

## **Initial education evaluation of a Physical Education program: Perceptions of graduates from a public university in the state of Santa Catarina**

**Avaliação da formação inicial em Educação Física: percepções de egressos de uma universidade pública do Estado de Santa Catarina**

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### **ABSTRACT**

This mixed-methods study investigated the perceptions of Physical Education (PE) graduates on their education obtained at a public university in the state of Santa Catarina, Brazil. An online questionnaire was applied to collect information regarding the initial education of 94 graduates (50 bachelors and 44 teachers) trained under the new curricular proposal implemented in 2008 at the institution. Extension (8.35±1.51) and research activities (8.24±1.66) achieved the highest scores, with emphasis on the diversity of structures and options offered. The graduates' classmates (7.45±1.73), due to the lack of dedication and commitment to the program, and the curricular structure (7.64±1.59), due to the problems in the courses' semiannual organization, received the lowest ratings. Teachers evaluated their course higher than the bachelors, especially

in the components of faculty ( $T = 8.55 \pm 1.02$ ;  $B = 7.28 \pm 1.37$ ), classmates ( $T = 7.91 \pm 1.60$ ;  $B = 7.04 \pm 1.76$ ), physical infrastructure ( $T = 8.30 \pm 1.69$ ;  $B = 7.64 \pm 1.34$ ), supervised internships ( $T = 8.61 \pm 1.45$ ;  $B = 7.72 \pm 1.73$ ), and overall program evaluation ( $T = 8.64 \pm 1.10$ ;  $B = 7.82 \pm 1.35$ ). Factors such as supervised internships, curricular structure, faculty, and extension activities explained 59.0% of the variance of the overall program evaluation. Considering these results, those responsible for structuring the PE program can consolidate the practices and components that have been well evaluated, as well as think of alternatives to reduce the weaknesses and negative aspects perceived by the graduates.

**Keywords:** Physical Education; Initial education; Graduates.

## RESUMO

Este estudo de métodos mistos investigou percepções de graduados em Educação Física (EF) sobre sua formação inicial, realizada em uma universidade pública do Estado de Santa Catarina. Aplicou-se um questionário on-line para coletar informações sobre a formação inicial de 94 egressos (50 bacharéis e 44 licenciados) formados sob nova proposta curricular implementada em 2008 na instituição. As atividades de extensão ( $8,35 \pm 1,51$ ) e atividades de pesquisa ( $8,24 \pm 1,66$ ) obtiveram as maiores pontuações, com ênfase na diversidade de estruturas e opções oferecidas. Os colegas de graduação ( $7,45 \pm 1,73$ ), devido à falta de comprometimento com o curso, e a estrutura curricular ( $7,64 \pm 1,59$ ), devido aos problemas na organização dos cursos, receberam as classificações mais baixas. Os licenciados avaliaram seu curso melhor que os bacharéis, especialmente nos componentes *docentes* ( $T = 8,55 \pm 1,02$ ;  $B = 7,28 \pm 1,37$ ), *colegas de classe* ( $T = 7,91 \pm 1,60$ ;  $B = 7,04 \pm 1,76$ ), *infraestrutura física* ( $T = 8,30 \pm 1,69$ ;  $B = 7,64 \pm 1,34$ ), *estágios supervisionados* ( $T = 8,61 \pm 1,45$ ;  $B = 7,72 \pm 1,73$ ) e *avaliação geral do curso* ( $T = 8,64 \pm 1,10$ ;  $B = 7,82 \pm 1,35$ ). Os estágios supervisionados, a estrutura curricular, o corpo docente e as atividades de extensão explicaram 59,0% da variação da avaliação geral do curso. Considerando esses resultados, os responsáveis pela estruturação da formação inicial em EF podem consolidar as práticas e componentes que foram bem avaliados, bem como pensar em alternativas para reduzir as fragilidades e os aspectos negativos percebidos pelos egressos.

**Palavras-chave:** Educação Física; Formação inicial; Egressos.

## Introduction

The professional practice in Physical Education (PE) is diverse and can be developed in different spaces, such as schools, clubs, gyms, companies, hospitals,

and clinics. In order to be effective, however, the professionals' roles should adapt to the characteristics of both the population and the environment in which they are performed – which requires the mastery of competencies such as planning, delivering, and assessing the intervention (FEITOSA; NASCIMENTO, 2003).

These competences, although they are consolidated in professional practice, are developed to a large extent in the experiences gained during initial education. In this sense, the universities become formally and socially recognized spaces for the development of these professionals (NEVES, 2007), since they are responsible for certifying the profession. In order to effectively contribute to the preparation of professionals capable of meeting the current, dynamic social needs, the university should not restrict its contents to the technical aspects of the profession (FEITOSA; NASCIMENTO, 2003), but must be attentive to the social changes in order to confront them with the proposed curriculum.

The new graduates have an important role in contemplating the quality of the initial education, since they are confronting what was learned at university and what is required in professional practice (ABREU, 2006). Thus, considering that the graduates may face some challenges during their professional insertion, they are in a unique position to identify the weaknesses of the curriculum, as well as its potential improvements (SALLES; FARIAS; NASCIMENTO, 2015).

Studies that consider PE graduates' experiences to evaluate the curriculum show clear possibilities of using this information for the continuous improvement of the programs (SALLES et al., 2013; ESPARTEL, 2009). However, while the investigation of these individuals' perceptions is pertinent, studies are still scarce (FOLLE; NASCIMENTO, 2011), which is why the implementation of such initiatives contributes to a better understanding of the processes that permeate the graduates' professional insertion and the role of initial education on this path, by approximating the relationship between theory and practice. Considering the aforementioned, this study aims to investigate the perceptions of PE graduates on their initial education held at a public university in the state of Santa Catarina, Brazil.

## Methods

### Study design

Considering the problem approach, this study is classified as mixed (qualitative-quantitative) parallel convergent (CRESWELL, 2014). Mixed method investigations involve the collection and integration of quantitative and qualitative data, and assume that both the quantitative and qualitative approaches, when used in isolation, are insufficient to deeply comprehend the research problem examined. In the convergent parallel design, the quantitative and qualitative data are analyzed separately, in order to verify to what extent, the results of both analyses confirm each other (CRESWELL, 2014).

In the quantitative dimension, the study can be classified as empirical and associative of the predictive type (ATO; LÓPEZ-GARCIA; BENAVENTE, 2013). The associative-predictive strategy seeks to explore possible functional relations between variables in order to estimate a prognosis for their behavior. The simple correlational design was adopted, in which no form of control of possible foreign variables is used with the functional relationship between the variables investigated (ATO; LÓPEZ-GARCIA; BENAVENTE, 2013). In the qualitative dimension, in turn, the descriptive-exploratory and interpretative approach (NEUMAN, 2014) was implemented, making it possible to work within the graduates' universe of interpretations and meanings regarding their initial education.

The study sought to meet the most recent scientific writing recommendations for quantitative and qualitative articles proposed by the Working Groups on Quantitative (JARS-Quant) (APPELBAUM et al., 2018) and Qualitative (JARS-Qual) (LEVITT et al., 2018) Research Reporting Standards.

## Participants

Ninety-four graduates (both sexes) were investigated from the baccalaureate and teacher education programs<sup>1</sup> in PE offered by a public university in the state of Santa Catarina, Brazil. The selection of the graduates was intentional, as from the second semester of 2008, the PE initial education was separated into two different programs in that institution. Graduates with enrollment from the second semester of 2008 and program completion between the first semester of 2012 and the second semester of 2014 were included. Those graduates who, at the time of data collection, were enrolled in another PE program or in other areas of knowledge were excluded.

## Instrument

A questionnaire developed and validated by Salles et al. (2013) and Salles, Farias and Nascimento (2015) was applied to identify the graduates' perceptions regarding their PE initial education. The instrument is organized into four main sections and consists of 32 questions (open, closed or multiple choice) that address: (a) sociodemographic aspects and current professional status; (b) entry and stay in the program; (c) evaluation of PE initial education; (d) prospects for continuing education and professional improvement. In this study, only the questions of the first and third sections were used and, for the evaluation of the initial education, the following components were considered: (a) Curricular structure of the courses; (b) Faculty; (c) Classmates; (d) Administrative structure; (e) Physical infrastructure; (f) Supervised internships; (g) Extension activities; (h) Research activities; and (i) Overall program evaluation. Respondents should represent, on a scale from 1 (most negative possible) to 10 (most positive possible), their evaluation on each topic. In addition, it was recommended for them to justify the score assigned to each component.

## Data collection procedures

The research project that initiated this study was submitted to the Ethics Committee on Human Research of the State University of Santa Catarina and was approved in the process nº 2,515,788/2017. An exclusive email address was created

to facilitate the communication between researchers and participants. In the created email account, the Google Forms tool was employed to structure and make the online questionnaire available to the graduates. Subsequently, a survey was carried out with the PE program coordinator to identify the graduates and gather their respective contacts (telephone numbers and email addresses). The 180 eligible graduates (86 bachelors, 94 teachers) were contacted by a phone call, during which information was provided on the characteristics and aims of the study. The voluntary nature of their participation was strengthened, as well as the anonymity of their responses and identity, as they were given the right to withdraw their consent at any time of the study. At this stage, it was not possible to contact 42 individuals, making their participation impracticable. The other 138 graduates agreed to receive an email containing more detailed information about the study, a digitized Free Consent Form in a format compatible with the Microsoft Word® program, and a link to access the online questionnaire. Of the 138 graduates who received the email, 52 answered the questionnaire within the first 30 days after receiving the message. After this period, another email was sent to the graduates who had not yet responded, serving as a reminder to answer the questionnaire. After the second contact, 42 individuals responded within 60 days after receiving the email, totaling 94 participants.

### **Data analysis**

The graduates' numerical responses (characterization data and scores attributed to the components of PE initial education) were represented through descriptive (absolute and relative frequencies, mean and standard deviation) and inferential statistical resources (Mann Whitney U test; Linear Regression). The initial descriptive analysis had the purpose of helping researchers to clearly identify the profile of the data obtained, enabling them to decide with greater ownership the statistical analyses to be conducted in the inferential stage. In addition to the reason cited, descriptive analysis is recommended by specialized literature (MARÔCO, 2011) because it allows the identification and correction of problems in the data set (e.g., missing or incorrect data).



The variable age (up to 27 years, 28 years or more) was *dichotomously* categorized from the raw data based on the 50<sup>th</sup> percentile (median) obtained in the descriptive analysis. Considering that the data did not present a normal distribution (for more information, see Marôco, 2011, p. 35), the Mann Whitney U test was selected to compare the bachelors' and teachers' numerical responses to the components of the initial education evaluation. The significance level ( $\alpha$ ) of 5% (0.05) was adopted for interpreting the results, which is normally recommended by the specialized literature (Marôco, 2011). To facilitate the reading and interpretation of the numerical responses, the data is presented as mean values and respective standard deviations.

Multiple/adjusted linear regression was applied to analyze the associated factors (independent variables/IV) to the overall program evaluation (dependent variable/DV) by the graduates. In addition to the specific components of the program evaluation (e.g., curriculum structure, faculty, classmates), age, the program (baccalaureate; teacher education) and the period / delay for completing the program as IVs were included. Then, crude linear regressions were performed between each possible IV candidate to compose the adjusted model and the DV. As inclusion criterion for IVs,  $\alpha = 0.20$  was considered. Subsequently, the multiple linear regression (Stepwise method, as described in Marôco, 2011) was applied for testing the IVs included in the crude regressions. As input criterion for the IVs in the adjusted model, as well as for the interpretation of the model's significance,  $\alpha = 0.05$  was considered. The assumption of residual normality of the adjusted model, which needs to be met to allow the linear regression analysis (Marôco, 2011), was verified through the Durbin-Watson test, and the multicollinearity of the IVs was interpreted through the Variance Inflation Factor (VIF) scores (Marôco, 2011). The SPSS Statistics 25 program was used to carry out all the inferential analyses. The open answers (justifications) of the graduates regarding the initial education components were analyzed through the content analysis (Bardin, 2011), which was developed through three main phases: (a) pre-analysis; (b) exploration of the material; (c) data processing and interpretation. During the pre-analysis, the responses were organized in the NVivo Pro 11 program. Individual documents, compatible with the Microsoft Word program, were created for each graduate, which were named according to the following pattern: the letter G (G =

graduate) + individual number (according to the order their answers were received by email) + the program letter (B = baccalaureate; T = teacher education).

Subsequently, preliminary readings of the material were taken to apprehend and organize the main ideas and their general meanings for the next phases of the analysis. From this phase, two subcategories were defined a priori to guide the next phase: positive aspects related to the evaluated component; negative aspects related to the evaluated component. In the second phase (exploration), the aim was to better refine the grouping of words, phrases or similar paragraphs, from which the units of meaning were created inductively. These units were coded in one of two categories established a priori in the first phase. In the third phase (interpretation), the units of meaning were inductively grouped into major themes, which were defined as subcategories of the positive or negative aspects of each component of the PE initial education evaluated by the graduates. These topics are presented in the results section.

## Results

The group of graduates (Table 1) was composed predominantly of younger (53.2%), single (73.4%) and female (56.4%) residents of Greater Florianópolis (86.2%). Most of them graduated from the baccalaureate program (53.2%) and delayed completing the program for at least one semester (57.4%).



**Table 1** – General characteristics of the graduates.

VARIABLES	CATEGORIES	N (%)
Gender	Female	53(56.4)
	Male	41(43.6)
Age	Up to 27 years	50(53.2)
	28 years or more	44(46.8)
Marital status	Single	69(73.4)
	Married or Common-law	25(26.6)
Housing Region	Greater Florianopolis	81(86.2)
	Other regions	13(13.8)
Program	Bachelor	50(53.2)
	Teacher Education	44(46.8)
Delay in completing the program	No	40(42.6)
	Yes	54(57.4)

**Source:** Study data (2019).

Table 2 presents the results regarding the evaluation of the components of initial education by the investigated bachelors and teachers. Extension activities ( $8.35 \pm 1.51$ ) and research activities ( $8.24 \pm 1.66$ ) had the highest scores, while the graduates' classmates ( $7.45 \pm 1.73$ ) and the curricular structure ( $7.64 \pm 1.59$ ) received the lowest scores.

**Table 2** – Assessment of the PE initial education\* by the graduates, considering their specific programs (baccalaureate or teacher education).

Evaluation components	Program			P
	Baccalaureate	Teacher Education	General	
Curricular structure	$7.36 \pm 1.83$	$7.95 \pm 1.20$	$7.64 \pm 1.59$	0.25
Faculty	$7.28 \pm 1.37$	$8.55 \pm 1.02$	$7.87 \pm 1.37$	<b>&lt;0.01</b>
Classmates	$7.04 \pm 1.76$	$7.91 \pm 1.60$	$7.45 \pm 1.73$	<b>0.01</b>
Administrative structure	$7.74 \pm 1.51$	$8.23 \pm 1.68$	$7.97 \pm 1.60$	0.10
Physical infrastructure	$7.64 \pm 1.34$	$8.30 \pm 1.69$	$7.95 \pm 1.54$	<b>0.01</b>
Supervised internships	$7.72 \pm 1.73$	$8.61 \pm 1.45$	$8.14 \pm 1.66$	<b>&lt;0.01</b>

**Table 2 Continued** – Assessment of the PE initial education\* by the graduates, considering their specific programs (baccalaureate or teacher education).

Extension activities	8.40±1.34	8.30±1.69	8.35±1.51	0.97
Research activities	8.44±1.33	8.02±1.97	8.24±1.66	0.52
Overall program evaluation	7.82±1.35	8.64±1.10	8.20±1.30	<0.01
<b>Total</b>	7.71±1.57	8.27±1.53	7.98±1.57	<0.01

**Source:** Study data (2019).

**Note:** \* = Values presented in mean ± standard deviation.

The main positive aspect mentioned by fifteen graduates (Box 1) regarding the extension activities relates to the diversity of structures and options of activities offered by the educational center. For G27B, “there is scope for extension activities in the area the graduate wants”, and according to G37B there is “a great diversity of quality projects involving undergraduates, graduate students, and the community”. In this sense, for G02B “the students just need to choose what they want”, because such activities “help the students and add to their curriculum” (G11B). Another valuable feature was the high quality and organization of such activities (G01B; G73B; G74B; G51B). For G01B, specifically, “the extension activities are excellent since they are responsible for all my current professional success”. According to this graduate, one benefit of the extension activities was that they “have always been well organized and offered to the community for free”.

Similarly, the research activities were positively evaluated by eleven graduates regarding the diversity of structures and options of activities. According to G39B, “we have opportunities in many areas, and there are many open positions”, which was confirmed by G43B when he affirmed that “there are several research groups”. Five individuals also mentioned that activities of this nature are very important because they contribute to the enrichment of the student's academic preparation. In the perception of G91B, “research activities determined all my professional training”, especially since he had been a scientific initiation fellow, a master's student and a doctorate student. This view was shared by G63B, when he stated that “the personal growth that the

individual has when engaging in research is tremendous”. In addition to the diversity of options, G91B recognized “great scholarship opportunities, guidance, and best-quality supervision”.

As for classmates, most graduates (twenty-five) perceived little dedication and commitment to the course, as well as immaturity and lack of respect (eight), and excessive absences and delays (seven). In this regard, G06B commented that only “a few were really interested in the program and in their professional future” and that “numerous laboratories were underutilized by the students, because they did not see the importance of them in their professional future”. For G11B, the main problem of his classmates was that “many just wanted to have a degree in order to apply for a public job, or just wanted to go to parties and have fun”. This feeling was shared by G12B, who stated that “many people did not know or did not really want to graduate in PE but chose the program for convenience”. The lack of interest in the program can be explained, according to G43B, by the fact that “even by studying a little, an individual could pass some courses”. This was enhanced in the perception of G45B, because “some students entered the Physical Education program with an understanding that it would be a very practical program, without many theoretical requirements”.

On the other hand, G67T recalled that such lack of interest could be explained because “some students were overwhelmed by work and family, so they had moments of less commitment”. The overload of activities was also noticed by G82B, when he stated that “many colleagues started other activities during the program, thus dividing their commitment”. The need to work, specifically, contributed to some individuals “ending up being not so punctual” (G05T) and “arriving late” (G87T). While acknowledging the difficulties faced by some colleagues in reconciling their other activities with their studies, or even in not being interested in all subjects, G86B mentioned that “respect for the professors and for their classmates should be greater”. G67T witnessed “even some cases of student aggression toward professors”.

When analyzing the curricular structure, twenty-five graduates identified failures in the courses’ semiannual organization. It was noticed that “some courses were not positioned exactly in the semester they should be” (G10B), so “they could be rethought and changed” (E26B). Some graduates felt lack of essential content before the

internships, which could be exemplified by the words of both G83T “when I completed the first internship, I had not had the Adapted Physical Education course yet, but I already had a student with a disability in my class” and G90T “the methodology courses should occur before the internship because we often go to school still learning about sports”.

To solve these problems, some graduates suggested the reorganization of the courses within the curriculum based on their degree of specificity. G11B, for example, stated that “the curriculum could have a block of basic or general courses and other blocks in specific areas of Physical Education”, an aspect that was reinforced by G12B when affirming that “to offer basic courses at the beginning of the program, and more specific courses from the middle to the end, would be an ideal proposition”. Finally, some graduates observed accumulation of courses in the last semesters. According to G42B, “during the final semesters, there is an accumulation of courses, internships, and our program’s final project”. This problem was confirmed by other graduates when they stated that “the last semester is the one with the most internships, making it more complicated since you also have your program’s final project to work on” (G21T), or that “I felt very overwhelmed at the end of the program, perhaps because of the excessive internships” (G32T).

In addition to the semiannual organization, fifteen graduates perceived problems in the courses’ workloads, “especially in relation to the excess of time for certain subjects and lack of time for other essential ones” (G15B). According to some graduates, there was a heavy workload for sports and a lack of in-depth instruction in more basic courses such as Anatomy, Physiology, and Biomechanics (G07B; G45B; G86B), or in subjects related to Pedagogical Practice in School (G67T; G88T), Physical Activity and Health/Fitness (G09B; G91B), and Exercise Physiology and Sports Training (G43B). Finally, twelve graduates indicated that some courses were irrelevant. A few individuals perceived that “some courses were unnecessary” (G16T), especially since “many courses repeated the same subjects from the beginning to the end” (G17T). According to G38T, “the problem occurred because some courses were taught in the same way in both the baccalaureate and in the teacher education programs, which should not happen”. Additionally, the need to attend courses outside

the student’s area of interest was criticized: “I always wanted to follow the Bodybuilding and Personal Trainer area, so why did I need to enroll in sports training and volleyball courses?” (G51B).

**Box 1 – Main components of PE initial education evaluated positively (+) and negatively (-) by the graduates.**

Component	Evaluation
Extension activities (+)	Diversity of structures and options of activities (12B; 3T); Good quality and organization (4B); Good accessibility (3T); Good teacher supervision (2B); Enrichment of professional preparation (1B; 1T); Community service (1B); Possibility of scholarship (1T)
Research activities (+)	Diversity of structures and options of activities (10B; 1T); Enrichment of professional preparation (5B; 2T); Good quality and organization (3B; 1T); Good accessibility (2B); Possibility of scholarship (1B)
Classmates (-)	Little dedication and commitment to the program (18B; 7T); Excess of absences and tardiness (5T; 2B); Immaturity and lack of respect (6T; 2B); Demotivation with the program (4B; 2T)
Curricular structure (-)	Problems in the courses’ semiannual organization (13T; 12B); Problems in the courses’ workloads (12B; 3T); Superficiality in the approach of essential content for professional practice (7T; 5B); Problems in course’s focus/lack of relevance (6B; 6T); Problems in the program’s overall philosophy (6B; 6T)

**Source:** Study data (2019).

**Label:** B = bachelors; T = teachers

As shown in Table 2, there were significant differences in the scores attributed by bachelors and teachers in the components of faculty ( $T = 8.55 \pm 1.02$ ;  $B = 7.28 \pm 1.37$ ), classmates ( $T = 7.91 \pm 1.60$ ;  $B = 7.04 \pm 1.76$ ), physical infrastructure ( $T = 8.30 \pm 1.69$ ;  $B = 7.64 \pm 1.34$ ), supervised internships ( $T = 8.61 \pm 1.45$ ;  $B = 7.72 \pm 1.73$ ) and overall program evaluation ( $L = 8.64 \pm 1.10$ ,  $B = 7.82 \pm 1.35$ ). In all cases, the teachers evaluated these components higher than the bachelors. The main positive and

negative aspects perceived by bachelors and teachers in some components are presented in Box 2.

In the analysis of faculty, thirteen bachelors and six teachers observed problems in didactics and in content transmission. While “many teachers did not have the practical knowledge of the course” (G01B), others had “a lot of theoretical-practical knowledge, but no didactics or patience with students” (G18B), lacking organization and having difficulties in transmitting content to the students (G26B; G57T). It was acknowledged that “some professors need to better understand the quality of their teaching and to know how much the student is learning” (G74B). At the same time, it was identified that this problem could be occurring “due to the fact that some professors often have to be in charge of particular courses due to a lack of other professionals, which promotes a separation between the subjects taught and the areas in which they are more skilled” (G33B). The lack of motivation and/or commitment of some professors was also identified by nine bachelors and six teachers. Some professors did not show any commitment to class preparation, “improvising in the presentation and, in some cases, not demonstrating mastery of the content” (G06B). The excessive involvement with research activities, in the perception of some graduates (G12B; G27B; G49B), meant that certain professors did not pay due attention to the responsibilities of teaching the students. In addition, the excessive absence of some professors was negatively perceived by graduates G05T, G30T, and G66B. In the words of G66B, “some professors did not show up, so their master’s or doctoral students taught in their place”. For G67T, this problem can be explained, in part, by the “convenience of holding a public job, which may favor the professors’ lack of planning and organization”.

Regarding the positive aspects, seven bachelors identified that the professors had adequate knowledge of the subject matters, while five teachers emphasized good teacher qualification. As G18B pointed out, “in most courses, professors presented in-depth knowledge and willingness to teach”. The graduate G35B recalls that “I only had wonderful professors, who gave me both theoretical and practical knowledge that allowed me to feel secure when I entered the job market”. For G78T, “many of the professors had excellent qualifications and knowledge”, since “many of them were

doctors, some were masters, and a few were specialists in their disciplines” (G70T).

As for physical infrastructure, the main negative aspects were the lack of resources and an insufficient structure for the activities developed in the educational center as perceived by eighteen bachelors and nine teachers. According to graduates G18B, G33B, G46T, and G70T, physical space was small for the demand of teaching, researching, and extension activities, resulting in many “schedule conflicts between extension projects at gymnasiums and the academy” (G75B). The Anatomy laboratory could be better structured (G03B, G51B, G63B, G66B, G71B, G89B, G76T); according to G51B and G66B, the “puppet practice” (i.e. practice performed with puppets or other representations of human body) and the “lack of contact with biological tissues” impair learning in this specific course. The quality of both the cafeteria and the living space (G09B; G38T), the structure of the classrooms (G06B) and the accessibility and quantity of washrooms (G07B) were also perceived as insufficient. For some graduates, the structure was “very limited and in poor condition”, mainly the Athletics area and the gyms (G01B; G49B; G19T). The justification given for the physical infrastructure problems was that “the construction of the sports center was not planned, and did not provide much room to grow” (G11B), because “the ideal scenario would be to have a place with physical infrastructure specifically designed for a PE program” (G58T).

On the other hand, ten bachelors and nine teachers perceived the structure differently and emphasized its good quality. Within the space where the center is installed, G02B and G53T believed that there is a good structure. The quality of spaces such as swimming pool (G29B; G29B; G51B; G53T; G74T), gymnasiums (G09B; G29B; G51B), classrooms (G29B; G51B; G74B), laboratories (G51B) and library (G74B) was specifically cited by the graduates. For G70T, the educational center has a very good structure. According to his words, “as I came from a public school, which had a fan and a chalkboard at most, I was delighted when I came across the university’s educational center! Available computers and Internet, swimming pool, sports courts, Athletics track and field, Gymnastics table, many mats, gym...”.



**Box 2** – Comparison of the positive (+) and negative (-) aspects indicated by the bachelors\* and teachers\* regarding different components of their initial education.

Components	Bachelors	Teachers
Faculty	Problems in didactics and content transmission (13-); Lack of motivation and/or commitment (9-); Appropriate knowledge of the subject matters (7+); Lack of qualification/need for renewal (7-); Good organization and didactics (6+); Outdated/decontextualized with the reality (4-); Good qualification (2+)	Problems in didactics and content transmission (6-); Lack of motivation and/or commitment (6-); Good qualification (5+); Good organization and didactics (5+); Lack of qualification/need for renewal (3-); Outdated/decontextualized with the reality (3-); Appropriate knowledge of the subject matters (2+); Accessibility (1+)
Physical infrastructure	Few resources/insufficient structure (18-); Problems with maintenance and/or cleaning (12-); Good quality (10+); Accessibility problems (5-); Good availability of resources (3+); Modernized, renovated spaces (3+)	Few resources/insufficient structure (9-); Good quality (9+); Problems in maintenance and/or cleaning (4-); Accessibility problems (3-); Good availability of resources (2+); Good accessibility (1+)
Supervised internship	Problems in receptivity and/or supervision (15-); Enrichment of professional preparation (13+); Need for more options/diversity of places (7-); Little or negative impact on students (7-); Adequate receptivity and supervision (7+); Little attention to the student's interests (4-); Lack of approximation/decontextualization with reality (4-); Quality of the internship sites (4+); Problems in locating internship sites (3-); Diversity of options (2+); Precarious infrastructure (1-); Problems in organization and workload (1-)	Problems in organization and workload (9-); Problems in receptivity and/or supervision (6-); Adequate receptivity and supervision (6+); Linked with professional practice (6+); Enrichment of professional preparation (5+); Need for more options/enlargement of places (2-); Lack of approximation/decontextualization with reality (2-); Diversity of options (2+); Problems in locating internship sites (1-); Precarious infrastructure (1-); Little attention to the student's interests (1-); Quality of internship sites (1+)
Overall program evaluation	Good professional preparation (7+); Lack/superficiality of knowledge for professional practice (5-); Development of professional knowledge/skills (5+); Content decontextualized with the reality (4-); Opportunities during initial education (4+); Favorable environment/structure for learning (4+); Students' immaturity/lack of dedication (2-); Poor professional preparation (2-); Problems in curricular organization (1-)	Good professional preparation (7+); Development of professional knowledge/skills (4+); Favorable environment/structure for learning (3+); Opportunities during initial education (2+); Lack/superficiality of knowledge for professional practice (2-); Content decontextualized with the reality (1-); Precarious physical infrastructure (1-); Problems in teaching didactics (1-); Good articulation between theory and practice (1+); Student dedication for learning (1+)

**Source:** Study data (2019).

**Note:** \* = The numbers that accompany the signs inside the parentheses (+ or -) represent the number of individuals who mentioned that aspect.

The main negative aspect perceived by fifteen bachelors and six teachers, regarding the supervised internships, related to the problems in receptivity and/or in supervision (G06B, G42B, G51B, G51B, G91B, G54T, G83T). For certain graduates, “some places did not provide due attention to the students” (G06B), especially attributable to the little or no supervision. The seriousness of the problem is pointed out by G33B, who stated that “some internships were developed in contexts where supervisors did not even know the structure of the internship, or even the student’s presence in the institution”. Although they understood the limiting factors that made it difficult to supervise all the students at each internship site (G67T), some graduates criticized the lack of standardization or systematization in the way the internship was conducted (G11B; G29B; G86B; G57T; G78T). According to G11B, “we had a professor who supervised the internship, visited the student and was present, but also had a teacher who never spoke about the student's internship site, did not visit and did not know what was happening at the internship”, causing “many students not to fulfill what they should at the internship” (G86B). As an alternative to address this constraint, G29B suggested that the “supervision may be more systematic in guiding the student to solve the daily problems encountered in the internship context”, while G78T indicated the need for mentoring professors “to be present in all interventions”.

Nine teachers observed problems in the internship’s organization and workload. Specifically, the excessive concentration of internships in the final semesters of the program was interpreted as prejudicial to the student's appropriate involvement with such activities: “I found it very tiring to have five internships during the program. Perhaps it could work with two or three elective internships, plus other projects that could help the students to integrate themselves with practice” (G08T). According to G83T, “our workload was heavy for those who needed to work, study, and still do the internships... it was complicated”, making it a “chaotic period of difficult reconciliation with life outside the university” (G30T). Among the graduates who worked during their program (G13T, G21T, G53T, G69T), it was difficult to reconcile work schedules with the internship demands: “It was difficult for those who, like me, had to work in other areas during the internship, because there was a break in schedules that divided the internship. The internship could be concentrated on the same day in order to facilitate

the student's schedule" (G13T).

In contrast, thirteen bachelors and five teachers recognized that the internship positively contributed to the enrichment of their professional preparation. In addition to enabling the development of skills and knowledge necessary for professional practice (G18B), the internships helped some graduates to create links and gain experience in the area in which they would like to work (G94B; G39T). Others noted that this period allowed them to move beyond their comfort zones and undergo challenging situations that allowed them to develop certain aspects of their professional competence (G40B; G38T). Finally, the diversity of areas covered by the internships was positively perceived by some bachelors (G20B; G60B). For these individuals, the possibility of living in different areas was "very important" (G20B) because "it greatly enlarged our view of the work possibilities in the near future" (G60B).

In the overall program evaluation, seven bachelors and seven teachers agreed that their respective programs offered good professional preparation, especially for enabling the development of professional knowledge and skills – aspects mentioned by five bachelors and four teachers. According to G04T, the program provided them "a good knowledge base", and for G05T it provided "all the support I needed to get into the job market". Initial education had the merit of "providing access to basic knowledge areas" (G89B), in addition to directing where the students could obtain the other relevant information for their professional practice (G18B; G89B; G94B).

The large scope of the initial education was positively perceived by the graduates, since it expanded their perspectives on the possibilities of professional practice (G82B, G30T, G70T). For G70T, the program was "a watershed in my life for having shown what it is to be a teacher, and how I could obtain the knowledge to better act in my professional practice". The reassurance provided by the knowledge acquired was also highlighted by some graduates (G15B, G35B, G24T, G87T). In addition to recognizing the good quality of the education offered in the program, G40B emphasized the student's role in the program's quality by stating that "it depends very much on the students' willingness to look for what they want to study and to specialize". On the other hand, the lack and/or superficiality in approaching important knowledge for professional practice was recognized as the program's main negative aspect for

five bachelors and two teachers. As G03B stated, “I feel at times that I lack some basic knowledge – which, although were specified in the curriculum, was not well developed by the professors”. G91B, specifically, experienced a lack of content related to public health, an area in which he was working at the time of data collection.

As a result of this problem of content superficiality, some graduates recognized the need to acquire certain knowledge and skills by other means (G11B, G30T, G33B). G11B, for example, stated that “much of what I use in my day-to-day work I got from my athletics experiences or from learning on my own”. This view was also shared by G30T when she stated that “I needed to understand how to teach a class by myself”. For G27B, the lack of time during the program made it difficult to discuss the relevant topics in depth, so that “the university gave me basic concepts that I had to better understand later, as I needed them”.

The analysis of the associated factors (IVs) for the overall program evaluation (DV) is presented in Tables 3 and 4. Initially, crude linear regressions were performed between the characterization variables (gender, age, marital status, housing region, program, and delay in completing the program) and the components of the initial education evaluation with the overall program evaluation. To determine the variables to be included in the adjusted model,  $\alpha = 0.20$  was adopted as the criterion, which implied the removal of the variables gender, marital status, and housing region.

**Table 3** – Factors associated with the overall program evaluation: Crude linear regressions.

IVs	$\beta$	SD	Adjusted R <sup>2</sup>	p
Age	0.50	0.29	0.02	0.09
Program	0.93	0.28	0.11	<0.01
Delay in completing the program	0.44	0.30	0.01	<0.01
Curricular structure	0.53	0.07	0.41	<0.01
Faculty	0.54	0.09	0.30	<0.01
Classmates	0.25	0.08	0.09	<0.01
Administrative structure	0.24	0.09	0.07	<0.01
Physical infrastructure	0.28	0.09	0.09	<0.01
Supervised internships	0.53	0.07	0.04	<0.01
Extension activities	0.29	0.09	0.10	<0.01
Research activities	0.20	0.08	0.05	<0.01

**Source:** Study data (2019).

**Label:**  $\beta$  = Beta value of the regression model; SD = standard deviation of Beta; R<sup>2</sup> = coefficient of determination of the model; p = probability of significance of the model result.

Afterwards, the multiple linear regression analysis (Table 4) was applied to the variables included through the crude linear regressions (shown in Table 3). The Stepwise method was used to introduce the variables into the adjusted model, with  $\alpha = 0.05$  being considered as the input/elimination criterion.

**Table 4** – Factors associated with the overall program evaluation: Multiple linear regression.

Coefficients	$\beta$	SD	Adjusted R <sup>2</sup>	p
<b>Model 1</b>			0.44	<0.01
Constant	3.86	0.55		
Supervised internships	0.53	0.07		<0.01
<b>Model 2</b>			0.51	<0.01
Constant	3.08	0.55		
Supervised internships	0.34	0.08		<0.01
Curricular structure	0.30	0.08		<0.01
<b>Model 3</b>			0.57	<0.01
Constant	1.95	0.62		

**Table 4 Continued** – Factors associated with the overall program evaluation: Multiple linear regression.

Supervised internships	0.26	0.08		<0.01
Curricular structure	0.27	0.08		<0.01
Faculty	0.26	0.08		<0.01
<b>Model 4</b>			0.59	<0.01
Constant	0.98	0.74		
Supervised internships	0.23	0.08		<0.01
Curricular structure	0.25	0.08		<0.01
Faculty	0.28	0.08		<0.01
Extension activities	0.15	0.06		0.03

**Source:** Study data (2019).

**Label:**  $\beta$  = Beta value of the regression model; SD = standard deviation of Beta;  $R^2$  = coefficient of determination of the model; p = probability of significance of the model result.

The adjusted final model (model 4 presented in Table 4,  $p < 0.01$ ) included the factors: supervised internships, curricular structure, faculty, and extension activities, and was able to explain 59.0% (adjusted  $R^2 = 0.59$ ) of the variance of the overall program evaluation by the graduates. The suitability of the adjusted model was confirmed after the diagnosis of non-existence of multicollinearity between the IVs (VIFs between 1.06 and 1.71). In addition, the Durbin-Watson test analysis of the residual distribution showed a score of 1.98, confirming the randomness required for applying the linear regression analysis (MARÔCO, 2011).

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## Note

<sup>1</sup> For more information, please consult the specific legislation:

Teacher education BRAZIL. **Resolution No. 2**. Defines the National Curriculum Guidelines for Higher Education (teacher education programs). Brasília, July 2, 2015.

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