

# Translation, validity and reliability of the Pain Attitudes and Beliefs Scale for Physiotherapists in French

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## Abstract

**Background:** The PABS-PT questionnaire evaluates manual therapists' biomedical and biopsychosocial beliefs regarding the management of chronic low back pain. Its usage in clinical settings is an important step in the implementation of national guidelines and policies to improve patient management.

**Objectives:** The objective of this study was to translate the PABS-PT questionnaire into French, to adapt it culturally, and to conduct a psychometric analysis.

**Design:** Qualitative and cross-sectional study

**Method:** The translation process followed published guidelines with a cross-cultural validation by an expert committee. We followed a forward and backward translation procedure and an expert committee, including the original author of the questionnaire and a linguistics expert ensuring good cultural adaptation, issued a finalised version. The psychometric analysis of the French version of the questionnaire was conducted among 390 French manual therapists in two phases. The first phase evaluated structural validity as well as external validity compared to the TSK and BBQ questionnaires. Then reliability and scalability were analysed. The second phase evaluated test-retest reproducibility by sending the same questionnaire 3 months later.

**Results :** The validity study revealed 3 subscales: the classic biomedical subscale and two subscales for biopsychosocial beliefs (aetiology of pain and physical activity). With 21 items in total for the PABS-PT-FR, the structural validity scores were good (BM: alpha = 0.82, H= 0.38; Physical Activity: alpha = 0.62, H= 0.32; Aetiology of Pain: alpha = 0.55, H= 0.29).

**Conclusions :** This study provides a validated tool to assess French physiotherapists' and, more generally, healthcare providers' beliefs about chronic low back pain, with a new insight into the BPS subscale internal construct.

## Introduction

Low back pain (LBP) is the most common musculoskeletal complaint in France, as in other countries worldwide, and a major economic and health burden (Depont et al., 2010; Hoy et al., 2012). Each year, more than 50% of the population will experience LBP, especially between 40 and 70 years old (Hoy et al., 2012 ; Rossignol et al., 2009). The economic cost is estimated to reach 6000 € per person and per year (Depont et al., 2010). In 2020 in Spain, the cost of covering LBP was estimated at 0.68% of the Gross Domestic Product, or 8945.6 million euros per year (Alonso-García & Sarría-Santamera, 2020).

LBP is the main cause of years lived with disability (GBD 2017 Disease and Injury Incidence and Prevalence Collaborators, 2018): 60% of people with LBP will continue to have pain after one year or experience frequent recurrences (Knezevic, Candido, Vlaeyen, Van Zundert, Cohen, 2021). Understanding and preventing the factors that explain the transition between acute to chronic LBP is a key challenge for healthcare providers. Traditionally, practitioners managed chronic LBP based on “biomedical” beliefs that structural damage was the main factor explaining pain (Ostelo, Stomp-van den Berg, Vlaeyen, Wolters, de Vet, 2003) but in recent years, the biopsychosocial model has been found to be a more suitable diagnosis and treatment framework for these patients (van Erp, Huijnen, Jakobs, Kleijnen, Smeets, 2019). This model underlines that unhelpful beliefs about LBP is one of the most important psychosocial factors responsible for the development of persistent pain (Draper-Rodi, Vogel, Bishop, 2018) and many studies highlight the responsibility of health professionals for the onset and maintenance of these beliefs among patients (Overmeer & Boersma, 2016; Setchell et al., 2017). Therefore understanding the practitioners’ cognitive processes is an important step to implement national guidelines and policies to improve patient management.

Several questionnaires assessing beliefs about LBP have been developed and among them the Pain Attitudes and Beliefs Scale for Physiotherapists (PABS-PT) was designed for manual therapists (Ostelo et al., 2003). The PABS-PT was designed as a 2-factor scale to assess the degree of a practitioner’s biopsychosocial and biomedical beliefs. It was created using items from the Tampa Scale of Kinesiophobia (TSK) (Miller, Kori, Todd, 1991), the Back Beliefs Questionnaire (BBQ) (Symonds, Burton, Tillotson, Main, 1996) and the Fear Avoidance Belief Questionnaire (FABQ) (Waddell, Newton, Henderson, Somerville, 1993) as well as items designed by the author’s team. Several studies analysed the questionnaire’s psychometric properties using Classical Test Theory (CCT) and found Cronbach’s  $\alpha$  ranging from 0.72 to 0.84 for the biomedical (BM) subscale and from 0.54 to 0.73 for the BPS subscale (Dalkilinc, Cirak, Yilmaz, Demir, 2014; Eland, Kvåle, Ostelo, Inger Strand, 2017 ; Houben et al., 2005; Laekeman, Sitter, Basler, 2008; Mutsaers et al., 2014 ; Ostelo et al., 2003). Across all studies, the BPS subscale was found to have lower internal consistency (Eland, Kvåle, Ostelo, Inger Strand, 2016) in comparison to the BM subscale. The most widely used version is Houben’s 19 item revised scale (Houben et al., 2005).

The original version of the PABS-PT was designed in Dutch and published in English (Ostelo et al., 2003). It has been translated in several other languages including Brazilian, Portuguese, German, Norwegian, and Turkish (Dalkilinc et al., 2014 ; Eland et al., 2016; Laekeman et al., 2008 ; Magalhães, Costa, Cabral, 2012). A version in French was used in Petit, Begue et Richard (2019) but the translation process was not detailed, which is a common problem in the literature with questionnaire translation (Danielsen, Pommergaard, Burcharth, Angenete, Rosenberg, 2015). The aim of this study was to develop and culturally adapt a French version of the PABS-PT and validate its psychometric properties.

## Methods

### Study Design

The translation into French and the validation process of the translated PABS-PT were conducted in several steps in the period of September 2018 to June 2020 (Figure 1). First, the English version of the PABS-PT (Houben et al., 2007) was translated and adapted into French and then psychometric testing of the PABS-PT French version was conducted (Figure 2).

### The Pain Attitudes and Beliefs Scale for Physiotherapists

The original questionnaire consists of 20 items using a 6-point Likert scale. This questionnaire is built around two subscales, one assessing biomedical (BM) beliefs ranging from 14 to 84, and one for biopsychosocial (BPS) beliefs from 6 to 36. In both subscales a higher score means a stronger belief in the corresponding domain. The BM subscale is composed of 14 items and the BPS subscale of 6 items. The PABS in its original version had a Cronbach alpha of 0.84 for the BM subscale and 0.54 for the BPS subscale (Ostelo et al., 2003). For this translation we used the 19-item English version (Houben et al., 2007) with two extra items that were found to have good psychometric qualities by Eland et al (2016) (Appendix 1).

### Translation and cross cultural adaptation

The translation was performed with the permission and assistance of one of the original authors. Beaton's recommendations for best practice to translate health screening tools were followed (Beaton, Bombardier, Guillemin, Ferraz, 2000).

The forward translation from English to French was conducted independently by two native French speakers who were fluent in English. One of them was an expert in pain management (academic clinician osteopath who did their doctorate on the biopsychosocial management of low back pain) and the other one did not have any medical background. They were both independent of the main investigators. Both versions were compared and synthesised by one member of the author team. Disagreements were discussed with the two translators (on a video call) and reported in a written document.

The backward translation was conducted by two independent translators who were native English speakers and fluent in French. Both were naive to the PABS-PT and did not have a medical background.

The expert committee included one of the original authors of the PABS-PT, a methodologist, health practitioners, a professional linguist, the main investigators and the translators of the forward and backward translations. The variety of profiles in the expert committee was an asset since it gave us the opportunity to have in depth-conversations on choices made by the translators, the professional linguist and the authors of PABS-PT (for instance one of the original PABS authors helped us to understand the meaning of some English items by explaining what they originally meant in Dutch). During the first meeting the experts went through the whole questionnaire and analysed each item in light of the translations and the back-translations. When differences were found between the English and Dutch versions of the questionnaires, the original Dutch version was the one chosen. This brainstorming led us to agree on the best way to express the items in French taking into account the meaning, the medical aspects and the target population of the questionnaire. A pre-final version was thus obtained at the end of the meeting.

The pre-final version was tested on a sample of 9 French manual healthcare providers with semi-directed interview methodology. Participants completed the questionnaire and were then asked to explain how they understood each item and to raise any difficulties they had when filling in the questionnaire. We asked participants to reformulate some items when they encountered difficulties, to explain their understanding of items or we proposed alternative words when necessary. Interviews were audio-recorded and transcribed verbatim.

The expert committee met a second time to examine the test phase results. Some additional modifications were made with the experts' agreement, and a finalised French version was produced (Appendix 2).

### Validity

The validity of the French version of the PABS was tested in comparison to the Tampa Scale for Kinesiophobia (TSK) and the Back Belief Questionnaire (BBQ).

The TSK is a questionnaire that evaluates the patient's fear of movement; a high score indicates a significant fear of movement. It was created in 1990 and translated into French in 2002 (French, Roach, Mayes, 2002 ; Kori, Miller, Todd, 1990).

The BBQ is a questionnaire that assesses beliefs related to low back pain. A high score indicates that patients believe that the consequences of their low back pain will be very negative for them. It was created in 1996 and translated into French in 2017 (Symonds et al., 1996; Dupeyron et al., 2017).

### Participants

Validation of the translated PABS-PT French version was conducted among French physiotherapists and osteopaths. They were invited to complete the survey online, on Framafoms©. The eligibility criteria were based on Ostelo (2003), Houben (2005) and Eland's (2016) studies: being over 18 years old and having at least 2 years of professional experience.

3000 manual therapists were contacted by email (former under- and postgraduate students from the study's main participating institution) in addition to the diffusion on social media. Participants were given 3 months to complete the questionnaire (Figure 1), a reminder was sent by email and posted on social media two weeks after the start of the study. The main aim was to assess the internal validity (verifies that there is a strong correlation between the data received and reality), and the secondary aims were to study the external validity (allows us to confirm our results by comparing them with other similar questionnaires) and reproducibility (will the questionnaire give the same result over time).

### Sample size

A sample size of 250 participants is generally considered appropriate according to guidelines for assessing the validity of such tools (De Vet, Terwee, Mokkink, Knol, 2012; Anthoine, Moret, Regnault, Sébille, Hardouin, 2014).

### Statistical analysis

Data analysis was performed using Stata (version 16).

Several aspects of validity and reliability have been explored as recommended by COSMIN guidelines (De Vet et al, 2012):

- Structural validity was assessed by fitting a Confirmatory Factor Analysis to the data. Root Mean Square Error of Approximation (RMSEA) lesser than 0.08 and Comparative Fit Index (CFI) greater than 0.9 were expected to define a correct structural validity of the scale.
- Concurrent validity was assessed by computing Spearman correlation coefficients with two other scales, the BBQ and the TSK.
- Internal consistency was assessed by computing Cronbach's alpha of each subscale. Values greater than 0.7 were expected to define a correct reliability.
- Scalability was assessed by fitting a Mokken scale (Sijtsma & Molenaar, 2002) to each subscale. Values of the Loevinger's H coefficients greater than 0.3 were expected to define a correct scalability.
- Test-retest reproducibility was assessed by calculating the rate of agreement (maximum one level of difference between the two administrations) and "perfect agreement" (exactly the same response on both administrations) for each item between two administrations of the scale by the same individuals. An agreement rate greater than 0.7 is considered good.

### Ethical considerations

This study was approved by the Research Ethics Committee at [ANONYMISED FOR PEER-REVIEW].

## Results

### Translation and cross-cultural adaptation

The translation of the PABS-PT into French was done using the English version of the questionnaire. To help interpret some of the English items, one of the original PABS-PT authors involved in this study provided the original meaning of the items in Dutch.

The expert committee decided to remove the explanation of the likert scale from the instruction as it was not useful to the responding healthcare providers. The word "Attitudes" in the title was changed to "Conception": in French "Attitudes" refers to physical behaviours while "conception" is closer to one's cognitive choices. This term is also closer to the original Dutch version which uses only one word for "Attitudes and Beliefs".

Concerning the translation of the items; "Back pain" was initially translated to "spinal pain" and then modified into "low back pain" as suggested by one of the original authors of the questionnaire since the PABS-PT is specific to the lumbar region. Item 21: "exercise" was changed to "physical activity" ("*activité physique*" in French); items 10: "spinal impairments" was changed to "spinal damage" ("*atteinte vertébrale*" in French); items 15 and 21: "organic injury" and "damage" were changed to "tissular lesion" ("*lésion tissulaire*" in French). Two inaccuracies were found between the English and Dutch versions. Item 19: the Dutch version did not actually refer to the "spread" of existing damage but to its "aggravation", therefore the corresponding French word was used; item 16: the Dutch version did not use the word "intensity" when referring to the practitioner's treatment, therefore it was removed in the French version.

The 9 healthcare providers (3 physiotherapists and 6 osteopaths) who tested the pre-final version of the PABS-PT-FR did not find any major problems of comprehension except for item 16 concerning the origin of low back pain: whilst having similar views when describing their answers, their scores were on each end of the likert scale due to a poor understanding of the item. Among the participants, the physiotherapists also had different interpretations of the term "tissue damage". Participants' responses to biomedical items were more consistent than biopsychosocial items. During a final meeting, the expert committee finalised the translation and obtained the final version of the PABS-PT-FR.

### Participants

439 healthcare providers participated in this study. 49 were excluded for not having been in practice for a minimum of two years, therefore the final sample had 390 participants (Figure 2). Mean age was 37.5 ( $\pm$  10,6) years old, 51% were female and mean graduation year was 2008 (Table 1).

<b>Gender (Male)</b>	192 (49%)
<b>Age</b>	37,5 ± 10,6
<b>Profession</b>	
Osteopath	327 (84%)
Physiotherapist	30 (8%)
Osteopath and physiotherapist	32 (8%)
<b>Year of graduation</b>	
Osteopath	2008 ± 7,4
Physiotherapist	2006 ± 9,7

**Table 1. Descriptive characteristics of the population (n=390)**

*Qualitative data is expressed as mean (sd)*

#### Psychometric properties and test-retest reliability

A biplot of the item distribution (Figure 3) revealed that items separated into two large groups: 1, 5, 6, 9, 10, 15, 16, 17, 18, 19 and 21 for the BM dimension and 2, 3, 4, 7, 8, 11, 12, 13, 14 and 20 for the BPS dimension, which was more dispersed.

The BM dimension was found to have a good reliability ( $\alpha = 0.82$ ) but a low scalability ( $H = 0.32$ ). The BPS dimension had a low reliability and consistency ( $\alpha = 0.67$  and  $H = 0.19$ ). Two items in the BM dimension showed very low coherence (item 16,  $H = 0.23$  and item 17,  $H = 0.20$ ): their removal increased the Loevinger's H coefficient while keeping the Cronbach's alpha stable (Table 2). By taking into account the interaction between items 5 and 15 in the BM scale, a RMSEA lower than 0.08 and a CFI of 0.89 were found. Concerning the BPS dimension, two items were removed : item 12 which seemed to represent a category on its own and item 20 who had a very low Loevinger coefficient ( $H = 0.09$ ). Furthermore, we found that the CFI and RMSEA were optimal when the BPS scale was divided into two : items 2, 3, 8 and 11 referring to low back pain aetiology and items 4, 7, 13 and 14 referring to the importance of physical activity in low back pain management.

Items	Scale	Cronbach's $\alpha$ [95% CI]	Loevinger's H [95% CI]	CFI	RMSEA
1,5,6,9,10,15,16,17, 18,19 and 21	BM	0.82 [0.79;0.85]	0.32 [0.27;0.36]	0.84	0.102
1,5,6,9,10,15, 18, 19 and 21	BM (excluding items 16 and 17)	0.82 [0.80;0.85]	0.38 [0.33;0.42]	0,89	0,100
1,5,6,9,10,15, 18, 19 and 21	BM (interaction items 5 and 15)	0.82 [0.80;0.85]	0.38 [0.33;0.42]	0,89	0,077
2,3,4,7,8,11,12,13,1 4 and 20	BPS	0.67 [0.62;0.72]	0.19 [0.15;0.23]	0.73	0.099
2,3,4,7,8,11, 13 and 14	BPS (excluding items 12 and 20)	0.70 [0.65;0.74]	0.26 [0.22;0.30]	0.80	0.103
4,7,13 and 14	BPS-PA	0.62 [0.55;0.69]	0.32 [0.26;0.39]	0,99	0,055
2,3,8 and 11	BPS-AP	0.55 [0.47;0.62]	0.29 [0.21;0.37]	0,81	0,190

**Table 2. Cronbach's  $\alpha$ , Loevinger's H, CFI, and RMSEA coefficients based on item selections of the translated PABS-PT**

*CI : Confidence Interval; BM : Biomedical subscale; BPS: Biopsychosocial subscale; BPS-PA : Physical Activity subscale; BPS-AP: Aetiology of Pain subscale; CFI: Comparative Fit Index; RMSEA: Root Mean Square Error of Approximation*

The test-retest phase included 100 participants. The responses were anonymous, leading to issues with matching the before and after answers. Only responses that had strictly identical socio-demographic criteria were included leading inclusion of 68 responses out of 103 entries. Agreement rates are all above 0.70 and perfect agreement rates are between 0.26 and 0.57. (Table 3). The test-retest phase was launched three months after the questionnaires were sent for the validity phase. In at least 70% of cases, participants give identical answers to the items within one level between their first and second answers.



	Perfect agreement [SD]	Agreement rate [SD]
Item 1	0.45 [0.50]	0.81 [0.40]
Item 2	0.53 [0.50]	0.93 [0.26]
Item 3	0.40 [0.49]	0.85 [0.36]
Item 4	0.35 [0.48]	0.75 [0.44]
Item 5	0.31 [0.46]	0.79 [0.41]
Item 6	0.66 [0.48]	0.93 [0.26]
Item 7	0.44 [0.50]	0.85 [0.36]
Item 8	0.37 [0.48]	0.84 [0.37]
Item 9	0.41 [0.49]	0.88 [0.32]
Item 10	0.38 [0.49]	0.70 [0.46]
Item 11	0.53 [0.50]	0.85 [0.36]
Item 13	0.57 [0.50]	0.87 [0.34]
Item 14	0.53 [0.50]	0.82 [0.38]
Item 15	0.41 [0.50]	0.87 [0.34]
Item 16	0.44 [0.50]	0.81 [0.40]
Item 17	0.47 [0.50]	0.81 [0.40]
Item 18	0.26 [0.44]	0.75 [0.44]
Item 19	0.37 [0.48]	0.78 [0.42]
Item 21	0.35 [0.48]	0.87 [0.34]

**Table 3 : Perfect agreement rate and agreement rate for the test-retest reliability of the translated PABS-PT.**

*SD : standard deviation*

### Validity

The TSK had a high correlation with the BM scale (0.73) and the Physical Activity scale (-0.59) but a moderate correlation with the Aetiology of Pain scale (-0.37) (Table 4) (Akoglu, 2018). The correlations of the three scales with the BBQ were low (-0.12 for the Aetiology scale) or medium (0.49 and -0.32 for the BM and Physical Activity scales). All correlations were found to be statistically significant, except for the one between the BBQ score and the Aetiology of Pain scale.

	TSK score	BBQ score
BM	0,73	0,49
BPS-PA	-0,59	-0,32
BPS-AP	-0,37	-0,12

**Table 3. Pearson correlation coefficients between the 3 PABS dimensions and the TSK and BBQ scores.**

*BM : Biomedical subscale; BPS: Biopsychosocial subscale; PA : Physical Activity; AP: Aetiology of Pain*

The correlation coefficients are positive for the BM scale and negative for the other two. A negative correlation shows an opposite positioning between the BPS scale and the two questionnaires used as gold standards. A high score for the TSK questionnaire corresponds to a greater fear of movement and a high score for the BBQ corresponds to a stronger belief that the consequences of low back pain will be severe. These concepts align with the BM scale and are opposed to the BPS scale explaining the positive (with BM) and negative (for BPS) correlations found.

## Discussion

The purpose of this study was the translation and cross-cultural adaptation of PABS-PT and its psychometric validation into French. Although a French translation of the PABS-PT had already been used by Petit et al (2018), this version was not validated by a psychometric study and the likert scale contained 4 points instead of 6 as in the original version. Our study was the first one to follow the methods required for the translation of a questionnaire, and to evaluate validity and reliability of this translated version. Working with one of the authors of the original version led to an accurate translation by avoiding discrepancies caused by translating a translated version (English version). Three subscales were identified during the validation process; the BPS subscale was split into two: Physical Activity and Aetiology of Pain. The heterogeneity of the unsplit BPS subscale was shown by its poorer psychometric properties and by the interviewed participants' uncertainty on the BPS items' meaning. The BPS dimension is complex by definition; it takes into account the psychological, social and biological factors of a pathology. Therefore, there are several types of items that take into account the multiple facets of this dimension. Having two subscales in this dimension allows a more precise evaluation of the healthcare providers' understanding of the BPS domain. Thus, the reliability coefficients in this study were higher than in previous PABS reliability studies (Ostelo et al., 2003; Houben et al., 2005; Leakman et al., 2007; Magalhaes et al., 2012; Mutsears et al., 2014; Dalkilinc et al., 2014 and Eland et al., 2016) with, however, fewer items in each dimension (Table 5). The French version was found to have good reproducibility.

	Total items	BM			BPS	
		No. of items	Cronbach's $\alpha$		No of items	Cronbach's $\alpha$
Ostelo et al (2003)	20	14	0.84		6	0.54
Houben et al (2005)	19	10	0.73		9	0.68
Leakeman et al (2007)	14	10	0.77		4	0.58
Magalhães et al (2012)	19	10	NA		9	NA
Mutsears et al (2014)	15	7	0.75		8	0.73
Dalkilinc et al (2014)	13	7	0.72		6	0.59
Eland et al (2016)	19	13	0.79		6	0.57
<b>French version</b>	<b>21</b>	<b>11</b>	<b>0.82</b>	<b>PA</b>	<b>4</b>	<b>0.62</b>
				<b>AP</b>	<b>4</b>	<b>0.55</b>

**Table 4. Comparison of Cronbach's  $\alpha$  according to the different versions of the PABS-PT.**

*BM : Biomedical subscale; BPS: Biopsychosocial subscale; PA : Physical Activity; AP: Aetiology of Pain; NA: Not Available*

### Strengths and limitations

This study followed best guidance on the translation of questionnaires using forward and backward translation phases with a mixture of pain experts and professional translators while relying on native speakers of the targeted audience's language. The translation was reviewed by an expert panel, including one of the PABS-PT original authors. A qualitative validation was conducted interviewing 9 French healthcare providers, and a quantitative validation assessed the internal validity and reliability of the PABS-PT-FR.

The questionnaires used in this study are subject to the usual limitations around self-report data (i.e. social desirability and acquiescence bias). There can be a difference between self assessed beliefs and real behaviours in a clinical setting. Additionally, the external validity assessment of the PABS-PT is an issue that previous translation studies have faced. To compare the PABS-PT to other scales, scales measuring similar concepts would be required. We used the TSK and BBQ to analyse the validity of the PABS-PT. They helped in the construction of the questionnaire (composite of the TSK, BBQ and FABQ with the addition of questions from the PABS original authors) that have similar concepts but do not fully reflect the concepts evaluated by PABS-PT, thus limiting the interpretation of the external validity results. Another limitation is that the TSK is designed for patients. Following Houben et al.'s example (2005), the TSK was transposed to the third singular person to allow healthcare providers to

respond. This may have led to problems in understanding the TSK items and to inappropriate responses.

When translating the PABS-PT into French, it was chosen to use the 19-item version and not the 36-item version. The 19-item version is the most reliable. It could have been interesting to translate the 36-item version and to select the items using psychometric analysis. The final items included may have been different for the French version (Houben et al., 2007 and Eland et al., 2016).

Finally, as we used an anonymous questionnaires for ethical reasons, we had to match data (age, gender, profession, average number of consultations per week, practice location and practice composition) between the two PABS-PT responses for the retest phase. To be as precise as possible, we eliminated all responses where there was doubt about the association between the first and second answers. We first calculated an ICC (2.1), but this proved problematic as the participants were too homogeneous. In the end, we opted for the rate of agreement.

### Conclusion

The PABS-PT-FR is a reliable tool capable of assessing French-speaking healthcare providers' orientation on a spectrum between the biomedical and biopsychosocial models. This study is the first to suggest three subscales instead of two, possibly reflecting the complexity of biopsychosocial beliefs (Appendix 3). Although the BPS model was proposed 45 years ago by George Engel (Engel, 1977), this model has had difficulty being applied in everyday life (Fava & Senino, 2007). This tool will enable stakeholders to assess the French healthcare community's beliefs and to assess the effectiveness of educational interventions in altering their beliefs and attitudes. Whilst researchers may decide to use the classic two dimensional score for comparative purposes, we strongly recommend using the three-dimension scoring system as it bears more robust psychometric properties.

## **Implications on Physiotherapy Practice**

This study will provide a better understanding of the beliefs of French-speaking physiotherapists and, more generally, of all practitioners working in the field of low back pain. Recent knowledge on the neuroanatomical mechanisms of pain is changing beliefs on the subject. The PABS-PT is a tool that will give rise to other studies that will surely improve patient management, enhance the training of physical therapists, and serve as the basis for a self-assessment at the beginning of a professional training program.

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## Figures and tables

Figure 1. Translation and validation study flow-chart.

Figure 2. Psychometric study flow-chart (timing and recruitment of participants)

Figure 3. Biplot distribution of the translated PABS-PT items.

Author's accepted version