



The impact of social distancing due to COVID-19 on adults' and older adults' exercise

O impacto do distanciamento social devido à COVID-19 nos exercícios de adultos e idosos

El impacto del alejamiento social por la COVID-19 para los ejercicios en adultos y mayores

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ABSTRACT

Objective: The objective of this paper is to describe and compare the frequency, duration, and intensity of physical exercise performed by the participants, as well the types of exercise, in three different periods: 2019 (1), January and February 2020 (2), and during the social distancing period (SDP) due to the COVID-19 pandemic (3). **Methods:** This is a mixed-methods (retrospective/cross-sectional) study of a population of adults and older adults from a public recreation center in Porto Alegre, Brazil. The participants were invited to take a survey on Google Forms addressing the characteristics of the physical exercises performed in the periods covered in this research. The questionnaire remained available throughout October 2020. **Results:** The sample comprised 194 participants (63.49±14.14 years; 93.2% were women). During period 1, the most performed exercises were strength/aerobic exercises twice a week for 46 minutes to 1 hour per session at intensity 6. During period 2, walking was the most reported exercise performed three times a week for 31 to 45minutes per session at intensity 7. During period 3, strength/aerobic exercises were the most frequent, being performed three times a week for 31 to 45minutes per session at intensity 5. **Conclusion:** When compared to the first period, a significant decrease in total time, intensity and duration of exercises performed by the population analyzed was observed in the other periods. Similar behavior was observed across the age ranges.

Descriptors: COVID-19; Exercise; Healthy Lifestyle; Elderly; Adults.

RESUMO

Objetivo: O objetivo deste artigo é descrever e comparar a frequência, a duração e a intensidade de exercícios físicos realizados pelos participantes, bem como os tipos de exercícios, em três períodos diferentes: em 2019 (1), janeiro e fevereiro de 2020 (2) e durante o período de distanciamento social devido à pandemia COVID-19 (3). **Métodos:** Trata-se de um estudo misto (retrospectivo/transversal) com população composta por adultos e idosos de um centro recreativo público de Porto Alegre, Brasil. Os participantes convidados responderam a um questionário disponibilizado por meio dos Formulários Google, acerca das características dos exercícios físicos praticados nos períodos abrangidos por esta pesquisa. O questionário permaneceu disponível durante o mês de outubro de 2020. **Resultados:** Compuseram a amostra 194 participantes (63,49 ± 14,14 anos; 93,2% mulheres). No período 1 os exercícios mais praticados compuseram-se por força/aeróbica, duas vezes/semana, de 46 minutos a 1 hora/sessão, na intensidade 6. No período 2, a caminhada apresentou-se como a atividade mais citada, três vezes/semana, de 31 a 45 min/sessão, na intensidade 7. No período 3, a aula de força/aeróbica apresentou-se como a atividade mais frequente, três vezes/semana, de 31 a 45 min/sessão, na intensidade 5. **Conclusão:** Quando comparado ao primeiro período, houve diminuição significativa nos demais períodos quanto ao tempo total, intensidade e duração de exercícios realizados pela população investigada, além de apresentar este mesmo comportamento entre os grupos etários.

Descritores: COVID-19; Exercício Físico; Estilo de Vida Saudável; Idosos; Adultos.

RESUMEN

Objetivo: El objetivo del artículo es describir y comparar la frecuencia, la duración y la intensidad de los ejercicios físicos de los participantes, así como los tipos de ejercicios en tres periodos distintos: enero de 2019, febrero de 2020 y durante el periodo de alejamiento social (PAS) por la pandemia de la COVID-19. **Métodos:** Estudio misto (retrospectivo/transversal) con la población de



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adultos y mayores de un centro de recreación público de Porto Alegre, Brazil. Los participantes han sido invitados para contestar una encuesta del Google Forms sobre las características de los ejercicios físicos practicados en los periodos del estudio. La encuesta estuvo disponible durante el mes de octubre de 2020. **Resultados:** El estudio tuvo 194 participantes (63,49±14,14 años; 93,2% mujeres). Durante el periodo 1 los ejercicios más realizados han sido los de fuerza/clase de aeróbic, dos veces a la semana con duración entre 46 minutos y una hora la sesión e intensidad 6. Durante el periodo 2, lo más relatado ha sido la caminata, tres veces a la semana entre 31- 45 minutos la sesión e intensidad 7. Durante el periodo 3, la clase de aeróbic y fuerza fue la más frecuente, tres veces a la semana, entre 31 y 45 minutos la sesión e intensidad 5. **Conclusión:** Hubo una disminución significativa en los otros periodos comparados al primero respecto al tiempo total, la intensidad y la duración de los ejercicios realizados por la población investigada además de presentar la misma conducta entre los grupos de edad.

Descriptor: COVID-19; Ejercicio Físico; Estilo de Vida Saludable; Anciano; Adulto.

INTRODUCTION

The novel coronavirus disease identified in humans in December 2019 (then named COVID-19) was declared a pandemic by the World Health Organization (WHO) on March 11, 2020⁽¹⁾. Until November 2, 2020, COVID-19 had infected nearly 51 million people and killed more than 1.3 million worldwide⁽²⁾. In order to tackle the spread of the new virus, WHO recommended social distancing in different countries at different times at different levels of strictness, especially among the population over 60 years of age due to their weaknesses and pre-existing diseases⁽¹⁾.

The city of Porto Alegre, Brazil (population of 1,409,351 inhabitants⁽³⁾), as any other city in the world, was hit hard by COVID-19. By November 2020, almost 48,000 people had been infected and more than 1,300 had died⁽⁴⁾. Following general health rules, in March 2020, the municipal government took action to restrict outdoor activities by suspending all school activities and many other services⁽⁵⁾. Outdoor activities restriction measures were later extended until the beginning of their easing on April 24, 2020⁽⁶⁾ in some industrial and commercial sectors. The service sector (both public and private), which includes the promotion of physical exercise, was hit harder. Unlike other services, gyms were authorized to reopen at a reduced capacity on May 5⁽⁷⁾, but on July 7⁽⁸⁾ they were forced to close again due to the increase in the number of COVID-19 cases. Gyms were only authorized to reopen on August 11⁽⁹⁾. Despite being officially authorized to reopen, public recreation centers did not return to offering physical exercise sessions face-to-face to the population until the beginning of November 2020.

An alternative to restricted face-to-face activities during this period was the provision of guided online exercises. Online exercises offered to the general population were highly recommended during the COVID-19 pandemic. The WHO Regional Office for Europe promoted a “stay physically active” campaign for those in self-quarantine⁽¹⁰⁾, encouraging people to exercise at home while outdoor and indoor sites were closed. In Brazil, the Ministry of Health launched at least two web pages with tips on how to keep fit during the enforced need to stay at home and social distancing period (SDP)^(11,12). Unfortunately, these important recommendations for staying healthy have not spread to most of the population due to differences in how the federal administration and state and municipal administrations were dealing with this new disease.

Fortunately, within the public service sector, some personal initiatives from civil servants at the beginning of the COVID-19 outbreak provided citizens with a web-based opportunity to continue exercising while at home⁽¹³⁻¹⁵⁾. Initially, these gym classes were targeted at closed groups using a personal messaging app. Afterwards, these individual actions became institutional activities through social and corporate networks^(16,17). More recently, the city of Porto Alegre started offering a set of classes to pregnant women, including physical exercises and nutritional and psychological assistance services⁽¹⁸⁾. All these individual and institutional initiatives were developed to keep people, especially older adults, active. Although these social and corporative social media could not definitively reach all of the city's population, short videos (ranging from 4 to 20 minutes) were viewed more than 40,000 times from March to November 2020⁽¹⁸⁾.

The decrease in frequency, duration, and intensity of physical exercise imposed by the need for social distancing can cause damage to general health, especially among the older population. WHO recommends that people over 18 years of age perform at least 150 minutes of moderate activities or 75 minutes of intense activities per week^(19,20). At home, household activities may not have decreased, but the absence of physical exercise classes may have impacted the total time spent on physical activities. The difficulty maintaining the frequency and intensity of exercise at a time when there is a need to stay at home can facilitate the emergence of health problems, especially those caused by the loss of muscle strength.

The objective of this paper is to describe and compare the frequency, duration, and intensity of physical exercise performed by participants, as well the types of exercise, in three different periods: 2019, January and February 2020, and during the social distancing period (SDP) due to the COVID-19 pandemic.

METHODS

This is a mixed-methods (retrospective and cross-sectional) study in which the participants' information was accessed through a survey that investigated their lifestyle habits, focusing on their physical exercise practices in the years 2019 and 2020. Participants were asked about exercises they usually did in the last year (retrospective) and about exercises they are currently doing (cross-sectional). The study population comprised regular attendees at Ararigboia Park. This park is a public service maintained by the City of Porto Alegre and offers several exercise groups, mostly two times a week for an hour each day.

The calculation of the minimum sample size (n) considered a maximum error of the estimate (e) of 2.0, a 96% confidence level, Z value (Zc) of 2.05, and a population standard deviation (σ) of 7.8⁽²¹⁾.

$$n = \left(\frac{Z_c \times \sigma}{e} \right)^2 = \left(\frac{2.05 \times 8.8}{2} \right)^2 = 82$$

All procedures in this research were conducted remotely. Google Forms® was used to create a questionnaire about physical exercise practices in the years 2019 and 2020. The questionnaire was distributed through social media and kept available to respondents over the month of October 2020.

Ararigboia Park's social media were used to encourage people to join the research. During the period over which the questionnaire was available, five endorsement messages were sent to encourage people's participation. Inclusion criteria were age (>18 years old), enrollment at any park activity, physical assessment dating from 2019 done at the Park, and agreement to participate. Convenience sampling was used to reach the minimum number of participants.

The questionnaire about physical exercise practices in the years 2019 and 2020 contained 22 questions about the exercises participants did during three different time periods: 1) in the year 2019, 2) in the months of January/February 2020, i.e., the summer break in Porto Alegre, and 3) during the SDP due to the COVID-19 outbreak.

The summer break period in Porto Alegre is characterized by the discontinuity of regular exercise groups (from late December to early March) in this public space. Many of the participants travel or move to the coast and greatly change their exercise habits.

The questions addressed the type of physical exercise (16 different types were presented – basketball, cycling indoors or on the street, biodancing, cambio, walking on a treadmill or on the street, running on a treadmill or on the street, dancing, strength and aerobic exercises, water aerobics, jogging in the pool, weight training, swimming, pilates, tennis or beach tennis, volleyball, yoga and one last option labelled “other”) and its frequency (once a week, twice a week, three times a week, four times a week, five times a week, six times a week, and every day), duration (up to 15 minutes, 16 to 30 minutes, 31 to 45 minutes, 46 minutes to 1 hour, 1 hour to 1 hour and 15 minutes, and over 1 hour and 15 minutes), and intensity (visual analog scale from 0 - lowest intensity - to 10 - highest intensity). This questionnaire was developed by the author and presented to and discussed with the group of physical educators working at the park. After proposed corrections were made, the questionnaire was included in the research.

Data were firstly analyzed according to its distribution using the Kolmogorov-Smirnov and Shapiro-Wilk tests. Data were described using frequencies, means, standard deviations, medians, and ranges. Differences between time periods and age ranges were checked using the Friedman's Two-Way Analysis (with Bonferroni's correction), Independent Samples Median Test, and Chi-Squared Test. SPSS®26 was used for data descriptions and inferences. The confidence interval assumed was 95%.

All the procedures were analyzed and approved by the Ethics Committee of the city of Porto Alegre (Approval No. 4172154). All the participants gave their consent to the use of their information prior to completing the online form.

RESULTS

While this study originally focused on people aged 18 or over who regularly exercised in a public recreation center, the study included a random sample of 194 people aged 30-89 years (63,49 ± 14,14 ano). The sample comprised mostly women (92.3%) and people aged 60 years (75.6%). This sample is similar to the Park Ararigboia population aged 30-89 years (87% are women; and 76% are over 60 years), thus making it representative.

According to the 2019 anamnesis, the participants were mostly non-smokers (95.8%), with no reported cardiovascular diseases (93.6%), and some were hypertensive (24%). Body fatness measured by WHR (waist-to-hip ratio) in December 2019 indicated that 15.2% of the participants were at a low level of health risk, 27.2% were at a moderate level, and 56.6% were at a high-risk level. BMI (body mass index), another body fatness index, showed that 40% of the participants were at normal weight, with 48% being overweight and 12% being obese. Participants' lipid profile showed that 87.3% had a desirable triglyceride level, 94.5% had a desirable HDL cholesterol, and 43.6% had a desirable total cholesterol. Finally, 76.9% of the participants had a desirable level of fasting glucose, with 19.2% exhibiting a high risk of developing diabetes and 3.8% being diabetic.

Before accessing the main focus of this research, participants were asked if they were complying with social distancing rules. They were asked how many times (from 0 to 7 times a week) they left home for essential purposes. Forty-three percent said they never leave home or do so just once a week. This is a valuable piece of information. All the research participants are regular attendees at the park and engaged in regular exercise at least twice a week. Thus, a large group lost some physical activity during the period of social distancing covered in this research.

The following sections present, first, a descriptive overview of the data and then several inferential attempts to understand the phenomena herein described. Nonparametric statistics was used as normality tests showed data come from a non-normal sample.

Participants were asked how many times a week they engaged in physical exercise in an attempt to assess frequency of regular physical exercise. The most common overall frequency was twice a week (52.27%). Looking at the responses for each period, in 2019, 74.91% of the participants said they exercised twice a week, in January/February 2020, 26.04% of the participants said they exercised three times a week, and during SDP, 26.61% of the participants said they exercised three times a week. Table I shows the frequency participants' in which participants engaged in' exercise.

The next question was aimed at knowing how much time participants spent exercising so as to assess duration of regular physical exercise.

Overall, the most frequent duration was 46 minutes to 1 hour (43.91%). During 2019, 58.25% said they spent 46 minutes to 1 hour exercising per session. In January/February 2020, 31.91% reported 31 to 45 minutes, and during SDP, 42.45% exercised for 31 to 45 minutes. Table I shows the time participants spent exercising per session.

Participants were then asked how intensely they exercised in order to assess intensity of regular physical exercise using a visual analog scale ranging from 0 (lowest intensity) to 10 (highest intensity). The most frequent intensity for the whole sample was 6. For 2019, 60.57% of the participants said they exercised at an intensity of 6, for January/February 2020, 20.21% reported intensity 7, and during SDP, an intensity of 5 was mentioned by 19.27% of the participants. Table I shows the frequency of the intensities participants mentioned in their answers.

When participants were asked what kind of physical exercise they were regularly engaged in in order to know the types of regular physical exercise, 19 different activities emerged (668 mentions). The types of exercise mentioned, ranked by frequency, were as follows: strength and aerobic exercises (26.2%), walking on a treadmill or on the street (25%), weight training (11.4%), dancing (8.5%), yoga (5.8%), Pilates (4.3%), cycling indoor or on the street (3.7%), stretching (3.6%), water aerobics (3%), running on a treadmill or on the street (2.1%), biodancing (1.8%), volleyball (1.6%), swimming (0.75%), tennis or beach tennis (0.75%), cambio (0.6%), jogging in the pool (0.3%), Chinese exercises (0.15%), elliptical trainer (0.15%), and functional exercises (0.15%).

In 2019, the three most frequent exercises were strength and aerobic exercises (29.76%), weight training (15.77%), and walking (11.90%). When the question focused on the January/February 2020 period, the three most frequent exercises were the same but in a reverse order of frequency: walking (48.34%), weight training (10.60%), and strength and aerobic exercises (8.61%). During SDP, strength and aerobic exercises were mentioned by 34.25% of the participants, walking by 29.83%, and yoga by 8.84%.

The total time spent on regular physical exercise per week was not assessed by the questionnaire. Instead, it was calculated based on the participants' responses concerning frequency and duration. The mean overall total time spent exercising was 115.46 minutes per week (± 89.29 ; CI=102.82-128.11). In 2019, the mean total time spent per week was the highest among the three periods analyzed (167.83 \pm 100.03; CI=153.66-181.99 minutes per week), followed by January/February 2020 (93.51 \pm 132.97; CI=74.68-112.34 minutes per week), and SDP (85.05 \pm 108.62; CI=69.66-100.43 minutes per week).

Table I - Frequency, duration, and intensity (%) of the exercise in which the participants engaged. Porto Alegre, Rio Grande do Sul, Brazil, 2020.

	Total	2019	Jan/Feb 2020	SDP	
Frequency	Once a week	5.17	4.66	3.13	8.26
	Twice a week	52.27	74.91	23.96	19.27
	Three times a week	16.32	8.96	26.04	26.61
	Four times a week	10.33	5.38	18.75	15.60
	Five times a week	7.23	4.30	12.50	10.09
	Six times a week	2.48	0.72	2.08	7.34
	Every day of the week	6.20	1.08	13.54	12.84
Duration	Up to 15min	2.54	1.55	1.06	5.66
	16 to 30min	10.41	7.22	11.70	15.09
	31 to 45min	28.93	20.10	31.91	42.45
	46min to 1h	43.91	58.25	29.79	30.19
	1h to 1h and 15min	6.85	6.19	12.84	2.83
	Over 1h and 15min	7.36	6.70	12.70	3.77
Intensity	0	7.88	5.73	11.70	10.09
	1	1.45	-	3.19	3.67
	2	2.90	2.87	5.32	0.92
	3	3.32	1.08	7.45	5.50
	4	3.94	2.15	2.13	10.09
	5	10.37	5.38	14.89	19.27
	6	39.42	60.57	8.51	11.96
	7	12.45	10.04	20.21	11.90
	8	10.79	6.45	17.02	16.51
	9	3.32	2.87	3.19	4.59
	10	4.15	2.87	6.38	5.50

SDP: social distancing period

The mean absolute deviation (MAD) for each period was calculated considering the mean overall total time spent exercising.

$$MAD = \bar{X}_1 - \bar{X}$$

\bar{X}_1 = mean of each period; \bar{X} = overall mean

There is a 52.4 minute per week MAD for the 2019 period, a (-)21.45 minute per week MAD for the January/February 2020 period, and a (-)30.41 minute per week MAD during SDP, showing a continuous decrease in total time engaged in exercise.

Friedman's Two-Way Analysis showed a statistically significant difference between total time spent exercising in 2019, in January/February 2020, and SDP ($X^2(2) = 106.93$; $p < 0.05$). The total time spent exercising in 2019 is statistically greater than those of January/February 2020 and SDP. The last two periods did not differ statistically. The significance values were adjusted using Bonferroni's correction. Figure 1 presents the range of total time spent exercising per period.

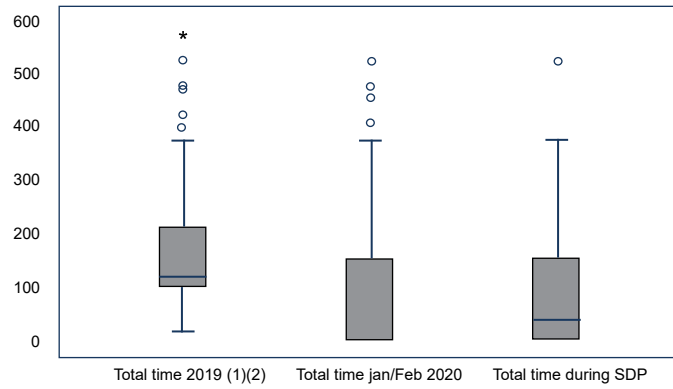


Figure 1 - Median and range of the total time per week spent exercising. Porto Alegre, Rio Grande do Sul, Brazil, 2020. (1) Statistically significant difference between 2019 and January/February 2020; (2) Statistically significant difference between 2019 and SDP.

The independent samples median test showed no statistically significant differences between age ranges in 2019 ($X^2(6) = 8.273$; $p > 0.05$), January/February 2020 ($X^2(6) = 6.464$; $p > 0.05$), and SDP ($X^2(6) = 3.002$; $p > 0.05$). Figure 2 shows the medians and the range for each period across all age ranges.

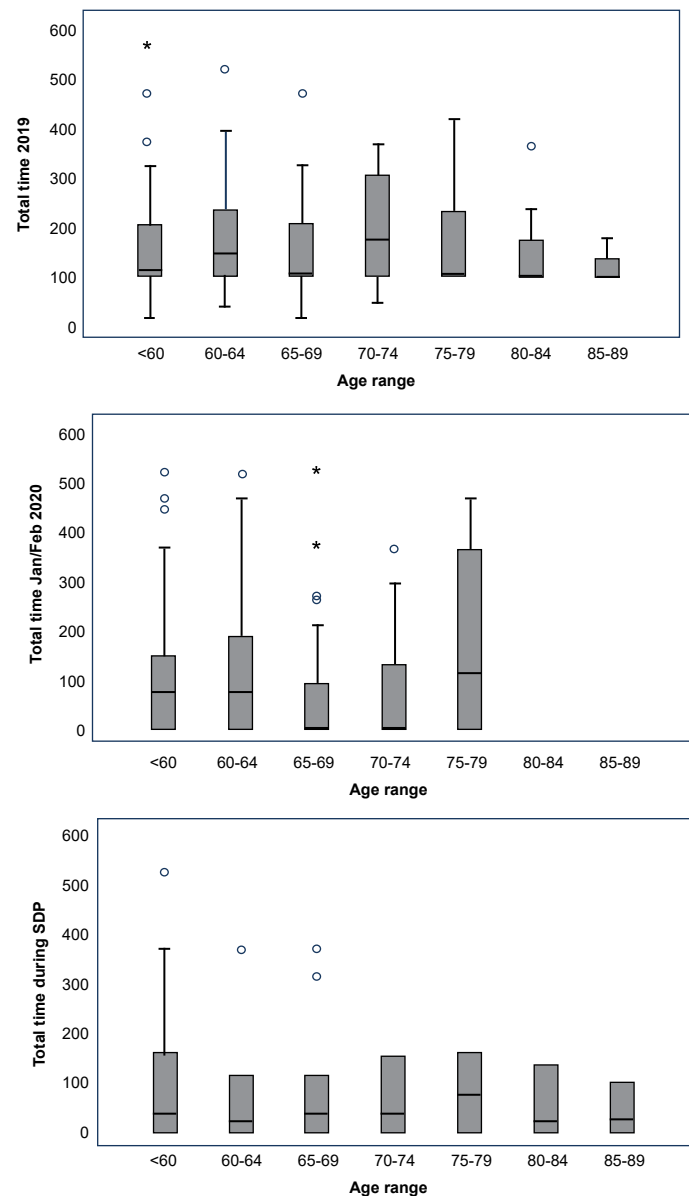


Figure 2 - The median and range of the total time per week spent exercising by age range. Porto Alegre, Rio Grande do Sul, Brazil, 2020.

The total time spent exercising was also analyzed according to age range across the three periods. Friedman’s Two-Way Analysis showed a statistically significant decrease between 2019 and January/February 2020 across all age ranges, except for those participants aged 75-79 years. It also showed a statistically significant decrease between 2019 and SDP across all age ranges, except for those participants aged 80-84 years. No differences were found between January/February 2020 and SDP, and there were no differences in the 85-89 age range across the periods. Significance values were adjusted using Bonferroni’s correction. Figure 3 presents the medians and ranges for total time spent exercising for each age group across the periods.

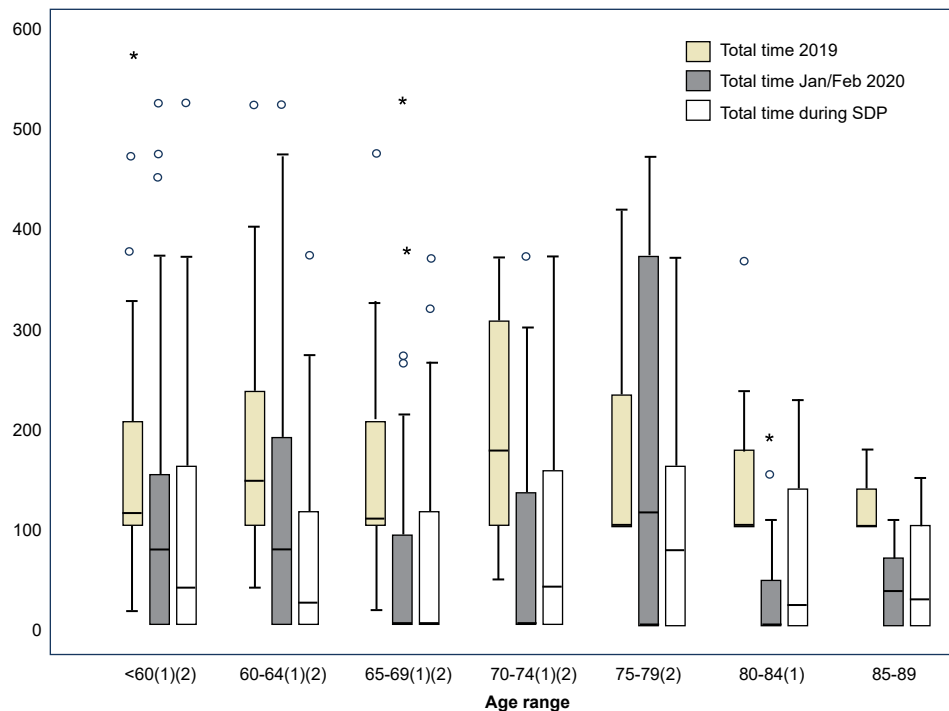


Figure 3 - Median and range of the total time per week spent exercising across age ranges. Porto Alegre, Rio Grande do Sul, Brazil, 2020.

(1) Statistically significant difference between 2019 and January/February 2020; (2) Statistically significant difference between 2019 and SDP.

For the assessment of personal performance in the periods covered in this research, the participants informed, indirectly, how much exercise they did, as measured by total time spent exercising per week. Individually, participants could present a decrease, an increase, or unchanged total time spent exercising from 2019 to 2020. From 2019 to January/February 2020 to SDP, most of the participants greatly decreased their engagement in exercise. As for the periods of January/February 2020 and SDP, there was an equal distribution in personal performance (Figure 4).

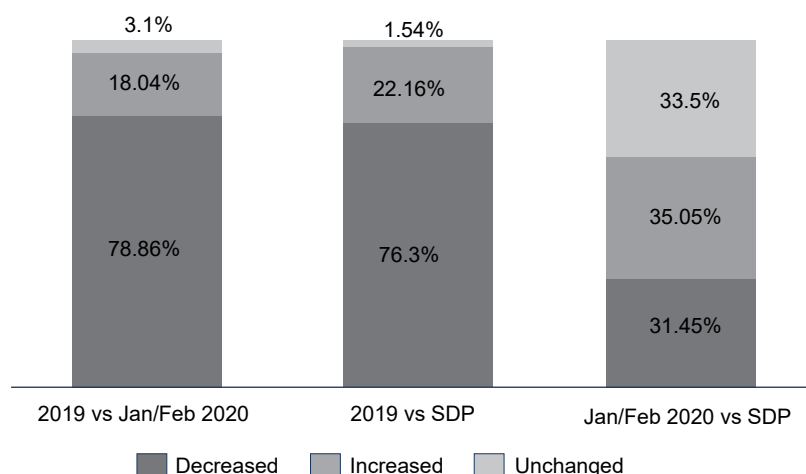


Figure 4 - Personal performance over different periods. Porto Alegre, Rio Grande do Sul, Brazil, 2020.

This prevalence was analyzed using a chi-squared test. There was a weak but statistically significant association between personal achievement and period ($X^2(4)=155.645$; $p<0.05$; Cramér's $V = 0.366$). There were more participants than expected who decreased exercise engagement in 2020 when compared to 2019. Hence, there is an association with decreased total time spent doing exercise in both 2020 periods.

DISCUSSION

This study aimed to compare time engaged in physical exercise prior and during social distancing due to the COVID-19 pandemic. The reduction in time exercising just before the COVID-19 outbreak (January/February 2020) and during SDP was 42.7% and 41.6%, respectively, when compared to 2019. These results are in line with other studies that used similar methodologies and populations⁽²²⁻²⁴⁾. To assess the level of physical activity, all these studies, as well as this one, asked participants what type of physical activity/sport they were engaged in prior the pandemic and during SDP and for how long and how often they did it. There was a unanimous alteration in physical activity level when considering the social distancing period in 2020.

Almost 80% of people from a sample of the Brazilian population said SDP had a big impact on their physical activity practice and most of them had stopped or reduced them⁽²⁵⁾. Similar results were reported in a sample from Northern Brazil, showing an increase in inactive participants during SDP⁽²⁶⁾. The present study also showed a decrease in the level of physical activity and most participants (76.3%) were negatively impacted by SDP, decreasing their engagement. When IPAQ (International Physical Activity Questionnaire) was used, a study of the five regions of Brazil showed a reduction in the level of physical activity during the period of social distancing, thereby leading to an increase in the number of participants characterized as physically inactive⁽²²⁾. Although the present study did not use IPAQ to measure physical activity level, it showed a significant decrease in the time participants reserved for physical exercise during the week during SDP compared to 2019.

All these findings were expected to a certain extent considering the emergency need to restrict the circulation of people. A surprising finding was the magnitude of the negative impact caused by measures of social distancing in the practice of physical exercise. Despite the efforts made to provide online exercises, the technology currently available and the fact that the participants in this study are regular attendees of the park's physical exercise groups, none of these strategies was able to create a pleasant and challenging physical exercise environment for the vast majority of people. People seem to be unprepared to self-encourage engagement in physical activity.

This negative impact of the social distancing on exercise level was not specific to a single age range. In the present study, all age ranges up to 79 years old exhibited a significant decrease in the total time engaged in physical exercise during SDP. Similar findings on age ranges were found in a study of more than 45,000 participants from every region in Brazil. Participants under 60 years old and participants above that age had their time of physical activity reduced by more than half in addition to the worsening of other health-related behaviors⁽²³⁾. These similarities seem to indicate that different age ranges face the same difficulties in maintaining the practice of exercises in the online format. The lack of adequate amount of exercise can lead to a state of heightened anxiety, stress and depression^(24,25) and also increase the risk of developing or aggravating certain diseases (e.g. cancer, type 2 diabetes mellitus, metabolic syndrome, overweight/obesity and sarcopenia)⁽²⁷⁾.

Younger adults exhibited a decrease in exercising in 2020, although by a different percentage in a cohort of young adults (23.3±4 years old; 71.5% of women) from Bavaria-Germany⁽²⁷⁾. Most of them (44.5%) decreased their amount of exercise after a lockdown was imposed in the state of Bavaria, while 32.8% increased their amount of exercise and 22.7% maintained their engagement in exercise. This change in behavior due to the need to stay at home was also observed in a study conducted in Northern Brazil⁽²⁶⁾ and in the present study.

The results of the present study, which included participants aged 30-89 years are a cause of concern: 76.3% of the participants decreased their total time of exercise, 22.2% increased their time, and 1.5% maintained the total time they exercised. When a below 60-year-old sub-sample ($n=61$; 49.16 ± 14.94 years old; 95.1% of women) was analyzed, the results were almost the same (70.6% decreased, 26.2% increased, and 3.3% were unchanged), showing an important difference from the younger samples from Germany and from Northern Brazil. This shows that adults and older adults restricted their movements more than younger people, thus showing that the focus of awareness campaigns and the greater fragility of older adults was successful despite the disease also reaching the younger and less committed to social distancing. It is also possible to hypothesize that older adults were able to stay at home for a longer period because they are retired, unlike the younger. These findings give rise to an important concern regarding the negative impact of social distancing: this age range is more likely to lose muscle mass due to inactivity, which could affect their functional capacity and, consequently, their quality of life⁽²⁹⁾.

Participants over 60 years old (except those aged 80-84 years) showed a statistically significant decrease in total time spent doing exercise during SDP. A similar finding was reported for a population in a continuing care retirement community in Japan⁽³⁰⁾. Researchers, using a pace counter, observed two major decreases in daily walking distance among the community dwellers (67-92 years old; 70.4% of women). The total decrease was circa 24% of daily walking distance. In the present study, it was possible to create a sub-sample with similar characteristics (67-89 years old; n=82; 89% of women), but it differed in terms of place of residence – the latter was not institutionalized. This sub-sample also exhibited a major decrease in exercise after the city of Porto Alegre declared, on March 16, restrictions of movement, especially among older adults. This large drop was of 58.2% when comparing 2019 and SDP, almost twice the decrease seen in the Japanese study. This difference may be associated with the more controlled environment a continuing care retirement community can offer its residents, making them feel safer and thus allowing them to continue exercising. Finally, another study, this time analyzing the behavior of a group of patients (n=82; 58-72 years old; median age=65; 35.4% of women) using an implantable cardiac electronic device with remote monitoring in Riyadh, Saudi Arabia, examined physical activity during the COVID-19 pandemic⁽³¹⁾. After monitoring the participants for a period of 77 days (including a 38-day lockdown), the authors observed a 27.1% reduction in physical activity. These results were very similar to those in Japan, but still very different from what was observed in this research.

The reduction of total time spent on physical activities after the COVID-19 outbreak is an undeniable reality. People from different countries, of different ages, and with different previous exercise-related behavior became less active or even inactive during the pandemic in 2020. This unhealthy change was caused by the need to stay at home and to socially distance from others. There was a wide range of choices of online exercise programs - either free or paid - of all kinds, but these programs were not suitable for everyone, especially for older adults or low-income families due to the complexity in the use of technology or to the cost of accessing a reliable high speed internet connection. The reduction or absence of activity for a short period can be harmful to people in general. For older adults, a long period of self-isolation can be especially deleterious to their health. Porto Alegre and Brazilian authorities were advising older adults to stay at home as much as they could. Now it is time to look forward and start to create programs to encourage people of all ages to get back on track in terms of healthy exercise behaviors or even to encourage people that were inactive before the pandemic to join exercise programs. This is the great challenge that all governments must now face: getting all the apparatus of their cities ready for the new and old practitioners of exercises for the post-vaccine era.

This research assessed physical exercises performed by the participants in the year before the outbreak of COVID-19 and in the current year. The questions were not about details of their exercises, but about what they did most of the time, how many times a week, for how long and with what intensity. Participants were encouraged to remember what they usually did in the period covered in the research, so there may be a potential recall bias in their responses. In an attempt to avoid this bias, the alternatives to the questions were written as openly as possible so that the participants were not obliged to give a very precise response. In addition, all the participants regularly attended the same recreational center, most of them for a long time, thus making this memory bias less likely to occur. Future investigations should focus on creating alternative forms of exercising, especially for older adults, that meet their needs, are interesting and hold their attention.

CONCLUSION

The novel coronavirus pandemic forced people all over the world to stay at home and physically distant from each other. Considering this sample from the Ararigboia Park (Porto Alegre, Brazil), the need to stay at home led to important changes in their exercise behavior. There was a statistically significant decrease in the total amount of exercise per week that participants performed during the social distancing period in 2020 compared to 2019 despite some efforts to engage in online guided exercise routines.

CONFLICTS OF INTEREST

The author declares that there is no conflict of interest either in the execution of this research or in the writing of the manuscript.

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