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**BELIEFS ABOUT CONSTRUCTIVIST-ORIENTED TEACHING PRACTICES: A STUDY WITH ELEMENTARY PHYSICAL EDUCATION TEACHERS****CRENÇAS SOBRE PRÁTICAS DE ENSINO ORIENTADAS AO CONSTRUTIVISMO: UM ESTUDO COM PROFESSORES DE EDUCAÇÃO FÍSICA DO ENSINO FUNDAMENTAL**

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**RESUMO**

O objetivo do estudo foi identificar as crenças sobre as práticas de ensino orientadas ao construtivismo dos professores de Educação Física do Ensino Fundamental, do Núcleo Metropolitano de Florianópolis, em Santa Catarina, Brasil. Neste estudo quantitativo e descritivo, 129 professores de Educação Física do Ensino Fundamental responderam a um questionário de caracterização dos participantes, e uma versão traduzida e adaptada do *Constructivist Teaching Practices Inventory in Elementary Physical Education* – CTPI-EPE. Empregaram-se recursos da estatística descritiva e a análise de regressão logística binária, com o auxílio do *software* de código aberto “R”, versão 3.6.1. Os resultados revelaram que, independente das características pessoais, acadêmicas e profissionais, os professores de Educação Física investigados percebem o ensino frequentemente orientado ao construtivismo. Ressalta-se que os professores com vínculo empregatício temporário apresentam crenças relacionadas às práticas de ensino voltadas ao construtivismo geral; os que não participaram de cursos sobre o ensino dos esportes, crenças quanto ao desenvolvimento da cooperação social; e os com vínculo temporário e pós-graduação *lato sensu* apresentaram maiores chances de promover a relevância pessoal dos estudantes em aula.

**Palavras-chave:** Construtivismo. Ensino. Educação Física escolar.

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**ABSTRACT**

The aim was to identify the beliefs about teaching practices oriented to constructivism by Elementary Physical Education teachers of the Florianópolis Metropolitan Nucleus in Santa Catarina, Brazil. In this quantitative and descriptive study, 129 Elementary School Physical Education teachers answered a questionnaire to characterize the participants and a translated and adapted version of the *Constructivist Teaching Practices Inventory in Elementary Physical Education - CTPI-EPE*. Descriptive statistic and binary logistic regression analysis were used, with the aid of the open-source software “R”, version 3.6.1. The results revealed that regardless of personal, academic, and professional characteristics, the Physical Education teachers investigated perceive their teaching often oriented towards constructivism. It stands out, teachers with a temporary job often have beliefs related to teaching practices oriented towards general constructivism; teachers who did not participate in courses on sports education have beliefs oriented to the development of social cooperation; and teachers with a temporary employment bond and with a non-degree graduate program had a greater chance of promoting students' personal relevance in their classes.

**Keywords:** Constructivism. Teaching. School Physical Education.

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**Introduction**

In Physical Education, constructivist theories have been used as a reference to guide guidelines, curricula, and practices at different educational levels. Moreover, teaching practices aimed particularly at constructivism seek to contemplate three fundamental principles: to promote the active construction of knowledge by students, creating individual responsibilities for their learning; enable learning situations in which they can identify their prior knowledge to establish connections with new knowledge; and create opportunities for them to share their ideas, engaging in cooperative activities and solving learning problems together<sup>1,2</sup>.

From the constructivist perspective, learning is defined as an active construction and content reorganization, reflecting more complex and structured understandings. Students develop an understanding from a knowledge base and learned experiences, which also identify

with their beliefs<sup>1</sup>. Studies centered on practices oriented to constructivism in Physical Education have been carried out, primarily internationally<sup>1-6</sup>, while in Brazil – although documents that guide Basic Education<sup>7,8</sup> include principles of constructivist theories<sup>9</sup> – they are still incipient<sup>10</sup>. Overall, the evidence from these studies highlights the complexity involved in constructivist-oriented teaching practices and the impact of teachers' previous experiences on their interpretation and implementation<sup>1,5,10,11</sup>.

In the educational field, teachers' beliefs have been used to analyze the influence of experiences on constructing teachers' pedagogical knowledge<sup>12,13</sup>. Conceptually, beliefs comprise mental representations associated with subjective and relatively stable truths, often referred to as attitudes, values, judgments, opinions, perceptions, conceptions, dispositions, implicit theories, personal theories, internal mental processes, action strategies, rules of conduct, practical principles, perspectives, among others. Particularly about teaching, they designate a category that represents each teacher's particular way of teaching, leading and determining their professional practices in a marked way<sup>12</sup>.

Studies focusing on identifying beliefs and practices aimed at the constructivist perspective and their relationship with personal, professional, and academic factors, based on quantitative tools, analyzed the levels of constructivist orientation and the differences between the contexts of performance of Physical Education teachers<sup>2</sup>, comparing their characteristics between *experts* and novices<sup>1</sup>, and also the levels in relation to gender and academic training<sup>6</sup>. The evidence shows that most Physical Education teachers present teaching practices oriented towards constructivism, facilitating the active construction of knowledge, personal relevance, and students' social cooperation of students<sup>2</sup>. In this sense, experienced teachers are more capable of understanding and implementing constructivist principles than novices<sup>1</sup>; female teachers perceive teaching itself as more oriented towards constructivism; and undergraduate teachers have a higher incidence of constructivist practices that facilitate social cooperation when compared to graduate teachers<sup>6</sup>.

There is a gap in research on teaching in the Brazilian scenario, specifically on practices oriented towards constructivism that use quantitative research tools. Identifying beliefs about the practices of Physical Education teachers can provide important information about the teaching principles they believe they adopt and the personal (characteristics and experiences), professional, and academic factors associated with beliefs aimed at constructivism<sup>2</sup>. The evidence obtained in research of this nature contributes to constructing initial and continuing education programs in supporting teachers aiming at the understanding and development of teaching principles oriented to constructivism, particularly in times of curricular reforms in Physical Education at different educational levels in Brazil. Thus, the present study aims to identify the beliefs about constructivism-oriented teaching practices of Elementary Education Physical Education teachers from Municipal Education Networks, from the Florianópolis Metropolitan Nucleus, Santa Catarina, Brazil.

## Methods

### *Participants*

For this quantitative and descriptive study, the selection of municipal education networks, which belong to the Florianópolis Metropolitan Nucleus (SC), occurred through judgmental sampling<sup>14</sup>, based on the following inclusion criteria: a) being located in the Florianópolis metropolitan area, in the state of Santa Catarina; b) authorize the participation of its teaching staff in the research. For research purposes, according to the last census<sup>15</sup>, municipalities with less than 20,000 inhabitants were not included in the study, with only five of the nine educational networks that make up the Florianópolis Metropolitan Nucleus.

The target population consisted of 184 Elementary School Physical Education teachers working at the Florianópolis Metropolitan Nucleus (SC). From this sample calculation ( $n=184$ ), the participation of at least 125 teachers in the area was estimated. A further 2% was added due to possible losses and refusals. Therefore, the sample consisted of 129 participants who met the following criteria: a) being a Physical Education teacher in a municipal network located in the Florianópolis Metropolitan Nucleus, in the state of Santa Catarina; b) work in regular education, in Elementary School; c) show availability and motivation to participate in the research. Female ( $n=66$ ) and male ( $n=63$ ) teachers participated in the research, with an average age of 37.3 years (standard deviation = 8.85) and average professional experience of 9.78 years (standard deviation = 7.69).

### Procedures

This study was approved by the Ethics Committee for Research with Human Beings of a public university under opinion No. 3,535,966. In the process of collecting information, those responsible for the Department of Education of the municipal networks that met the criteria for inclusion in the research were contacted, and there was an agreement between all those intended.

The sample characterization data were obtained through a questionnaire composed by the collection of personal information (age and sex), professionals (education network, number of schools and stages of elementary education in which they work; employment bond, workload, performance in private education, participation in sports competitions as a teacher and taught courses in the area), academic (training and participation in continuing education in their education network and courses on sports teaching) and sports (experience as an athlete in the sport, in sports competition, and in terms of level).

To verify the beliefs about constructivist teaching of Physical Education teachers, a translated and adapted version of the *Constructivist Teaching Practices Inventory in Elementary Physical Education – CTPI-EPE*, initially built and validated in English by Chen et al.<sup>2</sup> was used. The tool, elaborated from the theoretical assumptions of the constructivist approach to assess the perception about the practices of this teaching in Physical Education teachers in Elementary School, has 36 items, distributed in the following dimensions: Facilitating the Active Construction of Knowledge in Dance and Gymnastics; Facilitating Active Construction in Games and Skills; Facilitating Personal Relevance; and Facilitating Social Cooperation.

In order to be applied to this study, the initial version of the tool underwent an adaptation process in which eight items from the dimension "Facilitating the Active Construction of Knowledge in Dance and Gymnastics" and another from "Facilitating Personal Relevance" (also related to the contents of Dance and Gymnastics) were excluded. Subsequently, two native Portuguese speakers (a certified specialist in English-Portuguese translation and a professor with a Ph.D. in Physical Education) produced independent translations of the CTPI-EPE. Both versions were compared, and a synthesis of the document was prepared. Subsequently, a certified specialist and native English speaker back-translated the tool.

After the translation and adaptation of the tool, 13 specialists with a Ph.D. in Physical Education and extensive professional experience in the field assessed the clarity of language, practical relevance, and theoretical dimension of the tool, which presented satisfactory content validity indices, considering, for this, the general Aiken's V coefficient ( $V = 0.94$ ), the clarity of language ( $V = 0.92$ ), the practical relevance ( $V = 0.97$ ), and the theoretical dimension ( $V = 0.96$ ), superior to the reference value ( $V \Rightarrow 0.81$ ). Qualitative suggestions provided by experts were considered for the final version of the tool. Subsequently, the tool was applied to 15 Physical Education teachers (female=9; male=6), at two different times (test and retest), with an interval of one week between them to verify reliability. All items presented correlation

values higher than recommended ( $\rho > 0.70$ ), confirming its stability. Besides, there was a high level of internal consistency for the full scale ( $\alpha = 0.99$ ), and specifically for the dimensions “Facilitating the Active Construction of Knowledge” ( $\alpha = 0.98$ ), “Facilitating Personal Relevance” ( $\alpha = 0.97$ ), and “Facilitating Social Cooperation” ( $\alpha = 0.98$ ), revealing acceptable levels to be applied in the Brazilian reality.

### *Statistical analysis*

Data were tabulated with the aid of the *EpiData software*, version 3.1 in English, using absolute and integer numbers. Subsequently, they were analyzed using descriptive (simple frequency and percentage) and inferential statistical resources. The Gross Binomial and Adjusted odds ratio (OR) logistic regression was used, considering the significance level of 5%. The open-source *software “R”*, version 3.6.1<sup>16</sup>, was used to perform all statistical tests. To select the model's variables, the method (forward and backward) was adopted. In the Adjusted Analysis, only the variables that presented  $p \leq 0.20$  in the Gross Analysis were included<sup>17</sup>.

In the analysis of beliefs about the constructivist orientation, the CTPI-EPE responses were grouped into two categories: 0=Never (never and almost never); 1=Always (sometimes, almost always and always). Likewise, the independent variables selected via the *stepwise* method were categorized as follows: Sex (0=Female; 1=Male); Employment bond (0=Statutory; 1=Temporary); Participated in competitions as a teacher (0=No; 1=Yes); Academic Education (0=Undergraduate Course; 1=Non-degree Graduate Course; 2=Graduate Course); Participation in courses on teaching sports (0=No; 1=Yes).

## **Results**

Table 1 shows the absolute and relative frequencies referring to beliefs about the constructivist teaching practices of Physical Education teachers, and also general and specific by tool dimension, in relation to personal, professional, and academic variables.

**Table 1.** Absolute and relative frequency of beliefs about the constructivist teaching of Physical Education teachers, considering personal, professional, and academic variables

Variables	GCO		FACK		FSC		FPR	
	Never n (%)	Always n (%)						
<b>Sex</b>								
Female	13 (19.7)	53 (80.3)	15 (22.7)	51 (77.3)	12 (18.2)	54 (81.8)	7 (10.6)	59 (89.4)
Male	7 (11.1)	56 (88.9)	7 (11.1)	56 (88.9)	12 (19.0)	51 (81.0)	7 (11.1)	56 (88.9)
<b>Employment bond</b>								
Statutory	15 (21.1)	56 (78.9)	16 (22.5)	55 (77.5)	15 (21.1)	56 (78.9)	11 (15.5)	60 (84.5)
Temporary	5 (8.6)	53 (91.4)	6 (10.3)	52 (89.7)	9 (15.5)	49 (84.5)	3 (5.2)	55 (94.8)
<b>Participation in Competitions as a Teacher</b>								
No	9 (12.5)	63 (87.5)	10 (13.9)	62 (86.1)	13 (18.1)	59 (81.9)	6 (8.3)	66 (91.7)
Yes	11 (19.3)	46 (80.7)	12 (21.1)	45 (78.9)	11 (19.3)	46 (80.7)	8 (14.0)	49 (86.0)
<b>Education</b>								
Undergraduate Course	7 (20.0)	28 (80.0)	7 (20.0)	28 (80.0)	7 (20.0)	28 (80.0)	6 (17.1)	29 (82.9)
Non-degree graduate course	9 (11.7)	68 (88.3)	10 (13.0)	67 (87.0)	14 (18.2)	63 (81.8)	5 (6.5)	72 (93.5)
Graduate degree	4 (23.5)	13 (76.5)	5 (29.4)	12 (70.6)	3 (17.6)	14 (82.4)	3 (17.6)	14 (82.4)
<b>Participation in Sports Teaching Courses</b>								
No	14 (14.1)	85 (85.9)	15 (15.2)	84 (84.8)	11 (11.1)	88 (88.9)	11 (11.1)	88 (88.9)
Yes	6 (20.0)	24 (80.0)	7 (23.3)	23 (76.7)	13 (43.3)	17 (56.7)	3 (10.0)	27 (90.0)

**Note:** GCO=General Constructivist Orientation; FACK= Facilitating Active Construction of Knowledge; FSC= Facilitating Social Cooperation; FPR=Facilitating Personal Relevance

**Source:** the authors

The results revealed that the teaching of the investigated teachers is often guided by constructivist principles, regardless of sex, employment bond, participation in sports competitions as a teacher, academic training, and participation in courses on sports teaching. Although the difference in frequency distribution between the sexes was very small, men reported beliefs about teaching more oriented towards the GCO (88.9%) and FACK (88.9%) dimensions and women towards the FSC (81.8%) and FPR dimensions (89.4%).

Regarding employment bonds, it was observed that temporary teachers, when compared to statutory teachers, more often believe that their teaching is based on constructivism, with relatively higher percentage values for all dimensions analyzed (GCO=91.4%; FACK=89.7%; FSC=84.5%; FPR=94.8%). As for participation in competitions, it was found that teachers who did not participate in sports competitions, in relation to those who did, have beliefs that their teaching is guided more by constructivism in all dimensions of analysis (GCO=87.5%; FACK=86.1%; FSC=81.9%; FPR=91.7%). As for academic training, it was found that teachers with a non-degree graduate course believe that their teaching is mainly focused on constructivism, both for GCO (88.3%) and FACK (87.0%), FSC (81.8%), and FPR (93.5%). Finally, in relation to participation in courses, those who did not participate in courses about teaching sports had higher percentage values for beliefs about constructivist teaching in the dimensions GCO

(85.9%), FACK (84.8%), and FSC (88.9 %), while those who participated contemplated the FPR (90.0%).

The results of the gross and adjusted analysis of the binary logistic regression models revealed some significant associations. In the General Constructivist Orientation (Table 2), employment bond showed a significant association ( $p < 0.05$ ) in the gross analysis, as well as sex obtained acceptable values ( $p < 0.20$ ), but this relationship was not confirmed in the adjusted analysis. Therefore, considering the gross analysis, it was observed that temporary teachers were more likely to have beliefs about constructivist-oriented teaching ( $OR = 2.84$ ) than statutory teachers.

**Table 2.** Odds Ratio (OR) and Confidence Intervals (95%CI) of the associations between GCO and personal, professional, and academic variables

Variables	Gross Analysis		Adjusted Analysis	
	Never vs. Always	p-value	Never vs. Always	p-value
<b>Sex</b>				
Female	1	0.17	1	0.22
Male	1.96 (0.74; 5.57)		1.85 (0.69; 5.31)	
<b>Employment bond</b>				
Statutory	1	0.05*	1	0.06
Temporary	2.84 (1.02; 9.22)		2.73 (0.97; 8.91)	
<b>Participation in Competitions as a Teacher</b>				
No	1	0.29	-	-
Yes	0.60 (0.22; 1.56)			
<b>Education</b>				
Undergraduate Course	1	0.34	-	-
Non-degree graduate course	1.89 (0.62; 5.57)			
Graduate degree	0.81 (0.21; 3.55)			
<b>Participation in Sports Teaching Courses</b>				
No	1	0.45	-	-
Yes	0.66 (0.24; 2.02)			

Note: \* $p \leq 0.05$

Source: the authors

In the FACK dimension, the results indicated that sex and employment bond presented acceptable values in the gross analysis ( $p < 0.20$ ), not confirming, however, a significant association in the adjusted analysis. Regarding the FSC dimension (Table 3), the results showed a significant association with the variable participation in courses on teaching sports, indicating that teachers who did not participate in these courses are more likely ( $OR = 1.0$ ) to have beliefs related to the development of FSC in their classes.

**Table 3.** Odds Ratio (OR) and Confidence Interval (95%CI) of the association between FSC and participation in courses on sports teaching

Variables	Gross Analysis	
	Never vs. Always	p-value
<b>Participation in Sports Teaching Courses</b>		
No	1	<0.001*
Yes	0.16 (0.06; 0.42)	

Note: \*p<0.05

Source: the authors

In the FPR dimension (Table 4), the results revealed that the employment bond also presented a significant association ( $p<0.05$ ) in the gross analysis, as well as the academic training obtained acceptable values ( $p<0.20$ ). In the adjusted analysis, both variables showed a significant association, indicating that temporary teachers, when compared to those with a statutory contract, are more likely to have beliefs related to the adoption of strategies that emphasize FRP in students in their classes (OR=11.80), in the same way, that teachers with a non-degree graduate course are more likely (OR=11.77) compared to those who only have initial training.

**Table 4.** Odds Ratio (OR) and Confidence Intervals (95%CI) of the associations between FPR and professional and academic variables

Variables	Gross Analysis		Adjusted Analysis	
	Never vs. Always	p-value	Never vs. Always	p-value
<b>Employment bond</b>				
Statutory	1	0.05	1	<0.001*
Temporary	3.36 (0.99; 15.43)		11.80 (2.28; 86.49)	
<b>Participation in Competitions as a Teacher</b>				
No	1	0.30	-	-
Yes	0.56 (0.17; 1.70)			
<b>Education</b>				
Undergraduate Course	1		1	0.01*
Non-degree graduate course	2.98 (0.83; 11.08)	0.16	11.77 (2.32; 74.04)	
Graduate degree	0.97 (0.22; 5.10)		4.58 (0.73; 37.09)	

Note: \*p<0.05

Source: the authors

## Discussion

The results revealed that the investigated Physical Education teachers, working in Elementary Schools at the Florianópolis Metropolitan Nucleus, have beliefs about teaching oriented towards constructivism, regardless of their personal, academic, and professional characteristics. Besides, those who have a temporary employment bond have, when compared to statutory, beliefs related to teaching practices oriented to general constructivism. In contrast, those who did not participate in courses on sports teaching revealed beliefs aimed at the development of social cooperation. Those with temporary employment bonds and non-degree graduate courses were more likely to promote the students' personal relevance.

In general, the evidence indicates that teachers manifest beliefs about the teaching of Physical Education consistent with the constructivist assumptions recommended in the specialized literature in the area<sup>2,18-20</sup>, which emphasize: the adoption of practices that promote the responsibility of students through their learning itself, involving them in interesting and

challenging activities; creating teaching situations that consider their previous experiences; and seek to provide opportunities for them to work collaboratively, sharing and negotiating ideas. Considering the context in which the teachers who participated in this study are inserted, it is believed that the changes that have taken place in the national curricula both for Basic Education<sup>7</sup> and for the initial teacher training in recent decades<sup>21</sup>, as well as the growing appeal to the centrality of the student and the offer of experiences relevant to their social and cultural context in the teaching and learning process of Physical Education, may have contributed to the high perception of teachers in relation to teaching oriented towards constructivism.

The predominance of beliefs about adopting constructivist models and practices was also verified in other studies conducted with Physical Education teachers<sup>5,22</sup>. High scores were similarly identified for the FACK, FPR, and FSC dimensions<sup>2</sup>. However, some studies show the dissonance between the beliefs declared by the teachers and their practice, indicating that it is also necessary to consider the fact that these beliefs may not reflect on the constructivist pedagogical practice<sup>5,23,24</sup>.

When considering the sex of the investigated teachers, there was a similarity between their beliefs, confirmed by the absence of association in all dimensions analyzed. This tendency was also found in other studies that did not identify the influence of sex in relation to beliefs about models, practices, and teaching styles in Physical Education<sup>25,26</sup>. However, there is some evidence that teachers tend to have more constructivist-oriented beliefs when compared to their male peers<sup>4,6</sup>. Likewise, although participation in sports competitions as a teacher has not been an explanatory factor for beliefs about constructivist practices, the descriptive analysis allowed to identify in all teaching dimensions the predominance of beliefs about constructivist teaching among teachers who have no experience in competitions. In fact, participating in sports competitions as a teacher can direct the look at the teaching of Physical Education so that a teaching style can be assumed emphasizing the reproduction of actions and privileging more directive instructions to increase the student's motor competence in proposed activities<sup>27</sup>. Furthermore, teachers with stable beliefs regarding the adoption of competitive activities in the classroom tend to focus more on teaching tasks, emphasizing repetition and refinement of skills, and less on the cultural relevance of the tasks for students<sup>28</sup>.

Gross Binary Logistic Regression analysis showed that employment was associated with GCO so that temporary teachers were more likely to perceive teaching oriented to constructivism than statutory teachers. This evidence suggests that the absence of beliefs about constructivist practices may be related to professional stability since statutory employees seem to be more comfortable than temporary workers<sup>29</sup>. This condition can lead to accommodation in teaching practices, reducing the search for and interest in innovations in the teaching and learning process. Also, there is evidence that the level of teacher (dis)satisfaction has been related to constructivist teaching practices in the literature consulted. More satisfied teachers usually assign more active roles to students and establish more positive and trusting environments for learning<sup>30</sup>. Although it was not the focus of this study, there is evidence that statutory Physical Education teachers, who work in the same region as the sample (Greater Florianópolis/SC), were more dissatisfied with working conditions than temporary teachers<sup>31</sup>. In addition, the teacher's previous experiences can influence their professional practice, so that the practices of statutory graduated in the 1980s and 1990s, with a predominantly centered focus on the teacher himself/herself, could still influence their professional action today<sup>32</sup>.

Participation in courses on sports teaching was strongly associated with the FSC dimension, revealing that teachers who did not participate in courses are more likely to express, in their teaching practices, beliefs related to creating opportunities for students to share ideas and solve problems together. Specific courses on sports, especially when they take place outside the context of training promoted by educational networks, can often emphasize directive teaching, focusing on *performance* and individual sports results. On the other hand, the

continuing education offered by educational networks are mainly based on the social aspect of constructivism, according to its normative documents, which may justify the fact that teachers (who do not participate in courses on teaching sports outside the network) present beliefs about teaching practices more oriented to the FSC principle. This study pointed out that the continuing education of teachers with a constructivist perspective can overcome traditional education, enabling conceptual structures necessary for a pedagogical work committed to the formation of critical, active, and autonomous citizens<sup>33</sup>.

Regarding the FPR dimension, employment bond and academic education were associated with it in the adjusted analysis. Considering the employment relationship, it was found that teachers admitted temporarily were more likely to create teaching situations that value students' knowledge and previous experiences in learning new content. These results may be associated with the fact that most temporary teachers are at the beginning of their career (0-3 years=56.9%), possibly indicating that their participation in initial training courses may have occurred more recently than that of statutory teachers, most of whom are in the Career Diversification/Renewal cycle (7-19 years=62.0%)<sup>34</sup>.

When analyzing the constructivist-oriented teaching practices of *experts* and novices, Chen and Rovegno<sup>1</sup> found that expert teachers, compared to novices, sought to use more strategies to help students make connections between the content and their life experiences (personal relevance). As implications of the study, the authors highlighted that the deficit in teacher training in Physical Education is related to support for learning practices oriented to constructivism. On the other hand, it is suggested, in this study, that temporary teachers may have received greater encouragement during their initial training to develop meaningful and relevant experiences in the lives of students because of the growing appeal in the preparation of teachers for teaching in this dimension in undergraduate courses, as can be seen in recent studies carried out in the field of Physical Education<sup>35,36</sup>.

Regarding academic training, teachers with a non-degree graduate course, compared to those without a graduate course, were more likely to have beliefs about teaching practices that encourage students' personal relevance. These results suggest that specialization courses in Physical Education have possibly contributed to the construction of beliefs about constructivist and/or "innovative" teaching practices<sup>37</sup>. In fact, teacher education provides an environment for rethinking pedagogical practice itself so that experts are expected to be more open to the use of student-centered teaching strategies<sup>6</sup>, valuing their previous experiences in the process of planning and implementing new contents, in order to make learning more meaningful and relevant to the social and cultural reality they are inserted.

## Conclusions

Given the results found and considering the limitations of studies of this nature, it is concluded that the investigated Physical Education teachers present beliefs about teaching that are often oriented towards constructivism, regardless of their personal, academic, and professional characteristics. Teachers with a temporary employment bond have beliefs related to teaching practices oriented to general constructivism; those who did not participate in courses on teaching sports, beliefs aimed at the development of social cooperation; and those with temporary employment bond and a non-degree graduate course, greater chances of promoting the students' personal relevance. In general, the evidence indicates that aspects related to the profession (e.g., employment bond) and academic training (e.g., participation in courses and continuing education) comprise factors with greater potential to influence teachers' beliefs about adopting constructivist teaching practices.

The limitations of this investigation include the use of only one data collection tool for the objective assessment of indicators about these beliefs. Besides, the scarcity of studies in the

field of Physical Education in the Brazilian context, using tools that validate this practice, made it difficult to compare the results found in this study with those of similar research. Therefore, it is suggested to use tools for observation of constructivism-oriented teaching practices to provide complementary indicators to the teachers' perception. Furthermore, future studies can expand the universe investigated to other education networks at local, state, and national levels to understand the particularities and similarities between the beliefs of Physical Education teachers from different regions of the country. Finally, it is considered pertinent to continue the investigation of beliefs about constructivist teaching practices, specifically on the dimensions prioritized or not by teachers and the respective factors that affect their practice, whose evidence can provide important contributions to their initial and continuing education of these professionals, aiming to improve the quality of pedagogical interventions in Basic Education Physical Education.

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**Acknowledgments:** This study was carried out with the support of the Coordination for the Improvement of Higher Education Personnel - Brazil (CAPES) - Financing Code 001

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Received on Sep, 22, 2020.

Revised on Jun, 01, 2021.

Accepted on Jul, 01, 2021.

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