	Males	Females	Total
Elementary school	3	8	11
High school	4	9	13
University	4	2	6
Total	11	19	30
Age			
Min	28	20	20
Max	63	76	76
Average	44.25	50.72	48.13
Standard deviation	11.73	18.15	15.99

Only one female subject from the less educated group faced problems in filling in the questionnaire. As this study had a small number of subjects in the sample, this can be considered a high percentage (9%) of difficulties found in the elementary school group. In this sense, further studies should be addressed to determine the adequacy of using this instrument in this population. In all cases, we recommend that less instructed subjects be supervised while responding the questionnaire to avoid biases caused by comprehension issues. All other subjects from all groups reported no problems with the items, although valorous suggestions were made to improve the quality of the phrasing.

Items 8 and 10 caused confusion in some of the less educated subjects because of the excess of information to that they should be comparing their behavior (other people, work/leisure, and the intensity of the physical activity). To meet this difficulties, those items were adjusted and in the final form of the questionnaire are presented as: Item 8 – “Em comparação com o trabalho de outras pessoas da minha idade, o meu trabalho é fisicamente”, e Item 10 – “Em comparação com outras pessoas da minha idade, minha atividade física durante os momentos de lazer é?”.

In item 9, participants suggested that “sports” should be substituted by “physical exercise”, in order to include other kinds of exercise, such as jogging, weight lifting or gymnastics that in Portuguese are not referred as sports. This change was also made for item 12, with the same purpose.

Discussion

A meticulous evaluation of the equivalence between an original instrument and its adapted version is necessary before applying instruments developed for one cultural context in another due to the cultural differences in definitions, beliefs and behaviors among many populations. This cross-cultural adaptation emphasized the semantic equivalence rather than the literally equivalence of the terms with the purpose to express concepts of the new population¹⁶⁻¹⁸.

Using two translators was considered helpful, since the two versions could be confronted and discussed in the elaboration of the synthetic version. It allowed that when discrepancies were identified, they could be discussed extensively and solutions would be created. Although the translators were “blind” and independent, their expertise in the field and familiarity with the constructs was thought to be helpful through the process of semantic equivalence.

The use of subjects with different educational backgrounds provided us the possibility to discuss the viability of the application of the instrument in all educational levels of the Brazilian population. A limitation that can be pointed in this study is the small number of subjects (n = 30) composing the sample in the pilot test. This was attenuated by using people from different educational degrees and ages. This pre-test provided useful suggestions, some of which were incorporated to the final version of the instrument. It was also clear that most participants understood the situations described in the questionnaire.

A common remark referred to the validity of the questionnaire for individuals that don't work. The authors find this comment very interesting, as a large part of the population does not work but might be quite physically active, such as students, women who don't work but perform house-work and others. As items referring to work are one of the three dimensions of the instrument and transforming the structure of the items could deeply alter the metric structure of the questionnaire, the solution yield by the authors is to verbally instruct the subjects who don't have work as main occupation to respond to the items concerning work bearing in mind the main occupation.

A large number of participants pointed the shifts in the order of appearance of the options of the answers. This is an important psychometric strategy to avoid biases in the filling of the questionnaire and it was probably designed this way to avoid those biases. However, when using this measure with cognitive impaired or low

educated patients it is important to drive the participant attention to these changes.

Finally, for an adequate use of the instrument, it must present good reliability and validity, besides good sensibility and specification¹⁸. Although it is an important step in the validation process of a questionnaire, the cross cultural adaptation and semantic equivalence are only the first stage. The final presentation of the HPAQ (Attachment 1) must now have its factorial structure and internal consistency tested and convergent and divergent validity assessed by future studies.

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Attachment 1. Habitual Physical Activity Questionnaire final Brazilian version

- 1) Qual a sua ocupação principal? _____
- 2) No trabalho, eu fico sentado:
 Nunca Raramente Às vezes Frequentemente Sempre
- 3) No trabalho, eu fico em pé:
 Nunca Raramente Às vezes Frequentemente Sempre
- 4) No trabalho, eu ando:
 Nunca Raramente Às vezes Frequentemente Sempre
- 5) No trabalho, eu levanto objetos pesados:
 Nunca Raramente Às vezes Frequentemente Sempre Muito frequentemente
- 6) Depois do trabalho, eu me sinto cansado:
 Muito frequentemente Frequentemente Às vezes Raramente Nunca
- 7) No trabalho, eu suo:
 Muito frequentemente Frequentemente Às vezes Raramente Nunca
- 8) Em comparação com o trabalho de outras pessoas da minha idade, o meu trabalho é fisicamente:
 Muito mais pesado Mais pesado Iguamente pesado Mais leve Muito mais leve
- 9) Você pratica exercício físico? Sim Não
 Se sim:
 Qual exercício você pratica mais frequentemente? _____
 Quantas horas por semana você pratica este exercício? _____
 Quantos meses por ano? _____
 Se você pratica um segundo exercício físico:
 Qual exercício? _____
 Quantas horas por semana você pratica este exercício? _____
 Quantos meses por ano? _____
- 10) Em comparação com outras pessoas da minha idade, minha atividade física durante os momentos de lazer é:
 Muito maior Maior Igual Menor Muito menor
- 11) Durante os momentos de lazer, eu suo:
 Muito frequentemente Frequentemente Às vezes Raramente Nunca
- 12) Durante os momentos de lazer, eu pratico exercícios físicos:
 Nunca Raramente Às vezes Frequentemente Sempre
- 13) Durante os momentos de lazer, eu assisto à televisão:
 Nunca Raramente Às vezes Frequentemente Sempre
- 14) Durante os momentos de lazer, eu ando:
 Nunca Raramente Às vezes Frequentemente Sempre
- 15) Durante os momentos de lazer, eu ando de bicicleta:
 Nunca Raramente Às vezes Frequentemente Sempre Muito frequentemente
- 16) Quantos minutos você caminha e/ou anda de bicicleta por dia para ir ou voltar do trabalho, escola e shopping? _____

Attachment 2. Habitual Physical Activity Questionnaire: scoring sheet.

Item	Score
1	1----- 3 -----5*
2	1---2---3---4---5
3	1---2---3---4---5
4	1---2---3---4---5
5	1---2---3---4---5
6	5---4---3---2---1
7	5---4---3---2---1
8	5---4---3---2---1
9	19 (see below)**
10	5---4---3---2---1
11	5---4---3---2---1
12	1---2---3---4---5
13	1---2---3---4---5
14	1---2---3---4---5
15	1---2---3---4---5
16	1---2---3---4---5

CALCULATION OF THE SUBCALES

Work index: $(I_1 + (6 - I_2) + I_3 + I_4 + I_5 + I_6 + I_7 + I_8) / 8$ Sport index: $(I_9 + I_{10} + I_{11} + I_{12}) / 4$ Leisure time index: $[(6 - I_{13}) + I_{14} + I_{15} + I_{16}] / 4$ * **Item 1:** Score 1, 3 ou 5 will be attributed according to the intensity of the activity's physical demand.** **Item 9:** Each answer will be categorized and will receive a score. A corresponding number will be attributed in terms of intensity, time and proportion. The final score ranges from 1 to 5 and is the correspondent number attributed to the obtained from the sum of all sub-items, as shown bellow.Você pratica exercício físico? () Sim () Não **Score zero is given to people who don't play sport.**

Se sim:

Qual exercício você pratica mais frequentemente?

Quantas horas por semana? < 1 - 1/2 - 2/3 - 3/4 - > 4

Quantos meses por ano? < 1 - 1/3 - 4/6 - 7/9 - > 9

INTENSITY 0.76 ---- 1.26 ---- 1.76

TIME 0.5--1.5--2.5--3.5--4.5

PROPORTION 0.04--0.17--0.42--0.67--0.92

Se você pratica um segundo exercício físico:

Qual exercício?

Quantas horas por semana? < 1 - 1/2 - 2/3 - 3/4 - > 4

Quantos meses por ano? < 1 - 1/3 - 4/6 - 7/9 - > 9

INTENSITY 0.76 ---- 1.26 ---- 1.76

TIME 0.5--1.5--2.5--3.5--4.5

PROPORTION 0.04--0.17--0.42--0.67--0.92

Final Score Item 9 :

 $\Sigma (\text{intensity} \times \text{time} \times \text{proportion}) = (0)-(0.01-<4)-(4-<8)-(8-<12)-(\geq 12) \rightarrow 1---2---3---4---5$