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Continuing education of physical education teachers and self-assessment of the teaching domain

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Abstract — Aims: to diagnose continuing education initiatives and training needs of physical education teachers. The frequency, limitations and alternatives to continuing education were characterized and self-assessment areas of knowledge essential to teaching were analyzed. **Methods:** Data were obtained from 18 beginning teachers, using the Professional Career Characterization Questionnaire, an inventory of needs and characterization of continuing training and self-assessment of skills in areas of knowledge essential to teaching. Qualitative data were systematized and quantitative data analyzed by descriptive statistics. **Results:** Teachers performed 78 continuing training activities over the last four years, 43 in the technical area of physical education and 28 in school-based Physical Education. The most attended subjects were short-duration and graduate courses. The main limitations identified were the financial and time constraints to training. Self-assessment of the teaching areas was deemed to be sufficient, indicating a margin for new learning. **Conclusion:** The teachers showed commitment to their training, with a focus on teaching and awareness of its importance in professional development.

Keywords: Professional Development; Continuing Education; Training needs; Teaching Skills.

Introduction

The continuous technological advances since the 20th century and the constant changes in the different sectors of society require the restructuring of formal education and the way in which the teaching profession is viewed. Initial teacher training cannot be considered an end in itself, but merely one of the successive stages in a teacher's professional or career development¹. Continuing education, added to initial training, allows teachers to acquire knowledge that supports contextualized, reflexive and effective pedagogic intervention, contributing to their professional development².

Professional development is the process by which teachers re-examine and renew themselves as well as develop the teaching proposals, knowledge and skills essential to professional thinking, planning and pedagogic intervention^{3,4,5}, in order to improve control over the teaching environment and teacher intervention. Continuing education means updating or deepening specific knowledge of a subject or new theories and pedagogic practices that meet teachers' needs in conjunction with social and academic demands⁶.

The term Education is broad and may involve initial education, continuing education and in-service education. The professional development is inaugurated by Marcelo Garcia⁵ to think

about the continuous education, pointing to two fundamental distinctions: between continuous education and compensation of deficiencies of the initial education; and between continuing education and professional development. In this sense, the compensatory action has the specific character of being 'up to date', being updated; while the association between professional development and continuing education lies in overcoming the traditional dichotomy between initial education and the offsetting of resulting deficits.

In Brazil, continuing education policies take *top-down* orientation, i.e. they depart from the guardianship bodies, often without taking into account the needs of teachers and the real context of schools. The census on continuing education, carried out in 19 education systems, in different geographic spaces of the country, identified some initiatives based on the collaborative education; in linking the education to the career path; and attention to the needs of teachers. However, classical and short-lived modalities still predominate, in the form of courses, lectures and workshops, etc.⁶, inspired by the technical rationality, determinants of individualizing formative practices and/or exclusively directed to the interests of the educational management organs.

Invariably, centralized continuing education favors technicism and standardized behavior, processes and

methodologies, without considering the peculiarities of teachers or schools.

On the other hand, decentralized continuous education is understood under a more critical view and essentially linked to the constant process of reflection about the practice itself, in order to significantly contribute to enhancing educational practices, with the personal dimension of teachers an integral part of this process^{7,8,9,10,11}.

Decentralized training programs allow schools to mobilize real content specific to daily education, transforming the space to one of reflection, constructing teachers' knowledge and its relationship with intervention¹². Including the continuing training of teachers in Pedagogic Projects produces instant results since it encourages them to question daily situations and value the acquired learning and experience, thus favoring internal educational resources and strengthening interactions in educational settings¹³. Although there is considerable theoretical production on training in the literature, it has not been widely disseminated in school systems. Classic training programs still predominate, offered either by educational systems or undertaken personally by teachers, in accordance with their immediate interests, but the latter is not always aligned with the interests of the school community¹⁴.

The literature characterizes four learning models present in the continuous education actions, based on the level of structuring and adaptation to the individuals: Through the *Courses (Learning FROM Others)*; Through the *Education in Seminars or in Group (Learning WITH others)*; By *Self-Learning (Learning ALONE)*; and by *Informal Learning (unplanned and open)*⁵. These modalities can take on a virtual character through the use of Teletraining devices and tools.

The *Courses* require a specialist in a disciplinary area, responsible for the selection of contents and activities; allow clarity in the definition of learning objectives or learning outcomes; although having a homogenizing conception, the learning occurs as an individual process. The *education in seminars or groups* includes the formation of a collective character, with collaborative purposes, which can occur in person or at a distance away from the objectives and learnings which are desired to make effective¹⁴. The characterizing factor of this modality is the sharing of learning goals in the group of participants. The *Self-education* assumes that the professional is able to guide his/her education and learning process; the experience and the professional reflection are references for the accomplishment of this open and unplanned action; it presupposes the experience as a starting point for the reflection and determination of the necessary learning. The *Informal Learning*, also of an open and unplanned nature, occurs in a random and casual way through the observation of peers, causal readings of articles, books or internet pages, which, even when not planned, end up providing access to knowledge of professional interest. Self-education and informal learning have the characteristic of autonomous learning, of individual initiative¹⁵. These training modalities are increasingly becoming

virtualized through the possibilities offered by teletraining, which is used for various purposes such as distance learning, semi-presential or face-to-face, combining/alternating real and virtual contacts. It is supported in the diverse technological tools, of telecommunications, multimedia materials, etc, denominated TICs. The Internet and its possibilities are used as the main mechanism for access to information. The configuration of combined educational scenarios has great potential to promote meaningful learning.

The training modalities offered develop according to a specific training model, governed by concepts, objectives and specific purposes. These depend on academic, social, political, financial and personal factors (initiative of the teachers themselves) and reflect views of the world, education in general, the educational process and consequently, expectations about the teaching profession and its functions.

Taking into account the role of the continuing education for the professional development of the teacher, the aim of this study was to diagnose continuing training of Physical Education teachers from the Alto Paraopeba region, Minas Gerais state, considering their limitations and possibilities and, based on their self-assessments, identify the level of professional skills in areas of knowledge necessary for teaching and considered essential to continuing education projects that meet teacher training needs.

Methods

The study is qualitative and quantitative of descriptive character of the *survey* method, through the use of a questionnaire with open and closed questions to characterize the continuing education profile of Physical Education teachers. This type of study aims to determine information about future and current practices, opinions or projections of a specific population¹⁵. The qualitative data, derived from the open questions, served to characterize the contributions of the continuous education actions carried out by the teachers, as well as the limitations and alternative strategies to the participation in the education processes. The quantitative data refer to the modalities of continuous education actions carried out in the school and technical areas of Physical Education and the self-assessment of the level of competence domain associated to each one of the knowledge areas fundamental to teaching.

Sample

This research represents a cut from a longitudinal study, through which it investigates the path of physical education teachers since initial education ten years ago. The results presented here refer to teachers who were enrolled for four years in the profession, selected by convenient sampling, using the criterion of having participated in the initial phase of the investigation, when they were at the end of the initial education. Thus, the

non-probabilistic sample consisted of 18 early-career teachers (three to four years of teaching) linked to public education systems in the Alto Paraopeba (MG) region, eight of whom were female and ten were male, aged between 25 and 36 years. All teachers worked in elementary school, 11 in elementary and middle school and only three teachers worked together in pre-school education. In relation to the social context in which they were inserted, 12 teachers taught in schools in the urban area; five in rural schools; and a teacher in both areas. As for school assignment, 13 teachers taught only in one school, four in two schools and one in four schools.

Instrument

Data collection was performed using the Questionnaire for the Characterization of Professional Career and Skills. The instrument is composed of 25 open and closed questions, organized into two parts. The first consists of open questions to characterize participation in continuing education activities in the four years before the study, based on their resumé; identify those the teachers consider most relevant; the limitations to taking part in training of this nature, in addition to exposure to the strategies used by teachers to compensate for the limited offer and/or impossibility of benefiting from permanent training processes. The second part includes a set of closed questions on areas of knowledge involving the skills needed for Physical Education teaching, conceived based on Standards for Initial Programs in Physical Education Teacher Training, developed by the National Association for Sport and Physical Education [NASPE]¹⁶ and adapted to the Brazilian context and the aims of this investigation. The teachers were asked to assess their skill level in each of the fields of knowledge, as follows: Knowledge of Content, Planning and Instruction, Student Assessment, Management and Motivation, Communication, Development and Diversity, Reflection, Technology and Collaborative Work. The response options to the closed questions are presented on a 4-point Likert-type scale (Insufficient, Satisfactory, Good and Very Good). Before application, the instrument was conceptually validated in four stages: 1) question formulation; 2) validation by specialists; 3) pilot test; and 4) final reformulation.

Procedures

Data collection occurred in 14 cities in the Alto Paraopeba region of Minas Gerais state, in Southeastern Brazil: Ouro Branco, Conselheiro Lafaiete, Barbacena, Congonhas do Campo, Santa Rita de Ouro Preto, Piranga, Pinheiros Altos, Cachoeira do Brumado, Dores do Turvo, Alto do Rio Doce, Desterro do Melo; Barroso, Ibertioga and Carandaí.

1 NASPE is responsible for establishing the initial training parameters, using them as references for certification of Physical Education courses in the USA.

Before the questionnaire was applied the teachers gave their informed consent.

The research project was approved by the Faculty of Human Motricity Scientific Council of the University of Lisbon and the Research Ethics Committee of the Federal Rural University of Rio de Janeiro, under protocol n°. 655/2015 appended to process n°. 23083.006714/2015-75.

Data Analysis and Processing

The qualitative data obtained through open questionnaire questions were interpreted through content analysis centered on the semantics of the information, in order to identify connotations about the strategies, limitations and contribution of the continuous education actions attributed by the research subjects.

Descriptive statistics (measures of central tendency, dispersion, relative and absolute frequency) was used to quantitatively characterize the continuous education carried out by the teachers, as well as their self-evaluation of mastery in areas of knowledge to teaching. The quantitative treatment was done in IBM® SPSS, version 20.

Results

The results are presented in two sections. The first characterizes continuing training activities of the teachers, classifying them by area of knowledge and training modality, identifying those most significant to them, as well as the obstacles faced and the alternatives they resorted to in order to advance their professional development. The second part concentrates on describing the self-assessment of teaching skills deemed essential to Physical Education teaching. In addition, in order to maintain anonymity and comply with the ethical precepts of the research, we present the eighteen teachers with the abbreviations “T1, T2, T3, etc.”.

Characterization of Continuous Training

The teachers were asked about continuous training activities in the previous four years by fields of knowledge (technical and pedagogic) and modalities, in accordance with their curriculum. They were also asked to indicate and justify the activities that most contributed to enhancing their teaching skills, the difficulties encountered and the strategies used to compensate for these hindrances.

Training Area and Modality

As shown in Table 1, the 18 teachers performed 78 training activities in the four previous years.

Table 1 Continuing education activities performed in the four years before the study

Subjects	Areas of Physical Education					Training Activity					Total
	Technical	School-based	Others	Workshops	Refresher courses	Scientific studies	Lectures/ Congresses/ Symposiums	Lectures/ Congresses/ Symposiums	Postgraduate Program	Others	
T 1	3	2			3	1			1 ^C		5
T 2											0
T 3	1	1			1				1 ^C		2
T 4	1	1			1				1 ^D		2
T 5	2	1			3						3
T 6	1								1 ^C		1
T 7	14	1		2	8			4	1 ^C		15
T 8											0
T 9	2	1	1		4						4
T 10		4					3		1 ^D		4
T 11	2	1	1		3				1 ^D		4
T 12	2	3			4		1				5
T 13	2	4	1	1	4	1			1 ^C		7
T 14		2			1				1 ^D		2
T 15	3		1		2				1 ^C	1	4
T 16	4	2	2	1	4			2	1 ^D		8
T 17	6	3	1		7		2		1 ^C		10
T 18		2			1				1 ^D		2
Total	43	28	7	4	46	2	6	6	13	1	78

Note. C = classroom course; D = distance course

Of the 78 training activities, 43 (55.1%) training events were related to technical sports knowledge, exercise physiology, sport training and fitness. Of the pedagogic training activities, 28 (35.9%) were related to School-based Physical Education, and seven (9.0%) to other areas. However, nearly half (46.5%) of technical training activities were due to the initiative of T7 and T17, since in addition to teaching at an elementary school, the former owns a weightlifting gym and the latter is involved in initiation and sport training projects, justifying their choice for continuing training in the technical area.

Only T2 and T8 did not undergo any training activities. Of the remaining 16 teachers, 11 performed activities in the two fields of knowledge, three in the school-based area and two in the technical area of Physical Education. There was no prevalence

for training in school-based Physical Education, although all the teachers belonged to elementary school systems. It is plausible that teachers, although understanding the meaning of the education in the pedagogical area of Physical Education and perceive its importance for the performance of the teaching function, due to the low remuneration received in the school systems, are forced to assume different jobs, including in non-school contexts. Because of this, the teachers combine the education in different areas in order to provide them with the professional activity that allows them minimum conditions of subsistence.

A comparison between the frequency of training activities in the two areas of knowledge, disregarding those engaged in by T7 in the technical area, showed no significant difference in the number of activities.

With respect to the continuing education modalities, professional development and/or refresher courses were the most frequent (14 teachers and 46 activities). These sporadic events contained little theoretical content and were of short duration (\cong 8-40 h). The second most attended modality was the *lato sensu* post-graduation, in which among the 13 teachers who declared it, seven opted for face-to-face training and six for distance learning. This modality is of a long duration (360 hours) and demands time and a greater burden, but the teachers involved in it show a greater appreciation of this type of training due to its consistency¹⁷, even in view of its increasing

commodification^{18,19}, still respond to a greater degree the demand of a scientific formation of the teachers, when compared to the *stricto sensu* courses.

Relevant Continuing Training Activities

Table 2 summarizes the continuing training modalities considered the most relevant by teachers, the training speciality, its contributions to enhancing teaching skills and the reasons for enrolling in the course.

Table 2 Modalities, thematic areas and contribution of continuous training activities

Subjects	Training Activity		
	Relevant modality	Specificity	Reasons and/or Contributions
T 1	Refresher Courses	Sport training	Theoretical improvement; enjoys training; desires to work in the area
T 2			
T 3	Graduate Program	Sport Training	Enjoys Sport Training; desires to work in the area
T 4	Refresher Courses	Futsal Referee	Confidence to teach the sport
T 5	Refresher Courses	Teacher training for full time school	Practical improvement; exchange experiences with professional in the area
T 6			
T 7	Preletor/ Project organization	Projects and partnerships with public and school entities	Greater interaction among students and professional practice; Improve the image of the professional profile; School management requirement
T 8			
T 9	Refresher Courses	Training of coaches and futsal referees	Improve performance; more knowledge, ineducation; class content
T 10	Graduate Program	Psychomotricity	Complementary to initial training
T 11	Graduate Program	Elementary and Secondary teaching methodology	(Didactic) improvement; test preparation; student assessment
T 12	Refresher Courses	Teacher training for full time school	Directed to daily class activities
T 13	Refresher Courses	Teacher training for full time school	Innovate activities; improve methodological aspects; creativity
T 14	Refresher Courses	Educational Advisor	Update of theoretical and practical knowledge
T 15	Graduate Program	Physiology and Kinesiology of Physical Activity and Health	Update of theoretical and practical knowledge
T 16	Workshops	Psychogenesis of literacy	Work with the biological (differences and individualities) of students
T 17	Refresher Courses	Educator program and Pythagoras network training	Didactic processes; planning; assessment; distinction between sport performance and school-based physical education
T 18	Refresher Courses	Teacher training for full time school	Organization; diversity; manufacture of alternative materials

Of the teachers reporting the professional development and/or refresher courses as being the most relevant, six underwent training activities in the school-based area and three in the technical area of Physical Education. Four teachers enrolled in graduate training, two in the school-based and two in the technical area. The only mention of a workshop was made by T16, reporting the field of School Psychology as the most relevant for his teaching activities. The training was financed by the institution that employed him. T7 reported her experience as prelector as being relevant in the conception and organization of projects, as well as active participation in these projects (partnerships between the teaching institution and the municipal government).

With respect to responses on the reasons and contributions of continuing education activities considered the most relevant, whether teaching-related or for professional development, of the 15 teachers that provided this ineducation, 13 declared that they were useful for teaching activities, including those considered relevant for some teachers in the technical area of Physical Education. Only T3 underwent training in the technical area of Physical Education because he enjoyed it and intended to work in this area as a coach. It was surprising to observe that only four of the 13 teachers in the graduate certificate course deemed it to be superior. Of those who did not undergo graduate training, four did so in the undergraduate technical area, two in the school-based and two in the teaching field (one

teacher did not specify any training). The ineducation provided by these teachers reveals two reasons that explain this occurrence: (a) most of the training was in the technical area or one unconnected to work-related activities (school-based or not); (b) of the six graduate distance learning courses, only two in the school-based area were praised by the teachers, while the others were criticized or taken to enrich their resume without being particularly useful to their teaching activities. Short-duration activities were predominantly valued for providing teachers with a repertoire of tasks immediately applicable to their work context, whether school-based or not. The option for training modalities, as well as their recognition by teachers, is associated with immediate objectives related to their individual contexts (school, gym or social projects); and future professional expectations (university-level teaching, training activities and fitness, among others).

Limitations versus Refresher Strategies

The teachers were asked about limitations or difficulties encountered in training. Table 3 illustrates the limitations or difficulties faced by teachers in terms of continuing education, as well as the training alternatives used to compensate for the shortage of opportunities aimed at keeping them up to date.

Table 3 Limitations and alternative continuing education strategies

Subjects	Limitations	Strategies
T 1	Financial; time; (reconciliate) training with work	Books; scientific articles
T 2	Time; Financial	Internet
T 3	Distance; Financial	Scientific articles; books
T 4	Financial; Time	Exchange of experiences
T 5	Time; financial; two professional occupations	Exchange of experiences; books; contact with former teachers
T 6	Financial	Books; exchange of experiences; contact with former teachers
T 7	Time; distance; financial	Internet; books; Journals; refresher courses
T 8	Distance; Family	Books; journals; Internet; exchange of experiences
T 9	Distance; lack of ineducation on courses	Internet; exchange of experiences
T 10	Time; financial; lack of training options in (the) region; distance	Does not compensate these limitations
T 11	Time; financial; distance	Internet; books; exchange of experiences
T 12	Distance; stress	Internet; exchange of experiences
T 13	Financial; distance	Exchange of experiences; refresher courses
T 14	Internet; contact with course colleagues	Books; CDs and DVDs; exchange of experiences
T 15	Distance; financial	Refresher Courses; Internet; books; exchange of experiences
T 16	Time; for having several jobs	Refresher Courses; Internet; exchange of experiences
T 17	Time; financial	Refresher courses
T 18	Financial; distance; time	Contact with former teachers; exchange of experiences; Internet; books

Most responses cited financial limitations (n= 12), followed by distance (n= 10) and time (n= 10). The financial difficulties are explained by the fact that the training opportunities took place in cities far from the locality of residence, generating expenses with displacement, lodging and meals. Moreover, teachers expressed dissatisfaction with public teaching salaries, requiring them to take on other occupations or more than one position in the public system and limiting their availability for continuing education.

Given the aforementioned difficulties and limitations, teachers reported using informal open models as alternative continuing education strategies to make up for the lack of opportunities in their localities. The exchange of experience between peers was the informal model most cited by the teachers (15 times), followed by the open self-training model involving the reading of scientific books/journals/articles (14 times) and internet searches (nine times). The five references to refresher and/or professional development strategies are an alternative to the impossibility of training far from the teachers' residence, and therefore, not always an intentional and objective choice associated with their training needs. Nevertheless, it is also important to observe that the desire to improve their training varies as a function of the initiative and enthusiasm of teachers regarding their profession, as was the case of T17, who despite all the difficulties related to work overload and financial resources, spared no effort in seeking training in another state, while T10 was not concerned about compensating for these limitations and/or difficulties.

Self-assessment of teachers regarding their teaching skills

In the last part of the questionnaire, teachers were asked to conduct a self-assessment of their teaching skills in nine areas of knowledge. The self-assessment scale has four points: (1) Insufficient; (2) Satisfactory; (3) Good and (4) Very Good.

Data analysis of the responses in the nine areas of knowledge (Table 4) shows that the highest concentration of self-assessments were Satisfactory (48.1%) and Insufficient (26.5%), that is, 74.6% of all the responses were at best in the Sufficient category. Only 23.5% and 1.9% of the responses demonstrated that teachers considered their skills Good and Very Good, respectively.

With respect to each area of knowledge, Collaborative Work received the worst assessment from the teachers, with an average of 1.5± 0.6 (Mo= 1), while the best self-assessment was in the Technology area, with an average of 2.4± 0.9 (Mo= 2), and Student Assessment, with an average of 2.3± 0.7 (Mo= 2; 3). Nevertheless, in general, the mean scores for Average and Mode in the collective assessments of teachers in the areas of knowledge show a predominance of the Satisfactory category, confirmed by a score of 2 on the scale, except Collaborative Work. In the range of 1 to 4, Mo=2 was found in eight of the nine areas of knowledge. Likewise, in eight of the nine areas, the median was Satisfactory (Md= 2), except for Collaborative Work (Md= 1).

Table 4 Teacher self-assessment of teaching-related areas of knowledge

Subjects	Knowledge Content	Development and Diversity	Management and Motivation	Communication	Planning and Instruction	Student Assessment	Reflection	Technology	Collaborative Work	Mean ±SD	Median	Mode
T 1	3	2	2	1	2	3	1	1	1	1.8±0.8	2	1
T 2	3	3	2	3	3	3	3	2	1	2.6±0.7	3	3
T 3	1	1	1	2	1	2	2	2	1	1.4±0.5	1	1
T 4	3	2	2	3	2	3	2	3	2	2.4±0.5	2	2
T 5	2	2	2	2	3	3	2	3	1	2.2±0.7	2	2
T 6	2	2	2	2	1	2	1	2	1	1.7±0.5	2	2
T 7	3	3	2	2	3	3	2	2	1	2.3±0.7	2	2; 3
T 8	2	3	4	3	2	3	2	4	2	2.8±0.8	3	2
T 9	2	1	1	1	1	1	1	2	1	1.2±0.4	1	1
T 10	2	2	2	2	2	2	2	3	2	2.1±0.3	2	2
T 11	1	2	1	2	2	2	1	2	2	1.7±0.5	2	2
T 12	1	3	2	3	3	2	2	4	1	2.3±1.0	2	2; 3
T 13	2	1	2	2	2	3	2	3	2	2.1±0.6	2	2
T 14	2	1	2	2	1	2	1	3	3	1.9±0.8	2	2
T 15	1	2	3	1	2	1	2	1	2	1.7±0.7	2	1; 3
T 16	2	2	3	1	1	2	3	2	2	2.0±0.7	2	2
T 17	1	1	2	1	2	3	2	1	1	1.6±0.7	1	1
T 18	3	2	2	3	2	2	3	3	1	2.3±0.7	2	2; 3
Mean±SD	2.0±0.8	1.9±0.7	2.1±0.7	2.0±0.8	1.9±0.7	2.3±0.7	1.9±0.7	2.4±0.9	1.5±0.6	---	---	---
Median (Md)	2	2	2	2	2	2	2	2	1	---	---	---
Mode (Mo)	2	2	2	2	2	2; 3	2	2	1	---	---	---

Note. Scale: 1 = Insufficient; 2 = Satisfactory; 3 = Good; 4 = Very Good

In relation to the areas of knowledge, the greater frequency of records on scales of 1, 2, 3 and 4 occurred in Collaborative Work (Mo= 1), Management and Motivation (Mo= 2), Student Assessment (Mo= 2; 3) and Technology (Mo= 2), respectively. With respect to the teachers, the greater frequency of records was between 1 and 3, T1, T3, T9, T15, and T17 with Mo= 1; T4, T5, T6, T7, T8, T10, T11, T12, T14, T16 and T18 with Mo= 2; T2, T7, T12, T15 and T18 with Mo= 3. Teachers T8 (F= 2) and T12 (F= 1) were the only ones to report self-assessments in the Very Good category, but all of them were below the Mode observed in the data set. The distribution of teachers as a function of the modal values confirms the predominance of records in the Satisfactory category on the scale.

However, these results demonstrate that most teachers felt they had satisfactory teaching skills. In a study by Ferreira¹⁷, despite there being no significant differences in the frequency of continuing education activities, the self-assessment values of beginning teachers tended to be in the Good category, and higher than those found in the present investigation in seven of the nine areas of knowledge surveyed. The areas in which teacher self-assessment was most similar were Technology and Student Assessment, albeit smaller in this research. It is plausible that the higher results in terms of self-assessment of competences found by Ferreira¹⁷ occur because teachers were favored by location in urban centers, which provided them with greater opportunities for continuing education, unlike the teachers we investigated who resided, most of them, in countryside locations.

Discussion

The teachers gave different reasons for their training choices, which were generally related to their personal and professional needs, in order to obtain more knowledge and/or invest in the profession through teacher development or refresher courses. Other teachers described student requirements in areas they do not dominate, showing their need to remain up to date. Still others stated the desire to complement initial training, the opportunity to break out of their routine and exchange experiences with other teachers.

A comparison between the frequency of training activities in the two areas of knowledge, showed no significant difference in the number of activities. The results differ from those reported by Ferreira¹⁷, in which beginning teachers were involved in fewer training activities in the technical-biological area of Physical Education. However, the average annual frequency of continuing education activities was similar, around one per year, considered low since most were sporadic and of short duration.

It is important to remember that, in the Brazilian context investigated, teaching systems provide few or no training activities in the technical area of Physical Education, since their ultimate objectives are related to the school setting, that is, the didactic and pedagogic dimensions of teaching. Teachers enrolled in technical courses at their own expense for two main reasons: (a) the connection of their activities to school-based sports (ex., School Games of Minas Gerais – JEMG), albeit restricted to a school setting, motivated them to acquire knowledge related

to sport training; (b) those involved in sport, training or fitness alongside their academic position considered it important to enroll due to their low salaries, obliging them to complement their income in other areas of Physical Education, such as gyms and sport clubs.

The results of this study demonstrate an antiquated view of reality in terms of the continuing education of teachers, although there are signs of new perspectives open to teachers in their search for professional qualification and development. Analysis of the training undergone by teachers shows the broadening of mandatory continuing teacher education, albeit in traditional, sporadic, short-duration programs focused on technical rationality aimed more at the political-pedagogic and budgetary interests (low-cost events) of education systems than the training needs of teachers. This situation is due to the limitations and difficulties in pursuing continuing education courses and the few opportunities available in the region, requiring other strategies to compensate for this shortage and remain up to date. The literature highlights short-duration modalities as the most popular with Physical Education teachers^{14,2,20}.

The results show that most of the teachers completed the modality of *lato sensu* postgraduate education after the Licentiate Degree as a way of complementing the initial education. Another point to note is that some teachers, even residing in regions far from cities considered poles of provision of continuing education (Belo Horizonte, Juiz de Fora and others), sought to overcome their limitations (time, distance, financial resources, etc.) carried out *lato sensu* face-to-face postgraduate courses, while other teachers opted for the *lato sensu* distance education modality, favoring the various government policies for distance education implemented in the country in recent years and offered by the education management bodies in their respective regions. According to Paim, Loro, Tonetto²⁰, the *lato sensu* courses, in spite of their costs, are believed by the teachers as consistent formative spaces for their professional development, even for accessibility, when compared to *stricto sensu* courses.

However, we must highlight the efforts of these teachers to seek, at their own expense, courses that allow them to acquire knowledge and develop skills to work in such diverse environments, as was the case of the expressive initiative in the search for postgraduate education. In fact, as previously mentioned, this type of education presents consistency for the consolidation of important knowledge for teaching, are often sought by teachers to qualify in the non-school and/or school areas in order to have options to supplement their monthly income, as was observed among the vast majority of teachers. Even so, the search for postgraduate distance education, due to the impossibility of moving to large centers where there is a diversified offer of face-to-face courses, did not always meet the personal demands by limiting them to available offers that sometimes do not correspond to the needs of the specific field of action or do not have the desired quality, as observed with a third of the teachers investigated.

It is important to emphasize the low annual frequency in continuing education actions attended by most teachers. It is noteworthy that, excluding the frequency of education in the Technical Area of Physical Education conducted by Teacher T7, the average participation in continuing education reported by the

teachers was 0.7/year. This result does not differ substantively from the average of 0,6/ year reached by teachers in Ferreira et al. research¹⁴. Although the results found in this research are based on teachers' self-reports (questioning the consonance with the offer by the teaching systems), the expression of the results seems to represent a characteristic pattern of the Brazilian context. For example, in the Portuguese context the study carried out by Ferro² presented an average of slightly more than one education per year (1,1/year), possibly distinctive due to the existence of a policy of continuous education associated with career promotion in this country.

Although the contribution of short courses to continuing education projects/programs is recognized, their unidirectional, targeted, and compulsory nature, in addition to their frequent long distance from the schools, inhibit the reflective skills of teachers, insofar as it aligns itself with a formation of a traditional character, based on technical rationality, and which under the positivist influence, sees the teacher as a reproducer of techniques, depriving him "of reflecting on his practice and modifying it by personal initiative"²¹.

In this study, the choice of this modality is justified by the possibilities of complying with proposals in a school setting, which does not always occur since they do not consider the specific realities faced by teachers. Given the conceptual and epidemiological limitations, the vast majority of teachers reported the contributions of training and its effects on teaching activity, which resulted in changes in their pedagogic proposals. Moreover, some teachers mentioned other contributions related to personal development and the exchange of ineducation with other professionals.

Teachers likely enrolled in short-duration sporadic courses because they are offered by the school where they teach or by administrative entities of the public education system (Municipal and State). A number of studies help clarify the results obtained^{6,14,22,20}. Although permanent training at schools is a positive factor in acknowledging the school setting as a training space, the continued presence of short-duration sporadic training underscores the lack of public resources for effective continuing education integrated to the needs of teachers and schools and committed to offering quality education²³. The greatest appeal of these training modalities to government bodies is their low cost, in addition to the lower number of lost teaching hours.

Another characteristic is the perspective of technical rationality, frequent in continuing Physical Education training. Continuing education programs offered by the elementary school system are usually compulsory, according to institutional interests and the strategies employed by the administrators of these facilities and the school system²⁵. Thus, it is expected that the most common modalities reflect the continuing education model offered by the school system, which is limited to the transfer of knowledge. This means that technical and traditional training aims solely at generating and updating knowledge. These results are corroborated by the literature regarding continuing training of Physical Education teachers where knowledge is transmitted in 20 and 40-hour courses that leave little room for reflection, exchange of knowledge or the collaborative development of skills¹¹.

The current legislation discusses the importance of projects

developed in partnership with schools and school community agents as a viable possibility for continuing education. National Curricular Parameters (PCN) and Ministry of Education and Culture guidelines for teacher training highlight the importance of introducing training projects into the school calendar and the teachers' workday^{20,23}. However, the problems and dilemmas faced by teachers in different schools (ex: lack of organizational structure and school management) hinder this initiative.

The limitations imposed on the teachers and their self-assessments of skills demonstrate the significant need to improve their professional interventions. It is important to underscore the teachers' commitment in searching for training aimed at their pedagogic activities, albeit contradictorily in technical modalities. Although there was no significant difference in the number of training activities in the different areas of Physical Education, the teachers related the knowledge learned in these training programs to the improvement in their teaching practices, an important characteristic of their profile in the first years of professional development.

However, policies regarding teachers' salaries and training options leave much to be desired, obliging teachers to seek more than one source of employment, resulting in financial and time restrictions to furthering their professional qualifications. This is made clear in the teachers' reports, where they refer to these factors as obstacles in the search for relevant training options. A study by Paim, Loro and Tonetto²⁰ showed that these same factors prevent teachers from investing in their own training, including the absurd situation where teachers are not granted leave to participate in training offered by their own educational system, obliging them to compensate for their absences.

Despite these obstacles, the pursuit of personal and professional training and development included the reading of scientific books/articles, consulting the internet and dialogues with peers in order to obtain suggestions and teaching strategies in an attempt to overcome the problems faced in the work environment. These sources are frequently referred to in the literature as informal or open training^{2,24}. The exchange of ineducation between peers deserves attention for its potential contextualization with the daily demands of teachers. This informal mode of knowledge acquisition occurs even in the systematic collaborative training activities in which teachers share knowledge that is integrated into their teaching practices with the same urgency required by their pedagogic work.

According to Marcelo²⁴, the exchange of experiences between peers is an informal training process, whereby teachers resort to occasional searches for ineducation and experiences among peers. Without disregarding the formal and systematic processes, this type of training mobilizes learning for the professional development of teachers, since they can use it in their daily routine as a strategy in the knowledge building process by communicating with other colleagues to clarify specific doubts regarding teaching activities²⁷. According to Tardif²⁷, knowledge based on teachers' experience is very valuable in their daily activities, since they can establish a "relationship of interiority", reflecting on the appropriation of disciplinary, curricular and professional knowledge.

Although they are individualized learning models, open processes of self-training²⁴ by reading scientific books/journals/articles gain importance in that they are regulated by the training

needs perceived by teachers and allow them to establish personal learning goals based on their experiences. Moreover, traditional study and training sources were recognized for their strong tradition among teachers who consider books as the main resource for developing curricular components, and due to the didactic proposals, strategies, activities and tasks that can be used to innovate planning and teaching¹⁷. Although being referred by half the investigated teachers, using teletraining or the internet to obtain literary sources²⁴ is still characterized by the low quality and/or high costs of these services. This explains why most teachers resorted to the school's computer system to search for materials and ineducation. Despite the internet's potential as a source of ineducation, as reported by Gasque and Costa²⁶, it is still not used by teachers as the primary source of self or collaborative training.

Training needs should be understood as the gap between teacher skills and those they need to develop and adapt to the reality of their schools. Their diagnosis helps both teaching systems and teachers develop continuing education projects that can lead to normative and pedagogic changes, as well as personal and professional development. In this respect, the predominant self-assessment of teachers in the Insufficient and Satisfactory categories indicates the significant need for didactic-pedagogic, organizational, reflexive and collaborative improvement.

Considering the macrolimits of the scale in the Satisfactory category, there is a relationship between self-assessments and the continuing education profile. Although not statistically significant, most of the teachers that underwent training in the school-based area or to a lesser extent in the technical area of Physical Education, self assessed their skills, obtaining the highest means in the different areas of knowledge. Likewise, the self-assessments of most teachers that engaged in more continuing education activities exhibited the highest values.

Also in Ferreira¹⁷, the area with the lowest self-assessment was Collaborative Work. One plausible explanation for this being that the lowest domain for most teachers may be the fact that they have little time to experience the culture of the school where they are employed, or have more than one occupation or position linked to the education system, leaving them little time to dedicate to their professional contexts. Probably, because of that, teachers value in a preponderant way the few opportunities for interaction and exchange of experience with other teachers as a means of education, as found by Ferreira¹⁷.

The self-assessment of teachers on the scale and corresponding categories demonstrates the gap in the development of skills that teachers need to fill through higher quality intervention in their classes and schools. In addition to teacher self-assessments, their training needs in the different areas of knowledge that underlie the intervention are also considered.

Conclusions

Initial training is a fundamental determinant of teacher professionalization, but is definitely not enough to meet work-related demands, whether school-based or not, due to the diversity and adversities faced by teachers in this setting. Continuing education is the focal point for enhancing teaching performance, the perspective of permanent training and consequent professional and personal development of teachers in service.

This research was motivated by the evidence in the literature of the need to rethink the epistemological, ideological and political fundamentals of continuing education projects proposed for teachers. Despite serving the State through the implementation of educational policies, their focus and primary objectives must provide teachers with permanent training in line with the needs imposed by their daily routine, giving them the ability, encouragement and autonomy to overcome everyday practical problems. Thus, analysis of the continuing education profile and the skills needed for teaching are essential to establish the fundamentals that can change the existing training paradigm towards the effective qualification of teachers, in order to enhance their pedagogic practices and improve their students' learning, the primary goal in the field of education.

In summary, professional development is a continuous process consisting of moments of equilibrium and disequilibrium that constitute the different personal/professional phases or stages of life, which are influenced by multiple elements. In these stages, teachers exhibit particular characteristics in terms of attitudes, routines, performance or mode of perceiving their teaching activity. It is this learning process that shapes a teacher's professional identity over the course of their career. Viewing themselves as teachers is the result of an evolutionary process that begins from the moment they choose the profession, primarily at the expense of professional knowledge derives from a dialectic between theoretical and experiential or practical learning, where knowing how to teach is one of the most effective means of learning how to be a teacher.

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