



Family social support and meeting the physical activity recommendations in adolescents

Emmanuel Vélez-Parra, Carlos Mario Arango-Paternina, José Petro-Petro, Luís Felipe Rocha & Fredy Alonso Patiño-Villada

To cite this article: Emmanuel Vélez-Parra, Carlos Mario Arango-Paternina, José Petro-Petro, Luís Felipe Rocha & Fredy Alonso Patiño-Villada (10 Mar 2026): Family social support and meeting the physical activity recommendations in adolescents, International Journal of Health Promotion and Education, DOI: [10.1080/14635240.2026.2637129](https://doi.org/10.1080/14635240.2026.2637129)

To link to this article: <https://doi.org/10.1080/14635240.2026.2637129>



© 2026 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 10 Mar 2026.



[Submit your article to this journal](#)



[View related articles](#)



[View Crossmark data](#)

Family social support and meeting the physical activity recommendations in adolescents

Emmanuel Vélez-Parra^a, Carlos Mario Arango-Paternina ^a, José Petro-Petro^{a,b},
Luís Felipe Rocha^a and Fredy Alonso Patiño-Villada^a

^aPhysical Activity for Health Research Group, Institute of Physical Education, University of Antioquia, Medellín, Colombia; ^bDepartamento de Cultura Física, Universidad de Córdoba, Montería, Colombia

ABSTRACT

Understanding the relationship between social support and physical activity (PA) in Latin America is essential for designing culturally relevant interventions. This cross-sectional study investigates the relationship between perceived family social support and meeting the physical activity (PA) recommendations among adolescents aged 11 to 18 years from the city of Montería, Colombia. A multi-stage probabilistic sampling method yielded a sample of 1573 participants. Perceived family social support and PA levels (SAYCARE PA) were assessed by validated questionnaires in a sample of 1573 participants. Logistic regression models were used to analyze associations, adjusting for sociodemographic factors. High overall social support was associated with meeting the PA recommendations (under 15 years, OR: 1.8; CI 95% 1.2–2.7; p -value = 0.004; 15 years and older, OR: 1.9; CI 95% 1.1–3.3; p -value = 0.02). Results showed that adolescents under 15 years with high social support from all types and sources were more likely to meet PA recommendations (OR from 1.6 to 2.5). In contrast, among those 15 years and older, high social support from siblings (OR: 2.0; CI 95% 1.3–3.0; p -value = 0.003), and high observational support (OR: 1.7; CI 95% 1.1–2.7; p -value = 0.02), were associated with being physically active. These findings suggest that the relationship between perceived family social support and meeting the PA recommendations varies by age group, with younger adolescents benefiting from a broader range of support sources and types, while older adolescents benefit primarily from siblings and observational support. These findings could be useful for designing longitudinal or intervention studies.

ARTICLE HISTORY

Received 29 May 2025
Accepted 21 February 2026

KEYWORDS

Perceived social support;
parental support; healthy
behavior; school-aged
adolescents; sports

Introduction

Physical activity (PA) is a fundamental practice for the optimal growth and development of children and adolescents (Spruit et al. 2016). However, by 2016, 81.0% of adolescents worldwide did not engage in sufficient PA (Guthold et al. 2020). According to the most recent prevalence data in Colombia, only 13.4% of adolescents met the PA

CONTACT Carlos Mario Arango-Paternina  carlos.arangop@udea.edu.co  Physical Activity for Health Research Group, Institute of Physical Education, University of Antioquia, Medellín 050034, Colombia

© 2026 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

recommendations in 2015, which consist of performing moderate to vigorous PA for 60 min daily, 7 days a week (Instituto Colombiano de Bienestar Familiar 2019). This panorama reflects a concerning situation, as adolescence is a crucial period for establishing behavioral patterns that tend to persist throughout life (Fernandez-Jimenez et al. 2018).

Participation in PA is influenced by factors at different levels of the ecological model, often within social and physical environments (Hu et al. 2021); therefore, healthy behavior is not solely an individual decision (Demetriou and Bachner 2019), and social relationships play an important role for health and survival (Holt-Lunstad, Smith, and Layton 2010). Among the functional dimensions of social relationships, social support (SS) is one of the most important (Holt-Lunstad 2021). In the field of PA, SS is often regarded as the set of resources provided within social networks, to which individuals have access to adopt or maintain a particular behavior (Laird et al. 2016).

Social support can be classified into different types (motivational, conditional, observational, informational and instrumental support) and sources (parents, friends, siblings, uncles and teachers) (Beets et al. 2006). Also, SS is divided into perceived support, referring to a person's potential access to SS, and received support, referring to the reported receipt of supportive resources (Uchino 2009). Given that perceived SS provides a more comprehensive explanation of the relationships between SS and health outcomes (Uchino 2009), the present study focuses on perceived support rather than received support.

The dynamics of interpersonal relationships during adolescence unfold through changes that occur as the adolescent develops and matures. For instance, it has been observed that parental SS for PA decreases as the adolescent grows (Davison and Jago 2009), as the result of the adolescent's maturation process, as they have more time without parental supervision, increased interaction with friends and peers (Fitzgerald, Fitzgerald, and Aherne 2012), and the development of cognitive (Junger and van Kampen 2010) and socialization skills (Lawler et al. 2022) that enable them to make behavioral decisions. A similar dynamic has been documented in sports participation at early ages and adolescence, in which SS, both perceived and received, is deployed differentially as the adolescent grows and transitions from one stage to another (Wylleman, Alfermann, and Lavalée 2004).

The context of PA promotion in Latin America faces serious challenges. For example, considering the ecological model, the efforts made in the region are characterized by unsustainable public policies (Pinheiro et al. 2025). Regarding the social environment, most studies evaluating the association between family SS and PA have been conducted in high-income countries, evidence from Latin America remains scarce, highlighting a population gap that limits the global understanding of these associations and underscoring the need for studies in Latin American countries to provide context-specific insights (Mendonça et al. 2014). The family structure in Latin America is distinctive, characterized by a high occurrence of co-residence of single mothers or nuclear families with extended family members (Esteve, Castro-Martín, and Felipe Castro-Torres 2022), as a strategy to cope with inadequate financial conditions. An additional key characteristic of Latin American families is the typical hierarchical structure, in which the family dynamics is driven by a family value system and the provision of emotional and material support among family members (Sabogal et al. 1987). These distinctive characteristics

may give rise to specific patterns of weight-related behaviors (Ayala et al. 2021) and may influence the association between parental support and PA. Therefore, this study aimed to identify the association between perceived family SS and meeting the PA recommendations in adolescents. We hypothesized that high overall SS would be associated with meeting the PA recommendations that high SS from family members and across all types of support would similarly be associated with meeting these recommendations and that the pattern of these associations would differ by age group.

Materials and methods

Study design

This is a cross-sectional design study. The research adhered to the guidelines outlined in the Declaration of Helsinki and the study protocol was approved by the IRB (Acta: ACEI 41-2023).

Population and sample

A multi-stage probabilistic sampling method was utilized to ensure the representativeness of the sample, comprising school-aged adolescents between 11 and 18 years old from the city of Monteria, Colombia. In the first stage, the sample size was estimated using an appropriate equation (Cochran 1977), and 15 schools were randomly selected from a sampling frame of 63 schools. In the second stage, cluster sampling was applied, with each class group considered a cluster. One group from each grade (four grades, from seventh to tenth) at the secondary level of each selected school was randomly chosen, resulting in 60 groups across 15 schools. In these 60 groups, voluntary sampling was employed by inviting all students to participate. In total, 1713 students were invited, 81 students did not return the informed assent form or parental informed consent form. After excluding participants with incomplete data ($n = 59$), the analysis was conducted with a final sample of 1573 adolescents (response rate of 91.8%).

The inclusion criteria were students enrolled in the selected schools who voluntarily agreed to participate by signing an assent form, with their parents also consenting by signing an informed consent form. Exclusion criteria included students with motor or sensory disorders that impaired mobility.

Measurement instruments

Perceived SS was measured using a questionnaire developed by Sallis et al. (2002), which examines the types and sources of SS for PA (Beets et al. 2006; Duncan, Duncan, and Strycker 2005; Silva et al. 2014). The instrument has demonstrated moderate reliability (ICC = 0.74) and internal consistency ($\alpha > 0.7$) (Norman, Sallis, and Gaskins 2005). The questionnaire assessed the frequency with which adolescents perceived different types of SS (five types) from their mother, father, another adult family member and siblings. For each item, the adolescent reported the frequency of these supportive actions on a scale from 1 to 5 (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often and 5 = Always). With this information, ten SS domains were calculated: an overall SS domain (averaging

all the scores), a domain for each of the four sources of support (by averaging the scores of the five types of support for each source); a score for each of the five types of support (by averaging the scores of the four sources for each type). The 10 domains were dichotomized, with scores of 3 or more indicating high SS, and lower scores were considered low SS. This cut-off was used since a score of 3 corresponds to the response 'sometimes', which conceptually reflects the presence of recurrent level of support, compared to 'never' or 'rarely'. In addition, this dichotomization was applied to simplify interpretation and increase the utility of the results, since this approach facilitated the analysis of associations between SS and meeting the PA recommendations, as the outcome is binary.

Physical activity was measured using the SAYCARE PA questionnaire (Nascimento-Ferreira et al. 2018), which assesses routine activities (frequency and intensities) over the past week (7 days) across three domains (school, leisure time and transportation). The questionnaire contains 47 items, capturing the PA intensity. To record intensity, adolescents were asked to indicate the level of exertion of the activity by selecting one of the three categories: 'I was not sweating and my breathing was normal' for Light PA, 'I was a little sweaty and my breathing was a little heavier than normal' for Moderate PA, or 'I was very sweaty and out of breath' for vigorous PA. Based on this scale, the amount of PA time was stratified according to each intensity category (moderate and vigorous), and the total weekly time of moderate to vigorous PA was calculated. This questionnaire has shown acceptable reliability with Spearman correlation coefficient ($\rho > 0.30$) and acceptable validity when correlating minutes of moderate to vigorous physical activity with accelerometer-derived measurements ($r_s = 0.88$) (Nascimento-Ferreira et al. 2018). Responses related to physical education classes were excluded, as physical education is mandatory and independent of perceived social support. The current PA recommendations (World Health Organization 2020) were used to classify the PA level of each participant. Responses were classified as 'active' for participants who accumulated at least 60 min/day of moderate to vigorous PA, and as 'inactive' for those who did not meet the PA recommendation.

Sociodemographic variables included gender, age, school type (public or private), school location (urban or rural) and family structure (nuclear, single-parent, other). Socioeconomic position was assessed using the Family Affluence Scale (FAS) (Boyce et al. 2006). The FAS is composed of four items exploring the material assets of the family: Do you have your own bedroom?; How many cars are there in your family?; How many PCs are there in your home?; Do you have internet access at home? The final composite FAS score ranged between 0 and 8, the higher the score, the greater the family affluence. These scores may be transformed into tertiles, to identify low, middle and high affluence. Family function was measured using the APGAR instrument (Forero et al. 2006). This scale has five items exploring how frequently (from never to always) the adolescent perceives her/his family function in different facets. The final APGAR score is calculated by adding the answer to each question, and scores ranged from 0 to 20, where higher scores indicate a better family function. Scores were dichotomized as Dysfunctional (score between 0 and 16) and Functional (score > 16) (Smilkstein 1978). Height and body weight were measured, and Body Mass Index (BMI) and BMI z-scores were calculated; overweight was defined as a BMI-for-age $> +1$ SD according to WHO growth charts (de Onis et al. 2007). Overweight was included since it has been identified as

a confounder in the relationship between perceived social support and PA (Brunet et al. 2014).

Statistical analysis

Analyses were stratified by age groups: adolescents younger than 15 years and 15 years or older. Descriptive statistics, with a bivariate analysis, were conducted to report on each sociodemographic variable and SS variables (type and source). The associations between SS and meeting PA recommendations were analyzed using crude and adjusted binary logistic regression models, reporting odds ratios (OR) and their respective 95% confidence intervals (CI). Ten adjusted models were analyzed, separately for each one of the SS domains (overall SS, four sources and five types of support). The adjusted models included variables such as school location, school type, gender, BMI, socioeconomic position, family structure and family function. All analyses were conducted using Jamovi statistical software (Version 2.6) (The Jamovi Project 2024) with a significance level set at $p < 0.05$.

Results

Sample characteristics are presented in Table 1. Most students attended public schools (80.2%) and were primarily located in urban areas (77.7%). Fifty-seven percent of the adolescents were under 15 years old, with 51.3% of this group being girls. Across both age groups, most of the adolescents belonged to nuclear families (69.7%) and were classified as physically inactive (59%). Descriptive statistics of high SS indicate that high maternal support (22.3%) was reported with the greatest frequency across the entire sample, while high support from another adult in the family had the lowest frequency (10.5%). Motivational support (23.5%) was the type of support with the highest frequency, followed by informational support (22.8%). High overall SS was reported by 12% of adolescents. Adolescents under 15 years old reported a higher frequency of high SS in all its domains.

The frequencies of high family support according to meeting the PA recommendation are shown in Table 2. Among adolescents under 15 years old, all sources and types of SS were significantly higher in physically active youth (p -value $< .05$). In adolescents aged 15 years or older, high SS from both father (17.6% vs 12.1%) and siblings (22.4% vs 13.1%) were significantly greater in physically active adolescents. Additionally, high observational (20.0% vs 12.8%), informational (22.0% vs 15.4%) and instrumental (17.3% vs 10.9%) support were significantly greater in active adolescents. High overall SS was also significantly more frequent among active adolescents in both age groups.

The bivariate logistic regression associations (crude ORs) of sociodemographic variables and high SS with meeting PA recommendations are shown in Table 3. In both age groups, adolescents attending private schools (compared to public schools) were significantly less likely to be physically active (under 15 years old, OR = 0.6; CI 95%: 0.4–0.8; $p < .001$; 15 years or older, OR = 0.4; CI 95%: 0.3–0.7; $p < .001$). Among adolescents under 15 years, those attending urban schools (compared to rural areas) were more likely to be physically active (OR = 1.4; CI 95%: 1.0–2.0; $p = 0.041$). Girls (compared to boys) had a significantly lower likelihood of being physically active (OR = 0.4; CI 95%: 0.3–0.5; p

Table 1. Sample characteristics.

Variables	All (<i>n</i> = 1573)	11–14 years, <i>n</i> = 897 (57%)	15–18 years, <i>n</i> = 676 (43%)	<i>p</i> -value*
Type of school		<i>n</i> (%)	<i>n</i> (%)	
Public	1262 (80.2)	693 (77.3)	569 (84.2)	<.001
Private	311 (19.8)	204 (22.7)	107 (15.8)	
School location				
Rural	350 (22.3)	170 (19.0)	180 (26.6)	<.001
Urban	1223 (77.7)	727 (81.0)	496 (73.4)	
Sex				
Boys	766 (48.7)	433 (48.3)	333 (49.3)	0.698
Girls	807 (51.3)	464 (51.7)	343 (50.7)	
Weight status				
Normal weight	1257 (79.9)	698 (77.8)	559 (82.7)	0.017
Overweight	316 (20.1)	199 (22.2)	117 (17.3)	
Socioeconomic position				
Low	202 (12.8)	99 (11.0)	103 (15.2)	<.001
Middle	663 (42.1)	347 (38.7)	316 (46.7)	
High	708 (45)	451 (50.3)	257 (38.0)	
Family function				
Dysfunctional	652 (41.4)	337 (37.6)	315 (46.6)	<.001
Functional	921 (58.6)	560 (62.4)	361 (53.4)	
Family structure				
Nuclear	1096 (69.7)	634 (70.7)	462 (68.3)	0.079
Single-parent	393 (25)	225 (25.1)	168 (24.9)	
Other	84 (5.3)	38 (4.2)	46 (6.8)	
Physical activity				
Inactive	928 (59)	507 (56.5)	421 (62.3)	0.022
Active	645 (41)	390 (43.5)	255 (37.7)	
High social support (Sources)				
Mother	350 (22.3)	232 (25.9)	118 (17.5)	<.001
Father	300 (19.1)	204 (22.7)	96 (14.2)	<.001
Another adult in the family	165 (10.5)	106 (11.8)	59 (8.7)	0.048
Siblings	295 (18.8)	183 (20.4)	112 (16.6)	0.054
High social support (Types)				
Motivational	370 (23.5)	223 (24.9)	147 (21.7)	0.149
Conditional	182 (11.6)	119 (13.3)	63 (9.3)	0.015
Observational	284 (18.1)	179 (20.0)	105 (15.5)	0.024
Informational	359 (22.8)	238 (26.5)	121 (17.9)	<.001
Instrumental	270 (17.2)	180 (20.1)	90 (13.3)	<.001
High overall social support	188 (12)	124 (13.8)	64 (9.5)	0.008

*Chi-squared test. Statistical significance at *p*-value < 0.05.

<.001). Additionally, adolescents in both age groups who had high family affluence (compared to those who had low) were more likely to be physically active (under 15 years old, OR = 2.1; CI 95%: 1.3–3.3; *p* = .002; 15 years or older, OR = 3.0; CI 95%: 1.8–5.0; *p* < .001). Among adolescents younger than 15 years, high SS from all sources, types and total SS was associated with meeting PA recommendations (*p* < .05). In the older age group, high support from father (OR = 1.6; CI 95%: 1.0–2.4; *p* = .047), along with high observational (OR = 1.7; CI 95%: 1.1–2.6; *p* < .05), informational (OR = 1.5; CI 95%: 1.0–2.3; *p* < .05) and instrumental support (OR = 1.7; CI 95%: 1.1–2.7; *p* < .05), were associated with being physically active. Additionally, high overall SS was associated with meeting PA recommendations in both age groups (under 15 years old, OR = 2.1; CI 95%: 1.4–3.0; *p* < .001; 15 years or older, OR = 2.0; CI 95%: 1.2–3.4; *p* < .01).

The multivariate associations (adjusted ORs) between high SS and meeting PA recommendations are presented in Table 4. For the group under 15 years, being physically active was associated with all types and sources of SS, and with overall SS (*p* < .05).

Table 2. Descriptive statistics of high family social support (average score of 3 or higher) according to meeting physical activity recommendations.

Variables	11–14 years, <i>n</i> = 897 (57%)			15–18 years, <i>n</i> = 676 (43%)		
	PA recommendation		<i>p</i> -value*	PA recommendation		<i>p</i> -value*
	Inactive, <i>n</i> = 507 (56.5%)	Active, <i>n</i> = 390 (43.5%)		Inactive, <i>n</i> = 421 (62.3%)	Active, <i>n</i> = 255 (37.7%)	
High social support sources						
Mother	97 (19.1)	135 (34.6)	<.001	65 (15.4)	53 (20.8)	0.076
Father	75 (14.8)	129 (33.1)	<.001	51 (12.1)	45 (17.6)	0.046
Another adult in the family	46 (9.1)	60 (15.4)	0.004	30 (7.1)	29 (11.4)	0.058
Siblings	83 (16.4)	100 (25.6)	<.001	55 (13.1)	57 (22.4)	0.002
High social support types						
Motivational	93 (18.3)	130 (33.3)	<.001	90 (21.4)	57 (22.4)	0.766
Conditional	49 (9.7)	70 (17.9)	<.001	37 (8.8)	26 (10.2)	0.542
Observational	68 (13.4)	111 (28.5)	<.001	54 (12.8)	51 (20.0)	0.013
Informational	106 (20.9)	132 (33.8)	<.001	65 (15.4)	56 (22.0)	0.032
Instrumental	70 (13.8)	110 (28.2)	<.001	46 (10.9)	44 (17.3)	0.019
Overall social support	51 (10.1)	73 (18.7)	<.001	30 (7.1)	34 (13.3)	0.008

*Chi-squared test. Statistical significance at *p*-value < 0.05.

Therefore, in this age group, all the hypotheses were confirmed. For adolescents who were 15 years old or older, some hypotheses were confirmed. High SS from siblings (OR: 2.0; CI 95%: 1.3–3.0; *p* = 0.003) was associated with meeting the PA recommendation. Associations with the rest of SS sources were not confirmed. Regarding the type of support, observational support was also associated with being physically active (OR: 1.7; CI 95%: 1.1–2.7; *p* = 0.02). Associations with the rest of support types were not confirmed. Overall SS (OR: 1.9; CI 95%: 1.1–3.3; *p* = 0.020) was associated with being physically active.

Discussion

The aim of this study was to identify the association between perceived family SS and meeting PA recommendations in adolescents. Among adolescents aged under 15 years, all types and sources of SS and overall SS were associated with being physically active. In adolescents aged 15 years and older, high SS from siblings, observational and overall SS, were associated with being physically active.

The results indicate that the patterns of association between perceived SS and meeting PA recommendations differ by age group. Similar findings were reported in a systematic review (Rhodes, Perdeu, and Malli 2020). This relationship may be explained by differences in parenting styles, where parents grant a greater degree of autonomy to adolescents compared to children (Edwardson and Gorely 2010). Another review highlighted a shift towards SS from friends rather than family in older adolescents (Mendonça et al. 2014). However, other two systematic reviews have highlighted the importance of identifying both the source and the type of support for PA (Laird et al. 2016; Lisboa et al. 2018).

The different patterns of association between the analyzed age groups may be attributed to changes in psychological, social and developmental needs that occur as

Table 3. Bivariate logistic regression associations between perceived social support and meeting physical activity recommendations.

Variables	11–14 years		15–18 years	
	OR (95% CI)	<i>p</i> -value	OR (95% CI)	<i>p</i> -value
Type of school				
Public	1.0		1.0	
Private	0.6 (0.4 - 0.8)	<.001	0.4 (0.3 - 0.7)	<.001
School location				
Rural	1.0		1.0	
Urban	1.4 (1.0 - 2.0)	0.041	1.3 (0.9 - 1.8)	0.216
Sex				
Boys	1.0		1.0	
Girls	0.4 (0.3 - 0.5)	<.001	0.4 (0.3 - 0.6)	<.001
Weight status				
Normal weight	1.0		1.0	
Overweight	1.0 (0.7 - 1.4)	0.933	0.7 (0.5 - 1.1)	0.100
Socioeconomic position				
Low	1.0		1.0	
Middle	1.5 (0.9 - 2.4)	0.090	1.5 (0.9 - 2.5)	0.100
High	2.1 (1.3 - 3.3)	0.002	3.0 (1.8 - 5.0)	<.001
Family function				
Dysfunctional	1.0		1.0	
Functional	1.4 (1.1 - 1.9)	0.02	1.0 (0.7 - 1.3)	0.852
Family structure				
Nuclear	1.0		1.0	
Single-parent	1.2 (0.6 - 2.4)	0.603	1.2 (0.6 - 2.4)	0.565
Other	1.2 (0.6 - 2.3)	0.624	1.0 (0.5 - 1.8)	0.936
Social Support (Sources)				
Mother				
Low	1.0		1.0	
High	2.2 (1.7 - 3.0)	<.001	1.4 (1.0 - 2.1)	0.077
Father				
Low	1.0		1.0	
High	2.8 (2.1 - 3.9)	<.001	1.6 (1.0 - 2.4)	0.047
Another adult in the family				
Low	1.0		1.0	
High	1.8 (1.2 - 2.7)	0.004	1.7 (1.0 - 2.9)	0.060
Siblings				
Low	1.0		1.0	
High	1.8 (1.3 - 2.4)	<.001	1.9 (1.3 - 2.9)	0.002
Social Support (Types)				
Motivational				
Low	1.0		1.0	
High	2.2 (1.6 - 3.0)	<.001	1.1 (0.7 - 1.5)	0.766
Conditional				
Low	1.0		1.0	
High	2.0 (1.4 - 3.0)	<.001	1.2 (0.7 - 2.0)	0.542
Observational				
Low	1.0		1.0	
High	2.6 (1.8 - 3.6)	<.001	1.7 (1.1 - 2.6)	0.013
Informational				
Low	1.0		1.0	
High	1.9 (1.4 - 2.6)	<.001	1.5 (1.0 - 2.3)	0.033
Instrumental				
Low	1.0		1.0	
High	2.5 (1.8 - 3.4)	<.001	1.7 (1.1 - 2.7)	0.020
Overall social support				
Low	1.0		1.0	
High	2.1 (1.4 - 3.0)	<.001	2.0 (1.2 - 3.4)	0.008

OR, odds ratio. Statistical significance at *p*-value < 0.05.

Table 4. Adjusted logistic regression models for the association between social support and meeting physical activity recommendations.

Variables	11–14 years		R ²	15–18 years		R ²
	OR (95% CI)	<i>p</i> -value		OR (95% CI)	<i>p</i> -value	
Social support sources						
Mother						
Low	1.0			1.0		
High	2.2 (1.6 – 3.0)	<.001	12.6	1.5 (0.9 – 2.2)	0.085	12.4
Father						
Low	1.0			1.0		
High	2.5 (1.8 – 3.5)	<.001	13.3	1.4 (0.9 – 2.2)	0.188	12.2
Another adult in the family						
Low	1.0			1.0		
High	1.6 (1.0 – 2.4)	0.038	10	1.4 (0.8 – 2.4)	0.276	12.1
Siblings						
Low	1.0			1.0		
High	1.7 (1.2 – 2.4)	0.003	10.7	2.0 (1.3 – 3.0)	0.003	13.5
Social support type						
Motivational						
Low	1.0			1.0		
High	2.0 (1.4 – 2.7)	<.001	11.8	1.0 (0.7 – 1.5)	0.933	11.9
Conditional						
Low	1.0			1.0		
High	2.0 (1.3 – 3.0)	<.001	11	1.2 (0.7 – 2.1)	0.500	12.0
Observational						
Low	1.0			1.0		
High	2.3 (1.6 – 3.3)	<.001	12.5	1.7 (1.1 – 2.7)	0.020	12.9
Informational						
Low	1.0			1.0		
High	1.8 (1.3 – 2.5)	<.001	11.3	1.4 (0.9 – 2.1)	0.161	12.2
Instrumental						
Low	1.0			1.0		
High	2.3 (1.6 – 3.2)	<.001	12.3	1.6 (1.0 – 2.5)	0.066	12.5
Overall social support						
Low	1.0			1.0		
High	1.8 (1.2 – 2.7)	0.004	10.6	1.9 (1.1 – 3.3)	0.020	12.9

OR, odds ratio. Statistical significance at *p*-value < 0.05. Adjusted variables: type of school, school location, sex, BMI, socioeconomic position, family function and family structure.

adolescents grow. For example, adolescents under 15 years old may require more support and guidance from family members to engage in PA (Beets, Bradley, and Brandon 2010). This aspect is confirmed by the associations reported here. In contrast, older adolescents exhibit greater independence and autonomy in making behavioral decisions, creating opportunities for other socialization agents and expanding their support networks (De Goede et al. 2009). However, family support remains a significant factor for PA in older adolescents, as documented in the present study. It was found that observational support was the only type of SS associated with adherence to PA recommendations in older adolescents. This suggests that for these adolescents, the presence of family members in PA settings provides important emotional support, as has been reported in previous studies (Duncan, Duncan, and Strycker 2005).

This study underscores the role of family SS in promoting PA, aligning with findings from previous research. For instance, Morrissey et al. (2015) demonstrated that family support increases objectively measured moderate-to-vigorous PA. Similarly, Cheng et al. (2014) found that SS was positively associated with adolescent PA, with parental support more strongly linked to boys' PA and maternal support to

girls' PA. However, further studies are needed to explore potential mediators between family SS and adolescent PA.

In the literature, potential mechanisms have been proposed to explain how SS influences PA behavior in adolescents. For instance, SS emerges as a product of social relationships, and, according to the self-determination theory, fulfilling the basic psychological needs for autonomy, competence and relatedness enhances intrinsic motivation, which leads to increased PA (Deci and Ryan 2000). Furthermore, SS can help adolescents develop self-efficacy, self-control and self-esteem (Uchino 2009), which are positively associated with healthy behaviors (Eggert et al. 1994). In addition, parent support is an important resource for sport initiation and development, as long as parents create an adequate learning environment to meet the demands of sports competition (Wylleman and Lavalée 2004).

In the Colombian context, several cultural factors may influence both family SS and adolescent PA. Unlike many other countries, physical education is mandatory in Colombian schools at both the primary and secondary levels, reflecting the societal value placed on the educational goals of physical education. Additionally, sport holds significant cultural importance in Colombia, which partly accounts for the high participation rate in organized sports among Colombian children and adolescents, with nearly half of them engaged in such activities (Gonzalez et al. 2018). As mentioned earlier, Latin American families are characterized by a hierarchical structure and a value system focused on SS (Sabogal et al. 1987); therefore, it is expected a family environment conducive to providing such support. However, the present study found that the highest levels of SS were reported in perceived informational support, among adolescents under 15 years old, not exceeding 27%. This finding highlights the need for educational efforts targeting parents to enhance their ability to adopt parenting style and practices that encourage PA. Furthermore, promoting PA through family-based interventions remains an underexplored area of research (Brown et al. 2016), and parents often report a lack of knowledge and resources to effectively support their children's PA (Arredondo et al. 2014).

Results of this study encourage the development of new educational schemes to stimulate the socialization skills needed to increase PA in adolescents, a topic still underexplored. For example, in physical education, teaching models based on social interactions among students, such as cooperative learning and sports pedagogy, could be employed (Bores-García et al. 2021). The findings also highlight the importance of involving parents in these initiatives by enhancing their cognitive resources for providing SS to their children (Rhodes, Perdew, and Malli 2020). In addition, several aspects that should be addressed in future studies to increase our understanding of the complex dynamics about SS such as the effectiveness of family-based interventions, the exploration of characteristics for both the provider and recipient of support, the relationship between parental style and SS, and the differentiated effect of the types of support on PA.

Some limitations should be considered when interpreting the results of the present study. First, cross-sectional design limits the ability to determine causality. Second, using questionnaires to measure PA and SS may lead to information bias. Third, the questionnaire used to measure SS only explores perceived SS and omits received SS, which could yield different patterns of association with healthy behaviors (Uchino 2009). Fourth, the study was focused on family support.

Other sources of support such as peer support or support from non-familial adults were not explored. Fifth, dichotomization of SS variables may lead to a loss of data variability and could affect the direction and magnitude of the associations. Finally, in the study, it was not possible to collect information about some known factors associated with physical activity, such as socioeconomic status and deprivation levels of the sample frame. Therefore, this limitation may affect the external validity of the findings. A strength of this study is the sample size, which allowed for stable patterns of association between the variables studied. Additionally, the use of probabilistic sampling reinforces the external and internal validity of the study. This study also explored different types and sources of perceived SS separately, enriching the findings and providing useful insights for designing interventions.

Conclusions

The findings of this study indicate that the patterns of association between perceived SS and meeting PA recommendations differ by age group in adolescents. Among adolescents aged under 15 years, being physically active was associated with all types and sources of SS, and with overall SS. In adolescents aged 15 years and older, high SS from siblings, observational and overall SS, were associated with being physically active.

Acknowledgements

Authors are grateful to the students and directors of schools involved in the study.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

This research did not receive any specific grant from funding agencies in the public, commercial or non-profit sectors.

ORCID

Carlos Mario Arango-Paternina  <http://orcid.org/0000-0002-5263-3139>

Data statement

All data from the corresponding author are available on reasonable request.

References

Arredondo, E. M., M. Morello, C. Holub, and J. Haughton. 2014. "Feasibility and Preliminary Findings of a Church-Based Mother-Daughter Pilot Study Promoting Physical Activity Among

- Young Latinas.” *Family and Community Health* 37 (1). <https://doi.org/10.1097/FCH.0000000000000015>.
- Ayala, G. X., R. Monge-Rojas, A. C. King, R. Hunter, and J. M. Berge. 2021. “The Social Environment and Childhood Obesity: Implications for Research and Practice in the United States and Countries in Latin America.” *Obesity Reviews* 22 (S3): e13246. <https://doi.org/10.1111/obr.13246>.
- Beets, M. W., J. C. Bradley, and L. A. Brandon. 2010. “Parental Social Support and the Physical Activity-Related Behaviors of Youth: A Review.” *Health Education and Behavior* 37 (5): 621–644. <https://doi.org/10.1177/1090198110363884>.
- Beets, M. W., R. Vogel, L. Forlaw, K. H. Pitetti, and B. J. Cardinal. 2006. “Social Support and Youth Physical Activity: The Role of Provider and Type.” *American Journal of Health Behavior* 30 (3): 278–289. <https://doi.org/10.5993/AJHB.30.3.6>.
- Bores-García, D., D. Hortigüela-Alcalá, F. Javier Fernandez-Rio, G. González-Calvo, and R. Barba-Martín. 2021. “Research on Cooperative Learning in Physical Education: Systematic Review of the Last Five Years.” *Research Quarterly for Exercise and Sport* 92 (1): 146–155. <https://doi.org/10.1080/02701367.2020.1719276>.
- Boyce, W., T. Torsheim, C. Currie, and A. Zambon. 2006. “The Family Affluence Scale as a Measure of National Wealth: Validation of an Adolescent Self-Report Measure.” *Social Indicators Research* 78:473–487. <https://doi.org/10.1007/s11205-005-1607-6>.
- Brown, H. E., A. J. Atkin, J. Panter, G. Wong, M. J. Chinapaw, and E. M. van Sluijs. 2016. “Family-Based Interventions to Increase Physical Activity in Children: A Systematic Review, Meta-Analysis and Realist Synthesis.” *Obesity Reviews* 17 (4): 345–360. <https://doi.org/10.1111/obr.12362>.
- Brunet, J., C. M. Sabiston, J. O’Loughlin, M. E. Mathieu, A. Tremblay, T. A. Barnett, and M. Lambert. 2014. “Perceived Parental Social Support and Moderate-to-Vigorous Physical Activity in Children at Risk of Obesity.” *Research Quarterly for Exercise and Sport* 85 (2): 198–207. <https://doi.org/10.1080/02701367.2014.893049>.
- Cheng, L. A., G. Mendonça, J. Cazuza de, and F. Júnior. 2014. “Physical Activity in Adolescents: Analysis of the Social Influence of Parents and Friends.” *Jornal de Pediatria* 90 (1): 35–41. <https://doi.org/10.1016/j.jped.2013.05.006>.
- Cochran, W. G. 1977. *Sampling Techniques*. 3rd ed. New York: John Wiley & Sons.
- Davison, K. K., and R. Jago. 2009. “Change in Parent and Peer Support Across Ages 9 to 15 Yr and Adolescent Girls’ Physical Activity.” *Medicine and Science in Sports and Exercise* 41 (9). <https://doi.org/10.1249/MSS.0b013e3181a278e2>.
- Deci, E. L., and R. M. Ryan. 2000. “The “What” and “Why” of Goal Pursuits: Human Needs and the Self-Determination of Behavior.” *Psychological Inquiry* 11 (4): 227–268. https://doi.org/10.1207/S15327965PLI1104_01.
- De Goede, I. H., S. J. Branje, M. J. Delsing, and W. H. Meeus. 2009. “Linkages Over Time Between Adolescents’ Relationships with Parents and Friends.” *Journal of Youth & Adolescence* 38 (10): 1304–1315. <https://doi.org/10.1007/s10964-009-9403-2>.
- Demetriou, Y., and J. Bachner. 2019. “A School-Based Intervention Based on Self-Determination Theory to Promote Girls’ Physical Activity: Study Protocol of the CReActivity Cluster Randomised Controlled Trial.” *BMC Public Health* 19 (1): 519. <https://doi.org/10.1186/s12889-019-6817-y>.
- de Onis, M., A. W. Onyango, E. Borghi, A. Siyam, C. Nishida, and J. Siekmann. 2007. “Development of a WHO Growth Reference for School-Aged Children and Adolescents.” *Bulletin of the World Health Organization* 85 (9): 660–667. <https://doi.org/10.2471/blt.07.043497>.
- Duncan, S. C., T. E. Duncan, and L. A. Strycker. 2005. “Sources and Types of Social Support in Youth Physical Activity.” *Health Psychology* 24 (1): 3–10. <https://doi.org/10.1037/0278-6133.24.1.3>.
- Edwardson, C. L., and T. Gorely. 2010. “Parental Influences on Different Types and Intensities of Physical Activity in Youth: A Systematic Review.” *Psychology of Sport & Exercise* 11 (6): 522–535. <https://doi.org/10.1016/j.psychsport.2010.05.001>.

- Eggert, L. L., E. A. Thompson, J. R. Herting, L. J. Nicholas, and B. Garii Dicker. 1994. "Preventing Adolescent Drug Abuse and High School Dropout through an Intensive School-Based Social Network Development Program." *American Journal of Health Promotion* 8 (3): 202–215. <https://doi.org/10.4278/0890-1171-8.3.202>.
- Esteve, A., T. Castro-Martín, and A. Felipe Castro-Torres. 2022. "Families in Latin America: Trends, Singularities, and Contextual Factors." *Annual Review of Sociology* 48: 485–505. <https://doi.org/10.1146/annurev-soc-030420-015156>.
- Fernandez-Jimenez, R., M. Al-Kazaz, R. Jaslow, I. Carvajal, and V. Fuster. 2018. "Children Present a Window of Opportunity for Promoting Health: JACC Review Topic of the Week." *Journal of the American College of Cardiology* 72 (25): 3310–3319. <https://doi.org/10.1016/j.jacc.2018.10.031>.
- Fitzgerald, A., N. Fitzgerald, and C. Aherne. 2012. "Do Peers Matter? A Review of Peer and/or Friends' Influence on Physical Activity Among American Adolescents." *Journal of Adolescence* 35 (4): 941–958. <https://doi.org/10.1016/j.adolescence.2012.01.002>.
- Forero, L., M. Avendaño, Z. Duarte, and A. Campo. 2006. "Consistencia interna y análisis de factores de la escala APGAR para evaluar el funcionamiento familiar en estudiantes de básica secundaria." *Revista Colombiana de Psiquiatría* XXXV (1): 23–29. <https://www.elsevier.es-es-revista-revista-colombiana-psiquiatria-379>.
- Gonzalez, S. A., C. A. Triana, C. Abaunza, L. Aldana, L. F. Arias-Gomez, J. Bermudez, D. M. Camargo Lemos, et al. 2018. "Results From Colombia's 2018 Report Card on Physical Activity for Children and Youth." *Journal of Physical Activity and Health* 15 (S2): S335–S337. <https://doi.org/10.1123/jpah.2018-0507>.
- Guthold, R., G. A. Stevens, L. M. Riley, and F. C. Bull. 2020. "Global Trends in Insufficient Physical Activity Among Adolescents: A Pooled Analysis of 298 Population-Based Surveys With 1.6 Million Participants." *Lancet Child and Adolescent Health* 4 (1): 23–35. [https://doi.org/10.1016/S2352-4642\(19\)30323-2](https://doi.org/10.1016/S2352-4642(19)30323-2).
- Holt-Lunstad, J. 2021. "The Major Health Implications of Social Connection." *The Current Directions in Psychological Science* 30 (3): 251–259. <https://doi.org/10.1177/0963721421999630>.
- Holt-Lunstad, J., T. B. Smith, and J. B. Layton. 2010. "Social Relationships and Mortality Risk: A Meta-Analytic Review." *PLoS Med* 7 (7): e1000316. <https://doi.org/10.1371/journal.pmed.1000316>.
- Hu, D., S. Zhou, Z. J. Crowley-McHattan, and Z. Liu. 2021. "Factors That Influence Participation in Physical Activity in School-Aged Children and Adolescents: A Systematic Review from the Social Ecological Model Perspective." *International Journal of Environmental Research and Public Health* 18 (6). <https://doi.org/10.3390/ijerph18063147>.
- Instituto Colombiano de Bienestar Familiar. 2019. *Encuesta Nacional de la Situación Nutricional en Colombia, ENSIN 2015*. Bogotá: ICBF.
- The Jamovi Project. 2024. "jamovi (Version 2.6) [Computer Software]." <https://www.jamovi.org>.
- Junger, M., and M. van Kampen. 2010. "Cognitive Ability and Self-Control in Relation to Dietary Habits, Physical Activity and Bodyweight in Adolescents." *International Journal of Behavioral Nutrition and Physical Activity* 7 (1): 22. <https://doi.org/10.1186/1479-5868-7-22>.
- Laird, Y., S. Fawcner, P. Kelly, L. McNamee, and A. Niven. 2016. "The Role of Social Support on Physical Activity Behaviour in Adolescent Girls: A Systematic Review and Meta-Analysis." *International Journal of Behavioral Nutrition and Physical Activity* 13 (1): 79. <https://doi.org/10.1186/s12966-016-0405-7>.
- Lawler, M., C. Heary, G. Shorter, and E. Nixon. 2022. "Peer and Parental Processes Predict Distinct Patterns of Physical Activity Participation Among Adolescent Girls and Boys." *International Journal of Sport and Exercise Psychology* 20 (2): 497–514. <https://doi.org/10.1080/1612197X.2021.1891118>.
- Lisboa, T., W. R. da Silva, J. M. Alexandre, and T. S. Beltrame. 2018. "Suporte Social da Família e Amigos para a Prática de Atividade Física de Adolescentes: Uma Revisão Sistemática." *Cadernos Saúde Coletiva* 26 (4): 351–359. <https://doi.org/10.1590/1414-462x201800040463>.

- Mendonça, G., L. A. Cheng, E. N. Mélo, and J. C. de Farias Júnior. 2014. "Physical Activity and Social Support in Adolescents: A Systematic Review." *Health Education Research* 29 (5): 822–839. <https://doi.org/10.1093/her/cyu017>.
- Morrissey, J. L., K. F. Janz, E. M. Letuchy, S. L. Francis, and S. M. Levy. 2015. "The Effect of Family and Friend Support on Physical Activity Through Adolescence: A Longitudinal Study." *International Journal of Behavioral Nutrition and Physical Activity* 12 (1): 103. <https://doi.org/10.1186/s12966-015-0265-6>.
- Nascimento-Ferreira, M. V., A. C. F. De Moraes, P. V. Toazza-Oliveira, C. L. Forjaz, J. C. Aristizabal, A. M. Santaliesra-Pasías, and H. B. Carvalho. 2018. "Reliability and Validity of a Questionnaire for Physical Activity Assessment in South American Children and Adolescents: The SAYCARE Study." *Obesity* 26 (S1): S23–S30. <https://doi.org/10.1002/oby.22116>.
- Norman, G., J. F. Sallis, and R. Gaskins. 2005. "Comparability and Reliability of Paper- and Computer-Based Measures of Psychosocial Constructs for Adolescent Physical Activity and Sedentary Behaviors." *Research Quarterly for Exercise and Sport* 76. <https://doi.org/10.1080/02701367.2005.10599302>.
- Pinheiro, I. K. A. D. S., K. P. Sadarangani, R. M. Tassitano, J. Brazo-Sayavera, R. V. Robinson, J. C. D. N. Melo, and D. R. P. D. Silva. 2025. "Capacidade de promover atividade física em países sul-americanos: um estudo ecológico." *Revista Brasileira de Atividade Física & Saúde* 30:1–6. <https://doi.org/10.12820/rbafs.30e0377>.
- Rhodes, R. E., M. Perdeu, and S. Malli. 2020. "Correlates of Parental Support of Child and Youth Physical Activity: A Systematic Review." *International Journal of Behavioral Medicine* 27 (6): 636–646. <https://doi.org/10.1007/s12529-020-09909-1>.
- Sabogal, F., G. Marín, R. Otero-Sabogal, B. Vanoss Marín, and E. J. Perez-Stable. 1987. "Hispanic Familism and Acculturation: What Changes and What Doesn't?" *Hispanic Journal of Behavioral Sciences* 9 (4): 397–412. <https://doi.org/10.1177/07399863870094003>.
- Sallis, J. F., W. C. Taylor, M. Dowda, P. S. Frieson, and R. R. Pate. 2002. "Correlates of Vigorous Physical Activity for Children in Grades 1 Through 12: Comparing Parent-Reported and Objectively Measured Physical Activity." *Pediatric Exercise Science* 14 (1): 30–44. <https://doi.org/10.1123/pes.14.1.30>.
- Silva, P., R. Lott, J. Mota, and G. Welk. 2014. "Direct and Indirect Effects of Social Support on Youth Physical Activity Behavior." *Pediatric Exercise Science* 26 (1): 86–94. <https://doi.org/10.1123/pes.2012-0207>.
- Smilkstein, G. 1978. "The Family APGAR: A Proposal for a Family Function Test and Its Use by Physicians." *The Journal of Family Practice* 6 (6): 1231–1239.
- Spruit, A., M. Assink, E. van Vugt, C. van der Put, and G. Jan Stams. 2016. "The Effects of Physical Activity Interventions on Psychosocial Outcomes in Adolescents: A Meta-Analytic Review." *Clinical Psychology Review* 45:56–71. <https://doi.org/10.1016/j.cpr.2016.03.006>.
- Uchino, B. N. 2009. "Understanding the Links Between Social Support and Physical Health: A Life-Span Perspective With Emphasis on the Separability of Perceived and Received Support." *Perspectives on Psychological Science* 4 (3): 236–255. <https://doi.org/10.1111/j.1745-6924.2009.01122.x>.
- World Health Organization. 2020. *WHO Guidelines on Physical Activity and Sedentary Behaviour*. Geneva, Switzerland: WHO Press.
- Wylleman, P., D. Alfermann, and D. Lavalée. 2004. "Career Transitions in Sport: European Perspectives." *Psychology of Sport & Exercise* 5 (1): 7–20. [https://doi.org/10.1016/S1469-0292\(02\)00049-3](https://doi.org/10.1016/S1469-0292(02)00049-3).
- Wylleman, P., and D. Lavalée. 2004. "A Developmental Perspective on Transitions Faced by Athletes." In *Developmental Sport and Exercise Psychology: A Lifespan Perspective*, edited by M. R. Weiss, 503–523. Morgantown, WV: Fitness Information Technology.