

# Örebro Questionnaire: short and long forms of the Brazilian-Portuguese version

Felipe Ribeiro Cabral Fagundes<sup>1</sup> · Leonardo Oliveira Pena Costa<sup>1,2</sup> ·  
Fernanda Ferreira Fuhro<sup>1</sup> · Ana Carolina Tacollini Manzoni<sup>1</sup> ·  
Naiane Teixeira Bastos de Oliveira<sup>1</sup> · Cristina Maria Nunes Cabral<sup>1</sup>

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## Abstract

**Purpose** To translate, cross-culturally adapt and test the measurement properties of the Örebro Musculoskeletal Pain Screening Questionnaire (ÖMPSQ) short and long versions in Brazilian-Portuguese.

**Methods** The ÖMPSQ versions were translated, cross-culturally adapted and pretested in 30 patients with acute and subacute non-specific low back pain. Internal consistency, reproducibility (reliability and agreement), construct validity, and ceiling and floor effects were tested in 100 patients. Construct validity was assessed using the Roland-Morris Disability Questionnaire (RMDQ), the Tampa Scale for Kinesiophobia (TSK), and the Pain Numerical Rating Scale.

**Results** Internal consistency was adequate (ÖMPSQ: Cronbach's alpha = 0.83; ÖMPSQ-short: Cronbach's alpha = 0.72). Reliability was substantial (ÖMPSQ: ICC<sub>2,1</sub> 0.76; ÖMPSQ-short: 0.78). Standard error of measurement was very good for the ÖMPSQ (5 %) and good for the ÖMPSQ-short (6.7 %); limits of agreement were 13.07 for the ÖMPSQ and 1.37 for the ÖMPSQ-short; and the minimum detectable change was 25.12 for the ÖMPSQ and 15.51 for the ÖMPSQ-short. The ÖMPSQ total score showed a good correlation with the RMDQ ( $r = 0.73$ ) and the TSK ( $r = 0.64$ ) and a moderate correlation with pain intensity (current pain:  $r = 0.36$ ; last 2 weeks:  $r = 0.37$ ;

last episode:  $r = 0.46$ ). Moreover, ÖMPSQ-short showed a good correlation with RMDQ ( $r = 0.69$ ) and a moderate correlation with TSK ( $r = 0.57$ ) and pain (current pain:  $r = 0.34$ ; last 2 weeks:  $r = 0.36$ ; last episode:  $r = 0.54$ ). No ceiling or floor effects were detected in both versions. **Conclusion** The Brazilian-Portuguese ÖMPSQ and ÖMPSQ-short showed acceptable measurement properties and provide evidence that the Brazilian-Portuguese versions of ÖMPSQ and ÖMPSQ-short are similar to the original versions.

**Keywords** Low back pain · Screening · Questionnaire · Validation · Prognosis · Yellow flags

## Introduction

Low back pain (LBP) is a common condition in clinical practice and a significant public health problem [1, 2]. Early identification of patients at risk of developing chronic pain and disability is considered a research priority [3]. The transition from acute to chronic LBP is associated with predictive factors of persistent disability [4]. These factors include psychosocial factors (also known as yellow flags), which are associated with the risk of chronicity. The assessment of yellow flags in patients with LBP plays an important role and should be performed with specific instruments [4–6].

The Örebro Musculoskeletal Pain Screening Questionnaire (ÖMPSQ) [7] aims to identify the risk of developing chronic pain and disability associated with psychosocial factors in patients with acute and subacute non-specific LBP. The ÖMPSQ has been translated and cross-culturally adapted into Norwegian [8], French [9], Dutch [10] and Mandarin [11]. Recently, the short version of the ÖMPSQ, known as ÖMPSQ-short, was published [12]. The

✉ Felipe Ribeiro Cabral Fagundes  
felipercafagundes@gmail.com

<sup>1</sup> Master's and Doctoral Programs in Physical Therapy, Universidade Cidade de São Paulo, Rua Cesário Galeno 448/475, Tatuapé, São Paulo, SP CEP 03071-000, Brazil

<sup>2</sup> Musculoskeletal Division, The George Institute for Global Health, Sydney, Australia

ÖMPSQ-short has not been translated so far to any language different than English.

The majority of assessment questionnaires for patients with LBP have been developed in English [13, 14]. To be used in other languages and populations, it is important that the instrument be adequately translated and cross-culturally adapted [15]. The objectives of this study were to translate and cross-culturally adapt the ÖMPSQ and ÖMPSQ-short into Brazilian-Portuguese and to test the measurement properties of the Brazilian-Portuguese versions with acute or subacute LBP patients.

## Methods

### Participants and procedures

One hundred and thirty patients seeking for physical therapy treatment were included in this study between January and April 2013 in physical therapy clinics in the cities of Sao Paulo and Taubate, Brazil. We included patients with acute or subacute non-specific LBP (<3 months of duration) [16] and older than 18 years. We excluded patients with previous spinal surgery, serious spinal pathologies, diseases associated with cognitive impairment or pregnancy. This study was approved by the Research Ethics Committee, and all participants signed an informed consent form.

### Örebro Musculoskeletal Pain Screening Questionnaire (ÖMPSQ)

The ÖMPSQ is a screening questionnaire that identifies patients at risk of worse prognosis related to psychosocial factors [7]. It contains 25 items divided into five factors: pain, function, fear avoidance, psychological variables and questions related to demographics, environment and work-related factors. Questions 1–4 involve demographic data and are not scored. Questions 5–21 are scored on a numerical rating scale ranging from 0 to 10, except for the questions related to location of pain, leave from work and duration of pain, which are rated by ordinal scales. All points are added to determine the final score that ranges from 2 to 210 points. The higher the score, the greater the risk. Patients can be classified into three groups based upon the risk of chronic pain and disability associated with psychosocial factors: low risk (<90 points), medium risk (91–150 points) and high risk (>150 points) [7, 17].

The ÖMPSQ-short is a derivative questionnaire of the original version that assesses the same factors in a quick and simple way [12]. It contains 10 items and all questions are answered on a numerical rating scale ranging from 0 to 10, except for question 1, which ranges from 1 to 10. The

total score is calculated by adding the points of all questions and ranges from 1 to 100 points. Patients scoring between 1 and 50 points are considered as having low risk and those with 51–100 points are classified as having a high risk of long-term disability and taking up to 14 days of sick leave in the next 6 months [12].

### Translation and cross-cultural adaptation

The process of translation and cross-cultural adaptation followed the recommendations of the guidelines [15]. Two independent translators, both Brazilian-Portuguese speakers, translated the instrument from English to Brazilian-Portuguese. A meeting was held with the two translators and the authors to synthesize the translations. Based on this version, two new translators back translated the Brazilian-Portuguese version of the ÖMPSQ into English. In order to verify equivalence and produce the final version of the ÖMPSQ and ÖMPSQ-short, an expert committee review was composed including authors and translators. The pre-final version was tested in 30 participants. After that, the participants were interviewed on the meaning of each item of the questionnaire and the difficulties to completing the items. All the questions were considered easy to understand and did not report difficulty filling in the questionnaire.

### Testing of measurement properties

This stage included 100 participants interviewed by the researcher at baseline and reassessed 3–7 days later by telephone. Additionally, the participants answered the translated version of the ÖMPSQ, ÖMPSQ-short and the Brazilian-Portuguese versions of the Roland-Morris Disability Questionnaire (RMDQ) [18], the Pain Numerical Rating Scale (PNRS) [19], and the Tampa Scale for Kinesiophobia (TSK) [20].

### Statistical analysis

Internal consistency was calculated using Cronbach's alpha if an item was deleted. Values were considered adequate when  $\geq 0.70$  and  $< 0.95$  [21]. Reliability (relative measurement error) was calculated using intraclass correlation coefficient ( $ICC_{2,1}$ ) and its respective 95 % confidence intervals (CI). ICC values were classified as poor ( $< 0.40$ ), moderate (0.40–0.75), substantial (0.75–0.90) and excellent ( $> 0.90$ ) [21]. Agreement was analyzed using the standard error of the measurement (SEM) [22]. The percentage of SEM with the total score of each instrument is interpreted as:  $\leq 5$  % very good;  $> 5$  and  $\leq 10$  % good;  $> 10$  and  $\leq 20$  % doubtful; and  $> 20$  % negative [21]. The minimum detectable change (MDC) was calculated using the formula  $MDC = 1.645 \times \sqrt{2} \times EPM$ , which reflects

**Table 1** Characteristics of the study participants

Variable	Translation sample ( <i>n</i> = 30)	Testing sample ( <i>n</i> = 100)
Age (y), mean (SD)	52.1 (12.8)	52.8 (14.9)
Height (cm), mean (SD)	163.8 (9.4)	160.3 (7.6)
Weight (kg), mean (SD)	74.6 (14.0)	71.4 (12.2)
Gender		
Male, <i>n</i> (%)	11 (36.7)	14 (14)
Female, <i>n</i> (%)	19 (63.3)	86 (86)
Duration of pain (weeks), median (IQ)	9.0 (10.0)	8.0 (10.0)
Time off work <sup>a</sup> (weeks), mean (SD)	7.9 (14.5)	5.9 (19.3)
Pain intensity—last episode (0–10), mean (SD)	7.0 (2.2)	8.3 (1.5)
Pain intensity—last 2 weeks (0–10), mean (SD)	5.9 (2.3)	6.6 (2.4)
Pain intensity—current (0–10), mean (SD)	5.0 (2.4)	5.1 (3.2)
Leg pain		
Yes, <i>n</i> (%)	23 (76.7)	72 (72)
No, <i>n</i> (%)	7 (23.3)	28 (28)
Tampa Scale of Kinesiophobia (17–68), mean (SD)	47.9 (9.2)	46.4 (8.7)
Roland–Morris Disability Questionnaire (0–24), mean (SD)	14.7 (6.5)	14.4 (6.1)
ÖMPSQ score		
Pain (1–50), mean (SD)	32.0 (7.6)	33.4 (7.4)
Function (0–50), mean (SD)	19.9 (10.4)	18.9 (11.7)
Psychology(0–50), mean (SD)	32.3 (10.5)	30.2 (9.3)
Fear avoidance (0–30), mean (SD)	21.2 (6.3)	19.0 (8.2)
Work (1–30), mean (SD)	15.5 (4.2)	12.3 (4.2)
Total (2–210), mean (SD)	128.3 (27.9)	125.7 (25.8)
ÖMPSQ classification <sup>b</sup>		
Low risk (0–90 points), <i>n</i> (%)	6 (20.0)	28 (28)
Medium risk (91–150 points), <i>n</i> (%)	8 (26.7)	30 (30)
High risk (151–210 points), <i>n</i> (%)	16 (53.3)	42 (42)
ÖMPSQ-short score		
Total score (1–100), mean (SD)	58.0 (10.7)	58.9 (14.1)

<sup>a</sup> Variable evaluated in 21 patients who were absent of work

<sup>b</sup> Classification was calculated in accordance with the original version of the instrument [11]

the lower detectable change in the score of an individual [21]. The limits of agreement (LOA) were calculated using the Bland and Altman's plot. Ceiling and floor effects were considered to be present when more than 15 % of the sample achieved the maximum or the minimum score [21]. The construct validity was assessed using Pearson's *r* correlation. The correlation was measured between the total scores of the ÖMPSQ and ÖMPSQ-short and the scores of the RMDQ, TSK and PNRs (current pain, pain in the last episode and mean pain in the last 2 weeks). The correlation was interpreted as:  $r < 0.30$  weak;  $r \geq 0.30$  and  $< 0.60$  moderate; and when  $r \geq 0.60$  good [23]. The hypothesis of this study for the construct validity was that the Brazilian-Portuguese versions of the ÖMPSQ and ÖMPSQ-short would be positively correlated with the RMDQ [18], PNRs [19] and TSK [20], with moderate-to-good correlations.

## Results

### Translation and cross-cultural adaptation

During the expert committee review certain terms needed to be cross-culturally adapted (items 13 and 17 of the ÖMPSQ and question 5 of the ÖMPSQ-short). Some terms/words were replaced with a better option following the expert committee's suggestions. No further adaptations to the translated instruments were required. The final versions of the Brazilian-Portuguese ÖMPSQ and ÖMPSQ-short, as well as the scoring instructions, are presented in Appendices 1 and 2.

### Testing of measurement properties

Table 1 shows the demographic characteristics and the values of the questionnaires collected at baseline. The

**Table 2** Measurement properties of the Brazilian-Portuguese versions of the ÖMPSQ and ÖMPSQ-short

Measurement property	ÖMPSQ		ÖMPSQ-short	
	Value	Classification	Value	Classification
Internal consistency				
Cronbach's alpha	0.83	Adequate	0.72	Adequate
Cronbach's alpha if an item was deleted	(0.80–0.84)	–	(0.66–0.77)	–
Reproducibility				
Reliability, ICC <sub>2,1</sub> (95 % CI)	0.76 (0.28–0.89)	Substantial	0.78 (0.69–0.85)	Substantial
Agreement				
SEM (%)	10.37 (5.00)	Very good	6.67 (6.67)	Good
LOA (95 % CI)	13.07 (–15.63–41.80)	–	1.37 (–25.26–28.00)	–
MDC	25.12	–	15.51	–
Construct validity, <i>r</i> (95 % CI)				
Roland-Morris Disability Questionnaire	0.73* (0.59–0.86)	Good	0.69* (0.55–0.83)	Good
Tampa Scale of Kinesiophobia	0.64* (0.48–0.79)	Good	0.57* (0.40–0.73)	Moderate
Pain intensity—last episode	0.46* (0.28–0.63)	Moderate	0.54* (0.37–0.71)	Moderate
Pain intensity—last 2 weeks	0.37* (0.19–0.56)	Moderate	0.36* (0.18–0.55)	Moderate
Pain intensity—current	0.36* (0.17–0.54)	Moderate	0.34* (0.15–0.52)	Moderate

ICC<sub>2,1</sub> intraclass correlation coefficient, CI confidence interval, SEM standard error of measurement, LOA limits of agreement, MDC minimum detectable change, ÖMPSQ Örebro Musculoskeletal Pain Screening Questionnaire, ÖMPSQ-short Örebro Musculoskeletal Pain Screening Questionnaire short form

\*  $p < 0.001$

**Table 3** Internal consistency (Cronbach's alpha) and reproducibility (reliability and agreement) of the translated versions of the ÖMPSQ

	Örebro Musculoskeletal Pain Screening Questionnaire (ÖMPSQ)					
	Heneweer et al. [10] (Dutch)	Grotle et al. [8] (Norwegian)	Nonclercq et al. [9] (French)	Chan et al. [11] (Mandarin)	ÖMPSQ (Brazilian-Portuguese)	ÖMPSQ-short (Brazilian-Portuguese)
Internal consistency						
Cronbach's alpha	0.81	0.95	–	0.88	0.83	0.72
Reproducibility						
Reliability, ICC (95 % CI)	–	0.90 (0.80–0.95)	–	–	0.76 (0.28–0.89)	0.78 (0.69–0.85)
Agreement, SEM (%)	–	11.70 (5.34)	–	–	10.37 (5.00)	6.67 (6.67)

“–” data not presented by the studies

ICC intraclass correlation coefficient, CI confidence interval, SEM standard error of measurement

values for the measurement properties tests are shown in Table 2. In general, both versions of the ÖMPSQ (full and short) showed similar results for the measurement properties tests. The correlation between the ÖMPSQ and ÖMPSQ-short was good ( $r = 0.85$ ).

## Discussion

The translation, cross-cultural adaptation and test of measurement properties of the ÖMPSQ and ÖMPSQ-short was chosen because they assess risk of chronicity related to psychosocial factors in patients with LBP [4, 24]. Table 3

shows the values for internal consistency and reproducibility of the present study and of the studies on the translation into Dutch, Norwegian, French and Mandarin. In our study, the ÖMPSQ and the ÖMPSQ-short showed adequate internal consistency. Other translation and measurement properties studies also found similar values [8–11]. Substantial values were found for reliability of the ÖMPSQ and ÖMPSQ-short. This value is only slightly slower than the ICC<sub>1,1</sub> of 0.90 found in the study performed in Norway [8]. The other studies on the translation of the ÖMPSQ did not report reliability values. Similarly, agreement was only reported by the Norwegian [8] version with a good value for SEM of 11.7 points (5.3 %). No ceiling or



Ou assinale uma alternativa

Quantos dias da semana você pratica exercícios?

0-1 dias     2-3 dias     4-5 dias     6-7 dias

1. Em qual ano você nasceu? _____	
2. Você é: <input type="radio"/> homem <input type="radio"/> mulher	
3. Você nasceu no Brasil? <input type="radio"/> sim <input type="radio"/> não	
4. Qual a sua situação profissional atual? <input type="radio"/> trabalho remunerado <input type="radio"/> estudando <input type="radio"/> não-remunerado <input type="radio"/> trabalha em casa Desempregado, aposentado, outro: _____	
5. Onde você tem dor? Assinale os locais apropriados. 2*x	2x (máx 10)
<input type="radio"/> pescoço <input type="radio"/> ombro <input type="radio"/> coluna torácica <input type="radio"/> coluna lombar <input type="radio"/> perna	
6. Quantos dias de trabalho você perdeu devido à dor nos últimos 12 meses? Assinale uma alternativa.	
<input type="radio"/> 0 dias <input type="radio"/> 1-2 dias <input type="radio"/> 3-7 dias <input type="radio"/> 8-14 dias <input type="radio"/> 15-30 dias <input type="radio"/> 31-60 dias <input type="radio"/> 61-90 dias <input type="radio"/> 91-180 dias <input type="radio"/> 181-365 dias <input type="radio"/> > 365 dias	
7. Há quanto tempo você vem apresentando essa dor? Assinale uma alternativa.	
<input type="radio"/> 0-1 semanas <input type="radio"/> 2-3 semanas <input type="radio"/> 4-5 semanas <input type="radio"/> 6-7 semanas <input type="radio"/> 8-9 semanas <input type="radio"/> 10-11 semanas <input type="radio"/> 12-23 semanas <input type="radio"/> 24-35 semanas <input type="radio"/> 36-52 semanas <input type="radio"/> > 52 semanas	
8. Seu trabalho é pesado ou monótono? Circule a melhor alternativa.	
0    1    2    3    4    5    6    7    8    9    10 nem um pouco    extremamente <input type="radio"/> Não estou trabalhando	
9. Como você classificaria a dor que você tem tido durante a última semana? Circule um número	
0    1    2    3    4    5    6    7    8    9    10 sem dor    pior dor possível	
10. Nos últimos três meses, em média, qual foi a intensidade da sua dor em uma escala de 0-10? Circule um número.	
0    1    2    3    4    5    6    7    8    9    10 sem dor    pior dor possível	
11. Em média, com qual frequência você tem apresentado episódio de dor durante os últimos três meses? Circule um número.	
0    1    2    3    4    5    6    7    8    9    10 nunca    sempre	





<p>Aqui está uma lista de cinco atividades. Por favor circule o número que melhor descreve sua atual capacidade para participar em cada uma dessas atividades.</p> <p>21. Eu posso realizar trabalho leve por uma hora.</p> <p>0    1    2    3    4    5    6    7    8    9    10</p> <p>não posso realizar por causa da dor                      posso realizar, pois a dor não me atrapalha</p>	10 - X
<p>22. Eu posso caminhar por uma hora.</p> <p>0    1    2    3    4    5    6    7    8    9    10</p> <p>não posso realizar por causa da dor                      posso realizar, pois a dor não me atrapalha</p>	10 - X
<p>23. Eu posso realizar as tarefas domésticas comuns.</p> <p>0    1    2    3    4    5    6    7    8    9    10</p> <p>não posso realizar por causa da dor                      posso realizar, pois a dor não me atrapalha</p>	10 - X
<p>24. Eu posso fazer as compras da semana.</p> <p>0    1    2    3    4    5    6    7    8    9    10</p> <p>não posso realizar por causa da dor                      posso realizar, pois a dor não me atrapalha</p>	10 - X
<p>25. Eu consigo dormir à noite.</p> <p>0    1    2    3    4    5    6    7    8    9    10</p> <p>não posso realizar por causa da dor                      posso realizar, pois a dor não me atrapalha</p>	10 - X

Obrigado por sua contribuição!

### Scoring of the Brazilian-Portuguese version of the Örebro Musculoskeletal Pain Screening Questionnaire

O Questionário de Triagem de Örebro é um questionário de triagem com o objetivo de prever incapacidade e falha de retorno ao trabalho devido a fatores psicossociais.

#### Instruções de pontuação

- Para a questão 5—contar o número de locais de dor e multiplicar por 2.
- Para as questões 6, 7, 8, 9, 10, 11, 13, 14, 15, 18, 19 e 20 a pontuação equivale ao número assinalado ou circulado.
- Para as questões 12, 16, 17, 21, 22, 23, 24 e 25 a pontuação é 10 menos o número assinalado ou circulado.
- Anote os valores nas caixas separadas ao lado de cada questão
- Some os valores das questões 5 a 25 obtendo o escore final do questionário.

### Interpretação dos resultados

A pontuação do questionário é utilizada como um preditor de incapacidade em longo prazo e falha no retorno ao trabalho, varia de 2 a 210 pontos, com altos valores indicando maiores riscos. Por não haver estudos de validade preditiva na população brasileira, recomendam-se os pontos de corte do instrumento original: baixo risco <90 pontos, médio risco 91 a 150 pontos e alto risco >150 pontos. Entretanto, recomendamos também a avaliação e discussão individual baseadas nos altos valores encontrados em domínios específicos do questionário, enfatizando as necessidades e problemas individuais de cada paciente.

### Appendix 2

#### Brazilian-Portuguese version of the Örebro Musculoskeletal Pain Screening Questionnaire—short form



## ÖREBRO MUSCULOSKELETAL PAIN SCREENING QUESTIONNAIRE - SHORT FORM – versão português-brasileiro

Nome: \_\_\_\_\_

Endereço: \_\_\_\_\_

Telefone: \_\_\_\_\_ - \_\_\_\_\_

*Estas perguntas e afirmações se aplicam se você tem queixas ou dores na coluna, ombros ou pescoço. Por favor, leia e responda cada questão com cuidado. Não gaste muito tempo para responder as questões. No entanto, é importante que você responda todas as questões. Há sempre uma resposta para a sua situação particular.*

### EXEMPLO:

Responda circulando uma alternativa

Eu gosto de laranjas:

0 1 2 3 4 5 6 7 8 9 10

nem um pouco

muito

Ou assinale uma alternativa

Quantos dias da semana você pratica exercícios?

0-1 dias     2-3 dias     4-5 dias     6-7 dias

1. Há quanto tempo você vem apresentando essa dor? Assinale uma alternativa. <input type="radio"/> 0-1 semanas <input type="radio"/> 2-3 semanas <input type="radio"/> 4-5 semanas <input type="radio"/> 6-7 semanas <input type="radio"/> 8-9 semanas <input type="radio"/> 10-11 semanas <input type="radio"/> 12-23 semanas <input type="radio"/> 24-35 semanas <input type="radio"/> 36-52 semanas <input type="radio"/> > 52 semanas	
2. Como você classificaria a dor que você tem tido durante a última semana? Circule um número 0 1 2 3 4 5 6 7 8 9 10 sem dor    pior dor possível	



## Scoring of the Brazilian-Portuguese version of the Örebro Musculoskeletal Pain Screening Questionnaire—short form

O questionário ÖMPSQ-short é um questionário de triagem com o objetivo de classificar pacientes com dor lombar em baixo e alto risco de cronificação relacionada a fatores psicossociais. A partir deste instrumento, o profissional de saúde será direcionado ao tratamento mais adequado para a condição do paciente.

### Instruções de pontuação

- Para a questão 1—a pontuação vai de 1 a 10.
- Para as questões 2, 5, 6, 7, 9 e 10 a pontuação equivale ao número assinalado ou circulado.
- Para as questões 3, 4 e 8 a pontuação é 10 menos o número assinalado ou circulado.
- Anote os valores nas caixas separadas ao lado de cada questão.
- Some os valores das questões 1 a 10 obtendo o escore final do questionário.

### Interpretação dos resultados

A pontuação do questionário é utilizada como um preditor de afastamento de trabalho e incapacidade, sendo que pacientes que obtiveram a pontuação de 1 a 50 são classificados como baixo risco e de 51 a 100 como pacientes de alto risco. Deve-se notar que como toda ferramenta prognóstica, há a possibilidade de falsos negativos e falsos positivos. É também indicado que os terapeutas, a partir das questões assinaladas, discutam com seus pacientes sobre as questões, com o intuito de entender mais o paciente e direcioná-lo para um tratamento mais eficaz.

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