

PARTICIPATION IN PHYSICAL EDUCATION CLASSES AND FACTORS ASSOCIATED WITH THE LEVEL OF PHYSICAL ACTIVITY OF BRAZILIAN ADOLESCENTS: A SCOPE REVIEW

PARTICIPACIÓN EN CLASES DE EDUCACIÓN FÍSICA Y FACTORES ASOCIADOS AL NIVEL DE ACTIVIDAD FÍSICA DE ADOLESCENTES BRASILEÑOS: UNA REVISIÓN DEL ALCANCE

PARTICIPAÇÃO NAS AULAS DE EDUCAÇÃO FÍSICA E FATORES ASSOCIADOS AO NÍVEL DE ATIVIDADE FÍSICA DE ADOLESCENTES BRASILEIROS: UMA REVISÃO DE ESCOPO

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Manuscript received on: February 28, 2023.

Approved on: June 20, 2023.

Published on: July 5, 2023.

Abstract

To analyze participation in physical education classes and factors associated with the level of physical activity of Brazilian adolescents. Scope review study, with a literature search carried out in the databases: PubMed, Scielo and Lilacs, from August to December 2021. In the 12 studies included, the participation of adolescents in physical education classes ranged from 41.9% to 84.7% %. These analyzed all regions of the country, evaluating public and private schools with questionnaires. The main associated factors were: gender, meeting the recommendations for physical activity, practicing sports, health and physical fitness criteria, in addition to participation in physical education classes. It is observed that there is a need to encourage the promotion of physical activity in the school environment, with more physical education classes offered, with active participation that contribute to the health of Brazilian adolescents.

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Keywords: Physical education classes; Physical activity; Adolescents; Brazil.

Resumen

Analizar la participación en clases de educación física y los factores asociados al nivel de actividad física de adolescentes brasileños. Estudio de revisión de alcance, con búsqueda bibliográfica realizada en las bases de datos: PubMed, Scielo y Lilacs, de agosto a diciembre de 2021. En los 12 estudios incluidos, la participación de los adolescentes en las clases de educación física varió del 41,9% al 84,7% %. Estos analizaron todas las regiones del país, evaluando escuelas públicas y privadas con cuestionarios. Los principales factores asociados fueron: género, cumplimiento de las recomendaciones de actividad física, práctica de deportes, criterios de salud y condición física, además de la participación en clases de educación física. Se observa la necesidad de incentivar la promoción de la actividad física en el ambiente escolar, con más clases de educación física, de participación activa que contribuyan a la salud de los adolescentes brasileños.

Palabras clave: Clases de educación física; Actividad física; Adolescentes; Brasil.

Resumo

Analisar a participação nas aulas de educação física e fatores associados ao nível de atividade física de adolescentes Brasileiros. Estudo de revisão de escopo, com busca na literatura realizada nas bases: PubMed, Scielo e Lilacs, de agosto a dezembro de 2021. Nos 12 estudos incluídos a participação dos adolescentes nas aulas de educação física variou entre 41,9% a 84,7%. Estes analisaram todas as regiões do país, avaliando com questionários, escolas públicas e privadas. Os principais fatores associados foram: sexo, atender as recomendações de Atividade física, prática esportiva, critérios de saúde e aptidão física, além da participação nas aulas de educação física. Observa-se que a necessidade de incentivar a promoção da atividade física no ambiente escolar, com mais oferta de aulas de educação física, de participação ativa que contribuam na saúde dos adolescentes brasileiros.

Palavras-chave: Aulas de educação física; Atividade física; Adolescentes; Brasil.

Introduction

In Brazil, the Law of National Guidelines and Bases of National Education - LDB made Physical Education (PE) an obligatory subject for elementary and high school students (BRASIL, 1996). School PE plays the role of the unique curricular component, which promotes, through teaching, the formation of healthy habits and an active lifestyle for the health of the child and youth population (CONFEEF, 2014). The literature portrays positive associations regarding participation in PE classes with the development of motor skills (LORAS, 2020), less exposure to sedentary behaviors (DA COSTA et al., 2017), better perception of health, nutrition (TASSITANO et al., 2010) and physical fitness (PERALTA et al., 2020).

As for the importance of participating in PE classes to incorporate the habit of regular physical activity (PA) practice, it is recommended that children and adolescents should reach a daily average of 60 minutes of PA of moderate to vigorous intensity, throughout the week (WHO, 2020). These recommendations, which do not match the reality of Brazilian adolescents.

When analyzing trends (2009-2012-2015) and sociodemographic determinants in the adoption of health behaviors among students in Brazilian capitals regarding the level of PA, the results by Haddad and Sarti (2020) point to a decrease in the proportion of physically active adolescents across all socioeconomic strata. Raising concerns about the loss of health benefits for adolescents, especially when taking into account efforts to promote and maintain PE classes in school curricula (HADDAD; SARTI, 2020). Da Silva et al. (2021) examined the impact of a normative in the offer of PE classes, in participation and its association with health behaviors among adolescents, where after the implementation of the normative there were improvements in the offer and in the participation in PE classes. Being able to contribute positively to the health behaviors of adolescents.

Currently, one year after it came into effect, the remodeling of the New High School is on the agenda of national discussion. Among several questions, it is important to highlight the moment of vulnerability of PE School, which is now considered studies and practices, losing the status of a curricular component (BRASIL, 2017). On the other hand, the Physical Activity Guide for the Brazilian Population emphasizes the importance of guaranteeing the access and the participation in PE classes, recommending that should be offered at least three classes of 50 minutes each, per week (BRASIL, 2021). In this regard, participating in PE classes seems to be a significant strategy for promoting PA for adolescents.

In the study by Silva Araújo et al. (2019) they reviewed the literature about the participation of Brazilian adolescents in PE classes and verified the associated factors. The participation ranged from 29.3 to 75.0%, the variable associated to the most evaluated participation was the practice of physical activity. Concluding that few studies have been carried out, encouraging the production of new researches, which investigate the associated factors and the identification of the reasons that lead to participation in PE classes.

Faced the implementation of regulations that rule over curricular changes for the PE discipline at school in recent years, and the stalemate between Education and Health recommendations in Brazil, it is necessary to understand the outlook of participation in PE classes in the national scenario, since there is already a consensus about the role of school PE in the education of adolescents and its health benefits. In this scenario, the aim of this study is to analyze the participation in the PE classes and identify factors associated to the PA level of Brazilian adolescents.

Materials and methods

This is a scope review study in which a literature search was carried out from August to December of 2021, in the electronic databases: PubMed, Scielo and Lilacs, using the descriptors in Portuguese and English: “aulas de educação física” “physical education classes”; “prevalência de atividade física” “prevalence of physical activity”; “adolescentes” “adolescents”. These were previously selected through consultation with the DECs (Health Sciences, BIREME) and Mesh (Medical Subject Headings, Pubmed). Also, the Boolean operators “AND” and “OR” were used to associate the terms. The association of these descriptors used in the searches of the articles, served as a filter and were initially used in the titles and abstracts.

The criteria for inclusion of articles were: published in the years (2016-2021), the choice of this period is justified because it is an update of the references, given the curricular changes imposed by educational policy regulations in the last 10 years (2006-2016). As well as original studies with human beings, in the languages: Portuguese and English, being related to the participation in PE classes and associated to the level of physical activity. Duplicate articles were excluded after the complete reading; they did not refer to Brazilian adolescents, as well as those with a sample of less than 200 adolescents ($n < 200$), in search of more representative population samples.

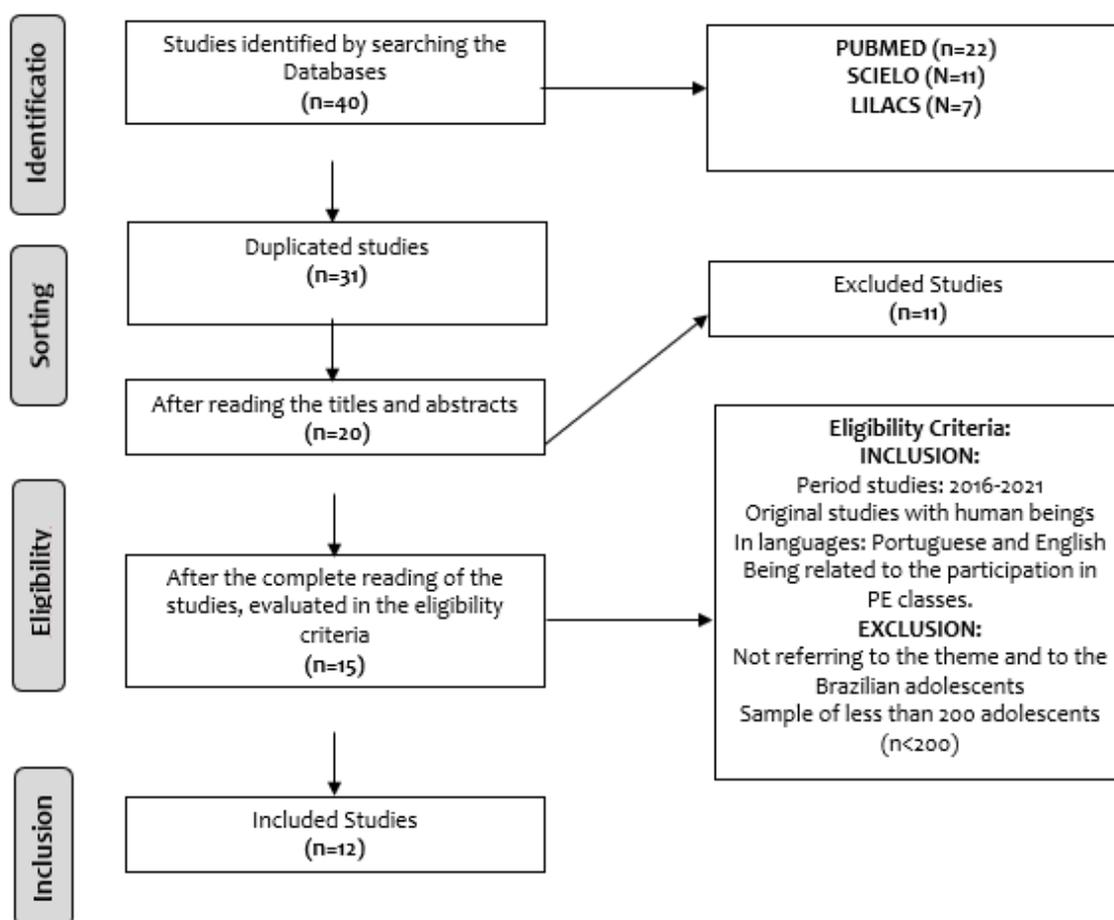
The tabulation of the results was performed through the Microsoft Office Excel 2010, using a personal computer, an activity attributed to the first author. In order to stratify the results, besides the participation in PE classes, information about

authorship and year of publication, State (region), type of school (private or public), age group (years), sample (Number of adolescents), instrument (research question) and the factors associated with the level of PA in adolescents. With reference to the review study by Silva Araújo et al. (2019), for data analysis and observation.

Results

Initially, a flowchart describing the phases and activities of the process of selection of the studies for this review is presented in picture 1.

Picture 1. Presentation of the flowchart with the selection process of the studies used in the review.



Source: Authors (2022).

Twelve articles were included, of which only 4 had as main objective to analyze the participation in PE classes among adolescents, the other studies present the participation in school PE as a covariate. The information from the studies is presented in the Table 1. References for the years 2016-2021, of these: Four articles were carried out in the South region, three encompassing all of the Brazilian Capitals and the Federal District, two in the Northeast and Southeast and one in the North region. Five studies evaluated exclusively public schools and the remaining public and private schools. The most recurrent age group in the articles is from 11 to 18 years old. Nine studies had a sample of more than 1,000 adolescents. The participation in PE classes was evaluated indirectly, through questionnaires answered by the adolescents, in all studies.

Table I – Characteristics of studies about Participation in PE Classes and Factors associated with the level of PA among adolescents.

Author and Year	State (Region)	Type of School	Age Range (years)	Number of Adolescents	Instrument/ Research Question
Coledam (2016)	Paraná (S)	Public	10 to 18	736	Adaptation of the questionnaire PAQ-C. (Physical Activity Readiness Questionnaire).
Coledam (2017)	Paraná (S)	Public	10 to 17	737	Adaptation of the questionnaire PAQ-C. (Physical Activity Readiness Questionnaire). Questionnaire COMPAC.
Lima (2017)	Santa Catarina (S)	Public	14 to 19	1103	(Behaviors of Adolescents from Santa Catarina)
Werneck (2017)	Brazilian Capitals and Federal District	Public and Private	11 to 18	101.445	Adaptation of the International Physical Activity questionnaire.
Coledam (2018)	Paraná (S)	Publica	10 to 17	681	Adaptation of the questionnaire PAQ-C. (Physical Activity Readiness Questionnaire).
Oliveira-Campos (2018)	Brazilian Capitals and Federal District	Public and Private	13 to 17	173.310	NSHS- National School Health Survey.
Prazeres-Filho (2019)	Paraíba (NE)	Public and Private	14 to 19	2.874	Adaptation of the Self-Administered Physical Activity Checklist.

Santos (2019)	Rondônia (N)	Public and Private	8 to 18	1471	International Physical Activity Questionnaire -IPAQ.
Araújo (2020)	Brazilian Capitals and Federal District	Public and Private	11 to 19	16.493	NSHS- National School Health Survey.
Ferrari (2020)	São Paulo (SE)	Public and Private	14 to 15	2682	Adaptation of the questionnaire Global School-Based Student Health Survey.
Ferreira (2020)	Brazilian Capitals and Federal District	Public and Private	12 to 17	73.999	Adaptation of the Self-Administered Physical Activity Checklist.
Werneck (2020)	São Paulo (SE)	Public	11 to 18	100.648	NSHS- National School Health Survey.

Source: Authors (2022).

For analysis of participation in PE classes, most studies used the question: “do you participate in physical education classes? And as a dichotomous answer: “yes” and “no”. Regarding the weekly frequency of participation, they used: once/week, twice/week, ≥ 3 times/week. Some variables were related, such as: age, gender, income and type of school. The results of the percentage of participation in PE classes and the factors associated with the PA level of adolescents are presented in chart 2.

Chart II – Studies with Percentages of Participation in PE Classes and Factors associated with the PA level of adolescents.

Author and Year	Participation in PE Classes (%)	Factors associated with the level of PA in adolescents
Coledam (2016)	83,3% <14 years 81,5% >14 years	Gender; Age; Cardiorespiratory capability; Weekly moderate-to-vigorous PA practice; PA perception; Sports practice; prevent health problems.
Coledam (2017)	73,2%	Gender, Age, participate in PE classes; Sports practice; meet health criteria for fitness and muscular strength.
De Lima (2017)	66,4% Twice a week	Comply with the recommendations regarding the practice of weekly PA; Gender; Family Income, Diet and Sleep.
Werneck (2017)	86% 37,6% Once a week 37,4% Twice a week 11% ≥ 3 times	Comply with the recommendations regarding the practice of weekly PA; Participate in PE classes; Geographic Region.
Coledam (2018)	84,7%	Participate in PE classes; Health criteria: cardiorespiratory fitness and muscle strength.
Oliveira-Campos (2018)	50% 2 or + classes	Gender; Attendance in two or more PE classes; Type of school; Geographic Region.
Prazeres-Filho (2019)	41,9% 2 or + classes Public schools: 56,6% and 6,6% private ones.	Participate in two or more PE classes per week; Positive perception of health; School type.

Santos (2019)	Non-participation in PE classes was 43,6%. Public School: 38,9% and private 49,5%.	Practice of PA in the school environment; Participation in PE classes; Type of school; health risk behaviors.
Araújo (2020)	-	Gender; Geographic location; Not owning a motor vehicle; Ethnicities; Type of school; School environment; Active time in PE classes and in extracurricular shifts.
Ferrari (2020)	81,2% 77,6%	Gender; PE classes; Socioeconomic Level; Maternal Schooling.
Ferreira (2020)	40,6% Once a week; 32,6% Twice a week; and 4,4%, Three times a week.	PA at leisure; Duration and weekly frequency; PA at school; Participation in PE classes reduces the chances of common mental disorders.
Werneck (2020)	-	Gender; PA during PE classes; Less anxiety-induced sleep disturbance.

Source: Authors (2022).

Discussion

The percentage of participation in PE classes varied between 41.9% and 84.7%. As for the factors associated with the PA level of Brazilian adolescents, in the studies by Coledam (2016) and Ferrari et al., (2020) they demonstrate associations to meet the PA recommendations of adolescents. It is important to highlight the results of the study by Prazeres-Filho et al., (2019), 41.9% of students participated in two PE classes or more per week, being higher in public schools compared to private ones (56.6% vs. 6.6%; $p < 0.001$).

Greater participation in classes was identified in male and younger students from both school systems, in public school students who did not work, from a higher economic class and with higher parental education, and in those from the 1st grade and 2nd grades of high school from private schools. Participating in two or more PE classes per week was associated with positive aspects regarding PA and the health of adolescents in the public network (PRAZERES-FILHO, 2019). These findings corroborate with De Rezende et al., (2014; 2015) and Ferrari et al., (2020) where adolescents who participate in physical education classes are more likely to be physically active and PE classes proved to be a fundamental opportunity to promote PA.

Another factor associated to the participation in PE and PA classes was the sports practice, in the findings of Coledam et al., (2017) greater proportions of sports practitioners were male, aged between 10 and 12 years, 73.2% participated in PE classes and met health criteria for fitness and muscle strength. In the study by Oliveira-Campos et al., (2018) there was stability in the trend of indicators on the frequency of two or more PE classes at school (50%) and globally estimated PA, for all students and both genders. As it is already a consensus in the literature, attending PE classes has been associated with higher levels of PA and greater participation in sports (TASSITANO et al., 2010; COLEDAM et al., 2014).

When related to health, Coledam et al., (2018) state in their results that PE classes participants (84.7%) and those who were active during the classes meet a greater proportion of health criteria for cardiorespiratory fitness and muscle strength compared to non-participants or non-active students during the classes. In turn, Werneck et al., (2020) associate PA during PE classes for both genders and PA outside school among boys to less anxiety-induced sleep disturbance. These results differ from those of Ferreira et al., (2020) who even with 77.6% participation in PE classes, this was negatively associated with common mental disorders, but these appear in greater proportion in adolescents who did not practice sports, they did not participate in classes and were inactive.

In addition, two external studies in the present review portray participation in PE classes associated with diseases, in Victo et al., (2020) 15% participated ≤ 2 classes per week and 85% ≥ 2 classes per week, practicing ≥ 2 classes per week of PE determined 70% protection for the development of asthma. In the study by Martins et al., (2017) 66.6% always participated in PE classes, although adolescents with HIV had a lower overall PA score, they showed greater participation in PE classes.

In general, most studies were conducted in the South and Southeast regions. The results of Werneck et al. (2017) show a lower level of PA and participation in PE classes among adolescents in the North and Northeast regions. Factors related to greater socioeconomic inequalities in these regions are quoted, as well as between capitals and cities in the inland, these configurations may be the main driver of the striking differences between PA and adoption of sedentary behaviors in the poorest regions of Brazil (WERNECK et al., 2017). Regional differences in the quality of school

infrastructure, the access and the availability of physical spaces for the practice of activities as courts, tracks and swimming pools can affect directly in the PE classes and in the leisure PA for adolescents (DE REZENDE et al., 2015).

The prevalence of students' **non**-participation in PE classes was high (43.6%), so the practice of PA within the school environment should be considered an important mechanism for this specific population and an inseparable part of the global educational process (SANTOS et al. al., 2019). Two studies portray variables related to PA, where the prevalence of students who did not meet the recommendations regarding the practice of weekly PA was 77.2%, with the highest frequencies observed in girls (DE LIMA; SILVA, 2017). And girls accumulated less active time during PE classes, while boys accumulated less active time during extracurricular activities (ARAÚJO et al., 2020).

It is important to reflect about these results and seek for possible explanations for these behaviors in the literature. Thus, it is pointed out that with advancing of the age, female adolescents are more likely to report body dissatisfaction and greater attention to physical appearance, this factor combined with external barriers, for example: the influence or support from family members for the practice of PA (CUREAU et al., 2016). These behaviors are reflections of many socially constructed aspects linked to the gender issue, the practices are encouraged, offered or denied in different ways for each gender and generate direct impacts on the performances and in the fulfillment of bodily experiences (SOUZA JUNIOR, 2018).

With regard to the type of school, public or private, the findings by Santos et al. (2019) confirm that adolescents from the private schools participate less and less in PE classes, demonstrating low levels of physical activity and more inactive behavior. The low prevalence of PE classes is a concern, as its practice increases sedentary time at school (DA COSTA et al., 2017). Reinforcing the importance of prioritizing PE classes as a curricular component in Brazil. Since the contents of school PE in Brazil are not focused on health promotion, but with emphasis on the practices of the body culture of movement: games, sports, dance, fights and gymnastics (BETTI et al., 2015). Even though this is the curricular format offered in Brazil, PE classes are associated with the health criteria for physical fitness, as long as there is effective and active participation of adolescents (COLEDAM et al., 2018).

It is emphasized that both in public and in private education there are few PE classes in their syllabus (1 to 2 classes per week), of short time, which do not meet the PA recommendations of the World Health Organization (WHO) and the American College of Sports Medicine (ACSM) (SANTOS, 2019). A complicated issue in Brazil because PE is considered an obligatory subject in the educational system, but 14% of schools, especially among the poorest regions (North: 21.2% and Northeast: 24.0%) do not offer PE classes (WERNECK et al., 2017).

The school environment should be considered as a favorable place for interventions to encourage the practice of PA. Thus, increasing the workload of PE classes in the syllabus, promoting interventions at school or extracurricular activities are probably actions that collaborate to meet the recommendations regarding the practice of PA for adolescents (DE LIMA; SILVA, 2017). Recently, through ORDINANCE Nº. 627, of April 4, 2023, the Ministry of Education suspended the National schedule for the implementation of the New High School (BRASIL, 2023), the discussions about the space of the PE subject in school education are still on the agenda debates in the country.

Thus, it is emphasized that the promotion of school PA is a fundamental action that results in more active adolescents (OLIVEIRA-CAMPOS et al., 2018). And that the school environment should play a role in the critical development of adolescents through empowerment over multiple health risk factors and the adoption of healthy behaviors (FARIA et al., 2020).

Conclusion

In the 12 studies included in this review, the prevalence of participation in PE classes varied between 41.9% and 84.7%, the majority had a percentage of $\geq 50\%$. The main factors associated with the level of PA among adolescents were: gender, meet the recommendations, sports practice and health and physical fitness criteria, in addition to participation in PE classes.

There is an eminent concern with the offer, the prevalence of non-participation by adolescents and the curricular content of PE classes offered conventionally in Brazil. However, the need for recommendations to promote PA in the school environment is evident in this review, with more PE classes offered, with more active participation that contribute to build healthy habits and that derive more benefits to the health of Brazilian adolescents.

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