TRANSLATION AND CROSS-CULTURAL ADAPTATION OF THE SCORING OF PATELLOFEMORALDISORDERS INTO PORTUGUESE: PRELIMINARY STUDY

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ABSTRACT

Objective: The aim of this study was to translate and culturally adapt the questionnaire Scoring of Patellofemoral Disorders for the Portuguese language. Methods: 40 participants were selected, including physiotherapists and lay individuals. The process of translating the questionnaire into Portuguese was based on standardized methods. The original scale passed through seven stages, before reaching the final version in Portuguese. 40 subjects took part in each test: 20 lay individuals and 20 physiotherapists. The level acceptable of non-comprehension was up to 10% of the interviewees. Results: In the first test, only three questions were not understood by more than 10% of the subjects interviewed, leading to a reapplication of the questionnaire. In the second test, only two questions were understood by 90% of the interviewees, while the remaining questions were understood by more than 90% of the interviewees, and there were no doubts among the physiotherapists. The 2nd version of the test was therefore selected as the final Portuguese version of Scoring of Patellofemoral Disorders. Conclusion: The Scoring of Patellofemoral Disorders scale was translated and adapted culturally for the Portuguese language, with title, in Portuguese, of Escala de Desordens Patelofemorais. Level of Evidence: Level II, development of diagnostic criteria on consecutive patients.

Keywords: Translating. Questionnaires. Knee. Patelofemoral pain syndrome.

Citation: *Aquino VS, Falcon SFM, Neves LMT, Rodrigues RC, Sendín FA. Translation and Cross-cultural adaptation of the Scoring of Patello femoral Disorders into Portuguese: preliminary study. Acta Ortop Bras. [online]. 2011;19(5):273-9. Available from URL: http://www.scielo.br/aob.*

INTRODUCTION

Among the wide range of conditions affecting the knee complex, one of the most important is the Patellofemoral Pain Syndrome (PFPS) due to its incidence and functional disability. It is characterized by anterior knee pain, patellar misalignment, degeneration of the patellar and femoral articular cartilage, difficulty climbing stairs, pain when standing up after a long period seated with the knees flexed, postural valgus or varus misalignment of the knee, shortening of ischiotibial and/or quadriceps muscles.[1,2]

Like the diagnosis of PFPS,[1] quantitative and qualitative evaluation instruments are becoming increasingly common in the rehabilitation of knee disorders. In relation to the knee, more specifically the patellofemoral joint, there are several scales for functional and pain evaluation in international literature,[3] including the International Knee Documentation Committee form,[4] Fulkerson,[5] Tegner,[6] the Musculoskeletal Function Assessment,[7] Lysholm[8] and the Scoring of Patellofemoral Disorders of Kujala.[9] Although there are several scales for patellofemoral joint assessment, the researchers of this study obtained only the translated Lysholm validated in Portuguese.[10]

The Kujala Scale (Scoring of Patellofemoral Disorders*)* stands out due to its frequent use. There are recent studies published in the United States,[11] England,[12] Germany,[13] Sweden[14] and Denmark[15] that used it. It is a questionnaire used to evaluate subjective symptoms, such as anterior knee pain and functional limitations in PFPS. The items assessed in the questionnaire are patellar subluxation, claudication, pain, walking, climbing stairs and prolonged sitting with the knees flexed. It has a score from 0 to 100 points, where 100 means without pain and/or functional limitations and 0 means constant pain and various functional limitations.[9] In addition, it exhibits good test-retest reliability (Spearman's test=0.86) and internal consistency (Cronbach's alpha=0.82).[3,16]

In the literature in Portuguese no scale was identified that specifically and jointly assesses anterior knee pain, patellofemoral joint function and patellar alignment.

All the authors declare that there is no potential conflict of interest referring to this article.

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Article received on 1/25/10 and approved on 7/16/10.

Accordingly, the aim of this study was to translate and cross-culturally adapt the Scoring of Patellofemoral Disorders scale, a questionnaire originally written in English and accepted worldwide for evaluation of the patellofemoral joint.

MATERIALS AND METHODS

Study population

Forty Brazilian participants were recruited for the study, made up of lay individuals and physiotherapists. The age of the lay individuals ranged between 18 and 63 years, with mean age of 32.6±9.76. Most members of the sample group of lay individuals were female, composing 65%. These were selected at Lar Escola São Francisco – a Rehabilitation Center linked to the Universidade Federal de São Paulo/Escola Paulista de Medicina (UNIFESP/EPM).

Inclusion criteria: Minimum age of 18 years for the lay individuals and 22 years for the physiotherapists. The lay individuals were supposed to have sufficient comprehension and decision ability to understand the questionnaire and the objective of the study presented, while the physiotherapists were supposed to work in the area, pursuing the profession.

Exclusion criteria: illiterate or semi-illiterate individuals; individuals with cognitive alterations; individuals with neurological lesions.

Twenty lay individuals took part in the 1st and 2nd tests. The characteristics related to the level of education of these lay individuals can be found in Table 1.

Twenty physiotherapists were interviewed and took part in the 1st and 2nd tests. The physiotherapists' age ranged between 22 and 36 years, averaging 27.3 ± 4.19 years.

PROCEDURES

The translation and cross-cultural adaptation stages were those standardized in literature[17,18]. (Figure 1)

The values of the scores were evaluated by the committee, which concluded that the redistribution of these values was not a necessary process.

This study was approved by the committee of ethics in research –CER of Universidade Federal de São Paulo/Escola Paulista de Medicina (0981/08).

RESULTS

Among the physiotherapists interviewed in the 1st and 2nd test, we obtained a total of 20 physiotherapists, with 70% females. Among them 30% were graduates, 55% were graduates with specialization and only 15% were masters. The same 20 physiotherapists that took part in the 1st test were once again interviewed in the 2nd test. The physiotherapists' age ranged between 22 and 36 years, averaging 27.3 years.

Level of comprehension

Of the 20 lay individuals, 18 replied by themselves. For the other 2 individuals, the questionnaire was read aloud for sporadic reasons such as visual deficiency or because they did not have their eyeglasses with them when the questionnaire was applied. The sentences were read without any type of guidance, even if the interviewee was seen to be having difficulties, and without explaining the meaning of the words, even when asked. After application of the scale, the words or sentences that proved hard to understand were written down and each subject reported their impressions of the instrument and their answers to each item.

All the health professionals replied to the scale without assistance. After this, the words or sentences that were not understood were modified and adapted.

In the 1st test of the Portuguese version designed to assess the comprehension of the population and of health professionals, we noticed that both populations experienced difficulties in their understanding. Of the 20 lay individuals, seven did not exhibit full comprehension of the questionnaire. The physiotherapists had comprehension difficulties in just two questions. (Table 2)

Table 1. *Distribution by level of education of the lay individuals.*

Level of education	n	Percentage
Complete higher education with specialization	2	12.5%
Complete higher education	2	12.5%
Incomplete higher education	1	6.25%
Complete secondary education	6	37.5%
Incomplete secondary education	2	12.5%
Incomplete primary education	3	18.75%

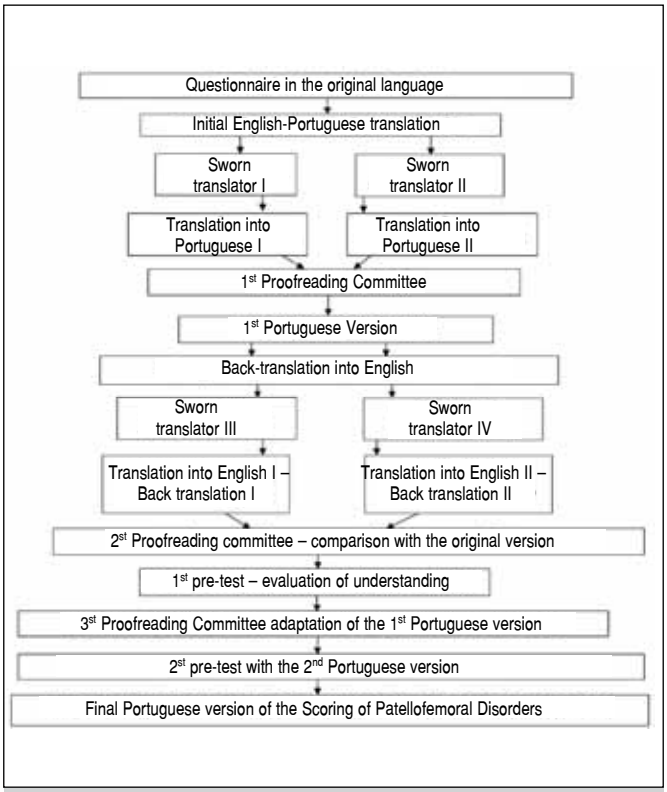

Figure 1. *Diagram representing the protocol used for translation and cross-cultural adaptation of the Scoring of Patellofemoral Disorders*

Table 2. *Level of understanding of the physiotherapists in the 1st test.*

Question	No. of physiotherapists that did not understand	Percentage	What they did not understand in each question
8th	3	15%	The stem, item D and 2 physiot. item B.
11th	1	5%	Stem, item D and E.

Table 3 contains information referring to the results of the 1st and 2nd tests, as relates to the issue of difficulties in understanding of lay individuals or physiotherapists. The percentage described in the charts is based on 20 individuals, which is the total of each test of the lay individuals and physiotherapists, separately. Also during the 1st test, the 8th question was not comprehended by three physiotherapists and 1 lay individual. The justification provided by the physiotherapists was that Item B was not related to the question stem and that it made no sense. After the change made, the comprehension of this item became unanimous among the physiotherapists.

Now in the 2nd test, with the initial version modified (Chart 1), few lay individuals experienced difficulties in understanding the scale. Of the 20 lay individuals of the 2nd test, only three failed to comprehend some items of the questionnaire, where 2 had an incomplete and 1 a complete secondary education. Since none of the misunderstood items exceeded 10% of the individuals evaluated, these answers were disregarded, thus using the 2nd version in Portuguese as the final version.

The questions that the lay individuals had more difficulty understanding in both tests were the 11th and 12th, as they use technical terms from the area of health, such as "atrophy", "patellar movements" and "subluxations". The substitution of these technical words would change the meaning of the question, which precluded substitution, only allowing adaptation with maintenance of the technical terms.

The physiotherapists did not have any difficulty understanding any question from the scale in the 2nd test. The final version of the questionnaire (2nd version) can be found in Appendix 1.

Table 3. *Level of understanding of the lay individuals in the 1st and 2nd test.*

	Question	No. of lay individuals that did not understand	Percentage	What they did not understand in each question
1st test	1st	2	10%	The stem and "periodically"
	2nd	2	10%	"Painful" and "bear the body weight"
	3rd, 4th, 5th, 6th, 7th	1	5%	Everything from all
	8th	1	5%	"Prolonged"
	9th	2	10%	"Occasionally" and other individual the whole question
	11th	6	30%	"Abnormal patellar movements (subluxations)" and 1 individual the whole question.
	12th	3	15%	"Atrophy of thigh"
	13th	1	5%	"Flexion deficiency"
2nd test	8th	1	5%	The whole question
	11th	2	10%	1 individual the whole question and another "abnormal patellar (subluxations)"
	12th	2	10%	1 individual did not understand "atrophy" and another "thighmass"

DISCUSSION

The Kujala scale was translated and adapted adequately according to cross-cultural adaptation standards, showing difficulties in the understanding of the technical terms in the process, especially among lay individuals, which to be resolved required multiple changes in the expressions.

A significant number of health assessment scales and questionnaires has been developed and used. Both generic instruments, which evaluate a wide variety of health problems, and specific instruments that evaluate aspects restricted to a particular disease and/or treatment, are available.[3,19] However, not all these instruments are available in all countries and in all languages. Therefore, the translation and the standardization of foreign instruments is becoming a new area of activity of health professionals, although there is controversy regarding the methodology to be followed.[20,21] For this reason, the translation and cross-cultural adaptation process should be conducted according to a given sequence of actions.[17,18] The outcomes of the application of these guidelines have been applied successfully in several areas of health such as geriatrics (EBBS)[22], nephrology (chronic renal patients),[23] orthopedics and traumatology (knee disorders)[10] and rheumatology (knee disorders).[24] The absence of accuracy in the process can induce tendentious

Chart 1. *Changes made from the 1st to 2nd Portuguese version*

1st Portuguese version	2nd Portuguese (final) version
1. Limp (a) None (b) Slight or periodic (c) Constant	**1. Do you limp when walking?** (a) No (b) Sometimes (c) Always
2. Support (a) Full support without pain (b) Painful (c) Weight bearing impossible	**2. Do you bear your body weight?** (a) Yes, entirely without pain (b) Yes, but with pain (c) No, it is impossible
3. Walking (a) Unlimited (b) More than 2 km (c) 1-2 km (d) Unable	**3. You walk:** (a) An unlimited distance (b) More than 2 km (c) 1- 2 km (d) I am unable to walk
4. Stairs (a) No difficulty (b) Slight pain when descending (c) Pain both when ascending and descending (d) Unable	**4. To ascend and descend stairs you:** (a) Have no difficulty (b) Have slight pain only when descending (c) Have pain when ascending and descending (d) Are unable to ascend or descend stairs
5. Squatting (a) No difficulty (b) Repeated squatting painful (c) Painful each time (d) Possible with partial weight bearing (e) Unable	**5. To squat you:** (a) Have no difficulty (b) Feel pain after repeated squatting (c) Feel pain in one/each squat (d) It is only possible with partial body weight-bearing on the affected leg (e) Are unable
6. Running (a) No difficulty (b) Pain after more than 2 km (c) Slight pain from start (d) Severe pain (e) Unable	**6. To run you:** (a) Have no difficulty (b) Feel pain after more than 2 km (c) Feel slight pain from start (d) Feel severe pain (e) Are unable
7. Jumping (a) No difficulty (b) Slight difficulty (c) Constant pain (d) Unable	**7. To jump you:** (a) Have no difficulty (b) Have slight difficulty (c) Have constant pain (d) Are unable
8. Prolonged sitting with knees flexed (a) No difficulty (b) Pain after exercise (c) Constant pain (d) Pain forces knees to extend temporarily (e) Unable	**8. As regards prolonged sitting with knees flexed you:** (a) Do not feel pain (b) Feel pain when sitting only after exercise (c) Feel constant pain (d) Feel pain that forces you to extend the knees for a while (e) Are unable

9. Pain (a) None (b) Slight and occasional (c) Interferes with sleep (d) Occasionally severe (e) Constant and severe	**9. Do you feel pain in the affected knee?** (a) None (b) Slight and sometimes (c) I have pain that interferes with sleep (d) Severe and sometimes (e) Severe and constant
10. Swelling (a) None (b) After severe exertion (c) After daily activities (d) Every evening (e) Constant	**10. As regards swelling:** (a) I have none (b) I only have swelling after severe exertion (c) I have swelling after daily activities (d) I have swelling every evening (e) I have swelling constantly
11. Abnormal painful patellar movements (a) None (b) Occasionally in sports activities (c) Occasionally in daily activities (d) At least one documented dislocation (e) More than two dislocations	**11. As regards your PAIN in abnormal patellar dislocations (subluxations):** (a) There is none (b) Sometimes in sports activities (c) Sometimes in daily activities (d) At least one proven dislocation (e) More than two dislocations
12. Atrophy of thigh (a) None (b) Slight (c) Severe	**12. Have you lost muscle mass (atrophy) from the thigh?** (a) None (b) Slight (c) Severe
13. Flexion deficiency (a) None (b) Slight (c) Severe	**13. Do you have difficulty bending the affected knee?** (a) None (b) Slight (c) Severe

results, besides producing possible problems such as the improper choice of an instrument or even inconsistency between the translation and the original version, causing the use of this instrument to become inadequate. Different cultures present different habits and activities, which should be taken into account.[18,20,21,23]

The use of the instrument in a sample of the population to be assessed, helps in the control and in the verification of possible mistakes, and also certifies comprehension of the scale or questionnaire by individuals with different levels of education.[18]

In this study, the evaluations of the translations performed by the Committee formed were considered adequate, and there was semantic equivalence to the original. No difficulties arose during the translation, and to avoid misunderstandings by the individuals with a low level of education, words commonly used in the Portuguese language were maintained.

Some grammatical changes were observed during the translation from Portuguese into English (back-translation). These changes occurred due to the need to mold the text to the national culture, thus achieving semantic equivalence (among words), idiomatic equivalence (equivalent expressions not encountered), experiential equivalence (words adapted to the cultural context) and conceptual equivalence (validity of the explored concept and the events experienced by the lay individuals), as shown by literature.[11,12,22,25]

The Scoring of Patellofemoral Disorders questionnaire in the original version should be self-administered to exclude examiner bias,[9] yet in this version the authors suggest application in the form of an interview, since some technical terms were maintained in the scale so as not to change the meaning of the questions, which may lead to a misunderstanding by the patient and consequently an untrustworthy answer if self-administered,[10] considering the socioeconomic and educational level of the population studied.[26] Applied in interview form, the examiner will be able to explain what the questions are asking and to deal with queries from the patient.

For the health area, the translated questionnaire can become an instrument applicable to professional practice, since there is no similar instrument available that is able to assess results

of treatments performed or even to quantify the limitation occasioned by anterior knee pain. To reach this level of adaptation, the questionnaire should be discussed and submitted to continuous critiques.

The most relevant limitations presented by the study were: 1) The absence of validation and determination of psychometric properties of the questionnaire in Portuguese, a fact that limits its practical application, for which it is ready; 2) limited size of sample made up of professionals and lay individuals; 3) heterogeneity of the group of lay individuals with regard to level of education, which hindered the obtainment of similar answers in relation to understanding. 4) The fact that the same individuals answered 2 versions of the questionnaire might imply some degree of learning in completing the questionnaire for the 2nd time, even with changes in the text from the 1st version to the 2nd version. For this reason, it is necessary to undertake new studies with larger samples under different socio-demographical and clinical conditions, where the new questionnaire is evaluated from the point of view of validity and comparison with other similar tools.

CONCLUSION

The Scoring of Patellofemoral Disorders scale has been translated into Portuguese with cross-culturally adaptation, under the Portuguese title *Escala de Desordens Patelofemorais*. The translation and cross-cultural adaptation process can be applied successfully in physiotherapy questionnaires, generating applicable instruments in Portuguese.

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Appendix 1. *Final Portuguese version*

1. Do you limp when walking?
(a) No (5)
(b) Sometimes (3)
(c) Always (0)

2. Do you bear your body weight?
(a) Yes, entirely without pain (5)
(b) Yes, but with pain (3)
(c) No, it is impossible (0)

3. You walk:
(a) An unlimited distance (5)
(b) More than 2 km (3)
(c) 1-2 km (2)
(d) I am unable to walk (0)

4. To ascend and descend stairs you:
(a) Have no difficulty (10)
(b) Have slight pain only when descending (8)
(c) Have pain when ascending and descending (5)
(d) Are unable to ascend or descend stairs (0)

5. To squat you:
(a) Have no difficulty (5)
(b) Feel pain after repeated squatting (4)
(c) Feel pain in one/each squat (3)
(d) It is only possible with partial body weight-bearing on the affected leg (2)
(e) Are unable (0)

6. To run you:
(a) Have no difficulty (10)
(b) Feel pain after more than 2 km (8)
(c) Feel slight pain from start (6)
(d) Feel severe pain (3)
(e) Are unable (0)

7. To jump you:
(a) Have no difficulty (10)
(b) Have slight difficulty (7)
(c) Have constant pain (2)
(d) Are unable (0)

8. As regards prolonged sitting with knees flexed you
(a) Do not feel pain (10)
(b) Feel pain when sitting only after exercise (8)
(c) Feel constant pain (6)
(d) Feel pain that forces you to extend the knees for a while (4)
(e) Are unable (0)

9. Do you feel pain in the affected knee?
(a) No (10)
(b) Slight and sometimes (8)
(c) I have pain that interferes with sleep (6)
(d) Severe and sometimes (3)
(e) Severe and constant (0)

10. As regards swelling:
(a) I have none (10)
(b) I only have swelling after severe exertion (8)
(c) I have swelling after daily activities (6)
(d) I have swelling every evening (4)
(e) I have swelling constantly (0)

11. As regards your PAIN in abnormal patellar dislocations (subluxations):
(a) There is none (10)
(b) Sometimes in sports activities (6)
(c) Sometimes in daily activities (4)
(d) At least one proven dislocation (2)
(e) More than two dislocations (0)

12. Have you lost muscle mass (atrophy) from the thigh?
(a) None (5)
(b) Slight (3)
(c) Severe (0)

13. Do you have difficulty bending the affected knee?
(a) None (5)
(b) Slight (3)
(c) Severe (0)