

Association between social support and leisure-time physical activity among high school students

Associação entre apoio social e atividade física no lazer em escolares do ensino médio

Luiza Isnardi Cardoso Ricardo^{1,2}

Airton José Rombaldi^{1,2}

Jorje Otte^{1,2,3}

Ana Cristina Alves Perez²

Mario Renato Azevedo^{1,2}

Abstract

The aim of this study was to analyze the association between social support and leisure-time physical activity level in students from the federal network of Rio Grande do Sul, and their relationships with sex and the different types and sources of social support. A cross-sectional study was carried out in order to make up a sample of 833 students aged between 13 and 25 years, enrolled from the 1st to the 3rd year in a technical high school from four campuses of the Federal Institute of Education, Science and Technology of Rio Grande do Sul (IFsul). Among the respondents, 50.3% (CI_{95%} 46.9 - 53.7) of the sample was considered physically active during leisure-time, and boys (64.7%; CI_{95%} 59.9 - 69.1) were more active than girls (36.8%; CI_{95%} 31.7 - 40.9). In the adjusted analysis, individuals who had higher social support from parents showed a higher probability of being active in comparison to those with less social support, showing the Prevalence ratio (PR) of 2.55 (CI_{95%} 1.67-3.90) among girls and 1.64 (CI_{95%} 1.20-2.23) among boys. About the social support from friends, boys located in the more elevated level of social support had greater probability of being active related to those with lower social support. (RP 2.19; CI_{95%} 1.46-3.26). The same analysis among girls has also shown significant results (PR 1.67; CI_{95%} 1.08-2.58). It was concluded that social support from parents and friends is an important tool in order to promote physical activity in adolescents.

Keywords

Students, Social Support, Motor Activity.

Resumo

O objetivo do presente estudo foi analisar a associação entre apoio social e nível de atividade física no lazer em escolares da rede federal de ensino do Rio Grande do Sul, além de suas relações com sexo e os diferentes tipos e fontes do apoio social. Foi conduzido um estudo transversal compondo uma amostra de 833 escolares com idade entre 13 e 25 anos, matriculados do 1º ao 3º anos do ensino médio técnico integrado de quatro campi do Instituto Federal de Educação, Ciência e Tecnologia Sul-rio-grandense (IF-Sul). Entre os respondentes, 50,3% (IC_{95%} 46,9 - 53,7) da amostra foi considerada fisicamente ativa no lazer, sendo que os rapazes (64,7%; IC_{95%} 59,9 - 69,1) foram mais ativos que as moças (36,8%; IC_{95%} 31,7 - 40,9). Na análise ajustada, indivíduos com maior apoio social dos pais tiveram maior probabilidade de serem ativos comparados àqueles com menor apoio social, apresentando entre as moças a razão de prevalências (RP) de 2,55 (IC_{95%} 1,67-3,90) e de 1,64 (IC_{95%} 1,20-2,23) entre os rapazes. Com relação ao apoio dos amigos, os rapazes localizados no tercil mais elevado de apoio social tiveram maior probabilidade de serem ativos em relação àqueles com menor apoio social (RP 2,19; IC_{95%} 1,46-3,26). A mesma análise entre as moças também mostrou resultados significativos (RP 1,67; IC_{95%} 1,08-2,58). Concluiu-se que o apoio social dos pais e amigos constitui-se como uma importante ferramenta na promoção de atividade física em adolescentes.

Palavras-chave

Escolares, Apoio social, Atividade Motora.

INTRODUCTION

Although the health benefits of regular physical activity (PA) are evident¹ the prevalence of physically active is increasingly low especially among young people.² A recent study that assessed the level of PA among adolescents and young adults in 105 countries found that more than 80% were physically inactive.³ It is thus crucial to identify the determinants of PA from a public health perspective since knowledge of these factors can help understand the reasons why young people do not achieve the recommendations of PA for health and help develop actions for promoting PA among adolescents and young adults.⁴

Social support has gained importance as a determinant of PA in the international literature.⁵ It can be generally defined as any information, material support or protection provided by other people and/or groups that lead to emotional results and/or positive behaviors.⁶

The main dimensions of social support are: emotional, instrumental, informational, and cognitive. Emotional support relates to the perception of being cared for, supported and valued by someone; material or instrumental support involves direct assistance of a practical nature; informational support involves obtaining information and advice; and cognitive support and self-affirmation involves being the object of active encouragement, active listening and positive reinforcement.⁷

Sources and types of social support associated with PA have been described in the literature. Parents, either individually or together, friends and siblings are the main sources of support,⁸ and the five types of social support for PA include encouragement, do with, watch, talk and transport.⁸ International studies have showed a consensus on the positive effects of social support for youth PA from parents and friends.^{9,10,11}

In Brazil, few studies have investigated the relationship between social support and PA.¹² It is thus necessary to further explore the impact of social support in promoting PA so that to know its actual magnitude for youth PA.¹³ Evidence suggests that the different sources and types of social support may produce distinctive effects on males and females.¹⁴

This study aimed to assess the association between social support and leisure-time PA in public high school students and to describe its relationships with gender and different sources and types of social support.

METHODS

This cross-sectional study is part of an initial assessment of the effectiveness of an intervention, the "Physical Education+: Promoting Health at School," developed by the Physical Activity Epidemiology Research Group (GEEAF) at the Universidade Federal de Pelotas. This intervention was designed to promote PA and health through physical education.

For sampling, all students attending grades 1, 2 and 3 of a public integrated technical high school at four campuses of the Instituto Federal de Educação, Ciência e Tecnologia Sul-rio-grandense (IF-Sul) were eligible to participate in the study, totaling 1,050 students at the beginning of the 2012 school year. Located in four cities in the state of Rio Grande do Sul, these campuses were selected to participate in the study because they met the inclusion criteria: integrated high school; physical education instructors who are not either directly or indirectly

affiliated to the GEEAF (e.g., former graduate student or collaborator); located outside Pelotas (to avoid potential intervention contamination). Of eight IF-Sul campuses, four were eligible.

Social support and level of PA were assessed using an instrument proposed by Farias *et al.*¹³. The level of PA was assessed using past week recall of leisure-time PA only. This section of the instrument consists of a list of physical activities and each student is asked how many days a week and how much time a day on average they engaged in an activity in the previous week. If a student engaged in an activity that is not listed, they can write it down. Active students were those reporting at least 300 minutes of PA in the week prior to the interview, consistent with current recommendations for PA.¹⁵

The instrument's section on social support was divided into two parts according to the source of support: parents or friends.¹³ Each part comprised the five types of social support: "encouragement," "do with (parents/friends)," "watch," "talk," and "transport." "Transport" was replaced with "invitation" for assessing friend support. For each type of social support students were asked the frequency of support (never, rarely, often, and always). As an operational definition, scores from 1 (never) to 4 (always) were assigned to frequency of social support from both sources. The scores were divided into tertiles: 0–4, 5–7, and 8–15 for parents, and 0–5, 6–10, and 11–15 for friends.

Data was collected from March to April 2012. At the days and times scheduled by school management, self-administered questionnaires were handed out in the classroom by an interviewer who also provided instructions. Data were collected by one of the researchers who underwent 8-hour training.

Independent variables included gender, age (in full years divided into three groups: ≤ 14 ; 15; ≥ 16), grade and campus. The variable asset index was constructed from a list of consumer goods and grouped according to factor analysis. A score was assigned based on the contribution of each consumer goods to explain the variable. It was then coded and divided into tertiles according to the score.

The data were first described from the distribution of proportions. Bivariate analyses were performed with the use of the Wald test. Poisson regression was used to assess the association between types of social support and level of PA controlling for confounders (gender, age, grade and campus).

The study project was approved by the Research Ethics Committee of the Universidade Federal de Pelotas School of Physical Education (protocol number 039/2011). A written consent was obtained from the parents of students under 18 and from students older than 18.

RESULTS

The sample comprised 833 students aged 13 to 25 years (mean age 15.7 years) with a study participation rate of 79.3%. Table 1 presents a description of the sample according to demographic, behavioral and school-related characteristics. Half of the sample (50.3%, 95% CI 46.9–53.7) was physically active during leisure time (≥ 300 min/week), and male students (64.7%, 95% CI 59.9–69.1) were more active than female students (36.8%, 95% CI 31.7–40.9).

Parental "encouragement" and "do with" friends were the most frequently reported types of social support regardless of gender (Table 2).

The proportion of physically active students by frequency of social support is presented in Table 3. Regardless of the source and type of social support, social

Table 1 – Demographic, behavior and school-related characteristics of the sample (N=833)

Variable	N*	%
Gender		
Male	415	49.9
Female	417	50.1
Age (in full years)		
≤14	193	23.2
15	251	30.1
≥16	389	46.7
Level of physical activity (minutes/week)		
<300	413	49.7
≥300	418	50.3

* Maximum number of missing values for level of physical activity was 2.

Table 2 – Frequency of social support from parents and friends by gender

	Never/rarely	Often/always
	%	%
Males		
Parents		
Encouragement	36.6	63.4
Do with	87.0	13.0
Transport	47.1	52.9
Watch	87.0	13.0
Talk	67.6	32.4
Friends		
Encouragement	35.7	64.3
Do with	22.4	77.6
Invitation	25.1	74.9
Watch	48.3	51.7
Talk	59.5	40.5
Females		
Parents		
Encouragement	38.3	61.7
Do with	86.5	13.5
Transport	50.4	49.6
Watch	85.8	14.2
Talk	68.8	31.2
Friends		
Encouragement	58.0	42.0
Do with	44.8	55.2
Invitation	46.1	53.9
Watch	65.9	34.1
Talk	72.0	28.0

support was directly associated with leisure-time PA, i.e., the prevalence of active students increased the more frequent support was.

Table 4 shows the crude and adjusted analyses of the association between parents and friend support and level of PA by gender. All analyses were statistically significant ($p \leq 0.05$). They showed that the higher the frequency of social support, the higher the level of PA in the sample studied. The adjusted analysis showed

Table 3 – Level of physical activity by source and type of social support

Sources and types of social support	Proportion of physically active			
	Never %	Rarely %	Often %	Always %
Parents				
Encouragement	31.4	40.9	53.4	64.6
Do with	41.4	52.7	69.4	90.9
Transport	38.3	52.9	54.7	56.5
Watch	36.0	57.4	76.8	81.2
Talk	34.4	48.7	67.0	76.2
Friends				
Encouragement	29.3	41.9	58.2	67.0
Do with	27.5	32.1	55.8	66.9
Transport	27.5	28.7	60.5	67.0
Watch	33.7	43.8	65.1	66.7
Talk	31.2	50.2	67.4	72.4

Table 4 – Crude and adjusted analyses of the association between social support from parents and friends and level of leisure-time physical activity

Social support	Crude analysis				Adjusted analysis*			
	%	PR	95% CI	p-value	PR	95% CI	p-value	
Males								
Parents				0.002				0.002
1st tertile	49.6	1.00			1.00			
2nd tertile	64.8	1.31	0.95–1.79		1.32	0.97–1.81		
3rd tertile	80.2	1.61	1.19–2.19		1.64	1.20–2.23		
Friends				<0.001				<0.001
1st tertile	34.0	1.00			1.00			
2nd tertile	71.3	2.09	1.42–3.08		2.05	1.39–3.03		
3rd tertile	77.0	2.26	1.52–3.36		2.19	1.46–3.26		
Females								
Parents				<0.001				<0.001
1st tertile	19.9	1.00			1.00			
2nd tertile	37.7	1.90	1.20–3.00		1.81	1.14–2.86		
3rd tertile	54.4	2.74	1.80–4.14		2.55	1.67–3.90		
Friends				0.003				0.016
1st tertile	26.9	1.00			1.00			
2nd tertile	41.4	1.54	1.06–2.22		1.43	0.98–2.09		
3rd tertile	50.0	1.86	1.21–2.85		1.67	1.08–2.58		

*Adjusted for gender, age, asset index, grade and campus

that male students with greater parental support were more likely to be active than the reference group (PR 1.64, 95% CI 1.20–2.23). Regarding friend support, male students in the upper tertile of support were more likely to be physically active than the reference group (PR 2.19, 95% CI 1.46–3.26). Among females, after adjustment for confounders, those with more parental support were more likely to be active (PR 2.55, 95% CI 1.67–3.90) than the reference group. And those in the upper tertile of friend support were more active (PR 1.67, 95% CI 1.08–2.58) than the reference group.

Table 5 shows the crude and adjusted analyses of the association between types of support from parents and friends and level of leisure-time PA by gender. So-

cial support regardless of the type and source—except for “providing transport” among girls—was associated with PA in both female and male students.

Table 5 – Crude and adjusted analyses of the association between the types of social support from parents and friends and level of leisure-time physical activity by gender

Sources and types of social support	Level of leisure-time physical activity (≥300 minutes/week)			
	Crude analysis		Adjusted analysis	
	PR (95% CI)*	p-value	PR (95% CI)*	p-value
Males				
Parents				
Encouragement	1.25 (1.06–1.47)	0.007	1.27 (1.08–1.50)	0.003
Do with	1.24 (1.05–1.46)	0.008	1.25 (1.07–1.46)	0.005
Transport	1.19 (1.03–1.39)	0.016	1.23 (1.06–1.43)	0.004
Watch	1.38 (1.20–1.58)	<0.001	1.40 (1.22–1.61)	<0.001
Talk	1.48 (1.30–1.68)	<0.001	1.47 (1.29–1.67)	<0.001
Friends				
Encouragement	1.41 (1.18–1.68)	<0.001	1.41 (1.19–1.67)	<0.001
Do with	1.89 (1.44–2.48)	<0.001	1.89 (1.45–2.45)	<0.001
Invitation	2.19 (1.66–2.89)	<0.001	2.14 (1.62–2.81)	<0.001
Watch	1.49 (1.28–1.75)	<0.001	1.48 (1.27–1.72)	<0.001
Talk	1.43 (1.25–1.65)	<0.001	1.45 (1.26–1.66)	<0.001
Females				
Parents				
Encouragement	1.83 (1.34–2.49)	<0.001	1.77 (1.32–2.39)	<0.001
Do with	2.00 (1.56–2.56)	<0.001	1.90 (1.46–2.47)	<0.001
Transport	1.20 (0.93–1.55)	0.152	1.14 (0.88–1.47)	0.308
Watch	2.19 (1.73–2.77)	<0.001	2.23 (1.76–2.83)	<0.001
Talk	2.09 (1.64–2.67)	<0.001	2.01 (1.57–2.56)	<0.001
Friends				
Encouragement	1.56 (1.21–2.01)	0.001	1.51 (1.18–1.94)	0.001
Do with	1.59 (1.20–2.10)	0.001	1.50 (1.13–1.98)	0.004
Invitation	1.78 (1.34–2.36)	<0.001	1.65 (1.25–2.19)	<0.001
Watch	1.58 (1.23–2.03)	<0.001	1.46 (1.14–1.87)	0.002
Talk	1.74 (1.36–2.23)	<0.001	1.66 (1.31–2.11)	<0.001

* Prevalence rates of physical activity (≥300 min/wk) – reference group: never/rarely.

DISCUSSION

The present study evidenced that, even after adjustment for confounders, support from parents and friends was positively associated with PA among students. Other studies have found similar results despite using different approaches to assess social support and PA and different definitions of social support for PA.¹⁶

In this study, parental and friend support showed similar associations with level of leisure-time PA. Consistent results were reported by Hohepa *et al.*¹¹ in a study where they assessed encouragement from parents, friends, siblings and school for PA. They found that only a significant association between encouragement from parents and friends and level of PA in all age groups studied. And Fermino¹⁰ reported that support from parents and friends was associated with moderate and vigorous PA in their study.

However, most research studies have shown that, compared to parental support, support from friends has a greater impact on youth PA. In a review study,

Van der Horst *et al.*⁵ found that parental support was positively associated with PA in children 4–12 years old whereas a positive association with friend support was seen in adolescents 13–18 years. In their study, Duncan, Duncan and Strycker⁸ found that support from friends was the source of support most strongly associated with level of PA among adolescents. Patnode *et al.*¹⁶ found that only support from friends was positively associated with PA among adolescents. In addition, a study with adults showed that support from friends was the most significant source of support for PA among both men and women, even for those still living with their parents.¹⁷

Seabra *et al.*¹⁸ has argued that the potentiated effect of friend support may be due to changes in the sources of advice during adolescence. Parents are key influencers of behaviors and values of their children during childhood, but during the transition to adolescence the desire for autonomy and independence makes adolescents separate from their parents and turn to friends for advice.

This study evidenced gender differences in the association between social support and level of PA. Among female students, parental support was more important than support from friends while the opposite was seen among male students. The Springer, Kelder, and Hoelscher¹⁹ study found that both parents and friends were major sources of support but support from friends was more strongly associated with PA among girls. Likewise, Kelly *et al.*²⁰ reported that support from friends was a major determinant of PA among girls.

Gonçalves *et al.*¹² proposed a possible explanation for these differences considering sociocultural factors. In their ethnographic study they evidenced that boys have more opportunities of making friends outside of school compared to girls because of a more clear concern with the morality of women, making them more reclusive. Parents put restrictions on their daughters' hanging out with friends, thus reducing their social interactions and the influence of friends and parents are key influencers of their behaviors. An opposite tendency is seen among boys as parents put fewer restrictions on hanging out with friends facilitating peer influence.

Based on our results we can infer that young males engage more in PA during leisure time than young females. This finding is consistent with that reported in other studies with young adults and adults.^{3,10} It can be explained by sociocultural factors determining PA among adolescents: the most common activities are sports where there is a predominance of boys.²

In our sample the types of social support more commonly associated with PA included parents' "talk" and friends' "invitation" among male students and parents' "watch" and friends' "talk" among females. A review study showed that the three types of social support more often associated with the outcome of PA included "encouragement," "do with" (take part), and "facilitation" (providing transport).¹² In Springer, Kelder and Hoelscher study,¹⁹ encouraging and engaging together were the most important types of support in the association between social support and PA. Yet another review study⁸ showed that children and adolescents who more frequently perceived their parents, friends and siblings watching them engage in PA showed higher levels of PA.

Surprisingly, parents' "transport" lacked statistical significance among female students. No other studies with similar results were found and further investigation is necessary to explain this finding.

The inconsistent results regarding the importance of different types of social support may be explained by the fact that it may be mediated by other factors such

as perceived athletic competence or self-esteem of adolescents, which can vary across samples. In addition to support from parents and friends, it would be necessary to explore their perceived psychosocial characteristics to better understand adolescent behavior.²²

The main limitation of this study is its cross-sectional design, which does not allow to establishing a causal relationship between frequency of social support and level of PA. Nevertheless, it should be stressed that social support has a positive impact on PA even in individuals who are otherwise physically active reinforcing this behavior.

CONCLUSION

Social support from parents and friends is a major promoter of PA in school students. This is a key finding that should be taken into consideration in the development of PA interventions well as parents and friends as promoters of physically active behaviors in this population.

Author contributions

Mario R Azevedo, Airton J Rombaldi e Jorge Otte collaborated in all steps of the study from study development to manuscript writing. Luiza IC Ricardo and Ana Cristina A Perez participated in the work of data analysis and manuscript writing.

REFERENCES

1. Lee IM, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet*. 2012; 380: 219–229.
2. Guedes DP, Guedes JERP, Barbosa DS, Oliveira JA. Níveis de prática de atividade física habitual em adolescentes. *Rev Bras Med Esp*. 2001; 7: 187–199.
3. Hallal PC, Andersen LB, Bull FC, Guthold R, Haskell W, Ekelund U. Global physical activity levels: surveillance progress, pitfalls, and prospects. *Lancet*. 2012; 380: 247–57.
4. Sallis JF, Prochaska JJ, Taylor WC. A review of correlates of physical activity of children and adolescents. *Med Sci Sports Exer*. 2000; 32: 963 - 975.
5. Van Der Horst K, Paw MJCA, Twisk JWR, Mechelen WV. A brief review on correlates of physical activity and sedentariness in youth. *Med Sci Sports Exer*. 2007; 39: 1241–1250.
6. Valla VV. Educação popular, saúde comunitária e apoio social numa conjuntura de globalização. *Cad Saúde Pública*. 1999; 15: 7-14.
7. Gonçalves TR, Pawlowski J, Bandeira DR, Piccini CA. Avaliação de apoio social em estudos brasileiros: aspectos conceituais e instrumentos. *Ciênc. saúde colet*. 2011; 16: 1755–1769.
8. Duncan SC, Duncan TE, Strycker LA. Sources and types of social support in youth physical activity. *Health Psychol*. 2005; 24:3-10.
9. Ceschini FL, Florindo AA, Benicio MHD. A. Nível de atividade física em adolescentes de uma região de elevado índice de vulnerabilidade juvenil. *Rev Bras Ciên Mov*. 2007; 15: 67-78.
10. Fermino RC. Atividade física e fatores associados em adolescentes do ensino médio de Curitiba, Brasil. *Rev. Saúde Públ*. 2010; 44: 986-995.
11. Hohepa M, Scragg R, Schofield G, Kolt GS, Schaaf D. Social support for youth physical activity: importance of siblings, parents, friends and school support across a segmented school day. *Int J Behav Nutr Phys Act*. 2007; 4:1-9.
12. Gustafson SL, Rhodes RE. Parental correlates of physical activity in children and early adolescents. *Sports Med*. 2006; 36: 79-97.
13. Farias Júnior JC, Lopes AS, Reis RS, Nascimento JV, Borgatto AF, Hallal PC. Development and validation of a questionnaire measuring factors associated with physical activity in adolescents. *Rev Bras Saúde Matern Infant*. 2011; 11: 301-312.

14. Beets MV, Vogel R, Forlaw L, Pitetti KH, Cardinal BJ. Social Support and Youth Physical Activity: The Role of Provider and Type. *Am J Health Behav.* 2006; 30 (3): 278-289.
15. World Health Organization. *Global Recommendations on Physical Activity for Health.* Geneva: World Health Organization, 2010.
16. Patnode CD, Lytle LA, Erickson DJ, Sirard JH, Barr-Anderson D, Story M. The relative influence of demographic, individual, social, and environmental factors on physical activity among boys and girls. *Int J Behav Nutr Phys Act.* 2010; 7: 1-10.
17. Silva ICM, Azevedo MR, Gonçalves HJ. Leisure-time physical activity and social support among Brazilian adults. *Phys Act Health.* 2012; Oct 10. [Epub ahead of print]
18. Seabra AF, Mendonça DM, Thomis MA, Anjos LA, Maia JA. Determinantes biológicos e sócio-culturais associados à prática de atividade física de adolescentes. *Cad Saúde Pública.* 2008; 24: 721-736.
19. Springer AE; Kelder SH, Hoelscher DM. Social support, physical activity and sedentary behavior among 6th-grade girls: a cross-sectional study. *Int J Behav Nutr Phys Act.* 2006; 3: 1-10.
20. Kelly EB, Medina DP, Pfeiffer KA, Dowda M, Conway TL, Webber LS, et al. Physical activity in black, hispanic and white middle school girls. *J Phys Act Health.* 2010; 7: 184-193.
21. Gonçalves H, Hallal PC, Amorim TC, Araújo CL, Menezes AM. Fatores socioculturais e nível de atividade física no início da adolescência. *Rev Panam Salud Publica.* 2007; 22: 1755-1769.
22. Beets MW, Cardinal BJ, Alderman BL. Parental social support and the physical activity-related behaviors of youth: a review. *Health Educ Behav.* 2010; 37: 621-644.

Corresponding author

Luiza Isnardi Cardoso Ricardo
Rua Manoel Lucas de Oliveira, nº 1878,
bairro Fragata, Pelotas-RS.
CEP: 96030-370
Telefone: (53) 32712112, (53)
81118723
E-mail: luricaardo@gmail.com

Received 20/03/2013**Revised** 17/04/2013**Approved** 26/04/2013