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# Adaptation of the Recreovía During COVID-19 Lockdowns: Making Physical Activity Accessible to Older Adults in Bogotá, Colombia

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The community restrictions during the coronavirus disease 2019 pandemic adversely impacted older adults' physical activity levels. This convergent mixed-method study assessed the adaptation of the Recreovía, a community-based physical activity program in Bogotá, and characterized physical activity levels among older adult participants. Our results showed how the Recreovía adapted during the pandemic to continue promoting physical activity, through indoor and outdoor strategies, including virtual physical activity sessions and safety protocols. During this time, 72%–79% of the older adults attending the adapted program were physically active. A greater proportion of park users (84.2%) and more people involved in vigorous physical activity were observed during Recreovía days. Older adults had positive experiences and perceptions of the Recreovía program related to their health and social well-being. Even though the older adults prefer being outdoors, the adapted program allowed participants to continue with their physical activity routines as much as possible during the pandemic.

**Keywords:** community-based physical activity, COVID-19 pandemic, mix-method design, healthy aging








In response to the coronavirus disease 2019 (COVID-19) pandemic, countries worldwide introduced disease control and containment measures colloquially known as lockdowns (encompassing stay-at-home orders, curfews, quarantines, physical distancing, *cordons sanitaires*, travel bans, and similar societal restrictions) to slow the transmission of the severe acute respiratory syndrome coronavirus 2 (Euronews, 2020; Güner et al., 2020; Wilder-Smith & Freedman, 2020). These restrictions were severe for older adults and intensified feelings of social isolation, especially among older adults living alone (Sepúlveda-Loyola et al., 2020). Social isolation and perceived social isolation (i.e., loneliness) are significant risk factors for cognitive decline, anxiety, depression, and cardiovascular disease and are associated with increased levels of all-cause mortality in older adults. Social isolation is linked with increased sedentary behavior and reduced physical activity among this population. Recent reports suggest that physical activity levels in older adults decreased worldwide during the quarantine periods of COVID-19 (Callow et al., 2020; Oliveira et al., 2022).

The health benefits of regular physical activity are well documented and widely recognized (Bull et al., 2020; Warburton & Bredin, 2017). These benefits turned especially relevant in the context of the COVID-19. Regular physical activity improves immune function, reducing viral infection risk, duration, and severity (Sallis et al., 2021). New consistent and conclusive evidence shows

that adults who were physically active or fit before a COVID-19 diagnosis have lower odds of requiring hospitalization and intensive care and are less likely to die from COVID-19 (Sallis et al., 2021). It is important to underscore that the risk for severe illness with COVID-19 increases with age, being older adults at the highest risk of developing severe illness due to physiological changes associated with aging and potential underlying health conditions (Shahid et al., 2020; Wang et al., 2020; Zhai et al., 2020). This is of particular concern since older adults represent a growing population segment worldwide.

In this context, creating environments and opportunities to promote physical activity for older adults should be a priority (Cortez et al., 2020). Evidence suggests that the risk of transmission of COVID-19 is lower in outdoor environments such as parks and public spaces compared to public indoor settings (Levinger et al., 2021). Public space is one of the key locations where Latin Americans are physically active (Salvo et al., 2017). Therefore, community-based physical activity programs in public spaces are a compelling strategy to promote physical activity in older adults.

In Bogotá, Colombia, the Recreovía, a local community-based physical activity program, has created opportunities for being active in public spaces for >25 years (Sarmiento et al., 2017), particularly for vulnerable populations, such as older adults and people from low- to middle-income neighborhoods (Rios et al., 2017; Torres et al., 2017). Recreovía provides free access to physical activity classes on weekdays' mornings or evenings and Sundays' and holidays' mornings. During the pandemic, the Recreovía program has adapted to promote physical activity among citizens while maintaining biosafety measures. These interventions for being active during the COVID-19 pandemic are a pivotal contribution to overall community resiliency, health, and well-being (Mitra et al., 2020). However, the evidence on the adaptation of existing programs to continue promoting physical activity during the COVID-19

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pandemic is scarce. Overall, evidence to evaluate how complex health interventions adapt to changes in the contextual systems is limited, especially in low- and middle-income countries, where the resources for implementation research are restricted (Skivington et al., 2021; Westerlund et al., 2019).

In Canada, the strategy Choose To Move was adapted to promote physical activity and social connectedness virtually among older adults and this adaptation was found to be feasible and accepted by older adults (Gray et al., 2022). In this context, research is needed to learn about the adaptations to existing programs during the COVID-19 pandemic, as well as to understand what are the factors that influence community members to continue using the parks and engaging in these community programs. Therefore, this study aimed to: (a) describe the measures implemented by the *Recreovía* program to promote physical activity among older adults in the context of the COVID-19 pandemic, (b) characterize the contextual and individual physical activity levels of *Recreovía* users attending the different strategies implemented by the program during the COVID-19 pandemic, and (c) to describe the experience and perceptions of the older adults attending the adapted *Recreovía* during the COVID-19 pandemic.

## Materials and Methods

### Study Setting

Bogotá is the capital city of Colombia, an upper-middle-income country located in the north of South America, with a population of 7,181,469 (Departamento Administrativo Nacional de Estadística [DANE], 2018). Bogotá has an older adult population of approximately a million, (Ministerio de Salud y Protección Social, 2020a) and an aging index of 58.7 adults (aged 60 years and over) per 100 individuals younger than 15 years (Departamento Administrativo Nacional de Estadística [DANE], 2018). In Colombia, the main national regulation recognizes recreation, physical activity, and leisure as a right and holds the state accountable for guaranteeing it (Asamblea Nacional Constituyente, 1991). In response to this legislation, several strategies to promote physical activity have been implemented (Díaz del Castillo et al., 2017; Sarmiento et al., 2010). One of these strategies is the *Recreovía*, a community-based physical activity program led by the Institute for Sports and Recreation (IDRD) since 1995 (Díaz del Castillo et al., 2017).

On March 12, 2020, the National Government of Colombia declared a public health emergency due to COVID-19 (Presidencia de la República de Colombia, 2020). COVID-19 restrictions were regulated by provisional legal measures introduced by the national government and city governments. As part of the legislation produced in the context of the emergency, the Colombian government adopted a mandatory preventive isolation measure to protect older adults (over 70 years old) from March 20 to May 30, 2020 (Ministerio de Salud y Protección Social, 2020b). Further legislation extended the isolation measure for older adults to August 31, 2020 (Ministerio de Salud y Protección Social, 2020c). To provide opportunities for healthy lifestyles, new city acts allowed the practice of outdoor physical activity among older adults (Ministerio del Interior, 2020a, 2020b). However, while adults between 18 and 69 years were allowed to go outdoors for 2 hr every day, older adults were restricted to spending a maximum of 1 hr outdoors three times per week. In response to these regulations, a civil society group of older adults called “the gray hair revolution” filed legal action for age discrimination (also referred to as tutela action) against the mandatory isolation norms. Superior Court of Bogotá ruled in favor of this legal action on July 2nd, and older

adults were able to enjoy outdoor time as well as people between 18 and 69 years of age. COVID-19 vaccinations targeting older adults began in March 2021. Therefore, the older adults were in mandatory isolation for 4 months, two times longer than the rest of the age groups.

### Study Design

We conducted a cross-sectional study in which we used a convergent mixed-method design to collect qualitative and quantitative data concurrently (Creswell & Plano Clark, 2011). Data analysis integrated both methods using an exploratory unidirectional framework (Moseholm & Fetters, 2017). The qualitative component included in-depth interviews with IDRD staff and *Recreovía* users aimed to (a) document the measures implemented by the IDRD to adapt and continue the operations of the *Recreovía* program during the COVID-19 lockdowns and (b) explore the perceptions of older adults attending the adapted *Recreovía* program. The quantitative component comprised a cross-sectional survey with a set of physical activity measures to characterize *Recreovía* users and their physical activity levels. Combining these two methodologies provided a comprehensive understanding of the acceptability of the measures implemented by the IDRD to continue the *Recreovía* program and a characterization of participating older adults’ physical activity during the COVID-19 pandemic. The writing of this manuscript was guided by the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) checklist for cross-sectional studies.

### Sampling and Recruitment

Due to the adaptations studied in this paper, during the pandemic, the *Recreovía* program comprised two different settings: outdoors and indoors. For this study, we selected participants from both settings. For the outdoor setting, we selected two low–middle socioeconomic status parks from a list of six parks where the *Recreovía* program was operating during the COVID-19 lockdowns and that were frequently attended by older adults. This selection was conducted with the guidance of IDRD stakeholders. Taking into account the nature of the program, which is offered on weekdays in some parks and on Sundays in other parks, we selected one park of each modality for the outdoor setting in order to capture the variability of the program delivery. It was not one of the initial goals, but we considered it was necessary to stratify by type of park (Sunday or weekday) in order to characterize the contextual physical activity levels and to identify potential differences according to the day of delivery. Therefore, we selected one park that offered *Recreovía* sessions on weekdays, and another park that offered the program on Sundays and holidays. For the outdoor setting recruitment, older adults attending the *Recreovía* sessions at the two selected parks were invited to participate in the study. For the indoor setting, we selected four virtual physical activity sessions that participants attended from their homes. Participants who joined the sessions were invited to fill out a contact form shared via the Facebook live-streamed physical activity sessions and *Recreovía*’s social media posts. Eligible participants were adults 55 years and older, residents of Bogotá, users of the *Recreovía* program at the time of recruitment, and who signed the informed consent to participate in the study. In Colombia, adults 55 years old and older can be classified as older adults according to their physical, psychological, and vital status, as defined by Law 1276 of 2009 (Congreso de la República de Colombia, 2009). For this study, the

research team decided to lower the age range considering the effects of the COVID-19 pandemic on physical and mental health of participating adults. This sampling strategy led to a sample of 110 adults  $\geq 55$  years. The survey was completed by 90 individuals (59 from the outdoor setting and 31 from the indoor setting). A timeline with details of the recruitment and data collection processes is provided in Figure 1.

For the qualitative component, two instructors and the program manager were interviewed. Additionally, to ensure the inclusion of representatives from indoor and outdoor settings, we invited a group of older adults to participate in the interviews following the logic of maximum variation sampling (Glesne, 2016). We used a snowball strategy to enroll older adults and their companions in both indoor and outdoor settings. This strategy led to a qualitative sample of five older adults (three women and two men)  $\geq 55$  years old.

Study procedures were approved by the Institutional Review Board of the Universidad de los Andes in Bogotá, Colombia (Minutes 1250 of 2020). All study participants provided written informed consent prior to participating in this study.

## Data Collection

### In-Depth Interviews

Following the reopening of the Recreovía after the first COVID-19 lockdown, we conducted in-depth interviews with Recreovía users and instructors between November and December of 2020. A follow-up interview with the Recreovía managers was conducted in September 2021. An experienced interviewer conducted all interviews using a guide with a set of open-ended questions specific to each group (Supplementary Material S1 [available online]). The program manager and physical activity instructors were asked about the decision-making process during the COVID-19 restrictions, the adaptation of the program amid this context, and the attendance and engagement of the older adults. Recreovía users were asked about their experience engaging in the adapted program during the COVID-19 pandemic. All interviews were conducted and recorded by virtual video call, with an average duration of 43.2 min. All audio recordings were transcribed, anonymized, and reviewed.

### Survey

A cross-sectional survey was administered to selected Recreovía users participating in the study in two parts. The first part of the survey was administered face-to-face in the selected parks on the same day of recruitment, including demographic information and a social network questionnaire. One week after, the second part of the survey was administered by phone. It included Recreovía-use-related variables, social support for the participants' physical activity, social participation, and perceived barriers to attending the Recreovía. Data were collected by trained interviewers using the Qualtrics platform.

Sociodemographic variables collected included age, sex (female vs. male); highest education level attained (none or less than primary vs. secondary or noncompleted secondary vs. technical, college, or graduate studies); socioeconomic level (low vs. middle); and occupation (remunerated vs. nonremunerated).

Recreovía-use variables measured included frequency of attendance to the program (once per year vs. once to three times per month vs. four times per month or more), preferred type of activities, number of sessions attended, how they learned about the Recreovía, reasons for attending, and alternative activities if not attending Recreovía.

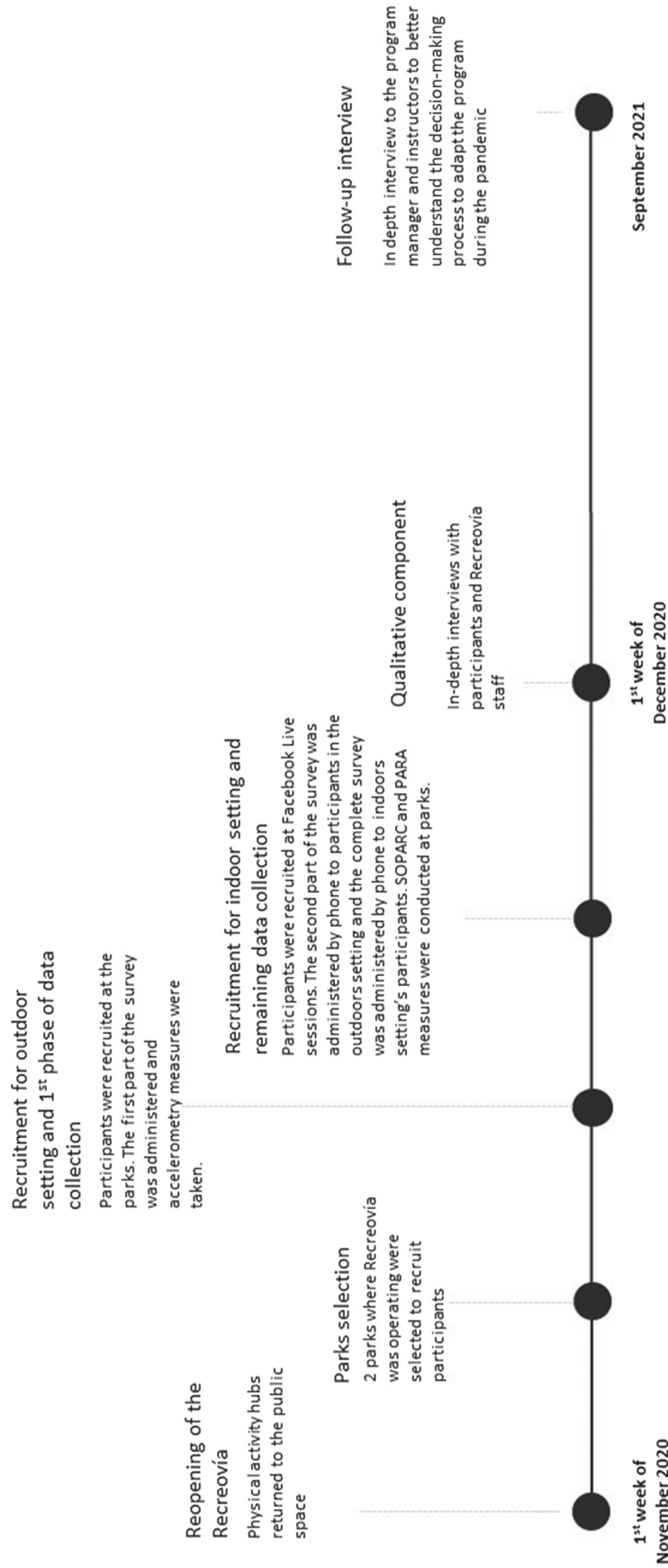
### Physical Activity Measures

Physical activity of Recreovía users was assessed with three different methods. First, self-reported physical activity levels on leisure time and transport domains were assessed on the same day of recruitment with the International Physical Activity Questionnaire (Hallal et al., 2010), which has been validated with older adults from Brazil showing good reliability (Spearman's correlation = .77–.95) and modest to low validity ( $k = .19–.37$ ; Benedetti et al., 2004, 2007). Participants were classified as meeting the aerobic levels of physical activity if they spent at least 150–300 min in moderate-intensity aerobic physical activity, or at least 75–100 min of vigorous-intensity physical activity or an equivalent combination of moderate- and vigorous-intensity activity per week (World Health Organization, 2020). A dichotomous variable was created to indicate whether the World Health Organization (WHO) guidelines were met (yes vs. no).

Second, physical activity intensity during the Recreovía outdoor sessions was measured objectively with accelerometers ActiGraph GT3X+ and GT3X (ActiGraph). Accelerometers were used with an elastic belt and worn over the right midaxillary line on the waist. Participants used the accelerometer from the beginning to the end of the physical activity session on the same day of recruitment. Data were collected with a sampling frame of 80 Hz, downloaded in 30-s epochs, and grouped in 60-s epochs for analysis. We validated the time of use with an algorithm programmed in R (version 3.3.2). Data were scored using the Freedson cut points for adults (Freedson et al., 1998).

Third, physical activity levels during Recreovía outdoor sessions and participants' characteristics were measured with the System for Observing Play and Recreation in Communities (SOPARC) on the next week after outdoor recruitment. SOPARC is a tool to assess the use of parks and has been adapted for use in Latin America to evaluate physical activity programs in community settings (Sarmiento et al., 2017). The data registered included the number of users according to sex (female or male), age group (child 0–12 years, adolescents 13–20 years old, adults 21–59 years old, or older adults  $\geq 60$  years old), and physical activity levels of each observed user. Activity levels are classified as sedentary (e.g., lying down, sitting, or standing), moderate (e.g., walking slowly), and vigorous (e.g., walking fast, running, aerobic classes, dancing, and playing soccer). In addition, the conditions of the target areas were classified as: accessible, usable, equipped, supervised, organized, dark, and empty (McKenzie et al., 2016).

The parks were divided into target areas that allowed for physical activity, including courts, fields, walking/running tracks, exercise areas, game areas, and open areas. We created maps for each park, delineating target areas that were evaluated and coded according to the type of area, the presence of structures for physical activity practices (lines, soccer goalposts, etc.), and the type of surface (grass, concrete, etc.; Sarmiento et al., 2017). The number of target areas in parks ranged from 34 to 40 areas, and the size was between 5.3 m<sup>2</sup> and 3,055.5 m<sup>2</sup>. At each park, observations were made for 3 days with the Recreovía program and 1 day without the Recreovía program. On each observation day, four observation periods were conducted in the Recreovía target areas during the physical activity classes, 10 min before the class, 10 min after the beginning of the class, 40 min after the beginning of the class, and 10 min after ending the class. The total data were collected during 1,376 observation visits in the parks. Data were collected by researchers trained in the use of the SOPARC tool.



**Figure 1** — Timeline of the recruitment and data collection of Activa tu Vida Study 2020. SOPARC = System for Observing Play and Recreation in Communities; PARA = Physical Activity Resource Assessment.



### Quality of Parks

The quality of parks' infrastructure was assessed with the Physical Activity Resource Assessment tool on the same day of SOPARC measures. The Physical Activity Resource Assessment assesses the conditions of parks into six domains: (a) features for physical activity practices (fields and courts for sports, exercise areas, trails for walking, running, skating, roller skating, swimming pools, and playgrounds); (b) amenities (bathrooms, benches, locker rooms, lighting, trash cans, and picnic tables); (c) incivilities (cleanliness, esthetics, safety, dog refuse, garbage, broken glass, graffiti/tagging, vandalism, overgrown grass, unrestrained dogs, and litter); (d) services (restaurants, libraries, physical activity materials, and physical activity classes); (e) accessibility (taxi and bus stops, parking, bike racks, and bicycle paths); and (f) safety. The quality score was computed as the sum of the items described above (Sarmiento et al., 2017).

### Data Analysis

We followed an exploratory unidirectional approach during the analysis to integrate mixed methods. The qualitative approach was used to explore the topic (community-based physical activity amid the pandemic) followed by a quantitative strand approach to provide a more thorough understanding of the phenomena of interest (adaption of the *Recreovía* and its impact on physical activity levels in older adults; Moseholm & Fetters, 2017).

#### Qualitative Analysis

Following the process proposed by Braun and Clarke (Braun & Clarke, 2006) to conduct thematic analysis, we analyzed the two groups of interviews using NVivo software (QSR International 193 Pty Ltd., version 12 Pro). Two cycles of coding were performed using inductive methods. The first coding cycle aimed to identify the general themes discussed in the interviews. The second coding cycle aimed to collapse and expand the identified themes (i.e., perceived influence of the COVID-19 pandemic on the physical activity habits, experiences of the adapted program, and perceived benefits of the adapted program). To establish intercoder reliability, the coding team conducted three verification sessions employing debriefing and member-checking techniques (Glesne, 2016). Subsequently, quotes from participants that better represented each theme were selected. The quotes that better illustrated the identified themes were translated from Spanish to English and included within the results.

#### Quantitative Statistical Analysis

Descriptive statistics (mean, *SD*, absolute frequency, and percentage) were calculated for sociodemographic variables, *Recreovía* participation, and individual physical activity outcomes. To characterize the population, we compared the two settings of the adapted *Recreovía* program on sociodemographics using independent *t* tests or chi-square procedures depending on the nature and distribution of the variable.

For the SOPARC analysis, first, we described the park and user characteristics for each group using descriptive statistics (absolute and relative frequency distribution, mean, *SD*, and range). Second, we described the characteristics of the parks and target areas (quantity, size, and quality). Third, we described user characteristics (gender, age, and physical activity levels). All comparisons between categorical variables were tested with a chi-squared test. All analyses were performed using STATA (version 14.0, StataCorp LP) and R package stats (version 3.3.2)

## Results

### Adaptation of the *Recreovía* Program During the Confinement

According to interviews with the *Recreovía* program manager and physical activity instructors, the program was adapted to continue operating during the COVID-19 pandemic restrictions through three main strategies: (a) virtual physical activity sessions streamed on Facebook Live, (b) a joint initiative implemented in a partnership with the Ministry of Sports called the *Asómate a la Ventana* or *Movement Route*, and (c) outdoor physical activity sessions with safety protocols. The main variation in the implementation of the program was on the setting where it was delivered. Overall, five classes of 60 min per day were delivered at each of the settings. The types of activities were the same for indoor and outdoor settings, including a combination of aerobic activities such as rumba and functional gymnastics such as yoga and stretching.

Facebook Live classes were virtual sessions open to the public, initially live-streamed from the instructors' Facebook profile and then from the IDRD official Facebook page (Figure 2a). These sessions comprised morning and evening schedules, with a session especially designed for older adults. Users were initially invited through the program's online social network, then through community leaders, and IDRD official communications. Besides the physical activity sessions, the Facebook Live strategy involved interactive activities where participants could share videos of themselves and their families being active on their Facebook profiles.

The *Asómate a la Ventana*/Movement Route was a district and national joint initiative in which *Recreovía* program instructors visited residential complexes and led the classes in shared areas of the complex. Residents attended the activity classes from their home's windows or balconies (Figure 2b).

The outdoor strategy started as individual physical training in public parks and evolved with the local and national policies as confinement measures became more flexible. The program coordination designed a safety protocol according to the current legislation, and by November of 2020, the program was offered again in prioritized parks that served the most vulnerable populations on weekdays and weekends. The safety protocol included providing masks and sanitizer, floor markings for physical distancing, limited capacity specifications, and limiting direct contact with surfaces (Figure 2c). Figure 3 illustrates the distribution of the *Asómate a la Ventana*/Movement Route *Ventana* sessions and outdoor physical activity sessions across the city. Figure 4 depicts key events in implementing the three strategies between March and November 2020.

### Sociodemographic Characteristics Among Study Participants

*Recreovía* participants in both outdoor (parks used on weekdays and parks used on Sundays) and indoor settings (Facebook Live and *Route of the movement*) were similar in their sociodemographic characteristics, with a mean age of  $64.62 \pm 0.21$  years, and 87% of the participants being female (Table 1). Between 52% and 54% of the participants reported secondary school as their highest educational level completed, and the majority had a medium socioeconomic status. Regarding occupation, most participants (82%) reported being involved in unpaid tasks, including looking for a job, studying, or doing household chores.

(a)



(b)

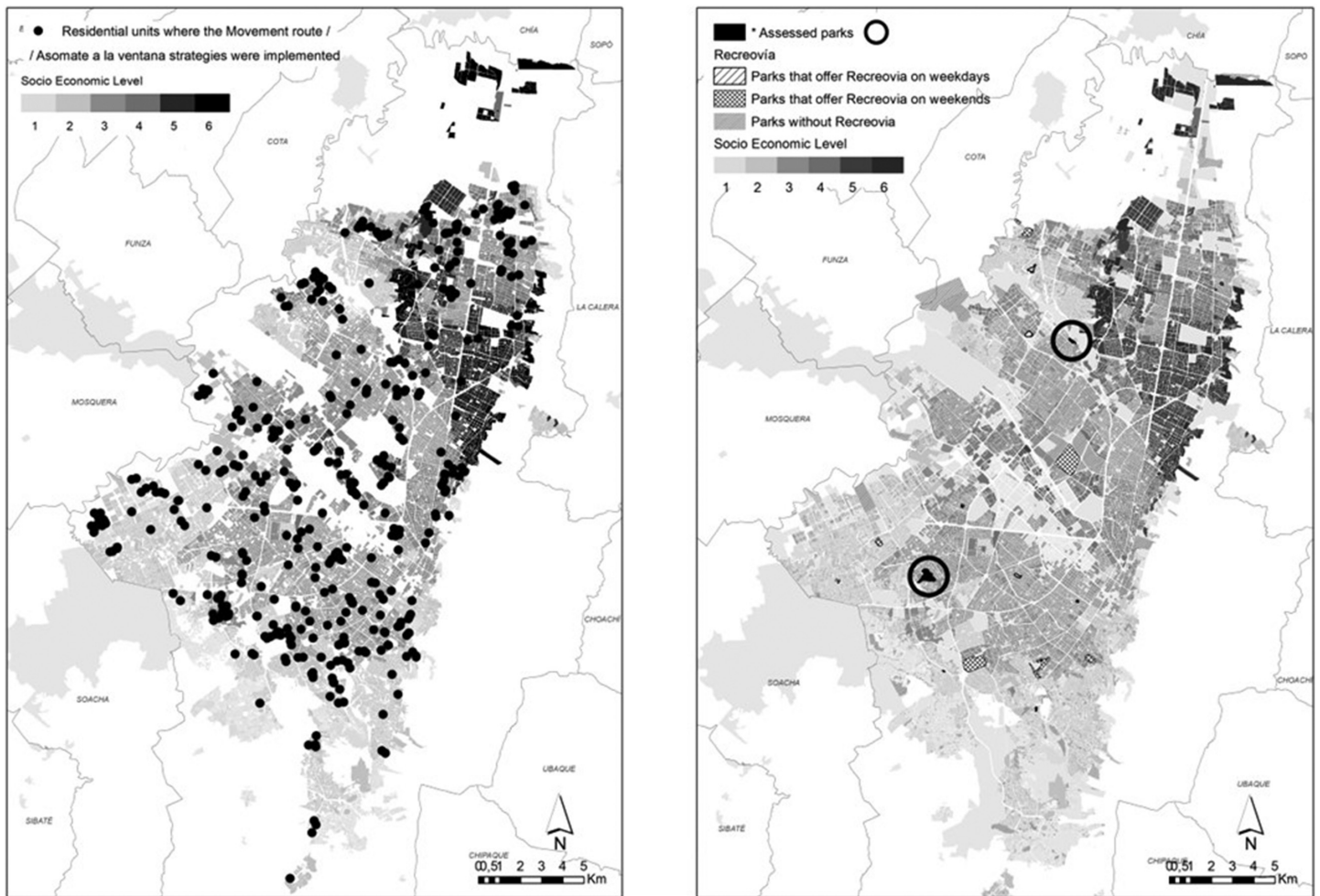


(c)



**Figure 2** — Pictures of the three adaptation modalities implemented by the Recreovía program during the COVID-19 pandemic. (a) Facebook Live sessions. (b) The Movement Route/Asómate a la Ventana. (c) Outdoor physical activity sessions. Pictures provided by the program, and these are not pictures taken from a study participant.





**Figure 3** — Distribution of Asómate a la Ventana interventions and outdoor physical activity sessions across Bogotá between May and November of 2020.

### Engagement of Participants in the Recreovía

Comparing users of the outdoor and indoor settings, we observed that at least 90% of both types of users reported attending Recreovía four or more times per month before the COVID-19 pandemic. The average years of attendance to the program ranged between 9.5 and 13.4 years. The average number of sessions usually attended before the pandemic differed between users of the park on weekdays (1.7 sessions) and users of the park on Sunday (3.5 sessions), and no difference was observed with users of the indoor setting. During the pandemic, no difference was observed between users regarding the average number of sessions attended, ranging between 2.1 and 2.8 (Table 2).

The main activities reported were functional gymnastics and rumba/aerobics. There were no significant differences in type of activity between users of the Recreovía (outdoors vs. indoors). When inquired about how they found out about the adapted program, users of the outdoor setting reported hearing about the program mainly from information shared in the public space, while users of the indoor setting reported learning about the program mainly from family and friends ( $p < .001$ ). The main reasons for attending Recreovía reported by all types of users were to be active, for well-being, or to lose weight. Finally, when users were asked about what they would do if they were not in the

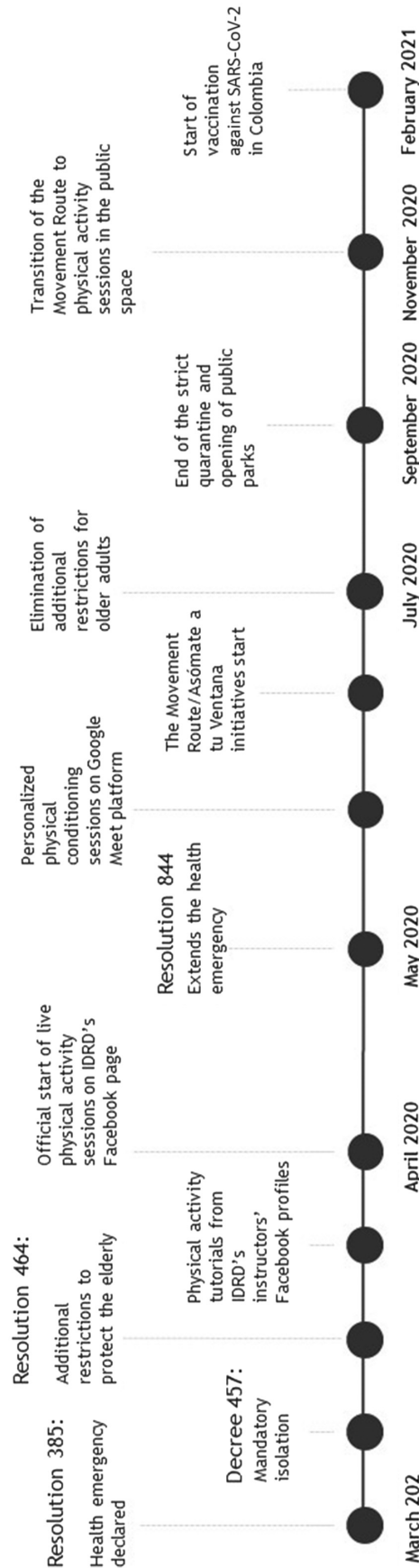
Recreovía, most users of the outdoor and indoor settings reported that they would spend their time in other sedentary indoor activities (Table 2).

### Experience of Older Adults Engaging in the Adapted Program

#### *Perceived Influence of the COVID-19 Pandemic on the Physical Activity Habits*

Regarding the perceived influence of the COVID-19 pandemic, the participants reported that the confinement drastically changed their physical activity habits, which had repercussions on their physical, emotional, and mental health. For example, a participant said:

The first lockdown affected me a lot, although we tried to play board games and spend time with my family here at home. I noticed that when I was walking, about 500 meters, my hip hurt more and more every day. The cars' smoke also affected me. In May, I started going out with a lot of responsibility because I was tired [of confinement]. I was used to being outdoors, seeing other people, the sun, and the air. I tried to exercise at home, but it never was the same as outdoor. I don't like being locked. (Female, 62 years old)



**Figure 4** — Timeline of political context and key events in the adaptation of the Recreovia program between March and November of 2020. IDR = Institute for Sports and Recreation.

**Table 1 Sociodemographic Characteristics of Older Adults Who Participate in the Recreovía Program (N = 90). Activa tu Vida Study 2020**

Variable	Outdoor setting				<i>p</i> <sup>a</sup>	Indoor setting		
	Weekday (N = 31)		Sunday (N = 28)			Facebook live and movement route (N = 31)		
Age (mean ± SD)	31	64.3 ± 6.89	28	64.61 ± 4.69	.823 <sup>c</sup>	31	64.13 ± 4.51	.809 <sup>c</sup>
Sex (%)								
Female	30	96.77	21	75.0	.015 <sup>d</sup>	28	90.32	.593 <sup>d</sup>
Male	1	3.23	7	25.0		3	9.68	
Education (%)								
Nonprimary school or less	8	25.81	4	14.29	.480 <sup>d</sup>	4	12.90	.574 <sup>d</sup>
Secondary school <sup>e</sup>	16	51.61	15	53.57		16	51.61	
Technical, college, or postgraduate	7	22.58	9	32.14		11	35.48	
Household socioeconomic status (%)								
Low (0–1)	12	38.71	4	14.29	.035 <sup>d</sup>	15	48.39	.044 <sup>d</sup>
Middle (2)	19	61.29	24	85.71		16	51.61	
Occupation (%)								
Remunerated: Working or retired	6	19.35	4	14.29	.604 <sup>d</sup>	7	22.58	.517 <sup>d</sup>
Not remunerated: Looking for a job, studying, household chores, and permanently unable to work	25	82.65	24	85.71		24	77.42	

<sup>a</sup>*p* Value weekday versus Sunday park. <sup>b</sup>*p* Value outdoors versus indoors. <sup>c</sup>Welch test (*t* test). <sup>d</sup>Chi-squared test. <sup>e</sup>Noncompleted secondary school or graduated from secondary school.

### Experiences of the Adapted Program

Recreovía users mentioned positive experiences with the adapted program that increased their motivation to be physically active and promote their social well-being. For example, a participant relates:

I attend Recreovía, I have my schedules and routines. What motivates me to go to the park to do physical activity are the instructors who are very well known. That integration encourages me to go every day and become a social person. I am already recognized in any social circle where I go. (Male, 75 years old)

### Perceived Benefits of the Adapted Program

On the other hand, the indoor activities resulting from the adaptation process of the Recreovía allowed the participants to have an alternative to continue with their physical activity routines during the strict COVID-19 confinement. This provided a flexible schedule for participants to attend organized activities:

During the pandemic, how did you continue to be physically active?—Via Facebook with the IDR programs. They have several schedules so if you are busy, look for another one and participate. We all do the exercises at home and go for a walk when we are in the open field. (Female, 65 years old)

During the reopening of the parks, the continuation of the indoor activities was an alternative that allowed the participants to progressively recover their physical activity routines despite the fear related to COVID-19. A participant expressed: “Well, everyone is afraid right now, so obviously I don’t dare to go right now where there are a lot of people, so that has limited physical activity a lot” (Female, 65 years old).

For the indoor setting, specifically for the Facebook Live sessions, technology-related issues emerged as a potential barrier

at the beginning of their implementation. Older adults reported feeling challenged by the use of devices and the availability of internet access to join the sessions:

We [the participants] had to ask for help from nephews, grandchildren, relatives or friends to be able to join the class and continue practicing our exercise. It is a great opportunity, however, it depends on each one’s data. Sometimes I connect just at the beginning of the class and disconnect as soon as it finishes because I will be out of data. The positive side is that the classes are recorded and if I don’t have connectivity, I can watch them later. (Female, 60 years old)

Finally, the participants acknowledged that social interaction in outdoor activities continues to be affected by COVID-19 restrictions, as a participant declares:

Due to the pandemic, certain activities that we used to do when interacting with other people are missed. For example, we interacted with other people in the yoga class in which stretches were between two people. Nowadays we cannot even look at each other, we just do our activity, something is missing. (Male, 75 years old)

## Individual and Contextual Physical Activity

### Individual Physical Activity Levels Measured by Questionnaires and Accelerometers

According to the self-reported physical activity, over 70% of the Recreovía users in the outdoor and indoor setting met the physical activity guidelines (Table 2), and no statistically significant differences were observed between types of parks nor settings (Figure 5). The objective assessment of the intensity of the different types of activity showed that muscular stimulation activities reached the highest physical activity intensity (Figure 6).

**Table 2** Recreovía Attendance Characteristics in Outdoor and Indoor Settings (N = 90). Activa tu Vida Study 2020

Variable	Outdoor setting				<i>p</i> <sup>a</sup>	Indoor setting		
	Weekday park (N = 31)		Sunday park (N = 28)			Facebook live and movement route (N = 31)		
	N	%	N	%		N	%	<i>p</i> <sup>b</sup>
Before COVID-19								
Frequency of attendance to the Recreovía (%)								
At least 1 day/year	0	0.0	0	0.0	.289	0	0	.074
Two to three times per month	0	0.0	1	3.57		3	10.0	
Four or more times per month	31	100.0	27	96.43		27	90.0	
Frequency in years of time spent in the Recreovía <sup>c</sup>	9.47	7.21	12.86	11.19	.209	13.36	14.09	.377
Frequency in number of sessions <sup>c</sup>	1.69	0.97	3.54	2.58	.003	3.66	2.44	.074
During COVID-19								
Frequency in number of sessions	2.12	1.23	2.78	1.91	.119	2.29	2.16	.710
Type of activity reported <sup>d</sup>								
Functional gymnastic <sup>e</sup>	27	87.10	22	78.57	.383	30	96.77	.059
Rumba/aerobics	28	90.32	23	82.14	.359	29	93.55	.308
Others <sup>f</sup>	12	38.71	14	50.0	.383	18	58.06	.207
How did you learn about the Recreovía <sup>d</sup>								
Media <sup>g</sup>	2	6.45	3	10.71	.557	9	29.03	.011
Family and friends	13	41.94	6	21.43	.092	17	54.84	.037
Public space <sup>h</sup>	19	61.29	23	82.14	.077	8	25.81	<.001
Reasons for going to the Recreovía								
Sharing time with family or friends	4	12.90	12	42.86	.010	7	22.58	.639
Physical activity, well-being, or losing weight	31	100.0	28	100.0	.894	29	93.55	.048
Recreation	10	32.26	19	67.86	.006	17	54.84	.608
Others <sup>i</sup>	2	6.45	16	57.14	<.001	4	12.90	.065
What would you do if you were not in the Recreovía?								
Sedentary indoor activities	19	61.29	15	53.57	.549	14	45.16	.269
Other physical activity	9	29.03	9	32.14	.796	9	29.03	.885
Meeting physical activity guidelines								
Meet	23	79.31	22	78.57	.945	21	72.41	.498
Not meet	6	20.69	6	21.43		8	27.58	

Note. Older adults correspond to adults 55 years or older. <sup>a</sup>*p* Value Weekday versus Sunday park. <sup>b</sup>*p* Value outdoors versus indoors. <sup>c</sup>Mean and *SD*, two data excluded due to inconsistency or missing data. <sup>d</sup>Percentage does not add at 100% because participants could include multiple responses. <sup>e</sup>Functional gymnastics (yoga and stretching). <sup>f</sup>Others (boxing, children rhythmic, and bicycle). <sup>g</sup>Media (includes television, radio, newspaper, handouts, posters, internet, Twitter, Facebook, and major offices). <sup>h</sup>Public space (includes: In the park, neighborhood, or Ciclovía). <sup>i</sup>Others (environment, fresh air, and curiosity).

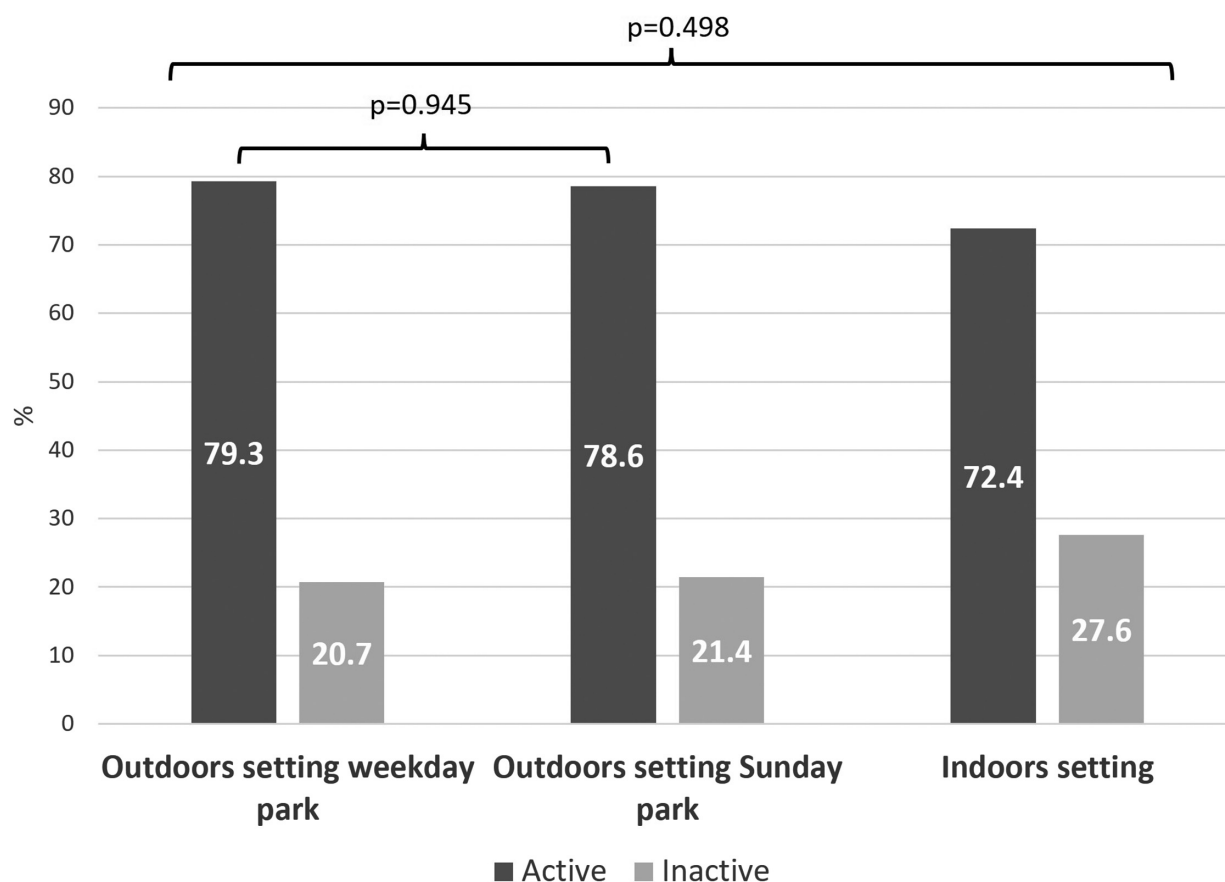
### Park Users

In the SOPARC assessments, we observed 4,370 park users, 76.6% on Sundays and 23.4% on weekdays (Table 3). A greater proportion of park users (84.2%) were observed on days with the Recreovía program. At the Sunday park, a greater proportion of women were observed during Recreovía days, compared to non-Recreovía days ( $p < .001$ ). During weekdays, most of the users were women, but no difference was observed between days with or without the program. In terms of age distribution, in both, Sunday and weekday parks, most of the users were adults. In the Sunday park, a greater proportion of adults were observed on the days with Recreovía, whereas no difference was observed in the weekday park. However, when stratified by sex, it was evident that for both, Sunday and weekday parks, a greater proportion of female adults were observed on days with Recreovía than on days without the

program (Table 3). A similar pattern is observed among Sunday park male users, where the proportion of adults increased on the day with the program. Details on the characteristics of parks and types of activities observed are presented in Tables 1 and 2 of [Supplementary Material S2](#) (available online).

### Physical Activity Levels

Overall, a greater proportion of users were engaged in vigorous activities on days with Recreovía than on days without the program, followed by moderate activities and sedentary activities on a lower proportion. On days without the program, a greater proportion of users were engaged in moderate activities, followed by vigorous and sedentary. When stratified by sex, the same patterns were observed for females at Sunday and weekday parks. For males, these patterns remained only at the Sunday park. In the



**Figure 5** — Percentage of active and inactive participants in outdoor and indoor settings of the Recreovía program according to measures with the International Physical Activity Questionnaire.

absence of Recreovía on the weekday park, men did not engage in sedentary activities. When older adults were analyzed, the observed patterns comparing days with and without Recreovía remained but were statistically significant only for moderate and vigorous activities among females. No male older adults were observed on the Recreovía day at the weekday park.

## Discussion

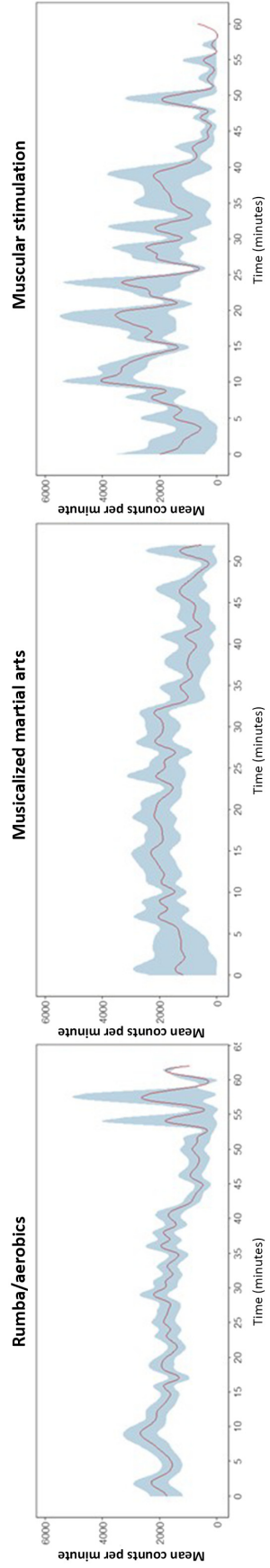
Our study assessed the adaptation of a community-based physical activity program during the COVID-19 pandemic at the program, individual and contextual levels. Our results showed how a program with a history of >25 years of implementation adapted to continue promoting physical activity at the community level during a pandemic through three different strategies. The decision-making process adapted to the regulations in place and the demand for services, and the health sector recommendations based on the progressive evidence about COVID-19 transmission. Activities in the indoor and outdoor settings were alternatives for older adult users of the Recreovía program to continue being physically active during the strictest period of the pandemic regulations. During this time, 72% of the older adults attending the program in the indoor setting and 79% in the outdoor settings met the WHO recommendations of physical activity for health. In the contextual assessment of the outdoor setting, it was evident that having Recreovía sessions in place increased the proportion of women in parks, and that a greater engagement in vigorous activities was observed on

Recreovía days, especially among female adults and female older adults. The qualitative component evidenced that the older adults had positive experiences and perceptions of the Recreovía program related to their health and social well-being. Even though the older adults prefer being outdoors, the adapted program allowed participants to continue with their physical activity routines as much as possible during the lockdown.

This study contributes to understanding the interaction between interventions and their context in a dynamic way, focused on their adaptive characteristics (Skivington et al., 2021). This systematic approach in the implementation research contributes to narrowing the knowledge-practice gap in public health, identifying what, how, and in which circumstances community programs work to support health care (Westerlund et al., 2019). This study provides evidence, especially to low- and middle-income settings, for adapting and implementing physical activity programs in circumstances of emergency, which is a contribution to public health because changes in social systems are unpredictable and interfere with the implementation and efficacy of health interventions.

The adaptations implemented by the Recreovía program to continue promoting physical activity among vulnerable populations during lockdown and social distancing measures are consistent with the strategies recommended to continue promoting physical activity among older adults (Son et al., 2021). Similar adaptations have been conducted in other physical activity interventions in different settings, such as dance and exercise routines in clinical settings (Ammar et al., 2021; Kemmler et al., 2021; Natalucci et al., 2021). Within these interventions, streaming or





**Figure 6** — Intensity of the physical activity in mean counts per minute with a 95% confidence interval, measured in one session of RecreoVIA according to the type of activity.

**Table 3 Characteristics of Park Users in a Sunday and a Weekday Park on Days With and Without the Recreovía Program**

Variable	Sunday park							Weekday park							All N°
	Overall		With Recreovía program		Without Recreovía program		p <sup>a</sup>	Overall		With Recreovía program		Without Recreovía program		p <sup>a</sup>	
	N°	%	N°	%	N°	%		N°	%	N°	%	N°	%		
Total users	3,349		2,807		542			1,021		872		149		4,370	
Sex															
Female	2,120	63.30	1,832	65.27	288	53.14	<.001	739	72.38	632	72.48	107	71.81	.867	2,859
Male	1,229	36.70	975	34.73	254	46.86		282	27.62	240	27.52	42	28.19		1,511
Age group															
Children	469	14.0	339	12.08	130	23.99	<.001	159	15.57	136	15.60	23	15.44	.960	628
Adolescents	159	4.75	124	4.42	35	6.46	.041	41	4.02	26	2.98	15	10.07	.001	200
Adults	2,456	73.34	2,131	75.92	325	59.96	<.001	629	61.61	547	62.73	82	55.03	.074	3,085
Older adults	265	7.91	213	7.59	52	9.59	.113	192	18.81	163	18.69	29	19.46	.824	457
Female															
Children	249	11.75	181	9.88	68	23.61	<.001	61	8.25	45	7.12	16	14.95	.006	310
Adolescents	83	3.92	66	3.60	17	5.90	.061	14	1.89	9	1.42	5	4.67	.023	97
Adults	1,605	75.71	1,427	77.89	178	61.81	<.001	494	66.85	436	68.99	58	54.21	.003	2,099
Older adults	183	8.63	158	8.62	25	8.68	.975	170	23.0	142	22.47	28	26.17	.400	353
Male															
Children	220	17.90	158	16.21	62	24.41	.002	98	34.75	91	37.92	7	16.67	.008	318
Adolescents	76	6.18	58	5.95	18	7.09	.502	27	9.57	17	7.08	10	23.81	.001	103
Adults	851	69.24	704	72.21	147	57.87	<.001	135	47.87	111	46.25	24	57.14	.192	986
Older adults	82	6.67	55	5.64	27	10.63	.004	22	7.80	21	8.75	1	2.38	.156	104
Physical activity level															
General															
Sedentary	531	16.43	481	17.77	50	9.52	<.001	89	9.20	83	9.88	6	4.72	.061	620
Moderate	1,323	40.93	909	33.58	414	78.86	<.001	291	30.09	220	26.19	71	55.91	<.001	1,614
Vigorous	1,378	42.64	1,317	48.65	61	11.62	<.001	587	60.70	537	63.93	50	39.37	<.001	1,965
MVPA	2,701	83.57	2,226	82.23	475	90.48	<.001	878	90.80	757	90.12	121	95.28	.061	3,579
Female															
Sedentary	280	13.45	253	14.03	27	9.68	.047	72	10.23	66	10.78	6	6.52	.208	352
Moderate	781	37.51	553	30.67	228	81.72	<.001	195	27.70	141	23.04	54	58.70	<.001	976
Vigorous	1,021	49.04	997	55.30	24	8.60	<.001	437	62.07	405	66.18	32	34.78	<.001	1,458
MVPA	1,802	86.55	1,550	85.97	252	90.32	.047	632	89.77	546	89.22	86	93.48	.208	2,434
Male															
Sedentary	251	21.83	228	25.22	23	9.35	<.001	17	6.46	17	7.46	0	0.0	—	268
Moderate	542	47.13	356	39.38	186	75.61	<.001	96	36.50	79	34.65	17	48.57	.111	638
Vigorous	357	31.04	320	35.40	37	15.04	<.001	150	57.03	132	57.89	18	51.43	.472	507
MVPA	899	78.17	676	74.78	223	90.65	<.001	246	93.54	211	92.54	35	100.0	—	1,145
Older adults															
Older adult sedentary	24	12.70	20	14.18	4	8.33	.293	10	5.10	9	5.26	1	4.0	.789	34
Older adult moderate	77	40.74	36	25.53	41	85.42	<.001	60	30.61	42	24.56	18	72.0	<.001	137
Older adult vigorous	88	46.56	85	60.28	3	6.25	<.001	126	64.29	120	70.18	6	24.0	<.001	214
Older adult MVPA	165	87.30	121	85.82	44	91.67	.293	186	94.90	162	94.74	24	96.0	.789	351
Female															
Older adult sedentary	14	10.85	11	11.0	3	10.34	.920	9	5.36	8	5.59	1	4.0	.744	23
Older adult moderate	43	33.33	20	20.0	23	79.31	<.001	51	30.36	33	23.08	18	72.0	<.001	94
Older adult vigorous	72	55.81	69	69.0	3	10.34	<.001	108	64.29	102	71.33	6	24.0	<.001	180
Older adult MVPA	115	89.15	89	89.0	26	89.66	.920	159	94.64	135	94.41	24	96.0	.744	274

(continued)

Table 3 (continued)

Variable	Sunday park							Weekday park							All N°
	Overall		With Recreovía program		Without Recreovía program		p <sup>a</sup>	Overall		With Recreovía program		Without Recreovía program		p <sup>a</sup>	
	N°	%	N°	%	N°	%		N°	%	N°	%	N°	%		
Male															
Older adult sedentary	10	16.67	9	21.95	1	5.26	.107	1	3.57	0	0	1	3.57	—	11
Older adult moderate	34	56.67	16	39.02	18	94.74	<.001	9	32.14	0	0	9	32.14	—	43
Older adult vigorous	16	26.67	16	39.02	0	0.0	—	18	64.29	0	0	18	64.29	—	34
Older adult MVPA	50	83.33	32	78.05	18	94.74	.107	27	96.43	0	100.0	27	96.43	—	77

Note. MVPA = moderate to vigorous physical activity.

<sup>a</sup>Chi-square.

video sharing was the most popular ways to maintain physical activity engagement (Buckinx et al., 2021; McDonough et al., 2021; Pinelli et al., 2021). Furthermore, the adaptations of the Recreovía program took into account the call for innovative, flexible, and continuous physical activity intervention strategies amid COVID-19 (Kemmler et al., 2021; McDonough et al., 2021). Particularly, in the context of strict social distancing regulation, the adaptations of the program evidenced that home-based interventions are valid and effective ways to engage older adults in physical activity to preserve their physical and mental health (Ammar et al., 2021; Natalucci et al., 2021; Vitale et al., 2020).

Our results showed that the majority of participants of our study were already active and attended the Recreovía before the pandemic. In this context, it is important to highlight that the adaptations of the program could have prevented a decrease in the physical activity of this population, contrary to the decline in physical activity levels that has been observed widely as a consequence of the measures implemented in response to the COVID-19 pandemic (Caputo & Reichert, 2020). While a multicountry study, conducted in 11 countries reported that >40% of adults were inactive, and 45% decreased their physical activity levels during strict lockdown (Ding et al., 2021), we found that Recreovía allowed >70% of our participants to continue being active. Our findings are consistent with previous evidence on the potential of the Recreovía program as a promising strategy to increase physical activity in vulnerable populations like women and older adults. Our study also shows that women's participation in physical activity and their use of parks increased when Recreovía sessions were available (Sarmiento et al., 2017; Torres et al., 2017).

Our findings showed the potential of a community-based physical activity program to contribute to the initiative of creating age-friendly cities, through the provision of opportunities for outdoor physical activity is a promising strategy to encourage active aging (Steels, 2015; World Health Organization, 2016). This is particularly relevant considering that physical activity opportunities are one of the main services that according to WHO should be provided in an age-friendly city (World Health Organization, 2007). Therefore, our results can contribute to inform the age-friendly cities' agenda with a case of success of promotion of self-care and active living during the COVID-19 pandemic in the global south, as well as the WHO strategy of healthy aging (World Health Organization, 2019).

The main strength of this study is the use of mixed methods to understand the influence of the pandemic on a dynamic program, in terms of implementation and results among users. Also, the use of several approaches to characterize physical activity during the pandemic provides a rich evaluation of this behavior. However,

our findings should be interpreted considering some limitations. For instance, the study's cross-sectional design does not allow the assessment of the program's impact or inference of causality. Also, due to the dynamic nature of the program that adapted quickly to the constantly changing regulations during the pandemic, we were unable to recruit Asómate a la Ventana/The Movement Route participants, nor to conduct a long-term follow-up assessment of the adapted strategies and their adherence.

## Conclusions

The Recreovía in Bogotá is a well-established program with >25 years of history. This community program was adapted during the COVID-19 pandemic to promote active living among vulnerable populations. Despite the strict regulations, older adult users of the Recreovía continued being active and appreciated the strategies designed by the IDR to provide opportunities to continue being active. The mixed-methods applied in this study allowed us to identify contextual characteristics that influenced the adaptations of the program during a public health emergency and assess the behaviors of older adult users of the program.

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