Promotion of healthy lifestyles in active Spanish schools: a cross-sectional analysis of participation, barriers, and educational stages across school levels

Promoción de estilos de vida saludables en escuelas españolas activas: análisis transversal de la participación, barreras y etapas educativas

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Received: 27-01-26
Accepted: 17-04-26

How to cite in APA

Romero-Chouza, Ó. & Silva-Piñeiro, R. (2026). Promotion of healthy lifestyles in active Spanish schools: a cross-sectional analysis of participation, barriers, and educational stages across school levels. *Retos*, *78*, 1217-1227. https://doi.org/10.47197/retos.v80.118661

Abstract

Introduction: Active lifestyle habits are essential for children's and adolescents' well-being, particularly in the context of increasing sedentary behavior. Although physical education is compulsory in schools, complementary school-based initiatives play a key role in promoting regular physical activity and healthy habits.
Objective: The aim of this study was to analyze the promotion of active and healthy lifestyles in Spanish schools across different educational stages and to identify factors associated with participation in physical activity promotion initiatives.
Methodology: A cross-sectional study was conducted with 273 Spanish schools that participated in a national event promoting active lifestyles during 2024. Descriptive statistics, binary logistic regression, and multiple correspondence analysis were performed to examine participation levels, use of public spaces, and perceived barriers.
Results: Early Childhood and Primary Education schools showed significantly higher participation levels in active lifestyle initiatives compared with Secondary and post-Compulsory Education centers. Limited resources and logistical difficulties were the most frequently reported barriers across educational stages.
Conclusions: The findings highlight the importance of strengthening school-based strategies to promote active lifestyles and suggest that educational stage should be considered a key factor when designing initiatives aimed at increasing physical activity within and beyond the school context.

Keywords

Active schools; barriers; educational stages; healthy lifestyles; physical activity promotion; Physical Education; school-based interventions.

Resumen

Introducción: Los hábitos de vida activos son esenciales para el bienestar de niños, niñas y adolescentes, especialmente en el contexto del aumento de los comportamientos sedentarios. Aunque la Educación Física es una materia obligatoria en los centros educativos, las iniciativas escolares complementarias desempeñan un papel clave en la promoción de la actividad física regular y de hábitos saludables.
Objetivo: El objetivo de este estudio fue analizar la promoción de estilos de vida activos y saludables en centros educativos españoles de diferentes etapas educativas e identificar los factores asociados a la participación en iniciativas de promoción de la actividad física.
Metodología: Se llevó a cabo un estudio transversal con 273 centros educativos españoles que participaron en un evento nacional de promoción de estilos de vida activos durante 2024. Se realizaron análisis estadísticos descriptivos, regresión logística binaria y análisis de correspondencias múltiples para examinar los niveles de participación, el uso de espacios públicos y las barreras percibidas.
Resultados: Los centros de Educación Infantil y Educación Primaria mostraron niveles de participación significativamente más elevados en las iniciativas de promoción de estilos de vida activos en comparación con los centros de Educación Secundaria y etapas postobligatorias. La limitación de recursos y las dificultades logísticas fueron las barreras más frecuentemente señaladas en todas las etapas educativas.
Conclusiones: Los resultados ponen de relieve la importancia de reforzar las estrategias escolares orientadas a la promoción de estilos de vida activos y sugieren que la etapa educativa debe considerarse un factor clave en el diseño de iniciativas destinadas a incrementar la actividad física dentro y fuera del contexto escolar.

Palabras clave

Actividad física; barreras; Educación Física; escuelas activas; estilos de vida saludable; programas escolares.

Introduction

Regular physical activity is an essential pillar of health and well-being. The World Health Organization (2022) highlights that frequent exercise prevents physical and mental illness, although inactivity remains one of the main health risks today, underlining the imperative need to promote healthy physical habits, especially in young people, who are likely to maintain the habits they acquire throughout their lives (García-Matamoros, 2019). Globally, 25% of adults and 81% of adolescents do not achieve the recommended levels of physical activity, and no significant improvements in overall PA have been observed since 2001. In Europe, 45% of adults report never practicing sports or physical exercise, and only 17.6% of boys and 9.6% of adolescent girls meet the guidelines (OECD, 2023). In response to this situation, it is recommended that children aged 3-4 years perform at least 180 minutes of PA daily, of which 60 minutes should be of moderate to intense intensity. For young people aged 5-17 years, a minimum of one hour per day of moderate-to-vigorous physical activity, with activities that strengthen muscles and bones at least three times per week, is advised. Adults should engage in 150-300 minutes of moderate aerobic activity per week or 75-150 minutes of vigorous activity, together with strength work at least twice a week (WHO, 2022).

At the cognitive level, physical activity enhances academic performance, attention, and concentration, especially in math (Chacón-Cuberos et al., 2020). These benefits justify its effective inclusion in the school curricula. Therefore, schools are one of the most relevant settings for promoting physical activity and active lifestyles among children and adolescents. Promoting an active physical culture in schools requires an organizational structure that encourages the participation of the entire educational community. Active schools integrate physical activity into their daily lives, creating environments that encourage PA and motivate students to be active (Martínez & Veiga, 2008). At the curricular level, Physical Education plays a crucial role in promoting active and healthy lifestyles at all educational stages (BOE, 2020). Recent evidence has also shown that school-based interventions can contribute to the promotion of physical activity from preschool to secondary education, although their effectiveness and sustainability vary depending on the design and context of their implementation (Pérez-Herráez et al., 2025). However, the curricular contents are often not met, and the required practice time is frequently not achieved, due to its perception as a minor and easy-to-pass subject. This stigma has motivated the organization of events outside the classroom to make it visible, highlighting its educational value and positive impact on the adoption of healthy habits (Flórez et al., 2016).

It is also worth highlighting the relationship between physical education and the Sustainable Development Goals (United Nations, 2025), specifically Goal 3, "Health and Well-being", which addresses noncommunicable diseases, and Goal 11, "Sustainable Cities and Communities". In this regard, schools promote initiatives such as active playgrounds, road safety education, healthy eating, self-construction of materials, service learning, and school travel, the latter being associated with higher levels of mobility (Jiménez et al., 2022). Moreover, these classes not only improve physical health, but also have a positive impact on psychological and social health, fostering a healthy relationship with the environment and sustainable transport (Ballester-Martínez et al., 2022). Similarly, classroom-based physical activity interventions have shown positive effects on psychological well-being, self-esteem, motivation toward physical activity, and classroom behavior in children aged 6–12 years (Robles-Campos et al., 2023). Simultaneously, it is necessary to raise the status of physical education and demonstrate its usefulness in the comprehensive development of students and in response to social needs (Baena-Morales, 2023). Education of the body through movement is key for society to improve and maintain its quality of life, both physical and psychosocial (Ramírez, 2015). In this sense, a pedagogical model that fosters an active personality in students throughout their lives is relevant, thus ensuring Sustainable Development Goal 4, which focuses on "Quality Education".

However, school-based promotion of healthy habits, whether curricular or extracurricular, faces significant barriers, such as lack of time and perceived lower relevance. Therefore, it is essential to develop pedagogical models that value and strengthen them as an integral part of student development. This includes not only increasing the time devoted to physical activity but also adopting didactic approaches that integrate the learning of motor skills, promote active lifestyles, and provide knowledge about physical activity and its benefits (González, 2022). Recent evidence suggests that active recess interventions are effective in increasing physical activity, especially when supported by greater availability of space,

color markings, equipment, structured activities, and teacher involvement (Pastor-Vicedo et al., 2021). Likewise, active breaks have emerged as a promising pedagogical strategy for improving classroom climate, emotional well-being, participation, cooperation, and student behavior, although their effects depend on factors such as duration, frequency, context, and type of activity (Losada-Berlanga et al., 2025).

In Spain, one collective initiative that addresses low levels of physical activity and school culture is Physical Education Day in the Street (Día de la Educación Física en la Calle). Launched in 2011 in the region of Asturias with around 100 students, it mobilized 226,480 students by 2023. Registration allows schools to organize a day of activities or collaborate with others. This aims to raise awareness of the importance of increasing the amount of time spent on physical education with an inclusive, varied, and innovative approach to healthy habits. It also seeks to raise awareness of the benefits of physical activity and the risks associated with a sedentary lifestyle. These activities improve the social perception of physical education and participating schools, as they are held in public spaces accessible to the community (Consejo COLEF, 2022). Similarly, other national and international initiatives also promote active and healthy lifestyles in schools, such as The Daily Mile (INEOS, 2026), Run4Unity (Salerno, 2021), School Paths - PACO and PACA Guide (Aznar et al., 2022), active playgrounds (Salas & Vidal-Conti, 2020), School Sports Project (Consejo COLEF, 2017), gamification of active habits (Gómez, 2021), sustainable schools (Bruchner, 2017), healthy schools (Rusillo et al., 2021), and school trips (Hughes & Codesal, 2013).

Although these initiatives reflect the growing interest in promoting physical activity in educational settings, the literature has more often described their potential benefits than examined how schools actually participate in them across different contexts. In the Spanish context, there is still limited evidence simultaneously analyzing how schools promote active and healthy lifestyles, whether participation differs according to educational stage, what barriers are most frequently identified, and the extent to which these patterns vary across autonomous communities. Promoting physical culture in the educational environment is essential for the comprehensive development of students and the educational community. The effective integration of physical activity into the curriculum and school agenda not only improves students' physical and mental health but also enriches their social and academic development, preparing them to lead healthy lives. Simultaneously, adopting an active school model is crucial for fostering positive lifelong habits. Therefore, the main objective of this study was to analyze the promotion of active and healthy lifestyles in Spanish schools at all educational levels. The secondary objective was to assess the influence of variables such as the educational stage, autonomous community, and number of students on the level of participation of schools in activities to promote physical activity.

Method

Research design

This study followed a cross-sectional correlational design with an explanatory analytical component. This observational study aimed to analyze the associations between school participation in active lifestyle promotion initiatives and contextual variables such as educational stage, autonomous community, and school size. Therefore, the inferential scope of this study is associative rather than causal.

Participants

The initial target population consisted of 602 Spanish schools and high schools registered for the national healthy lifestyle promotion event in 2024. Of these, 273 schools completed the questionnaire and were included in the final sample, corresponding to a response rate of 45.3%: 74 from Infant Education, 89 from Primary Education, 61 from Secondary Education, 33 from Baccalaureate, 10 from Vocational Training and 6 from Special Education. The territorial distribution of the sample shows marked heterogeneity among autonomous communities. The highest participation frequencies were recorded in Castilla y León and Galicia, with 63 centers each, followed by Castilla-La Mancha (47), Andalucía (25), and Asturias (24). In the intermediate range were Aragón (20), the Baleares (18) and Canarias (14), while the other communities had a lower representation, such as the Comunidad de Madrid and Cantabria (6), La Rioja (5) and Comunidad Valenciana, Extremadura and Navarra (4). Educational stage was not

treated as a mutually exclusive variable, as some schools offered more than one educational level. Therefore, frequencies by educational stage should not be interpreted as representing unique schools and may exceed the total sample size.

Schools were eligible if they had formally registered for the initiative and submitted a complete institutional response to the questionnaire during the data collection period. Cases with incomplete or duplicate responses were excluded from the analysis. The final sample included schools from different autonomous communities and educational levels. For analytical purposes, school size was operationalized according to the number of enrolled students, grouped into predefined categories. Because the sample was drawn from schools already participating in a national active lifestyle initiative, a potential self-selection bias must be acknowledged.

All participants received clear information about the study's objectives and procedures, the voluntary nature of their participation, and the confidentiality of the data. The study was conducted in accordance with the principles of the Declaration of Helsinki, and informed consent was obtained from all participants. Ethical approval was granted by the Committee of the Spanish General Council of Physical Education and Sports.

Procedure

This study complied with the requirements established by Organic Law 3/2018 on the Protection of Personal Data and the Guarantee of Digital Rights (BOE, 2018). Schools registered in the initiative were contacted via email through event coordination channels and invited to participate in the study. The questionnaire was completed online using Microsoft 365 Forms during the data collection period from January 24th to April 16th, 2024. Responses were intended to reflect the school's institutional perspective and were completed by the staff member most directly involved in the organization of the initiative at each school (e.g., Physical Education teachers or school coordinators). Only one response per school was considered. The questionnaire took approximately 15 minutes to complete. Two reminder emails were sent during the data collection period to improve response rates. Participation was voluntary, and all responses were anonymized prior to analysis. No personally identifiable information was collected, and confidentiality was guaranteed throughout the study.

Instrument

An ad hoc questionnaire was used, the first version of which was presented in November 2023, with 12 items. For its validation, it was reviewed by two national experts and administered as a pilot test to three nearby educational centers with characteristics similar to those of the study sample. The experts were selected according to their experience in Physical Education, school-based physical activity promotion, and educational research methodology. Experts assessed the clarity, relevance, and adequacy of the items concerning the study objectives. They independently reviewed the initial version of the questionnaire, and their feedback was used to refine the item wording, eliminate ambiguities, and improve the overall structure of the instrument. Based on their feedback, wording changes and structural adjustments were made before the final administration. The final version consisted of 10 closed-ended questions, five of which were multiple-choice.

The questionnaire included categorical variables of different types: nominal variables (e.g., autonomous community), ordinal variables (e.g., participation levels grouped into percentage ranges), and dichotomous variables (e.g., presence or absence of specific initiatives, barriers, or use of spaces). Examples of items included whether the school had implemented active playgrounds, healthy school projects, or school sports programs; whether public spaces such as parks, trails, or outdoor sports facilities were used for educational purposes; and which barriers were perceived as limiting the promotion of active living. The response formats included dichotomous options, multiple-response items, and ordinal participation ranges.

For explanatory analyses, the participation level was recoded into a dichotomous variable distinguishing lower participation (<50%) from higher participation (≥50%). This threshold was established to differentiate schools with limited versus at least moderate participation intensity and to enable binary logistic regression analysis, consistent with the categorical structure of the data. Logistic regression was used because the dependent variable was dichotomous, whereas multiple correspondence analysis was used as an exploratory technique to visualize the associations among multiple categorical variables.

Data analysis

Data were processed using the Statistical Package for the Social Sciences (SPSS Inc., version 29.0). The level of statistical significance was set at $p < .05$, with a 95% confidence interval. First, descriptive analyses were conducted to characterize the sample and distribution of the main categorical variables. Second, to examine the association between the autonomous community and educational stage with variables such as the availability of school projects promoting active lifestyles, the use of public spaces for educational purposes, and the main barriers to fostering active habits among students, chi-square tests were conducted. Cramer's V was calculated to quantify the strength of these associations, with the following thresholds: $V < .30$ (small effect), $V \approx .50$ (moderate effect), and $V > .80$ (large effect).

A binary logistic regression analysis was performed to evaluate the influence of educational stage, autonomous community, and student population size on the likelihood of schools reporting high participation (≥50%) in active living promotion events. Several models were tested, refining variable selection and addressing potential collinearity by aggregating the under-represented autonomous communities.

Finally, multiple correspondence analysis was applied as an exploratory multivariate technique to visualize patterns of association among categorical variables related to participation, educational stage, and geographical context of the study. Thus, the MCA complemented the inferential analyses by offering a graphical representation of the underlying categorical structure of the data. The model fit in the logistic regression was assessed using the Hosmer-Lemeshow test and Nagelkerke's pseudo-R^2.

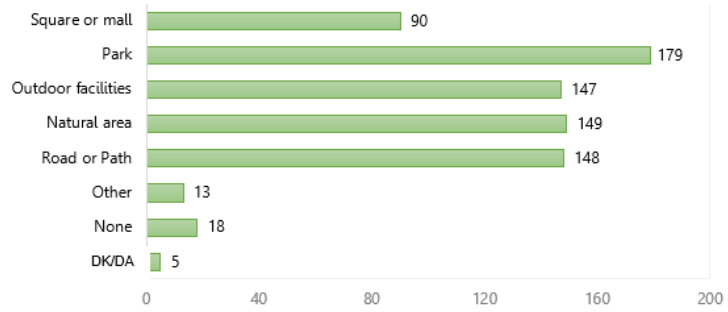
Results

The descriptive results indicated that the most frequently reported initiatives were Active Playgrounds (n = 190), Healthy Schools (n = 151), School Outings (n = 136), and the School Sports Project (n = 103), whereas Sustainable Schools (n = 69), School Walks (n = 40), and Gamification of Active Habits (n = 33) were less commonly reported.

Most educational institutions reported that between 75% and 100% of their students engaged in initiatives promoting an active lifestyle (n = 159), whereas lower participation rates were less commonly observed.

Figure 1 also shows that Parks (n = 179), natural spaces (n = 149), roads or footpaths (n = 148), and outdoor sports facilities (n = 147) were the public spaces most frequently used for educational purposes. The main perceived barriers were limited resources (n = 130) and the need to travel to activities (n = 111), followed by inadequate or poorly maintained spaces (n = 79), safety concerns (n = 74), lack of teacher involvement (n = 69), and lack of school-led initiatives (n = 36).

Figure 1. Use of public spaces for school activities



Note. DK/DA, Don´t Know/Don´t Answer.

Bivariate analyses by autonomous community showed significant associations for the School Sports Program, Healthy Schools, use of natural areas, lack of school-led initiatives, and lack of teacher involvement (Table 2). The largest territorial differences were observed in the School Sports Program (χ^2 =

42.12, p < .001, V = .370) and Healthy Schools (χ^2 = 37.00, p < .001, V = .350), both indicating small-to-moderate territorial variation. Significant but weaker associations were also found for the use of natural areas (χ^2 = 33.01, p = .002, V = .330), lack of teacher involvement (χ^2 = 32.29, p = .002, V = .330), and lack of school-led initiatives (χ^2 = 23.04, p = .041, V = .280).

Table 2. Relationships between territory and active school promotion

Initiatives and programs educational center		χ^2	p	V
School Sports Program	AC	42.12	<.001*	.370
Healthy Schools Program		37.00	<.001*	.350
School PA practice environments	AC	χ^2	p	V
Natural areas		33.01	.002*	.330
Difficulties in promoting active habits in students	AC	χ^2	p	V
Lack of initiatives by the school		23.04	.041*	.280
Lack of teacher involvement		32.29	.002*	.330

Note. χ^2= Chi-Square; p= Significance level; V= Cramer's V; AC= Autonomous Community.

Bivariate analyses by educational stage revealed several significant, albeit generally weak, associations (Table 3). In Early Childhood Education, significant associations were found for School Outings and the use of roads or footpaths. In Primary Education, significant associations were observed for School Trips, Sustainable Schools, use of roads or footpaths, and travel to activities as perceived barriers. In Compulsory Secondary Education, significant associations were found for Active Playgrounds, use of roads or footpaths, and lack of school-led initiatives. In Baccalaureate, lack of school-led initiatives was also significantly associated, whereas in Special Education, a significant association was identified for the use of natural areas. Overall, these results suggest stage-related differences in the type of initiatives, spaces, and implementation barriers reported by schools, although most of the effect sizes were weak.

Table 3. Relationships between educational stage and active school promotion

Availability of active living projects/programs		χ^2	p	V
School outings	ECE	14.023	<.001*	.210
School trips	PE	8.29	.004*	.170
Sustainable Schools		4.39	.040*	.120
Active Playground	CSE	4.2	.041*	.120
Outdoor spaces used for educational purposes		χ^2	p	V
Roads or footpaths	ECE	10.6	.001*	.187
Roads or footpaths	PE	10.3	.001*	.184
Roads or footpaths	CSE	8.4	.004*	.167
Natural areas	SE	4.9	.027*	.127
Difficulties in the promotion of active habits among students		χ^2	p	V
Traveling to Activities	ECE	5.0	.025	.129
Trips to the Activities	PE	11.4	<.001*	.194
Lack of initiatives by the school	CSE	6.4	.011	.145
Lack of initiatives by the school	BAC	7.2	.007	.154

Note. χ^2= Chi-Square; P= Significance level; V= Cramer's V; ECE= Early Childhood Education; PE= Primary Education; CSE= Compulsory Secondary Education; BAC= Baccalaureate; SE= Special education.

The educational stages represented in the schools were grouped into three categories: (1) Pre-school and/or Primary, (2) Secondary and/or Baccalaureate, and (3) mixed combinations, Vocational Training, or Special Education (reference group). These categories were included as predictors in a binary logistic regression model (Table 4) to examine their association with high participation (≥50%) in active life promotion events.

Table 4. Predictors of high participation (≥50%) in active living promotion events.

	B	Wald χ^2	p	OR	CI 95 OR
Infant and/or Primary (vs. ref.)	1.112	10.264	.001	3.041	1.540-6.005
Secondary school and/or high school (vs. ref.)	-0.673	3.496	.062	0.510	0.252-1.033
Constant	0.811	10.926	p<.001	2.250	

Note. B = logistic regression coefficient; Wald χ^2 = Wald chi-square statistic; OR = Odds ratio; CI = Confidence interval for OR; ref = reference group (Mixed, Vocational Education Training or Special Education).

The model was statistically significant ($\chi^2(2) = 25.44$, $p < .001$) and showed acceptable explanatory capacity (Nagelkerke's $R^2 = .137$), correctly classifying 75.4% of cases. A positive association was observed between the exclusive presence of Pre-school and/or Primary education and a higher likelihood of high participation (OR = 3.04, 95% CI [1.54, 6.00], $p = .001$), whereas the Secondary/Baccalaureate category did not differ significantly from the reference group (OR = 0.51, 95% CI [0.25, 1.03], $p = .062$).

Multiple correspondence analysis (MCA) was also conducted including autonomous community, educational stage, and level of participation in active lifestyle promotion events. The analysis revealed a clustering pattern in which schools offering Pre-school and Primary education were located closer to the category of high participation, whereas schools offering Secondary and Baccalaureate education were positioned farther from this category. These findings were consistent with the results of binary logistic regression analysis.

Discussion

The principal finding of this study indicates that institutions providing preschool and/or primary education are more likely to report substantial participation in initiatives promoting an active lifestyle compared to the reference group. Conversely, institutions offering secondary and/or baccalaureate education exhibit a lower likelihood of high participation, although this association does not achieve conventional levels of statistical significance. Furthermore, the multiple correspondence analysis demonstrated a clustering pattern that aligns with the logistic regression results, with preschool and primary education positioned closer to the category of high participation. Collectively, these findings imply that the educational stage constitutes a significant organizational factor in comprehending school engagement in active lifestyle promotion initiatives.

According to Trejo-Ortiz (2012), there is a need to create environments that encourage movement while reducing screen time. It is essential to strike a balance that leverages technological benefits without compromising on physical activity. Evidence indicates that school environments play a pivotal role in fostering healthy habits, with positive associations reported between the availability of school recreation facilities and students' activity levels (Gámez-Calvo, 2022). Consistent with the current findings, this may elucidate why educational institutions offering preschool and primary education exhibited higher levels of engagement in initiatives promoting an active lifestyle. These educational stages may afford greater flexibility to incorporate physical movement into daily school activities. This interpretation aligns with recent evidence indicating that school-based physical activity interventions are implemented across various educational stages under different organizational conditions, with significant variability contingent upon the characteristics of the school context (Pérez-Herráez et al., 2025).

In this regard, Piper-Healion (2023) highlights the role of schools as promoters of active lifestyles through comprehensive policies and extracurricular participation, noting that effective implementation can positively influence students' health and well-being. Active school education and care models have also been linked to favorable educational and well-being-related outcomes (Backman & Larsson, 2016). Similarly, recent evidence has shown that active breaks may contribute positively to classroom climate and emotional well-being, particularly when meaningfully integrated into school routines (Losada-Berlanga et al., 2025).

Research on active schools in Logroño identified extracurricular activities and the availability of facilities as key factors supporting the consolidation of healthy habits (Arriscado et al., 2015). This finding underscores the importance of adopting a comprehensive approach to school planning. Nonetheless, even in highly committed schools, disparities in student engagement with health-promoting activities persist, pointing to the need for sustained and targeted promotion of active lifestyles both during and beyond school hours (Neil-Sztramko, 2021). Addressing this challenge requires the design of strategies tailored to the specific characteristics of each educational community. From this perspective, the increased participation observed in preschool and primary education may be attributed to organizational and curricular characteristics, such as enhanced timetable flexibility, a stronger emphasis on play- and movement-based pedagogies, and broader opportunities for implementing school-wide initiatives. Conversely, the lower and nearly significant trend observed in secondary and baccalaureate education may

reflect the heightened academic pressure, more rigid timetables, and more compartmentalized organization typically present at these educational stages than in primary education.

Furthermore, school engagement in community active living initiatives depends on effective coordination, logistics, and safety measures, requiring adequate resources and high levels of motivation. Sustainable school projects (particularly those that foster connections with the social and natural environment) emphasize educational value and encourage the adoption of healthy habits. Active schools tend to favor public and outdoor spaces for their activities, which provide psychological benefits, promote social interaction, and support the adoption of active behaviors (Wicks et al., 2022).

Regarding the programs analyzed, schools demonstrate a clear preference for Active Playgrounds, confirming their orientation towards physical activity (Salas & Vidal-Conti, 2020), and for outdoor spaces (Manferdelli, 2019). Healthy Schools have also been widely adopted, given their reported benefits for students (Rusillo et al., 2021). In contrast, the Gamification of Active Habits, while potentially effective in supporting long-term knowledge retention (Gómez, 2021), was implemented by only 33 schools. School Trips, despite their association with high levels of physical activity (Jiménez et al., 2022) and their potential to promote healthy school habits (Aznar et al., 2022), have not gained substantial relevance. Even though multiple educational opportunities exist to promote healthy habits, particularly through Physical Education (Durant et al., 2009), schools report that travel remains one of the main barriers to fostering active and healthy behaviors. The prominence of Active Playgrounds is also in line with previous evidence showing that active recess strategies can be an effective and feasible way to increase physical activity during the school day, especially when schools have suitable spaces, equipment, and teacher support (Pastor-Vicedo et al., 2021).

In the present study, although the sample consisted of schools already involved in a national active lifestyle initiative, participating institutions reported barriers to the implementation of initiatives. Common challenges included a lack of financial resources and logistical constraints, suggesting that although interest and motivation are present, structural limitations hinder wider program development. Educational stage emerged as a more decisive factor in school involvement than geographical location, potentially reflecting the influence of specific policies or differences in institutional support at the regional level. This pattern was reinforced by both the logistic regression and multiple correspondence analysis, which consistently showed a closer relationship between pre-school/primary education and higher levels of participation.

The popularity of programs such as Active Playgrounds and Healthy Schools points to a focus on facility functionality and overall well-being, whereas the selection of accessible natural spaces for physical activity may be influenced by geographical factors and regional outdoor education policies. Conversely, innovative initiatives such as the Gamification of Active Habits have received limited uptake, possibly due to the complexity of implementation, indicating a need for stronger institutional backing and resource allocation.

The potential of public spaces for educational activities depends on addressing safety concerns and ensuring meaningful involvement of teachers and families. Alfrey & O'Connor (2022) emphasize that resource availability is critical to the success of active projects. In many schools, particularly in densely populated urban areas, the lack of suitable facilities makes outdoor spaces a viable alternative (Bruchner, 2017).

The data collected further highlights the influence of regional context on the adoption of school-based initiatives promoting physical activity and health. However, although some territorial differences were identified, these were less consistent than those associated with educational stage. These patterns appear to be linked to certain educational stages, suggesting structural differences in education systems at the regional level. Nevertheless, the observed variability within categories indicates that autonomous community is not a decisive factor for participation, reinforcing the conclusion that educational stage is the primary explanatory variable. These findings suggest that health promotion policies and strategies should be tailored to the specific characteristics of each educational stage to maximize effectiveness. At the same time, the potential effect of self-selection bias should be acknowledged, since the participating schools were already engaged in a national initiative and may therefore represent centers with a greater prior interest in active lifestyle promotion than the broader population of Spanish schools.

Conclusions

The findings of this study suggest that educational stage was the main factor associated with participation in active lifestyle promotion initiatives, with schools offering Pre-school and/or Primary education showing a higher likelihood of reporting high participation than the reference group. Although some territorial differences were observed, their influence appeared to be less consistent than that associated with educational stage. Taken together, the results indicate that school engagement in active lifestyle promotion may depend more strongly on organizational and curricular conditions linked to educational stage than on geographical context alone.

The study also shows that, even among schools already involved in a national initiative, the promotion of active lifestyles continues to face persistent structural barriers, particularly limited resources, logistical difficulties, and insufficient involvement of key educational agents. These findings point to the need for stronger institutional support and strategies adapted to the specific characteristics of each educational stage.

Limitations and future research

This study had several limitations. First, its cross-sectional design does not allow for the establishment of causal relationships. Second, the use of non-probabilistic purposive sampling limits generalizability of the findings. Third, the study relied on institutional self-reported data, which may be affected by subjective interpretation and may have led to a possible overestimation of participation levels. In addition, although the questionnaire was reviewed by experts and pilot-tested, its psychometric validation was limited, which should be considered when interpreting the findings.

Future research could address these limitations by using longitudinal designs to examine changes over time, multilevel analytical approaches to better account for contextual influences, and student-level outcome measures to assess the impact of school initiatives more directly. Further studies should advance the formal validation of the measurement instrument to strengthen the methodological robustness of this line of research.

Acknowledgements

The authors declare no conflicts of interest.

Financing

This research received no external funding.

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