

PHYSICAL EDUCATION

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Scientific production on martial arts and combat sports content in school physical education: a review study

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Abstract

Background. There are few theoretical and practical tools for teaching martial arts and combat sports, such as teaching strategies, reports on successful or unsuccessful teaching experiences, pedagogical approaches that prioritize martial arts and combat sports, and systematic reviews.

Problem and aim. This study aimed to systematically review the scientific literature on martial arts and combat sports in the context of school Physical Education.

Methods. The review was conducted according to the Enhancing Transparency in Reporting the Synthesis of Qualitative Research (ENTREQ) protocol and the search form. The databases ERIC, LILACS, ProQuest, SCIELO, and SCOPUS were searched. They contained studies that discuss combat sports in school Physical Education.

Results. A total of 8,038 articles were obtained from the initial search of databases, after duplicates were excluded, 5,361 articles remained. Studies were screened for eligibility according to inclusion and exclusion criteria. Two researchers analyzed first the titles, selecting 328 studies, then the abstracts, selecting 42 studies, and finally the full text. Ten studies were included in the review.

Conclusions. It can be concluded that there is a need for new studies related to the theme, considering the range of contributions that martial arts and combat sports can present to the students in the school scene, as well as assisting in the pedagogical practice of the teacher.

Introduction

Martial arts and combat sports are associated with cultural and religious traditions, leisure activities, health promotion, personal defense, school environments, and sports performance [Reid, Croucher 1983; Esparteiro 1999; Rufino, Darido 2012; Goncalves, Silva 2013; Kusnierz, Cynarski, Gorner 2017], which is a statement of their magnitude and idiosyncrasies. Martial arts and combat sports are practiced in several settings, such as in fitness centers, sports clubs, community centers, schools, and parks [Breda *et al.* 2010; Galatti, Cirino, Scaglia 2015; Zeng 2019].

The school environment is a space for interventions. Martial arts and combat sports can be included in school

curricula, pedagogical programs, teaching plans, or after school programs as either a required or elective activity [Winkle, Ozmun 2003; Nascimento, Almeida 2007; Aljadef Abergel 2013; Goncalves, Silva 2013; Correia 2015; Rufino, Darido 2015; Cynarski 2016; Rodrigues *et al.* 2017]. However, a large number of school subjects, lack of appropriate infrastructure, development of general skills, the channeling of aggressiveness, and lack of knowledge on the subject by teachers hinder the introduction of martial arts and combat sports in physical education (PE) classes [Olivier 2000; Nascimento, Almeida 2007; Breda *et al.* 2010; Rufino, Darido 2012; Galatti, Cirino, Scaglia 2015].

Studies on martial arts and combat sports in school settings highlight their importance [Espartero, Gutier-

rez, Villamon 2003; Gonçalves, Silva 2013; Correia 2015; Rufino, Darido 2015; Hortiguera, Gutierrez-Garcia, Hernandez-Garijo 2017; Kusnierz, Cynarski, Gorner 2017; Pavlova *et al.* 2019] and the benefits they bring to students; for instance, students develop general and specific motor skills [Olivier 2000], autonomy, and moral reasoning [Johnson, Há 2015]; gain knowledge about the concepts, philosophy, and history behind the sport; and learn how to think critically about violence and aggressiveness [Fett, Fett 2009; Gomes *et al.* 2010; Correia 2015].

Many authors seek to expand the research on martial arts and combat sports and disseminate the benefits they bring to the students' integral development. However, Correia and Franchini [2010] and Rufino and Darido [2012] report that studies on the practice of martial arts and combat sports in PE classes are scarce, which is explained by the absence of martial arts and combat sports classes in most schools. There are few theoretical and practical tools for teaching martial arts and combat sports, such as teaching strategies, reports on successful or unsuccessful teaching experiences, pedagogical approaches that prioritize martial arts and combat sports, and systematic reviews. This study aimed to systematically review the scientific literature on martial arts and combat sports in the context of school PE.

Methods

This study is a systematic review of the scientific literature that aims to efficiently search databases, evaluate studies, and explain the results [Mulrow 1994]. By selecting quality studies, one can present the state of the art of the selected topic [Schutz, Santana, Santos 2011]. A critical part of systematic reviews is reporting the synthesis of the results. Methods and guidelines have been developed to help researchers improve synthesis reports [Tong, Sainsbury, Craig 2007; Tong *et al.* 2012]. The Enhancing Transparency in Reporting the Synthesis of Qualitative Research (ENTREQ) statement is an example of such guidelines. It consists of 21 items that help researchers in reporting syntheses of qualitative research [Tong *et al.* 2012].

We used the ENTREQ statement for the synthesis of the systematic review (Table 1). The 21 items were grouped into five domains, as applied by Bennie *et al.* [2017] in a review of experiences of Aboriginal sports coaches.

The databases ERIC, LILACS, ProQuest, SCIELO, and SCOPUS were searched. They contained studies that discuss martial arts and combat sports in school PE. Articles retrieved from the initial search were screened for eligibility by analyzing first the titles, then the abstracts, and finally the full texts. The articles selected in each phase were considered pieces of a puzzle, and the main researcher was responsible for selecting which piece was adequate and fitted the criteria of the search [Mul-

Table 1. Synthesis of the systematic review using the Enhancing Transparency in Reporting the Synthesis of Qualitative Research (ENTREQ) statement [Tong *et al.* 2012].

Domain	No.	Item	Description	
Introduction	1	Aim	To systematically review the scientific literature on martial arts and combat sports in the context of school PE.	
Methods and methodology	2	Synthesis methodology	Content analysis	
		3	Approach to searching	Comprehensive
		4	Inclusion criteria	Inclusion criteria are shown in Table 2.
		5	Data sources	Five scientific databases. Grey literature and websites were not included.
		6	Electronic search strategy	Search terms are described in Table 2.
Literature search and selection	7	Study screening methods	Titles and abstracts were screened by two researchers.	
		8	Study characteristics	Study characteristics are described in Table 2.
		9	Study selection results	Selection results are presented in the flow diagram of the search process (Figure 1).
		10	Rationale for appraisal	Evaluation of the quality of the articles included in the study.
Appraisal	11	Appraisal items	Consolidated criteria for reporting qualitative research (COREQ) checklist.	
		12	Appraisal process	Quality assessment was performed by two researchers, and disagreements were resolved by a third researcher.
		13	Appraisal results	Appraisal results are presented in Table 2.
Synthesis of findings	14	Data extraction	Presented in the Results, Discussion, and Conclusions sections.	
		15	Software	Microsoft Excel and Endnote
	16	Number of reviewers	Three researchers were involved in coding and analysis.	
		17	Coding	Line by line
	18	Study comparison	Subsequent studies were coded into key themes.	
		19	Derivation of themes	Deductive
	20	Quotations	Participant quotations	
		21	Synthesis output	Synthesis outputs are presented in the Results, Discussion, and Conclusions sections.

row 1994; Castro 2001]. We followed the guidelines of Saur-Amaral [2011] for selecting the articles. Table 2 shows the search form, which helped the researchers during data collection.

The following inclusion criteria were used: empirical studies, theoretical studies, studies carried out with students and/or teachers in the school environment, studies published in full, and studies published in Portuguese, English, or Spanish. Incomplete articles (lacking the abstract, title, name of authors, or full text) and studies published in languages other than Portuguese, English, or Spanish were excluded.

The search of the literature was carried out in November 2017. Duplicates were excluded, and the remaining articles were analyzed using Endnote. Two researchers screened the titles, abstracts, and full texts. Disagreements were resolved by an experienced third researcher with knowledge of systematic reviews and research on pedagogical proposals.

Selected articles were submitted to content analysis, following the method of Bardin [1977]. Three stages were applied: pre-analysis (screening of titles, abstracts, and full texts), coding (recording units were created based on inclusion and exclusion criteria), and categorization (classification of studies by their objectives, year of publication, place of publication, data collection methods, and results).

Results

A total of 8,038 articles were obtained from the initial search of databases, of which 594 were retrieved from ERIC, 197 from LILACS, 4,899 from ProQuest, 152 from SCIELO, and 2,196 from SCOPUS. After duplicates were excluded, 5,361 articles remained. Studies were screened for eligibility according to inclusion and exclusion criteria. Two researchers analyzed first the titles, selecting 328 studies, then the abstracts, selecting 42 studies, and finally the full text. Ten studies were included in the review (Figure 1).

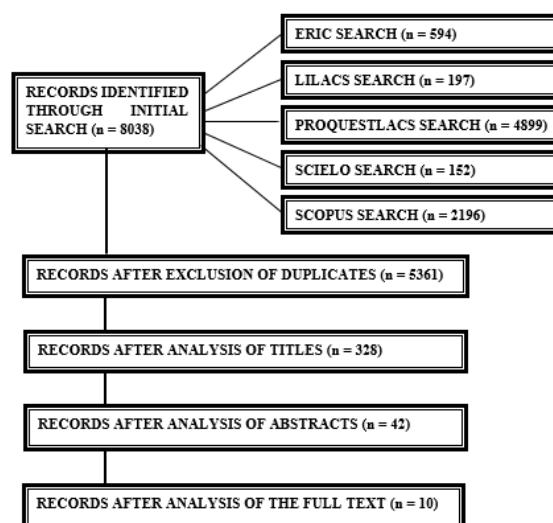


Figure 1. Flow diagram of the search process.

The number of selected studies was small, with only 10 studies met the established criteria [Theeboom, Knop 1999; Michaelson *et al.* 2000; Winkle, Ozmun 2003; Ferreira 2006; Aljadef Abergel 2013; Vasques, Beltrao 2013; Lacerda *et al.* 2015; Lopes, Kerr 2015; Rufino, Darido 2015; Rodrigues *et al.* 2017]. Table 3 presents a detailed characterization of the selected articles, in which the title, authors, year of publication, objectives, and main results are listed.

One study was a report about the experiences of teaching martial arts and combat sports in the school setting [Lopes, Kerr 1999]. Four studies were theoretical, including teaching proposals and a review of the literature on the subject [Michaelson *et al.* 2006; Winkle, Ozmun 2003; Aljadef Abergel 2013; Vasques, Beltrao 2013]. Five papers were empirical studies on the introduction of martial arts and combat sports in schools [Theeboom, Knop 1999; Ferreira 2006; Lacerda *et al.* 2015; Rufino, Darido 2015; Rodrigues *et al.* 2017]. These results show that the teaching of martial arts and combat sports in schools has been little investigated.

Two studies were published nearly 20 years ago, in 1999 and 2000. Eight studies were published between

Table 2. Search form containing the search objectives, terms, and criteria.

Content	Details
Objective	Systematically analyze the literature on the practice of martial arts and combat sports in school physical education.
Search terms	<i>Lutas AND Educação AND Educação Física</i> ; Fighting sports AND Education AND Physical Education; <i>Luchas AND Educación AND Educación Física</i> ; <i>Lutas AND Educação Física</i> ; Fighting sports AND Physical Education; <i>Luchas AND Educación Física</i> ; <i>Lutas AND Escola</i> ; Fighting sports AND School; <i>Luchas AND Escuela</i> ; <i>Artes Marciais AND Escola</i> ; Martial Arts AND School; <i>Artes Marciales AND Escuela</i> ; <i>Artes Marciais AND Educação Física</i> ; Martial Arts AND Physical Education; <i>Artes Marciales AND Educación Física</i> ; <i>Esportes de Combate AND Educação Física</i> ; Sports of Combat AND Physical Education; <i>Deportes de Combate AND Educación Física</i> .
Search scope	Databases: ERIC, LILACS, ProQuest, SCIELO, and SCOPUS.
Inclusion criteria	Empirical studies; theoretical studies; systematic reviews; studies carried out with students and/or teachers in the school environment; articles published in full; and articles published in Portuguese, English, or Spanish.
Exclusion criteria	Incomplete articles (lacking the abstract, title, name of authors, or full text) and articles written in languages other than Portuguese, English, or Spanish.

Table 3. Characteristics of the selected studies.

Original Title	Authors	Year	Characteristics	Objective	Main results
The teaching of struggles in school Physical Education: an experience in elementary education	Lopes, Kerr	2015	Type of study: teaching experience report. Approach: qualitative. Subjects: elementary school students.	Report the introduction of combat sports in physical education classes of sixth-grade students using games.	Introduction of a new sport. Student acceptance. Breaking paradigms regarding prejudice and association of combat sports with violence. Learning new motor skills.
The teaching of fights in physical education classes: analyze of pedagogical practice in the light of experts	Rufino, Darido	2015	Type of study: empirical. Approach: qualitative. Data collection method: interview. Subjects: five university teachers.	Analyze the opinions of university teachers specialized in combat sports about the practice of combat sports in physical education classes.	The teacher's lack of knowledge and insecurity as well as inadequate infrastructure are factors that affect the teaching of combat sports. Teaching tools and materials and continuing education for teachers are needed to promote the practice of combat sports in schools.
The perception of school directors in the city of Jaguariúna about combat sports	Rodrigues, Baião Junior, Antunes, Almeida	2017	Type of study: empirical. Approach: qualitative. Data collection method: interview. Subjects: 30 school leaders.	Investigate the perception of elementary school leaders about the potential benefits of combat sports.	The majority (93.3%) of the school leaders believe that combat sports can bring benefits to students, such as integral development, discipline, respect, control of aggressiveness, improved understanding of rules, motor coordination, self-defense, and knowledge about the body. Some leaders showed concern about the conduct of combat sports professionals and that aggression and violence might be stimulated by combat sports.
Fight teaching: reports of an experience in the public network	Lacerda, Silva, Lovisi, Mourão	2015	Type of study: empirical. Report of a physical education teacher. Approach: qualitative. Data collection method: interview.	Analyze the teaching experience of a physical education teacher in a public school in Juiz de Fora, Minas Gerais, Brazil.	The authors highlighted the importance of structured planning, continuous study, and dedication so that teachers can introduce combat sports and overcome difficulties and challenges.
Asian Martial Arts and Approaches of Instruction in Physical Education	Theeboom, Knop	1999	Type of study: empirical. Approach: qualitative and quantitative. Data collection method: questionnaire. Subjects: 13 members of the European Physical Education Association.	Describe the characteristics and types of Asian martial arts. Discuss different approaches that can be used to introduce combat sports in physical education classes.	There are a variety of schools and styles of Asian martial arts, and each has specific characteristics. Three different approaches to martial arts practice are described, traditional, efficiency, and sporting. In several European countries, Asian martial arts are part of school physical education. In most countries, the teaching of Asian martial arts is limited to a few styles.
The fighting in school Physical Education	Ferreira	2006	Type of study: empirical. Approach: qualitative. Data collection method: questionnaire. Subjects: 50 physical education teachers.	Understand how physical education teachers apply the contents proposed by the Brazilian National Curricular Parameters for Physical Education to teach combat sports.	Of the 50 teachers interviewed, 16 (32%) reported that they taught combat sports and 34 (68%) reported that they did not. The motives for not teaching combat sports were lack of knowledge on the subject (41.17%), lack of adequate infrastructure (23.52%), believing that combat sports are inadequate for the school environment (17.64%), and lack of training from professionals/specialists (17.64%). When asked if combat sports promote violence, 12 (24%) of the 50 teachers answered yes, 22 (44%) answered no, and 16 (32%) said that it depends on the teacher.

<p>Karate Kid: games and activities for introducing Karate to early elementary students</p>	<p>Aljadef Abergel</p>	<p>2013 Type of study: theoretical. Lesson plans for teaching karate in physical education classes.</p>	<p>Propose learning activities and games to teach basic karate techniques.</p>	<p>The games and activities proposed can improve the students' affective development, psychomotor abilities, anaerobic capacity, endurance, muscle strength, flexibility, and balance as well as respect and responsibility. The lesson plans can be carried out by physical education teachers with limited knowledge of karate, as they include short activities and games as teaching strategies.</p>
<p>MMA and School Physical Education: the fight will begin</p>	<p>Vasques, Beltrão</p>	<p>2013 Type of study: theoretical. Review of the literature.</p>	<p>Discuss mixed martial arts (MMA) as a sociocultural practice and its association with school physical education.</p>	<p>MMA needs to be thoroughly analyzed and discussed within the academic environment. School physical education lacks a scientific basis for interventions associated with combat sports. MMA is rapidly entering the homes of young Brazilians via the radio, internet, and, especially, television.</p>
<p>Should Martial Arts Be Taught in Physical Education Classes?</p>	<p>Michaelson, Walsh, Linden, Crider, Lubinski, Murray, Newsome, Winkle, Wright</p>	<p>2000 Type of study: theoretical. Opinion article.</p>	<p>Discuss whether martial arts should be taught in physical education classes.</p>	<p>Elaboration of a curriculum for the teaching of martial arts. Martial arts provide motor, cognitive, and moral benefits. It can diversify the curriculum of school physical education. Martial arts must be taught by a qualified instructor.</p>
<p>Martial Arts: An Exciting Addition to the Physical Education Curriculum</p>	<p>Winkle, Ozmun</p>	<p>2003 Type of study: theoretical. Proposal for teaching martial arts in physical education classes.</p>	<p>Discuss the practice of martial arts in physical education classes.</p>	<p>Authors highlight the importance of having an adequate lesson plan for teaching martial arts. Students can gain increased self-confidence and skills that can be used in other spheres. Physical education teachers should seek training to gain the knowledge and confidence needed to teach martial arts.</p>

2003 and 2017, two of which were published in 2013 and three in 2015.

The main data collection methods were interviews and questionnaires, which were applied to small- and medium-sized groups of teachers and school leaders. Lacerda *et al.* [2015], Rufino and Darido [2015], and Rodrigues *et al.* [2017] used interviews, whereas Theeboom and Knop [1999] and Ferreira [2006] used questionnaires.

Lopes and Kerr [2015] aimed to report the possibility of including martial arts and combat sports in PE classes of sixth graders using games. Winkle and Ozmun [2003] and Michaelson *et al.* [2006] aimed at discussing the introduction of martial arts in PE classes. Aljadef Abergel [2013] proposed learning games and activities to teach karate. Vasques and Beltrao [2013] sought to discuss the introduction of mixed martial arts in the school environment.

Table 4. Summarized analysis of the results of the studies.

Authors	Type of study	Focus	Topic
Michaelson <i>et al.</i> 2006	Theoretical	Martial arts	Martial arts curriculum in the school setting
Winkle, Ozmun 2003		Martial arts	Lesson plans for martial arts classes
Aljadef Abergel 2013		Karate	Teaching of karate in schools
Vasques, Beltrao 2013		Mixed martial arts (MMA)	Discussion about MMA in physical education classes
Lopes, Kerr 1999	Teaching experiences	Teacher	Combat sports in physical education classes
Theeboom, Knop 1999	Empirical	Combat sports	Combat sports in physical education classes
Ferreira 2006		Teacher	Combat sports in physical education classes
Lacerda <i>et al.</i> 2015		Teacher	Lesson plans for martial arts classes
Rufino, Darido 2015		Teacher	Teaching of combat sports
Rodrigues <i>et al.</i> 2017		School leaders	Teaching of combat sports

Theeboom and Knop [1999] had two objectives. The first was to describe the characteristics of martial arts, and the other was to discuss approaches for introducing martial arts in the PE curriculum. Ferreira [2006] aimed to analyze the introduction of martial arts and combat sports in light of the proposals of the Brazilian National Curricular Parameters. Lacerda *et al.* [2015] focused on the teaching experiences of a PE teacher in introducing martial arts and combat sports. Rufino and

Darido [2015] investigated the perception of university teachers regarding the role of PE teachers in introducing martial arts and combat sports. Finally, Rodrigues *et al.* [2017] evaluated the understanding of school leaders about the teaching of martial arts and combat sports.

The selected articles were mostly published in Brazilian journals [Ferreira 2006; Vasques, Beltrao 2013; Lacerda *et al.* 2015; Lopes, Kerr 2015; Rufino, Darido 2015; Rodrigues *et al.* 2017]. The study by Theeboom and Knop [1999] was published in an English journal and the other studies were published in US American journals [Michaelson *et al.* 2000; Winkle, Ozmun 2003; Aljadef Abergel 2013]. This result suggests that Brazilian researchers are more concerned about the introduction of martial arts and combat sports in schools. The authors are aware that more studies from other countries would have been included in the teaching of martial arts and combat sports in other contexts were also part of the inclusion criteria.

A summarized analysis of the selected articles is shown in Table 4. Studies were characterized according to their type, focus, and topic (Table 4).

Discussion

In all databases, the search identified a large number of articles containing the term “Fighting,” as it has a wide range of meanings, such as in “Fighting for life,” “Fighting for goals,” and “physical Fighting” [Correia, Franchini 2010; Rufino, Darido 2012; Correia 2015]. We also noted that themes related to martial arts and combat sports are discussed in several contexts, from philosophy and exercise training to the introduction of children to physical activities. These findings differ from those of Correia and Franchini [2010], who searched 11 Brazilian journals for scientific studies on martial arts and combat sports and found only 75 articles. The authors highlighted the need for further research on the topic. However, according to our search results, this does not apply in an internal scenario [Fett, Fett 2009; Johnson, Ha 2015; Hortiguera, Gutierrez-Garcia, Hernando-Garijo 2017; Kusnierz, Cynarski, Gorner 2017].

In analyzing the 10 selected articles, we observed that studies on the teaching of martial arts and combat sports in the school environment are still incipient, as also stated by Rufino and Darido [2013]. Espartero, Gutierrez, and Villamon [2003] emphasized that studies on teaching martial arts and combat sports in schools should be aimed at lesson planning.

Analysis of study type

This review included only one report of practical teaching experiences with martial arts and combat sports. Teaching reports are of paramount importance for the dissemination of the practice in PE classes. Positive and successful results should be published to encourage PE

teachers to include martial arts and combat sports in their lesson plans, to support them in the systematization of teaching strategies, and to remind them to share their experiences. More theoretical studies are also necessary. These should analyze pedagogical proposals and discuss the meanings, paradigms, and challenges of teaching martial arts and combat sports in PE classes [Olivier 2000; Rufino, Darido 2012; Galatti, Cirino, Scaglia 2015; Pereira *et al.* 2017].

Analysis of year of publication

There was an increase in the number of publications over the 18-year period between the first and the last article included in this review, a finding corroborated by other recent reviews on martial arts and combat sports [Correia, Franchini 2010; Goncalves, Silva 2013; Zou *et al.* 2018]. It is important to emphasize that Correia and Franchini [2010], Goncalves and Silva [2013], and Zou *et al.* [2018] defined a year of publication range in their inclusion criteria, whereas we did not limit our search by year of publication. However, these reviews analyzed martial arts and combat sports in broad scope, without restricting the topic to the school context, which increased the number of retrieved articles.

Analysis of data collection methods

Interviews and questionnaires are practical data collection tools that can assist the researcher in extracting detailed information about large populations [Negrine 2004]. The many advantages of these data collection tools greatly surpass their few disadvantages [Pupo, Schutz, Santos 2011]. None of the analyzed studies adopted assessment tools, such as a motor or physical test, rating scales, observation sheets, or teaching diaries. Fitness evaluation and performance testing are common in several sports, including in martial arts and combat sports [Aggon *et al.* 2017; Doroshenko *et al.* 2017; Kons, Ache-Dias, Detanico 2017; Silva *et al.* 2018]. In a school setting, these tools can be of value for teachers to evaluate their teaching effectiveness and the performance of the students.

Analysis of study objectives

Theoretical studies focused mainly on concepts and approaches related to martial arts and combat sports, and some presented teaching proposals to support teachers in the pedagogical practice. Some authors expressed concern about pedagogical proposals and emphasized that they should aim to break existing paradigms that discourage the teaching of martial arts and combat sports in schools.

Empirical studies focused on the different modalities of combat sports and on the interest of researchers in reaching other populations, not only PE teachers. Laws and regulations related to PE were also discussed in empirical studies, as legal documents determine the

content of school subjects and must make provision for such practices in lesson plans.

Analysis of the place of publication

Undergraduate and postgraduate studies have been broadened and conceptualized as new research groups and fields of research are created. Articles containing terms related to martial arts and combat sports appear in several contexts, which explains the low number of articles from English-speaking countries.

Regarding the expressive number of Brazilian studies pointed out in the results, it is important to highlight that in the recent Brazilian educational context, with the publication of the Law of Guidelines and Bases of National Education [Brazil 1996], it is possible to understand the contents of school Physical Education as coming from historical-cultural processes. Thus, the learning of knowledge related to dance, martial arts and combat sports, games, sports, among others, becomes objectified in the educational context.

From the promulgation of the Law of Guidelines and Bases of Brazilian National Education, guiding documents were prepared with the intention of organizing and deepening discussions around the mandatory content of Physical Education, being, at first, the National Curriculum Parameters [Brazil 1998], in force, had three blocks of content such as games, sports, gymnastics, martial arts and combat sports; rhythmic and expressive activities; and knowledge about the body, establishing interactions between them and reinterpretations of human culture in its manifestations. In this context, it is up to the teacher to choose methodologies to dilute these contents, acting broadly and positively interfering in the student's education.

Subsequently, with the construction and approval of the National Common Curricular Base [Brazil 2017], a legal document that has been in force to guide basic education since 2018, highlights thematic units to be addressed, namely: games, sports, gymnastics, dance, corporal practices of adventure, martial arts and combat sports. These contents, named as thematic units, should be understood as forms of cultural manifestations, which will enrich the students' experiences, in addition to guiding the teacher in his pedagogical practice.

Such guiding documents deal with martial arts and combat sports as corporal disputes, carried out through techniques in which the participants develop strategies to meet specific objectives, such as: immobilize, unbalance and exclude the opponent from an established space [Brazil 1996; 2017]. Also, these documents have a propositional character, which becomes normative, making it mandatory to approach these contents, including the martial arts and combat sports in the governing classes of physical education at school.

Thus, it is noted the preference of Brazilian researchers, because of the legislation that corroborates the

teaching of the most varied corporal practices, to investigate a diversified field of themes regarding the contents of Physical Education. And when it comes to the martial arts and combat sports, which as content are still little explored by Brazilian teachers, and the arguments of the teachers who corroborate this, focus on the lack of experience in martial arts and combat sports, the lack of experience of this content in graduation and in the association of martial arts and combat sports against violence [Correia 2015; Pereira *et al.* 2017; Pereira *et al.* 2020; Silva *et al.* 2020], investigations such as those presented in the results and this review study, justify the need to discuss and reflect on the martial arts and combat sports in the context of school Physical Education classes.

Main results of the selected articles

Lopes and Kerr [2015] analyzed the introduction of martial arts and combat sports in PE classes, presenting a teaching proposal, and discussing common views about their practice. Martial arts and combat sports were highly accepted by students and their introduction resulted in a paradigm shift in which the association of fighting sports with violence was considered prejudiced.

Nascimento and Almeida [2007] carried out a similar study about martial arts and combat sports teaching, but focused on theme-based teaching practices and exposed the concerns of teachers, such as that the sports would be seen as violent or that some combat styles would not be approved. Lopes and Kerr [2015] also underscored the importance of presenting the various skills associated with martial arts and combat sports in themes and of discussing the differences between violent acts and martial arts and combat sports.

The theoretical study of Aljadeff Abergel [2013] discussed the benefits students achieve from practicing karate: improved anaerobic capacity, endurance, muscular strength, flexibility, balance, respect for oneself and others, and a sense of responsibility. According to the author, the teaching plan presented in the study can be put into practice even by PE teachers with limited knowledge about karate, as each activity is presented as a short game.

The study conducted by Michaelson *et al.* [2000] resulted in the development of a curriculum for teaching martial arts. The authors also pointed out benefits that stem from the practice of martial arts, especially in the development of motor skills, cognitive ability, and moral reasoning. The authors recommended that martial arts and combat sports should be taught by a qualified instructor.

The main findings of Winkle and Ozmun [2003] were that an appropriate lesson plan is essential for teaching martial arts and combat sports and that PE teachers should seek to develop their skills so that they feel com-

petent and secure in instructing students. As did other authors, Winkle and Ozmun [2003] presented the beneficial effects of martial arts and combat sports for students, such as increased self-confidence and improvement of skills that can be used in several contexts.

Vasques and Beltrao [2013] analyzed mixed martial arts (MMA) and concluded that this sport needs to be the focus of scientific research. Although MMA is brought to the attention of young Brazilians through the radio, internet, and television, there is a lack of scientific information to support PE teachers interested in teaching the sport.

Winkle and Ozmun [2003] and Aljadeff Abergel [2013] stressed the importance of using appropriate lesson plans and enforcing safety rules. Both studies proposed that martial arts lessons should be based on the repetition of technical exercises and stated that teachers should receive specific training on the style. However, these recommendations contrast those of other authors who studied martial arts and combat sports in the context of PE classes. Galatti, Cirino, and Scaglia [2015] and Pereira *et al.* [2017], for instance, believe that restricting PE lessons to technique-centered exercises limits the pedagogical value of martial arts and combat sports and can be regarded as a transposition of practices performed in fitness centers and sports clubs to the school environment. A technique-centered approach in which teachers present an exercise and students repeat it inhibits the students' freedom of expression and creativity [Gomes *et al.* 2010; Breda *et al.* 2010; Cirino, Correia 2015; Galatti, Cirino, Scaglia 2015; Cynarski 2016].

Michaelson *et al.* [2006] and Vasques and Beltrao [2013] discussed the inclusion of combat sports, martial arts, and MMA in school PE classes, presenting the benefits of the sports, societal paradigms, the relationship between fighting sports and violence, and how these topics are portrayed in the media. Their findings are in good agreement with those of Goncalves and Silva [2013], and Cynarski [2016], and Kusnierz, Cynarski, and Gorner [2017], who also recommended the introduction of martial arts and combat sports into the school curriculum on the basis of a comprehensive review that included the origins of the sports and their changes through time until they became a school subject.

The empirical study of Rufino and Darido [2015] found that three factors limit the teaching of martial arts and combat sports in schools: poor training, teacher insecurity, and infrastructure problems. The authors also stated that martial arts and combat sports may renovate teaching practices by stimulating continuing education and the incorporation of new teaching materials.

Rodrigues *et al.* [2017] reported that most school leaders believe that martial arts and combat sports promote the integral development, discipline, and respect of students for themselves and others, decrease aggressiveness, improve the students' understanding of rules,

enhance motor coordination, and teach self-defense and body awareness. However, leaders voiced concerns regarding the conduct of martial arts and combat sports professionals and feared the increase in aggression and violent acts that might stem from teaching and discussing combat skills in classes.

Lacerda *et al.* [2015] concluded that a structured teaching program is essential for martial arts and combat sports classes. The authors considered that PE teachers are able to teach martial arts and combat sports and share their experiences with students.

Theeboom and Knop [1999] observed that Asian martial arts encompass a range of disciplines with specific characteristics. The authors analyzed three different approaches to martial arts practice in schools, the traditional, efficiency, and sporting approaches. In several European countries, Asian martial arts are part of PE, but few disciplines are taught.

Ferreira [2006] interviewed 50 PE teachers in Brazil and found that 16 teachers included martial arts and combat sports practice in their classes and 34 did not. The main reasons for not teaching martial arts and combat sports were lack of knowledge on the subject, lack of infrastructure or equipment, believing that martial arts and combat sports were not adequate for the school environment, and lack of specialists to help teachers to plan lessons. When asked whether martial arts and combat sports promote violence, 12 respondents answered yes, 22 answered no, and 16 believed that it would depend on the teacher.

Participants of the studies of Rufino and Darido [2015] and Rodrigues *et al.* [2017] described the following factors as limitations for introducing martial arts and combat sports in school PE: structural problems, lack of materials, safety concerns, and association of the sports with violence. Nevertheless, participants of both studies recognized the benefits of these practices. Other studies reported similar findings, limitations, and positive aspects [Nascimento, Almeida 2007; Fonseca, Franchini, Vecchio 2013; Hortiguela, Gutierrez-Garcia, Hernando-Garijo 2017].

The other empirical studies [Theeboom, Knop 1999; Ferreira 2006; Lacerda *et al.* 2015] analyzed how martial arts and combat sports were taught in PE classes. Lacerda *et al.* [2015] presented a teaching case study. Theeboom and Knop [1999] and Ferreira [2006] mentioned the same problems as other authors, including the view that martial arts and combat sports are linked to violent behaviors, the lack of knowledge of PE teachers on how to prepare martial arts and combat sports lessons, and the lack of infrastructure and materials.

The 10 studies had similar objectives and results with regard to the problems encountered in introducing martial arts and combat sports in schools. The barriers reported in earlier studies were also reported in more recent articles, suggesting that teaching material and

information on successful practices are necessary to change the situation. Future research should focus on reporting positive teaching experiences and providing an overview of how martial arts and combat sports are being taught in PE classes around the world.

Conclusions

This systematic review of the literature showed that research on martial arts and combat sports in the school context is still incipient, as only 10 studies were identified. The scarcity of literature on this topic suggests little concern by academic and scientific communities.

In general, researchers investigated the teaching of martial arts and combat sports in school PE and analyzed how martial arts and combat sports are perceived by teachers and school leaders, proposing lesson plans and presenting theoretical foundation to help PE teachers to introduce martial arts and combat sports in their classes.

We based our discussion on the selected articles and also on other studies, books, and documents, which show the incipience of studies related to martial arts and combat sports in PE as well as the preference of researchers for publishing their results on other platforms. This fact should be taken into consideration in future review studies.

Future studies should explore the subject of martial arts and combat sports in the school environment, given the range of research possibilities. New investigations can be directed at teachers continuing education, student learning, opinions of school leaders, concerns regarding the introduction of martial arts and combat sports, and production of teaching tools and materials.

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Dorobek naukowy dotyczący treści z zakresu sztuk i sportów walki w szkolnym wychowaniu fizycznym: studium przeglądowe

Słowa kluczowe: sztuki walki, sporty walki, wychowanie fizyczne, edukacja, szkoła

Streszczenie

Tło. Istnieje niewiele teoretycznych i praktycznych narzędzi do nauczania sztuk walki i sportów walki, takich jak strategie nauczania, raporty z udanych lub nieudanych doświadczeń dydaktycznych, podejścia pedagogiczne, które nadają priorytet sztukom walki i sportom walki oraz przeglądy systematyczne. Problem i cel. Celem pracy był systematyczny przegląd literatury naukowej dotyczącej sztuk walki i sportów walki w kontekście szkolnego wychowania fizycznego. Metody. Przegląd został przeprowadzony zgodnie z protokołem Zwiększania przejrzystości w raportowaniu syntezy badań jakościowych (ENTREQ) oraz formularzem wyszukiwania. Przeszukano bazy danych ERIC, LILACS, ProQuest, SCIELO i SCOPUS. Zawierały one opracowania omawiające sporty walki w szkolnym wychowaniu fizycznym.

Wyniki. W wyniku wstępnego przeszukania baz danych uzyskano 8 038 artykułów, po wykluczeniu duplikatów pozostało 5 361 artykułów. Badania zostały sprawdzone pod kątem kwalifikowalności zgodnie z kryteriami włączenia i wyłączenia. Dwóch badaczy przeanalizowało najpierw tytuły, wybierając 328 prac, następnie streszczenia, wybierając 42 prace, a na końcu pełny tekst. Do przeglądu włączono 10 badań.

Wnioski. Można stwierdzić, że istnieje potrzeba nowych badań związanych z tym tematem, biorąc pod uwagę zakres korzyści, jakie sztuki walki i sporty walki mogą przynieść uczniom w szkole, a także pomóc w praktyce pedagogicznej nauczyciela.