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STUDY SUCCES AS A FUNCTION OF OUT-OF-SCHOOL SPORTS ACTIVITIES (Based on OKM 2016 database)

MORAVECZ MARIANNA[1,*], NAGY ÁGOSTON[1]

ABSTRACT. Study success is usually closely related to the popularity of certain subjects and the sport activities. The purpose of our study is to highlight the connection between the participation of students in out-of-school sports activities and their success in school on the basis of the analysis of the 10th-year student questionnaires of the 2016 OKM database. In our research we examine the correlation between sport activities and gender using cross tables. For forming student groups, we used cluster analysis, for analysing the factors of participation in extracurricular sport classes we used logistic regression analysis, and for analysing the factors influencing grade point average we used linear regression analysis. As for out-of-school extra and private lessons, according to our results sports activities seem to be the most popular with students. Concerning gender and school grade average, boys and students with a better school grade average take part in sports activities unlike girls and students with lower school grade average. Regression results have shown that boys, those living in the city, the more financially well-off, the highly educated and the labour-marketed parents, those attending grammar school, and pupils in church-based institutions attend extra-curricular sports classes. There is also a strong correlation between the average education and non-school sports, as students with a higher average grade are involved in separate sports classes.

Keywords: *success in school, out-of-school sports activities, national competence survey*

Introduction

Nowadays, the value world of young people other than adults is clearly centred on experience, postmodern values. From the field of professional sports, young people are moving towards a free sports experience. (Bodnár

[1] *University of Debrecen, Faculty of Humanities, Doctoral School of Humanities, Doctoral Program in Educational and Cultural Sciences*

[*] *Corresponding Author: moraveczmarianna@gmail.com*

and Perényi 2016). Young people are formed into an independent social community. Their cultural and leisure time habits and their daily activities are completely different from any other social group. Sport, as an active form of leisure, plays a decisive role in young people's lives. Teaching and learning environments play an important role in defining performance concepts, which include not only formal and non-formal learning processes, but also social and organizational contexts (Pusztai, 2016). The effectiveness of sporting activities and the positive effects of sports have been studied by many. Ács et al. (2011) described the social expectation of sport as a process of consolidating health, serving physical, mental and spiritual development. Csányi and Révész (2015) also formulate the goal of increasing the effectiveness of learning in other subjects. According to research results (Perényi 2011, 2014; Hamar 2012; Kovács 2016) sport is more common among boys than girls. Hamar and Karsai (2008) examined the affinity of physical education for 11-18 year old students (N = 2840) in cross-sectional arrangement. Based on this, boys have a more accepting attitude than girls, and the positive emotional saturation is greatly reduced among girls, with age. The links between earlier research are unclear concerning the relationship between sport and effectiveness (mainly in upper secondary and higher education): some studies resulted in positive effects of sport (Castelli et al. 2007) and others negative (Maloney-McCormick, 1993) while some studies have not found any correlation between these two variables (Fisher et al. 1996). Shephard and Trudeau (2013) examined the studies on the relationship between sport and learning performance, and they showed more positive correlations than negative or neutral. It was concluded that programs related mainly to physical activity in primary school only make a small contribution to better test results, but greatly improved classroom performance through a positive impact on cognitive functions. Our research topic has not been studied from the OKM database before, so we hope to provide a snapshot of the connections between the sporting activity and the learning outcomes of today's high school generation.

Hypotheses

Hypothesis 1: Out-of-school sports activities are popular among students (Fintor, 2016).

Hypothesis 2: Boys do more sports than girls (Perényi, 2011, 2014; Hamar, 2012; Kovács, 2016). We assume that boys are primarily involved in out-of-school sports. (Hamar and Karsai, 2008)

Hypothesis 3: Athletes have better study results than those who do not do any sports (Kovács, 2015; Kovács, 2018). We assume that those who do sports out of an educational institution have better school results.

Hypothesis 4: We assume that athletes prefer primarily human and science subjects, rather than art subjects (such as music or drawings). Those who like art subjects take part in extracurricular sport activities in a lower rate.

Hypothesis 5: We assume that socio-demographic background variables, the type of school, and the maintainer influence the participation in sporting activities beyond school. We assume that those who do sports out of school have a better socio-demographic background, so their parents' qualification is higher, their parents are active in the labour market, the family is in a better financial position, live in a city, and students go to high school and study in a church-maintained institution.

Hypothesis 6: We assume that the school results are influenced positively by not just socio-demographic background variables, the type of the school and the type of maintainer, but the sport activity done out of school. Shephard et al. (2013) in a five-year longitudinal study showed that the group that had five physical education lessons per week had better school performance than the control group who had just 40 minutes.

Materials and methods

Every year, every 6th, 8th and 10th year student of each institution participates in the National Competence Measure. This research is based on the analysis of the 10th grade student questionnaires of the OKM 2016 database. In this database we examined the popularity of extra-curricular classes outside school. Among the private lessons listed in the questionnaire, students nominated the highest proportion of sports activities. In our research, we use cross-table to examine the relationship between participation in sport and sex variable. In the study of sport in extracurricular lessons and gender relations, we sought the correlation between study success and participation in out-of-school sports activities using variance analysis. We examined what kind of subjects those students like the most who do sports. First we created cluster groups with cluster analysis based on what subjects students like, and then we used cross-tables to examine the relationships between sports and cluster groups. With logistic regression model, we examined what variables

affect participation in out-of-school sport activities. Finally, with a linear regression model, we analysed whether the student's school results are influenced by out-of-school sport activities besides the socio-demographic variables.

Results

Our first hypothesis examined participation in sports, the aggregation of which is illustrated in Figure 1.

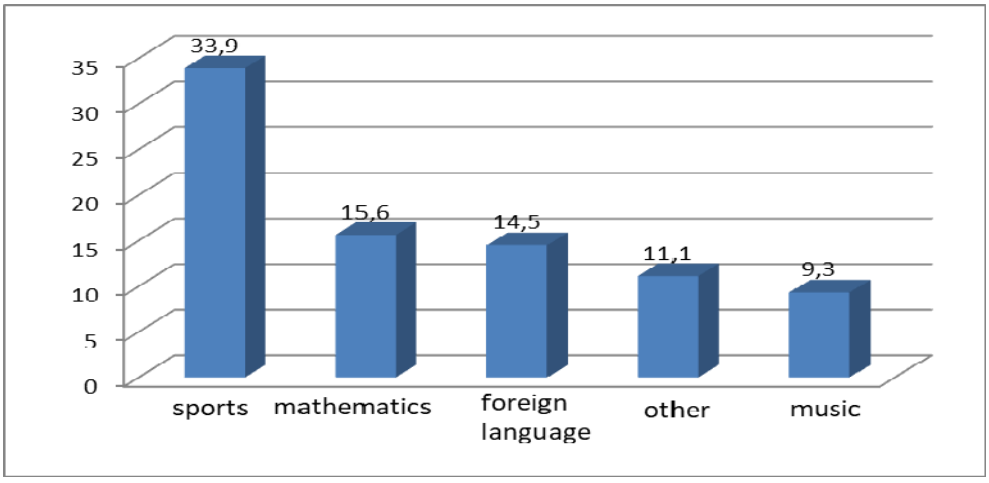

Figure 1. Participation in extracurricular and private lessons (%) (OKM 2016, N=88382)

It can be seen from Figure 1 that students take the highest proportion of sports from extracurricular lessons listed in the questionnaire. What exactly these sport activities are (competition sports, hobby sports, etc.) and the frequency with which the student participates is not answered by the database. However, sport is definitely the most popular followed by mathematics (15.6%), foreign language (14.5%), other special classes (11.1%) and music classes (9.3%). Therefore, our hypothesis has proved that in the case of extra-curricular classes and private lessons, sporting activities seem to be the most popular among students.

In our second hypothesis, we assumed that boys were the main participants in out-of-school sport activities. In the following, we will use the cross-table to examine the relationship between participation in sport and sex.

Table 1. Participation in out-of-school sports activities by gender (OKM 2016, N=69890) (p=0.000)

Sex		Do not take part in extracurricular sport activity	Take part in extracurricular sport activity
Male	%	46.8	53.9
	item number	21630	12776
Female	%	53.2	46.1
	item number	24563	10921
All	%	100	100
	item number	46193	23697

Table 1 shows that there is a significant correlation between gender and participation in sport activities. 53.9% of those in sports are boys and 46.1% are girls, while of those who do not attend out-of-school sports 46.8% are boys and 53.2% are girls.

Our hypothesis that boys are primarily involved in out-of-school sports has been confirmed. Our research data confirm previous studies (Perényi 2011; 2013; Hamar 2012; Kovács 2016). In terms of gender, boys continue to favour sporting activities for extracurricular activities.

In the study of sport lessons and gender relations, we examined the relationship between academic success and participation in out-of-school sports (Table 2).

Table 2. Correlation of participation in out-of-school sports activities and the grade point average (OKM 2016, N=58292) (p=0.000)

		Grade point average of the last year
Took part in sport activity	Average	4.173
	Item number	20407
Did not take part in sport activity	Average	3.917
	Item number	37949
All	Average	4.007
	Item number	58356
Anova		0.000

In our third hypothesis we assumed that students who do sports beyond the walls of an educational institution have better academic results.

Based on the results of the analysis of variance, a significant correlation can be found between participation in out-of-school sports and the grade

point average at the end of the previous year (p = 0.000). The data show that students who do sports out of the school have a better grade point average than their non-athlete mates. The interviewed students reported a grade point average of 4.0 on average. Those who do sports on extracurricular lessons had an average of 4.1, while non-athletes achieved 3.9 at the end of last year. Our third hypothesis has also been confirmed that athletes have better study results than non-athletes. Our present research reinforces the results of studies showing that sport has a positive impact on the relationship between sport and success (Castelli et al. 2007, Shephard and Trudeau 2013).

Since the National Competence Measurement Student Questionnaire does not ask the subject of physical education in relation to the popularity of subjects, we do not have any data that would show the popularity of physical education. However, we can look at what kind of subjects those students like the most who do sports. To do this, we first create cluster groups with cluster analysis based on what subjects students like and what student groups we can create, and then use cross-tables to examine the relationships between sports and cluster groups.

During cluster analysis, cluster groups were created based on the 11 subjects listed in the OKM questionnaire (Table 3).

Table 3. Popularity of subjects in cluster groups (N=64505)
We highlighted those above 3.5.

	Those who like graduation subjects	Those who like all subjects	Those who mostly like art subjects
Hungarian language	2.97	3.69	2.96
Literature	3.26	4.04	3.31
Mathematics	3.52	3.53	2.29
History	3.65	3.97	3.00
Biology	3.37	3.98	3.08
Chemistry	3.02	3.50	2.16
Physics	3.41	3.50	2.17
Geography	3.18	3.75	2.76
Music	2.53	4.05	3.39
Art	2.94	4.29	3.77
Foreign language	3.75	4.08	3.13
All	17494	25685	21326

Source: OKM 2016

We have created three cluster groups based on popularity: those who like graduation subjects, those who like every subject, and those who like art subjects.

Those who like graduation subjects: this group includes students who have firstly declared their compulsory maturity subjects (mathematics, history, foreign language) that they like. A total of 17,494 students belong to this group.

Those who like all subjects: this group includes students who were positive about every subject. A total of 25,685 students belong to this group.

Group of art lovers: This group includes students who prefer the art subject, but not as much as members of a the group who like all subjects. On the whole, none of the subjects were declared as positive as members of the other groups. A total of 21,326 students make up this group.

The relationship between cluster groups and participation in out-of-school sports activities is discussed in Table 4 below.

Table 4. Examination of correlation between participation in out-of-school sports activities and cluster groups (N = 63428) (p = 0.000)

Does he/she do sports out of school?		Those who like graduation subjects	Those who like all subjects	Those who love art subjects
Do not do sports	%	61.0	65.7	70.6
	Item number	10497	16606	14783
Do sports	%	39.0	34.3	29.4
	Item number	6721	8679	6142
All	%	100	100	100
	Item number	17218	25285	20925

Source: OKM 2016

Table 4 shows that there is a significant correlation between participation in out-of-school sports activities and cluster groups (p = 0.000).

In our fourth hypothesis we assumed that athletes prefer primarily humanities and science subjects, rather than art subjects, and those who like art subjects attend out-of-school sport classes less.

On the whole, it can be seen that the proportion of those who do not sport outside school is higher in each cluster groups than the proportion of athletes. There is the highest proportion of athletes among those who like graduation subjects (39%), 34.3% among those who like all subjects, and only 29.4% of those who love art subjects admit to do sports out of the school.

Our fourth hypothesis has been confirmed that those who like art subjects do less extracurricular sport activities.

In the following, we use a logistic regression model to examine the effects of variables on participation in out-of-school sports (Table 5). In order to monitor the interaction effect, we included the variables in three steps.

Table 5. Logistic regression models for out-of-school sport activities (N=89516)

Explanatory variable	Exp(B)	Exp(B)	Exp(B)
Sex	1.340***	1.332***	1.344***
Type of settlement	1.782***	1.326** *	1.263***
Financial background		1.538***	1.498***
Qualification of mother		1.565***	1.526***
Qualification of father		1.512***	1.462***
Mother works		1.148***	1.144***
Father works		1.186***	1.182***
Type of school			1.634***
Type of maintainer			1.634*
RL2=	1.37	5.32	5.69

Source: OKM 2016

In the first step we included the sex (0 = girl, 1 = boy) variable and the settlement type variable (0 = village, 1 = city). It can be seen that boys and city dwellers are significantly more involved in out-of-school sports.

In the second step, besides the gender and the type of settlement we included the variables concerning objective financial situation[2] (0 = low 1 = high), the parents' qualification (0 = low, 1 = high) and the parents' labour status (0 = not working, 1 = working). The table shows that after the inclusion of these latter variables, the explanatory power of gender and settlement type has decreased. The financial situation, the educational attainment of parents and the status of the labour market have a significant impact on participation in sports activities. It can be seen that a better financial situation, mother and father's

[2] We measured the objective financial situation with the following items: if there are minimum 2 pieces: mobile phone, computer, car, bathroom, internet connection.

higher qualifications, and the active labour market status of mother and father have a positive impact on participation in out-of-school sports activities.

In the third step, the type of school (0 = non-grammar school, 1 = grammar school) and the type of maintainer (0 = non-church, 1 = church) were included. It can be seen that mainly students attending grammar school and those with church maintenance are involved in sports activities.

Our hypothesis has been confirmed that those who do sports outside the school have a better socio-demographic background, their parents have higher qualification, their parents are active in the labour market, the family is in a better financial position, live in a city, students go to high school and study in a church-maintained institution.

Although we have previously investigated the significant correlation between the grade point average and participation in out-of-school sports, with the help of a linear regression model we will now examine, whether the student's out of school activities have an effect on school performance beyond socio-demographic variables (Table 6).

Table 6. Linear regression models for the grade point average (N=88382)

Explanatory variable	B	Std. Mistake	Beta	Significance
Constant	3.476	0.011		0.000
Extracurricular sport	0.092	0.006	0.059	0.000
Sex	-0.315	0.006	-0.210	0.000
Type of settlement	-0.020	0.007	-0.012	0.003
Qualification of mother	0.407	0.007	0.264	0.000
Qualification of father	0.271	0.007	0.181	0.000
Mother works	0.121	0.008	0.061	0.000
Father works	0.167	0.010	0.067	0.000
Financial background	0.116	0.006	0.073	0.000
Type of school	0.051	0.009	0.021	0.000
Type of maintainer	0.035	0.008	0.017	0.000

Source: OKM 2016

In the linear regression study the following variables were included in addition to the grade point average: gender, type of settlement, parents' qualification, parents' labour status, objective financial situation, type of school, and school maintainer. The results show that the grade point average is influenced by whether the student attends extracurricular sports activity ($p = 0.000$), the gender of the student ($p = 0.000$), the type of settlement where they live ($p = 0.003$), the mother's qualification ($p = 0.000$), the father's qualification ($p = 0.000$), the mother's labour market status ($p = 0.000$), the father's labour

market status (p = 0.000), the objective financial situation of the family (p = 0.000) the type of school (p = 0.000) and the school's maintainer (p = 0.000). The table shows that those students have higher grade point averages who attend out-of-school sport activities, girls, who live in small settlements or villages, whose parents have higher qualification, whose parents are employed in the labour market, who have high objective financial status, who go to high school and church-maintained schools.

Our hypothesis has been confirmed that academic success is positively influenced by not just socio-demographic background variables, school type and maintainer, but also by out-of-school sports activities.

Discussion

The aim of the research was to investigate the relationship between participation in extracurricular activities and the school success based on OKM database by an unexplored aspect so far, especially with regard to out-of-school sports.

It can be stated that out-of-school sports classes and private lessons are very popular among students. In terms of gender and grade point average, it can be seen that boys and those with a better grade point average are more involved in sport activities than girls and undergraduates. There is also a strong correlation between the grade point average and out-of-school sports, as students with a higher grade point average attend extracurricular sports classes. Regression results showed that boys, those living in the city, those with better financial background, children of high-educated and working parents, those attending high school, and pupils in a church-maintained institution attend extra-curricular sports classes. The results of the linear regression study show that the study success is also positively influenced by sport activities, besides the socio-demographic background variables, the school type and the maintainer.

Based on her research Klára Kovács states that the validity of the development model and Coleman's social capital theory for leisure-time athletes has been clearly demonstrated, primarily due to the personality development and social character of sports. The results that sport has a positive effect on learning outcomes are consistent with the earlier results of Hartman (2008), Castelli et al. (2007), Miller et al. (2007). According to Trudeu and Sephard (2008), sporting in leisure time or as an extracurricular program enhances school attachment, gives confidence, and plays an important role in learning success.

Conclusion

The results show correlation between sport and subject popularity, which can be a base of further researches. Considering individual and institutional characteristics in supporting extracurricular sport activities is essential. The positive effect of out-of-school sport classes on study success is worth using also in practice.

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