

Relationship between extracurricular physical activity and academic performance in secondary education students

Relación entre la actividad física extraescolar y el rendimiento académico en alumnos de Educación Secundaria

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Abstract

Decreasing physical activity levels and the incremental sedentary time affects negatively during primary school, and have a negative influence on academic performance. 175 students from different centers of southern Spain were included. Sociodemographic characteristics, physical activity practice and academic performance were evaluated. Results show how children who practice out of school have higher levels of academic performance. Therefore practice of sport and physical activity in adolescents is associated with higher academic performance.

Key Words

Academic performance, Extracurricular physical activity, Secondary education

Resumen

La disminución de los niveles de práctica de actividad física, así como el incremento del sedentarismo repercute de forma muy negativa en los escolares, además de influir en factores como el rendimiento académico. El estudio presenta una muestra de 175 escolares de diferentes centros del sur de España. Se utilizaron variables sociodemográficas, practica de actividad física y diferentes calificaciones escolares. Los resultados indican que los escolares que practican actividad física extraescolar obtienen un mayor rendimiento. La práctica de actividad física extraescolar en escolares se asocia con mayor rendimiento académico.

Palabras clave

Rendimiento académico; Actividad física extraescolar; Educación Secundaria

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Introduction

Interest in the academic performance of our students, is a major concern and continues to arouse the interest of different audiences (family, education system, society, etc.), not just social and academic level but also at the level of research (Rodríguez, 2011). Since it was conducted early research on this subject, many elaborate theories about learning and their methods, becoming one of the problems with more presence in everyday life (Rodríguez, 2011).

Following Leon (2008), academic performance is defined like "the productivity of the subject, the final product of the implementation of the effort, tempered by activities, features and more or less correct perception of the tasks," or so more concise, the product that pays or gives students in the field of schools, and normally expressed through school grades (Tilano, Henao and Restrepo, 2009).

On the academic performance of students there are many influencing factors, including socioeconomic status, parents' education, area of residence (Casanova, Cruz, de la Torre and Villa, 2005 are; Jones and White, 2000), personal behavioral variables (Powell and Arriola, 2003) or personal (Proctor, Hurst, Prevant, Petscher and Adams, 2006). Especially in the use of their free time and leisure, since adolescence is a stage marked by changes physical, social, moral, emotional, among others, accounting for different variations and modifications teenager about their lifestyle and the way they occupy the leisure time (Gonzalez and Portolés, 2014). In fact, today we are witnessing an increase in sedentary behaviors among adolescents, which occupy their leisure time in sedentary activities like watching TV, surfing the net, playing consoles or using mobile, getting to be related numerous pathologies addiction to new technologies (Arias Gallego Rodriguez and Del Pozo, 2012; Carbonell, Fúster, Chamarro and Oberst, 2012).

In Europe, Spain has a prominent position in levels of physical inactivity refers more specifically is placed third in sedentary behaviors, ranking just above Portugal and Belgium (Varo et al., 2003). Similarly, the Health Behaviour in School-aged Children (HBSC) confirms each year the low physical activity of our teenagers, still below the percentage of practice in girls and descending with increasing age. Moreover, there is an increase in the

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hours that teens spend at the computer and television, fundamental reasons for the development of sedentary behaviors (Echeburúa Gargallo Odriozola & Corral, 2010).

However, authors like Ramirez, Vinaccia and Suarez (2004), stressed after nine years of intervention, students who performed physical education had higher levels of health, attitude, discipline, enthusiasm and academic performance than students who did not engage in physical education. In this regard, physical activity is not only beneficially related to academic achievement, but also negatively with behaviors that affect so harmful to health and are associated with academic problems (Kovacs et al, 2008; Paz-Navarro Roldan and Gonzalez, 2009).

The aim of the study is to describe and to establish the relationship between the practice of Extracurricular PA and academic performance.

Material and methods

Design and Participants

The design used for the study was a cross-sectional observational design where 175 subjects (84 boys and 91 girls) between the age of 12 and 16 year, were included. Volunteers were required different centers of southern Spain. His guardians were informed verbally and in writing the purpose of the study and were told they could leave the study at any time without having to report the reason for the abandonment and proceeded to the signing of informed consent. Ethical considerations for human study declared in Helsinki in 2000 and later revised in 2004 were met.

Inclusion criteria were: belong to the school where the collection was made, be aged between 12 and 16 years.

Procedures

After signing the informed consent, the questionnaires were applied in classrooms where students regularly receive their classes voluntarily and anonymous at all times. The measurements obtained were age, gender, academic data, and data on the practice of extracurricular physical activity.

Data analysis

The statistics has been presented as mean (standard deviation) for continuous variables. The normality of the data was initially examined by the Kolmogorov-Smirnov test with Lillifors correction. For the purpose of the study variables differences between academic performance and extra-curricular physical activity was tested by applying the Student t test for parametric distributions. Moreover, correlations between the study variables were tested using person coefficient. For all analyses, the significance level was set at $p < 0.05$. All analyzes were performed using SPSS version 23.0 for Windows operating system (SPSS, Inc., Chicago, IL). The figures were performance using Graphpad package version 5.0 for Windows.

Results

The average age of survey participants was 13.91 (1.31). The 59.4% of the sample practice extracurricular physical activity, while 40.6% do not practice. Regarding to gender (Table 1), results shows that the highest levels of practice are obtained in 1° ESO for girls and for boys 3° ESO. Based on academic course, it shows that 1° ESO has a higher practical value than 3° ESO.

Table 1. Sample distribution gender and course based in relation to the practice of physical activity out of school *

Extrac. PA	Gender	Academic course			
		1°	2°	3°	4°
Yes	Male	16 (25.4%)	14 (22.2%)	18 (28.6%)	15 (23.8%)
	Female	14 (34.1%)	10 (24.4%)	7 (17.1%)	10 (24.4%)
	Total	30 (59.5%)	24 (44.6%)	25 (45.7%)	35 (48.2%)
No	Male	9 (42.9%)	3 (14.3%)	7 (33.3%)	2 (9.5)
	Female	7 (14%)	17 (34%)	15 (30%)	11 (22%)
	Total	16(56.9%)	16 (48.3%)	22 (63.3%)	13 (31.5%)

*Data presented as frequency (%); Extrac. PA: Extracurricular Physical Activity

Figure 1 shows an apparent decline in the practice of Extracurricular PA in girls with increasing course in which they are teenagers, up 3° ESO, where an increase occurs in the practice. Regarding the boys seen as AF fluctuates practice Afterschool in different courses, obtaining the highest level in 3° ESO.

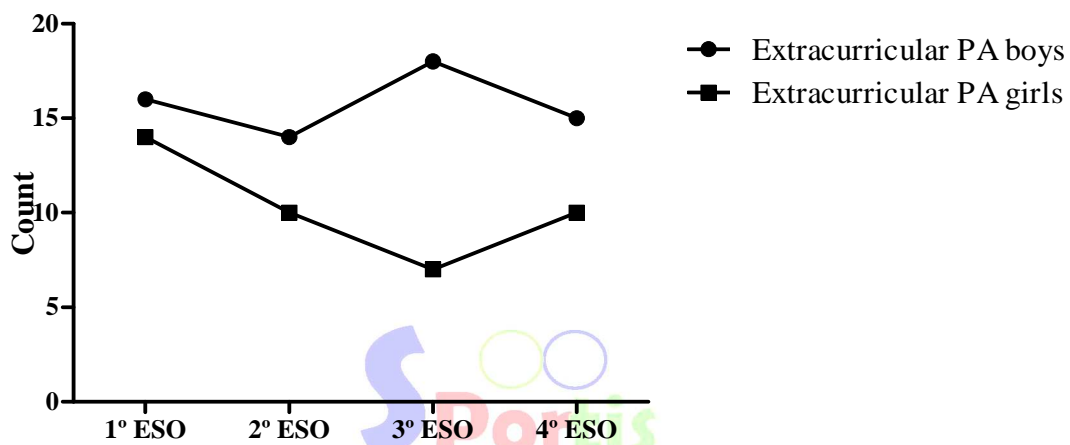


Figure 1. Comparison by gender and course in relation to the practice of Extracurricular PA

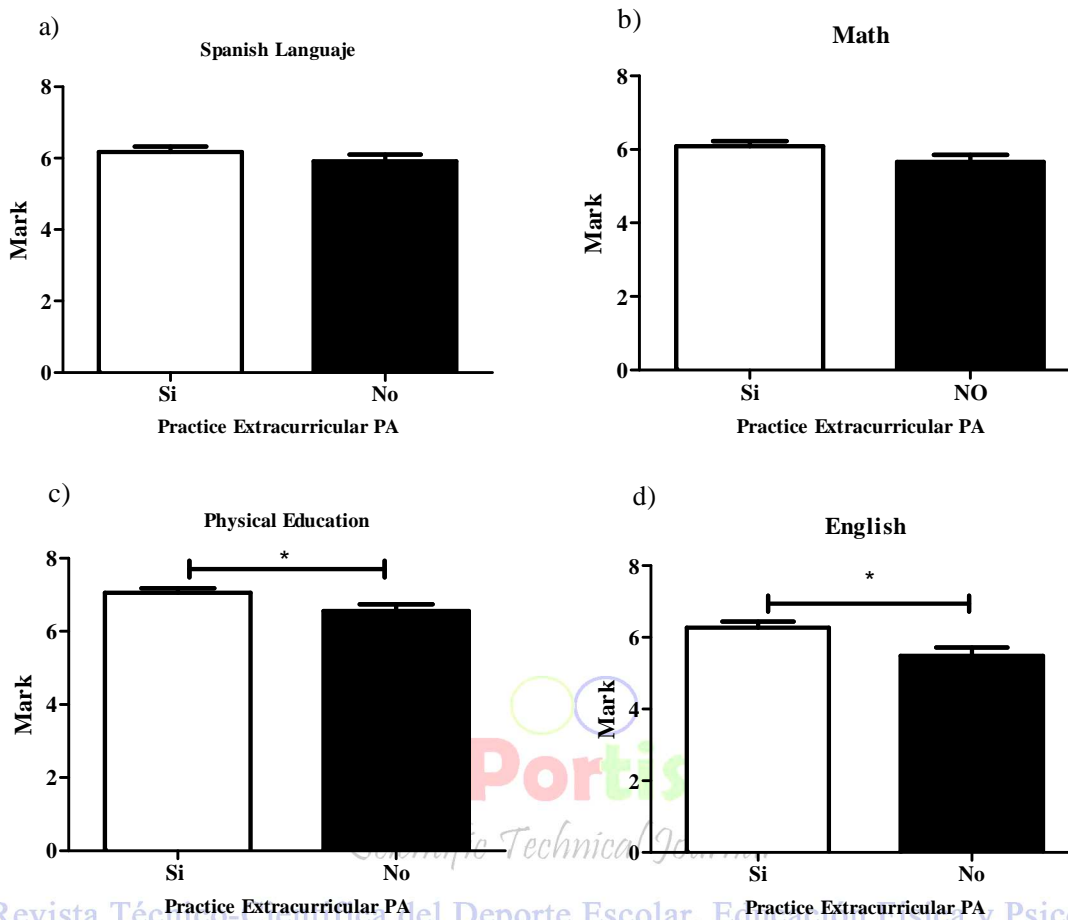


Figure 2. Academic performance according to practice or not of Extracurricular Physical Activity.

Figure 2 shows the academic performance measured on test scores in the subjects of Language, mathematics, english and physical activity. It is observed that there are significant differences in favor of practitioners Extracurricular Physical Activity to physical activity ($t=2.324$; $df=163$; $p= 0.0214$) and english language ($t=2.771$; $df=170$; $p= 0.0062$).

Table 2. Relationship between Extracurricular PA practice and academic performance (N = 175)

Variables	Extracurricular PA
Math	.142
English	.208**
Spanish Language	.084
Physical Education	.179*

*p<0,05; **p<0,01

Table 2 shows the correlations between PA practice afterschool and academic performance. A positive correlation was found between extracurricular physical activity and english subject ($r = .208$) and physical education ($r = .179$).



Discussion and conclusions

In a cross-sectional study in which 175 subjects were included, the principal finding was found in the Extracurricular PA relationship and academic performance in the subjects of english and physical education.

Overall, the results obtained regarding the practice of AF Afterschool is in line with those reported by Ruiz -Juan and Garcia (2002), who claim that the highest rates of Extracurricular PA practice occur in the early course of the ESO (59.5 %), decrease when children are growing (48.2 %).

Results show that children, who practice physical activity after school, have higher academic averages obtained in the subjects analyzed, with statistically significant differences in the subjects of english and physical education. These results are consistent with those reported in other studies (Linder, 2002; Ramirez, Vinaccia and Suarez, 2004, Scheuer and Mitchell, 2003), affirming the existence of a higher academic performance in school practicing Extracurricular PA.

Adopt policies and social measures to increase and facilitate the students to practice physical activity outside school is essential not only to counteract the levels of physical inactivity, but also to avoid the appearance of psychologically maladaptive behaviors and promote academic achievement.

As a research, it also has limitations that require further research to obtain data contrasting results (more comprehensive analysis of academic subjects, schools, physical activity levels, etc.).

Therefore, future research could address the analysis of activities by type and time commitment ... On the other hand; determine what are reasonable number of hours that are compatible or complementary activity to school, etc.

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