


Research article

Parental predictors of physical inactivity in Spanish adolescents

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Abstract

The purpose of this study was to determine some parental predictors of physical inactivity in Spanish adolescents. The sample comprised 1,978 children, aged between 12 and 16 years. A quantitative and qualitative technical triangulation was employed. The study analyzed data of the parents' educational level, the importance they grant to physical-sport activities, and their physical-sport practice. Quantitative technique: a questionnaire (MACOFYD) was used to collect the data. Descriptive, bivariate, and multinomial regression analyses were employed. Statistical significance was set at $p < 0.05$. Qualitative technique: four discussion groups were conducted, consisting of parents, physical education teachers, teachers of other subjects, and children aged between 12 and 16 years. The results indicated that adolescents are four times more likely to be physically inactive if their parents have never exercised (odds ratio [OR] = 4.065, and = 3.487, for the fathers and mothers, respectively, $p < 0.05$). When parents grant "some" or "much" importance to physical-sport practice, adolescents are less likely to be physically inactive (OR = 0.185 and 0.118 respectively, $p < 0.01$). No significant correlation was found between adolescents' physical-sport activity and parents' educational level. However, young people reproach their parents because they emphasize academic goals more than physical-sport practice—an observation that teachers also confirm. Young people perceive their parents as being the education agents with the greatest influence over their inactive lifestyles. Many parents are unaware of their influence and, therefore, do not take responsibility, declaring that the teachers' influence is greater.

Key words: Physical activity, sport, adolescents, leisure and parents.

Introduction

In several research studies, intrinsic factors (i.e., pleasure, fun, attraction to the activity...) have been associated with adherence to physical activity (Almagro et al., 2010; Ulrich-French and Smith, 2009). However, Gómez-López et al. (2010) examined barriers to the practice of physical activities, finding both intrinsic and extrinsic factors that are linked to an inactive lifestyle. Among the external barriers, they highlight the lack of social support. Thus, results from numerous studies confirm that both the parents are the most influential education agents of physical-sport practice for children and teenagers (Gimeno, 2000; Kremer-Sadlik and Kim, 2007; Moreno and Cervelló, 2004; Vizcarra et al., 2006).

The interest and importance that parents grant to physical activity are related to adolescent physical activity (Edo, 2004). Furthermore, the parents' educational level has been reported to influence children's and teenager's physical practice. Authors such as Gordon-Larsen et al.

(2000) and Roman et al. (2006) state that a mother's higher educational level is linked to a higher probability for her children to participate in physical-sport activities. Kantomaa et al. (2007) and Palou et al. (2005) agree, but they refer to both parents, whereas Edo (2004) does not establish any relationship between the two variables.

Parents' physical activity is associated with adolescent physical activity (Edo, 2004; Montil, 2004; Ponseti et al., 1998; Rodríguez et al., 2005; Valderas et al., 2002; Vilhjalmsón and Thorlindsson, 1998). However, García Ferrando (1993) noted that the increase in children's physical practice is only associated with the mothers' past physical activity. Aarnio (2003) only detected an association between very active mothers and their daughters' physical activity, whereas Trudeau et al. (2004) observed a significant relationship around ages 10 to 12 years old, which ceased when the children reached age 30.

Most of the literature reviewed examines the factors that have a positive impact on the initiation and maintenance of children's physical activity. However, Boiché and Sarrazin (2009) compared the factors associated with dropout versus maintained participation, concluding that parental support and the value parents grant to sport were positively associated with children's sport participation. They suggest that "parents' investment should be considered in order to prevent dropout from organized sport."

Regarding physical inactivity among adolescents, results from diverse studies indicate that when both parents are physically inactive, the children are more likely to be physically inactive than are children whose parents are physically active (Singh et al., 2008). When parents are physically active, the likelihood of their daughters, but not their sons, becoming physically active increases (Rangul et al., 2011). In contrast, Siegel et al. (2011) report that parents' perceived physical activity is a significant predictor of young boys' physical inactivity. Perceiving the mother as active is positively related to inactivity, but perceiving the father as active is negatively related to physical inactivity.

Daskapan et al. (2006) discovered a series of parental barriers to teenager's sports activities. Parents acknowledge the priority of academic success to the detriment of physical-sport practice, and that this preference, as well as a lack of time due to family responsibilities, is an obstacle to integrate physical activity into the children's lifestyle.

Given this state of affairs, the present research seeks to answer the following questions: how, when, and why can parents exert a negative influence over their children, resulting in the absence of physical activity? The goal of this article is to determine the parental factors

that can have a negative impact on children's active lifestyle.

Methods

A methodological triangulation, using both quantitative and qualitative techniques, was employed.

Quantitative technique

Participants

The study population comprised 11,259 subjects aged between 12 and 16 years, spanning all the adolescents who were registered in any of the four levels of Secondary Education in schools throughout the province of La Rioja (Spain). La Rioja is an autonomous community in north-central Spain, covering 5,035 km². The sample comprised 1,978 subjects: 51.7% girls and 48.3% boys, for a 95% confidence level and a sample error of ± 2 sigma.

Instruments

The MACOFYD (Questionnaire on the motivation, attitudes, and behaviors in children's physical-sport leisure) (Ponce de León et al., 2010). This questionnaire, which has already been validated and configured for a total of 39 items, was used to collect the data about the variables of this study. To determine predictors of adolescents' physical inactivity, only Items 2, 8, 18, 22, and 28 were used. As Figure 1 shows, these variables were: the participants' gender, both parents' educational levels, the importance granted to physical-sport activities by the parents, the parents' physical-sport situations, and the participants' own physical-sport situation. The specific questions and response categories are shown in Table 1. Reliability was verified through two pilot studies in real conditions, taking into account the inputs during the process, including suggestions by experts and university specialists in Sport and Physical Activity. Cronbach's alpha ($\alpha = 0.721$) shows that the items have a high reliability.

Procedure

The questionnaire was administered during the academic year 2008 between the months of February and April. The

information was collected through a self-administered approach designed for massive classroom impact, during the usual class time and with previous consent given by the corresponding teacher and the headmaster. Students were asked for their anonymous and voluntary collaboration. A researcher was present at all times and special emphasis was placed on the sincerity of the students' responses.

Data analysis

Cramer's V coefficients were calculated to determine the extent and direction of the bivariate association between adolescent physical activity and all the other variables. A multinomial regression analysis was performed in order to detect the parental factors that determine the absence of physical-sport practice in the children. Significance of the analysis was set at an alpha level of $p < 0.05$.

Qualitative technique

Participants

A total of 41 participants took part in this section: 10 parents, 10 physical education (PE) teachers, 10 teachers of other subjects, and 11 students.

Instruments

A discussion group technique was used with the four above-mentioned collectives. The selection of the participants was crucial, and the diverse collectives were primarily formed according to membership criteria. The following aspects were taken into account: homogeneity regarding collective education; gender heterogeneity; the decision to balance the number of participants in relation to their birthplace (i.e., whether or not they were from the capital or from another area in the province); and the balance of the type of school (public and state-subsidized or chartered).

The category system for analyzing the value of health in physical-sport leisure created by Valdemoros (2010) was used. To determine educational and social agents' perception of the influence of the parents on adolescents' inactivity, the subcategories of the influence of social agents in the children's physical-sport practice were analyzed (Table 2).

Table 1. Items, questions and answers examined in this study

ITEMS	QUESTIONS	ANSWERS
2	Gender	Male/female
8a	Your father's educational level is:	<i>No official studies/primary education/secondary education including vocational studies/university degree/does not know how to respond</i>
8b	Your mother's educational level is:	<i>No official studies/primary education/secondary education including vocational studies/university degree/does not know how to respond</i>
18	The importance granted to physical-sport activities by your parents is:	<i>None/ Little/ Some /Much /Very Much /does not know how to respond</i>
22a	Your father's physical-sport situation is:	<i>He does not practice now nor did he practice physical-sport in the past/He does not practice now but he used to /He practices now but he did not use to practice /He practices now and also practiced in the past</i>
22b	Your mother's physical-sport situation is:	<i>She does not practice now nor did she practice physical-sport in the past/She does not practice now but she used to /She practices now but she did not use to practice /She practices now and also practiced in the past</i>
28	Your physical sport situation is:	<i>I do not practice nor have I practiced physical-sport in the past/I do not practice now but I used to /I practice now but I did not use to practice /I practice now and also practiced in the past</i>

FOLLOW-UP AND ANALYSIS PROTOCOL OF DISCUSSION GROUPS

Date of session: _____

Collective: _____

Number of volunteer participants: _____

Men: _____ Women: _____

Questions for discussion:

From your point of view, what do adolescents' and youngsters' currently think about physical sports practice?

What factors or variables do you think may influence the practice of physical sports? (Is there appropriate training in physical-sport leisure or is this an unresolved issue?) (rural/urban, parents, friends, professionals' training, facilities, material, diverse offer[s], communication media).

What do adolescents and youngsters look for in physical sports?

What kind of physical-sports activities are youngsters currently interested in and which ones do you think are practiced most frequently?

What impact do you think the teachers, the family, and friends have on such practice?

How would you rate the physical-sport offer in the schools, City Halls, private entities, federations, associations, etc. (facilities and space)?

What would you propose in order to increase adolescents' and youngsters' interest in the practice of physical-activity sports? (adequate teachers?)

Describe the ideal professional profile of the people who direct or stimulate adolescents' and youngster's physical-sports leisure (competences, aptitudes, attitudes, values, knowledge...).

Observations:

Figure 1. Observational protocol

Table 2. Category and subcategories examined in this study.

Category	Subcategories
The influence of social agents in the children's physical-sport practice	1. Parents as influential agents
	2. Teachers as influential agents
	3. Friends as influential agents
	4. Coaches as influential agents
	5. Others as influential agents

Procedure

An observational protocol, which is represented in Figure 1, was created to carry out discussion groups during the month of May of 2008. In order to prevent influencing participants' responses, the protocol consisted of eight general questions that do not explicitly address the subject matter of study, which are shown in Figure 3.

In order to optimize the reliability of the protocol, only one researcher was responsible for data analysis. Flexible criteria were used concerning the duration of the group discussions and when to end them (when the group was saturated or discourse became redundant). All the participants were observed to determine whether they changed their opinion about any of the issues.

Data analysis

The accounts of these discussion groups were analyzed

with Nvivo 9 software. The analytical category and subcategories were validated by the judgments of five experts and university specialists in Sciences Education, Sport and Physical Activity, who identified the textual units in one of the discussion groups (PE teachers), registering each unit in the corresponding subcategories.

Cohen's kappa formula was applied to measure inter-evaluator reliability, obtaining satisfactory reliability. Concerning the degree of correlation among the experts, the variance was never less than 0.5 (Cohen, 1960). Thus, the results obtained verified the categories used in the present investigation (see Table 3).

After the category system had been validated, a single investigator was responsible for coding the textual units of the other three focus groups.

Results

In the questionnaire, most of the young people (78.4%) currently exercised. Of these, 73.5% had already engaged in some form of physical-sport activity in the past, but 4.9% had no prior experience. In contrast, 3.1% of the children had never engaged in sport activity, and 18.5% of the adolescents had quit practicing physical sport. These results are presented in Figure 2.

Table 3. Kappa coefficients

Principal Investigator	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5
Kappa	.568	.727	.548	.832	.674
Margins proposed by Landis and Koch (1977)	Moderate [.4-.6]	Good [.6-.8]	Moderate [.4-.6]	Very Good [.8-1]	Good [.6-.8]

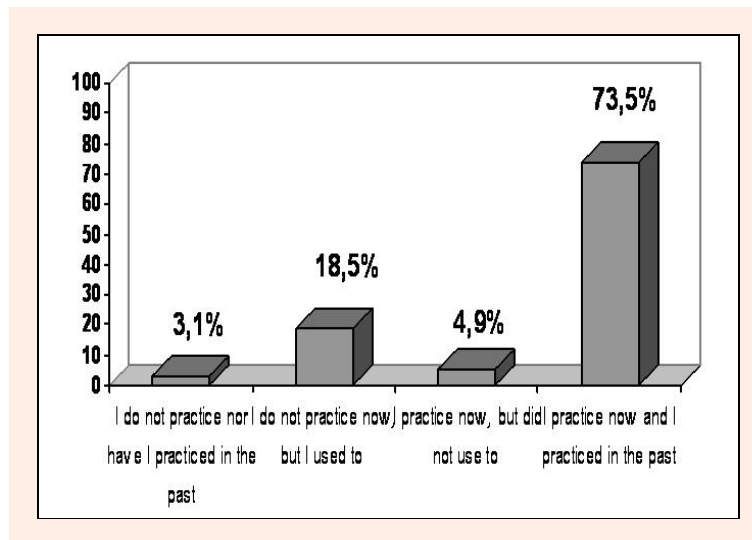


Figure 2. Adolescents' past and present physical-sport behavior.

The bivariate correlation analysis showed that the children's physical-sport practice correlated significantly with gender (Cramer's $V = 0.264$), the importance granted by parents to physical-sport activities (Cramer's $V = 0.213$), and both parents' physical-sport practice (Cramer's $V = 0.164$ and $V 0.125$, respectively, for fathers and mothers). However, the children's physical-sport practice did not significantly correlate with either parent's educational level. These results are presented in Figure 3.

In order to determine the predictors of adolescents' physical inactivity, a multinomial regression analysis was conducted with the children who had never engaged in physical-sport activities (Table 4). The results of this analysis revealed that, if neither parent had ever engaged in physical activities (OR = 4.065 and = 3.487, for the fathers and mothers, respectively) and the child was female (OR = 2.738), this strongly predicted that these adolescents would not currently engage in physical-sport activities nor would they have done so in the past. On the other hand, adolescents whose parents grant "some" or "much" importance to physical-sport practice (OR = 0.185 and 0.118, respectively) are less likely to be

physically inactive.

Based on these findings, it is four times more likely for an adolescent whose father has never engaged in physical-sport activities to be more sedentary than a child whose father currently practices and has practiced physical exercise in the past. Likewise, children are three and a half times more likely to be sedentary if their mothers have never practiced physical activities than if their mothers practice and have practiced in the past. Girls are three times more likely to avoid physical-sport activities in their free time, in comparison to boys.

Lastly, regarding the effect of the importance granted by parents to physical-sport activities, granting "none," "little" or "some" importance to such activities has no impact on adolescents' participation in physical-sport activities in their free time. However, granting "much" or "very much" importance to these types of experiences reduces the likelihood of adolescents being physically inactive.

In the qualitative phase, a total of 215 opinions about the influence of social agents in the children's physical-sport practice were recorded in the discussions generated in the 4 focus groups. Twenty percent of the

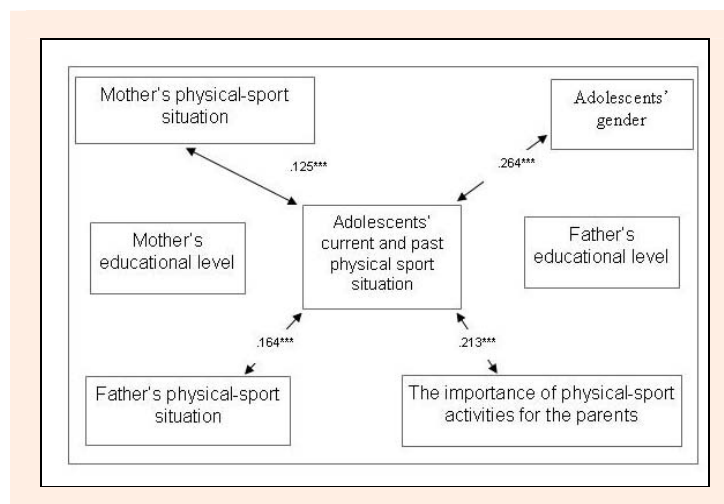


Figure 3. Bivariate relational analysis of adolescents' current and past physical-sport practice with the remaining variables. The numbers along the arrows represent Cramer's V . * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 4. Results of the multinomial regression analysis

Variables	Reference Category	B	SE (β)	Odds ratio [95% CI]	p value
Father's physical-sport situation Does not practice/did not use to practice	Practices and used to practice	1.402	.480	4.065 [1.586, 10.415]	< .005
Mother's physical-sport situation Does not practice/ did not use to practice	Practices and used to practice	1.249	.522	3.487 [1.252, 9.709]	< .05
Gender	Male	1.007	.299	2.738 [1.525, 4.918]	< .001
The importance granted to physical-sport activities	Does not know how to respond				
Some		-1.685	.745	.185 [.43, .799]	< .05
Much		-2.133	.805	.118 [.024, .573]	< .05
Constant		-4.447	.794		

comments point to the coaches as influential agents, 22% to parents, another 22% to the teachers, and 26% to friends.

Regarding comments that consider the parents as influential education agents, such comments were equitably distributed in the four groups analyzed (Figure 4).

According to their statements about education agents, 32% of the parents' arguments showed that they are aware that they constitute a fundamental model for their children's physical-sport activity or the absence thereof. Arguments like the following support this claim:

"Today, there are many parents who do not place much importance on sports because they believe that their child should be better prepared to find the best jobs, or to achieve higher grades in their degree. Consequently, they emphasize other directions for the children, such as new technologies, languages, etc." (Parents' collective).

On the other hand, children occasionally reproach their parents for placing more importance on academics rather than on physical-sport practice (seen in 25% of the children's comments). Testimonials like the following reflect this idea: "Many of us have been influenced by the fact that our parents consider studies as being primary, and sports secondary" (Students' collective).

Teachers of subjects other than PE voiced their agreement with the adolescents on this issue (20% of the comments by teachers of subjects other than PE), expressing the following: "Although you can try to explain to parents that one can study and participate in sports at the same time, many of them are reticent about this notion" (Collective of teachers of subjects other than PE).

Finally, PE teachers reproach the influence parents

placing more importance on academics to the detriment of physical-sport activity, and focusing on economic arguments to justify the lack of physical participation (33% of PE teachers' comments).

"Another factor is the family's mentality, and the fact of paying for physical-sport activity. There are many families that consider that to pay 50 Euros a month for English classes is absolutely normal, but to pay 20 or 30 Euros a month to participate in a physical activity in a club is unusual" (PE Teachers' Collective).

Discussion

The present research sought answers to the following questions: how, when, and why can parents exert a negative influence over their children, resulting in the absence of physical activity? The goal of this article was to determine which parental factors could have a negative impact on their children's active lifestyle. We conclude that both parents are influential education agents for their children's physical activities.

As mentioned above, numerous investigations have discovered a positive association between the participation in physical-sport activities of parents and their children (Aarnio, 2003; Edo, 2004; Montil, 2004; Ponseti et al., 1998; Rodríguez García et al., 2005; Trudeau et al., 2004; Valderas et al., 2002; Vilhjalmsson and Thorlindsson, 1998). Our results show that the probability of adolescents' physical inactivity is quadrupled when their parents have never participated in physical-sport activities. After confirming the influence of parents as education models, it is important to ask whether parents' in capacity to prevent sedentary lifestyle

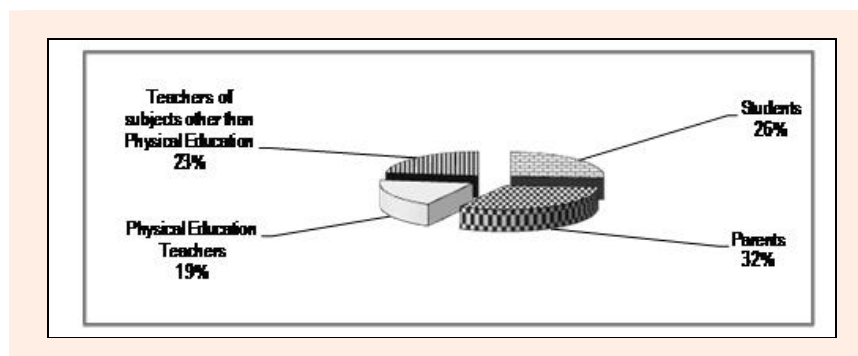


Figure 4. Textual units of the diverse collectives that consider the parents to be important education agents.

is partially determined by their own lack of motor activity.

This study verifies that when parents confer more importance on physical activity, the likelihood that the adolescent is sedentary is minimized. The results are consistent with those obtained by other authors (Edo, 2004).

Gender is also an important determinant in these experiences and deserves more attention in future research. For instance, when parents do not provide a physical-sport model in recreational activities, their daughters are three times more likely to be inactive.

Lastly, the discussion group analysis reveals a reproach that is reiterated both by teachers and children, aimed at both parents: the perception that parents grant more importance to academics than to physical-sport activities, which creates an obstacle to practice sports and, consequently, determines the absence of physical activity in their children. This result corresponds with that of Daskapan et al. (2006), who also reported that parents' prioritization of academic success was a barrier for adolescents' practice of physical activity. Based on the findings of the present study, we consider that parents may not be aware of this criticism. In fact, they say that they are willing to support their children's practice in any possible way. In view of this statement, it is essential to study the discrepancy between parents and the remaining study groups, as the parents do not realize the great influence they wield regarding the absence of physical-sport habits in their children's lives.

The results obtained in other investigations (Gordon-Larsen et al., 2000; Roman et al., 2006; Kantomaa et al., 2007; Palou et al., 2005) find that the parents' educational level is an influential factor in the physical-sport practice of young children and adolescents. In this research, however, the parents' academic level did not determine their children's lack of participation in these activities. This raises a central question for this study: what is it that affects children's decision to start, adhere to, or drop out of physical-sport activities?

We are aware of the limitations of this kind of study, as the information about parents' physical practice and the importance they grant such practice was collected through the adolescents' perception.

Conclusion

1. An important percentage of adolescents have never participated in sports activities.
2. Adolescents' lack of physical-sport practice correlates significantly with both parents' lack of physical exercise, as well as with the adolescent being female.
3. When the parents place increasingly greater importance on physical-sport practice, the likelihood of their children being physically inactive is greatly reduced.
4. The parents' educational level does not correlate with their children's participation in physical activities.
5. Children perceive that their parents are education agents with a great deal of influence on their sedentary lifestyle.
6. Both teachers and children reproach parents for priori-

tizing academic goals and undermining the importance of physical-sport activities, leading to counterproductive effects such as the absence of habits of physical exercise.

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Key points

- Parental factors significantly affect adolescent physical inactivity. Parents' physical inactivity is among the most important factors.
- Statistically significant results were found for gender. Being female tripled the likelihood of being sedentary.
- The results are very important as they are considered an outline for the design of support policies and national sport promotion guidelines.