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Use of the Spanish Version of the Physiotherapy Evidence Database (PEDro) Scale: A Meta-Research Study of Systematic Reviews

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ABSTRACT

Background: Widely used to assess the quality of trials in physical therapy, the Physiotherapy Evidence Database (PEDro) scale has been translated into several languages, including Spanish. Nevertheless, no data are available on the use of the Spanish version of the scale or its adoption by Spanish-speaking authors.

Purpose: To examine the use of the PEDro scale by Spanish-speaking authors, and the application of its Spanish version since its publication.

Methods: A meta-research study of systematic reviews was conducted to identify potentially eligible systematic reviews. From 6349 references screened, 4196 reports fulfilled our inclusion criteria and were sought for retrieval. A data extraction form was developed and piloted with a random sample of 32.6% of the included papers, with average inter-coder agreement of Kappa = 0.84 for categorical variables, and an average intra-class correlation of ICC = 0.98 for continuous variables. Primary outcomes included the language, Spanish-speaking country of the study, country of the authors, and use of the PEDro scale and field of application.

Results: This meta-research included a total of 650 studies in Spanish or English that applied the PEDro scale and had primary authors affiliated with a research institution in Spain or another Spanish-speaking country. The publication language was predominantly English (477 studies), and the most common Spanish-speaking countries listed were Spain (531), Chile (42), and Colombia (41). 612 systematic reviews reported having used the PEDro scale, providing 809 citations from 33 studies. A total of 21 studies specified the scale language, which was Spanish in 13 studies, and 51 studies stated having used the Spanish version of the PEDro scale.

Conclusions: Only 3.5% of the 650 systematic reviews published by authors from Spanish-speaking countries specified the scale language, which was Spanish in 13 studies.

Study registration: The protocol for this study was registered on PROSPERO under code CRD42024575584

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Highlights

- What is already known
  - The Physiotherapy Evidence Database (PEDro) scale was designed to assess the methodological quality of clinical trials indexed in PEDro.
  - The PEDro scale is increasingly used to evaluate trials included in systematic reviews across various disciplines.
  - Originally published in English, this scale has been translated into several languages.
  - The Spanish version of the PEDro scale was released in 2012.
- What is new
  - The PEDro scale is widely used by authors affiliated in institutions from Spanish-speaking countries, with increasing use in recent years, including growing citation of the Spanish version.
  - Key elements of transparent application, such as the number of assessors, and specification of the linguistic version used, are inconsistently reported.
  - Reported citations do not necessarily correspond to explicit declaration of the linguistic version of the PEDro scale used.
  - Citation practices for the PEDro scale are highly heterogeneous.
- Potential impact for Physiotherapy Research International readers
  - This study highlights gaps in the reporting of methodological appraisal tools within systematic reviews. The findings underscore the need for specification of linguistic versions used when validated adaptations are available, and for this reason, authors using the PEDro scale should specify which language version was used. For researchers, reviewers, and journal editors, these results emphasize the importance of strengthening reporting standards to enhance reproducibility and interpretability in evidence synthesis.

1 | Introduction

Multi-lingual evidence resources optimize efforts to reduce the language barrier to using published research (Melman et al. 2020). Spanish is the second most widely spoken native language globally and continues to experience rapid and sustained growth. Currently, 4.4% of the world's scientific output originates from Spanish-speaking countries, with Spain accounting for 70% of this production (Instituto Cervantes 2022) and Hispanic America has played an increasingly prominent role in scientific publishing in recent years.

After English, Spanish is the language in which the most scientific texts are published (Anuario del Instituto Cervantes 2023). However, because the international scientific community has adopted English as its *lingua franca*, a significant portion of the academic publications by researchers in Spanish-speaking countries are written in English (Ardanuy 2012). Spanish-speaking authors often translate their works into English to publish in international journals. Consequently, many relevant journals in the field of physiotherapy based in Spanish-speaking countries, have shifted from publishing in Spanish to English or now accept submissions in both languages.

The Physiotherapy Evidence Database (PEDro) scale consists of 11 items encompassing external validity (item 1), internal validity (items 2–9), and statistical reporting (items 10–11): (1) eligibility criteria and source; (2) Random allocation; (3) Concealed allocation; (4) Baseline comparability; (5) Blinding of participants; (6) Blinding of therapists; (7) Blinding of assessors; (8) Adequate follow-up (> 85%); (9) Intention-to-treat analysis; (10) Between-group statistical comparisons; and (11) Reporting of point measures and measures of variability. Items are rated 1 (yes) or 0 (no) according to whether the criterion is clearly satisfied in the study. A PEDro scale total score ranging from 0 to 10 can be obtained by adding the ratings of items 2 to 11 (PEDro Scale 1999). Although originally designed to assess the methodological quality of clinical trials indexed in PEDro, the scale is increasingly used to evaluate trials included in systematic reviews across various disciplines (Cashin and McAuley 2020), including biochemistry (Jimenez-Pavon et al. 2019) and sports science (Moreno et al. 2022). Originally published in English (last revised in 1999), this scale has been translated into several languages (Elkins and Moseley 2019; Escala PEDro-Español 2012; Scala di PEDro–Italiano 2024; Échelle PEDro-Français 2010), with limited evidence on the psychometric properties of the scores obtained with these adaptations, compared to those stemming from the original English version (A. Moseley et al. 2015; Shiwa et al. 2011). These newly developed versions follow the recommendations for the process of translation and cultural adaptation of Self-Report Measures (Beaton et al. 2000; Guillemin et al. 1993). Cross-cultural adaptation is not limited to the translation, but also encompasses the adaptation and validation of the measurement instruments in the cultural context in which they are intended to be used (Beaton et al. 2000).

According to the PEDro website, the Spanish version of the PEDro scale was completed on December 30, 2012 (Escala PEDro-Español 2012). Table 1 shows the items of the original and the Spanish versions. However, no data are currently available on the use of the Spanish version of the PEDro scale or its adoption by Spanish-speaking authors.

Therefore, the research questions for this study were:

1. To what extent is the PEDro scale utilized by Spanish-speaking authors?
2. How widely has the Spanish version of the PEDro scale been used since its publication?

2 | Methods

2.1 | Design

This meta-research study was reported according to non-quantitative items to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al. 2021), and the Synthesis Without Meta-Analysis (SWiM) Extension (Campbell et al. 2020). Due to the type of study, items

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TABLE 1 | PEDro scale items.

Original version	Spanish version
1. Eligibility criteria were specified	*1. Los criterios de elección fueron especificados*
2. Subjects were randomly allocated to groups (in a crossover study, subjects were randomly allocated an order in which treatments were received)	*2. Los sujetos fueron asignados al azar a los grupos (en un estudio cruzado, los sujetos fueron distribuidos aleatoriamente a medida que recibían los tratamientos)*
3. Allocation was concealed	*3. La asignación fue oculta*
4. The groups were similar at baseline regarding the most important prognostic indicators	*4. Los grupos fueron similares al inicio en relación a los indicadores de pronóstico más importantes*
5. There was blinding of all subjects	*5. Todos los sujetos fueron cegados*
6. There was blinding of all therapists who administered the therapy	*6. Todos los terapeutas que administraron la terapia fueron cegados*
7. There was blinding of all assessors who measured at least one key outcome	*7. Todos los evaluadores que midieron al menos un resultado clave fueron cegados*
8. Measures of at least one key outcome were obtained from more than 85% of the subjects initially allocated to groups	*8. Las medidas de al menos uno de los resultados clave fueron obtenidas de más del 85% de los sujetos inicialmente asignados a los grupos*
9. All subjects for whom outcome measures were available received the treatment or control condition as allocated or, where this was not the case, data for at least one key outcome was analysed by "intention to treat"	*9. Se presentaron resultados de todos los sujetos que recibieron tratamiento o fueron asignados al grupo control, o cuando esto no pudo ser, los datos para al menos un resultado clave fueron analizados por "intención de tratar"*
10. The results of between-group statistical comparisons are reported for at least one key outcome	*10. Los resultados de comparaciones estadísticas entre grupos fueron informados para al menos un resultado clave*
11. The study provides both point measures and measures of variability for at least one key outcome	*11. El estudio proporciona medidas puntuales y de variabilidad para al menos un resultado clave*

Note: Items in Spanish are presented in italics.

from 10 to 15 and 18 to 22 from PRISMA were considered not applicable.

A protocol was developed and registered on the International Prospective Register of Systematic Reviews (PROSPERO) under code CRD42024575584.

2.2 | Data Sources and Search Strategy

Systematic reviews with or without meta-analysis published between January 2013 and December 31, 2023 (the 2013–2023 period was chosen because the Spanish version of the PEDro scale was completed on December 30, 2012). This 11-year window was considered sufficient to capture the uptake and dissemination of the Spanish version of the PEDro scale following its publication, while also reflecting the period of substantial growth in the number of systematic reviews published internationally (Hoffmann et al. 2021). Reviews in Spanish or English were included if they applied the PEDro scale and had primary authors (first author, corresponding author, and/or senior author) affiliated with a research institution in Spain or another Spanish-speaking country. Overviews of systematic reviews and conference abstracts were excluded, as it was not possible to assess the use of the scale in those cases.

A comprehensive search was performed in the following databases: MEDLINE, Scientific Electronic Library Online (SciELO), Web of Science, Scopus, *Literatura Latinoamericana y del Caribe en Ciencias de la Salud* (LILACS), PEDro, and the Cumulative Index to Nursing and Allied Health Literature (CINAHL). The search was conducted on August 12, 2024. The detailed search strategies are provided in Table S1.

2.3 | Study Selection and Data Extraction

The identified titles and abstracts were independently evaluated by four reviewers (JMGM, ICM, CMSS and AGC), and if the reviewers considered one reference to be eligible, the full text was obtained for complete assessment. The four reviewers independently assessed the full texts to verify whether they met the eligibility criteria (e.g., the review applied the PEDro scale instead of merely extracting scores from the PEDro). In case of disagreement, the authors discussed the reasons for their decisions until reaching a consensus.

A data extraction form was developed and piloted with a random sample of 32.6% of the included papers. Using an ad hoc coding protocol, the four reviewers extracted the following information: type de study, publication year, journal, language, Spanish-speaking country of the study, country of the first author, corresponding author, and/or senior author, use of PEDro scale and field of application (Physiotherapy vs. Other); number of authors and how many authors applied the scale; inter-rater agreement; language version used; and reference of the PEDro scale used in the article.

The results for inter-coder agreement were on average Kappa = 0.84 (range 0.66–0.95) for categorical variables, with an

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average intra-class correlation of ICC = 0.98 (0.97–0.99) for continuous variables, which can be interpreted as almost perfect agreement.

2.4 | Data Analysis

Descriptive analyses were conducted to address both research questions. Categorical variables were summarized using frequencies and percentages, whereas medians with interquartile ranges were employed to summarize the continuous variables. Trends over time were explored descriptively using barplots. Bivariate associations involving use of the Spanish version of the PEDro scale were also examined, using cross-tabulation tables with hypothesis tests and phi coefficients as the effect size measure. All analyses were performed using R v4.4.2 (R Core Team 2024) and the *irr* package v 0.84.1 (Gamer et al. 2019).

3 | Results

A total of 6349 records were screened, of which 4196 reports were assessed for eligibility criteria. Finally, 650 systematic reviews were selected for inclusion. The study screening and selection process is shown in Figure 1.

3.1 | Use of the PEDro Scale by Spanish-Speaking Authors

Of the 650 published systematic reviews included, 272 (41.9%) carried out a meta-analysis. The publication language was predominantly English (477 articles, 73.4%), with the remaining 173 studies published in Spanish. Most studies were conducted in Spain (84.4%), followed by Chile (6.8%), Colombia (6.5%), and Mexico (1.1%). Table 2 shows the countries where the studies

TABLE 2 | Countries where the study was conducted.

Country	Number of studies
1. Spain	531
2. Chile	42
3. Colombia	41
4. Mexico	7
5. Costa Rica	3
6. Cuba	2
7. Ecuador	1
8. Peru	1
9. Unclear	22
Total	650

Note: Unclear: Authors from Spanish-speaking countries, but the country of completion could not be determined.

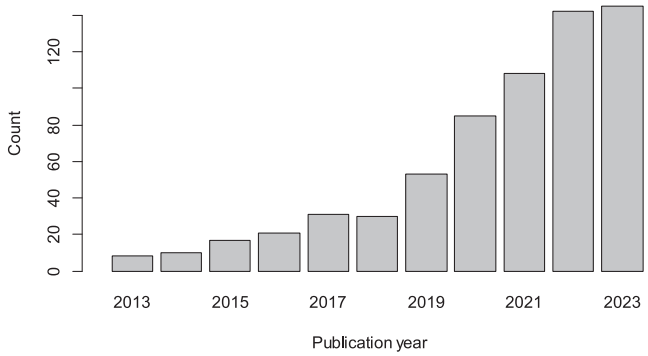


FIGURE 2 | Number of published articles per year (all included studies).

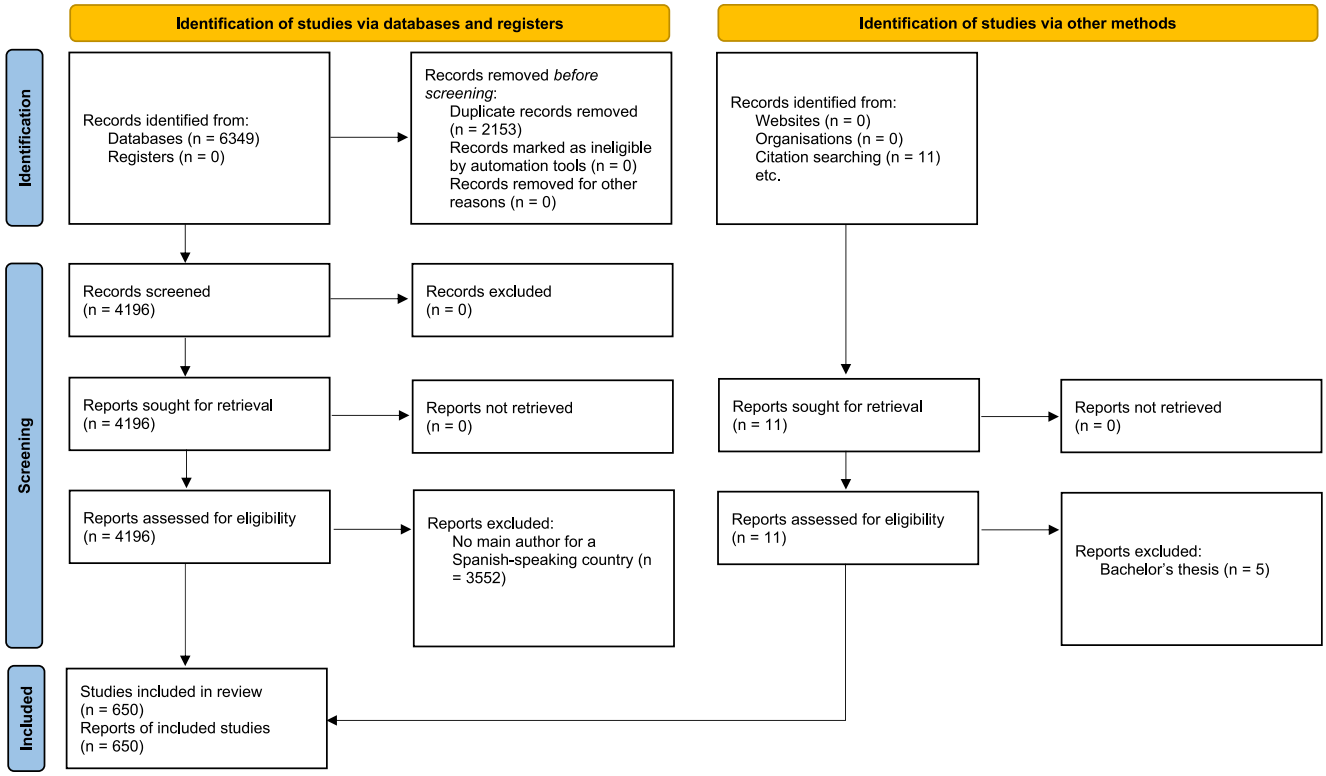


FIGURE 1 | PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) diagram selecting/screening process.

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were conducted, and Figure 2 shows the number of published studies per year between 2013 and 2023, revealing an ascending trend.

The PEDro scale was mentioned in the abstract of 380 (58.6%) of the articles, and all 650 (100%) studies reported having used it in the main text; of these, 645 (99.2%) administered the scale (the 5 remaining did not implement the scale, but used the scores provided in the PEDro database). A total of 80.1% of the studies that employed the scale were systematic reviews in the Physiotherapy field.

The number of authors listed in each review ranged from 1 to 13, with a median of 5 authors (IQR 4–6). The number of authors using the PEDro scale was reported in 379 (58.3%) of the studies, with two or more authors involved in most of them (361, 95.3%). However, only 8.2% of the studies examined and reported inter-rater agreement.

3.2 | Use of the Spanish Version of the PEDro Scale

Only 3.5% of the included studies specified the scale language, which was either Spanish (13 studies) or English (8 studies). A total of 612 studies (94.2%) included at least one reference for the PEDro scale, with 33 different sources cited (full list presented in Table S2). The most relevant sources for the Spanish version of the scale were its publication on the PEDro website (Escala PEDro-Español 2012), cited in 42 articles, and the conference abstract where the translation was first presented (Gómez-Conesa et al. 2015), cited in 7 studies. After merging both indicators, we identified 51 studies (7.8%) that stated having used the Spanish version or the PEDro scale and/or cited one of the two references presenting it. Figure 3 illustrates a recent increase in frequency.

A total of 51 systematic reviews stated having used the Spanish version and/or cited at least one reference corresponding to the Spanish version of the PEDro scale or the Spanish translation. There was evidence of a statistical association with type of synthesis ($\chi^2_1 = 20.7$, $p < 0.001$; $\widehat{\phi} = 0.18$), and with publication language ($\chi^2_1 = 22.7$, $p < 0.001$; $\widehat{\phi} = 0.19$), but not with research field ($\chi^2_1 = 0.69$, $p = 0.41$; $\widehat{\phi} = 0.03$ (Table 3).

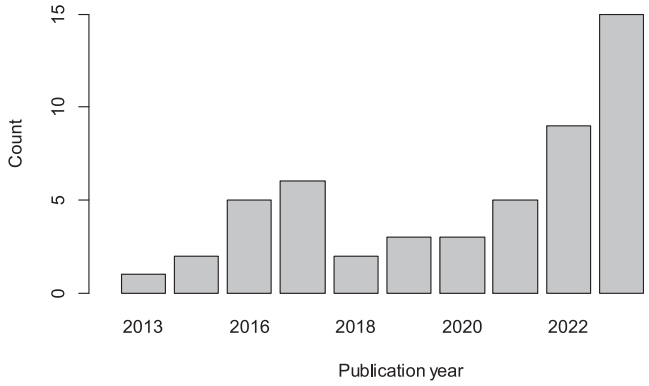


FIGURE 3 | Number of published articles per year (studies using the Spanish version of the PEDro scale).

3.3 | Methodological Appraisal Practice of the PEDro Scale

The results of this Meta-Research study reveal several gaps in the reporting of methodological appraisal practices. Therefore, the application of validated methodologically adapted appraisal tools could help address these gaps. Based on these results, we propose a minimum reporting checklist to improve transparency, reproducibility, and consistency in the use of the PEDro scale in systematic reviews (Table 4).

4 | Discussion

This meta-research study showed that the PEDro scale is a well-established tool in systematic reviews conducted by authors affiliated with Spanish-speaking institutions between 2013 and 2023, identifying 650 published systematic reviews, and providing novel insights into both the use of this scale and the uptake of its Spanish adaptation.

Spain was the Spanish-speaking country with the most studies (531), followed by Chile (42) and Colombia (41), consistent with Spain's continued role as the main hub of Spanish-language scientific dissemination despite the rising scientific output of Hispanic America (Instituto Cervantes 2023).

Most systematic reviews (73.4%) were published in English, reflecting the broader dominance of English in international scientific publishing, likely driven by institutional and journal-prestige pressures rather than author location (Guler et al. 2016), even though writing in English is costly for non-native researchers (Suárez-Ortega et al. 2012), and may limit the inclusion of reports written in other languages (Aali and Shokraneh 2021; Hannah et al. 2024). This pattern parallels PEDro database-wide figures, where English accounts for 92.1% of publications, yet only 11% of platform engagement originates from English-speaking countries PEDro statistic (2025), as opposed to 22% two decades ago (A. M. Moseley and Elkins 2018; Maher et al. 2003). This suggests a persistent gap between where evidence is produced and where it is used, a gap that multilingual resources, such as the 11 available translations of the PEDro scale, may help to close.

Consistent with this gap, reviews published in Spanish reported use of the Spanish version of the scale more often (16.2%) than

TABLE 3 | Evidence of use of the Spanish version by the type of synthesis, publication language and research field.

Type of synthesis	No, *n* (%)	Yes, *n* (%)
Systematic review	332 (88.1%)	45 (11.9%)
Meta-analysis	266 (97.8%)	6 (2.2%)
Publication language	**No, *n* (%)**	**Yes, *n* (%)**
English	454 (95.2%)	23 (4.8%)
Spanish	145 (83.8%)	28 (16.2%)
Research field	**No, *n* (%)**	**Yes, *n* (%)**
Physiotherapy	86 (91.9%)	43 (8.1%)
Other	112 (94.1%)	7 (5.9%)

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TABLE 4 | Proposed minimum reporting checklist for the use of the PEDro scale.

Item	Reporting element	Description
1	Language version of the PEDro scale	Specify the language version applied
2	Application of the PEDro scale	Clarify whether the scale was applied independently or scores were extracted from databases
3	Number of reviewers	Report the number of reviewers involved in the assessment
4	Independence of assessment	Indicate whether assessments were conducted independently
5	Consensus process	Describe how disagreements were resolved
6	Inter-rater agreement	Report agreement measures (e.g., kappa, ICC), when available
7	Assessment procedures	Describe the methodological process (e.g., training, calibration, protocol)
8	PEDro scale citation	Provide an appropriate and specific reference

those published in English (4.8%), linking publication language directly to scale-version reporting.

Citation practices raise concerns about traceability: although 612 studies (99.2%) reported using the PEDro scale, providing a total of 809 citations, these were dispersed across 33 references with only. Maher et al. (2003) and de Morton (2009) were each cited by more than a quarter of studies, and 14 references were used by less than 1% of reviews (Table S2). Verhagen et al. (1998), which describes the Delphi list underlying the scale rather than the scale itself, was frequently miscited, underscoring inconsistent sourcing practices in this field.

The growing number of reviews over time (more than half published between 2021 and 2023 mirrors the broader exponential growth of systematic review publication reported elsewhere (Hoffmann et al. 2021).

Most critically, our results reveal substantial underreporting of scale-language information: of the 612 reviews reporting PEDro scale use, only 21 (3.5%) specified the language version applied (13 Spanish and 8 English), despite 51 studies stating explicit the use of the Spanish version. Given the limited evidence on comparability between the original scale and its language adaptations, this lack of transparency represents a meaningful methodological gap, as it hinders the assessment of reproducibility and cross-study comparability in PEDro-based quality appraisal.

The subgroup analyses shed light on who reports using the Spain version. Systematic reviews were over five times more likely than meta-analyses to show evidence of Spanish version use (11.9% vs. 2.2%), possibly because articles systematic reviews without meta-analyses leave more room for reviewers to use the language version they are most familiar with, and to declare this in the final report. This raises the question of whether appraisal scores remain comparable when different language versions are mixed within evidence synthesis, particularly when quantitative pooling is involved.

The association with publication language (16.2% in Spanish vs. 4.8% in English) suggests that the language of dissemination tends to align with the scale version used, likely driven more by target journal or readership than by a deliberate methodological choice, which may help explain the low overall rate of explicit language-version reporting (3.5%). Editorial norms, rather than transparency practices, may be shaping which version gets used and reported.

The absence of an association with research field (8.1% physiotherapy vs. 5.9% other fields) suggests that disciplinary context does not meaningfully drive Spanish-version use, reinforcing that the differences by synthesis type and publication language likely reflect methodological and linguistic factors rather than field-specific reporting cultures.

Although interdisciplinary in scope, this work has its most direct application in physiotherapy, and its findings support recommendations for more precise and complete reporting of PEDro scale language and version in future systematic reviews.

4.1 | Strengths and Limitations

This meta-research study provides novel insights into existing work created by Spanish-speaking authors. It also presents a clear, rigorous, and replicable method used both in the development of the coding scheme and in the data extraction from each systematic review, data analysis and reporting.

On the other hand, only 3.5% of the included studies specified the scale language, so we could not reach solid conclusions regarding the use of the Spanish version of the PEDro scale since its release in 2012. Given the uncertainty on the comparability of the scores obtained with different language adaptations, future systematic reviews using the PEDro scale should specify which language version was used, as well as other information that we found to be incompletely reported, namely the country where the study was conducted, the number of authors extracting data from the primary studies, and the number of authors using the PEDro scale. Furthermore, we used the affiliation as a proxy to identify each author's native language, which can be inaccurate in some instances.

5 | Conclusions

This meta-research identified 650 systematic reviews published by authors from Spanish-speaking countries between 2013 and 2023, of which 612 reported using the PEDro scale. Most systematic reviews were conducted in Spain (531 studies).

Twenty one of the included studies specified the scale language, which was Spanish in 13 studies, and 51 studies stated (mostly

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by references) having used the Spanish version of the PEDro scale.

There was evidence of an association with publication language, with 16.2% of the reviews published in Spanish providing evidence of use of the Spanish version compared to 4.8% of the reviews published in English.

It is necessary to improve transparency, reproducibility, and consistency in the use of the PEDro scale in systematic reviews.

6 | Implications for Physiotherapy Practice

The findings of this study revealed critical gaps in the reporting of methodological appraisal practices, from which the following actionable recommendations are proposed for authors, peer reviewers, and journals/editors.

6.1 | Recommendations for Authors

Authors conducting systematic reviews should explicitly report:

1. The language version of the PEDro scale applied
2. The number of reviewers involved in the assessment
3. Whether assessments were conducted independently
4. The method used to resolve disagreements
5. Measures of inter-rater agreement (e.g., kappa or ICC)
6. Appropriate and specific references to the PEDro scale.

6.2 | Recommendations for Peer Reviewers

Peer reviewers should:

1. Verify that the PEDro scale was actively applied (rather than merely extracting scores from the PEDro database).
2. Confirm the presence of minimum reporting elements listed above (number of reviewers, independence of assessment, consensus process, inter-rater agreement, and language version).
3. Cross-check consistency across sections abstract, methods, and results.
4. Request specific revisions when reporting is incomplete (e.g., "please specify number of raters and agreement statistics").
5. Evaluate the appropriateness of references, ensuring that the scale is cited using validated sources (rather than indirect or unrelated citations).

6.3 | Recommendations for Journals and Editors

Journals and editors should:

1. Include explicit reporting requirements in author guidelines, specifying that studies using methodological appraisal tools must report the number of reviewers, independence of assessment, agreement measures, and consensus procedures.
2. Integrate these requirements into submission checklists (e.g., as part of PRISMA compliance).
3. Encourage structured reporting, such as dedicated subsections for quality assessment procedures in the methods section.
4. Provide guidance on appropriate citation practices for tools such as the PEDro scale.
5. Support reviewers with brief instructions or checklists highlighting key aspects to verify when methodological appraisal tools are used.

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Ethics Statement

The authors have nothing to report.

Consent

The authors have nothing to report.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

All data relevant to the study are included in the article or uploaded as supplementary information.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.
Table S1: Appendix A: Search strategy. **Table S2:** Appendix B: All references cited.

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