

Title

Beliefs and Use of Contextual Factors in Musculoskeletal Pain among Argentine Physiotherapists: a nationwide cross-sectional study

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List of supplementary materials

Supplementary 1. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist

Supplementary 2. Checklist for Reporting Of Survey Studies (CROSS)

Supplementary 3. Checklist for Reporting Results of Internet E-Surveys (CHERRIES)

Supplementary 4. Survey (Original version)

Supplementary 5. Survey (English version)

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Data availability statement

The data that support the findings of this study are openly available in OSF at

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ABSTRACT

Background: Contextual factors (CFs), such as clinician's words and patient's expectation, influence musculoskeletal pain outcomes through biopsychosocial processes. While physiotherapists' views on CFs have been studied elsewhere, no such research exists in Argentina.

Objective: This study examines Argentine physiotherapists' perspectives and their link to professional characteristics.

Methods: A cross-sectional online survey was distributed to 512 Argentine physiotherapists, members of a scientific society specializing in musculoskeletal care. It gathered demographic, professional data, two clinical vignettes on decision-making, and closed-ended questions on CF use, ethical and communication aspects, beliefs, use frequency, mechanisms of action, and perceived benefits. Associations between professional factors and both CF beliefs and use were analyzed using univariate and multivariate regression models.

Results: Response rate was 45.5%. The most influential CFs were therapeutic alliance, verbal communication, and positive attitudes and behavior; in contrast, professional reputation, patient's previous experience, and a patient-centered approach were rated less influential. While frequently used CFs generally matched perceived influence, some discrepancies emerged. Reading more than five scientific articles in the past three months was significantly associated with stronger CF beliefs ($B=0.178$, 95% CI [0.055–

0.301], $p < 0.01$) and higher CF use ($B = 0.181$, 95% CI [0.053–0.309], $p < 0.01$). Teaching activities were also linked to greater CF use ($B = 0.178$, 95% CI [0.027–0.329], $p = 0.021$). Conclusion: Argentine physiotherapists recognize the importance of CFs, especially therapeutic alliance and communication. Discrepancies between beliefs and use, along with regression results, suggest that academic exposure and teaching play a key role in CF integration, underscoring the need to strengthen education and training in clinical practice.

Keywords: surveys and questionnaires; physical therapy specialty; placebo effect; Argentina

INTRODUCTION

The interest in contextual factors (CFs) has significantly increased in recent years, gaining international recognition due to their impact on musculoskeletal pain management and improving therapeutic outcomes (Rossettini, Palese and Cook, 2024). CFs encompass the physical, psychological, and social elements involved in the clinical interaction between the patient and the physiotherapist (Cook et al, 2023). A proposed classification identifies five main domains: (i) the patient-therapist relationship; (ii) patient characteristics and beliefs; (iii) therapist characteristics and beliefs; (iv) treatment characteristics; and (v) the therapeutic environment (Cook et al, 2023).

Several systematic reviews and meta-analyses have examined the role of CFs in various musculoskeletal conditions, yielding heterogeneous results regarding their influence on pain and disability outcomes (Ezzatvar et al, 2024; Saueressig et al, 2024; Hohenschurz-Schmidt et al, 2024). The proportion of clinical effects attributable to CFs varies across studies, ranging from large to small effects, and depends on factors such

as patient and therapist characteristics, the condition being treated, the intervention applied, and the analytical methodology used (Poulter et al, 2025). Despite these variations, there is growing recognition that CFs contribute meaningfully to therapeutic outcomes and should be systematically considered in clinical practice (Rossettini, Palese and Cook, 2024).

Interest in how CFs affect physiotherapy is growing, yet to date, all related research has been conducted in Italy (Rossettini et al., 2018; Rossettini et al., 2020b; Bisconti et al., 2021). Findings from these surveys suggest that physiotherapists recognize CFs as key determinants of therapeutic outcomes and acknowledge their crucial role in clinical practice. However, the way CFs are perceived and integrated into clinical practice may vary across countries due to differences in professional training, healthcare systems, and cultural factors (Rossettini, Palese and Cook, 2024). Despite this, no studies have explored these perspectives in Argentina, and the potential relationship between professional characteristics and both CFs beliefs and use remains unexamined.

For this reason, this study aims to examine the perspectives of Argentine physiotherapists on CFs in the context of musculoskeletal pain management, including their beliefs, frequency of use, decision-making, application, communication, ethical considerations, mechanisms of action, and therapeutic benefits. Studying these aspects in Argentina provides an opportunity to explore cultural differences in CFs understanding and implementation, particularly in comparison to existing European research. Additionally, the study explores associations between professional characteristics and both beliefs about and the frequency of CFs use (Cook et al, 2023). It is hypothesized that certain professional characteristics of Argentine physiotherapists could be associated with their beliefs about CFs and with the frequency of their use in the context of musculoskeletal pain.

MATERIALS AND METHODS

Study design

We conducted a quantitative, exploratory, web-based cross-sectional survey, and this report was developed following the STrengthening the Reporting of OBservational Studies in Epidemiology (STROBE) guidelines for cross-sectional studies (von Elm et al, 2007), the Consensus-Based Checklist for Reporting of Survey Studies (CROSS) (Sharma et al, 2021), and the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) (Eysenbach, 2004), as detailed in Supplementary 1, 2 and 3. The research protocol received approval from the Institutional Review Board (PRIISA #4759, approved on 25/05/2021). The dataset is publicly available on OSF (<https://osf.io/hxn92/>).

Setting and Participants

The survey was conducted between October and December 2022 and targeted physiotherapists working in Argentina within the field of musculoskeletal treatment and rehabilitation. A convenience sampling strategy was used, as participation was voluntary and limited to an accessible sample of 512 members of the *Asociación de Kinesiología del Deporte* (AKD; www.akd.org.ar), a national scientific society that brings together professionals dedicated to sports and musculoskeletal physiotherapy.

Eligible participants were physiotherapists actively working in Argentina, specialized in musculoskeletal treatment and rehabilitation, and with a valid email address. Participants who did not provide informed consent or abandoned the survey before completing Section B were excluded from the analysis.

Sample Size

The sample size was calculated based on a target population of 512 members of a scientific society and response rates from previous studies on placebo-related effects and CFs (30.1–61.6%) (Rossettini 2018, 2020b; Palese 2019; Bisconti 2021). Using a 95% confidence level, a conservative 50.0% population proportion, and a target standard error of 0.03, the expected margin of error was $\pm 5.88\%$. This resulted in an expected response of 180 participants (Australian Bureau of Statistics, 2021).

Data collection instrument

The questionnaire used in this study was adapted from an original Italian version (Rossettini et al, 2018) through a systematic process that included cross-cultural adaptation, content validity assessment, and pilot testing. The methodological details and outcomes of this adaptation have been previously reported (Andreu et al, 2022). The cross-cultural adaptation was conducted in accordance with the International Society for Pharmacoeconomics and Outcomes Research (ISPOR) guidelines (Wild et al, 2005) and included multiple steps: initial authorization from the original authors, two independent forward translations into Argentine Spanish, reconciliation into a single version, and backward translation into Italian. The back-translated version was reviewed by the original developers to ensure conceptual equivalence with the source questionnaire. This was followed by cognitive interviews with ten Argentine physiotherapists, who assessed item clarity and contextual relevance. Based on their feedback, several modifications were introduced to improve language, flow, and cultural appropriateness. Content validity was evaluated using the COSMIN framework (COnsensus-based Standards for the selection of health Measurement INstruments)

(Prinsen et al., 2018; Terwee et al., 2018) through a two-round modified Delphi process involving a panel of ten expert physiotherapists. These experts were selected via convenience sampling and met predefined criteria: at least five years of clinical experience, current involvement in musculoskeletal pain management, substantial knowledge of CFs, and prior experience in the development and administration of surveys. Both qualitative and quantitative analyses were performed to assess the clarity, relevance, and comprehensiveness of the items. Finally, a pilot test was conducted through a second round of cognitive interviews with another group of ten physiotherapists to confirm the feasibility, acceptability, and clarity of the final version. The resulting questionnaire comprises 25 items organized into three sections (Andreu et al, 2022). Section A includes 11 closed questions focusing on demographic information and professional practices. Section B presents two clinical vignettes with multiple-choice questions. The first vignette involves a patient with low back pain and high expectations for ultrasound therapy (US), requiring respondents to decide on its use despite no contraindications and a lack of evidence. The second vignette describes a case of shoulder pain responding positively to sham US, prompting respondents to draw conclusions about its efficacy and effectiveness. Section C comprises nine closed-ended questions exploring various aspects of CFs, including their application, ethical and communication considerations, beliefs, frequency of use, mechanisms of action, and potential benefits. The questionnaire is available in both Argentine Spanish and English (Supplementary 4 and 5). The online version of the questionnaire was structured into 12 consecutive pages: Section A was distributed across 4 pages, Section B on a single page, and Section C across 7 pages.

Variable Selection

Two dependent variables were derived from Section C: beliefs about CFs and frequency of CFs use. These were measured using a five-point Likert scale, ranging from “Not at all” to “A great deal” for beliefs and from “Never” to “Always” for frequency of use. For the beliefs variable, a weighted average score was calculated for each participant to account for the additional exclusive response option, “I don’t know”.

Predictor variables were selected from Section A based on their potential relevance to the dependent variables. To facilitate analysis, variables with more than two categories were dichotomized. These transformations were guided by the distribution of responses and theoretical considerations.

Data collection procedure

We used SurveyMonkey® (www.surveymonkey.com), an online survey platform, to collect data between September and December 2022. The survey was self-administered and conducted exclusively online, allowing participants to complete it at their convenience.

Physiotherapists were invited via mass email (de Leeuw, Hox and Dillman, 2008), which included the survey link, study details, confidentiality assurances, and informed consent information. The first page of the online survey included the full informed consent text, which explained the study purpose, procedures, anonymity and data protection, voluntary nature of participation, and contact information for the research team and ethics committee. It also included a simplified definition of CFs to ensure participant understanding. This definition was adapted from previous literature (Rossettini et al., 2018; 2020b) and refined during the pilot testing and content validation process. CFs were described as psychosocial components of treatment capable of modulating patient symptoms, with practical examples such as the

physiotherapist's communication style, patient expectations, and environmental characteristics (e.g., scents, sounds, or decor). Clicking the link implied voluntary consent (Eysenbach and Wyatt, 2002). To boost participation, five email reminders were sent biweekly. No incentives were offered for participation. To prevent multiple submissions, the survey invitations were sent directly through SurveyMonkey® using a pre-uploaded list of email addresses, ensuring that only invited participants could access the survey and respond once. The survey was anonymous, as no personally identifiable information was collected. All responses were stored securely within SurveyMonkey®, with access restricted to the principal investigator (MFA). Data were handled in accordance with confidentiality guidelines to prevent unauthorized access. The survey, requiring all questions to be answered, took approximately 12 minutes to complete. Participants could review and modify their responses before final submission (Fan and Yan, 2010).

Statistical Analysis

Data collected via SurveyMonkey® were reviewed in Excel® to assess consistency and identify missing data. Responses terminated before completing Section A were excluded. Surveys with complete Section A responses were classified as “fully complete” if all sections were answered or “partially complete” if participants discontinued during Sections B or C.

The online survey was programmed with mandatory responses, which prevented item-level missing data within completed sections. The reduction in the number of responses observed across the dataset was due to progressive participant dropout, rather than item nonresponse. Available case analysis was applied, including

only respondents who completed the relevant portions of the survey. No imputation was performed.

A descriptive and exploratory analytical approach was employed. Descriptive statistics summarized demographic and professional characteristics, with continuous variables reported as means with standard deviations or medians with interquartile ranges, and categorical variables as frequencies and percentages. Comparisons between “fully complete” and “partially complete” responses were performed using Student’s t-test or Mann-Whitney U test for continuous variables and Chi-square or Fisher’s exact test for categorical variables.

To explore potential associations between professional factors and both CFs beliefs and frequency of use, univariate and multivariate linear regression analyses were conducted. Unstandardized regression coefficients (B) with 95% confidence intervals (95% CI) were reported. All predictor variables were entered simultaneously in the multivariate models. Multicollinearity among independent variables was assessed using variance inflation factors (VIFs). Given the exploratory nature of this study, no correction for multiple comparisons was applied. For statistically significant variables in the multivariate model, Cohen’s d was calculated based on Cohen (1988): small ($d = 0.20\text{--}0.49$), moderate ($d = 0.50\text{--}0.79$), and large ($d \geq 0.80$).

Spearman’s rho was calculated to assess correlations between beliefs and frequency of CF use. Correlation coefficients were calculated and interpreted according to Schober, Boer and Schwart (2018): poor (< 0.40), moderate ($0.40\text{--}0.69$), and strong (≥ 0.70).

Statistical significance was set at $p < 0.05$. All analyses were conducted using SPSS® version 27.0 (IBM Corp., Armonk, NY, USA).

RESULTS

Section A: Participant Characteristics

Of the 512 invitations sent, 262 respondents (51.2%) accessed the survey (participation rate). After excluding 29 incomplete responses, 233 valid surveys were analyzed (208 fully completed and 25 partially completed), yielding a response rate of 45.5%. The completion rate was 79.4% (208/262), calculated as the proportion of participants who completed all sections among those who accessed the survey.

Most respondents were men (n=172; 73.8%), with a median age of 35 years (IQR: 30–44). Among the total responses, 208 surveys (89.3%) were fully completed, while 25 (10.7%) were partially completed. Participant characteristics are detailed in Table 1. A comparison between groups revealed significant differences in scientific authorship.

After excluding 29 incomplete responses, a total of 233 valid responses were analyzed, resulting in an overall response rate of 45.5% (233/512).

Section B: Clinical Vignettes

In the first clinical case, participants were presented with a scenario involving a patient with low back pain and high expectations for US based on a previous positive experience. The most frequently chosen initial intervention was “propose using US only if the condition does not improve with another treatment preferred by the professional” (n=104; 44.6%), followed by “apply another commonly used treatment for low back

pain" (n=57; 24.5%), "attempt to convince the patient that US is not necessary" (n=43; 18.5%), "grant the US treatment" (n=26; 11.2%), and "do nothing" (n=3; 1.3%).

In the second clinical case, respondents were asked to interpret a positive response to sham US in a patient with shoulder pain. The most frequently selected explanation was "pain is not solely caused by organic factors but also psychological ones" (n=176; 75.5%), followed by "the therapist's positive attention led to pain reduction" (n=123; 52.8%), "the patient is highly suggestible" (n=59; 25.3%), "pain intensity naturally decreases over time" (n=51; 21.9%), and "the patient provided this response to please the therapist" (n=19; 8.2%).

Section C: Beliefs and Frequency of Use of Contextual Factors

Regarding beliefs, a total of 222 participants completed the question assessing physiotherapists' perceptions of the influence of 15 CFs on therapeutic outcomes. Considering the total number of responses (222 × 15 items), the relative frequencies were: 8.7% "I don't know", 2.6% "not at all", 6.3% "almost not", 18.8% "neutral", 46.7% "a lot", and 16.8% "a great deal". Excluding the "I don't know" responses, the mean belief score was 3.75 (95% CI: 3.70-3.81).

Regarding frequency of use, a total of 218 participants responded to the question on the intentional use of the same 15 CFs to enhance therapeutic outcomes. Based on the total responses (218 × 15 items), the relative frequencies were: 8.7% "never", 9.0% "almost never", 23.5% "sometimes", 29.3% "almost always", and 29.6% "always". The mean frequency score was 3.62 (95% CI: 3.56-3.68). A full breakdown of item-level response distributions is provided in [Table 2](#).

Figure 1 displays the percentage of participants who reported high beliefs (“a lot” and “a great deal” responses) and frequent use (“almost always” and “always” responses) of various CFs in musculoskeletal pain management. Among the 222 respondents, the most influential CFs were the empathetic therapeutic alliance (n=213; 95.9%), verbal communication (n=209; 94.1%), and positive attitudes and behavior toward the patient (n=206; 92.8%). Regarding frequency of use (n=218), the most commonly applied CFs were the empathetic therapeutic alliance (n=205; 94.0%), positive attitudes and behavior (n=203; 93.2%), and verbal communication (n=200; 91.7%).

Table 3 presents the correlations between beliefs and frequency of use for each CF. The results indicate a general alignment between perceived influence and usage patterns, with weak correlations identified for professional reputation, patient expectations and preferences, patient’s previous experience, and the patient-centered approach.

Section C: Application and Communication

To explore perceptions regarding the application and communication of CFs, a hypothetical scenario was presented involving the use of a non-operational physiotherapy device to enhance therapeutic outcomes. Among 233 valid responses, 171 (73.4%) stated they would not justify its use under any circumstances. Among those who would consider using it, the most common justification was “to alleviate the patient’s anxiety” (n=45; 19.3%).

Regarding communication, from 227 valid responses, 152 (67.0%) indicated they would not use the device under any circumstances. Among those who would, the most frequently cited reason was “it is a treatment that may help and will not cause harm” (n=40; 17.6%).

Section C: Mechanism of Action

Among the 215 participants who answered the question, 11 (5.1%) reported not knowing what mechanisms explain the effects of CFs. The remaining 204 selected the following options: “Conditioning” (n=153; 71.2%), “Patient expectations or beliefs” (n=153; 71.2%), “Psychological factors” (n=162; 75.3%), “Suggestion” (n=105; 48.8%), “Natural history of the condition” (n=76; 35.3%), “Neurophysiological factors” (n=68; 31.6%), and “Spiritual factors” (n=28; 13.0%).

Section C: Therapeutic Benefits

A total of 208 participants answered the question regarding the therapeutic effects of CFs on 13 health conditions. Considering the total responses (208 responses × 13 conditions), 30.8% stated that they did not know the effect of CFs, 11.0% believed they had a neurophysiological effect, 11.2% identified a psychological effect, 43.9% indicated that CFs had both neurophysiological and psychological effects, and 3.1% considered that CFs provided no therapeutic benefit ([Table 4](#)).

Factors Associated with Beliefs and Frequency of CF Use

Tables 5 and 6 present the results of the univariate and multivariate linear regression models examining factors associated with CF beliefs and frequency of use.

Regarding CF beliefs, the univariate model showed that reading more than five scientific articles in the past three months was significantly associated with higher belief scores ($B=0.165$; 95% CI: 0.054 - 0.277; $p<0.01$). This association remained significant in the multivariate model after adjusting for other factors ($B=0.178$; 95% CI: 0.055 - 0.301; $p<0.01$), suggesting that regular engagement with scientific literature is an independent predictor of CF beliefs, with a small effect size ($d=0.42$). No other variables showed statistically significant associations with CF beliefs in the multivariate model.

Regarding CF frequency of use, the univariate model also showed that reading more than five scientific articles in the past three months was significantly associated with greater frequency of use ($B=0.181$; 95% CI: 0.063 - 0.299; $p<0.01$). This association remained significant in the multivariate model ($B=0.181$; 95% CI: 0.053 - 0.309; $p<0.01$), indicating that reading scientific literature is an independent predictor of CF frequency of use, with a small effect size ($d=0.40$). Additionally, teaching activity showed a trend toward significance in the univariate model ($B=0.116$; 95% CI: -0.009 - 0.241; $p=0.07$) but reached statistical significance in the multivariate model ($B=0.178$; 95% CI: 0.027 - 0.329; $p=0.021$). This suggests that physiotherapists involved in teaching tend to use CFs more frequently, even when controlling for other variables, with a small effect size ($d=0.40$). No other variables showed statistically significant associations with CF beliefs or frequency of use.

DISCUSSION

This is the first study to explore Argentine physiotherapists' beliefs and use of CFs in musculoskeletal pain management. Participants reported strong beliefs in the therapeutic value of CFs, especially those linked to the patient–physiotherapist relationship. Therapeutic alliance, verbal communication, and positive attitudes were the most influential and frequently applied. These findings are consistent with a previous study conducted in Italy (Rossettini et al, 2020a), suggesting that certain interpersonal CFs may play a universally significant role across cultural contexts. Clinically, these factors contribute to building trust, enhancing patient engagement, and fostering adherence to treatment plans (Peterson, Erb and Davenport, 2022). These are critical components in the management of musculoskeletal conditions, where outcomes are often shaped by subjective experiences such as pain, disability, and perceived improvement (Rossettini, Palese and Cook, 2024). Theoretically, these CFs align with biopsychosocial and contextual models of care, which emphasize the dynamic interaction between therapeutic context and patient outcomes (Hutting et al, 2022). Their consistent identification across studies highlights the need to prioritize and train these skills in physiotherapy education and clinical practice.

However, discrepancies emerged between beliefs and use for some CFs. Patient-centered care, patients' expectations and experiences, and professional reputation were highly valued but less frequently implemented. Regression analyses showed that reading scientific literature was associated with stronger CF-related beliefs and use, while teaching was linked only to greater use. Although effect sizes were small, these associations suggest that continuous exposure to academic environments may enhance CF awareness and application. This supports previous evidence on the impact of evidence-based practice in clinical reasoning (Dawes et al, 2005). The teaching association may reflect a selection effect—whereby professionals

already inclined to use CFs are more likely to engage in teaching, rather than teaching itself being a direct driver of CFs application (Rossettini et al, 2020a).

Our findings align with European studies, particularly from Italy, where CFs are similarly prioritized (Bisconti et al, 2021; Rossettini et al, 2018, 2020b). In both contexts, therapeutic alliance, communication, attitudes, and physical contact were consistently valued and applied. These factors have been linked to clinically meaningful outcomes (Kelley et al, 2014; Peterson, Erb and Davenport, 2022; Andreu et al, 2024; Ezzatvar et al, 2024; Rossettini, Palese and Cook, 2024).

Nonetheless, Italian physiotherapists reported greater alignment between beliefs and use. Factors like patient-centered care, expectations and preferences, prior experiences, and non-verbal communication were both highly rated and frequently applied (Rossettini et al, 2018). In contrast, Argentine physiotherapists reported lower use despite acknowledging their importance. This may reflect contextual challenges such as high patient loads, limited consultation time, insufficient training, and lack of institutional support. In many outpatient or private settings in Argentina, for instance, clinicians often work independently and without formal protocols, relying more on clinical intuition and personal experience than on standardized frameworks for implementing CFs (Pierobon, Villalba, Ferreira and Maher, 2021).

Our data also reveal within-country gaps between beliefs and application. CFs such as professional reputation, patient's previous experience, and patients' expectations and preferences were valued yet inconsistently used. Patient-centered care may be especially difficult to apply in high-demand settings, where establishing meaningful connections and shared decision-making is challenging (Hutting et al, 2022). Addressing this gap may require targeted education and practical tools to

support CF integration in daily care (Poulter et al, 2025). Overall, these discrepancies may reflect a combination of ethical concerns (e.g., around self-promotion), limited training on how to operationalize certain CFs, and systemic barriers such as time constraints and high patient loads.

This study presents several practical implications, particularly regarding the clinical application of CFs. Properly incorporating these elements into practice, especially by reinforcing aspects such as the therapeutic alliance, communication skills, and professional behavior, may represent a cost-effective strategy to optimize therapeutic outcomes in musculoskeletal pain management, particularly in resource-limited settings (Testa and Rossetini, 2016). While some CFs may arise naturally during clinical encounters or be leveraged implicitly without clinicians consciously identifying them as such, their intentional and ethical strengthening can broaden the therapeutic repertoire and improve care effectiveness. As such, future research should explore whether increasing explicit awareness and skill in CF use leads to measurable improvements in patient outcomes beyond current intuitive practices. For example, the ContextualizAR trial, a randomized controlled study currently underway, is evaluating the effectiveness of contextually enriched care in patients with mechanical neck pain (Andreu et al, 2024). Such initiatives demonstrate that the deliberate use of CFs is not merely theoretical but is being actively explored in clinical research, and their findings may contribute to the development of practical recommendations for the ethical and effective implementation of CFs in physiotherapy.

From an educational standpoint, the findings highlight the need to integrate CFs into physiotherapy training programs more explicitly. In line with international recommendations (Evers et al, 2018), integrating CFs education into physiotherapy curricula—through case-based learning, simulations, and reflective exercises—may

help bridge the gap between theoretical knowledge and clinical implementation (Rossettini et al, 2020a). Additionally, our findings suggest that academic engagement, such as involvement in teaching or reading scientific literature, may support the development of CF-related competencies by fostering regular exposure to current evidence and contemporary clinical reasoning models (Bianchi, Rossettini, Cerritelli and Esteves, 2025). This type of engagement could therefore be strategically promoted within both educational and clinical training pathways.

For research, the results suggest the value of conducting further cross-cultural studies to explore how CFs are understood and applied in different countries and healthcare systems. Future research could also employ qualitative designs to gain deeper insight into the barriers and facilitators influencing the use of CFs in clinical settings (Rossettini, Palese and Cook, 2024).

Limitations

This study has several limitations. First, its cross-sectional design limits causal inferences, and the convenience sampling of scientific society members may affect generalizability to all Argentine physiotherapists. Second, the use of self-reported measures introduces potential social desirability and recall biases, possibly overestimating actual CF use. Third, although the response rate (45.5%) was similar to the average reported for online surveys (44.1%) (Wu, Zhao, and Fils-Aime, 2022), selection bias cannot be ruled out, as those more interested or familiar with CFs may have been more inclined to respond. Finally, the quantitative design does not capture the complexity of clinicians' reasoning or contextual decision-making. Qualitative research could enrich these findings by exploring barriers and facilitators in greater

depth (Ryan, Coughlan and Cronin, 2007). Future longitudinal and qualitative studies could help address these limitations.

Despite these constraints, this is the first study to investigate beliefs and use of Cfs among Argentine physiotherapists, offering novel insights into a previously unexplored cultural and professional setting. The final sample size ($n = 233$) yielded a recalculated margin of error of $\pm 4.75\%$ at a 95% confidence level, indicating good statistical precision for the descriptive estimates. This strengthens the internal reliability of the findings. While generalizability is limited by the non-random sampling strategy, both the response rate (45.5%) and the margin of error fall within recommended thresholds for survey research quality (Story and Tait, 2019). Overall, this study contributes to a broader understanding of how contextual and systemic elements influence CF application and provides a foundation for future cross-cultural and implementation research.

CONCLUSION

Argentine physiotherapists acknowledge the importance of CFs, particularly the therapeutic alliance, verbal communication, and positive attitudes, which were the most valued and commonly applied. However, gaps remain between beliefs and use. Multivariate analyses suggest that professional development through academic exposure and teaching activities may influence both beliefs and application.

Table 1. Characteristics of the Survey Participants

Variables	Total	Fully	Partially	p value
	Sample (n=233)	completed (n=208)	completed (n=25)	
Male sex, n (%)	172 (73.8)	153 (73.6)	19 (76)	0.79
Age, median (IQR), years	35 (30 - 44)	35 (31 - 44)	31 (29 - 38)	0.09
Years since physiotherapy graduation, median (IQR)	9 (5 - 16)	9.5 (6 - 17)	6 (4.5 - 14)	0.19
Completed postgraduate education	88 (37.8)	79 (38)	9 (36)	0.85
Practice in sports physiotherapy, n (%)	125 (53.6)	108 (51.9)	17 (68)	0.13
Teaching activity, n (%)	79 (33.9)	73 (35.1)	6 (24)	0.27
Workload, median (IQR), hours/week	30 (15 - 40)	30 (15 - 40)	30 (22 - 41)	0.26
≥ 2 patients load per hour, n (%)	172 (73.8)	153 (73.6)	19 (76)	0.79
Difficulty reading articles in English, n (%)	89 (38.2)	75 (36.1)	14 (56)	0.053
Use of scientific databases (e.g., PubMed)	201 (86.3)	183 (88)	18 (72)	0.06
>5 scientific articles read in the last 3 months, n (%)	98 (42.1)	91 (43.8)	7 (28)	0.13
Authorship of scientific articles in the last 5 years, n (%)	59 (25.3)	58 (27.9)	1 (4)	0.009

IQR = interquartile range; ≥ = greater than or equal to; n = number of participants; (%) = percentage

Table 2. Counts and Percentages for Beliefs and Frequency of Use of Contextual Factors.

Contextual factors items *	Beliefs n=222						Frequency of Use n=218				
	<i>I don't know</i>	<i>Not at all</i>	<i>A little</i>	<i>Neither a little nor a lot</i>	<i>A lot</i>	<i>A great deal</i>	<i>Never</i>	<i>Rarely</i>	<i>Sometimes</i>	<i>Almost always</i>	<i>Always</i>
A) Professional reputation (e.g., qualifications, experience, referrals, being the therapist of a well-known athlete)	18 (8.1)	6 (2.7)	18 (8.1)	37 (16.7)	116 (52.3)	27 (12.2)	86 (39.4)	60 (27.5)	57 (26.1)	9 (4.1)	6 (2.8)
A) Uniform (e.g., uniform, white coat, tattoos, hairstyle)	9 (4.1)	24 (10.8)	42 (18.9)	58 (26.1)	79 (35.6)	10 (4.5)	58 (26.6)	34 (15.6)	49 (22.5)	42 (19.3)	35 (16.1)
A) Positive attitudes and optimistic behavior (e.g., expressing optimism about the patient's	4 (1.8)	1 (0.5)	0 (0)	11 (5)	131 (59)	75 (33.8)	1 (0.5)	0 (0)	14 (6.4)	83 (38.1)	120 (55)
B) Patient's expectation and preference (e.g., a treatment recommended by others)	3 (1.4)	3 (1.4)	11 (5)	33 (14.9)	140 (63.1)	32 (14.4)	11 (5.0)	7 (3.2)	63 (28.9)	70 (32.1)	67 (30.7)
B) Patient's previous experience e.g., positive or negative outcomes from prior physical therapy treatments)	10 (4.5)	8 (3.6)	26 (11.7)	75 (33.8)	86 (38.7)	17 (7.7)	20 (9.2)	40 (18.3)	110 (50.5)	31 (14.2)	17 (7.8)
C) Verbal communication (e.g., use of familiar language, explanation of treatment rationale)	2 (0.9)	0 (0)	3 (1.4)	8 (3.6)	137 (61.7)	72 (32.4)	1 (0.5)	0 (0)	17 (7.8)	72 (33)	128 (58.7)
C) Non-verbal communication (e.g., posture, gestures, eye contact, facial expressions)	4 (1.8)	2 (0.9)	10 (4.5)	42 (18.9)	121 (54.5)	43 (19.4)	4 (1.8)	8 (3.7)	45 (20.6)	83 (38.1)	78 (35.8)
C) Empathetic therapeutic alliance with the patient (e.g., getting to know the patient, active listening, showing care and commitment)	0 (0)	1 (0.5)	0 (0)	8 (3.6)	98 (44.1)	115 (51.8)	0 (0)	0 (0)	13 (6.0)	80 (36.7)	125 (57.3)
D) Overt therapy (e.g., suggesting the patient watch you perform a therapeutic maneuver using a mirror)	66 (29.7)	14 (6.3)	21 (9.5)	59 (26.6)	55 (24.8)	7 (3.2)	72 (33)	34 (15.6)	63 (28.9)	36 (16.5)	13 (6.0)
D) Patient-centered approach (e.g., shared decision-making regarding treatment)	13 (5.9)	15 (6.8)	26 (11.7)	70 (31.5)	87 (39.2)	11 (5)	12 (5.5)	43 (19.7)	115 (52.8)	34 (15.6)	14 (6.4)
D) Professional approach to patient (e.g., maintaining privacy, punctuality)	1 (0.5)	2 (0.9)	10 (4.5)	29 (13.1)	136 (61.3)	44 (19.8)	2 (0.9)	2 (0.9)	31 (14.2)	80 (36.7)	103 (47.2)
D) Physical contact with the patient (e.g., manual contact for demonstration, preparation, or assistance)	1 (0.5)	0 (0)	4 (1.8)	23 (10.4)	139 (62.6)	55 (24.8)	0 (0)	0 (0)	30 (13.8)	93 (42.7)	95 (43.6)
E) Comfortable setting (e.g., low noise levels, music, pleasant fragrances, appropriate temperature)	3 (1.4)	1 (0.5)	4 (1.8)	50 (22.5)	121 (54.5)	43 (19.4)	1 (0.5)	10 (4.6)	41 (18.8)	96 (44)	70 (32.1)
E) Adequate environmental architecture (e.g., private rooms, modern and innovative equipment, spaciousness, windows)	3 (1.4)	3 (1.4)	16 (7.2)	67 (30.2)	110 (49.5)	23 (10.4)	2 (0.9)	16 (7.3)	59 (27.1)	87 (39.9)	54 (24.8)
E) Adequate design (e.g., decorations, ornaments, and color schemes)	4 (1.8)	10 (4.5)	30 (13.5)	89 (40.1)	75 (33.8)	14 (6.3)	10 (4.6)	40 (18.3)	62 (28.4)	62 (28.4)	44 (20.2)

All numerical values are presented as counts and percentages (%). * Contextual factors (CFs) were categorized according to Testa and Rossettini (2016) into five domains: A) CFs related to the physical therapist; B) CFs related to the patient; C) CFs related to the patient–therapist relationship; D) CFs related to the treatment; and E) CFs related to the therapeutic environment.

Table 3. Correlation Between Beliefs in Contextual Factors and Their Use in Clinical Practice

Contextual factors items	Beliefs *		Frequency of Use		Correlation **		
	n	mean (95% CI)	n	mean (95% CI)	n	rho Spearman	Interpretation
<i>CFs related to the physiotherapist</i>	200	2.69 (2.6 - 2.78)	218	2.11 (2.01 - 2.21)	197	0.47 ^a	moderate
Professional reputation	204	2.69 (2.56 - 2.82)	218	1.03 (0.89 - 1.17)	200	0.31 ^a	weak
Uniform	213	2.04 (1.89 - 2.20)	218	1.83 (1.64 - 2.02)	210	0.45 ^a	moderate
Positive attitudes and optimistic behavior	218	3.28 (3.20 - 3.36)	218	3.47 (3.38 - 3.56)	215	0.45 ^a	moderate
<i>CFs related to the patient</i>	210	2.6 (2.5 - 2.71)	218	2.37 (2.25 - 2.49)	207	0.45 ^a	moderate
Patient's expectation and preference	219	2.85 (2.75 - 2.96)	218	2.8 (2.66 - 2.95)	215	0.30 ^a	weak
Patient's previous experience	212	2.37 (2.24 - 2.49)	218	1.93 (1.8 - 2.06)	209	0.43 ^a	moderate
<i>CFs related to the patient-physiotherapist relationship</i>	217	3.21 (3.14 - 3.28)	218	3.34 (3.26 - 3.43)	214	0.52 ^a	moderate
Verbal communication	220	3.26 (3.18 - 3.34)	218	3.5 (3.4 - 3.59)	217	0.39 ^a	weak
Non-verbal communication	218	2.88 (2.78 - 2.99)	218	3.02 (2.9 - 3.15)	215	0.45 ^a	moderate
Empathetic therapeutic alliance with the patient	222	3.47 (3.39 - 3.55)	218	3.51 (3.43 - 3.6)	218	0.35 ^a	weak
<i>CFs related to the treatment</i>	153	2.62 (2.53 - 2.71)	218	2.51 (2.43 - 2.58)	150	0.49 ^a	moderate
Overt therapy	156	2.13 (1.97 - 2.29)	218	1.47 (1.3 - 1.64)	153	0.57 ^a	moderate
Patient-centered approach	209	2.25 (2.12 - 2.39)	218	1.98 (1.86 - 2.1)	206	0.48 ^a	moderate
Professional approach to patient	221	2.95 (2.89 - 3.05)	218	3.28 (3.18 - 3.39)	217	0.44 ^a	moderate
Physical contact with the patient	221	3.11 (3.02 - 3.19)	218	3.3 (3.21 - 3.39)	217	0.36 ^a	weak
<i>CFs related to the therapeutic environment</i>	216	2.6 (2.5 - 2.69)	218	2.75 (2.63 - 2.86)	213	0.57 ^a	moderate
Comfortable setting	219	2.92 (2.82 - 3.01)	218	3.03 (2.91 - 3.14)	216	0.42 ^a	moderate
Adequate environmental architecture	219	2.61 (2.50 - 2.72)	218	2.8 (2.68 - 2.93)	215	0.44 ^a	moderate
Adequate design	218	2.24 (2.12 - 2.37)	218	2.41 (2.26 - 2.56)	214	0.50 ^a	moderate
<i>Total</i>	222	2.75 (2.70 - 2.81)	218	2.62 (2.56 - 2.68)	218	0.60 ^a	moderate

CFs = Contextual Factors; CI = Confidence Interval; n = number of participants

* Responses from participants who selected "Don't know" were excluded from the analysis.

** Correlation coefficients were interpreted according to Schober, Boer and Schwart (2018): poor (< 0.40), moderate (0.40–0.69), and strong (≥ 0.70).

^a Statistically significant correlation (p < 0.05).

Table 4. Therapeutic Effects of Contextual Factors on Different Health Conditions (n=208)

Health Condition	<i>I don't know</i>	<i>Psychological</i>	<i>Neurophysiological</i>	<i>Both</i>	<i>No benefit</i>
Acute pain	25 (12)	41 (19.7)	13 (6.3)	122 (58.7)	7 (3.4)
Chronic pain	19 (9.1)	5 (2.4)	14 (6.7)	167 (80.3)	3 (1.4)
Emotional problems	20 (9.6)	2 (1)	96 (46.2)	90 (43.3)	0 (0)
Gastrointestinal problems	70 (33.7)	14 (6.7)	16 (7.7)	103 (49.5)	5 (2.4)
Sexual problems	79 (38)	1 (0.5)	38 (18.3)	86 (41.3)	4 (1.9)
Drug or medication dependence	71 (34.1)	7 (3.4)	42 (20.2)	84 (40.4)	4 (1.9)
Respiratory problems	75 (36.1)	37 (17.8)	7 (3.4)	82 (39.4)	7 (3.4)
Neurological problems	69 (33.2)	57 (27.4)	4 (1.9)	73 (35.1)	5 (2.4)
Rheumatological problems	61 (29.3)	33 (15.9)	9 (4.3)	96 (46.2)	9 (4.3)
Immune system problems/allergies	68 (32.7)	28 (13.5)	14 (6.7)	91 (43.8)	7 (3.4)
Oncological problems	92 (44.2)	17 (8.2)	16 (7.7)	76 (36.5)	7 (3.4)
Cardiovascular problems	85 (40.9)	32 (15.4)	4 (1.9)	75 (36.1)	12 (5.8)
Infections	98 (47.1)	43 (20.7)	5 (2.4)	45 (21.6)	17 (8.2)
Insomnia	65 (31.3)	3 (1.4)	48 (23.1)	89 (42.8)	3 (1.4)

All numerical values are presented as counts and percentages (%).

Table 5. Linear Regression Model for Factors Associated with Beliefs About the Effects of Contextual Factors (n=222)

Variables	Univariate model *		Multivariate model **	
	B (CI 95%)	p-value	B (CI 95%)	p-value
Sex				
Female	Ref.		Ref.	
Male	0.057 (-0.071 - 0.185)	0.38	0.058 (-0.074 - 0.191)	0.39
Time since physiotherapy graduation				
< 10 years	Ref.		Ref.	
≥ 10 years	-0.062 (-0.174 - 0.051)	0.28	-0.054 (-0.171 - 0.063)	0.36
Completed postgraduate education				
No	Ref.		Ref.	
Yes (specialization, master, PhD)	-0.015 (-0.131 - 0.101)	0.8	-0.031 (-0.155 - 0.092)	0.62
Teaching activity				
No	Ref.		Ref.	
Yes	0.022 (-0.097 - 0.141)	0.71	0.054 (-0.091 - 0.2)	0.46
Practice in sports physiotherapy				
No	Ref.		Ref.	
Yes	0.041 (-0.072 - 0.154)	0.48	0.019 (-0.099 - 0.137)	0.75
Workload (hours/week)				
< 30	Ref.		Ref.	
≥ 30	0.056 (-0.056 - 0.169)	0.32	0.036 (-0.082 - 0.154)	0.54
Patient load per hour				
< 2	Ref.		Ref.	
≥ 2	0.032 (-0.095 - 0.160)	0.62	0.019 (-0.113 - 0.151)	0.78
Difficulty understanding english articles				
No	Ref.		Ref.	
Yes	0.014 (-0.102 - 0.130)	0.81	0.05 (-0.076 - 0.176)	0.43
Use of scientific databases				
No	Ref.		Ref.	
Yes	0.004 (-0.161 - 0.169)	0.96	-0.022 (-0.195 - 0.151)	0.8
Reading scientific articles in the last 3 months				
≤ 5	Ref.		Ref.	
> 5	0.165 (0.054 - 0.277)	0.004	0.178 (0.055 - 0.301)	0.005
Authorship of scientific articles in the last 5 years				
No	Ref.		Ref.	
Yes	-0.051 (-0.178 - 0.077)	0.43	-0.083 (-0.232 - 0.066)	0.27

n = number of participants; ≥ = greater than or equal to; ≤ = less than or equal to; CI = Confidence Interval; B = Unstandardized regression coefficient; Ref. = Reference category.

Significant p-values (< 0.05) in bold.

* The predictor variables were entered separately in the univariate model.

** The predictor variables were entered simultaneously in the multivariate model.

Table 6. Linear Regression Model for Factors Associated with the Use of Contextual Factors (n=218)

Variables	Univariate model *		Multivariate model **	
	B (CI 95%)	p-value	B (CI 95%)	p-value
Sex				
Female	Ref.		Ref.	
Male	0.027 (-0.109 - 0.163)	0.7	0.026 (-0.112 - 0.164)	0.71
Time since physiotherapy graduation				
< 10 years	Ref.		Ref.	
≥ 10 years	-0.045 (-0.165 - 0.074)	0.46	-0.064 (-0.187 - 0.059)	0.31
Completed postgraduate education				
No	Ref.		Ref.	
Yes (specialization, master, PhD)	0.008 (-0.115 - 0.131)	0.898	-0.02 (-0.149 - 0.109)	0.76
Teaching activity				
No	Ref.		Ref.	
Yes	0.116 (-0.009 - 0.241)	0.069	0.178 (0.027 - 0.329)	0.021
Practice in sports physiotherapy				
No	Ref.		Ref.	
Yes	0.028 (-0.092 - 0.147)	0.65	0.013 (-0.11 - 0.136)	0.83
Workload (hours/week)				
< 30	Ref.		Ref.	
≥ 30	0.087 (-0.033 - 0.206)	0.15	0.084 (-0.04 - 0.207)	0.18
Patient load per hour				
< 2	Ref.		Ref.	
≥ 2	0.020 (-0.115 - 0.154)	0.77	0.016 (-0.121 - 0.153)	0.82
Difficulty understanding english articles				
No	Ref.		Ref.	
Yes	0.027 (-0.097 - 0.150)	0.67	0.08 (-0.052 - 0.212)	0.23
Use of scientific databases				
No	Ref.		Ref.	
Yes	-0.099 (-0.275 - 0.076)	0.27	-0.129 (-0.31 - 0.052)	0.16
Reading scientific articles in the last 3 months				
≤ 5	Ref.		Ref.	
> 5	0.181 (0.063 - 0.299)	0.003	0.181 (0.053 - 0.309)	0.006
Authorship of scientific articles in the last 5 years				
No	Ref.		Ref.	
Yes	-0.032 (-0.166 - 0.102)	0.64	-0.104 (-0.259 - 0.05)	0.18

n = number of participants; ≥ = greater than or equal to; ≤ = less than or equal to; CI = Confidence Interval; B = Unstandardized regression coefficient; Ref. = Reference category.

Significant p-values (< 0.05) in bold.

* The predictor variables were entered separately in the univariate model.

** The predictor variables were entered simultaneously in the multivariate model.

REFERENCES

- Andreu MF, Soliño S, Villalba F, Policastro PO, Laurens ML, D'Aversa G, Mastandrea M, Rodriguez F, Ramirez A, Cook C, Rossettini G 2024 Contextual Factors-Enriched Standard Care on mechanical neck pain (ContextualizAR trial): Protocol for a randomised controlled trial. *Musculoskeletal care* 22: e1894. <https://doi.org/10.1002/msc.1894>
- Andreu M, Policastro P, Terrasa SA, Rossettini G, Testa, M, Dias de Carvalho T, Pardo Y 2022 Adaptación transcultural y validación de contenido de un cuestionario para explorar las perspectivas de fisioterapeutas de Argentina con respecto al uso de factores contextuales en el dolor musculoesquelético. *Argentinian Journal of Respiratory and Physical Therapy* 4: 20–31.
- Australian Bureau of Statistics 2021 Sample size calculator.
<https://www.abs.gov.au/websitedbs/d3310114.nsf/home/sample+size+calculator>
or
- Bianchi M, Rossettini G, Cerritelli F, Esteves JE 2025 Insights into how manual therapists incorporate the biopsychosocial-enactive model in the care of individuals with CLBP: a qualitative study. *Chiropr Man Therap* 33: 7.
<https://doi.org/10.1186/s12998-025-00574-3>
- Bisconti M, Venturin D, Bianco A, Capurso V, Giovannico G 2021 Understanding Contextual Factors Effects and Their Implications for Italian Physiotherapists: Findings from a National Cross-Sectional Study. *Healthcare (Basel, Switzerland)* 9: 689. <https://doi.org/10.3390/healthcare9060689>
- Cohen J 1988 Statistical power analysis for the behavioral sciences (2nd ed.). Routledge.
- Cook CE, Bailliard A, Bent J, Bialosky JE, Carlino E, Colloca L, Esteves JE, Newell D, Palese A, Reed WR, et al. 2023 An international consensus definition for

- contextual factors: findings from a nominal group technique. *Frontiers in psychology* 14: 1178560. <https://doi.org/10.3389/fpsyg.2023.1178560>
- Dawes M, Summerskill W, Glasziou P, Cartabellotta A, Martin J, Hopayian K, Porzsolt F, Burls A, Osborne J, Second International Conference of Evidence-Based Health Care Teachers and Developers 2005 Sicily statement on evidence-based practice. *BMC medical education* 5: 1. <https://doi.org/10.1186/1472-6920-5-1>
- de Leeuw D, Hox J, Dillman D 2008 *International handbook of survey methodology* (1st ed.). Taylor & Francis Group.
- Evers AWM, Colloca L, Blease C, Annoni M, Atlas LY, Benedetti F, Bingel U, Büchel C, Carvalho C, Colagiuri B, et al. 2018 Implications of Placebo and Nocebo Effects for Clinical Practice: Expert Consensus. *Psychotherapy and psychosomatics* 87: 204–210.
- Eysenbach G 2004 Improving the quality of Web surveys: the Checklist for Reporting Results of Internet E-Surveys (CHERRIES). *Journal of medical Internet research* 6: e34. <https://doi.org/10.2196/jmir.6.3.e34>
- Eysenbach G, Wyatt J 2002 Using the Internet for surveys and health research. *Journal of medical Internet research* 4: E13. <https://doi.org/10.2196/jmir.4.2.e13>
- Ezzatvar Y, Dueñas L, Balasch-Bernat M, Lluch-Girbés E, Rossettini G 2024 Which Portion of Physiotherapy Treatments' Effect Is Not Attributable to the Specific Effects in People With Musculoskeletal Pain? A Meta-Analysis of Randomized Placebo-Controlled Trials. *The Journal of orthopaedic and sports physical therapy* 54: 391–399.
- Fan W, Yan Z 2010 Factors affecting response rates of the web survey: A systematic review. *Computers in Human Behavior* 26: 132–139.

- Hohenschurz-Schmidt D, Phalip J, Chan J, Gauhe G, Soliman N, Vollert J, Lunde SJ, Vase L 2024 Placebo analgesia in physical and psychological interventions: Systematic review and meta-analysis of three-armed trials. *European journal of pain* (London, England) 28: 513–531.
- Hutting N, Caneiro JP, Ong'we OM, Miciak M, Roberts L 2022 Patient-centered care in musculoskeletal practice: Key elements to support clinicians to focus on the person. *Musculoskeletal science & practice* 57: 102434.
<https://doi.org/10.1016/j.msksp.2021.102434>
- Kelley JM, Kraft-Todd G, Schapira L, Kossowsky J, Riess H 2014 The influence of the patient-clinician relationship on healthcare outcomes: a systematic review and meta-analysis of randomized controlled trials. *PloS one* 9: e94207.
<https://doi.org/10.1371/journal.pone.0094207>
- Palese A, Cadorin L, Testa M, Geri T, Colloca L, Rossettini G 2019 Contextual factors triggering placebo and nocebo effects in nursing practice: Findings from a national cross-sectional study. *Journal of clinical nursing* 28: 1966–1978.
- Peterson SR, Erb M, Davenport TE 2022 From Idea Cults to Clinical Chameleons: Moving Physical Therapists' Professional Identity Beyond Interventions. *The Journal of orthopaedic and sports physical therapy* 52: 170–174.
- Pierobon A, Villalba F, Ferreira G, Maher CG 2021 Insights into low back pain management in Argentina. *Brazilian journal of physical therapy* 25: 659–663.
- Poulter D, Palese A, Rodeghiero L, Carlino E, Esteves JE, Cook C, Rossettini G 2025 Contextual effects in musculoskeletal pain: are we overlooking essential factors?. *Frontiers in psychology* 16: 1537242.
<https://doi.org/10.3389/fpsyg.2025.1537242>

Prinsen CAC, Mokkink LB, Bouter LM, Alonso J, Patrick DL, de Vet HCW, Terwee CB 2018 COSMIN guideline for systematic reviews of patient-reported outcome measures. *Qual Life Res* 27: 1147-1157.

Rossettini G, Camerone EM, Carlino E, Benedetti F, Testa M 2020a Context matters: the psychoneurobiological determinants of placebo, nocebo and context-related effects in physiotherapy. *Archives of physiotherapy* 10: 11.
<https://doi.org/10.1186/s40945-020-00082-y>

Rossettini G, Geri T, Palese A, Marzaro C, Mirandola M, Colloca L, Fiorio M, Turolla A, Manoni, M, Testa M 2020b What Physiotherapists Specialized in Orthopedic Manual Therapy Know About Nocebo-Related Effects and Contextual Factors: Findings From a National Survey. *Frontiers in psychology* 11: 582174. <https://doi.org/10.3389/fpsyg.2020.582174>

Rossettini G, Palese A, Cook C 2024 "Trying to explain the unexplainable": why research on contextual factors in musculoskeletal pain is needed. *Pain management* 14: 465–468.

Rossettini G, Palese A, Geri T, Fiorio M, Colloca L, Testa M 2018. Physical therapists' perspectives on using contextual factors in clinical practice: Findings from an Italian national survey. *PloS one* 13: e0208159.
<https://doi.org/10.1371/journal.pone.0208159>

Ryan F, Coughlan M, Cronin P 2007 Step-by-step guide to critiquing research. Part 2: Qualitative research. *British journal of nursing* (Mark Allen Publishing) 16: 738–744.

Saueressig T, Owen PJ, Pedder H, Arora NK, Simons M, Kaczorowski S, Miller CT, Donath L, Belavy DL 2024 Boosting treatment outcomes via the patient-practitioner relationship, treatment-beliefs or therapeutic setting. A systematic

- review with meta-analysis of contextual effects in chronic musculoskeletal pain. *The Journal of orthopaedic and sports physical therapy* 54: 440–456.
- Schober P, Boer C, Schwart LA 2018 Correlation Coefficients: Appropriate Use and Interpretation. *Anesthesia and analgesia* 126: 1763–1768.
- Sharma A, Minh Duc NT, Luu Lam Thang T, Nam NH, Ng SJ, Abbas KS, Huy NT, Marušić A, Paul CL, Kwok J, et al. 2021 A Consensus-Based Checklist for Reporting of Survey Studies (CROSS). *Journal of general internal medicine* 36: 3179–3187.
- Story DA, Tait AR 2019 Survey Research. *Anesthesiology* 130: 192-202.
- Terwee CB, Prinsen CAC, Chiarotto A, Westerman MJ, Patrick DL, Alonso J, Bouter LM, de Vet HCW, Mokkink LB 2018 COSMIN methodology for evaluating the content validity of patient-reported outcome measures: a Delphi study. *Qual Life Res* 27: 1159-1170.
- Testa M, Rossetini G 2016 Enhance placebo, avoid nocebo: How contextual factors affect physiotherapy outcomes. *Manual therapy* 24: 65–74.
- von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsch P C, Vandenbrouck JP, STROBE Initiative 2007 Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *BMJ (Clinical research ed.)* 335: 806–808.
- Wild D, Grove A, Martin M, Eremenco S, McElroy S, Verjee-Lorenz A, Erikson P; ISPOR Task Force for Translation and Cultural Adaptation 2005 Principles of Good Practice for the Translation and Cultural Adaptation Process for Patient-Reported Outcomes (PRO) Measures: report of the ISPOR Task Force for Translation and Cultural Adaptation. *Value Health* 8: 94-104.

Wu MJ, Zhao K, Fils-Aime F 2022 Response rates of online surveys in published research: a meta-analysis. *Comput Hum Behav* 7: 100206.

<https://doi.org/10.1016/j.chbr.2022.100206>

Legend

Figure 1. Beliefs and Frequency of Use of Contextual Factors in Musculoskeletal Pain Management. Percentage of participants who endorsed high beliefs (“A lot” and “A great deal” responses) and frequent use (“Almost always” and “Always” responses) of various contextual factors in musculoskeletal pain management. Contextual factors are categorized into five domains: (A) Contextual factors related to the physiotherapist, (B) Contextual factors related to the patient, (C) Contextual factors related to the patient-physiotherapist interaction, (D) Contextual factors related to the treatment, and (E) Contextual factors related to the therapeutic environment. The orange bars represent beliefs, while the red bars represent frequency of use.