

## Use of physical education services by adults and the elderly in extreme south of Brazil: a population-based study

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**Abstract** *This study aimed to describe the use of physical education services by adults and elderly and to show characteristics of those who did not use these services, as well as to describe the knowledge of the population on the provision of these services in public health policies. It was conducted in Rio Grande (RS) in 2016 with a sample of 1,300 people interviewed using a questionnaire. A total of 16.1% (CI95% 13.0:19.3) of the respondents had used the services in the last three months. Of these, 78% did so in private services, with a predominance of gyms (73.2%). For those who did not, the lack of time was the reason in 31.1%, and 37.7% reported that school was the last contact with a physical education teacher. A total of 18.8% of the population never used physical education services. Knowledge about physical education in public health policies was 15.4% for basic health facilities (UBS) and 13.9% the University Hospital. A low use of physical education services by adults and elderly has been identified, concentrated in private spaces and more accessible to groups of higher income and schooling. Thus, a lack of democratization has been found in the use of this service by the adult and elderly population.*

**Key words** *Health Services, Physical Education and Training, Physical Activity, Research on Health Services, Health Promotion*

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## Introduction

Epidemiological, nutritional and demographic transitions required changes in the healthcare strategy in the Brazilian population. The relevant participation of several professionals in the expanded health-disease process was noticeable. Among them, the physical education professional articulated to the idea of health promotion and that was previously only associated with schools as a curricular component of learning<sup>1,2</sup>.

It is common in epidemiology when searching for papers related to access to health to locate the assessment of people's access to some health professionals such as doctors, dentists, nurses, especially in primary care services, actions and programs<sup>3,4</sup>. These studies are frequent in the Unified Health System (SUS), and evaluate the coverage, process and effectiveness of services to the population. The concept of utilization is employed as the direct contact of individuals with health services, through the process resulting from the behavior of individuals when first seeking the service and professionals or health services providing care and follow-up when necessary to this change<sup>5-7</sup>.

Thus, use is related to having the clinical care in case of a medical visit or attending a class in the case of contact with physical education professionals. Given the configuration of the presence of physical education professionals (from licentiate or baccalaureate courses) in different sectors of society, we will consider the nomenclature of such activity as "physical education services". This service can be performed in different ways and contexts, from the school sector, gyms and private services or public health policies.

Several events were essential for the growing health sector that draws physical education closer to the field of health, such as the National Health Council's denomination as a health profession in 1997. In 2006, bodily practices/physical activity were included in the National Health Promotion Policy (PNPS), especially given its relationship with Chronic Noncommunicable Diseases (CNCD). Although these relationships have stemmed from a preventive and economic interest, the area points to constant growth in the most different spaces and policies, associated with epidemiology, in which scientific production in Brazil is found from 1991, especially under physical activity epidemiology<sup>1,2,8</sup>.

In Rio Grande, located at the southern end of Rio Grande do Sul, the insertion of physical education professionals in the SUS network is

expanding. This process takes place through a variety of programs and projects, such as the Family Health Support Center (NASF), multidisciplinary residencies, projects involving physical activities for people with hypertension and diabetes, among other specific interventions. The local setting of including physical education into public health policies dialogues with the recent strategies that emphasize the theme of physical activity in the context of health promotion, and the expansion of the theme can be found in ministerial publications and specific local studies<sup>9-11</sup>. Besides, professional physical education interventions in other public spaces, such as leisure and social care, as well as all the private sector functioning, ranging from workplace exercise in firms, gyms and gymnastics clubs, sports, as well as personalized training and other private forms of services.

That said, little is known about the use of PE services by the population, since this contact was historically limited to schools in a well-defined age range. With the extended concept of health, decentralization of services and also increased care in the private sector, what would be the places of use of these professionals and in what conditions will this meeting take place?

Thus, this study aimed to describe adult and elderly use of physical education services, characterizing it from sociodemographic aspects. For those who did not use the service, we described the reasons for not doing so, the last place where they used it and where they would seek such a service if they needed it. Finally, as a specific objective, knowledge about physical education in public health policies was shown.

## Methods

This is an epidemiological, cross-sectional study from a research consortium entitled "Health of the Rio Grande's Population", consisting of students from two postgraduate courses at a University in southern Brazil. In general, this research aimed to assess several health aspects of the adult and elderly population of Rio Grande.

Rio Grande is located at the southern end of the state of Rio Grande do Sul (RS) and has approximately 200 thousand inhabitants. Its economy is mostly concentrated in port activity<sup>12</sup>. It has two hospitals, namely, the Miguel Riet Correa Jr University Hospital (only SUS), and the Santa Casa de Rio Grande (SUS and private). The city has a Federal University with Degree in Physical Education and 32 Primary Healthcare Facilities

(UBS), with the Family Health Strategy (ESF) covering 45% of the population (100% in the rural area) and five Family Health Support Centers (NASF) teams.

### Population and sample

This study is aimed at the adult and elderly population of the urban area of Rio Grande (RS). The sample consisted of 1,300 individuals aged 18 years or older.

### Sample calculation

The sample calculation was based on data from the 2010 Demographic Census, which indicated 138,996 adults and elderly of Rio Grande<sup>12</sup>, considering a prevalence of 20% of physical education services, with a margin of error of 2.5 percentage points and a level of significance of 5%. Also, 10% were added to cater for possible losses and refusals, and multiplication by 1.5 was performed for the possible design effect (clusters). Considering these aspects, the final calculation resulted in 1,092 people.

### Sampling process

This was a two-stage sampling. First, all households in the urban area of the municipality were allocated in descending order, according to the mean monthly income of the head of the household. The first residence was randomly selected, followed by systematic selection (skipping 1,080 households), thus obtaining 72 census tracts and resulting in 23,439 households, which were also organized according to the income of the head of the household.

Then, 711 households were systematically selected (with a 32-step skipping between households), totaling the 1,420 individuals required, since the estimate was of two adults per household<sup>12</sup> as per the IBGE.

### Data collection

All individuals from the households (18 years or over) selected were considered eligible and, therefore, interviewed, except those who were institutionalized at the time of the study and those with physical or mental impairment to respond to the questionnaire, according to their relatives. The complete interview lasted on average 50 minutes and was performed face-to-face by trained interviewers who visited the selected households.

### Research instrument

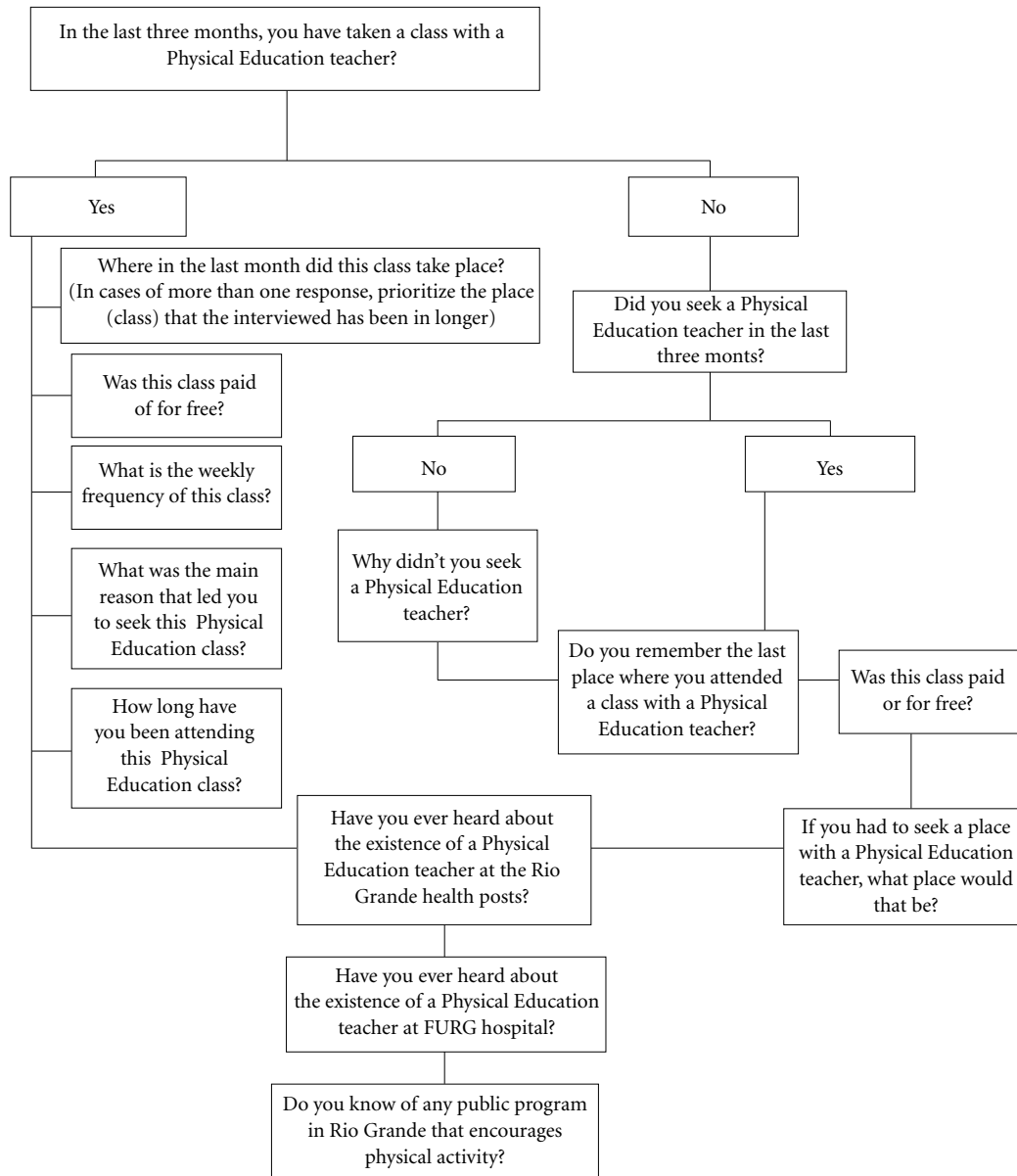
Concerning data referring to this research (Figure 1), the questions were elaborated by the researchers and the instrument is not validated. The questions were tested in a pilot study with adults living in the Rio Grande urban area of a census tract not included in the sample.

The questions relate to the use of Physical Education services through the following questions: *In the <LAST THREE MONTHS>, have you taken a class with a Physical Education teacher?* If the answer was Yes, the next questions were: *Where, in the last month, did this class take place?, Was this class paid for or for free?, What is the weekly frequency of this class?, What was the main reason that led you to seek this Physical Education class?, How long have you been attending this Physical Education class?* Thus, the study evaluated the use of physical education services, place of use, whether it was public or private and length of use.

However, if the answer to the first question was negative, questions about non-use of physical education services were applied, as follows: *Did you seek a physical education teacher in the last three months?* If the answer to this last question was positive, the following was asked: *Do you remember the last place where you attended a class with a Physical Education teacher?, Was this class paid or for free?* If the answer to the question was negative, we asked the following questions: *Why didn't you seek a Physical Education teacher?, If you had to seek a place with a Physical Education teacher, what place would that be?* Thus, the non-use of physical education services was evaluated by the search question for this service, last place of use and characteristics of this service.

Two questions were added and aimed to identify whether the population was aware of the existence of physical education teachers in the public health system, and the first one was: *Have you ever heard about the existence of a Physical Education teacher at Rio Grande Health posts?* And the second one: *Have you ever heard of the existence of Physical Education teacher at FURG hospital?*

The independent variables used were gender (female and male), age group (18-29, 30-39, 40-49, 50-59, 60 or more years), schooling years (0 to 4/5 to 8/9 to 11/12 or more) marital status (married, single, separated or widowed) self-reported skin color (white and non-white), as an indicator of socioeconomic level, the asset index and leisure activity level by the International Physical Activity Questionnaire (IPAQ)<sup>13,14</sup> (categorized



**Figure 1.** Flowchart of the questions used for the questionnaire on the use of physical education services, Rio Grande, Brazil, 2016. (n = 1,300).

as Active or Insufficiently Active), where “active” meant adult/elderly who accrued at least 150 minutes of weekly physical activity during leisure of moderate or vigorous intensity. In order to establish the socioeconomic variable, household characteristics (origin of drinking water, number of bedrooms and number of bathrooms in

the household) and some household goods (car, computer, internet, landline, microwave, washing machine, dryer and DVD player). The primary component analysis was performed from these 11 items, extracting the first component, which explained 30.1% of the variability of all items (eigenvalue = 3.31)<sup>15</sup>.

### Statistical analysis

Quality control was performed with partial repetition of the questionnaire in 10.5% of the interviews, and the mean value of the kappa index of the questions was 0.80. All questionnaires were coded, revised and double tabulated. Data were entered in the Epi-Data 3.1 program and were later transferred to the statistical package Stata 11.2, in which the exploratory analysis of the database was carried out, and the variables were transformed and categorized.

Concerning the analyses, a description of all the participants of the sample according to sociodemographic characteristics was first made. Then, the following were collected from the ones who used the services: the reasons, the frequency of use, places, funding (free or private) and length of use. Subsequently, non-users of services described the reason, last place of use of the service and where to find the service, if it was of interest.

Associations were performed using Fisher's exact test and Poisson regression, observing the design effect and significance level of 5%, between the use of the physical education service and leisure physical activity. This analysis was adjusted for gender, age and asset index. Finally, people's knowledge concerning physical education teachers in public policies was described.

### Ethical aspects

FURG's Health Research Ethics Committee (CEPAS) approved the research project and followed the precepts of Resolution 466/12. All study participants signed an informed consent form, agreeing to participate in the study. Concerning people who did not know how to read or write, the text was read aloud, and their fingerprints were used on the consent form.

### Results

Of the 1,429 subjects eligible for the study, 1,300 were interviewed (91%). Of the 129 non-respondents, 99 were refusals (77%) and 30 were losses (23%). Losses and refusals were more prevalent for males (12% versus 6.5% for females,  $p < 0.001$ ). There was no difference according to age. The losses resulted from not finding people at home despite several attempts at different times and days.

A total of 56.6% of individuals in the sample were female, 83% self-declared white and 46.3% were single. Around 24.2% of individuals were aged 60 years or over, 14.7% had 0-4 years of study, and 27.4% studied 12 years or more (Table 1).

The use of physical education services in the last three months was reported by 16.1% (CI95% 13.0:19.3) of the individuals, with no statistically significant difference for gender. Groups with greater use of such services were: whites (17.2%) and single (19.3%). The prevalence of use in the individuals with more years of study was 33.8%, and 29.4% in the wealthiest socioeconomic quintile, much higher than the use in their peers with fewer years of study and poor.

According to Figure 2, it can be observed that of those who used physical education services, 78% did so in the private sector; of these, 73.2% was in gyms. This use occurred more frequently weekly (4 times per week) in 36.1% of the sample. The main reason for the demand was health and quality of life in 47.9% of cases, weight loss (14.4%), muscle definition/strength (13.4%), professional recommendation (7.2%), social interaction (5.3%) and 12% of the subjects reported other reasons.

Of those who did not use the physical education service in the last three months, less than 5% sought the service. According to Figure 3, when asked if they would go to a physical education service, 40.6% answered that they would go to gyms, and 39.6% would not know where to look for such a service. The last place where they used the service was at school in 37.7% of the cases; nevertheless, 18.8% of the interviewed reported never having had contact with physical education classes. The main reasons mentioned in the responses to not seeking the service were lack of time (31.1%) and lack of interest (28%).

Other results of this study are not shown in Tables and Figures and will be described here. We questioned, for the whole sample, about the existence of physical education teachers in primary care (Primary Healthcare Facilities) and tertiary care (University Hospital), where 15.4% (CI95% 12.6:18.2) and 13.9% (CI95% 11.5:16.3), respectively, reported to be knowledgeable about such activities. The association between the use of the physical education service and the practice of leisure physical activity, adjusted for gender, asset index and schooling was also tested. Individuals who use physical education services are 8.73% (CI95% 6.62:11.5) more likely to be active during leisure compared to insufficiently active peers.

**Table 1.** Sample description of sociodemographic and behavioral variables in adults and elderly and among those who used the Physical Education services. Rio Grande, RS, 2016 (n=1,300).

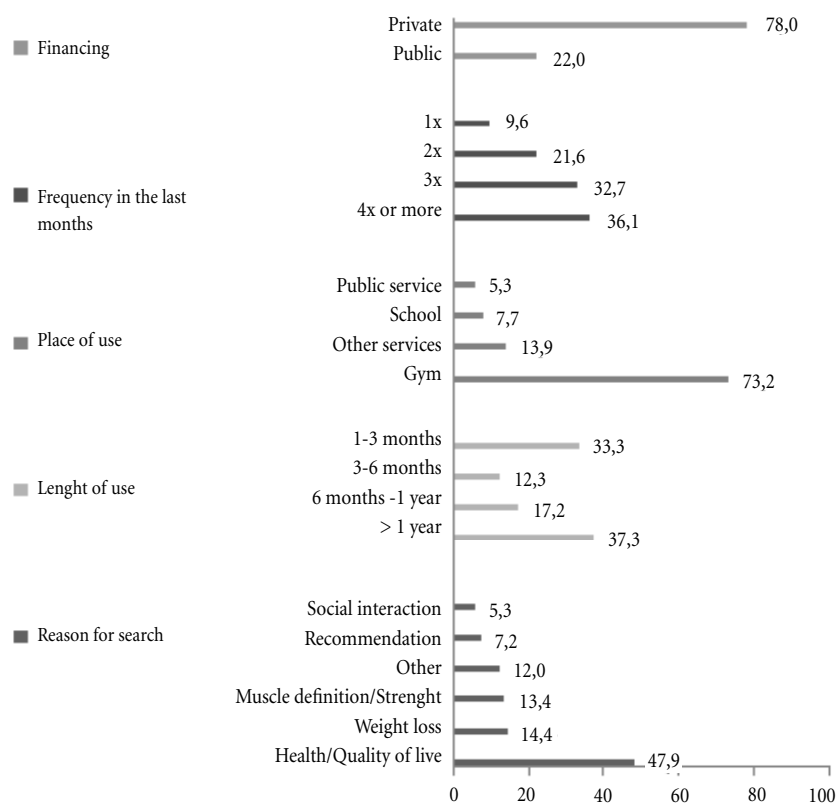
Variable	Sample	Used P.E. Services	Did not use P.E. Services	Fisher's Exact Test
	n (%)	n (%)	n (%)	p-value
Gender (1,300)				0.054
Female	736 (56.6)	131 (17.9)	603 (82.1)	
Male	564 (43.4)	78 (13.9)	484 (86.1)	
Skin color (1,298)				0.012
White	1,077 (83.0)	185 (17.2)	888 (82.8)	
Non-White	211 (17.0)	23 (10.4)	198 (89.6)	
Marital status (1,300)				0.007
Married	476 (36.6)	69 (14.5)	406 (85.5)	
Single	602 (46.3)	116 (19.3)	484 (80.7)	
Separated/Widower	222 (17.1)	24 (10.9)	197 (89.1)	
Schooling in years (1,298)				<0.001
0-4	191 (14.7)	6 (3.2)	183 (96.8)	
5-8	352 (27.1)	20 (5.7)	332 (94.3)	
9-11	400 (30.8)	63 (15.8)	335 (84.2)	
12+	355 (27.4)	120 (33.8)	235 (66.2)	
Age in years (1,300)				<0.001
18-29	283 (21.8)	69 (24.4)	214 (75.6)	
30-39	225 (17.3)	43 (19.1)	182 (80.9)	
40-49	240 (18.5)	34 (14.2)	206 (85.8)	
50-59	237 (18.2)	36 (15.2)	201 (84.8)	
60 and over	315 (24.2)	27 (8.7)	284 (91.3)	
Asset index in quintiles (1,299)				<0.001
1° (poorest)	260 (20.0)	18 (7.0)	239 (93.0)	
2°	260 (20.0)	20 (7.7)	240 (92.3)	
3°	261 (20.1)	39 (15.0)	221 (85.0)	
4°	266 (20.5)	58 (21.8)	208 (78.2)	
5° (richer)	252 (19.4)	74 (29.4)	178 (70.6)	
Physical activity during leisure (1,290)				<0.001
Inactive/Insufficiently active	1,002(77.7)	59 (5.9)	943 (94.1)	
Active	288(22.3)	148 (51.4)	140 (48.6)	
Total	1,300	209 (16.1)	1,087 (83.9)	

## Discussion

The use of physical education services between the adult and elderly population in the last three months was reported by only 16.1% of the individuals interviewed. This use has marked sociodemographic characteristics: predominance in individuals with higher schooling and asset index. The highest prevalence of contact with physical education professionals was in the private sector, with the gym being the most used location in 73.2%. Almost 20% of the population

studied never attended physical education classes. The results point to a lack of democratization in the use of this service that is facilitated to few population groups and especially in private environments, and the higher practice of physical activity deriving from contact with physical education professionals is also restricted to the individuals with better socioeconomic conditions<sup>16</sup>.

A study of a similar nature (population-based study) verified the use of Physical Education class, but, strictly evaluating gyms of Pelotas (RS)<sup>17</sup>. It identified the prevalence of the current



**Figure 2.** Use of physical education services by adults and the elderly. Rio Grande, RS, Brazil, 2016 (n = 1,300).

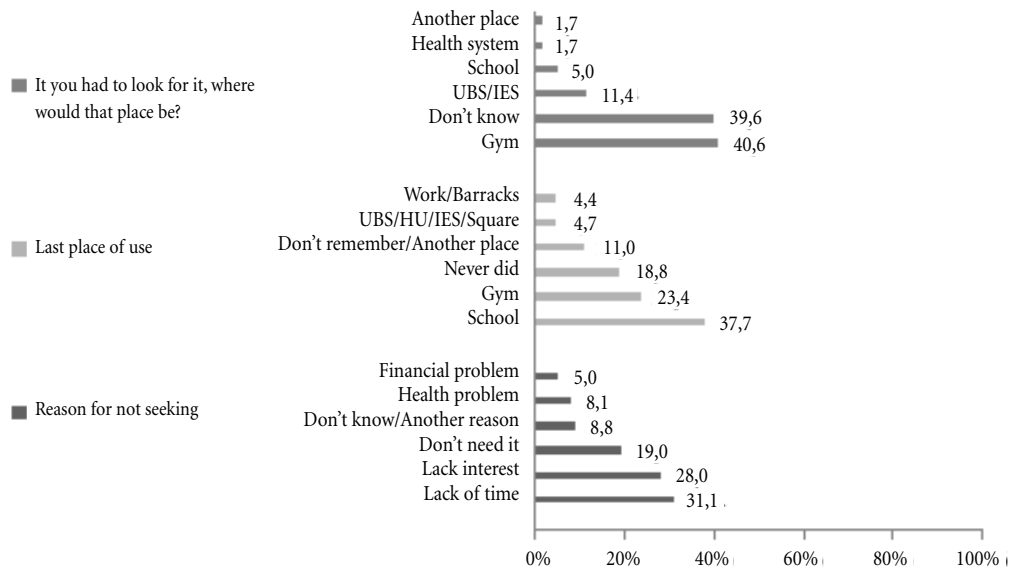
and past practice of physical activity in gyms, with a prevalence of 7.8% (CI95% 6.2:9.6) and 32.1% (CI95% 29.2: 35.1), respectively. However, the study cited is restricted only to the private setting, unlike the study carried out here, where the time-related selection also differs, since this research was three months before the interview and the previous study evaluated the non-period-specific use of gyms<sup>17</sup>.

In this context, gyms are the most studied places, since the presence of Physical Education in public health policies is still recent<sup>16</sup>. Moreover, the main reasons reported in Pelotas in a study carried out in 2008 for physical activity in the gyms were weight loss (22%), pleasure of exercise (22%) and physical fitness needs (20%). Also, the study reports that white male individuals aged 20-29 years, with A/B socioeconomic status and non-smokers are the most frequent in gyms in that city<sup>17</sup>. In this analysis, the reasons for service use were health/quality of life (47.9%), weight loss (14.4%), muscle/strength

definition (13.4%), similar to the reasons reported by gym-goers.

Regarding gender, gaps were identified, as follows: a predominance of men in Pelotas gyms, unlike the study presented, in which there was no significant difference for gender. In this paper, 73.2% of those who use physical education services do so in gyms. Thus, while they are different studies, they are connected because gyms are currently one of the primary manifestations of physical education services.

Epidemiological studies have pointed to a marked inequality in the access to and use of services, as well as in the quality of healthcare concerning socioeconomic characteristics in Brazil<sup>18-20</sup>. Individuals with lower economic status have greater difficulty in accessing health and longer waiting times<sup>7,21</sup>. This inequality was identified when we studied the use of physical education services. The distinction as mentioned earlier is even more strongly related to schooling, which is an essential factor in the use of health services,



**Figure 3.** Characterization of the sample of the non-use of physical education services. Rio Grande, RS, Brazil, 2016 (n = 1,300).

regardless of the presence or absence of chronic diseases<sup>22</sup>. Individuals with higher education attend these services more and have greater knowledge, mainly for preventive and routine visits<sup>19,22</sup>.

Within this perspective, the socioeconomic factor is a prominent landmark for the use of the physical education service. In the gyms' spaces, affirmed by the study of Pelotas, the socioeconomic level was a decisive factor in the use of those services, in favor of the richer ones<sup>17</sup>. Currently, in Brazil, people with a higher level of education are three times more active in leisure when compared to their less educated peers<sup>23</sup>. Besides, the level of leisure physical activity is more prevalent in people of higher income, and a global concern is to reduce these inequalities<sup>24-26</sup>. It is not an exclusion by physical activity, but a social context in which leisure physical activity is restricted to certain population groups, and when physical activities are still more frequent in private environments, such inequalities are enhanced. Public policies on leisure, sports, physical activity and health have recently begun to spread the theme of physical activities/corporal practices and the allocation of physical education teachers/professionals, but change is still negligible, and the general population's use of these services so far is shallow<sup>8,23,27</sup>.

Individuals who did not use the physical education service were asked where they would seek the service if they needed it. It is noteworthy that 39.6% of the individuals did not know to describe any specific place. The professional activities of physical education are still very dispersed and lack communication with the general population. Besides focusing on private environments, the purpose, type of service and insertion of these professionals are not very clear. Since its expansion beyond schools, physical education has been the cause of clear confusions and conflicts that have been reflected in the understanding of the profession among adults and the elderly.

Another relevant fact is that 18.8% of individuals in the sample reported never having used the physical education service, and this may be justified because these people did not even have this contact at school or the classes were irrelevant to the point where some people could not recall them. The debate about the role of school physical education in Brazil is well known and lacks an objective proposal and a clear political position on the development of school physical education contents<sup>25,28</sup>. There are theoretical and methodological differences, power and market disputes, but little progress is made in this discussion about physical education, to the point



where the area has been divided into two, with a licentiate and a baccalaureate degree<sup>29</sup>.

It is also important to note that, although this study evaluates the use of the service regardless of its origin, there are essential differences in the profile of the service provided by private and public environments. In theory, public services provide physical education based on a reference that places it in the field of education, health and leisure, with the purpose of improving aspects of the population's life. On the other hand, the private environment's primary source is income, although other less market-driven interests<sup>10</sup> can also be indirectly fine-tuned. Services may be similar, but their existence is based on distinct structures and objectives.

Nevertheless, 37.7% reported the last contact with the teacher at school, a significant finding, as per Mendes et al.<sup>30</sup>, in a study carried out in Pelotas with people aged 20-69 years to investigate the sources of information about the importance of physical activity in adults, which revealed the physical education teacher responsible for being a source of information about the practice of physical activity in 22.1%, losing space to television in 27.5%<sup>17,30,31</sup>.

This study also evaluated the knowledge of the population regarding the existence of a physical education teacher in public health policies, mainly due to the particularity of the city in having some initiatives that link physical education to the SUS. The city of Rio Grande includes physical education professionals in Family Health Support Centers (NASF), Multidisciplinary Residencies (primary and hospital care) and a specific PA program in the Municipal Health Department for Chronic Patients. These initiatives stem from the perspective of reorienting the health model of only clinical and individual spheres towards a comprehensive approach, which also includes care, prevention, promotion and paying attention to groups, communities and their realities. Physical education participates as one of the professional nuclei in this SUS scenario<sup>16,32,33</sup>. Thus, only 15.4% and 13.9% of the population are aware of the introduction of this service in primary and tertiary care, respectively.

The public sector is another area of achievement of physical education professionals working in several sectors such as leisure, sport, health and also in the social area. In this political line, the priority given by the Ministry of Health to the area is unprecedented in the world. For example, the inclusion of the area in the National Health Promotion Policy and the Plan for Coping with

Noncommunicable Diseases and Illnesses is an example of the Brazilian public policies for the population's knowledge of physical activity and health. However, the mere existence of documents does not ensure success, as many of these services can only address specific demands<sup>16,26,34</sup>.

Several programs include physical education workers, such as the City Gym program, created in 2011 by the Ministry of Health, with spaces with good infrastructure, equipment, and workers in the area, with the aim of contributing to health promotion. Physical education also occurs within the Family Health Strategy, created in 2008, and in Multidisciplinary Residencies, created in 2005, with the most different approaches, namely, mental health, elderly health, cardiometabolic, ESF, among others, spread nationwide<sup>10</sup>.

Several studies describe the use of other types of health services, such as Tomasi et al.<sup>6</sup>, which brought the relationship between overweight and the higher probability of using medical visits in the UBS and urgent and emergency services<sup>6</sup>. Another example are studies that describe not only the use of the medical professionals but also other professionals (physiotherapists), and report the prevalence in different places, allowing comparability: for example, the use of the physiotherapy service in Pelotas (RS) is 30.2%, and in Guarapuava (PR), 27.3%<sup>35,36</sup>. Considering the scenario of expanded SUS and other professional approaches other than only clinical care and focused on few professions, one would expect new studies in the scope of the use of services to describe this situation and discuss the quality of these services.

Concerning the results found in the increased probability of leisure physical activity for people that used the physical education service in the last three months, apparently, this is proposed by policies on the topic of physical activity disseminated by the health sector. This is one of the purposes of physical activity programs encouraged in the municipalities by the Ministry of Health to consolidate the State Policy "Health Gym", which dialogues with agreements signed worldwide in an attempt to reduce the health risks attributed to physical inactivity and place this issue within the framework of public health<sup>37,38</sup>.

Some limitations of the study should be considered. As a result, not much can be explored about the characteristics associated with the use of the service, although the sociodemographic variables were marked and its descriptive nature was always its original proposal. Another relevant point is the limitation of the instrument since it

was created for this purpose, although we have not located a similar instrument in the literature. We suggest that further studies improve the issues adopted here. In any case, researchers may face a possible recall flaw, because when asked where the last contact with the physical education teacher was, people had difficulty remembering, and this flaw could be minimized if we had access to the record of each person in schools, clubs, and gyms. However, this would require time and financial resources for the research, as well as services with good quality records, which is unthinkable in the context of most Brazilian institutions so far.

It is hoped that these considerations brought by this paper will help in the development of research on health services, more precisely in the physical education service, to better explore for whom the service is being made available and if it can be more equitable. Although the professional

is timidly inserted in the public spaces and that this space allows only a specific demand, this professional influences significantly in the practice of physical activity of the population as pointed out in this study. The physical education professional will undoubtedly have an unequivocal contribution in this policy scenario<sup>26</sup> if this influence is for the time of leisure and is accompanied by cultural, social and leisure elements.

This study has shown in a descriptive way how the population of Rio Grande uses the physical education services and pointed to inequality of use, always favoring the individuals with higher schooling and income. Finally, besides the need for more significant investments in an attempt to put more physical education professionals in touch with the population, it would be necessary to evaluate the places in which these professionals are included and how to inform the population where to find and how to use a specific service.

## Collaborations

All authors participated equally in the conception and reviews of the article.

## References

1. Ramires VV, Becker LA, Sadowsky ADI, Zago AM, Bielemann RM, Guerra PH. Evolução da pesquisa epidemiológica em atividade física e comportamento sedentário no Brasil: atualização de uma revisão sistemática. *Rev Bras Ativ Fis Saude* 2014; 19(5):529-547.
2. Scabar TG, Pelicioni AF, Pelicioni MCF. Atuação do profissional de Educação Física no Sistema Único de Saúde: uma análise a partir da Política Nacional de Promoção da Saúde e das Diretrizes do Núcleo de Apoio à Saúde da Família – NASF. *J Health Sci Inst* 2012; 30(4):411-418.
3. Dilélio AS, Tomasi E, Thumé E, Silveira DS, Siqueira FCV, Piccini RX, Silva SM, Nunes BP, Facchini LA. Padrões de utilização de atendimento médico-ambulatorial no Brasil entre usuários do Sistema Único de Saúde, da saúde suplementar e de serviços privados. *Cadernos de Saúde Pública*. 2014; 30(12):2594-2606.
4. Carreiro DL, Souza JGS, Coutinho WLM, Ferreira RC, Ferreira EF, Martins AMEDB. Uso de serviços odontológicos de forma regular na população de Montes Claros, MG, Brasil. *Cien Saude Colet* 2017; 22(12):4135-4150.
5. Costa FF, Garcia LMT, Nahas MV. A Educação Física no Brasil em transição: perspectivas para a promoção da atividade física. *Rev Bras Ativ Fis Saude* 2012; 17(1):14-21.
6. Tomasi E, Nunes BP, Thumé E, Silveira DS, Siqueira FV, Piccini RX, Facchini LA. Utilização de serviços de saúde no Brasil: associação com indicadores de excesso de peso e gordura abdominal. *Cad Saude Publica* 2014; 30(7):1515-1524.
7. Nunes BP, Flores TR, Duro SMS, Saes MDO, Tomasi E, Santiago AD, Tomasi E, Facchini LA. Utilização dos serviços de saúde por adolescentes: estudo transversal de base populacional, Pelotas-RS, 2012. *Epidemiol Serv Saude* 2015; 24(3):411-420.
8. Brasil. Ministério da Saúde (MS). *Política Nacional de Promoção da Saúde*. Brasília: MS; 2010.
9. Furtado G, Knuth A. Núcleo de Apoio à Saúde da Família (NASF) em Rio Grande/RS: percepções sobre o trabalho realizado pela educação física. *Rev Bras Ativ Fis Saude* 2015; 20(5):514-523.
10. Brasil. Ministério da Saúde (MS), Departamento de Análise de Situação em Saúde, Secretaria de Vigilância em Saúde. *Avaliação de efetividade de programas de atividade física no Brasil*. Brasília: MS; 2011.
11. Carvalho FFBD, Nogueira JAD. Práticas corporais e atividades físicas na perspectiva da Promoção da Saúde na Atenção Básica. *Cien Saude Colet* 2016; 21(6):1829-1838.
12. Instituto Brasileiro de Geografia e Estatística (IBGE). *Censo Brasileiro 2011* [página na Internet]. Rio de Janeiro: IBGE; 2011. [acessado 2015 Mar 20]. Disponível em: <https://cidades.ibge.gov.br/brasil/rs/panorama>
13. Haskell WL, Lee IM, Pate RR, Powell KE, Blair SN, Franklin BA, Macera CA, Heath GW, Thompson PD, Bauman A. Physical Activity and Public Health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association *Med Sci Sports Exerc* 2007; 39(8):1423-1434.

14. Matsudo S, Araújo T, Matsudo V, Andrade D, Andrade E, Oliveira LC, Braggion G. Questionário Internacional de Atividade Física (IPAQ): estudo de validade e reprodutibilidade No Brasil. *Rev Bras Ativ Fis Saude* 2012; 6(2):5-18.
15. Filmer D, Pritchett LH. Estimating wealth effects without expenditure data--or tears: an application to educational enrollments in states of India. *Demography* 2001; 38(1):115-132.
16. Hallal PC. Atividade Física no Brasil: pesquisa, vigilância e políticas. *Cad Saude Publica* 2014; 30(12):1-3.
17. Silva MC, Rombaldi AJ, Azevedo MR, Hallal PC. Participação atual e passada em academias de ginástica entre adultos: Prevalência e fatores associados. *Rev Bras Ativ Fis Saude* 2008; 13(1):28-36.
18. Nunes BP, Thumé E, Tomasi E, Duro SMS, Facchini LA. Desigualdades socioeconômicas no acesso e qualidade da atenção nos serviços de saúde. *Rev Saude Publica* 2014; 48(6):968-976.
19. Paim J, Travassos C, Almeida C, Bahia L, Macinko J. The Brazilian health system: history, advances, and challenges. *Lancet* 2011; 377(9779):1778-1797.
20. Mendonza-Sassi R, Béria JU. Utilización de los servicios de salud: una revisión sistemática sobre los factores relacionados Health services utilization: a systematic review of related factors. *Cad Saude Publica* 2001; 17(39):819-832.
21. Almeida APSC, Nunes BP, Duro SMS, Facchini LA. Determinantes socioeconômicos do acesso a serviços de saúde em idosos: revisão sistemática. *Rev Saude Publica* 2017; 51:50.
22. Chiavegatto Filho ADP, Wang YP, Malik AM, Takaoka J, Viana MC, Andrade LH. Determinantes do uso de serviços de saúde: análise multinível da Região Metropolitana de São Paulo. *Rev Saude Publica* 2015; 49:15.
23. Mielke GI, Malta DC, Sá GBAR, Reis RS, Hallal PC. Diferenças regionais e fatores associados à prática de atividade física no lazer no Brasil: resultados da Pesquisa Nacional de Saúde-2013. *Rev Bras Epidemiol* 2015; 18(Supl. 2):158-169.
24. Bauman AE, Reis RS, Sallis JF, Wells JC, Loos RJ, Martin BW, Lancet Physical Activity Series Working Group. Correlates of physical activity: why are some people physically active and others not? *Lancet* 2012; 380(9838):258-271.
25. Hallal PC, Andersen LB, Bull FC, Guthold R, Haskell W. Global physical activity levels: surveillance progress, pitfalls, and prospects. *Lancet* 2012; 380(9838):247-257.
26. Malta DC, Silva JB. Políticas to promote physical activity in Brazil. *Lancet* 2012; 380(9838):195-196.
27. Brasil. Ministério da Saúde (MS), Secretaria de Atenção Básica, Departamento de Atenção Básica. *Diretrizes do NASF: Núcleo de Apoio a Saúde da Família*. Brasília: MS; 2010. (Série A. Normas e Manuais Técnicos).
28. Kopp D, Prat I, Azevedo M. Intervenções escolares de médio e longo prazo para promoção de atividade física: Revisão sistemática. *Rev Bras Ativ Fis Saude* 2014; 19(2):142-152.
29. Andrade Filho NF. Formação profissional em educação física brasileira: uma sùmula da discussão dos anos de 1996 a 2000. *Rev Bras Cien Esporte* 2001; 22(3):23-37.
30. Mendes MA, Rombaldi AJ, Azevedo MR, Bielemann RM, Hallal PC. Fontes de informação sobre a importância da atividade física: estudo de base populacional. *Rev Bras Ativ Fis Saude* 2010; 15(39):163-169.
31. Del Duca GF, Nahas MV, Hallal PC, Peres KG. Atividades físicas no lazer entre adultos de Florianópolis, Santa Catarina, Brasil: estudo populacional sobre as características das práticas e de seus praticantes. *Cien e Saude Colet* 2014; 19(11):4595-4604.
32. Furtado G, Knuth AG. Núcleo de Apoio à Saúde da Família (NASF) em Rio Grande/RS: percepções sobre o trabalho realizado pela educação física. *Rev Bras Ativ Fis Saude* 2015; 20(5):514-523.
33. Corrêa LQ, Valério MP, Teixeira AO, Guerreiro LF, Silveira DF, Machado PT, Xavier BE, Oliz MM, Antunes D, Knuth AG. A atuação da educação física nas residências multiprofissionais em saúde. *Rev Bras Promoção Saude* 2014; 27(3):428-433.
34. Malta D, Silva M, Albuquerque G, Amorim R, Rodrigues G, Silva T, Jaime P. Política Nacional de Promoção da Saúde, descrição da implementação do eixo atividade física e práticas corporais, 2006 a 2014. *Rev Bras Ativ Fis Saude* 2014; 19(39):286-299.
35. Moretto LC, Boing AF, Arruda MP. Prevalência da utilização de serviços de fisioterapia entre a população adulta urbana de Lages, Santa Catarina. *Rev Bras Fisioter* 2009; 13(2):130-135.
36. Silva GGD, Sirena SA. Profile of patients referred to physiotherapy by a Primary Health Care Service in 2012. *Epidemiol Serv Saude* 2015; 24(1):123-133.
37. Lobelo F, Stoutenberg M, Hutber A. The exercise is medicine global health initiative: a 2014 update. *Br J Sports Med* 2014; 48(22):1627-1633.
38. Florindo AA, Reis RS, Farias Junior JCD, Siqueira FV, Nakamura PM, Hallal PC. Description of health promotion actions in Brazilian cities that received funds to develop "Academia da Saúde" program. *Rev Bras Cien Saude Hum* 2016; 18(4):483-492.

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