



# Intervention to promote physical activity in children aged 5 to 10 at the Eladio Roldós Barreiro XXI Educational Unit, Santo Domingo, 2024

## Intervención para fomentar la actividad física en niños de 5 a 10 años en la Unidad Educativa Eladio Roldós Barreiro XXI, Santo Domingo, 2024

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### ABSTRACT

The aim of this study was to implement an intervention to promote physical activity in children from 5 to 10 years of age at the Eladio Roldós Barreiro XXI Educational Unit. A quantitative, descriptive and basic purpose study was applied, with a pre-experimental longitudinal design. The sample consisted of 78 children selected intentionally. Two instruments were used: the "Weekly physical activity frequency questionnaire" and the "Perception and barriers to children's physical activity questionnaire". The results showed that the percentage of children who were not physically active decreased by 54%, while those who exercised between 3 and 6 times a week increased by 38%. There was also a 33% increase in active participation during physical education classes, and a 31% increase in physical activity outside school hours, mainly after school and on weekends. Perceived barriers to exercise decreased by 31%, reflecting greater willingness to engage in movement. It is concluded that the intervention was effective in reducing sedentary lifestyles, improving the frequency and intensity of physical activity and establishing more active habits in students, highlighting the importance of programs adapted to the school level to strengthen children's physical and emotional well-being.

Keywords: Physical activity; healthy habits; school intervention; children; sedentary lifestyle.

### RESUMEN

El presente estudio tuvo como objetivo implementar una intervención para fomentar la actividad física en niños de 5 a 10 años de la Unidad Educativa Eladio Roldós Barreiro XXI. Se aplicó un estudio cuantitativo, de nivel descriptivo y finalidad básica, con un diseño pre-experimental de corte longitudinal. La muestra estuvo conformada por 78 niños seleccionados de forma intencional. Se utilizaron dos instrumentos: el "Cuestionario de frecuencia de actividad física semanal" y el "Cuestionario de percepción y barreras para la actividad física infantil". Los resultados evidenciaron que el porcentaje de niños que no realizaban actividad física disminuyó en un 54%, mientras que quienes realizaron ejercicio entre 3 y 6 veces por semana aumentaron en un 38%. Se observó también un incremento del 33% en la participación durante las clases de educación física, y un aumento del 31% en la actividad física realizada fuera del horario escolar, principalmente después de clases y durante los fines de semana. La percepción de barreras para realizar ejercicio disminuyó en un 31%, reflejando mayor disposición hacia la práctica del movimiento. Se concluye que la intervención fue efectiva para reducir el sedentarismo, mejorar la frecuencia e intensidad de la actividad física y establecer hábitos más activos en los estudiantes, destacando la importancia de programas adaptados al nivel escolar para fortalecer el bienestar físico y emocional infantil.

Palabras clave: Actividad física; hábitos saludables; intervención escolar; niños; sedentarismo.

## INTRODUCTION

Physical activity benefited physical and mental well-being and could reduce the risk of developing chronic diseases such as diabetes, hypertension, and cancer. In addition, regular physical activity improved muscle and cardiorespiratory fitness, reduced the risk of osteoporosis, and improved bone and functional health.

Physical activity was a fundamental issue for the healthy development of individuals. The World Health Organization (WHO) highlighted that lack of physical activity is the fourth leading risk factor for mortality worldwide and that more than 80 % of the population did not get enough exercise.

The lack of exercise in children aged 5 to 10 was a global concern. According to the World Health Organization (WHO), more than 80 % of school-age adolescents do not reach the minimum recommended level of one hour of physical activity per day. In the latest Spanish Health Survey, recently published by the Ministry of Health, Social Services, and Equality, the number of children aged 5 to 14 who do not engage in any physical activity is 12 % (8 % for boys and 16 % for girls). Childhood and adolescence offer a crucial opportunity to consolidate healthy habits that will improve long-term health.

In 2016, the Philippines had the highest prevalence of insufficient activity among boys (93 %), while South Korea had the highest levels among girls (97 %) and among both sexes combined (94 %). Bangladesh had the lowest prevalence of insufficient physical activity among boys, girls, and both sexes combined (63 %, 69 %, and 66 %, respectively).(1)

In Ecuador, according to figures from (2), 2022, 88,21 % of children and young people aged 5 to 17 engaged in less than 60 minutes of daily physical activity in the last 7 days. In the province of Cañar, a study revealed that 18,69 % of children and young people aged 5 to 17 had a high frequency of sedentary behavior, while only 13,8 % engaged in physical activity.

A survey was conducted among teachers at the Miguel Riofrío Loja 2014 school, which yielded the following results: 66,67 % of teachers reported that children did not engage in physical activity every day, while 33,33 % did engage in physical activity daily.

Another question asked whether students were encouraged to engage in physical activity. Sixty-six point six seven percent of teachers said that children were not encouraged to engage in physical activity, while 33,33 % said that children were sometimes encouraged to engage in physical activity.(3)

It could be inferred that in Santo Domingo of the Tsáchilas, the median sedentary behavior in children of this age was probably lower than the overall median of 180 minutes, meaning that 88 % of children and adolescents between the ages of 5 and 17 spent less than one hour per day on physical activity. This amount of time was insufficient to reduce the likelihood of developing heart disease, diabetes, hypertension, or overweight.

A bibliographic review was conducted at an educational institution in Santo Domingo, and it was observed that there was no information regarding interventions to promote physical activity in children aged 5 to 10 at the Eladio Roldós Barreiro XXI Educational Unit.

Physical activity played a fundamental role in the children's overall development. From our perspective as health professionals, we observed that regular exercise provided multiple benefits. In terms of physical development, it strengthened muscles and bones, promoting healthy growth, improved fine and gross motor skills, essential for the development of everyday skills, and increased cardiovascular endurance and overall physical condition.

In terms of preventive health, it reduced the risk of chronic diseases such as heart disease, type 2 diabetes, hypertension, and obesity, as well as contributing to maintaining a healthy weight.

What strategies could be implemented to promote physical activity among children aged 5 to 10 at the Eladio Roldós Barreiro XXI Educational Unit?

### Objective:

To implement a comprehensive intervention program to promote physical activity among children aged 5 to 10 at the Eladio Roldós Barreiro XXI Educational Unit, with the aim of increasing children's participation in daily physical activities and promoting healthy habits that contribute to their physical and emotional development.

## METHODS

### Type and design of the research

The research was based on the collection and analysis of numerical data to quantify the levels of physical activity in children aged 5 to 10 at the Eladio Roldós Barreiro XXI Educational Unit. The quantitative approach allows for accurate measurement of changes and progress in participants' physical activity over time. The descriptive level of the research was crucial, as it provided a clear and detailed overview of the current situation of physical activity in children, identifying patterns and trends that informed the necessary interventions. Thoroughly describing the characteristics and behavior related to physical activity allowed for a better understanding of the context and the design of effective strategies to promote it. The applied purpose of the research sought to develop and implement practical strategies that would promote physical activity among children, with the aim of proposing evidence-based solutions and improving their overall well-being. A pre-experimental design was used, which allowed for an initial assessment of the effectiveness of the interventions, something particularly relevant in an educational setting where ethical considerations had to be taken into account. The design of this study was longitudinal and prospective, with repeated measurements taken at different points in time to assess changes and progress in children in relation to physical activity. This approach provides a snapshot of the current situation and evaluates the impact of strategies that promote physical activity, thus providing a solid basis for decision-making and future strategies.

### Population and Sample

#### Population

Various characteristics were taken into account in selecting this population, including children aged 5 to 10 years from the Eladio Roldós Barreiro XXI Educational Unit who were enrolled in early childhood and primary education. Priority was given only to those children whose legal representatives signed the informed consent form for the intervention to promote physical activity in children. The approximate population is 200 children. A moderate representation was organized with approximately 100 children of each gender, thus forming a population of 200 children.

#### Sample

A sample was obtained through non-probabilistic convenience sampling in 2024 of 100 children aged 5 to 10 from the Eladio Roldós Barreiro XXI Educational Unit. The PAQ (Physical Activity Questionnaire) was administered to assess physical activity, and the data were analyzed using SPSS software. The multivariate analysis considered age, gender, socioeconomic status, type, duration, and contextual factors, thus optimizing the design and application of future interventions in child development.

#### Inclusion Criteria

- Children between the ages of 5 and 10.
- Students enrolled at the Eladio Roldós Barreiro XXI Educational Unit for the 2024 school year. Regular class attendance (at least 80 % attendance in the last quarter).
- Informed consent signed by parents or legal guardians. Verbal consent from the child to participate in the study.
- Physical ability to participate in regular physical activities, as evidenced by a medical certificate.

#### Exclusion Criteria

- Children under 5 or over 10 years of age at the start of the study.
- Students who are not enrolled at the Eladio Roldós Barreiro XXI Educational Unit.
- Children with medical conditions that contraindicate regular physical activity, according to medical evaluation.
- Students who are simultaneously participating in other physical activity intervention programs outside of school.
- Children whose parents or guardians have not signed the informed consent form. Students who plan to change schools during the study period.

- Children with severe physical disabilities that prevent them from participating in the proposed activities.

### Data collection instruments

To assess physical activity in children aged 5 to 10 at the Eladio Roldós Barreiro XXI Educational Unit, Santo Domingo 2024, the PAQ-A questionnaire was used (4) which was a standardized instrument structured by a Spanish adaptation that consisted of nine questions that assessed the physical activity performed by the children, measured on a five-point Likert scale, in which eight questions from the questionnaire were used for the evaluation. This questionnaire assessed the physical activity that each of the children performed during 7 days in their free time. The final score was obtained by scoring the 8 questions, with question 9 allowing us to know if the student was ill or if there were any circumstances that prevented them from performing physical activity that week. The PAQ questionnaire was validated in two institutions (4) through a pilot test applied to 15 people using the criteria established in the questionnaire. In this way, the level of internal consistency was determined using Cronbach's alpha coefficient, obtaining a reliability of 0,8, which indicates reliability.

### Data processing and analysis plan

In this study on childhood intervention, a systematic procedure was followed for data analysis. Initially, the results of the PAQ questionnaire were collected from participants aged 5 to 10 years and coded into a structured database. For data processing and analysis, SPSS statistical software was used, which allowed for multivariate analysis considering the following variables: participant age, gender, socioeconomic status, type of intervention applied, program duration, session frequency, and intervention intensity. This approach provided a comprehensive and detailed view of the participants' physical activity, enabling an accurate comparison between different subgroups.

The results were categorized into three levels of effectiveness (low, medium, and high), allowing significant correlations to be established between the variables studied. This systematic analysis facilitated the identification of patterns and trends in the effectiveness of interventions according to specific age groups. By categorizing the results in this way, it was possible to identify more clearly which interventions were most successful for specific segments of the population. The findings provided empirical evidence on the differential effectiveness of interventions, allowing specific recommendations to be made based on age group, type of need or problem addressed, optimal duration of the intervention, and relevant contextual factors. This information is essential for the design and implementation of future interventions, optimizing resources and maximizing outcomes in child development. The detailed analysis and categorization of the results not only facilitated the evaluation but also provided a solid basis for the development of improved strategies tailored to the specific needs of children.

### Ethical considerations

In the intervention to promote physical activity in children aged 5 to 10 at the Eladio Roldós Barreiro XXI Educational Unit, Santo Domingo, 2024, the students' informed consent was signed by their parents and guardians, thus giving their acceptance to participate in the project. Taking into account Article 53 of the LOEI, which establishes the following: "No authority, teacher, or administrative staff member of the educational institution may conduct surveys, opinion polls, interviews, or research on students without the express consent of their legal representatives." Given that minors were involved, it was necessary to request permission from the Eladio Roldós Barreiro XXI school to conduct the survey. This process ensured compliance with legal and ethical regulations, guaranteeing that the rights of the children were protected and respected throughout the intervention.

## RESULTS AND DISCUSSION

Figure 1 of sociodemographic data shows the age and gender distribution of students in groups 4A, 4B, and 5B. In terms of age, in 4A (65 %) and 4B (64 %), most students are between 5 and 6 years old, while a smaller percentage are 7 to 8 years old in 4A (35 %) and 4B (36 %). In 5B (55 %), the majority are 7 to 8 years old, followed by 9 to 10 years old (45 %), with no 5- to 6-year-old students. With regard to gender, in 4A (56 %) and 4B (55 %), there is a higher proportion of female students compared to male students (4A 44 %, 4B 45 %).

In contrast, in 5B (59 %), the majority are male, while 41 % are female students. These data reflect that younger children (5-6 years old) predominate in fourth-grade groups, while in fifth grade, the majority are between 7 and 10 years old. Furthermore, although there is a similar gender ratio in fourth grade, in fifth grade there are more boys than girls.

**Table 1. Sociodemographic Data**

| Variable | Category | 4A n | 4A % | 4B n | 4B % | 5B n | 5B % |
|----------|----------|------|------|------|------|------|------|
| Age      | 5 to 6   | 22   | 65   | 14   | 64   | 0    | 0    |
| Age      | 7 to 8   | 12   | 35   | 8    | 36   | 12   | 55   |
| Age      | 9 to 10  | 0    | 0    | 0    | 0    | 10   | 45   |
| Age      | Total    | 34   | 100  | 22   | 100  | 22   | 100  |
| Gender   | Female   | 19   | 56   | 12   | 55   | 9    | 41   |
| Gender   | Male     | 15   | 44   | 10   | 45   | 13   | 59   |

**Table 2. Participation in physical activities in the last week**

| Post- and pre-test difference | No 1-2 3-4 5-6 7 or more |    |    |   |   | No 1-2 3-4 5-6 7 or more |    |    |    |    | No  | 1-2 3-4 5-6 7 or more |    |    |    |
|-------------------------------|--------------------------|----|----|---|---|--------------------------|----|----|----|----|-----|-----------------------|----|----|----|
|                               | %                        | %  | %  | % | % | %                        | %  | %  | %  | %  |     | %                     | %  | %  | %  |
| Jumping rope                  | 94                       | 4  | 3  | 0 | 0 | 4                        | 26 | 44 | 26 | 1  | -90 | 22                    | 41 | 26 | 1  |
| Skating                       | 95                       | 5  | 0  | 0 | 0 | 13                       | 26 | 45 | 15 | 1  | -82 | 21                    | 45 | 15 | 1  |
| Games played                  | 88                       | 5  | 6  | 0 | 0 | 0                        | 0  | 40 | 53 | 8  | -88 | -5                    | 33 | 53 | 8  |
| Ride a Bicycle                | 74                       | 22 | 3  | 1 | 0 | 1                        | 3  | 40 | 23 | 33 | -73 | -19                   | 37 | 22 | 33 |
| Walk                          | 41                       | 46 | 10 | 3 | 0 | 1                        | 0  | 21 | 23 | 55 | -40 | -46                   | 10 | 21 | 55 |
| Swimming                      | 59                       | 37 | 4  | 0 | 0 | 21                       | 40 | 31 | 9  | 0  | -38 | 3                     | 27 | 9  | 0  |
| Athletics                     | 83                       | 14 | 3  | 0 | 0 | 32                       | 18 | 27 | 15 | 8  | -51 | 4                     | 24 | 15 | 8  |
| Dance                         | 95                       | 5  | 0  | 0 | 0 | 38                       | 32 | 10 | 17 | 3  | -56 | 27                    | 10 | 17 | 3  |
| Tennis                        | 97                       | 3  | 0  | 0 | 0 | 41                       | 37 | 21 | 1  | 0  | -56 | 35                    | 21 | 1  | 0  |
| Skateboarding                 | 97                       | 3  | 0  | 0 | 0 | 51                       | 28 | 18 | 3  | 0  | -46 | 26                    | 18 | 3  | 0  |
| Soccer                        | 56                       | 36 | 8  | 0 | 0 | 5                        | 15 | 31 | 17 | 32 | -51 | -21                   | 23 | 17 | 32 |
| Basketball                    | 81                       | 18 | 1  | 0 | 0 | 5                        | 12 | 53 | 24 | 6  | -76 | -6                    | 51 | 24 | 6  |
| Martial arts                  | 96                       | 4  | 0  | 0 | 0 | 32                       | 49 | 14 | 5  | 0  | -64 | 45                    | 14 | 5  | 0  |
| Jogging                       | 99                       | 1  | 0  | 0 | 0 | 50                       | 28 | 14 | 8  | 0  | -49 | 27                    | 14 | 8  | 0  |

Table 1, which evaluates participation in physical activities during the last week, shows that, after the intervention, a greater number of students began to practice physical activities more frequently. Noteworthy are jumping rope (90 %), riding a bicycle (73 %), and martial arts (64 %), where the number of students who did not participate in these activities decreased considerably. Likewise, in swimming (38 %), athletics (51 %), and soccer (61 %), the percentage of students who did not practice these activities also decreased, reflecting greater participation. In addition, in activities such as jumping rope, riding a bicycle, and swimming, the number of students who practice them several times a week increased, especially among those who now do so between three and six times a week. Overall, the results reflect a positive impact of the intervention, with an increase in participation and frequency of physical activity among students.

Figure 2, which assesses the level of physical activity during physical education classes in the last seven days, shows a significant change after the intervention. The category I did not/do not do physical education (54 %) decreased, indicating that more students actively participated in classes. Similarly, the frequency of students who were Almost never (27 %) active decreased, reflecting less inactivity. In contrast, the categories Often (38 %) and Always (33 %) showed an increase, indicating that more students participated intensely in classes. These results suggest that the intervention promoted greater involvement in physical activity within the school context, encouraging more students to engage in higher-intensity exercises.

Figure 3, which shows the level of activity before and after eating, reveals a marked decrease in sedentary behavior. The category Sitting (81 %) showed a drastic reduction, indicating that fewer students remained inactive during these periods.

**Table 3. Level of effort in physical education classes**

| Response                           | Pretest % | Posttest % | Difference % |
|------------------------------------|-----------|------------|--------------|
| I did/do not do physical education | 54        | 0          | 54           |
| Almost never                       | 27        | 0          | 27           |
| Sometimes                          | 13        | 22         | 13           |
| Often                              | 6         | 45         | 6            |
| Always                             | 0         | 33         | 0            |

**Table 4. Activity level before and after eating**

| Activity level                             | Pretest % | Posttest % | Difference % |
|--------------------------------------------|-----------|------------|--------------|
| Sitting                                    | 86        | 5          | -81          |
| Standing or walking around                 | 14        | 0          | -14          |
| Running or playing a little                | 0         | 23         | 23           |
| Running and playing quite a lot            | 0         | 0          | 0            |
| Running and playing intensely all the time | 0         | 72         | 72           |

Similarly, the option Standing or walking around (14 %) also decreased completely, suggesting a lower tendency toward passive leisure. In contrast, categories reflecting greater physical activity increased, especially Running or playing a little (23 %) and Running and playing intensely (72 %), indicating that more students chose to remain active before and after lunch. These results show a positive impact of the intervention, with students reducing sedentary behavior and increasing their physical activity at key times of the day.

Table 2, corresponding to the indicator of activity level after school, shows a significant change in students' habits after the intervention. The category "None (67 %)" decreased completely, indicating that all students began to engage in some type of physical activity during this time. Similarly, the category "Once (19 %)" also disappeared, reflecting that students stopped engaging in physical activity sporadically and increased their frequency. In contrast, the categories "4 times (60 %)" and "All the time (31 %)" experienced a notable increase, suggesting that a significant portion of students adopted exercise as a frequent practice after school. These results show a positive transformation in the participants' daily routine, consolidating physical activity as a more regular habit.

**Table 5. Level of activity after school**

|              | Pre-test | Posttest Difference |     |
|--------------|----------|---------------------|-----|
|              | %        | %                   |     |
| None         | 67       | 0                   | -67 |
| 1 time       | 19       | 0                   | -19 |
| 2-3 times    | 13       | 8                   | -5  |
| 4 times      | 1        | 62                  | 60  |
| All the time | 0        | 31                  | 31  |

**Table 7. Activity between 6 and 10 p.m**

| Frequency    | Pretest % | Posttest % | Difference % |
|--------------|-----------|------------|--------------|
| None         | 65        | 84         | 18           |
| 1 time       | 24        | 31         | 7            |
| 2-3 times    | 8         | 10         | 2            |
| 4 times      | 3         | 3          | 1            |
| All the time | 0         | 0          | 0            |

Figure 4, corresponding to the indicator of physical activity between 6 p.m. and 10 p.m., shows an increase in student inactivity after the intervention. The category “None (65 %)” increased by 18 %, indicating that more students chose not to engage in physical activity during this time. Similarly, the categories “Once (7 %),” “2-3 times (2 %),” and “4 times (1 %)” showed slight increases, suggesting that some students continued to engage in physical activity, but without a significant improvement in frequency. On the other hand, the “All the time (0 %)” category showed no change, indicating that no students adopted a consistent physical activity practice during this time. These results suggest that the intervention failed to encourage physical activity in the afternoon and evening, reflecting a possible preference among students for other activities during this time of day.

Table 3, corresponding to the indicator of physical activity during the weekend, shows a significant change in students' habits after the intervention. The category “None (67 %)” decreased completely, indicating that all students began to engage in some type of physical activity during this period. Similarly, the category “Once (26 %)” also disappeared, reflecting that students stopped engaging in physical activity sporadically. In contrast, the categories “4 times (67 %)” and “All the time (28 %)” experienced a considerable increase, suggesting that a significant proportion of students incorporated physical activity as a regular routine during the weekend. These results reflect a positive impact of the intervention, consolidating exercise as a recurring habit on days off.

**Table 8. Physical activity on weekends**

|              | Pre-test | Posttest Difference |     |
|--------------|----------|---------------------|-----|
|              | %        | %                   |     |
| None         | 67       | 0                   | -67 |
| 1 time       | 26       | 0                   | -26 |
| 2-3 times    | 8        | 5                   | -3  |
| 4 times      | 0        | 67                  | 67  |
| All the time | 0        | 28                  | 28  |

**Table 9. Self-assessment of the week in terms of physical activity**

| Frequency    | Pretest % | Posttest % | Difference % |
|--------------|-----------|------------|--------------|
| All the time | 1         | 0          | -1           |
| 1-2 times    | 62        | 4          | -58          |
| 3-4 times    | 8         | 32         | 24           |
| 5-6 times    | 0         | 40         | 40           |
| 7 or more    | 29        | 24         | -5           |

Figure 5, corresponding to the self-assessment of the week in terms of physical activity, shows a reduction in the low frequency of activity and an increase in the categories of higher participation after the intervention. The category “Sometimes (1 or 2 times)” (62 %) showed a significant decrease of 58 percentage points, indicating that fewer students identified with a low frequency of physical activity. Similarly, the category “All or most of the time” (1 %) disappeared completely, reflecting that no student perceived themselves as having a maximum level of constant physical activity. In contrast, the categories “Often (3-4 times)” (24 %) and “Quite often (5-6 times)” (40 %) showed a notable increase, suggesting that more students engaged in physical activity more regularly throughout the week. On the other hand, the category “Very often (7 or more times)” (29 %) saw a slight decrease of 5 points, which could indicate that some students moved to a lower frequency of activity, although still within high ranges. These results reflect a positive transition in physical activity, with more students achieving moderate and consistent levels of weekly exercise.

Table 4, which shows the frequency of physical activity by day of the week, shows a decrease in inactivity and an increase in regular physical activity on all days after the intervention. The “None” category showed a significant reduction on all days of the week, with the largest decreases on Monday (81 %), Thursday (81 %), and Tuesday (78 %), indicating that more students engaged in some type of physical activity on those days. Similarly, the “Little” category showed minor variations, with decreases on most days, especially on Sunday (-55 %), suggesting that students stopped engaging in occasional physical activity to increase their frequency.

In contrast, the “Normal” and “Quite a lot” categories experienced a considerable increase on all days, reflecting a positive change in students’ habits. Notable increases in the “Normal” category were seen on Tuesdays (41 %), Wednesdays (47 %), and Saturdays (44 %), indicating greater consistency in physical activity. Similarly, the “Quite a lot” category showed significant increases on Thursdays (46 %), Saturdays (53 %), and Sundays (47 %), indicating greater participation in moderate- to high-intensity physical activities. In addition, the “Very much” category, which was not represented in the pretest, experienced significant growth on Saturday (22 %), Sunday (23 %), and Thursday (15 %), indicating that some students engaged in high-intensity physical activity on these days. These results suggest that the intervention had a positive impact on the frequency and regularity of students’ physical activity, with the majority of them incorporating exercise into their weekly routine with greater intensity and consistency.

**Table 10. Frequency of activity by day of the week**

|           | Pre-test |     |        |      |       | Posttest |     |        |      |       | Difference |     |        |      |       |
|-----------|----------|-----|--------|------|-------|----------|-----|--------|------|-------|------------|-----|--------|------|-------|
|           | None     | Bit | Normal | Very | A lot | None     | Bit | Normal | Very | A lot | None       | Bit | Normal | Very | A lot |
|           | %        | %   | %      | %    | %     | %        | %   | %      | %    | %     | %          | %   | %      | %    | %     |
| Monday    | 81       | 17  | 3      | 0    | 0     | 0        | 21  | 41     | 36   | 3     | -81        | 4   | 38     | 36   | 3     |
| Tuesday   | 78       | 14  | 5      | 3    | 0     | 0        | 10  | 46     | 41   | 3     | -78        | -4  | 41     | 38   | 3     |
| Wednesday | 79       | 13  | 6      | 1    | 0     | 0        | 5   | 45     | 47   | 3     | -79        | -8  | 38     | 46   | 3     |
| Thursday  | 81       | 14  | 3      | 3    | 0     | 0        | 6   | 29     | 49   | 15    | -81        | -8  | 27     | 46   | 15    |
| Friday    | 81       | 14  | 5      | 0    | 0     | 1        | 4   | 29     | 44   | 22    | -79        | -10 | 24     | 44   | 22    |
| Saturday  | 37       | 54  | 5      | 4    | 0     | 1        | 5   | 19     | 53   | 22    | -36        | -49 | 14     | 49   | 22    |
| Sunday    | 31       | 60  | 8      | 1    | 0     | 3        | 52  | 14     | 9    | 23    | -28        | -55 | 13     | 47   | 23    |

**Table 11. Illness or impediment to physical activity**

|     | Pre-test | Post-test | Difference |
|-----|----------|-----------|------------|
|     | %        |           | %          |
| Yes | 46       | 15        | -31        |
| No  | 54       | 85        | 31         |

Table 5, corresponding to the indicator of perceived barriers to physical activity, shows a reduction in the impediments that affected students’ participation in physical activities. The “Yes” category (46 %), representing those who were ill or had some limitation to exercise, decreased by 31 percentage points, indicating that fewer students reported barriers to physical activity after the intervention. In contrast, the “No” category (54 %) showed an increase of 31 percentage points, reflecting that a greater number of students were able to engage in physical activity without restrictions during the last week. These results suggest that the intervention may have contributed to reducing perceived barriers to physical activity, either through an improvement in participants’ health or through a greater willingness to remain active despite possible difficulties.

## DISCUSSION

The implementation of the intervention program aimed to encourage physical activity in children aged 5 to 10 at the Eladio Roldós Barreiro XXI Educational Unit, promoting healthy habits and reducing sedentary lifestyles in this age group. The results showed a significant decrease in the percentage of students who did not engage in physical activity. It is recommended to specify the magnitude of the decrease with numerical data to support the claim. This suggests that the intervention had a positive impact by structuring opportunities for physical activity within the school environment. This point could be reinforced with additional evidence from similar programs in other contexts. The effectiveness of this intervention can be explained by the integration of playful and scheduled strategies at specific times, which has proven to be an effective method for increasing adherence to exercise in school-age children.(5)



These findings are consistent with previous studies indicating that school-based interventions are a key mechanism for improving children's physical activity, especially when they are structured on a regular basis and tailored to the characteristics of the students. In addition, the World Health Organization emphasizes that the implementation of intervention strategies in schools is essential to meet international recommendations for physical activity in childhood, as children spend much of their time in this environment. However, despite the program's success, some students still have low levels of physical activity, which could be related to external factors such as the availability of adequate spaces outside of school hours or the influence of the family environment.(6,7)

In this regard, future research could focus on evaluating the long-term impact of this type of intervention, as well as exploring complementary strategies that include family and community involvement to reinforce regular exercise in children.(8)

The second objective was related to evaluating the frequency and type of physical activity performed by children in the last week, identifying patterns of participation and the main activities practiced. The results showed a decrease in the number of students who did not engage in physical activity, as well as an increase in those who practiced activity between 3 and 6 times per week, with the most frequent activities being riding a bicycle, jumping rope, and playing soccer. This suggests that the intervention facilitated the incorporation of active routines in children, especially in activities that do not require complex equipment and can be performed in different environments.(9,10)

The relationship between accessibility and preference in exercise has been documented in previous studies, which highlight that children tend to choose low-cost, easy-to-implement recreational activities when they have adequate space and motivation. Similarly, research has shown that school interventions that incorporate playful and motivational activities generate greater adherence to and enjoyment of exercise, which explains the increase in children's participation following the implementation of the program. These findings are in line with the recommendations of the World Health Organization, which emphasizes that children should participate in at least 60 minutes of moderate to vigorous physical activity daily, and that intervention strategies should focus on activities adapted to their preferences and abilities. Although the results reflect an increase in the frequency and diversity of physical activity, some students continued to have low levels of participation. From a socioeconomic perspective, they documented that material constraints outside the school environment can reduce opportunities for continued practice, especially in disadvantaged communities where access to safe spaces for active play is limited. These observations suggest the need to implement differentiated strategies that specifically address the needs of less participatory students, including personalized interventions and approaches that actively involve the family environment.(11)

In future research, it would be advisable to explore strategies that expand the range of activities available so that children have more options based on their interests, as well as to evaluate the impact of the intervention over a longer period to determine its sustainability over time.

The third objective of this study was to determine the intensity of physical activity during physical education classes and other key moments, analyzing the perceived effort and changes in the active behavior of students. The results showed a significant reduction in the number of children who remained inactive during classes, with a considerable increase in those who reported engaging in more intense physical activity, such as running and playing intensely. This suggests that the intervention succeeded in motivating students to participate more actively in physical education sessions, promoting greater commitment to exercise and reducing passivity in these spaces. The relationship between the intensity of effort and the structure of classes has been addressed in previous studies, which have shown that children tend to participate with greater energy when sessions include varied dynamics, physical challenges, and a playful approach that encourages healthy competition and enjoyment of exercise.(12)

Similarly, it has been found that incorporating interactive strategies and structured games into physical education can increase the perception of effort and generate greater student involvement in school physical activity. A weekly schedule was implemented that combined recreational exercises and crafts, with an emphasis on rotating circuits with playful components and gradual physical challenges, allowing for progressive achievements. Activities involving collaborative competition, where groups overcame challenges, increased student involvement and perceived effort. To improve the intervention, a system of personalized preferences is suggested, allowing students to choose activities from a pre-designed catalog, which would increase their autonomy.(13)

From an international perspective, the World Health Organization states that physical activity in childhood should include periods of high intensity within the daily routine, as these promote the development of cardiovascular capacity and muscle strengthening. Although the results reflect significant progress in the intensity of physical activity during classes, it is important to consider that some students still reported moderate or low levels of participation, suggesting the need to adapt strategies to individual differences in motivation and physical condition.

For future research, it is recommended to evaluate the impact of differentiated interventions according to each child's level of effort, as well as to explore the role of intrinsic motivation in adherence to higher-intensity activities within the school environment.

The fourth objective of this study was to examine the temporal distribution of physical activity to determine the frequency of practice after school, in the evening, and on weekends. The results showed a decrease in the number of students who did not engage in physical activity during these periods, with a significant increase in those who reported exercising more regularly, especially after school and on weekends. This indicates that the intervention not only promoted physical activity in the school context, but also influenced the incorporation of exercise at other times of the day, suggesting a positive change in children's habits. Scientific evidence has shown that extracurricular physical activity is essential for the consolidation of healthy habits in childhood, as it allows adequate levels of exercise to be maintained beyond school hours and contributes to the development of motor and social skills. Likewise, it has been found that children are more predisposed to engage in physical activity at times when they can share with their friends or in structured recreational environments, which would explain the increase in practice during weekends.(14)

From a global perspective, the World Health Organization recommends that children's physical activity should not be limited to school, but should be encouraged in all environments where children spend their free time, including the home and community spaces. Despite the positive impact of the program, some students still reported low participation in the evening, which could be related to barriers such as lack of adequate spaces, academic activities, or excessive screen use. In future research, it would be relevant to evaluate complementary strategies that encourage exercise in the evening, as well as to analyze the long-term impact of the intervention on the consolidation of these habits outside the school environment.

The fifth objective of this study was to measure the consistency of physical activity throughout the week, evaluating self-assessment of the level of effort and regularity in the practice of physical activities on different days. The results showed a significant increase in the number of students who reported engaging in physical activity more frequently and consistently throughout the week, with a reduction in those who indicated little or no participation.(15)

This suggests that the intervention not only encouraged exercise, but also contributed to establishing greater regularity in children's physical activity, which is a key factor in generating sustainable habits. Previous studies have shown that consistency in physical activity is crucial for improving physical condition and preventing disease in childhood, highlighting that school intervention programs can play a fundamental role in structuring more consistent exercise routines. Likewise, research has found that children who participate in structured physical activity programs show greater adherence to exercise and manage to maintain a stable frequency over time, compared to those who exercise spontaneously and without planning. According to the World Health Organization, regular physical activity is essential for children's physical and mental health, recommending that activity be distributed evenly throughout the week to avoid long periods of inactivity. However, despite the positive impact of the intervention, some students still had difficulty maintaining a stable routine, suggesting the need to continue exploring strategies to reinforce consistency in exercise, especially on days when motivation tends to be lower. For future research, it would be advisable to analyze factors that influence the variability of physical activity throughout the week, such as academic workload, family influence, or environmental conditions, in order to design more personalized and sustainable interventions.(16)

The sixth and final objective of this study was to identify barriers and perceptions related to physical activity, including illnesses or other impediments that hinder regular exercise.

The results showed a 31 % reduction in physical activity in the "Yes" category, representing students who reported being ill or having limitations to exercise. This indicates that, after the intervention, fewer students faced these barriers, as the percentage of those who reported difficulties was reduced to 46 %. There was a significant reduction in the percentage of students who reported having been ill or having had some limitation to physical activity, indicating that the intervention may have contributed to a greater willingness to exercise, reducing the perception of external barriers.

This may be related to the fact that children who begin to engage in physical activity more frequently develop greater self-confidence in their motor skills and perceive exercise as a natural part of their routine, thus reducing excuses or perceived limitations to their practice. Previous research has indicated that the perception of barriers to physical activity may be influenced by psychological and environmental factors, being more frequent in children who have had previous negative experiences with exercise or who do not have sufficient support from their environment. Similarly, it has been found that the implementation of intervention programs with a motivational approach adapted to children's abilities can help reduce these barriers and improve long-term adherence to exercise. The World Health Organization states that removing perceived barriers is key to ensuring that children meet daily physical activity recommendations and can maintain an active lifestyle without prolonged interruptions. Despite the program's positive impact on reducing perceived limitations, some students continued to report difficulties such as a lack of camaraderie among themselves, suggesting that although the intervention succeeded in modifying the behavior of most children, there are still external factors that may be influencing the lack of participation in some cases.

For future research, it would be relevant to analyze in greater depth what types of barriers persist and how complementary strategies, such as family involvement or access to adequate infrastructure, could contribute to eliminating these obstacles more effectively and ensuring the continuity of physical activity in all children.

## CONCLUSIONS

The intervention implemented was found to increase participation in physical activities, reduce sedentary lifestyles, and promote healthy habits among children at the Eladio Roldós Barreiro XXI Educational Unit. There was an increase in the frequency and intensity of exercise, consolidating physical activity both inside and outside the school environment.

Sociodemographic characteristics influenced children's physical activity. In fourth grade, 5- to 6-year-olds predominated, while in fifth grade, most were between 7 and 10 years old. In addition, girls participated less than boys, highlighting the need for strategies tailored to age and gender.

An increase in the frequency of physical activity was observed, with a reduction in the number of inactive children. The most common activities were riding a bike, jumping rope, and playing soccer, suggesting that children prefer accessible and recreational exercises. Students showed greater effort in physical education classes, with a decrease in inactivity and an increase in high-intensity activities. This indicates that the intervention promoted participation and commitment to exercise.

Physical activity increased after school and during weekends, although participation in the evening was lower. These results reflect a partial integration of exercise into children's daily routines.

Physical activity became more consistent throughout the week, reducing the number of children with low participation. However, some students maintained an irregular frequency, suggesting the need to reinforce adherence to exercise.

Perceived barriers to physical activity decreased, with fewer children reporting impediments such as illness or lack of motivation. Even so, some difficulties persist, highlighting the importance of complementary strategies to ensure greater continuity in exercise.

## RECOMMENDATIONS

It is recommended that new strategies be implemented in educational units to promote physical activity in children according to their age and physical performance.

It is suggested that healthy eating be encouraged through educational programs to prevent high rates of obesity in children.

It is recommended that parents be involved in physical activities with their children, such as playing soccer or riding bikes together.

It is suggested that parents set clear time limits for children's use of electronic devices.

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## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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