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# Body percussion as a pedagogical resource. Bibliometric study on body percussion based exclusively on secondary search engines La percusión corporal como recurso pedagógico. Estudio bibliométrico sobre percusión corporal basado exclusivamente en motores de búsqueda secundarios

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**Abstract:** Body percussion has emerged strongly in the last decades and not all quality information has been indexed in primary databases. The aim of this work was to present a bibliometric study on body percussion that agglomerated the main international documents from 2001 to 2021 found exclusively in secondary scientific-academic databases and that could serve as a starting point for new research on this discipline. A sample of n=128 documents extracted from Dialnet, Redalyc, DOAJ and specific search engines was selected. An ex post facto retrospective design and a frequency analysis in Microsoft Excel of the main bibliometric variables were used. As main results, it was observed that Spain and Spanish are the most productive country and the preferred language of publication, being 2019 the most prolific year, and the book chapter the most representative document. First-order papers, non-intervention papers, publication of a single paper per author and solo publication predominate. A single exclusive research group on body percussion was found in the line of possible cognitive stimulation and executive functions captained by the most significant author of the study, Francisco Javier Romero-Naranjo. In the intervention works, the quantitative approach prevails, through the BAPNE activities as methodology, the action-research design, the application of the intervention without control group (experimental only), the evaluation after the intervention (posttest only), and the questionnaire as evaluation instrument. **Key words:** BAPNE, bibliometrics, cognitive stimulation, executive functions, Body percussion, neuromotricity.

**Resumen:** La percusión corporal emergió con fuerza en las últimas décadas no encontrándose toda la información de calidad indexada en las bases de datos primarias. El objetivo de este trabajo fue presentar un estudio bibliométrico sobre la percusión corporal que aglomerara los principales documentos internacionales de 2001 a 2021 encontrados exclusivamente en bases de datos científicoacadémicas de carácter secundario y que pudiera servir como punto de partida para nuevas investigaciones sobre esta disciplina. Se seleccionó una muestra de n=128 documentos extraídos de Dialnet, Redalyc, DOAJ y buscadores específicos. Se utilizó un diseño *ex post facto* retrospectivo y un análisis de frecuencia en Microsoft Excel de las principales variables bibliométricas. Como principales resultados se observó que España y el español son el país más productivo y la lengua predilecta de publicación siendo 2019 el año más prolífico, y el capítulo de libro el documento más representativo. Predominan los documentos de primer orden, los trabajos de no intervención, la publicación de un solo documento por autor y la publicación es observó un solo grupo de investigación exclusivo sobre percusión corporal en la línea de la posible estimulación cognitiva y de las funciones ejecutivas capitaneado por el autor más significativo del estudio, Francisco Javier Romero-Naranjo. En los trabajos de intervención impera el enfoque cuantitativo, a través de las actividades BAPNE como metodología, el diseño de investigación-acción, la aplicación de la intervención sin grupo control (solo experimental), la evaluación después de la intervención (solo postest), y el cuestionario como instrumento de evaluación. **Palabras clave:** BAPNE, bibliometría, estimulación cognitiva, funciones ejecutivas, percusión corporal, neuromotricidad.

# Introduction

Bibliometric studies provide information on the state of the different areas of knowledge and establish bibliometric indexes for the evaluation of scientific production. Much of the research is nourished by articles published in high impact journals (Rodríguez & Gallego, 2019). Body percussion is no stranger to this, since there is already a bibliometric study published by Arnau-Mollá and Romero-Naranjo (2022) in which they agglutinated the documents published in high impact journals, extracted uniquely and exclusively from the primary databases Web of Science (WOS) and SCOPUS in the time period from 2005 to 2021.

Due to the large number of documents that have emerged in recent years, on the one hand, and the current lack of a study that not only takes into account the publications extracted from the main databases (WOS and SCOPUS), but also from other secondary databases (Dialnet, Redalyc, DOAJ, EBSCO, ProQuest, Redined, Redib...), in which most of the prints are published, it is necessary to carry out an investigation of these characteristics to divide the information.

As in other subjects, most of the publications on body percussion were also not included in the main databases. This does not mean that these documents lack good

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aptitude, because even if they do not have the same impact index, they still comply with the ethical and quality standards of research, most of them being exposed to peer review.

This discipline requires more scientific studies since it can provide a number of resources to work in different social, therapeutic and educational fields. Romero-Naranjo (2006; 2008a; 2011) presents different classifications of body percussion. In his last classification (Romero-Naranjo, 2022), the result of reading the entire scientific production, he bases the types of publications on body percussion on four major modules. In this work and under this classification, the following documents, among others, were found:

- A) Supporting documents: This type of publications present a justification and rationale making it clear what is the objective of the activities created. In this case, the BAPNE Method focuses mainly on the aspects related to cognitive and executive functions. (Alonso-Sanz & Romero-Naranjo, 2015; Andreu-Cabrera & Romero-Naranjo, 2021; Bango et al., 2017; Crespo et al., 2015; Emer & Romero-Naranjo, 2014; García et al., 2018; Jauset et al., 2014; Romero-Naranjo, 2008b, 2012, 2013a, 2013b, 2013c, 2013d, 2020c; Sánchez et al., 2018; Sayago-Martínez et al., 2021; Trives et al., 2018; Trives-Martínez & Vicente-Nicolás, 2013).
- B) Didactic in nature. These are didactic or pedagogical works that offer a wide and varied range of practical resources. (Conti & Romero-Naranjo, 2015, 2017; Cozzutti et al., 2014; Cozzutti et al., 2017; Crespo-Colomino et al., 2014; De Munari et al., 2016; Di Russo & Romero-Naranjo, 2021a, 2021b; González-Sánchez et al., 2021; Piqueres et al., 2018; Pons-Terrés et al., 2014; Quarello et al., 2014; Romero-Naranjo, 2015, 2019d, 2019e, 2019i, 2019j; Romero-Naranjo & Sayago-Martínez, 2021a; 2021b ).
- C) Research design. This type of publication focuses on the detailed description of the research protocols to be carried out, detailing: the type of sample; the characteristics of the control and experimental groups, as well as their socioeconomic and cultural level; the type and duration of the intervention; the research design; the instruments and moments of evaluation; and the type of statistical analysis, with the aim of offering a rigorous scientific-academic vision. (Cavan et al., 2017; Fabra-Brell & Romero-Naranjo, 2017a; Iguasnia-Amaguaya & Saquisela-Gallego, 2021; Jiménez-Molina et al., 2017; Moreno-Cebrian et al., 2017; Pozo et al., 2015; Salerno et al., 2017).

D) From statistical results with control and experimental group evaluating before and after the intervention. These publications are mainly of a quantitative nature and provide rigorous statistical data. (Álvarez-Morales & Romero-Naranjo, 2019; Arnau-Mollá & Romero-Naranjo, 2020; Botella & Adell, 2016; Carretero-Martínez, et al., 2014; Cozzutti, Guaran et al., 2017; Díaz, 2016; Fabra-Brell & Romero-Naranjo, 2017b; González et al., 2019; Latre-Nava et al., 2019; Lotfi et al., 2018; Moral et al., 2020; Pérez, 2014; Piqueres-Juan et al., 2019; Romero-Naranjo, 2014; Ros-Silla et al., 2019; Torró-Biosca et al., 2019; Yung & Myungja, 2020).

In addition, there are several practical programs that can be implemented in different contexts and that present a wide variety of resources. All of them have in common the contribution of practical resources, as well as the justification of their activities. To name just a few, we will say that there is an exclusive and specific program linked to the sciences of physical activity and sport called BAPNE FIT (Romero-Naranjo, 2020a, 2020b, 2022); another related to the learning of musical language under the name of Solfeo Cognitivo (Romero, 2020d); another aimed at stimulating executive functions through neuromotor skills in children between three and six years of age (Romero-Naranjo, 2019f); and another of theoretical-practical justification aimed at babies from six months of age (Romero-Naranjo, 2019c). Along the same lines, there are also programs aimed at body expression, elderly population, Parkinson's, Alzheimer's, and learning mathematics for children from three to six years of age through neuromotor skills (Romero-Naranjo, 2019a, 2019b, 2019g, 2019h, 2021a, 2021b, 2021c).

On the other hand, several studies show how through Physical Education and movement there are improvements in different areas such as: selective attention and inhibitory control in Primary Education (Rosa et al., 2020; Rosa et al., 2021); the motivation of young children to learn English vocabulary through singing, dancing and physical movement (Pacheco et al., 2022); vocabulary acquisition and in the retrieval of long-term memory in second languages (Padial et al., 2022); socio-affective skills and violence prevention in Primary Education (Aguilar et al., 2021); cognitive functions of the elderly (Romero et al., 2021), as well as in their quality of life through active aging (Martínez et al., 2021); Attention deficit hyperactivity disorder (ADHD) symptoms, and more significantly inattention (Palma et al., 2021); psychomotor and linguistic development in early care (Zambrano et al., 2022); or basic locomotor motor skills (Pérez et al., 2022).

In the same direction, other works find relationships, for example, between the motor competence of adolescent girls with low anxiety intensity and high engagement in learning Physical Education (Luis-de Cos et al., 2019); physical fitness with high cognitive abilities such as memory, creativity, speed of linguistic reasoning and mathematical calculation in adolescents (Mezcua-Hidalgo et al., 2020); or between Developmental Coordination Disorders and ADHD considering the stages of Early Childhood and Primary Education as sensitive phases for the stimulation of attention through movement (Villa et al., 2019).

Finally, from Physical Education we find works that make use of both motor games, as pedagogical resources that favor motor and socio-emotional competencies such as affectivity (Muñoz-Arroyave et al., 2020), and puerile games, which significantly improve motor coordination in Basic Education (Burbano et al., 2021). On the contrary, the use of musicomotricity, although it is a very interesting resource due to the greater integral development of the students that it can provide, is little exploited in the didactic programs of Physical Education (González, 2022).

For all these reasons, and in view of the need to present the results of quality studies from secondary sources that complement the work done by Arnau-Mollá and Romero-Naranjo (2022), this study aims to present a bibliometric study on body percussion that brings together the main international documents of the last 20 years found solely and exclusively in secondary scientific-academic databases and that can serve as a starting point for new research on this discipline.

# Methodology

The present study used an ex post facto retrospective design, according to the classification offered by Montero and León (2005) on the classification and description of research methodologies in psychology. These types of studies test the relationships between variables in a past situation in which the units of analysis are objects (usually documents) rather than people. These authors present a classification based on nine major categories with their respective subcategories. The first level categories are: "1) theoretical studies, 2) observational descriptive studies, 3) survey descriptive studies, 4) qualitative studies, 5) experiments, 6) cuasi experiments, 7) «ex post facto» studies, 8) single case experimental studies, and 9) instrumental studies" (p.116).

#### Sample

A sample of n=128 papers published in a time period of 21 years between 2001 and 2021 was selected. The reason for applying this time period was due to the fact that the first document found that met the inclusion criteria was from 2001. Prior to this date there are some works, mainly

activity books, but they were excluded from this work because they lacked academic foundation and scientific rigor and because they did not appear in the selected search engines.

The papers were extracted from secondary databases that were effective for inclusion such as Dialnet, Redalyc and DOAJ, as well as from specific search engines such as European Proceedings, ERPA 2021, the Argonaut and the official website of the BAPNE method, from which documents were extracted that, although they were known, did not appear in any of the databases analyzed. Figure 1 shows the origin, effectiveness, selection and inclusion of documents in the final sample.



Materials and instruments

The tools available in the databases were used for searching and selecting documents, creating lists of results and exporting references. On the other hand, the bibliographic manager Refworks was used to combine all the references. Finally, the Microsoft Excel program was used to create a database in which all the papers could be agglutinated, duplicates compared, analysis variables extracted, and results, tables and figures extracted.

#### Procedure

A total of seven databases and four specific search engines were analyzed using the following search strategy: ("Body percussion") or ("Bodypercussion") or ("Percusión corporal") or ("Percussió corporal") or ("Body music") or ("Bodymusic"). The search performed by Arnau-Mollá and Romero-Naranjo (2022) for the word body percussion in 14 languages was checked, but applied to the selected secondary databases, no valid results were found to be included in this study. Therefore, no filter by language was applied to any database. In addition, the final selected sample had to meet the following inclusion criteria: 1) Be published and edited material that dealt exclusively with body percussion (1st Order), or, failing that, allude to it in a considerable way within the body of the text, either at a descriptive level or using body percussion activities that are noteworthy within an investigation (2nd Order). 2) Contain any of the terms of the search strategy in the title, the abstract or in the key words. 3) Be written in

any language. 4) Not to be found in the primary databases (WOS/SCOPUS).

A total of seven databases were analyzed (Dialnet, Redalyc, DOAJ, ProQuest, EBSCO, REDIB and Redined) including 105 documents in the final sample. Of these seven, only the first three were effective for the selection of documents, taking Dialnet as the reference for counting the selected documents. In other words, any document that appeared in several databases was counted in Dialnet as it was the one with the highest validity of results. Both Dialnet and Redalyc applied the integrated search strategy using the Boolean operator "or". On the other hand, the DOAJ database did not allow the search strategy to be applied in its entirety and the search was carried out in a fragmented word-by-word manner. Table 1 shows the number of documents included in the final sample of each effective database.

Table 1

Documents by specific search engin	ie	
Specific search engines	Included in the sample	% Sample
BAPNE	15	11,72
ERPA 2021	6	4,69
European Proceedings	1	0,78
El argonauta	1	0,78
Total	23	17,97

The four databases that were discarded after analysis were ProQuest, EBSCO, REDIB and Redined, since all the results obtained in these were also found in Dialnet. First, use was made of ProQuest, which under the subscription of the University of Alicante hosted different databases (PsycINFO, ERIC, Social Services Abstracts, and Sociological Abstracts). Initially, we applied the search strategy and the results were narrowed down by search field (any field except full text), type of source (encyclopedias and reference works; books; papers and proceedings; scientific journals; and doctoral theses and dissertations), and type of document (conference proceedings; article; main article; book chapter; conference; dissertation/thesis; book; paper; and literature review). Eleven documents were obtained, of which five were eligible, but none were included in the final sample because four of them were in primary databases (WOS/SCOPUS) and one in Dialnet. Even so, and as a precaution, the list of documents was expanded by using the "all fields" search option. A total of 398 documents were found, of which only one more document was obtained than in the previous option and which appeared in the primary databases. Secondly, the EBSCO database was used under the subscription of the Catholic University of Valencia which collected documents hosted in ERIC, Psychology and Behavioral Sciences Collection, Education Research Complete, APA PsycInfo, Library, Information Science & Technology Abstracts, SPORTDiscus with Full Text, Dentistry & Oral Sciences Source, CINAHL Complete, OpenDissertations, MEDLINE Complete, and The Serials Directory. Thirdly, the REDIB database was analyzed by applying the search strategy and limiting the results only by time period. Only one document was found in this database that could be included in the final sample, since it was not included in Dialnet. On the other hand, it was found in the DOAJ database, where it was counted. Fourth, in Redined, the fragmented search strategy was applied, searching for key terms individually due to the impossibility of using Boolean operators. Figure 2 shows the results obtained in the rejected databases.

On the other hand, and in reference to the specific search engines, we searched for documents in European Proceedings, ERPA 2021, the Argonaut and the official



Figure 2. Selected documents by effective database

website of the BAPNE method. The reason for using these search engines was the certain knowledge of the existence of 23 first-order published papers that met the inclusion criteria and were not found in any of the databases analyzed. Figure 3 shows the papers selected in the specific search engines.

In total, the final sample selected included 105 papers extracted from the effective secondary databases plus 23 papers retrieved from specific sources.

# Data analysis

A frequency analysis was applied to the selected variables in Microsoft Excel, presenting the percentages based on the selected sample through dynamic tables.

#### Results

# Type of documents by year

Large increases and decreases were observed between consecutive years. Of the 21 years analyzed (2001-2021), four remained without any publication (2002, 2003, 2005 and 2007) and it is from 2008 onwards that regular printing began until the present day. Four different types of documents were found in the selected sample (n=128) with a predominance of book chapters with 57 documents (44.53%). The range of publications ranged from zero to 24 being the average of 6.10 documents per year and the most productive year was 2019 with 24 publications (18.75%). We observe in Table 2 the relation of type of documents per year.

# Documents per journal

The 19 journals found in the sample published a total of 31 documents (24.22%) between 2001 and 2021. A total of 84.21% of the journals (16) printed only one document per journal and accounted for 12.50% of the total sample. The most productive journal was *Música y Educación: Revista Trimestral de Pedagogía Musical* which published 7 papers (5.47%) between 2001 and 2013. On the other hand, the year with the highest number of papers published in journals was 2016 with seven papers (5.47%). Finally, *Eufonía: Didáctica de la Música*, was the journal that published the most in a single year presenting four papers (3.13%) in 2016. We can observe in Table 3 the papers per year in each participating journal and the percentages of publication over the sample n=128.

#### Documents by country

The sample showed a total of seven countries producing scientific-academic literature on body percussion, with Spain being the largest producer with 120 published documents (93.75%). A total of 57.14% of the countries (four countries) published only one document, while Portugal and Colombia published two documents from each country. Figure 4 shows the ratio of documents per country and the percentage of documents published in the sample.

# Documents by language

Six different languages were found in 93 monolingual papers (72.66%), being the most significant representation



Figure 3. Documents by rejected databases

\*Note: the missing document was included in the DOAJ database.

Document type by year 2001 2004 2006 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 Document type Total % Book chapter 2 1 3 3 8 8 6 1 1 6 4 6 8 57 44.53 Book 3 6 3 14 4 3 38 29,69 1 1 1 1 1 Article 1 1 1 1 1 1 5 1 7 1 5 1 2 31 24,22 Theses 2 1,56 13 15 10 11 13 128 Total 2 3 1 7 5 8 10 3 24 100,00 1 2,34 0,78 0,78 5,47 3,91 11,72 7,81 2,34 100,00 0,78 0,78 1,56 10,16 6,25 7,81 18,75 8,59 10,16 %

#### Table 3

Documents	per	year	per	journal	and	percentage	of the	sample $n=128$
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Journals	2001	2004	2006	52008	82010	02011	2012	2013	2014	20152	20162	20172	201820	)192	0202	2021To	tal %
Música y Educación: Revista Trimestral de Pedagogía Musical	1	1	1	1		1	1	1								7	5,47
Eufonía: Didáctica de la Música											4			1		1 6	4,69
El artista. Revista de Investigaciones en Música y Artes Plásticas.					1				1							2	1,56
INFAD. Revista de Psicología														1		1	0,78
Revista de Estudios e Investigación en Psicología de la Educación												1				1	0,78
Cuadernos de Pedagogía														1		1	0,78
EDUCATIO SIGLO XXI								1								1	0,78
Eduga: Revista Galega do Ensino														1		1	0,78
Comunicació Educativa: Revista d'Ensenyament de les Comarques de Cataluny	a										1					1	0,78
Pensamiento Actual															1	1	0,78
RELACult-Revista Latino-Americana de Estudos em Cultura e Sociedade											1					1	0,78
RELAdEI. Revista Latinoamericana de Educación Infantil.										1						1	0,78
Revista Electrónica de LEEME								1								1	0,78
Cuadernos de Música, Artes Visuales y Artes Escénicas											1					1	0,78
Revista Interuniversitaria de Formación del Profesorado														1		1	0,78
REXE. Revista de Estudios y Experiencias en Educación								1								1	0,78
Feminismo/s								1								1	0,78
593 Digital Publisher CEIT																1 1	0,78
Function and Disability Journal													1			1	0,78
Total	1	1	1	1	1	1	1	5	1	1	7	1	1	5	1	2 3	1 24,22



Figure 4. Documents by country and percentage of publications

of the sample. On the other hand, 11 bilingual papers (8.59%) were written in Spanish and English, and 24 quadrilingual papers (18.75%) were written in Spanish, English, French and Italian. Spanish was the preferred language of publication with 73 papers (57.03%). Figure 5 shows the number of documents per language in detail.

# Documents by publisher

A total of 20 publishers were reported, publishing 65.63% of the documents in the sample (84). Fifty percent of the publishers (10) published only one document each. The most productive publisher was Body Music-Body Percussion Press which printed 36 documents (28.13%) with 14 of them (10.94%) being published in 2019. The year with the highest presence of publications through publishers was 2019 with 18 documents (14.06%). Table 4 shows in more detail the number of publishers and

documents published annually, as well as the percentage of publication over the overall sample of each publisher.

#### Number of authors per document

A total of 77 authors were found who published the 128 papers in the selected sample. The range of authors per paper was between 1 and 11, with no papers written by seven, nine or 10 authors. Individualism predominated with 82 papers written alone (64.06%), and collaboration between two authors with 20 papers (15.63%). Figure 6 shows more clearly the ratio of papers by number of authors and the percentage of the final sample.

## Papers by author

Of the 77 authors participating in the sample, 58.44% (45 authors) published only one paper each. On the other hand, 40.26% (31 authors) participated in between two



Figure 5. Documents by language and percentage of the sample

Table 4. Documents per year per publisher

Publishers	2006	2009	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total	%
Body Music-Body Percussion Press	1		3	1		6	1	1	1	1	14	4	3	36	28,13
Universidad de Alicante			1		7	7	1	1						17	13,28
Universidad de Murcia						1	2			4				7	5,47
ASIRE										1		1		2	1,56
Dykinson, S.L.													2	2	1,56
Edit.um							1			1				2	1,56
Grupo Stellae/IARTEM												2		2	1,56
Libargo									1			1		2	1,56
Ramón Torres Gosálvez										2				2	1,56
REDINE											2			2	1,56
Actividad Física y Expresión Corporal (AFYEC)												1		1	0,78
Ediciones Aljibe							1							1	0,78
European Proceedings of Social and Behavioural Sciences												1		1	0,78
Fernando Ramos		1												1	0,78
Letra de palo							1							1	0,78
Marfil: Universidad de Alicante			1											1	0,78
Procompal Publicaciones											1			1	0,78
UNED					1									1	0,78
Universidad de Almería											1			1	0,78
Universidad de Santiago de Compostela			1											1	0,78
Total	1	1	6	1	8	14	7	2	2	9	18	10	5	84	65,63
% Sample	0,78	0,78	4,69	0,78	6,25	10,94	5,47	1,56	1,56	7,03	14,06	7,81	3,91	65,63	



Figure 6. Number of authors per document

and 10 papers. The author with the highest publication activity was Francisco Javier Romero-Naranjo with 91 publications (71.09%). Table 5 shows more clearly the number of papers per author.

Table 5

Authors	Documents	% Sample
Romero-Naranjo, FJ	91	71,09
Trives-Martinez, EA	10	7,81
Romero-Naranjo, AA	8	6,25
Liendo-Cardenas, A	8	6,25
Alonso-Sanz, A	7	5,47
Crespo-Colomino, N	7	5,47
Sanchez-Gonzalez, E	6	4,69
Pons-Terres, JM	6	4,69
Piqueres-Juan, I	6	4,69
Serna-Dominguez, M	5	3,91
Garcia-Sala, M	5	3,91
Garcias-de Ves, S	4	3,13
Sayago-Martinez, R	4	3,13
Six authors	3	14,06
13 authors	2	20,31
45 authors	1	35,16

Note: More than one author may participate in each document.

#### Papers by single author

It was found that 21 of the 77 authors (27.77%) published 82 solo papers (64.06%). Of the authors, 19.48% (15) published only one paper alone. The author with the most solo publications was Francisco Javier Romero-Naranjo with 56 papers (43.75%). Table 6 shows the number of solo papers per author and the percentage of the total sample of n=128.

Table 6

ocuments by single author	D	0/ 0 1
Authors	Documents in solitary	% Sample
Romero-Naranjo, FJ	56	43,75
Buide-del Real, B	3	2,34
Peñalver-Vilar, JM	2	1,56
Serratosa-Lopez, S	2	1,56
Garcias-de Ves, S	2	1,56
Garcia-Mahamud, A	2	1,56
15 authors	1	11,72
Total	82	64,06

#### Documents by order of treatment and research group

A single research group (BAPNE) unified under the same line of research was found, composed of 39 authors (50.65%) of the 77 authors present in the sample. The remaining 37 authors (48.05%) did not belong to any research group on body percussion. There was one author (1.30%) who carried out two papers with the BAPNE research group (1.56%) and one paper as an independent researcher (0.78%).

On the other hand, 110 first-order papers (85.94%) and 18 second-order papers (14.06%) emerged. The BAPNE research group published exclusively first-order papers, specifically 94 papers (73.44%). Figure 7 shows in more detail the number of papers published by order of treatment and research group.



Figure 7. Documents by order of processing and research group

#### Intervention papers

Thirteen papers (10.16%) were found that applied intervention, of which nine used varied body percussion activities in their methodology, eight a quantitative approach, nine an action research design, eight intervened only in an experimental group, and seven used only one evaluation (posttest). Eight different types of evaluation instruments were applied, with the questionnaire being the most commonly used in five of the 13 papers. Table 7 shows the methodology, approach, design, type of group, evaluations and evaluation instruments used by the different intervention papers.

Table 7	
1	

Intervention works			
Method	Features	Documents	% Sample
Mathadala a	Body percussion activities	9	7,03
Methodology	BAPNE Activities	4	3,13
	Quantitative	8	6,25
Approach	Qualitative	4	3,13
	Mixed	1	0,78
Dagigm	Action-research	9	7,03
Design	Quasi-experimental	4	3,13
Group type Evaluation	Experimental only	8	6,25
	Experimental/Control	5	3,91
	Post only	7	5,47
Evaluation	Pre-Post	6	4,69
	Questionnaire	5	3,91
	Test	4	3,13
	Interview	3	2,34
* Evaluation tools	Focus group	1	0,78
* Evaluation tools	Video recording	1	0,78
	Rubric	1	0,78
	Objective test	1	0,78
	Observation	1	0,78
		-	

\*Note: one and the same document used several assessment tools.

#### Citations per year

The number of citations received by the 128 articles that made up the sample was 552 with a range between zero and 92 citations per year being the average of 26.29 citations per year and 2021 the year that led this section with 92 citations (16.67%). Eight years were found with no citations; four between one and two (1.27%); two between 25 and 40 (11.78%); five between 57 and 66 (55.43%); and two years between 82 and 92 citations (31.52%). Figure 8 shows the number of appointments per year for the total selected sample.





# Distribution by population, language and type of document of the intervention works

It was found that the 13 intervention works (10.16%) were carried out in the educational setting. Specifically, 12 in regular education (9.38%) and one in special education (0.78%). In ordinary education, research in primary education predominated with five papers (3.91%), book chapters with seven (5.47%), and Spanish with eight (6.25%). On the other hand, in Special Education there was one intervention document (0.78%) applied to Primary Education of the journal article type and written in English. Table 8 shows the list of intervention documents found in terms of population, language and type of document.

# Citations per document

The 552 citations received by the selected sample ranged from zero to 53 citations. Articles with no citations predominated, accounting for 50.78% of the

Table 8

sample (65 documents), while 5.47% of the documents (seven) received only one citation. 41.41% (53 documents) had between two and 25 citations (73.01%), and three documents (2.34%) obtained between 42 and 53 citations (25.72%). Table 9 shows in detail the ratio of citations per document.

# Citations by author

It was observed that 22 of the 77 authors (28.56%) did not receive any citations; 41 authors (53.25%) obtained between one and 10 citations; 10 authors (12.99%) between 16 and 39 citations; and another three authors (3.90%) collected between 40 and 53 citations. The most cited author was Francisco Javier Romero-Naranjo who participated as author or co-author in 91 of the 128 documents published in this sample (71.09%) and received a total of 390 citations (70.65%). Table 10 shows more specifically the number of citations received by author.

Variable	Ordinary Education			Special Education			Total		
	Docs.	%	% sample	Docs.	%	% sample	Docs.	%	% sample
Population									
Primary Education	5	38,46	3,91	1	7,69	0,78	6	46,15	4,69
Secondary Education	2	15,38	1,56	0	0	0	2	15,38	1,56
Higher Education	2	15,38	1,56	0	0	0	2	15,38	1,56
In-service teacher training	2	15,38	1,56	0	0	0	2	15,38	1,56
Primary and Secondary Education	1	7,69	0,78	0	0	0	1	7,69	0,78
Total	12	92,31	9,38	1	7,69	0,78	13	100	10,16
Documents type									
Book chapter	7	53,85	5,47	0	0	0	7	53,85	5,47
Journal Article	4	30,77	3,13	1	7,69	0,78	5	38,46	3,91
Thesis	1	7,69	0,78	0	0	0	1	7,69	0,78
Total	12	92,31	9,38	1	7,69	0,78	13	100	10,16
Language									
Spanish	8	61,54	6,25	0	0	0	8	61,54	6,25
English	2	15,38	1,56	1	7,69	0,78	3	23,08	2,34
Italian	1	7,69	0,78	0	0	0	1	7,69	0,78
Portuguese	1	7,69	0,78	0	0	0	1	7,69	0,78
Total	12	92,31	9,38	1	7,69	0,78	13	100	10,16

Table 9		
Citations	bv	document

Cites	Documents	% Sample	Total cites	% Cites
0	65	50,78	0	0
1	7	5,47	7	1,27
2	13	10,16	26	4,71
3	7	5,47	21	3,80
4	2	1,56	8	1,45
5	5	3,91	25	4,53
6	3	2,34	18	3,26
7	2	1,56	14	2,54
8	1	0,78	8	1,45
9	4	3,13	36	6,52
10	1	0,78	10	1,81
11	2	1,56	22	3,99
12	2	1,56	24	4,35
13	1	0,78	13	2,36
15	2	1,56	30	5,43
16	3	2,34	48	8,70
17	2	1,56	34	6,16
18	1	0,78	18	3,26
23	1	0,78	23	4,17
25	1	0,78	25	4,53
42	1	0,78	42	7,61
47	1	0,78	47	8,51
53	1	0,78	53	9,60
Total	128	100	552	100

Table 10

Citations by author

Documents	% Sample	Cites	% Cites
91	71,09	390	70,65
8	6,25	53	9,60
10	7,81	40	7,25
3	2,34	40	7,25
2	1,56	39	7,07
7	5,47	30	5,43
8	6,25	29	5,25
7	5,47	28	5,07
6	4,69	26	4,71
3	2,34	17	3,08
3	2,34	17	3,08
1	0,78	17	3,08
1	0,78	16	2,90
1	0,78	16	2,90
		1 to 10	
		0	
	91 8 10 3 2 7 8 7 6 3 3 1 1	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$

*Note*: The same quotation may have been obtained by several authors.

#### Most cited articles

It was found that the five most cited articles received between 23 and 53 citations, bringing together 190 citations (32.42%) of the 552 total citations obtained by the selected sample. The most cited article was *Percusión* 

Table 11 Most cited articles Retos, número 46  $\cdot$  2022 (3° trimestre)

*corporal en diferentes culturas* by Francisco Javier Romero-Naranjo published in 2008 by the journal *Música y Educación: Revista Trimestral de Pedagogía Musical*, which received 53 citations (9.60%). Table 11 shows the references of the 5 most cited articles.

# Citations by journal

The 31 papers found in the 19 journals that published in this sample (24.22%) received a total of 287 citations (51.99%). Five journals received no citations at all; seven between one and 6 (3.80%); four between 11 and 16 (10.51%); and two between 25 and 47 (13.04%). The journal with the most citations was *Música y Educación: Revista Trimestral de Pedagogía Musical*, whose seven articles received a total of 136 citations (24.64%). Table 12 shows the list of citations of the articles published in the different journals.

# Citations by publisher

The 19 publishers found received a total of 218 citations (39.49%) in the 84 papers they published (65.63%). The 14 papers (10.94%) published by 10 publishers did not receive any citations. On the other hand, 8 publishers obtained between two and nine citations (6.52%) in their 17 papers (13.28%) while one publisher hosted 63 citations (11.41%) among their 36 papers (28.13%). The most cited publisher was the University of Alicante which received 119 citations (21.56%) in its 17 papers (13.28%). Table 13 shows the list of citations obtained by each publisher.

# Discussion

In reference to the results obtained on the selected sample of n=128 documents in the time period from 2001 to 2021 extracted solely and exclusively from secondary databases, we observe important similarities and differences with the work of Arnau-Mollá and Romero-Naranjo (2022). These justify the importance of separating the information according to the impact of the research,

Reference	Cites	% Cites
Romero-Naranjo, F. J. (2008b). Percusión corporal en diferentes culturas. Música y Educación: Revista Trimestral de Pedagogía Musical, 21(76),		
46-97.	53	9,60
Romero-Naranjo, F. J. (2013a). Criterios de evaluación en la didáctica de la percusión corporal - método BAPNE. Educatio Siglo XXI: Revista		
De La Facultad De Educación, 31(1), 235-254.	47	8,51
Romero-Naranjo, F. J. (2012). Percusión corporal y lateralidad. Método BAPNE. Música Y Educación: Revista Trimestral De Pedagogía		
Musical, 25(91), 30-51.	42	7,61
Trives Martínez, E. A., & Vicente Nicolás, G. (2013). Percusión corporal y los métodos didácticos musicales. In M. T., Tortosa Ybáñez, J.		
D. Álvarez Teruel & N. Pellín Buades (coords.), XI Jornadas de Redes de Investigación en Docencia Universitaria. Retos de futuro en la enseñanza		
superior: Docencia e investigación para alcanzar la excelencia académica (pp. 1748-1759). Universidad de Alicante.	25	4,53
Peñalver Vilar, J. M. (2010). El valor humano de la improvisación musical y su influencia en el desarrollo de los temas transversales en la		
educación obligatoria española. <i>El Artista</i> , (7), 152-164.	23	4,17
Total	190	34,42

Table 12	
Citations per	journal

Journals	Documents	% Sample	Cites	% Cites
Música y Educación: Revista Trimestral de Pedagogía Musical	7	5,47	136	24,64
EDUCATIO SIGLO XXI	1	0,78	47	8,51
El artista. Revista de Investigaciones en Música y Artes Plásticas.	2	1,56	25	4,53
Revista Electrónica de LEEME	1	0,78	16	2,90
Cuadernos de Música, Artes Visuales y Artes Escénicas	1	0,78	16	2,90
Eufonía: Didáctica de la Música	6	4,69	15	2,72
Feminismo/s	1	0,78	11	1,99
REXE. Revista de Estudios y Experiencias en Educación	1	0,78	6	1,09
Pensamiento Actual	1	0,78	5	0,91
INFAD. Revista de Psicología	1	0,78	3	0,54
593 Digital Publisher CEIT	1	0,78	3	0,54
Revista Interuniversitaria de Formación del Profesorado	1	0,78	2	0,36
Comunicació Educativa: Revista d'Ensenyament de les Comarques de Catalunya	1	0,78	1	0,18
Function and Disability Journal	1	0,78	1	0,18
Cuadernos de Pedagogía	1	0,78	0	0,00
RELAdEI. Revista Latinoamericana de Educación Infantil.	1	0,78	0	0,00
RELACult-Revista Latino-Americana de Estudos em Cultura e Sociedade	1	0,78	0	0,00
Revista de Estudios e Investigación en Psicología de la Educación	1	0,78	0	0,00
Eduga: Revista Galega do Ensino	1	0,78	0	0,00
Total	31	24,22	287	51,99

#### Table 13

Citations by publisher

		%		%
Publisher	Documents	Sample	Cites	Cites
Universidad de Alicante	17	13,28	119	21,56
Body Music-Body Percussion Press	36	28,13	63	11,41
Fernando Ramos	1	0,78	9	1,63
REDINE	2	1,56	8	1,45
Universidad de Murcia	7	5,47	6	1,09
Libargo	2	1,56	5	0,91
Edit.um	2	1,56	2	0,36
Marfil: Universidad de Alicante	1	0,78	2	0,36
Actividad Física y Expresión Corporal				
(AFYEC)	1	0,78	2	0,36
Letra de palo	1	0,78	2	0,36
Universidad de Almería	1	0,78	0	0,00
UNED	1	0,78	0	0,00
Universidad de Santiago de Compostela	1	0,78	0	0,00
European Proceedings of Social and				
Behavioural Sciences	1	0,78	0	0,00
Grupo Stellae/IARTEM	2	1,56	0	0,00
Procompal Publicaciones	1	0,78	0	0,00
Ediciones Aljibe	1	0,78	0	0,00
Ramón Torres Gosálvez	2	1,56	0	0,00
ASIRE	2	1,56	0	0,00
Dykinson, S.L.	2	1,56	0	0,00
Total	84	65,63	218	39,49

since in a general bibliometric study certain types of results that we consider noteworthy would remain in the shadows.

As for the similarities, identical results emerge for: supremacy of one database over the others, least effective search word, main producing country, order of treatment of the documents, most cited type of document, most significant and most cited author, year with the highest number of citations, predominance of citations per article, predominant type of work, single research group, and approach of the intervention works.

It should be noted that Spain is the largest producer of literature mainly due to the presence in this country of the only research group exclusively on this discipline and directed by Dr. Romero-Naranjo and with offices in Italy, Mexico, Venezuela and Costa Rica. This group is made up of more than 80 researchers who have published at some time and who contribute literature on didactics, didactics, research design and quantitative results in the same specific line, the possible stimulation of cognitive functions and executive functions.

Regarding the differences between the two studies, we found the following: main database, time period analyzed, most effective search word, year of greatest production, preferred language, number of languages, countries and authors, range of authors per paper, number of authors per paper, most productive author alone, as well as in the number, design, type of group, type of evaluation, methodology and main evaluation instrument of the intervention studies. Table 14 shows the similarities and differences found with the work of Arnau-Mollá and Romero-Naranjo (2022).

On the other hand, it is detected that not all the literature appears in the main secondary databases, the most significant case being the 15 documents extracted from the official page of the BAPNE method. This is due to the fact that, as of today, the author has not yet updated his profile in Dialnet, since previous papers of the same characteristics are found in this database (Romero-Naranjo, 2019c, 2019d, 2019e, 2019f, 2019i, 2019j).

It is noteworthy that in this study the Spanish language and the keyword body percussion are predominant. This is due to the importance of publishing in English in the primary databases in order to achieve greater dissemination of the works.

Another significant difference is the number of authors per paper. Single-authored papers predominate in this study. This is due to the large number of didactic papers presented by Romero-Naranjo that have a greater place in the secondary databases and that would be practically impossible to publish in the primary databases.

Table 14

Similarities and difference	with the work of A	Arnau-Mollá and	Romero-Naranjo (2022)
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Variables	Similarities	Differences
Supremacy of one database over others	Yes	-
Least productive keyword	Body music	-
Top producing country	Spain	-
Order of document processing	1st order	-
Most cited document type	Article	-
Most productive author	Romero-Naranjo	-
Most cited author	Romero-Naranjo	-
Predominant type of work	No intervention	-
Research groups	Only BAPNE	-
Most cited year	2021	-
Predominance of citations per article	0	-
Approach Intervention work	Quantitative	-
Methodology in intervention work	BAPNE Activities	Body percussion activities
Supremacy of one database over others	(WOS)	Dialnet
Time period analysed	2005-2021	2001-2021
Most productive keyword	Body percussion	"Percusión corporal"
Number of authors	103	77
Range of authors per document	One to seven	One to 11
Authors by documents	Two	One
Most productive solo author	Kartomi	Romero-Naranjo
Most productive year	2017	2019
Language	English	Spanish
Países	13	Seven
Languages	Five	Six
Number of intervention works	15	13
Design of intervention works	Quasi-experimental	Action-research
Type of group in intervention work	Experimental-Control	Experimental only
Type of evaluation of intervention work	Pretest-Postest	Postest only
Main evaluation tool in intervention work	Test	Questionnaire

A vital aspect in research is the transfer of results. These should incite decision making that facilitates their introduction and thus the realization of educational changes or intervention procedure in different collectives. To this end, we suggest the application of systematized intervention programs delivered by professionals trained in the field who are aware at all times of the type of stimulation they are applying.

It should be noted that before conducting any quantitative research with a control group and an experimental group, it is important to have a base of activities that are focused on a specific area, such as attention, laterality or fine psychomotor skills. That is why the construction of a coherent and well-founded didactic program is the first step before carrying out any research. In this work we find a large number of publications with practical activities, articulated under a strong scientific-academic justification and foundation, which can be used by different professionals in education, therapy or cognitive stimulation among others (Peñalver, 2013; Romero-Naranjo, 2008b, 2019a, 2019b, 2019c, 2019d; 2019e, 2019f, 2019g, 2019h, 2019i, 2019j, 2020a, 2020b, 2020d, 2021a, 2021b, 2021c, 2022).

Teachers continually demand protocols of activities to work in the classroom throughout the school year. BAPNE always prepares these protocols based on cognitive stimulation and never on musical, emotional, motor or rehabilitative stimulation. That is to say, it does not intend to compete with the great musical pedagogues such as Dalcroze, Orff, Kodaly, Willems..., nor to base itself exclusively on the motor aspect, but to contribute a different line focused on the stimulation of the cognitive and executive functions.

#### Conclusion

By way of summary, we can conclude by stating that the main results obtained in this study reveal that Spain and Spanish are the most productive country and the preferred language of publication, with 2019 being the most prolific year, the book chapter the most representative type of document, the article the most cited, and 2021 the year with the highest number of citations.

First-order papers on the treatment of body percussion, non-intervention papers, publication of a single paper per author and solo publication predominate. Similarly, papers without citations and authors with at least one citation preponderate.

Francisco Javier Romero-Naranjo is the head of the only exclusive research group on body percussion in the line of possible cognitive stimulation and executive functions. Likewise, he is the most productive author, both alone and in co-authorship, the most cited, and the author of the article with the highest number of citations entitled *Percusión corporal en diferentes culturas* and published by the journal *Música y Educación: Revista Trimestral de Pedagogía Musical* in 2008.

As for the journals, the publication of only one paper per journal and journals with some citations prevails. The journal with the highest production and the most cited is *Música y Educación: Revista Trimestral de Pedagogía Musical* and the one that prints the most documents in a single year is *Eufonía: Didáctica de la Música*.

On the other hand, the most significant publisher is Body Music-Body Percussion Press and 2019 the year of its highest output. Most of the publishers do not receive any citations and the University of Alicante hosts the highest number of citations.

As for the intervention works, intervention in the educational field predominates, specifically in Primary Education, the publication in book chapters and the Spanish language. On the other hand, the quantitative approach prevails, through body percussion activities as methodology and the action-research design. In addition, the application of the intervention without a control group (only experimental) and the evaluation after the intervention (only post-test) prevails, as well as the questionnaire as an evaluation instrument.

Needless to say, this study is not free of limitations, since it does not analyze the h-index of authors or journals. In turn, it does not present a classification of the different study groups (education, therapy, rehabilitation, active aging or recreation). Likewise, it does not present an analysis of the gender of the authorships to extract the presence of women in research on this subject.

As possible lines for the future, a general bibliometric study could be carried out to analyze the documents extracted, both from primary and secondary databases, and to provide an overview of the state of the art of body percussion. In addition, it would be of great help to elaborate a review study on the subject that would classify the different fields of study. Finally, and to make the state of the art much more concrete, it would be of great contribution to carry out a systematic review analyzing the intervention studies and offering a current perspective by bringing together the results of the different research on body percussion.

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