

RELATIONSHIP BETWEEN ACADEMIC ACHIEVEMENT AND SPORTS ENGAGEMENT: ARE ATHLETES BETTER THAN NON-ATHLETES IN TERMS OF ACADEMIC ACHIEVEMENT?

Tatjana Tubic^{1*}, Visnja Djordjic², Mira Milic³, Branka Protic-Gava⁴

¹Prof., Faculty of Sport and Physical Education, University of Novi Sad, SERBIA, tubic@uns.ac.rs

²Prof., Faculty of Sport and Physical Education, University of Novi Sad, SERBIA, visnja@uns.ac.rs

³Prof., Faculty of Sport and Physical Education, University of Novi Sad, SERBIA, mmilic@uns.ac.rs

⁴Prof., Faculty of Sport and Physical Education, University of Novi Sad, SERBIA, brankapg@uns.ac.rs

* Corresponding Author

Abstract

Considering inconsistent previous findings on the relationship between academic achievement and sports engagement, the study was conducted with the aim to examine the relations between students' academic achievement and selected indicators of sports engagement, including the type of sport (individual/ team), years of sport experience and the level of competition. The sample consisted of 194 secondary school third-graders, 89 males and 105 females. As for the academic achievement, 85 participants achieved an excellent overall score in the previous school year, 44 achieved a very good overall score, and 65 achieved a good overall score. In addition, 87 participants were non-athletes and 107 were athletes, with 34 of them being engaged in individual sports and 73 in team sports. Descriptive statistics was applied, as well as contingency tables (Chi-square test) and Freeman-Halton extension of the Fisher exact probability test. The results indicate that the academic achievement of athletes and non-athletes does not differ significantly. The relations between sports engagement and academic achievement were more prominent in male students; non-athletes had significantly better academic achievement than athletes ($\chi^2(2, N = 89) = 10.536, p = .00$). As for the whole sample, students engaged in individual sports achieved better academic results than those engaged in team sports ($\chi^2(2, N = 107) = 6.44, p = .04$). In the female student subsample the relationship between academic achievement and sports engagement was more related to sport experience; students who have been training for a longer period turned out to be better in terms of academic achievement. The level of competition was not identified as a significant variable in explaining the differences in academic achievement.

Keywords: academic achievement, sports engagement, individual/team sports, sport experience.

1 INTRODUCTION

There is a consensus among researchers on positive effects of sports engagement on health; sports engagement reduces anxiety and depression, but it also increases self-perception, concentration and memory, which should result in higher academic achievement (Bailey, 2006; Etnier et al., 1997; Fejgin, 1994; Roseqater 2009; Shephard, 2008; Trudeau & March, & Kleitman, 2003).

However, examination of the relevant literature has indicated that there is no consensus regarding the effects of sports engagement on academic achievement. A higher number of previous research works report positive correlation between academic achievement and doing physical activity in general (Miller et al., 2005; Marsh, 1992; Shephard, 1996; Taras, 2005; Whitley, 1999); a smaller number of research works indicate that this correlation is non-existent or that the relations between sports engagement and academic achievement are negative (Daley and Ryan, 2000; Tremblay, Inman, & Williams, 2000).

The mechanism which explains the positive correlation between sports engagement and academic

achievement concerns the increase of academic achievement due to neurohormonal balance and reduction of boredom, which in turn results in increased attention and concentration. An increased level of physical activity may additionally be related to higher self-perception which also affects the fulfillment of school obligations and thus academic achievement too (Shephard, 1996). A positive correlation between sports engagement and academic achievement can also be explained in terms of personality traits developed in a person owing to sport, which range from emotional stability and motivation for achievement to integrated functions such as conscientiousness, responsibility etc. (Tubić, 2013). For example, a person who has learned through sport how to cope with stress, how to fight his way to achieve goals, how to show his capabilities developed through hard work, will have more trust to his own abilities, which contributes to a higher efficiency of the learning process. These traits, that have been developed through sport, are reflected in school conditions and other spheres of life alike.

On the other side, the negative correlation between sports engagement and academic achievement is most often explained, in addition to the lack time and energy for school obligations, as being due to the so-called dumb jock stereotype, which is popularly believed to describe predominantly a male athlete who is good-looking, muscular etc. but not very intelligent. Basically, this explanation implies the assumption that sport is anti-intellectual due to which student-athletes are not seen as serious students. In accordance with this teachers have lower academic expectations from them. In combination with intrinsic and extrinsic gratification obtained in the field of sport, this stereotype leads to the situation in which many student-athletes put sport above academic achievement (Beezley, 1985; Edwards, 1984).

A contribution to systematization of this field is given by authors who point out the necessity of differentiation of direct and indirect relations between sports engagement and academic achievement. Indirect relations refer to the manner in which sport improves different noncognitive aspects of an athlete's personality, for example self-esteem or motivation, as well as how such an improvement leads to better academic achievement, whilst direct relations refer to the manner in which sports competitions help a student-athlete to improve his own test result or mark in a teaching subject by means of developing cognitive skills (Baucorn, & Lantz, 2000).

Attempts to determine whether sports engagement affects academic success of male and female subjects have not reached consensus of authors so far; the predominant research works suggest higher average school marks of female athletes (Crosnoe, 2002; Schlessner, 2004; Siliker, & Quirk, 1997; Stegman, & Stephens, 2000), even though there are research works with the opposite findings (e.g. Fox, 2010).

The findings testifying to higher academic achievement of females engaged in sport are explained by the fact that sports activities can increase the capacity for being successful in a male-dominated society, so that a higher sense of competence and self-esteem of females can be key factors of self-confirmation in competition with the males in the class. Regarding the fact that marks are also influenced by subjective factors, the females engaged in sport show greater readiness to impose themselves, to fight the pressure and competence in the classroom, to invest more effort, etc., which is reflected on the acquired marks too. The females are taught to behave in such a way in a typical male society, so that athletes and nonathletes do not differ substantially in that respect. Without a direct sports experience, girls would be more passive, more prone to withdrawal. Thus sports engagement produces greater differences of academic achievement between girls engaged in sport and those who are not, than in their male peers (Gneezy, Niederie, & Rustichini, 2003; Niederie, & Vesterlund, 2007).

On the other hand, in comparison with the females, sports engagement of the male subjects has a significantly higher effect on self-perception of sports competence, social acceptance, as well as general self-worth (Tubić, Đorđić, & Poček, 2012). Owing to the fact that the achieved sports success brings a more significant social benefit to the males in terms of popularity in a peer group than their academic achievement, it is possible that student-athletes try to maintain this status by means of stronger orientation towards sport than towards schooling and academic obligations. There is no doubt that secondary school male students have much more positive expectations from sports achievement than the females (Jacobs, Lanza, Osgood, Eccles & Wigfield, 2002).

Concerning the relations of academic achievement depending on the type of sport being practiced, a higher number of previous research works indicate that athletes engaged in individual sports have better academic results than their peers engaged in collective sports (Bradley, Keane, & Crawford, 2013; Eitle, & Eitle, 2002). The explanation is usually found in differences of personality traits of athletes in different sports which reflect on their academic achievement too (Craft, Magyar, Becker, & Feitz, 2003; Han et al., 2006; Kajbafnezhad, Ahadi, Heidarie, & Enayati, 2011; Zeng, 2003).

Understanding relations between sports engagement and academic achievement is also contributed by the duration of sports engagement; the results of meta-analysis based on 134 research works indicate that only long-term sports engagement makes it possible for positive effects achieved on the level of cognitive and psychological aspects of a personality functioning, in general, to become visible in the academic achievement (Etnier et al., 1997).

2. METHODOLOGY

2.1 Research sample

The sample consists of 194 secondary-school third graders (grammar school, school of electrical engineering, technical school and school of medicine) including 89 (45.9%) males and 105 (54.1%) females. Out of the total number of students, 85 (43.8%) have excellent academic achievement at the end of the previous grade, 44 (22.7%) very good, and 65 (33.5%) good. Besides, out of the total sample, 87 (44.8%) are not engaged in sport, whereas out of 107 engaged in sport, 34 (17.5%) practice individual sports and 73 (37.6%) the collective ones. Within the category of athletes, regardless the type of sport, 40 (20.6%) students have sports engagement lasting to up to three years, 18 (9.3%) up to five years, and 49 (25.3%) more than five years. With reference to self-estimation of students in terms of the highest level they have achieved in sports, 52 (26.8%) think that it is local-level of sports engagement, 35 (18%) believe that they have achieved the national level, whilst 20 (10.3%) report the international level.

The analysis of the share of particular tested categories of examinees indicates there are neither any statistically significant differences in the number of the tested males and females nor in the number of examinees engaged in sport and those who are not. The differences in academic achievement of the sample examinees are on the whole significant ($\chi^2(3, N = 194) = 79.61, p = .00$), whereas the differences in academic achievement between male and female examinees are not statistically significant.

2.2 Research aims

The aim of this research has been to determine whether there is a relationship between academic achievement of students and particular indicators of sports engagement, such as the type of sport (individual or collective), duration of sports engagement (up to 3 years, up to 5 years and more than 5 years), as well as the level of sports engagement (local, national or international).

Data were collected by means of an anonymous questionnaire constructed for the requirements of this research, which consists of close-ended questions.

2.3. Statistical processing

Due to category-relatedness of data of the implemented research, methods of descriptive statistics have been used, i.e. contingency tables and χ^2 test, as well as Freeman-Halton extension of the Fisher exact probability test for 2x2 and 3x3 contingency tables. The test will yield two probability values P_A and P_B (Freeman & Halton, 1951).

3. RESULTS

3.1 Academic achievement and sports engagement

Table 1 presents the data on academic achievement of students engaged in sport and those who are not engaged in it.

Table 1. Academic achievement of examinees engaged in sport and those not engaged in sport

	Academic achievement			
	Good	Very good	Excellent	Total
Engaged in sport	41 38.3%	19 17.8%	47 43.9%	107 100.0%
Not engaged in sport	24 27.6%	25 28.7%	38 43.7%	87 100.0%
Total	65	44	85	194

	33.5%	22.7%	43.8%	100.0%
$(\chi^2 (2, N = 194) = 4.2, p = .122)$				

The data presented in Table 1 indicate that examinees engaged in sport and those who are not engaged do not show statistically significant difference in terms of academic achievement. As the results of previous research works indicate that female athletes achieve higher academic achievement than the males (e.g. Crosnoe, 2002), which can be neutralized through consideration of the sample on the whole, the focus of following table is on gender-related relations between (non)engagement and academic achievement.

Table 2. Academic achievement of male, i.e. female students engaged in sport and those not engaged

Academic achievement of male students				
	Good	Very good	Excellent	Total
Engaged in sport	20 37.7%	7 13.2%	26 49.1%	53 100.0%
Not engaged in sport	6 16.7%	15 41.7%	15 41.7%	36 100.0%
Total	26 29.2%	22 24.7%	41 46.1%	89 100.0%
$(\chi^2 (2, N = 89) = 10.536, p = .00)$				
Academic achievement of female students				
	Good	Very good	Excellent	Total
Engaged in sport	21 38.9%	12 22.2%	21 38.9%	54 100.0%
Not engaged in sport	18 35.3%	10 19.6%	23 45.1%	51 100.0%
Total	39 37.1%	22 21.0%	44 41.9%	105 100.0%
$(\chi^2 (2, N = 105) = .418, p = .811)$				

The results presented in Table 2 indicate that there are significant differences in academic achievement between male students engaged in sport and those who are not engaged, in favor of those being engaged in sport, whereas the females engaged in sport do not show statistically significant differences in academic achievement from those engaged in sport. Moreover, there is the same number of female athletes with good and excellent academic achievement (38.9%).

3.2 Academic achievement and the type of sport

The differences in terms of academic achievement between examinees engaged in individual sports and those engaged in collective sports are presented in Table 3.

Table 3. Academic achievement of examinees engaged in individual and collective sports

Academic achievement				
	Good	Very good	Excellent	Total
Individual sport	9 26.5%	4 11.8%	21 61.8%	34 100.0%
Collective sport	32	15	26	73

	43.8%	20.5%	35.6%	100.0%
Total	41	19	47	107
	38.3%	17.8%	43.9%	100.0%
(χ^2 (2, N = 107) = 6.44, $p = .04$)				

According to Table 3, there are no statistically significant differences in academic achievement between examinees engaged in individual and collective sports. The obtained differences are due to much higher academic achievement of the examinees engaged in individual sport than those engaged in the collective sport (e.g. 61.8% : 35.6% within the category of excellent students).

Table 4 presents data related to the academic achievement of male and female students depending on whether they are engaged in individual or collective sports.

Table 4. Academic achievement of male i.e. female students engaged in individual and collective sports

Academic achievements of male students				
	Good	Very good	Excellent	Total
Individual sport	3 18.8%	2 12.5%	11 68.8%	16 100.0%
Collective sport	17 45.9%	5 13.5%	15 40.5%	37 100.0%
Total	20 37.7%	7 13.2%	26 49.1%	53 100.0%
Fischer Exact Probability Test (108); $P_A = .12$; $P_B = .12$				
Academic achievement of female students				
	Good	Very good	Excellent	Total
Individual sport	6 33.3%	2 11.1%	10 55.6%	18 100.0%
Collective sport	15 41.7%	10 27.8%	11 30.6%	36 100.0%
Total	21 38.9%	12 22.2%	21 38.9%	54 100.0%
Fischer Exact Probability Test (169); $P_A = .20$; $P_B = .20$				

Even though significant differences in academic achievement are obtained between the examinees engaged in individual sport and those engaged in the collective one, these differences are not statistically significant if the males and females are considered separately. However, there is a noticeable trend of a higher academic achievement of males, i.e. females, engaged in individual sports.

3.3 Academic achievement and duration of sports engagement

The data on contribution of duration of sports engagement to the explanation of differences between athletes achieving different academic achievement are presented in Table 5.

Table 5. Academic achievement of examinees with different duration of sports engagement

Academic achievement				
	Good	Very good	Excellent	Total
Up to 3 years	19	10	11	40

	47.5%	25.0%	27.5%	100.0%
Up to 5 years	7 38.9%	3 16.7%	8 44.4%	18 100.0%
More than 5 years	15 30.6%	6 12.2%	28 57.1%	49 100.0%
Total	41 38.3%	19 17.8%	47 43.9%	107 100.0%
$(\chi^2 (4, N = 107) = 8.08, p = .089)$				

Examinees engaged in sport for a different number of years do not show statistical differences in terms of academic achievement. However, it can be noticed that there is a significantly higher percentage of athletes with longer sports engagement within the category of excellent male students (27.5% up to 3 years towards 57.1% more than 5 years), whereas with the females with good academic achievement, a higher percentage accounts for the female athletes with shorter sports engagement (47% up to 3 years towards 30.6% more than 5 years). The differences in academic achievement depending on the duration of sports engagement for male and female subsamples are presented in Table 6.

Table 6. Academic achievement of the males i.e. females with different duration of sports engagement

Academic achievement of male students				
	Good	Very good	Excellent	Total
Up to 3 years	5 38.5%	2 15.4%	6 46.2%	13 100.0%
Up to 5 years	7 58.3%	1 8.3%	4 33.3%	12 100.0%
More than 5 years	8 28.6%	4 14.3%	16 57.1%	28 100.0%
Total	20 37.7%	7 13.2%	26 49.1%	53 100.0%
Fischer Exact Probability Test (4340); $P_A = .55$; $P_B = .54$				
Academic achievement of female students				
	Good	Very good	Excellent	Total
Up to 3 years	14 51.9%	8 29.6%	5 18.5%	27 100.0%
Up to 5 years	0 .0%	2 33.3%	4 66.7%	6 100.0%
More than 5 years	7 33.3%	2 9.5%	12 57.1%	21 100.0%
Total	21 38.9%	12 22.2%	21 38.9%	54 100.0%
Fischer Exact Probability Test (4942); $P_A = .01$; $P_B = .01$				

With reference to male students, duration of sports engagement is not significantly related to academic

achievement. The tendency noticed in the sample as a whole is also present in the athlete subsample: among students engaged in the selected sport for longer than 5 years, the number of excellent students is noticeably higher (28.6% of good students towards 57.1% of the excellent ones). On the other hand, among female students with different duration of sports engagement, there are statistically significant differences in academic achievement. The obtained differences are mostly contributed by the predominance of good female students in the category of female athletes being engaged in the selected sport for up to 3 years, i.e. the predominance of excellent females in the category of sports engagement for up to 5 years, especially in the category of more than 5 years.

3.4 Academic achievement and the level of sports engagement

Table 7 presents the data referring to the relations between the level of sports engagement and academic achievement.

Table 7. Academic achievement of examinees with different levels of sports engagement

	Academic achievement			
	Good	Very good	Excellent	Total
Local level	20 38.5%	11 21.2%	21 40.4%	52 100.0%
National level	16 45.7%	5 14.3%	14 40.0%	35 100.0%
International level	5 25.0%	3 15.0%	12 60.0%	20 100.0%
Total	41 38.3%	19 17.8%	47 43.9%	107 100.0%
$(\chi^2 (4, N = 107) = 3.534, p = .473)$				

The level of sports engagement is not statistically related to academic achievement; even though athletes engaged in the selected sport at the international level show a noticeable tendency towards achieving better results at school too (25% achieve good academic achievement, and 60% excellent).

Results of significance test in terms of differences in academic achievement between male and female students depending on the level of sports engagement are presented in Table 8.

Table 8. Academic achievement of the male i.e. female students with different level of sports engagement

	Academic achievement of male students			
	Good	Very good	Excellent	Total
Local level	7 35.0%	3 15.0%	10 50.0%	20 100.0%
National level	11 50.0%	3 13.6%	8 36.4%	22 100.0%
International level	2 18.2%	1 9.1%	8 72.7%	11 100.0%
Total	20 37.7%	7 13.2%	26 49.1%	53 100.0%
Fischer Exact Probability Test (5450); $P_A = .39$; $P_B = .39$				

Academic achievement of female students				
	Good	Very good	Excellent	Total
Local level	13 40.6%	8 25.0%	11 34.4%	32 100.0%
National level	5 38.5%	2 15.4%	6 46.2%	13 100.0%
International level	3 33.3%	2 22.2%	4 44.4%	9 100.0%
Total	21 38.9%	12 22.2%	21 38.9%	54 100.0%
Fischer Exact Probability Test (5058); $P_A = .95$; $P_B = .94$				

The level of sports engagement does not have a statistically significant relation with academic achievement, not even in the case when different gender examinees are considered separately.

4. DISCUSSION

Considering the sample on the whole, the findings of our research indicate that there are no statistically significant differences in academic achievement between students engaged in sport and those who are not. Although the findings of the previous research works are contradictory in terms of effects of sports engagement on academic achievement, the findings can be useful for understanding the position of a student-athlete in educational system of Serbia, from the perspective of the student himself and school, as well as from the standpoint of educational policy. First of all, from the perspective of an individual, role theory puts emphasis on the fact that time and energy, being indispensable for success in sports and academic domains alike, are flexible and concern subjective experience. Starting from this hypothesis Adler and Adler (1998) report that the way in which they will be distributed in a particular person depends on how a student-athlete perceives himself, and whether he can see himself in the role of an athlete or student. Due to the fact that the decision concerning a particular role is made at an early stage of academic i.e. sports life, devoting oneself to one role, e.g. role of an athlete, means at the same time distancing from the other role of a student. Since the results of an investment made in sports activities can be visible in a short time, sports achievement gets supported to a higher extent than the academic one, with the final result of enhancing a particular aspect of self-perception, from the sportive and social to the general one. Thus it is not surprising that athletes are more often devoted to the selected sport rather than studying and academic achievement. It is important to point out here that these two roles are not necessarily contradictory in academic environment, and that they should be understood as complementary to each other. In order to achieve this, the schooling system should develop legally-supported mechanisms which will encourage sports engagement, with optimal conditions for studying and achieving top academic results.

From the standpoint of educational policy, the findings on nonexistent statistically significant differences between athletes and non-athletes in terms of academic achievement indicate that athletes in system of education in this country neither have the proper treatment nor support for their well-balanced development in terms of sport, academic achievement and personal life. All EU countries provide a developed systematic support to young secondary school student-athletes, either in the form of specialized secondary schools for athletes (providing coaches and conditions for being engaged in sports, flexibility of teaching), or in the form of an additional educational support by means of providing personal tutors, extra classes, individual educational plans etc. (Education of young sport persons, 2004). The key element of a successfully balanced sport and academic achievement implies a certain level of flexibility of the educational program, which is not the case in this country (Đorđić, 2004). Cooperation between a sports club, teachers and coaches, as well as consulting work with athletes in terms of lifestyle management are also important prerequisites of a successful sports engagement and academic achievement.

The findings of our research indicate that regulation of the status of student-athletes in the system of education in this country should be carried out with special attention paid to the male students engaged in collective sports due to the fact that this category of examinees tend to be most sensitive to the issue of

academic achievement. On the one hand, sport offers a young person more possibilities of experiencing success in terms of academic achievement, which suggests that sports engagement is the source of a continuous, positive self-perception, which is especially true of the male athletes. On the other, athletes who opt for collective sports select sports that are more accessible to wider population in this country, so that the explanation of the predominance of excellent students in individual sports should also be based on the socioeconomic status and educational level of parents. Besides, the collective sports enable more intensive development of social skills that can contribute to academic achievement, whereas individual sports give prominence to integrated functions which seem to be predominant in academic achievement (Kajbafnezhad, Ahadi, Heidarie, Askari & Enayati, 2011). Our research indicates that sports engagement has a significant role in understanding the relations of academic achievement and sports engagement especially with girls who achieve better academic results through a longer sports engagement. The observed tendency towards the higher contribution of a higher-level sports engagement to academic achievement can also be interpreted in terms of a more intensive and more systematic engagement in the physical activity. The findings suggest that it is necessary to cross a certain threshold of engagement in the physical activity in order to produce the desired effect of sports engagement on the academic achievement.

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