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Physical activity in birth cohorts of three Brazilian cities (Ribeirão Preto, Pelotas, and São Luís): A cross-sectional study

Atividade física em coortes de nascimento de três cidades brasileiras (Ribeirão Preto, Pelotas e São Luís): estudo transversal

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ABSTRACT: ***Objective:*** To describe the prevalence of physical activity among subjects from birth cohorts of three cities located in different regions of Brazil according to sociodemographic characteristics and sex, comparing the relationships within and between cohorts. ***Methods:*** Cross-sectional study involving 12,724 adolescents and young adults who participated in five birth cohorts: Ribeirão Preto [1978/79 (37/39 years old in 2016) and 1994 (22 years in 2016)]; Pelotas [1982 (30 years in 2012) and 1993 (22 years in 2015)], and São Luís [1997/98 (18/19 years in 2016)]. Leisure-time physical activity was evaluated with questionnaires (insufficiently active: <150 min/week and active: ≥150 min/week) and moderate and vigorous physical activity (MVPA) was objectively measured by accelerometry. Those, in each city, were evaluated accordingly to skin color, socioeconomic classification, and study/work activities. ***Results:*** The prevalence of leisure-time physical activity ranged from 29.2% at 30 years old in Pelotas to 54.6% among adolescents from São Luís. The prevalence of leisure-time physical activity was higher among younger people (54.6% in São Luís 1997), while the same was not observed for total physical activity. MVPA (3rd tercile) was higher in the cohorts from Pelotas and São Luís. The prevalence of leisure-time physical activity and MVPA was higher in men. The data showed that the variation in physical activity was associated with sex and sociodemographic conditions in all cohorts. ***Conclusion:*** Sociodemographic characteristics should be considered when promoting leisure-time physical activity and actions aimed at young people, and adults who are more socioeconomically vulnerable should be encouraged.

Keywords: Physical activity. Descriptive epidemiology. Cohort studies. Accelerometry. Questionnaires.

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RESUMO: ***Objetivo:*** Descrever a prevalência de atividade física entre sujeitos de coortes de nascimento de três cidades localizadas em diferentes regiões do Brasil segundo características sociodemográficas e sexo, comparando relações intra e intercoortes. ***Métodos:*** Estudo transversal com 12.724 adolescentes e adultos jovens que participaram de cinco coortes de nascimento: Ribeirão Preto [1978/79 (37/39 anos em 2016) e 1994 (22 anos em 2016)]; Pelotas [1982 (30 anos em 2012) e 1993 (22 anos em 2015)] e São Luís [1997/98 (18/19 anos em 2016)]. A atividade física no lazer foi avaliada com questionários (insuficientemente ativo: <150 min/semana; ativo: ≥150 min/semana) e a atividade física moderada e vigorosa (AFMV) foi medida objetivamente por acelerometria. Foram avaliadas a cor da pele, a classificação socioeconômica e as atividades de estudo/trabalho. ***Resultados:*** A prevalência de ativos no lazer variou de 29,2% aos 30 anos em Pelotas a 54,6% entre os adolescentes de São Luís. A prevalência de ativos no lazer foi maior entre os mais jovens (54,6% em São Luís/1997), o que não foi observado para a atividade física total. A AFMV (3º tercil) foi maior nas coortes de Pelotas e São Luís. A prevalência de ativos no lazer e a AFMV foi maior nos homens. Os dados mostraram que a variação da atividade física foi associada ao sexo e às condições sociodemográficas em todas as coortes. ***Conclusão:*** As características sociodemográficas devem ser consideradas na promoção da atividade física no lazer e as ações voltadas para jovens e adultos mais vulneráveis socioeconomicamente devem ser incentivadas.

Palavras-chave: Atividade física. Epidemiologia descritiva. Estudos de coortes. Acelerometria. Questionário.

INTRODUCTION

The benefits of physical activity for the quality of life and health promotion have been extensively reported in recent decades[1]. Nevertheless, the global prevalence of physically active individuals continues to be low[2] and one-fourth of the world population does not reach the weekly minimum of 150 minutes of moderate physical activity or 75 minutes of vigorous activity recommended by the World Health Organization (WHO)[3]. The frequency of physical activity varies according to the location and economic situation of the country, with the lowest prevalence rates being observed in Latin America and high-income western and Asian countries. Among Latin American countries, Brazil has the lowest percentage of active people older than 18 years[2].

Given the large territory and cultural and sociodemographic differences, the prevalence of physical activity varies widely among the different regions of Brazil. According to the Surveillance of Risk and Protective Factors for Chronic Diseases by Telephone Survey, the prevalence of leisure-time physical activity among all capital cities ranged from 34.6 to 49.9%[4]. Despite this variation, studies have consistently reported a higher prevalence of leisure-time physical activity among men, younger people, individuals with a higher educational level, and high socioeconomic groups[5,6]. However, these associations are not well established when other physical activity domains are considered. The study[7] found no difference between genders for the set of leisure-time, work-related, domestic, and commuting-related physical activity, but observed lower physical activity in higher socioeconomic classes.

In addition to the importance of considering different physical activity domains, researchers highlight the need for methodological standardization of the measurements[8]. Historically, population studies have used subjective instruments, especially validated questionnaires, because

of their low cost and large-scale applicability[9]. In addition to subjective measures, accelerometry has been increasingly used in recent decades for the objective measurement of physical activity in population surveys[10]. However, the adoption of different protocols and procedures of accelerometry has impaired the comparison of data between studies[2,11,12].

In 2014, the consortium of Brazilian birth cohorts from Ribeirão Preto(RP), Pelotas(PEL), and São Luís(SL) [RPS Consortium][13] was started, which enabled the comparability of different social, biological, and behavioral outcomes[14-16] among research centers located in different regions of Brazil with contrasting socioeconomic and demographic characteristics through the use of methodological standardization. Within this context and considering the variation in the prevalence of physical activity between different regions of Brazil and the difficulty in comparing data of different physical activity domains, this study aimed to determine the prevalence of leisure-time physical activity and objectively measured moderate and vigorous physical activity in adolescents and adults.

METHODS

The present data were obtained from recent follow-ups of five birth cohort studies conducted in 1978/79 (follow-up at 37/39 years in 2016) and 1994 (follow-up at 22/23 years in 2016) in RP, in 1982 (follow-up at 30 years in 2012) and 1993 (follow-up at 22 years ins 2015) in Pelotas, and in 1997/98 (follow-up at 18/19 years in 2016) in SL, thus representing cross-sectional data.

RP had a population of 604,682 inhabitants, a Human Development Index (HDI) of 0.80, and a Gini index (GI) of 0.546. SL had a population of 1,014,837 inhabitants in 2010, an HDI of 0.768, and a GI of 0.627. PEL had a population of 328,275 inhabitants in 2010, an HDI of 0.739, and a GI of 0.560[17].

Further details about the methodology of each study have been published previously[13,18-20] and are briefly explained below.

In the RP78 cohort, we used the data from 1,775 subjects evaluated in the last follow-up in 2016/2017, at 37 to 39 years old. In the RP94 cohort, in 2016, 1,041 subjects were evaluated at 22/23 years old. In the PEL82 cohort, the data of the 2012 follow-up were used, totaling 3,701 participants evaluated at 30 years old. In the PEL93 cohort, when the participants were 22 years old, 3,810 participants were evaluated. The SL97 cohort was conducted in 2016, at 18/19 years old, and consisted of 2,515 adolescents.

DATA COLLECTION AND TOOLS

Objectively measured moderate and vigorous physical activity (MVPA)

The MVPA was measured objectively with ActiGraph® accelerometers (GT3X and GTX3+) in SL and RP; in PEL, the GENEActiv accelerometer (ActivInsights, Kimbolton)

was used for the 1982 cohort at 30 years of age, and the ActiGraph wGT3X-BT for the 1993 cohort at 22 years of age. Data on the validity of the measurements and the comparability of the different ActiGraph models have been published previously[21-23]. The processing of the accelerometer data involved self-calibration; in addition, the examiners were rigorously trained by the research coordinators in the placement of the device on the participants and in providing the necessary instructions.

The participants in the cohorts used the accelerometer for seven continuous days in SL97, RP78, and RP94, for 4 to 7 days in PEL82, and for 6 days in PEL93; the participants were asked to use the device on the wrist 24 hours per day (minimum usage is 2 days), including on weekends, except during showering and water-based activities.

The ActiGraph (GT3X, GTX3+, and wGT3X-BT) data were collected at a frequency of 60 Hz and the GENEActiv data at 85.7 Hz, and both brands summarized the acceleration signals over 5-second epochs for the definition of the variable of moderate-vigorous physical activity. The raw ActiGraph data were extracted with the ActiLife 6.12 software, which generated a spreadsheet (.csv) for each participant. The data were then processed for filtering non-human movements, validation of the time of use, and self-calibration using the R package (GGIR version 1.11-0). Data processing also generated data quality plots for each participant for visual inspection. The algorithm proposed by van Hess et al.[24] was used to identify physical activity parameters. The GENEActiv data were configured and downloaded using the GENEActiv software. The accelerometer data in binary format were analyzed using the GGIR R-package[25].

In the RP78 cohort, 1,200 subjects used the accelerometer; 31 cases were excluded because of invalid data and seven because of incomplete data (use of the device for less than two days). In the RP94 cohort, 548 subjects used the accelerometer, with the exclusion of 16 subjects because of invalid data and one because of incomplete data (use of the device for less than two days).

Over the 30 years of follow-up in the PE82 cohort, 2,876 participants used the accelerometer, with the exclusion of 152 subjects because of invalid data and 30 because they had used the device for less than two days (incomplete data). In the PE93 cohort, over the 22 years of follow-up, 3,280 participants used the accelerometer and 297 were excluded because of incomplete data (use of the device for less than two days). In the SL97 cohort, 1,538 subjects used the accelerometer; 214 cases were excluded because of invalid data and nine because of incomplete data (use of the device for less than two days).

The Spearman-Brown formula[26] was used in all cohorts to calculate the reliability for minimum accelerometer days. The total time of moderate and vigorous physical activity in minutes per day was used in this study. This variable was categorized into terciles, with the 3rd tercile being defined as the most active (Supplemental Table 1).

LEISURE-TIME PHYSICAL ACTIVITY

A questionnaire that assesses the duration and weekly frequency of leisure activities was used for the analysis of self-reported leisure-time physical activity at 30 years of age in the

Table 1. Prevalence of leisure-time and total physical activity according to the demographic and socioeconomic characteristics of male participants. Ribeirão Preto, Pelotas, and São Luís Consortium.

Cohort/age in complete years	Leisure-time physical activity (active ³150 min/week), %					Moderate and vigorous physical activity (3rd tercile), %				
	RP78 37 years	RP94 22 years	PE82 30 years	PE93 22 years	SL97 18 years	RP78 37 years	RP94 22 years	PE82 30 years	PEl93 22 years	SL97 18 years
Skin color*	0.168†	0.030†	0.035†	0.124†	0.204†	<0.001	0.027	<0.001†	<0.001†	0.011†
White	52.9	67.5	38.1	49.5	71.4	28.4	28.0	30.6	28.8	22.2
Black	40.4	50.0	44.2	56.6	79.0	71.9	42.9	41.7	49.3	36.9
Brown	47.9	55.7	30.3	52.5	74.3	41.1	47.2	46.2	38.3	36.0
Socioeconomic classification	0.001†	0.088†	<0.001†	0.001†	0.224*	0.002	0.051	<0.001†	<0.001†	<0.001†
A/B	56.3	66.3	42.7	56.2	70.4	28.9	28.4	24.1	24.0	23.1
C	42.6	53.8	33.6	49.2	74.3	45.3	47.6	41.5	37.2	33.0
D/E	0.0	66.7	26.6	38.2	77.2	33.3	50.0	54.0	52.9	44.7
Study/work	0.524†	0.517†	0.102	0.017†	0.019	0.192	0.532	<0.001†	0.013	0.800
Neither	40.0	59.3	34.2	51.9	80.9	43.2	37.5	41.0	30.1	32.9
Studies only	50.0	71.4	53.3	56.0	71.6	60.0	32.0	29.5	27.9	33.2
Works only	52.9	61.5	37.6	48.0	72.6	33.0	31.2	33.3	37.7	32.4
Studies and works	52.6	68.4	42.7	56.8	77.3	26.7	42.2	26.2	35.4	39.6

*Asians and indigenous people were excluded because of a small n; †p: intra-cohort difference.

PE82 and at 22 years of age in the PE93 cohorts. This questionnaire consists of a list of leisure activities elaborated from the results of a pilot study that identified the physical activities most frequently performed by young adults. In the RP and SL cohorts, leisure-time physical activity was evaluated using a list of physical activities obtained from the Self-Administered Physical Activity Checklist[27]. All questions permitted the creation of a time variable in minutes of leisure-time physical activity per week. This variable was dichotomized into insufficiently active (<150 min/week) and active (³150 min/week) according to WHO recommendations[3].

COVARIATES

The other variables analyzed in the present study were self-reported skin color (white, black, and brown; Asian and indigenous were excluded because of a small sample)[28] and socioeconomic classification (A/B, C, D/E) according to the criteria of the Brazilian Association of Research Companies (ABEP in the Portuguese acronym)[29]. The variable referring to study or work was elaborated from questions about the current study or work ties and was categorized as:

a) does not study and does not work,
b) studies only,
c) works only, and
d) studies and works.

The categorization of the sociodemographic variables was the same for all sites and cohorts.

DATA ANALYSIS

Descriptive analysis stratified by sex was used for all sociodemographic variables. The prevalence and respective 95% confidence intervals (95%CI) were calculated for self-reported leisure-time physical activity and MVPA in each city according to skin color, socioeconomic classification, and study/work activities, through Pearson's chi-square test. The prevalence rates of the outcomes were compared between the groups, in each cohort, and between the studies (established by 95% confidence intervals) using the Kruskal-Wallis test.

The sample of each cohort was stratified by sex since logistic regression analysis revealed an interaction between sex and skin color, socioeconomic classification and study/work activities in a large number of associations with the outcomes (leisure-time and MVPA) (not presented). A 5% statistical significance level was considered. The Stata 14.0 program (Stata Corporation, College Station, USA) was used for statistical analysis.

ETHICAL ASPECTS

After they had received the necessary explanations, all participants signed the informed consent form. The studies were approved by the Ethics Committees of the local university institutions involved (Approval numbers 1.282.710 for the 1978/79 and 1994 RP birth cohorts; 16/12 and 1.250.366 for the 1982 and 1993 PEL birth cohorts, and 1.302.489 for the 1997/98 SL birth cohorts). Therefore, all projects met the criteria of the National Health Council and its complementary regulations.

RESULTS

Supplemental Table 1 shows the characteristics of the general sample and stratified by sex. Most of the participants evaluated in the follow-up were white and worked only, except for the adolescents from SL whose self-reported skin color was mostly brown and who studied only. Regarding socioeconomic classification, most adults aged 37 and 22 years from RP and those aged 30 years from PEL belonged to class A/B, while most adolescents from SL and adults aged 22 years from PEL belonged to class C.

The prevalence of active participants in terms of leisure-time physical activity in the general sample was higher among adolescents from SL and adults (22 years) from RP, and lower among adults (30 years) from PEL, with a significant difference between the cohorts. When stratified by sex, a higher prevalence of active participants was observed among men. Most male adolescents and adults were active during leisure, except for adults (30 years) from PEL, with only 38.4% reporting this activity. The highest prevalence of the outcome was observed among male adolescents living in SL. For females, a minority was active during leisure in the cohorts studied, with the highest prevalence of this outcome being among adult women (22 years) from RP.

Table 1 shows the prevalence of leisure-time physical activity and MVPA among men according to the independent variables. White (RP94) or black skin color (PEL82), belonging to socioeconomic class A/B (RP78, PEL82, PEL93), studying and working (PEL93), and not studying (SL97) were associated with a higher prevalence of leisure-time physical activity in these cohorts.

Concerning MVPA, black (RP78, PEL93, SL97) or brown skin color (RP94, PEL82), belonging to socioeconomic classes C (RP78) and D/E (PEL82, PEL93, SL97), not studying (PEL82), and working only (PEL93) were associated with a higher prevalence of this outcome (Table 1).

The prevalence of leisure-time physical activity and MVPA among women in each cohort according to the independent variables is shown in Table 2. White skin color (RP94), belonging to class A/B (RP78, RP94, PEL82, PEL93), studying and working (RP78, PEL82), and studying only (PEL93) were associated with a higher prevalence of leisure-time physical activity. The prevalence of leisure-time physical activity was higher among women aged 37/39 years

Table 2. Prevalence of leisure-time and total physical activity according to the demographic and socioeconomic characteristics of female participants. Ribeirão Preto, Pelotas, and São Luís Consortium.

Cohort/age in complete years	Leisure-time physical activity (active ³150 min/week), %					Moderate and vigorous physical activity (3rd tercile), %				
	RP78 37 years	RP94 22 years	PE82 30 years	PE93 22 years	SL97 18 years	RP78 37 years	RP94 22 years	PE82 30 years	PE93 22 years	SL97 18 years
Skin color*	0.113†	0.040†	0.053†	0.133†	0.855†	0.060	0.679	<0.001†	<0.001†	0.105†
White	38.0	43.4	21.7	27.7	37.6	31.0	31.9	29.9	28.1	24.8
Black	26.8	43.2	15.9	22.2	37.6	43.6	40.0	44.5	43.0	34.3
Brown	31.4	29.5	16.5	25.0	36.1	41.4	36.0	47.1	38.5	35.1
Socioeconomic class	0.001†	0.004†	<0.001†	0.001†	0.057†	<0.001	0.338	<0.001†	<0.001†	<0.001†
A/B	41.3	46.6	26.8	36.5	41.5	27.9	29.3	22.4	27.9	16.2
C	27.3	34.5	15.5	20.8	39.9	45.8	37.8	39.5	34.6	35.4
D/E	19.0	18.7	6.6	14.0	32.2	54.5	40.0	58.4	43.3	40.6
Study and work	0.002†	0.387†	<0.001†	<0.001†	0.878†	0.192	0.532	<0.001†	0.013†	0.800†
Neither	31.2	38.1	13.3	15.7	36.3	43.2	37.5	41.0	30.1	32.9
Studies only	42.9	51.2	22.6	37.2	36.5	60.0	32.0	29.5	27.9	33.2
Works only	36.7	37.6	20.7	22.0	41.7	33.0	231.2	33.3	37.7	32.4
Studies and works	57.5	42.1	28.4	34.7	36.6	26.7	35.5	26.2	35.4	39.6

*Asians and indigenous people were excluded because of a small n; †p: intra-cohort difference.

(RP78) who study and work; white and black women aged 22 years (RP94) who belong to class A/B and who do not study/work or work only, and brown women aged 18 years (SL97) who belong to class C and D/E and who work only when compared to the other cohorts (Table 2).

Regarding MVPA, black (43.0% in PE93) or brown skin color (47.1% in PE82), belonging to class D/E (54.5% in RP78, 58.4% in PE82, 43.3% in PE93, and 40.6% in SL97), not working (41.0% in PE82), and working only (37.7% in PE93) were associated with a higher prevalence of this outcome (Table 2).

DISCUSSION

In all cohorts, the prevalence of leisure-time and MVPA was higher among men and leisure-time physical activity was more prevalent in SL and RP, while the level of MVPA (3rd tercile) was higher in PEL and SL. In general, the younger cohorts of RP and PEL were more active during leisure time but the same was not observed for MVPA. The results of this study also showed that the variation in physical activity was associated with gender and sociodemographic conditions according to the study site.

Variation in physical activity practice according to the region, environment, and sociodemographic and cultural characteristics has been reported in the literature[30,31]. In the present study, the city of SL had a higher prevalence of physical activity practitioners during leisure time. Some characteristics of the SL97 cohort[32], for example, being the only one located in a coastal city[32], being the youngest[31], and having a higher frequency of participants who study only, contribute to the results observed. Despite this, SL97 showed a greater difference between sexes in leisure-time physical activity, corroborating data that indicate less practice among women in the north and northeast of Brazil compared to men in these regions[31].

Hallal et al.[7] observed no disparity between genders when different physical activity domains were analyzed with a questionnaire. In contrast, women were less active in the present study, even in MVPA. Although the present results do not allow to identify in which physical activity domains these differences occurred, the lower engagement of women in leisure-time physical activity may explain the low prevalence of MVPA in this group.

Concerning leisure-time physical activity, some studies have reported differences between genders[30,31,33]. A possible explanation could be the fact that, since school age, boys are more encouraged by family members, colleagues, and institutions to participate in physical activity as a form of leisure and social interaction[34,35]. Within this context, measures encouraging regular physical activity that provide equal opportunities for women as early as childhood are fundamental to reducing inequalities in leisure-time physical activity[36], considering that individuals who are more active in childhood and adolescence tend to exercise more frequently in adulthood[37].

The socio-economic classification showed that, for both genders, participants of higher socioeconomic status were more physically active during leisure time, while those of lower status exhibited lower total physical activity levels. Lack of money and time and tiredness have been reported as perceived barriers that discourage people from engaging in leisure-time

physical activity[38]. A large proportion of the Brazilian population still associates physical activity exclusively with physical exercise and/or sports performed in clubs or fitness centers, which often require a financial investment[38]. On the other hand, data from the National Health Survey indicate that the most common leisure-time physical activity among Brazilians is walking, possibly because it is easy to incorporate into daily life, in addition to its low cost and easy access[39]. However, even in the case of activities in which financial issues supposedly would not be a barrier, the lack of infrastructure, as well as a high crime rate and perceived insecurity, which are more common in underprivileged regions, are barriers that discourage people from leisure-time physical activity[40]. Nevertheless, in agreement with other studies, the present results showed that class D/E was the most active in total physical activity, probably because of the large number of activities performed during work, commuting, and domestic tasks[41].

Study[42] also demonstrated that economic class is an important factor in motivating the practice of leisure-time physical activity. On the other hand, the economic aspect is not a barrier frequently reported in developed countries[43,44]. Thus, the results of the present study, together with the evidence in the literature, reinforce the importance of encouraging the practice of leisure-time physical activity, especially for the most socially vulnerable groups in developing countries.

Black and brown participants exhibited higher MVPA levels but the same was not observed for leisure-time physical activity. A possible explanation could be the socioeconomic and demographic disparities observed in Brazil among blacks, browns, and whites. A lower educational level and socioeconomic status are generally associated with higher levels of work-related physical activity[45]. Furthermore, a low educational level and socioeconomic status are more frequently observed among browns and blacks when compared to whites[46]. Although subjects belonging to class D/E and with black/brown skin color performed more MVPA, findings regarding the gains related to this activity are still inconsistent. Some studies have reported an increased risk of cardiovascular diseases and mortality associated with high occupational physical activity[47-49].

Regarding work and/or study, the present results indicate a lower frequency of leisure-time physical activity among women of the RP78, RP94, and PE93 cohorts who neither study nor work. However, this association was not observed for total physical activity. This finding can be explained in part by the fact that a proportion of women who are neither engaged in paid work nor study perform domestic tasks only. For example, in PE82, only 13.3% of the women who neither study nor work were active during leisure time, while 41% of these women remained in the most active tercile of MVPA. In men, the prevalence of leisure-time physical activity was higher among those who neither work nor study in SL97 and among those who study and work in PE93. However, the prevalence of MVPA was higher among those who neither study nor work in PE82 and among those who work only in PE93. Men who study only or study and work are more frequently inactive, for example, spending more time sitting. Men who neither work nor study have more time for leisure-time activities and can spend more time on domestic tasks, increasing total physical

activity, whereas those who study and work may try to compensate for the sedentary time by having more leisure-time physical activity.

We chose self-reporting for the measurement of leisure-time physical activity, which may have resulted in information bias due to the difficulty of accurately estimating physical activity. However, errors in the estimates are greater for the domains of work-related and domestic physical activity[50]; in the present study, these domains were only assessed when the global accelerometer-measured physical activity was used, which provides a measure of total physical activity without distinguishing between domains. In addition, questionnaires allowed to measure leisure-time physical activity in studies involving a large number of participants, and specific domains can only be assessed by self-report. Thus, the use of different questionnaires can be considered a limitation, although categorization was aimed at attenuating the differences between the measures. Another limitation is that the use of self-reported measures for skin color and socioeconomic classification can result in information bias; however, this information was obtained using validated instruments. In addition, differences in the age of the participants can impair the comparison between the cohorts. Due to the cross-sectional design, it is not possible to establish a causal relationship between sociodemographic indicators and outcomes.

The strengths of the study, the sample size of the cohorts and the use of an objective measure in large samples, are uncommon in Brazilian studies. We also standardized the analysis with accelerometers. In addition, to our knowledge, this is the first study analyzing the physical activity data of cohorts followed up in different regions of Brazil using a similar methodology.

The results demonstrated a difference in leisure-time and total physical activity between the regions. The factors associated with physical activity were similar between the cohorts despite demographic and economic differences. Regardless of the location, the data suggest that sociodemographic characteristics should be considered when promoting leisure-time physical activity and actions should be aimed at young people and adults of both genders who are socioeconomically more vulnerable. These factors must be taken into account when creating public policies designed to encourage leisure-time physical activity to improve the health conditions of the population. On the other hand, total physical activity must be analyzed with caution since it represents overall physical activity and is not separated by domains.

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