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Translation into Brazilian Portuguese, cultural adaptation and evaluation of the reliability of the Disabilities of the Arm, Shoulder and Hand Questionnaire

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Abstract

The objective of the present study was to translate, adapt and validate a Brazilian Portuguese version of the Disabilities of the Arm, Shoulder and Hand (DASH) Questionnaire. The study was carried out in two steps. The first was to translate the DASH into Portuguese and to perform cultural adaptation and the second involved the determination of the reliability and validity of the DASH for the Brazilian population. For this purpose, 65 rheumatoid arthritis patients of either sex (according to the classification criteria of the American College of Rheumatology), ranging in age from 18 to 60 years and presenting no other diseases involving the upper limbs, were interviewed. The patients were selected consecutively at the rheumatology outpatient clinic of UNIFESP. The following results were obtained: in the first step (translation and cultural adaptation), all patients answered the questions. In the second step, Spearman's correlation coefficients for interobserver evaluation ranged from 0.762 to 0.995, values considered to be highly reliable. In addition, intraclass correlation coefficients ranged from 0.97 to 0.99, also highly reliable values. Spearman's correlation coefficients and the intraclass correlation coefficients obtained during intra-observer evaluation ranged from 0.731 to 0.937 and from 0.90 to 0.96, respectively, being highly reliable values. The Ritchie Index showed a weak correlation with Brazilian DASH scores, while the visual analog scale of pain showed a good correlation with DASH score. We conclude that the Portuguese version of the DASH is a reliable instrument.

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• Disability Questionnaire
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• Upper limb
• Validation
• Arm

Introduction

Several diseases interfere with the mobility of upper limb joints, including rheumatic, orthopedic and neurological disorders, amputations, and other alterations. In addition to interfering with good limb functioning, these diseases cause pain, muscle weakness, instability, and compensations (1). Rheumatoid arthritis (RA) is a systemic disease, especially involving articular, periarticular and tendon structures as a result of inflammation

of the synovial membrane. In this disease, upper limb involvement can lead to deformities disabling the articulations (2,3).

The Disabilities of the Arm, Shoulder and Hand (DASH) Questionnaire (4) was developed to measure physical disability and symptoms of the upper limbs in a heterogeneous population, i.e., men and women, and individuals with mild, moderate or severe disability and a wide variety of upper extremity disorders (5). The purpose of the DASH Questionnaire is to describe differences between groups of individuals in order to compare the impact of upper limb disorders and outcome measures. This instrument was developed to evaluate disability and symptoms in single or multiple disorders of the upper limbs (5).

The DASH Questionnaire contains 30 questions designed to measure physical function and symptoms, including two items related to physical function, six items related to symptoms, and three items that assess social functions. In addition, there are two modules of four optional items: one for athletes/musicians and another for workers (5). The importance of the DASH is that it is the only questionnaire assessing the upper limbs as a whole. The questionnaire score is calculated by applying established formulas, one of them used to analyze the first 30 questions and the other used separately for the optional modules.

The objective of the present study was to translate the DASH into Brazilian Portuguese, make a cultural adaptation and evaluate its reliability for Brazilian patients.

Patients and Methods

Translation and adaptation of the original English version of the DASH were performed according to the recommendations of Guillemin et al. (6,7) and Beaton et al. (8).

Translation and back translation

Three English teachers (one of them a native English speaker) independently translated the original questionnaire, producing three different Portuguese versions of the questionnaire. The three translations were then compared and a consensus version (V1) of this translation was agreed upon.

The consensus version was then independently translated into English (back translation) by three other English teachers who were unaware of the original questionnaire. At the end of this phase, a new consensus version, called V2, was obtained and compared with the original questionnaire to determine equivalence. This new English version (V2), when compared to the original version, showed semantic and grammatical equivalence.

Cultural equivalence

A meeting was then held with health care workers (a rheumatologist, a physiotherapist and an occupational therapist) to evaluate the final DASH version. In questions 18 and 19, which refer to recreational activities that require effort of or impact on arms, shoulders or hands and to activities during which the arm moves freely, respectively, the examples were changed because the cited sports are unknown to and thus inappropriate for Brazilian patients. In question 18, playing golf or tennis was replaced with playing volley ball or hammering. In question 19, playing Frisbee or "hitting" (baseball) was replaced with playing shuttlecock and fishing.

This Portuguese version of the DASH was applied by an interviewer to 25 RA patients selected consecutively at the rheumatology outpatient clinic of the Federal University of São Paulo (UNIFESP). All of the patients fulfilled at least the four classification criteria for RA (9,10). The mean age of this group (22 women and 3 men) was 48.25 years. All patients presented upper limb dysfunction.

All patients agreed to participate in the

study. The main proposal of this step of the study was to determine question understanding. All questions were analyzed and those not understood were recorded. If 20% or more of the patients did not understand an item, the question was modified and tested again.

Reliability and validity

After cultural equivalence was established, the questionnaire was applied by interviewers to a new group of 40 RA patients. The DASH was applied three times, with the first two applications being performed on the same day by two investigators (investigator 1 and investigator 2 - interobserver evaluation), and the third assessment 5 to 8 days after the first application performed by investigator 1 (intra-observer evaluation). This new group of patients with RA was selected by the same procedure as used for the first group and also presented upper limb dysfunction. The mean age of these patients (36 women and 4 men) was 50.70 years.

The validity of the DASH was tested by determining its relationship with other clinical parameters commonly used for the assessment of RA patients. Clinical outcome measures included a visual analog scale (VAS) of pain in the upper limb and the Ritchie Articular Index (11), which were obtained during questionnaire application.

Inter- and intraobserver reliabilities were determined using Spearman's correlation coefficient and the intraclass correlation coefficient (ICC).

Results

Appendix 1 shows the original DASH version in English and Appendix 2 shows the final version of the DASH in Portuguese.

Table 1 lists the clinical and demographic characteristics of the 65 RA patients included in the cultural adaptation phase of the Portuguese DASH version and in the questionnaire validation phase.

Spearman's correlation coefficient for interobserver assessment was 0.937 for DASH scores and 0.920 for the optional module, values considered to be statistically significant ($P < 0.01$) and, therefore, highly reliable. The ICC for interobserver reliabil-

Table 1. Clinical and demographic characteristics of the 65 patients with rheumatoid arthritis, 25 included during the phase of cultural adaptation of the Portuguese version of the Disabilities of the Arm, Shoulder and Hand (DASH) Questionnaire (phase I) and 40 during the phase of intra- and interobserver reliability assessment (phase II).

	Phase I (N = 25)	Phase II (N = 40)
Mean age (years)	48.25	50.7
Sex (female:male)	22:3	36:4
Duration of the disease (years)	13.63 (8.02)	11.39 (7.80)
Functional class		
Class I	3 (12%)	20 (30.8%)
Class II	12 (48%)	19 (29.2%)
Class III	10 (40%)	1 (1.5%)
DASH score[a]	36.77 (19.76)	27.28 (19.11)
DASH score for the optional working module[a]	47.13 (24.23)	36.51 (25.23)
DASH score[c]	–	24.49 (18.52)
DASH score for the optional working module[c]	–	34.04 (23.59)
DASH score[b]		27.67 (19.00)
DASH score for the optional working module[b]	–	36.01 (24.07)
Time (min) of application of the DASH	16.5	16.5

Data are reported as means (SD). [a]Initial assessment. [b]Assessment performed on the same day as the initial assessment by a different examiner. [c]Assessment performed after 5 to 8 days by the same initial examiner.

Table 2. Inter- and intra-observer reliability determined by Spearman's correlation coefficient and the intraclass correlation coefficient, showing the mean Disabilities of the Arm, Shoulder and Hand (DASH) scores obtained by two observers and for the assessment performed one week later in 40 patients with rheumatoid arthritis.

	Mean (SD)			Coefficients			
	Obs 1	Obs 2	Obs 3	SCC 1 x 2	ICC 1 x 2	SCC 1 x 3	ICC 1 x 3
DASH	27.28 (19.11)	27.67 (19.00)	26.49 (18.52)	0.995*	0.99*	0.937*	0.96*
DASH optional module	36.51 (25.23)	36.01 (24.07)	34.04 (23.59)	0.939*	0.97*	0.920*	0.95*

Data are reported as means ± SD. Obs 1 = initial assessment; Obs 2 = assessment performed on the same day as the initial assessment by a different interviewer; Obs 3 = assessment performed after 5 to 8 days by the same initial interviewer. SCC = Spearman's correlation coefficient; ICC = intraclass correlation coefficient.
*$P < 0.01$.

ity was 0.99 for DASH scores and 0.97 for optional module correlations ($P < 0.01$).

In intra-observer assessment, Spearman's correlation coefficient was 0.99 for DASH scores and 0.95 for optional module correlations, also statistically significant ($P < 0.01$) and thus reliable values. The ICC for intra-observer reliability was also significant ($P < 0.01$), being 0.90 for DASH scores and 0.96 for optional module correlations. Table 2 shows the mean (± SD) for total DASH scores and the optional module, as well as Spearman's coefficient and the ICC.

Spearman's correlation coefficient between DASH and the optional DASH module was 0.797 ($P < 0.01$). The correlation between DASH and VAS was 0.617 ($P < 0.01$) and the DASH correlation with Ritchie was 0.393 ($P < 0.05$). All of the values encountered were significant but DASH correlation with the VAS was stronger than with the Ritchie Index, respectively showing values of 0.468 and 0.495 ($P < 0.01$).

Discussion

This is the first study applying the DASH to RA patients; all previous studies of this type were performed on other diseases. Navsarikar et al. (12) studied patients with psoriatic arthritis, Rosales et al. (13) patients with carpal tunnel syndrome, and Offenbaecher et al. (14) investigated patients with shoulder pain, which can be the result of nonspecific rheumatic conditions. Dubert et al. (15) assessed patients with traumatic diseases and disorders affecting the soft tissues of the upper limb. The importance of the results obtained with the application of the DASH to RA becomes evident when considering the frequency of the disease and involvement of the upper limbs, since RA is a systemic disease that affects all joints, but particularly those of the upper limbs ranging from the shoulder joints to the minor joints of the hand. In addition, there is a paucity of quality instruments for assessing the upper limbs as a whole.

After translation, the DASH was found to be close to the Brazilian reality since only the examples in two questions needed to be modified in the Portuguese version to adapt the instrument to the Brazilian population. The first modification was related to the example in question 18, in which playing tennis or golf was replaced with playing volley ball or hammering, since in Brazil few individuals know how to play tennis and golf is not a popularly practiced sport. Similarly, in question 19 playing Frisbee or "hitting" (baseball) was replaced with fishing or playing shuttlecock. In Brazil baseball is a rare sport and playing Frisbee is little practiced. It is important to note that these modifications did not alter the context of the question, which remained "recreational activities that require effort of or impact on the arms, shoulders or hands" and "recreational activities during which the arm is moved freely", respectively. The study by Rosales et al. (13), in which the DASH was translated into Spanish, also made changes in questions 18 and 19. In question 18, although the examples of practicing golf and tennis were maintained, hammering and playing shuttlecock were added. However, in question 19 the example given was swimming, recalling that this question refers to free movement of the arm.

In the present study, the DASH Questionnaire was applied by interviewers since in Brazil most patients are not used to or do not have sufficient schooling to respond to self-administered questionnaires. Thus, application of the DASH by interviewers was aimed at increasing the population to which the questionnaire could be applied, sidestepping a low level of education, as has also been done with other questionnaires (16-19).

Navsarikar et al. (12), studying patients with psoriatic arthritis, found a mean score of 27.5 (SD = 24.6). Jain et al. (20), in a study on patients with upper limb disabilities, reported DASH scores ranging from 21 to 99,

with scores ranging from 21 to 40 in 4 participants, from 41 to 60 in 9, from 61 to 80 in 8, and from 81 to 99 in 22 individuals, with the last result being highest in comparison to other studies. By way of contrast, Beaton et al. (21), in a study involving diseases affecting the wrist, hands and shoulders, observed DASH scores similar to those reported in the studies cited earlier, with a mean score of 43.9. It is important to note that the higher the score, the poorer the condition of the patient.

In the present study, the mean duration of the disease was 13.63 years (range, 1 to 31 years). Although studying a different disease, Navsarikar et al. (12) reported a similar duration (13.11 years) for patients with psoriatic arthritis.

In the assessment of intra- and interobserver reliability, Spearman's correlation coefficient and the ICC showed highly satisfactory correlations for the DASH scores and the optional DASH module. Analysis revealed a significant correlation between the DASH and the VAS of pain in the upper limbs. However, the Ritchie Index correlation was significant but weak, probably because not only upper but also lower limb joints were inflamed in these patients, whereas the questionnaire only refers to the upper limbs. Similarly, Navsarikar et al. (12) also reported a high correlation between the DASH and inflamed joints of the upper limbs, while comparison with the total number of inflamed joints showed no correlation.

Mean DASH scores obtained during intra-observer evaluation were 27.28 (SD = 19.11) and 26.49 (SD = 18.52) for the first and second assessment, respectively, with a Spearman's coefficient of 0.937. Performing two assessments, Rosales et al. (13) obtained Person's correlation coefficients ranging from 0.85 to 0.97. In contrast, during interobserver reliability evaluation, mean scores of 27.28 (SD = 19.11) and 27.67 (SD = 19.00) were obtained for the first and second assessment, respectively, with a mean Spearman's coefficient of 0.995.

Rosales et al. (13) reported a high level of equivalence for the Spanish version of the DASH. Dubert et al. (15) stated that the DASH is an objective measure which provides specific scores that help in the comparison of different treatment specialties. Navsarikar et al. (12) concluded that the DASH can be used in clinical studies since it reflects disease activity and articular debilitation; however, it does not reflect deformities or disabilities adapted to during the disease process. We also found that the DASH is unable to detect deformities when the patient is already adapted to his/her new condition. However, the important fact is not how the activity was performed but that it was performed since the DASH score indicates difficulty or disability in task performance, in agreement with other investigators. Probably due to this "failure", true instead of apparent difficulties are detected. If deformities do not interfere with the execution of activities, they will not affect the DASH score.

The practical sports/music module of the DASH might generate bias since some patients do not show difficulty playing a musical instrument but have difficulty practicing sports, especially when the sport involves effort or impact. This module should be applied in studies in which the whole sample population performs the same activity; otherwise it should be optional, i.e., the module should only be applied to patients who perform the same type of sport or play the same instrument. However, further studies on this module are required.

The Brazilian Portuguese version of the DASH was found to be a reliable and valid instrument for upper limb assessment in Brazilian patients and its scores correlated strongly with the VAS of pain and weakly with the Ritchie Index.

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Appendix 1. Original DASH.

Instructions

This questionnaire is about your symptoms as well as your ability to perform some activities.
Please answer all the questions based on your condition last week by circling the appropriate number.
If you didn't have the opportunity to perform some of the activities last week, please try to estimate which answer would be the most correct.
It doesn't matter which arm or hand you use to perform the activity; please answer based on your ability despite the way you perform the task.

Rate your ability of doing the following activities last week by circling the corresponding number:					
	Not difficult	A little difficult	Average difficulty	Very difficult	Unable
1. Open a tight jar	1	2	3	4	5
2. Write	1	2	3	4	5
3. Turn a key	1	2	3	4	5
4. Cook a meal	1	2	3	4	5
5. Push open a heavy door	1	2	3	4	5
6. Place an object on a shelf above your head	1	2	3	4	5
7. Do heavy housework (wash walls, wash floor)	1	2	3	4	5
8. Gardening	1	2	3	4	5
9. Make the bed	1	2	3	4	5
10. Carry a heavy bag or a suitcase	1	2	3	4	5
11. Carry a heavy object (more than 5 kg)	1	2	3	4	5
12. Change a light bulb above your head	1	2	3	4	5
13. Wash or dry your hair	1	2	3	4	5
14. Wash your back	1	2	3	4	5
15. Put on a sweater	1	2	3	4	5
16. Use a knife to cut food	1	2	3	4	5
17. Recreational activities (play cards, knit)	1	2	3	4	5
18. Recreational activities, which cause impact in your arms, shoulders and hands (play volleyball, hammering)	1	2	3	4	5
19. Recreational activities in which you move your arm freely (fishing, badminton)	1	2	3	4	5
20. Handle transportation needs	1	2	3	4	5
21. Sexual activities	1	2	3	4	5
	Nothing	A little	Average	A lot	Extremely
22. Last week, how much has your problem affected your regular activities with family, friends, neighbors or groups?	1	2	3	4	5
	No	A little	Average	A lot	Unable
23. During last week, was your work or regular activities limited because of your problem?	1	2	3	4	5
Rate the severity of the following symptoms last week:	None	A little	Average	A lot	Extreme
24. Pain in the arm, shoulder or hand	1	2	3	4	5
25. Pain in the arm, shoulder or hand while doing specific activities	1	2	3	4	5
26. Pins and needles in your arm, shoulder or hand	1	2	3	4	5
27. Weakness in the arm, shoulder or hand	1	2	3	4	5
28. Difficulty in moving the arm, shoulder or hand	1	2	3	4	5
	Not difficult	Not very difficult	Average difficulty	Very difficult	So difficult that I couldn't sleep
29. During last week, how difficult was it for you to sleep because of the pain in your arm, shoulder or hand?	1	2	3	4	5

	Totally disagree	Disagree	Neither agree or disagree	Agree	Totally agree
30. I feel less capable, confident and useful because of my problem	1	2	3	4	5

The following questions are about the impact of your arm, shoulder or hand problem while playing a sport, musical instrument or both.
If you play more than one sport, musical instrument or both, please answer about the most important for you.
Please indicate the sport or musical instrument, which is the most important for you: _____
☐ I don't play sports or musical instruments (you can skip this part).

Please circle the number that best describes your physical ability last week. Did you have any difficulty to:	Not difficult	A little difficult	Average difficulty	Very difficult	Not capable
1. Use the usual technique to play the musical instrument or sport?	1	2	3	4	5
2. Play the musical instrument or sport because of the pain in your arm, shoulder or hand?	1	2	3	4	5
3. Play the musical instrument or sport as well as you would like to?	1	2	3	4	5
4. Spend the same amount of time playing the musical instrument or sport?	1	2	3	4	5

The following questions are about the impact of your arm, shoulder or hand problem in your ability to work (including housework if that's your main work).
Please indicate what your work is: _____
☐ I don't work (you can skip this part).

Please circle the number that best describes your physical ability last week. Did you have any difficulty to:	Not difficult	A little difficult	Average difficulty	Very difficult	Not capable
1. Use your usual technique to work?	1	2	3	4	5
2. Perform your work because of the pain in your arm, shoulder or hand?	1	2	3	4	5
3. Perform your work as well as you would like to?	1	2	3	4	5
4. Spend the same amount of time performing your work?	1	2	3	4	5

Calculation scores

Disability/symptom score: (Raw score - 30)/1.2
Optional module: (Raw score - 4)/0.16

Appendix 2. Brazilian DASH.

Instruções

Esse questionário é sobre seus sintomas, assim como suas habilidades para fazer certas atividades.
Por favor, responda a todas as questões baseando-se na sua condição na semana passada.
Se você não teve a oportunidade de fazer uma das atividades na semana passada, por favor, tente estimar qual resposta seria a mais correta.
Não importa qual mão ou braço você usa para fazer a atividade; por favor, responda baseando-se na sua habilidade independentemente da forma como você faz a tarefa.

Meça a sua habilidade em fazer as seguintes atividades na semana passada circulando a resposta apropriada abaixo:

	Não houve dificuldade	Houve pouca dificuldade	Houve dificuldade média	Houve muita dificuldade	Não conseguiu fazer
1. Abrir um vidro novo ou com a tampa muito apertada	1	2	3	4	5
2. Escrever	1	2	3	4	5
3. Virar uma chave	1	2	3	4	5
4. Preparar uma refeição	1	2	3	4	5
5. Abrir uma porta pesada	1	2	3	4	5
6. Colocar algo em uma prateleira acima de sua cabeça	1	2	3	4	5
7. Fazer tarefas domésticas pesadas (por exemplo: lavar paredes, lavar o chão)	1	2	3	4	5
8. Fazer trabalho de jardinagem	1	2	3	4	5
9. Arrumar a cama	1	2	3	4	5
10. Carregar uma sacola ou uma maleta	1	2	3	4	5
11. Carregar um objeto pesado (mais de 5 kg)	1	2	3	4	5
12. Trocar uma lâmpada acima da cabeça	1	2	3	4	5
13. Lavar ou secar o cabelo	1	2	3	4	5
14. Lavar suas costas	1	2	3	4	5
15. Vestir uma blusa fechada	1	2	3	4	5
16. Usar uma faca para cortar alimentos	1	2	3	4	5
17. Atividades recreativas que exigem pouco esforço (por exemplo: jogar cartas, tricotar)	1	2	3	4	5
18. Atividades recreativas que exigem força ou impacto nos braços, ombros ou mãos (por exemplo: jogar vôlei, martelar)	1	2	3	4	5
19. Atividades recreativas nas quais você move seu braço livremente (como pescar, jogar peteca)	1	2	3	4	5
20. Transportar-se de um lugar a outro (ir de um lugar a outro)	1	2	3	4	5
21. Atividades sexuais	1	2	3	4	5

	Não afetou	Afetou pouco	Afetou medianamente	Afetou muito	Afetou extremamente
22. Na semana passada, em que ponto o seu problema com braço, ombro ou mão afetou suas atividades normais com família, amigos, vizinhos ou colegas?	1	2	3	4	5

	Não limitou	Limitou pouco	Limitou medianamente	Limitou muito	Não conseguiu fazer
23. Durante a semana passada, o seu trabalho ou atividades diárias normais foram limitadas devido ao seu problema com braço, ombro ou mão?	1	2	3	4	5

Meça a gravidade dos seguintes sintomas na semana passada:	Nenhuma	Pouca	Mediana	Muita	Extrema
24. Dor no braço, ombro ou mão	1	2	3	4	5
25. Dor no braço, ombro ou mão quando você fazia atividades específicas	1	2	3	4	5
26. Desconforto na pele (alfinetadas) no braço, ombro ou mão	1	2	3	4	5

27. Fraqueza no braço, ombro ou mão	1	2	3	4	5
28. Dificuldade em mover braço, ombro ou mão	1	2	3	4	5

	Não houve dificuldade	Pouca dificuldade	Média dificuldade	Muita dificuldade	Tão difícil que você não pôde dormir
29. Durante a semana passada, qual a dificuldade que você teve para dormir por causa da dor no seu braço, ombro ou mão?	1	2	3	4	5

	Discordo totalmente	Discordo	Não concordo nem discordo	Concordo	Concordo totalmente
30. Eu me sinto menos capaz, menos confiante e menos útil por causa do meu problema com braço, ombro ou mão	1	2	3	4	5

As questões que se seguem são a respeito do impacto causado no braço, ombro ou mão quando você toca um instrumento musical, pratica esporte ou ambos.
Se você toca mais de um instrumento, pratica mais de um esporte ou ambos, por favor, responda com relação ao que é mais importante para você.
Por favor, indique o esporte ou instrumento que é mais importante para você: _____
☐ Eu não toco instrumentos ou pratico esportes (você pode pular essa parte)

Por favor circule o número que melhor descreve sua habilidade física na semana passada. Você teve alguma dificuldade para:	Fácil	Pouco difícil	Dificuldade média	Muito difícil	Não conseguiu fazer
1. Uso de sua técnica habitual para tocar instrumento ou praticar esporte?	1	2	3	4	5
2. Tocar o instrumento ou praticar o esporte por causa de dor no braço, ombro ou mão?	1	2	3	4	5
3. Tocar seu instrumento ou praticar o esporte tão bem quanto você gostaria?	1	2	3	4	5
4. Usar a mesma quantidade de tempo tocando seu instrumento ou praticando o esporte?	1	2	3	4	5

As questões seguintes são sobre o impacto do seu problema no braço, ombro ou mão em sua habilidade em trabalhar (incluindo tarefas domésticas se este é seu principal trabalho).
Por favor, indique qual é o seu trabalho: _____
☐ Eu não trabalho (você pode pular essa parte)

Por favor, circule o número que melhor descreve sua habilidade física na semana passada. Você teve alguma dificuldade para:	Fácil	Pouco difícil	Dificuldade média	Muito difícil	Não conseguiu fazer
1. Uso de sua técnica habitual para seu trabalho?	1	2	3	4	5
2. Fazer seu trabalho usual por causa de dor em seu braço, ombro ou mão?	1	2	3	4	5
3. Fazer seu trabalho tão bem quanto você gostaria?	1	2	3	4	5
4. Usar a mesma quantidade de tempo fazendo seu trabalho?	1	2	3	4	5

Cálculo do escore do DASH

Para se calcular o escore das 30 primeiras questões, deverá ser utilizada a seguinte fórmula:
(Soma dos valores das 30 primeiras questões - 30)/1,2

Para o cálculo dos escores dos módulos opcionais, estes deverão ser calculados separadamente, utilizando a seguinte fórmula:
(Soma dos valores - 4)/0,16