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

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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% (CI95% 46.9 - 53.7) of the sample was considered physically active during leisure-time, and boys (64.7%; CI95% 59.9 – 69.1) were more active than girls (36.8%; CI95% 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 (CI95% 1.67-3.90) among girls and 1.64 (CI95% 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; CI95% 1.46-3.26). The same analysis among girls has also shown significant results (PR 1.67; CI95% 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.
INTRODUCTION

Although the health benefits of regular physical activity (PA) are evident⁴ 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. 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.

The instrument’s section on social support was divided into two parts according to the source of support: parents or friends. 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
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≤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...
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-
social 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

<table>
<thead>
<tr>
<th>Sources and types of social support</th>
<th>Level of leisure-time physical activity (≥300 minutes/week)</th>
<th>Crude analysis</th>
<th>Adjusted analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PR (95% CI)*</td>
<td>p-value</td>
<td>PR (95% CI)*</td>
</tr>
<tr>
<td><strong>Males</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encouragement</td>
<td>1.25 (1.06–1.47)</td>
<td>0.007</td>
<td>1.27 (1.08–1.50)</td>
</tr>
<tr>
<td>Do with</td>
<td>1.24 (1.05–1.46)</td>
<td>0.008</td>
<td>1.25 (1.07–1.46)</td>
</tr>
<tr>
<td>Transport</td>
<td>1.19 (1.03–1.39)</td>
<td>0.076</td>
<td>1.23 (1.06–1.43)</td>
</tr>
<tr>
<td>Watch</td>
<td>1.38 (1.20–1.58)</td>
<td>&lt;0.001</td>
<td>1.40 (1.22–1.61)</td>
</tr>
<tr>
<td>Talk</td>
<td>1.48 (1.30–1.68)</td>
<td>&lt;0.001</td>
<td>1.47 (1.29–1.67)</td>
</tr>
<tr>
<td><strong>Females</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encouragement</td>
<td>1.83 (1.34–2.49)</td>
<td>&lt;0.001</td>
<td>1.77 (1.32–2.39)</td>
</tr>
<tr>
<td>Do with</td>
<td>2.00 (1.56–2.56)</td>
<td>&lt;0.001</td>
<td>1.90 (1.46–2.47)</td>
</tr>
<tr>
<td>Transport</td>
<td>1.20 (0.93–1.55)</td>
<td>0.152</td>
<td>1.14 (0.88–1.47)</td>
</tr>
<tr>
<td>Watch</td>
<td>2.19 (1.73–2.77)</td>
<td>&lt;0.001</td>
<td>2.23 (1.76–2.83)</td>
</tr>
<tr>
<td>Talk</td>
<td>2.09 (1.64–2.67)</td>
<td>&lt;0.001</td>
<td>2.01 (1.57–2.56)</td>
</tr>
<tr>
<td><strong>Friends</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encouragement</td>
<td>1.56 (1.21–2.01)</td>
<td>0.001</td>
<td>1.51 (1.18–1.94)</td>
</tr>
<tr>
<td>Do with</td>
<td>1.59 (1.20–2.10)</td>
<td>0.001</td>
<td>1.50 (1.13–1.98)</td>
</tr>
<tr>
<td>Invitation</td>
<td>1.78 (1.34–2.36)</td>
<td>&lt;0.001</td>
<td>1.65 (1.25–2.19)</td>
</tr>
<tr>
<td>Watch</td>
<td>1.58 (1.23–2.03)</td>
<td>&lt;0.001</td>
<td>1.46 (1.14–1.87)</td>
</tr>
<tr>
<td>Talk</td>
<td>1.74 (1.36–2.23)</td>
<td>&lt;0.001</td>
<td>1.66 (1.31–2.11)</td>
</tr>
</tbody>
</table>

* 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.15 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.\textsuperscript{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 Strycker\textsuperscript{8} found that support from friends was the source of support most strongly associated with level of PA among adolescents. Patnode et al.\textsuperscript{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.\textsuperscript{17}

Seabra et al.\textsuperscript{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 Hoelscher\textsuperscript{19} 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.\textsuperscript{20} reported that support from friends was a major determinant of PA among girls.

Gonçalves et al.\textsuperscript{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 exclusive. 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 with consistent with that reported in other studies with young adults and adults.\textsuperscript{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.\textsuperscript{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).\textsuperscript{12} In Springer, Kelder and Hoelscher study,\textsuperscript{19} encouraging and engaging together were the most important types of support in the association between social support and PA. Yet another review study\textsuperscript{9} 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