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Original research paper

ANALYSIS OF THE USE OF DIETARY SUPPLEMENTS AMONG STUDENTS OF THE FACULTY OF SPORT AND PHYSICAL EDUCATION

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Abstract. *Supplements are products widely used among athletes to improve sports performance and reduce fatigue symptoms. The aim of the study was to determine the differences of the use of dietary supplements among students of the Faculty of Sport and Physical Education, University of Niš (by year of study and gender), as well as the differences between the frequency and duration of physical activity with the use of dietary supplements. The survey was conducted on a sample of 201 students of both genders, all four years of undergraduate studies, aged 19 to 23. The respondents completed questionnaire containing questions related to dietary supplementation, physical activity and the existence of fatigue symptoms. Survey results show that 40.8% of respondents use supplements. Male students used dietary supplementation more often than female. Students most commonly take vitamins (68.3%), proteins and amino acids (15.1%) whereas 5.6% of them use minerals. The results have shown that with the increase of the year of study, the number of students taking supplements decreases significantly. Also, the analysis of the results by gender showed that male students were more likely to take amino acid supplements. No differences were found between the duration and frequency of physical activity and the use of supplements. It could be concluded that with the increase of the year of study, we note positive changes in students' attitudes to the use of supplements, which could be explained by the acquisition of knowledge in the field of sports nutrition and supplementation through the curriculum contents of the study program.*

Key words: *ergogenic aids, students, attitudes, proteins, vitamins*

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1. INTRODUCTION

Nutrition has always been regarded as one of the key factors influencing an athlete's sports performance (Birkenhead & Slater, 2015; Maughan & Shirreffs, 2012). Variation in food intake has been shown to have a positive impact on sports performance in the last few decades due to scientific advancements and the need to identify factors that influence sports performance, specifically with the understanding of human metabolism and the physiology of physical exercise (García-Rovés, García-Zapico, Patterson, & Iglesias-Gutiérrez, 2014; Guest, Horne, Vanderhout, & El-Sohemy, 2019). Also, it can be said that the foundation for health preservation and disease prevention lies in obtaining adequate nutrition (Cristina & Lucia, 2021). Namely, an adequate supply of the nutrients, vitamins and minerals needed for the body's regular operations can be obtained via a well-balanced diet (Block et al., 2007). Supplements, often known as dietary supplements, are goods whose active components can support, reinforce, or improve the body's natural processes (Santana-Gálvez, Cisneros-Zevallos, & Jacobo-Velázquez, 2019). Due to its importance as a source of vital nutrients, dietary supplements are used by millions of people worldwide (Archer et al., 2005; Cencic & Chingwaru, 2010). Furthermore, it can be said that among all the dietary supplements used to increase muscle mass, proteins are the most popular (Morton, et al., 2018; Rodriguez-Lopez, et al., 2022). Dietary supplement adoption originated predominantly among athletes, emerging as the most prevalent and widely recognized practice in this domain (Maron, et al., 2007). This observation is confirmed by a study which found that 87.5% of athletes from seven different sports use one or more dietary supplements (Çelik & Dağdeviren, 2022; Dascombe, Karunaratna, Fergie & Goodman, 2010).

Dietary supplements have gained significant popularity as individuals seek to optimize their health and well-being (Bailey, Gahche, Miller, Thomas, & Dwyer, 2013). These supplements, ranging from vitamins and minerals to amino acids, are widely marketed for various health purposes (Lopes, Coimbra, Costa, & Ramos, 2023). Since they are often perceived as beneficial for improving overall health, their effects on individual organ systems remain a subject of intense scientific debate (Küllenberg, Taylor, Schneider, & Massing, 2012). On the positive side, dietary supplements offer several advantages (Küllenberg et al., 2012). Firstly, they provide a convenient and accessible means of supplementing essential nutrients that may be lacking in the diet (Cencic & Chingwaru, 2010; Küllenberg et al., 2012). Secondly, certain supplements are formulated to target specific health concerns or optimize organ function (Adadi, Barakova, Muravyov, & Krivoshapkina, 2019). Lastly, dietary supplements offer convenience and accessibility, especially in today's fast-paced lifestyle (Nichter & Thompson, 2006). They can be easily incorporated into daily routines, providing a simple and effective way to support health goals (Nichter & Thompson, 2006). However, the use of dietary supplements without medical supervision can also have negative consequences (Wierzejska 2021). First, there is a risk of nutrient toxicity (Ronis, Pedersen, & Watt, 2018). Next, supplements may interact with prescribed medications, leading to reduced efficacy or increased risk of side effects (nettle-rash, emesis and dizziness) (Wierzejska 2021). Therefore, while dietary supplements offer potential benefits, their use should be approached cautiously, with careful consideration of both the positive and negative implications for individual health and well-being (Adadi, Barakova, Muravyov, & Krivoshapkina, 2019; Wierzejska 2021).

Due to the previous achievements, dietary supplements are now made to meet various needs in various kinds of physical activity (Maughan, et al., 2018; Maughan, Depiesse, & Geyer,

2007). Specifically, because they are more widely available, dietary supplements are taken by recreational and professional athletes alike (Knapik, et al., 2016; Miteva, Kundurdzhiev, & Valchev, 2023; Slater, Tan, & Teh, 2003). Moreover, the consumption patterns of dietary supplements among students diverge from those of the general population, potentially attributable to the distinctive student lifestyle characterized by academic commitments, engagement in sports, and the usage of tobacco and alcohol (Kosendiak, Adamczak, Kuźnik, & Makles, 2024; Paffenbarger, Kampert, & Lee, 1997; Schnell, Mayer, Diehl, Zipfel, & Thiel, 2014). Therefore, educating students to adopt healthy eating habits aligned with nutritional guidelines, while discouraging reliance on supplements to compensate for poor choices, is crucial for establishing lasting patterns of nutritious eating in early adulthood (Lieberman et al., 2015). Due to their lack of understanding the proper use of dietary supplements and their compatibility with various foods and nutrients, students frequently take them without consulting a doctor (Kowalik et al., 2016).However, it can be said that knowledge about the consumption of dietary supplements among the younger population is important. Therefore, the aim of the study was to determine the differences of the use of dietary supplements among students of the Faculty of Sport and Physical Education, University of Niš (by year of study and gender), as well as the differences between the frequency and duration of physical activity with the use of dietary supplements.

2. METHOD

2.1. Sample of participants

The study was conducted on a sample of 201 students (130 male and 71 female) of undergraduate studies at the Faculty of Sports and Physical Education, University of Niš. The respondents were aged 19 to 23. All participants were informed about the purpose and the aim of this study. The questionnaire contained questions that analyzed the following domains: the use of dietary supplements, the level of physical activity and the presence of fatigue symptoms. The study was transversal. All participants voluntarily participated in the survey.

Participants had to meet the appropriate criteria for inclusion in this study. The first criterion was to attend the Faculty of Sports and Physical Education, University of Niš. Another criterion was to play a certain sport (professional or recreational) and that they were physically active. Also, the criterion for inclusion in this study was that they already had some acquired knowledge about the use of supplementation in sports. Students who did not meet these criteria were not part of the study sample. Demographics of the participants were presented in Table 1.

Table 1 Participants (gender and year of study)

Year of study	Male	Female	Age	Total number of students per year of study	Total number of students
I	40	12	19±0.5	52	201
II	23	25	20±0.6	48	
III	28	26	21±1.0	54	
IV	39	8	22±0.8	47	

The sample of participants consisted of students from all four years of undergraduate studies at the Faculty of Sports and Physical Education, University of Niš. Two hundred and one students of both genders participated in the survey 2.2. Sample of measuring instruments

Participants provided information by answering questions about their use of dietary supplements, level of physical activity, and presence of fatigue symptoms. Data will be obtained from the following questions:

1. Do you use dietary supplements?
2. What dietary supplements do you use?
3. How many hours per week are you physically active?
4. How many days a week are you physically active?
5. Are there any symptoms of fatigue?

To assess physical fitness, we analyzed participants' reported weekly frequency of physical activity and evaluate the average number of exercises performed per week (Dickinson, Bonci, Boyon, & Franco, 2012; Fogelholm et al., 2006).

2.3. Data processing

The data were processed with the statistical package SPSS (v17.0, SPSS Inc., Chicago, IL, USA). First, the basic descriptive parameters were determined. Also, the normality of the data distribution was confirmed by The Kolmogorov-Smirnov Test. Finally, the chi-square test was used to determine the differences between the frequency and duration of physical activity and the presence of fatigue symptoms with the use of dietary supplements. The level of significance was set at $p<0.05$.

3. RESULTS

The data in Table 2 indicate that 40.8% of students who were surveyed used supplements. These findings suggest that a higher percentage of participants have never used dietary supplements (59.2%). Also, according to findings in Table 2, participants primarily use vitamins (68.3%), followed by proteins and amino acids (15.1%) and least minerals (5.6%).

Table 2 The use of dietary supplements among students.

Do you use dietary supplements?	Number	%	What dietary supplements do you use?	Number	%
yes	82	40.8	minerals	7	5.6
no	119	59.2	vitamins	86	68.3
total	201	100.0	protein and amino acid	19	15.1

The results in Table 3 show the use of dietary supplements among students of the Faculty of Sports and Physical Education, University of Niš according to the year of study. Chi-square test was used to determine whether there was a difference between taking supplements and years of studying. It could be concluded that there were statistically significant differences in each of the three examples based on the level of significance ($p=0.002$). Based on the responses to the first question, it could be concluded that students who have completed higher study year used dietary supplements less frequently ($p=0.000$).

It also could be concluded that vitamins or protein were used by students of all years of studying.

Table 3 The use of dietary supplements per year of study.

		Year of study						
		I	II	III	IV	Total	Chi-square	Sig
Do you use dietary supplements?	Yes	36	20	22	4	82	37.71	0.000
	No	16	28	32	43	119		
What dietary supplements do you use?	minerals	4	1	1	1	7		
	vitamins	29	18	19	20	86		
	protein and amino acids	5	6	3	5	19		
	none	14	0	0	0	14	25.59	0.002

The results shown in Table 4 indicated that there were no significant differences in the use of supplements by gender (p=0.55). "However, it could be said that there were statistically significant differences in the types of supplements used (p=0.01). Protein and amino acids were used more frequently by male students. Furthermore, it could be stated that students of both genders consume vitamins more than other dietary supplements.

Table 4 The most frequently used supplements (stratification by gender).

		Gender				
		Male	Female	Total	Chi-square	Sig
Do you use dietary supplements?	Yes	55	27	82	0.35	0.55
	No	75	44	119		
What dietary supplements do you use?	minerals	6	1	7	12.33	0.01
	vitamins	52	34	86		
	protein and amino acids	19	5	24		
	none	9	0	9		

The data presented in Table 5 indicated that there were no differences between dietary supplement consumption and duration of physical activity (p=0.65). Also, it can be said that there were no differences between the duration of physical activity and the use of certain types of dietary supplements (p=0.11). Namely, it could be said that vitamins, proteins, and amino acids were more commonly used by those participants who trained more frequently compared to those who did not train very often, but it was not statistically significant.

Table 5 Supplement use and physical activity duration.

		How many hours per week are you physically active?					Total	Chi-square	Sig
		none	1 hour	2-4 hours	5-7 hours	>8 hours			
Do you use dietary supplements?	Yes	0	4	23	26	29	82	2.49	0.65
	No	1	10	28	43	37	119		
What dietary supplements do you use?	minerals	1	3	2	1	0	7	14.30	0.11
	vitamins	5	22	31	28	0	86		
	protein and amino acids	1	2	3	13	0	19		
	none	2	5	3	4	0	14		

The data presented in Table 6 indicated that there were no differences between dietary supplement consumption and frequency of physical activity (p=0.28). Furthermore, it could be established that there were no statistically significant differences in the frequency of training and the use of certain types of dietary supplements (p=0.15). Specifically, it was clear that those students who exercised more frequently preferred dietary supplementation. It could be said that vitamins are used most commonly

Table 6 Supplement use and physical activity frequency.

		How many days a week are you physically active?							
		Sometimes	Every day	4-6 days a week	2-3 days a week	1 weekly	Total	Chi-square	Sig
Do you use dietary supplements?	Yes	5	38	25	12	2	82		
	No	15	52	25	25	2	119	5.16	0.28
What dietary supplements do you use?	minerals	3	1	2	1	0	7		
	vitamins	6	43	22	13	2	86		
	protein and amino acids	1	9	8	1	0	19	16.92	0.15
	none	1	9	2	2	0	14		

4. DISCUSSION

The aim of the study was to determine the differences of the dietary supplements usage among students of the Faculty of Sport and Physical Education, University of Niš (by year of study and gender), as well as the differences between the frequency and duration of physical activity with the use of dietary supplements. Our study results indicated that the most commonly consumed supplements were vitamins, followed by proteins and amino acids. It was observed that male students consumed significantly more proteins and amino acids than female students. Additionally, no statistically significant difference was found between training duration per week and the use of dietary supplements. Similarly, no statistically significant difference was found between the frequency of monthly physical activity and the use of dietary supplements. This study revealed that 40.8% of participants consumed dietary supplements, aligning with findings from study conducted on medical students in Split (Kudrić, 2021). According to our study's findings, the highest usage among participants was for vitamins (68.3%), with proteins and amino acids following at 15.1%, which was in line with other studies (Đorđević-Nikić & Đorđević, 2006; Šoškić, Đorđević, Veljić, & Veljić, 2016). Đorđević-Nikić & Đorđević (2006) stated in their study that both male and female mostly used vitamins as dietary supplements. More precisely, female participants were more likely to choose supplements that help the recovery of the body, while male participants used supplements that contribute to increasing muscle mass, strength and power in addition to vitamins (Đorđević-Nikić & Đorđević, 2006). On the other hand, the study conducted in Japan showed different results from ours, there was no significant difference between the genders when it came to the use of dietary supplementation (Yonei, Takahashi, Hibino, Watanabe, & Yoshioka, 2008). Namely, 67% of students were male and 33% female in our study using a certain type of dietary supplement. This suggests that gender may play a more significant role in supplement

usage within our study population, emphasizing the need for further research to understand the underlying factors contributing to these differences.

The findings of the study indicated that as individuals progressed through their academic careers, their consumption of supplements decreased. These findings could be explained by the fact that many students gave up on a professional sports career to focus on their studies, and professional sports are typically linked to supplementing (Babiak & Wolfe, 2009). Additionally, as the number of study years increases, the usage of supplements decreases (Wierzejska 2021). This might be attributed to students learning more about sports nutrition and supplementation through the educational content (Patton-Lopez, Manore, Branscum, Meng, & Wong, 2018). Based on descriptive statistics, it was observed that students used more supplements when they dedicated additional time to training during the week. However, it should be noted that there was no statistical significance in this domain. More specifically, 29 participants who trained for eight hours or more used dietary supplements, while four participants who trained for an hour each week also did the same. This suggests a trend where those who spend more time training may be more inclined to use dietary supplements, possibly for reasons such as enhancing performance, supporting recovery, or meeting increased nutritional demands (Garthe & Maughan, 2018; Thomas, Erdman, & Burke, 2016). However, the lack of statistical significance indicates that this relationship may not be robust or consistent across the entire student population surveyed. Further investigation or a larger sample size may be needed to determine the strength and significance of these differences.

Furthermore, our study showed a statistically significant difference between male and female students in the use of protein and amino acids as a form of dietary supplementation. These results are partially anticipated, as male show a higher likelihood than female to focus on muscle mass development (Lafortuna, Tresoldi, & Rizzo, 2014; Vikmoen, et al., 2020). In addition, less than 3% of participants said that they had used doping substances. Reducing doping in later life may result from giving up professional sports, as well as from new knowledge acquired at the university (Morente-Sánchez & Zabala, 2013; Ntoumanis, Barkoukis, & Backhouse, 2014). Unfortunately, students often use supplementation without a sufficient understanding of its proper usage and its interaction with other nutrients (Sirico et al., 2018; Steele & Senekal, 2005). The authors assume that students' perspectives on dietary supplement usage evolve as they gain comprehensive knowledge in the field of nutrition and supplementation during their studies. Considering the scientific research and nutritional advice, it is crucial to pay increased attention to the use of supplements (Alonso & Fernández-García, 2020; Worsley 2002). Moreover, it is very important to underscore the significance of proper nutrition, ensuring adequate intake of vitamins, minerals, proteins, and amino acids through a balanced diet while complementing it with supplementation.. In particular, it is crucial to administer supplements appropriately when facing a deficiency of certain nutrients from food. Lastly, but equally important, is the need to educate individuals about the use of dietary supplements in order to prevent their health.

The results of our study established that there were no statistically significant difference between training duration per week and the use of dietary supplements. Also, there were no statistically significant differences between the frequency of monthly physical activity and the use of dietary supplements. However, it was found that there were statistically significant differences when it came to these domains (Knapiket al., 2016; Lacerda, Carvalho, Hortegal, Cabral, & Veloso, 2015). In these studies, dietary supplement usage

grew with the longer duration and higher frequency of physical activity. Knapiket al., (2016) determined that there was a difference in the use of all types of dietary supplements (protein, amino acid, vitamin and minerals and combination of products) and the duration and frequency of resistance training. Namely, those who engaged in resistance training for longer durations and more frequently used more dietary supplements compared to those who trained less often. The disagreements between our findings and those of other studies (Knapiket al., 2016; Lacerda, Carvalho, Hortegal, Cabral, & Veloso, 2015) highlight the need for further research to explore the factors influencing dietary supplement usage in relation to physical activity. Understanding these relationships can inform targeted recommendations for supplement usage, ensuring that individuals receive appropriate guidance based on their training habits and nutritional needs. Additionally, these findings suggest the importance of personalized approaches in dietary supplementation, considering the varying impacts of different types and intensities of physical activity.

The limitation of the study is reflected in the small number of participants. It is advised that future studies include a larger number of participants. It is also believed that if the assessment of physical activity and the use of dietary supplements were conducted using a more objective instrument, the results of this study would be more precise. Furthermore, the sample could be more precisely defined in relation to the specific type of sport in which the students are engaged. Based on the information gathered in this way, it becomes more feasible to precisely identify the frequency and types of dietary supplements that are commonly consumed in particular sports.

5. Conclusion

The study indicated that only a small number of students do not take supplements, which is consistent with the majority of data gathered from regional studies. Also, it was found that the most consumed supplements were vitamins, followed by protein and amino acids. Namely, it was shown that male students consumed noticeably more protein and amino acids than female students. However, it can be said that no statistically significant difference was found between the training duration per week and the use of dietary supplements. Also, there was no statistically significant difference found between the frequency of monthly physical activity and the use of dietary supplements. Only 3% of participants used doping substances, and they were all first-year male students. In addition, as the academic year progresses, there was a notable decline in dietary supplement consumption. The use of dietary supplements seemed to diminish as individuals accumulate knowledge from studies and educational materials encompassing both the positive and negative effects of these supplements, coupled with the cessation of active sports.

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ANALIZA UPOTREBE DIJETETSKIH SUPLEMENATA MEĐU STUDENTIMA FAKULTETA SPORTA I FIZIČKOG VASPITANJA

Suplementi su proizvodi koje koriste sportisti za poboljšanje sportskih performansi i smanjenje simptoma umora. Cilj istraživanja bio je da se proceni upotreba suplemenata u ishrani i stavovi kod studenata Fakulteta sporta i fizičkog vaspitanja u Nišu. Istraživanje je sprovedeno na uzorku od dve stotine i jednog studenta oba pola, sve četiri godine osnovnih akademskih studija, uzrasta od 19 do 23 godine. Ispitanici su popunili upitnik koji je sadržao pitanja u vezi sa upotrebom suplemenata, fizičkom aktivnošću i postojanjem simptoma umora. Rezultati istraživanja pokazuju da 40,8% ispitanika koristi suplemente. Studenti muškog pola su češće koristili suplementaciju u odnosu na studentkinje. Studenti najčešće uzimaju vitamine (68,3%), proteine i aminokiseline (15,1%), dok 5,6% njih koristi minerale. Rezultati pokazuju da sa povećanjem godine studija značajno opada broj studenata koji uzimaju suplemente. Analiza rezultata po polu pokazuje da učenici muškog pola češće uzimaju protein i aminokiselinu. Učenici koji koriste suplemente ređe prijavljuju simptome i znake umora. Nije utvrđena korelacija između trajanja i učestalosti fizičke aktivnosti i upotrebe suplemenata. Sa povećanjem godine studija, uočavamo pozitivne promene u stavovima studenata o upotrebi suplemenata, što se može objasniti sticanjem znanja u oblast sportske ishrane i suplementacije kroz nastavne sadržaje studijskog programa.

Ključne reči: *ergogena sredstva, studenti, stavovi, proteini, vitamini*

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THE RELATIONSHIP BETWEEN MULTIPLE INTELLIGENCES AND SUCCESS IN LEARNING ENGLISH AS A FOREIGN LANGUAGE

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Abstract. *The aim of this paper is to present research on the relationship between multiple intelligences (MI) proposed by Gardner (1993) and success in learning English as a foreign language (measured through grades in English) among 100 grammar school students in Serbia. McKenzie's (1999) Multiple Intelligences Survey was used to identify grammar school students' intelligence profiles, showing that the most prominent types of intelligence are intrapersonal, logical and kinesthetic. The results of independent samples t-test analysis indicate that gender does not affect MI or language proficiency. The results of Pearson correlation suggest that general language proficiency is positively correlated with visual and existential intelligences, while different types of productive and receptive language skills (together with grammar and vocabulary knowledge) are positively correlated with musical, existential, visual, logical and verbal intelligences. Pearson correlation results also indicate that it is not possible to develop certain types of intelligence by using teaching techniques that engage them. The research has significant educational implications, suggesting that teachers should identify their students' intelligence profiles and adapt their teaching techniques accordingly, instead of trying to force the development of verbal and logical intelligences, which are, apparently wrongly, regarded as prerequisites for success in learning.*

Key words: *multiple intelligences, language proficiency, student-centered teaching*

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1. INTRODUCTION

The concept of multiple intelligences was introduced by Howard Gardner in his work *Frames of mind: The theory of multiple intelligences* (Gardner, 1983). Gardner's (1983) view of intelligence opposes - the notion of intelligence as a single, general intelligence 'g', which is accurately measured with standard IQ-tests and relevant only in formal schooling. In educational contexts, general intelligence is understood as a combination of linguistic and mathematical-logical intelligences, which are regarded as prerequisites for success in education. Such a belief leads to biased teaching and assessment techniques, enabling only the students with higher levels of linguistic and mathematical intelligences to demonstrate their understanding of different phenomena. Gardner defines intelligence as a "biopsychological potential to process information that can be activated in a cultural setting to solve problems or create products that are valued in a culture" (Gardner, 1999, p. 33). According to Gardner (1999, pp. 53-57), intelligence is multiple and dynamic, consisting of verbal-linguistic intelligence (the ability to use words effectively, symbolic thinking, conceptual patterning, reading and writing), logical-mathematical intelligence (the capacity for good reasoning and effective use of numbers, sensitivity to logical patterns and relationships), musical intelligence (the recognition and use of rhythmic and tonal patterns, sensitivity to different sounds), spatial intelligence (the capacity to perceive the visual-spatial world accurately and perform transformations upon those perceptions, the ability to visualize, and to orient oneself properly), bodily-kinesthetic intelligence (the ability to use the body to express emotion, to play a game, or to create a new product), intrapersonal intelligence (possessing self-knowledge and the ability to act based on this knowledge, understanding inner cognitive and affective phenomena, having self-discipline), interpersonal intelligence (the ability to cooperate, and communicate with other people), naturalistic intelligence (the ability to recognize patterns in nature and classify objects, sensitivity to the features of the natural world and understanding of different species), and existential intelligence (the ability to pose and ponder questions about life, death and ultimate realities). As can be seen, the concept of multiple intelligences presupposes the existence of nine intelligence types, which are possessed by each individual in different proportions. Understood this way, intelligence is best "measured" through its realworld manifestations, focusing on people's ability to do and produce something in real life contexts (Baum, Viens, & Slatin, 2005, p. 10). Gardner (1993) views intelligence as not resulting solely from genetics, but also from environmental factors, such as motivation, experience and culture. In the educational context, this implies that different types of intelligence among learners are, at least partly, the result of the teaching methodology to which they were exposed (Christison, 1998). Nelson (1988) indicates the causal relationship between different types of teaching methods and multiple intelligences. According to him, learning through reading, hearing and seeing words, and writing, speaking and discussing ideas possibly promotes linguistic intelligence, whereas working with patterns and relationships, classifying and categorizing, and working with the abstract could promote mathematical-logical intelligence. Working with pictures and colors, visualizing and drawing promotes spatial and visual intelligence, while bodily-kinesthetic intelligence may be promoted through touching, moving, and processing knowledge through bodily sensations. Rhythm and melody, singing and listening to music and melodies potentially enhance musical intelligence, while sharing and relating with others, interviewing and cooperating should

enhance interpersonal intelligence. Intrapersonal intelligence may be developed through working alone, doing self-paced projects and reflecting, whereas working in nature, exploring living things and learning about plants and natural events may enhance naturalistic intelligence.

Exploring the relationship between gender and multiple intelligences among Iranian PhD candidates, Razmjoo (2008) concluded that there is no significant difference between male and female participants regarding their intelligence types and language proficiency. His findings are incongruent with Loori's (2005) results, which indicate that males display a preference for activities involving logical and mathematical intelligences, while female learners prefer learning activities involving intrapersonal intelligence. Saricaoglu and Arikan (2009) found no significant gender differences in intelligence types, except that female participants have a higher level of linguistic intelligence. Investigating the frequency of different types of intelligence among high school students, Snyder (2000) found that tactile/kinesthetic intelligence was the most prominent. Shayeghi and Hosseiniuon (2005) concluded that interpersonal intelligence is the most common among Iranian intermediate EFL learners, followed by bodily-kinesthetic, linguistic, spatial, musical and intrapersonal intelligence (in that order), while logical-mathematical was the least common type of intelligence. Saricaoglu and Arican (2009) found that the most prominent type of intelligence among preparatory class students at Erciyes University's School of Foreign Languages was math-logical intelligence, followed by spatial and bodily-kinesthetic intelligence. Considering the strength of the relationship between language proficiency in English and the nine types of intelligences, Razmjoo (2008) concluded that there is no significant relationship between language proficiency and the combination of intelligences in general or the types of intelligences in particular. None of the intelligence types can be diagnosed as a predictor of language proficiency (Ramzjoo, 2008, p. 169). Investigating the relationship between MI and writing ability among Iranian EFL learners, Sadeghi and Farzizadeh (2012) found no significant relationship between university EFL learners' MI and their writing ability, and the results were the same even when different components of MI were concerned. Their findings are at odds with Hosseini's (2012) claim that linguistic intelligence has the greatest contribution to the writing performance (quoted in Sadeghi & Farzizadeh, 2012), as well as with Marefat's (2007) conclusion that existential, kinesthetic and interpersonal intelligences are the best predictors of writing performance. Bemani Naeini & Pandian (2010) explored the relationship of MI with listening proficiency among Iranian TEFL university students, and concluded that there is no significant relationship between MI profiles and listening comprehension. On the other hand, Mahdavy's (2008) findings indicate that linguistic intelligence is a statistically significant predictor of listening proficiency. Yeganehfar (2005) finds an acceptable correlation between speaking and interpersonal intelligence. Sayeghi and Hosseinioun (2015) revealed a significant positive correlation between grammar accuracy and linguistic intelligence, as well as interpersonal intelligence, among Iranian EFL learners. Panahi (2011) claims that learners with higher MI display greater grammar knowledge, but learners with dominant linguistic intelligence did not differ from other learners. Saricaoglu and Arikan (2009) show that bodily-kinesthetic intelligence, intrapersonal intelligence and spatial intelligence had low negative correlations with students' grammar test scores. Javanmard (2012) studied the correlation between MI and Iranian EFL learners' scores on vocabulary tests, showing that musical and kinesthetic intelligencesare the most significant predictors of performance.

Taking everything into consideration, the following research questions have been deemed relevant to investigate:

1. Which type of intelligence is the most common among grammar school students?
2. What is the effect of gender on types of intelligence and English language proficiency?
3. Which type(s) of intelligence is/are the most significant in predicting English language proficiency?
4. Which type(s) of intelligence, if any, can predict success in speaking?
5. Which type(s) of intelligence, if any, can predict success in writing?
6. Which type(s) of intelligence, if any, can predict success in listening?
7. Which type(s) of intelligence, if any, can predict success in reading?
8. Which type(s) of intelligence, if any, is related to students' vocabulary knowledge?
9. Which type(s) of intelligence, if any, is related to students' knowledge of grammar?
10. Which type(s) of intelligence or combination of intelligences can predict success in education in general, i.e. average grade (GPA)?

2. METHODOLOGY

Section 2. describes the methodology of the research in terms of the participants, the instruments used, the procedure and the analysis of data.

Participants: The participants in the study included a total of 100 grammar school students, 50 from "Jovan Jovanović Zmaj" Grammar school in Odžaci, Serbia, and 50 from "Žarko Zrenjanin" Grammar school in Vrbas, Serbia. The participants were selected through purposive sampling to ensure an equal number of 50 female and 50 male participants. Of the participants, 25 were first year students (11 female and 14 male); 25 were second year students (13 female and 12 male); 25 participants were third year students (12 female and 11 male), and the remaining 25 students were fourth year students (14 female and 13 male). All participants were aged between 16 and 19, and were native speakers of Serbian. The participants varied in terms of their language proficiency, as measured by their grades in English and their average grades.

Table 1 Participants

			Year of Study				Total
			First year	Second year	Third year	Fourth year	
Gender	Female	Count	11	13	12	14	50
		% of Total	11%	13%	12%	14%	50%
	Male	Count	14	12	11	13	50
		% of Total	14%	12%	11%	13%	50%
Total		Count	25	25	23	27	100
		% of Total	25%	25%	23%	27%	100%

Instruments: The adapted version of McKenzie's (1999) Multiple Intelligences Survey was used in the study. McKenzie's (1999) questionnaire consists of nine sections, with each section containing 10 statements. Each section corresponds to one type of intelligence proposed by Gardner (1999). The sentences in each section that are true for the participants indicate the presence of the corresponding type of intelligence. The original questionnaire was adapted by translating it into Serbian and adding independent

variables such as age, gender, year of study, average grade, and grade in English. Furthermore, it included variables related to success in specific productive and receptive language skills, as well as those indicating the teaching techniques and methods to which the participants were exposed during their education.

Procedure: The teachers at both grammar schools agreed to allocate half of their 45-minute classes for the completion of the questionnaires. The students were assured that the questionnaire was anonymous and were invited to participate willingly. They were given clear instructions on how to complete the questionnaires, but were allowed to seek help whenever they found it necessary. They had 20 minutes to complete the questionnaire. In the first part, students were instructed to write their age, gender, year of study, average grade and grade in English in the provided spaces. Their grade in English was used as a measure of their English language proficiency. Information about their proficiency in specific receptive and productive language skills, as well as their knowledge of grammar and vocabulary, was elicited through self-evaluation. Participants were asked to rate their proficiency on a scale from 1 to 5, with clear descriptions of what each number represented, and to write the corresponding numbers in the provided spaces. The second part of the questionnaire described various teaching techniques that, according to Nelson (1988), are related to specific intelligence types. Participants were required to indicate how frequently they were exposed to these techniques by circling a number on a scale from 1 to 5, with clear descriptions of what each number represented. The third part of the questionnaire was the translated version of McKenzie's (1999) Multiple Intelligences Survey. Students were asked to read the sentences and write the number 1 in the space next to the sentence that accurately described them. The number of sentences that accurately described the participants was summed and recorded in the spaces below the sentences. The number of sentences marked as true indicated the level of presence of a specific type of intelligence in an individual.

Data analysis: The statistical analyses of the data were done using the *Statistical Package for the Social Sciences* (SPSS) version 20. To determine which type of intelligence is the most common among the participants, as well as to account for the teaching methods the participants were most frequently exposed to, simple descriptive statistics were calculated, including mean and standard deviation. The effect of gender on types of intelligence and language proficiency was analyzed using Independent Samples T-Test. To analyze to what extent certain types of intelligence are determined by the kinds of teaching methodologies the learners have experienced during their education, Pearson Correlation was calculated between a type of intelligence and the method expected to have an influence on it (e.g. correlating naturalistic intelligence with methods considered to promote naturalistic intelligence). To accountfor the influence of certain types of intelligence on language proficiency, average grade, and specific receptive and productive skills (together with grammar and vocabulary knowledge), Pearson Correlation was conducted between types of intelligence (components of MI) and the variable of interest.

3. Results and Discussion

Regarding the question about the most common component of MI among grammar school students, the results showed that the most common type of intelligence is intrapersonal (mean=6.59), followed by logical (mean=5.31) and kinesthetic (mean=5.06), while the least common type of intelligence is naturalistic (mean=4.13), as seen in Table 2.

This finding is congruent with findings by Snyder (2000), Shayeghi and Hosseiniuon (2005) and Saricaoglu and Arican (2009) who all showed that bodily-kinesthetic intelligence is very prominent. Saricaoglu and Arican (2009) also showed that logical intelligence is very prominent, while Shayeghi and Hosseiniuon (2005) found it to be the least prominent. Such incongruity with the latter indicates that the prominence of different types of MI is not universal, which means that not all learners should be taught in the same way. This further implies that every teacher should identify their students' intelligence profiles, become familiar with the ways their students learn new material, and create optimal learning conditions.

Table 2 MI types 1

	Multiple intelligence types								
	Naturalistic	Musical	Logical	Existential	Interpersonal	Kinesthetic	Verbal	Intrapersonal	Visual
Mean	4.13	4.77	5.31	4.41	4.30	5.06	4.48	6.59	4.67
Std. Deviation	1.73	1.99	1.88	2.21	2.04	2.15	2.04	2.31	2.18

Considering the frequency of teaching techniques engaging different types of MI, the results indicated that techniques suitable for displaying verbal intelligence are the most common (mean=3.80), closely followed by those suitable for interpersonal (mean=3.59) and intrapersonal (mean=3.48) intelligences. The teaching methods engaging naturalistic (mean=1.54) and kinesthetic (mean=1.63) intelligence are the least commonly experienced by grammar school students (Table 3). The fact that techniques engaging verbal intelligence are the most commonly experienced ones is not surprising, given that in educational contexts intelligence is traditionally understood as a combination of verbal and logical intelligences. Teaching and assessment techniques are constructed in such a way that knowledge and understanding of different phenomena are expected to be displayed verbally. The significant difference between the prominence of techniques pertaining to verbal intelligence, and those pertaining to naturalistic and bodily-kinesthetic intelligences, clearly indicates that the teaching and assessment techniques are biased, favoring students who can use words effectively, at the expense of those who would learn and display their knowledge more successfully through body movement. However, such techniques are the most economical. The understanding of a wide range of phenomena can be expressed through words, and clear and objective criteria are more easily set, requiring less effort on the part of the teacher than thinking of different ways to present and assess the same material would.

Table 3 Teaching techniques

	Teaching methods							
	Verbal-linguistic	Math-logic	Spatial/ Visual	Bodily-kinesthetic	Musical	Interpersonal	Intrapersonal	Naturalistic
Mean	3.80	2.94	2.39	1.63	2.08	3.59	3.48	1.54
Std. Deviation	0.98	1.14	1.16	1.00	1.21	1.14	1.24	0.93

In exploring the correlation between the prominence of certain types of MI and the frequency of teaching techniques engaging them, the starting point was Christison's

(1998) claim that different types of intelligence among learners may result from the teaching methodology they were exposed to. However, the results showed that, in the majority of cases, there is no significant correlation between the types of MI among the grammar school students and the teaching techniques they experienced (Table 4 and Table 5). This explains the fact that kinesthetic intelligence is very prominent (Table 2), while the techniques engaging it are very rarely used (Table 3). However, there appears to be a positive correlation between naturalistic intelligence and the techniques engaging it (r=0.26), as seen in Table 4, and visual intelligence and techniques engaging it (r=0.22), as seen in Table 5. The results may be interpreted in two ways. The first option would be that intelligence is indeed affected by experience as much as by genetics, but that all intelligence types except visual and naturalistic had enough opportunity to develop in real-life contexts, while visual and naturalistic did not develop sufficiently and depend on their engagement in teaching techniques. The second option is to interpret the results as supporting the view of intelligence as resulting primarily from genetics, independently of experience, while visual and naturalistic intelligence require some external factors to be fully developed. Regarding the educational implications of the finding, it suggests that teachers should not focus on developing in their students a kind of intelligence they consider necessary for learning, but rather focus on becoming familiar with their students' intelligence profiles, and teaching beyond the traditional, namely visual and logical, intelligences.

Table 4 MI and techniques

Verbal Intelligence & Verbal-linguistic tm		Logical Intelligence & Logical tm		Visual Intelligence & Visual-spatila tm		Kinesthetic Int. & Kinesthetic tm	
r	0.01	R	0.14	R	0.22	r	0.11
p	0.90	P	0.18	P	0.03	p	0.28

Table 5 MI and techniques

Musical Intelligence & Musical tm		Interpersonal Int. & Interpersonal tm		Intrapersonal Int. & Intrapersona tm		Naturalistic Int. & Naturalistic tm	
r	0.11	R	0.12	R	0.16	r	0.26
p	0.27	P	0.24	P	0.12	p	0.01

The data analyzed showed that gender does not significantly correlate with students' English language proficiency (Table 6) or types of intelligence (Table 7). These results are incongruent with Loori's (2005) claim that male participants have a higher level of logical intelligence, while female participants have a higher level of intrapersonal intelligence. Loori (2005) based his claims on male and female participants' preferences for learning activities involving either logical or intrapersonal intelligences. However, preferences for certain types of activities do not necessarily result from dominant types of intelligence. Activities involving intrapersonal intelligence are similar to the situations in which female individuals are often found, due to their socially conditioned roles, which require self-discipline and a high level of self-awareness. Similarly, activities which involve logical intelligence replicate situations in which male participants are often found, considering their everyday tasks and chosen jobs. This might lead to the conclusion that the preference for certain types of activities results from their perceived similarity to the tasks individuals are accustomed to performing.

Table 6 Gender and lang. proficiency

	Gender	Mean	Std. Deviation	Mean Difference	t	p
Language proficiency	Female	4.06	1.00	-0.32	-1.66	0.10
	Male	4.38	0.92			

Table 7 Gender and MI

MI	Gender	Mean	Std. Deviation	Mean Difference	t	p
Naturalistic	Female	4.12	1.57	-0.02	0.06	0.95
	Male	4.14	1.88			
Musical	Female	4.80	1.81	0.06	0.15	0.88
	Male	4.74	2.17			
Logical	Female	5.10	1.90	-0.42	-1.12	0.27
	Male	5.52	1.85			
Existential	Female	4.38	2.24	-0.06	-0.14	0.89
	Male	4.44	2.21			
Interpersonal	Female	3.96	2.05	-0.68	-1.69	0.10
	Male	4.64	1.99			
Kinesthetic	Female	5.24	2.11	0.36	0.84	0.41
	Male	4.88	2.19			
Verbal	Female	4.56	2.01	0.16	0.39	0.70
	Male	4.40	2.09			
Intrapersonal	Female	6.76	2.21	0.34	0.73	0.47
	Male	6.42	2.42			
Visual	Female	4.54	2.31	0.26	-0.60	0.55
	Male	4.80	2.05			

The questions of utmost importance for the educational implications of the research investigate the correlation between types of intelligence and success in education, and the correlation between types of intelligence and English language proficiency. Despite the widespread assumption that logical and verbal intelligences are prerequisites for success in education, the results showed that the only type of intelligence correlating with success in education is visual (r=0.20), as seen in Table 8. This may be because students are generally taught to study through working with pictures and colors, visualizing and drawing maps, rather than through techniques engaging other types of MI. Therefore, only students who naturally have a higher level of visual intelligence can fully utilize their studying potential, while others may not reach their maximum because their learning styles do not align with their natural ways of understanding different phenomena. Regarding the correlation between types of MI and English language proficiency, it was hypothesized that learners with higher verbal and interpersonal intelligences would have a higher level of language proficiency. However, the results showed a positive correlation only between existential intelligence (r=0.25) and visual intelligence (r=0.21) and language proficiency in general (Table 8), which is incongruent with Razmjoo's (2008) claim that none of the types of MI is a predictor of language proficiency. The correlation with visual intelligence may be understood in the same way as its correlation with success in education. The

influence of existential intelligence may result from the fact that English language proficiency was measured by grades in English, and the tasks for grammar school students often require them to display their knowledge by expressing reflections on the meaning of life and human conditions, such as death or love, through speaking and writing.

Table 8 MI and language proficiency/GPA

MI		Lang. Prof.	GPA
Naturalistic	r	0.04	0.00
	p	0.71	0.96
Musical	r	0.09	0.05
	p	0.38	0.59
Logical	r	0.15	0.07
	p	0.15	0.49
Existential	r	0.25	0.09
	p	0.01	0.38
Interpersonal	r	0.00	-0.03
	p	0.98	0.77
Kinesthetic	r	-0.03	0.07
	p	0.76	0.48
Verbal	r	0.20	0.14
	p	0.05	0.18
Intrapersonal	r	0.14	0.15
	p	0.17	0.13
Visual	r	0.21	0.20
	p	0.03	0.04

The results presented in Table 9 showed positive correlations between types of MI and students' receptive and productive language skills, as well as their knowledge of grammar and vocabulary. The results of previous research on the relationship between MI and writing skills are not uniform. For instance, Sadeghi and Farzizadeh (2002) found that writing ability is not affected by any component of MI, Hosseini (2012) discovered a significant contribution of verbal intelligence, while Marefat (2007) concluded that existential, kinesthetic and interpersonal intelligences predict good writing skills. The current results showed positive correlations of visual intelligence (r=0.28), existential intelligence (r=0.26), musical intelligence (r=0.22), and verbal intelligence (r=0.21) with writing abilities. The correlation with visual and musical intelligences may be explained by the capacity of individuals to visualize and graphically represent outlines and steps in writing, making the process more efficient and the outcome well-constructed, as well as to recognize and apply rhythmic patterns in writing, ensuring cohesion and a natural flow of ideas. The roles of existential and verbal intelligences are clear, as they indicate the capacity to pose and ponder interesting questions, using abstract reasoning and symbolic thinking, and to express ideas effectively through words. Regarding students' speaking skills, the results were expected to confirm Yeganehfar's (2005) findings that interpersonal intelligence predicts better speaking skills. However, the results showed positive correlations between speaking and visual intelligence (r=0.29), musical intelligence (r=0.25), existential intelligence (r=0.24), as well as logical intelligence (r=0.20). The effects of visual, musical and existential intelligence can be understood in a similar way as their effects on writing abilities. The correlation between speaking and

logical intelligence results from the fact that effective speaking and productive discussions require sensitivity to logical patterns and relationships between statements and propositions, enabling rapid and effective abstract reasoning. Regarding the correlation between listening skills and types of MI, the results confirmed Bemani Naeini & Pandian's (2010) claims that listening skills are not correlated with any component of MI. On the other hand, the results showed positive correlations between reading and existential intelligence (r=0.33), visual intelligence (r=0.29), verbal intelligence (r=0.26), intrapersonal intelligence (r=0.24), and musical intelligence (r=0.23). The influence of visual, verbal, musical and existential intelligences can be understood in terms of the capacity to visualize abstract concepts, graphically present ideas to facilitate their understanding, recognize patterns of thought and expression, and engage in abstract reasoning and symbolic thinking. The positive correlation between intrapersonal intelligence and reading skills may result from the fact that a person with well-developed self-knowledge integrates the read material into a well-defined view of the world, including clear attitudes, motivations and intentions. An individual's understanding of new phenomena often starts with a clear understanding of themselves. Logical and visual intelligences are positively correlated with grammar school students' knowledge of grammar (visual r=0.23, logical r=0.22), as well as with their knowledge of vocabulary (visual r=0.20, logical r=0.20). Grammar and vocabulary of a language are complex systems, so their acquisition requires sensitivity to logical patterns and relationships, as well as the capacity to visualize and graphically represent abstract concepts. For instance, the concepts of grammar such as conditionals require abstract reasoning to understand the nature of situations and their temporal relations. Vocabulary knowledge requires extensive mental imagery, while systematic reasoning aids in understanding word building processes and making generalizations to facilitate learning.

Table 9 MI and language skills

MI		Speaking	Writing	Listening	Reading	Grammar	Vocabulary
Naturalistic	r	0.02	-0.05	-0.07	0.07	0.07	0.00
	p	0.82	0.63	0.46	0.48	0.47	1.00
Musical	r	0.25	0.22	0.07	0.23	0.04	0.18
	p	0.01	0.03	0.51	0.02	0.70	0.08
Logical	r	0.20	0.13	0.04	0.20	0.22	0.20
	p	0.05	0.20	0.70	0.05	0.03	0.04
Existential	r	0.24	0.26	0.19	0.33	0.17	0.19
	p	0.02	0.01	0.06	0.00	0.08	0.06
Interpersonal	r	0.02	0.00	-0.07	0.06	0.13	0.02
	p	0.88	0.97	0.50	0.56	0.21	0.81
Kinesthetic	r	-0.03	-0.02	-0.03	0.08	-0.05	0.06
	p	0.79	0.86	0.77	0.46	0.63	0.55
Verbal	r	0.14	0.21	0.10	0.26	0.18	0.07
	p	0.18	0.03	0.33	0.01	0.08	0.48
Intrapersonal	r	0.16	0.14	0.13	0.24	0.19	0.11
	p	0.12	0.17	0.20	0.02	0.06	0.29
Visual	r	0.29	0.28	0.17	0.29	0.23	0.20
	p	0.00	0.01	0.10	0.00	0.02	0.04

4. CONCLUSION

Gardner's theory of MI is student-centered, implying the necessity of changes in traditional teaching methods in the classroom to accommodate various types of learners. A fundamental concern for a teacher should be to understand the ways in which learners differ from one another, as a particular teaching method or textbook may not be suitable for all students. One way to address students' needs is to consider their intelligence profiles and teach them through activities that engage their types of intelligence. The current research showed that the most prominent types of MI among grammar school students are interpersonal, logical and kinesthetic, which implies that EFL teachers in grammar schools should use teaching methods that rely on these intelligences. However, it is advisable for each teacher to assess their students' intelligence profiles before deciding on which teaching techniques to emphasize. The most commonly used teaching techniques are those engaging verbal, interpersonal and intrapersonal intelligences, regardless of the fact that these do not correspond to the types of intelligences the majority of students possess. Another point to highlight is that the dominant types of intelligence among grammar school students do not result from the teaching techniques they have experienced, but rather seem to be inherited. This implies that teachers should not try to force the development of types of intelligences that are widely accepted as prerequisites for success. Instead, teachers should adapt their teaching techniques to accommodate their learners' intelligence profiles. Analyzing the ability to predict success in education or language proficiency based on dominant intelligences, it was concluded that success in education can be predicted by a higher level of visual intelligence, while visual and existential intelligences positively correlate with language proficiency. Regarding specific language skills, as well as grammar and vocabulary knowledge, it can be said that musical, existential, verbal and visual intelligences predict better writing skills; musical, logical, existential, and visual intelligences predict success in speaking; reading skills are influenced by higher existential, visual, verbal, intrapersonal and musical intelligences, while listening skills do not correlate with any component of MI. In conclusion, the EFL classroom should not be a place where only traditional verbal and logical intelligences are appreciated and relied upon. The experience of using a foreign language encompasses the abilities that define all types of intelligence. Students should be provided with opportunities to learn and demonstrate their understanding through techniques related to all types of intelligence, as this will ensure that the teaching process is not biased, and better replicates real-life uses of language.

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VEZA IZMEĐU VIŠESTRUKE INTELIGENCIJE I USPEHA U UČENJU ENGLESKOG JEZIKA KAO STRANOG

Cilj ovog rada jeste da prikaže istaživanje odnosa višestruke inteligencije, pojma predloženog od strane Gardnera (1993), i uspeha u učenju engleskog jezika kao stranog (izmerenog ocenom iz engleskog jezika) među 100 gimnazijalaca u Srbiji. Mekenzijevo (1999) Istraživanje višestruke inteligencije korišćeno je za identifikaciju profila inteligencije učenika gimnazija, pokazujući da su najistaknutiji tipovi inteligencije intrapersonalna, logička i kinestetička. Razultati analize nezavisnih uzoraka t-testom pokazuju da pol ne utiče ni na višestruku inteligenciju ni na znanje jezika. Rezultati Pirsonove korelacije sugerišu da je opšte poznavanje jezika u pozitivnoj korelaciji sa vizuelnom i egzistencijalnom inteligencijom, dok su različite vrste produktivnih i receptivnih jezičkih veština (zajedno sa znanjem gramatike i vokabulara) u pozitivnoj korelaciji sa muzičkom, egzistencijalnom, vizuelnom, logičkom i verbalnom inteligencijom. Rezultati Pirsonove korelacije takođe ukazuju da nije moguće razviti određene vrste inteligencije korišćenjem nastavnih tehnika koje ih angažuju. Istraživanje ima značajne obrazovne implikacije, sugerišući da nastavnici treba da identifikuju profile inteligencije svojih učenika i da shodno tome prilagode svoje nastavne tehnike, umesto da pokušavaju da forsiraju razvoj verbalne i logičke inteligencije, koje se, očigledno pogrešno, smatraju preduslovima za uspeh u učenju.

Ključne reči: *višestruka inteligencija, znanje jezika, podučavanje usmereno na učenika*

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PARENTAL ATTITUDES AND SUPPORT TOWARD SCHOOL SPORTS

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Abstract. *This cross-sectional study examined parents' attitudes, their support, and perceptions of school involvement in school sports using a newly developed Parental Attitudes and Support for School Sports and Perceptions of School Involvement Questionnaire (PASSIQ). The study also examined the association between parents' gender and children's sports participation concerning these attitudes and support levels. A total of 380 parents were included in the study, with 341 valid responses analyzed. Our findings indicate that higher levels of parental support are strongly associated with more positive attitudes toward school sports ($p < 0.001$). While perceptions of school support showed a marginally significant positive relationship ($p = 0.083$), extended participation in sports was generally associated with lower parental attitudes, potentially reflecting concerns about burnout or shifting perceptions over time. Notably, the interaction between parents' gender and children's sports participation revealed that for male parents, extended sports participation of their children significantly enhanced positive attitudes toward school sports ($p = 0.004$). These results highlight the importance of considering parental support and gender-specific responses when developing strategies to promote positive attitudes and support for school sports. The PASSIQ proved to be a reliable and valid tool for assessing these constructs, providing a foundation for future research and interventions to foster supportive environments for children's physical activity.*

Key words: *Physical Activity, Parental Influence, School Engagement, Sports Participation.*

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INTRODUCTION

Regular physical activity and sports participation are essential components of a healthy lifestyle, offering numerous physical, psychological, and social benefits. Engaging in sports from a young age can improve cardiovascular health, reduce the risk of obesity, and foster mental well-being and social skills (Eime et al., 2013; Kohl et al., 2012). Despite these advantages, many children and adolescents do not meet the recommended levels of physical activity, posing significant public health challenges (Trost et al., 2011).

Schools play a crucial role in promoting physical activity through structured sports programs and physical education (PE) classes. By integrating sports into the school curriculum, educators can help students develop lifelong physical activity habits, leading to better health outcomes in adulthood (Trudeau & Shephard, 2008). School-based sports programs also offer opportunities for students to develop essential life skills, such as teamwork, leadership, and discipline, which are critical for personal and social development (Bailey et al., 2013).

Understanding the factors influencing children's participation in school sports is vital for developing effective interventions. Mitić et al. (2023) found that students who engage in school sports activities more frequently (more than twice a week) are likely to have higher attitudes and motivation toward school sports. However, they argued that the perceived importance of physical activity and attitudes toward sports' developmental benefits might be related to other valuable factors.

Following these insights, a crucial factor that might significantly shape positive attitudes toward school sports engagement is parental support. Research indicates that parental support and encouragement play a pivotal role in shaping children's attitudes toward sports and their motivation to engage in physical activities (Fredricks & Eccles, 2004; Gustafson & Rhodes, 2006). Parents who actively support their children's sports involvement foster a positive environment that promotes regular physical activity (Davison et al., 2011). This support extends beyond verbal encouragement and includes providing necessary resources such as transportation to games, attending events, and engaging in sports activities with their children (Edwardson & Gorely, 2010).

Moreover, understanding parents' perceptions of school support for sports is equally important. Positive perceptions of school support can enhance parental support, increasing children's sports participation. Schools that provide well-structured sports programs and maintain open communication with parents about the benefits of sports can foster a collaborative environment that supports children's physical activity (Wheeler, 2012). This holistic approach ensures that both the school and parents are aligned in promoting sports participation, creating a supportive framework for children.

In addition to parental and school support, it is essential to consider the role of parents' gender and children's sports participation as predictors of attitudes and support for school sports. Research shows that fathers and mothers might differ in their approaches to supporting their children's sports activities, with fathers often being more involved in competitive aspects and mothers in logistical support (Wheeler, 2012; Gustafson & Rhodes, 2006). These differences can influence how children perceive and engage in sports, highlighting the need for a nuanced understanding of these dynamics.

Existing inventories, such as the Activity Support Scale (ACTS) and the Parental Support for Physical Activity, have been used to measure similar constructs (Davison et al., 2011; Trost et al., 2003). However, these instruments do not fully capture the specific cultural and contextual factors relevant to Serbian parents or the role of schools in

supporting sports programs. The present study introduces a novel tool, the Parental Attitudes and Support for School Sports and Perceptions of School Involvement Questionnaire (PASSIQ), developed to assess parents' attitudes, support, and perceptions toward school sports. The PASSIQ aims to fill this gap by incorporating culturally relevant items and assessing three key dimensions: attitudes toward the benefits of school sports, parental support and engagement in children's sports activities, and parenteral perceptions of school support for sports activities.

Therefore, this study aimed to explore the predictors of parental attitudes toward school sports, focusing on parental support, perceptions of school support, duration of children's sports participation, and parents' gender. By understanding these dynamics, we hope to provide insights that can help develop strategies to promote positive attitudes and support for school sports, ultimately fostering a supportive environment for children's physical activity and well-being.

METHODS

Study Design and Procedures

This cross-sectional study explored parental attitudes and support for school sports, as well as their perceptions of school involvement in Serbia. Conducted during the second semester of 2022, the study was part of a national initiative led by the Ministry of Education to enhance school sports programs. The Ministry approved the selection of a representative sample from a single school to ensure feasibility and focus, employing a quasi-experimental approach.

To ensure transparency and clarity, a priori power analysis determined the sample size necessary to ensure statistical power and representativeness of the target population. Parents were provided with clear and comprehensive instructions to avoid misleading responses and were informed about the study's goals and the importance of improving school sports quality. Detailed information about school sports, including organized extracurricular activities, Physical and Health Education, sports sections, school competitions, and other related activities, was provided to ensure a thorough understanding.

Uniquely designed for this study, the Parental Attitudes and Support for School Sports and Perceptions of School Involvement Questionnaire (PASSIQ) aimed to explore the construct validity and potential efficacy of the PASSIQ for future broader administration if deemed sensible. The PASSIQ, a novel tool, assessed various constructs, including attitudes toward school sports, parental support, and parenteral perceptions of school involvement. Additionally, the study examined gender differences in parental attitudes and support and how this factor might vary based on the duration of their children's engagement in sports.

The questionnaire was administered electronically via Google Forms and distributed to official school email addresses to ensure efficiency. Parents were assured that their responses would remain anonymous and solely used for research. Incomplete responses or those with ambiguous outcomes were excluded from the analysis to maintain data integrity.

The study adhered to the ethical principles outlined in the Declaration of Helsinki, ensuring the protection of human subjects involved in research. To enhance the study's scientific rigor, we detailed the statistical analyses performed, including methods used to assess differences in parental attitudes and support across various levels of school sports engagement. Additionally, we acknowledged potential study limitations, such as biases inherent in self-reported measures.

In summary, this study's design and procedures were meticulously planned and executed to ensure valid and reliable data collection. It focused on parents' attitudes, support, and perceptions regarding school sports and their involvement. The results will inform the potential broader administration of the PASSIQ as part of the Ministry of Education's initiative.

Participants

The study enrolled parents of students from the "Stefan Nemanja" school in Niš, Serbia. A total of 380 parents participated in the study. However, after excluding incomplete responses, those with ambiguous outcomes, and detected outliers, the final sample consisted of 341 participants. This exclusion was necessary to ensure the data's accuracy and reliability, maintaining the research findings' integrity.

School administrators recruited participants via email, ensuring a streamlined and efficient process. This method allowed for broad outreach while maintaining control over the distribution and collection of the questionnaires. The inclusion criteria for the study were parents of regular students from the "Stefan Nemanja" school, ensuring that the responses were relevant to the study's focus.

This meticulous approach to participant recruitment and data collection underscores the study's commitment to ethical standards and methodological rigor. By focusing on a representative sample and ensuring informed consent, the study aimed to produce valid and ethically sound findings, contributing valuable insights into parental attitudes, support, and perceptions related to school engagement in sports.

The descriptive statistics for the final sample, broken down by gender and children's sports participation duration, are summarized in Table 1. This includes the mean and standard deviation of attitudes, support, and perceptions scores, providing a comprehensive overview of the data. The detailed breakdown helps to contextualize the findings within the specific demographic characteristics of the sample, facilitating a deeper understanding of the factors influencing parental attitudes and support for school sports.

Table 1 Descriptive statistics.

Gender	Sports	Count	Percentage	Attitudes	Support	Perceptions
Female	No sports	86	25.22%	32.87 ± 2.52	33.01 ± 4.48	15.90 ± 2.82
Female	Up to 1 year	17	4.99%	33.94 ± 1.60	36.18 ± 3.19	16.53 ± 2.27
Female	1-3 years	36	10.56%	33.00 ± 2.34	35.28 ± 2.75	15.72 ± 3.09
Female	Over three years	83	24.34%	33.04 ± 2.15	36.86 ± 2.68	15.76 ± 2.86
Male	No sports	46	13.49%	32.76 ± 2.95	33.74 ± 4.91	15.85 ± 2.93
Male	Up to 1 year	18	5.28%	33.50 ± 2.12	36.72 ± 2.59	16.22 ± 2.56
Male	1-3 years	13	3.81%	33.54 ± 1.51	36.38 ± 2.79	15.85 ± 2.23
Male	Over three years	42	12.32%	34.05 ± 1.83	36.74 ± 3.62	16.00 ± 3.15

Measurements

The present study introduces a novel tool, the Parental Attitudes and Support for School Sports and Perceptions of School Involvement Questionnaire (PASSIQ). This unique instrument assesses parents' attitudes, support, and perceptions toward school sports. The PASSIQ initially consisted of 25 items, categorized into three distinct subscales: Attitudes (Q1-Q7), Parental Support (Q8-Q17), and Perceptions of School Support (Q18-Q25). The attitudes subscale delved into the perceived benefits and importance of school sports, the

parental support subscale explored parental engagement and investment in their child's sports activities, and the perceptions subscale gauged parents' views on the school's support for sports activities. Participants' responses were evaluated using a five-point Likert scale, reflecting their degree of agreement (Strongly Disagree, Disagree, Neither Agree nor Disagree, Agree, and Strongly Agree).

The development of the PASSIQ involved a rigorous process of item selection and factor analysis. Exploratory Factor Analysis (EFA) revealed three distinct factors. A factor analysis using a diagonally weighted least squares (DWLS) estimator with direct oblimin rotation confirmed that each item corresponded to the theoretically assumed factors. The results showed that most items had high communalities, indicating substantial shared variance with other items. However, a few items (Q12, Q13, Q22, Q24, Q25) were excluded due to high loadings on multiple factors or low commonalities. The final Confirmatory Factor Analysis (CFA) model included three factors: Attitudes Toward the Benefits of School Physical Activity and Sports (F1), Parental Support and Engagement in Children's Sports Activities (F2), and Perceptions of School Support for Sports Activities (F3).

The Confirmatory Factor Analysis (CFA) model demonstrated an excellent fit to the data. The CFA model's fit indices were as follows: SRMR = 0.062, CFI = 0.993, RMSEA = 0.041, and TLI = 0.991, indicating an excellent fit. The internal consistency for the scale proved to be excellent, with Cronbach's alpha values of 0.85 for attitudes, 0.82 for parental support, and 0.77 for perceptions of school support. The inter-item correlations were moderate, with values of 0.46 for attitudes, 0.38 for parental support, and 0.45 for perceptions.

The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy indicated that the sample size was adequate for factor analysis, with an overall KMO value of 0.88 and individual MSA values of 0.75 to 0.95. The factor correlations revealed that F1 and F2 were strongly correlated at 0.68, while F1 and F3 had a moderate correlation of 0.34, and F2 and F3 showed a correlation of 0.40.

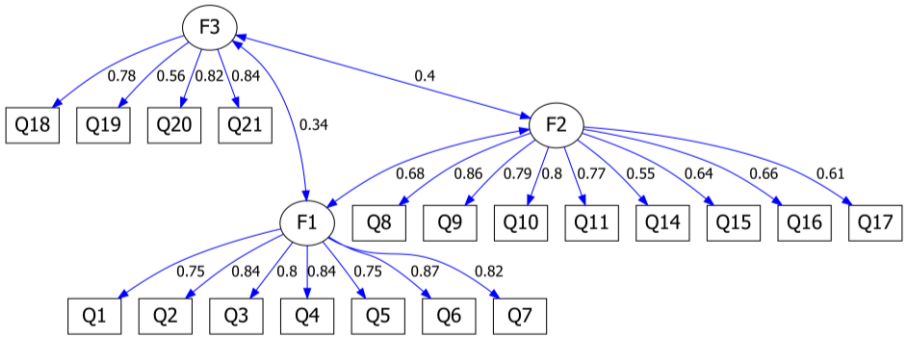

Fig. 1 Confirmatory Factor Analysis (CFA) Results for the Measurement Model. This figure displays the CFA results for the measurement model of the latent constructs F1, F2, and F3. The model demonstrates an excellent fit to the data with a comparative fit index (CFI) of 0.993. Standardized regression weights (factor loadings) are presented for each indicator. The rectangles represent observed variables (Q1 to Q21), while the ovals represent latent variables (F1, F2, and F3). The standardized loadings range from 0.55 to 0.87, indicating the strength of the relationship between each latent variable and its corresponding indicators. The correlations between the latent variables are also shown.

To obtain the scores for each subscale, the remaining items after the Confirmatory Factor Analysis (CFA) were summed for each subscale, as the items with high loadings on multiple factors or low communalities were excluded. This approach ensured that only the most reliable and valid items contributed to the assessment, providing a comprehensive and accurate evaluation of parental attitudes, support, and perceptions of school support for sports activities.

Sample Size Calculation

We conducted an a priori multiple regression power analysis using G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) to determine the required sample size for a multiple regression analysis with nine predictors: Parental Support Score, Perceptions of School Support Score, sport (categorized as up to 1 year, 1-3 years, over 3 years), gender, and the interaction terms between sport and gender. Using an alpha level of 0.05, a power of 0.95, and an expected small effect size ($f = 0.10$), we calculated the appropriate sample size. Based on these parameters, the desired sample size for this study was determined to be 245 participants.

Statistical Analyses

Data analyses were conducted using RStudio (version 2024.04.1+748, Spotted Wakerobin, Boston, MA). Descriptive statistics, including means and standard deviations, were calculated to characterize both categorical and continuous variables for the entire sample. The Parental Attitudes and Support for School Sports and Perceptions of School Involvement Questionnaire (PASSIQ) was initially validated through factor analysis. Exploratory Factor Analysis (EFA) using a diagonally weighted least squares (DWLS) estimator with direct oblimin rotation identified three distinct factors: Attitudes Toward the Benefits of School Physical Activity and Sports, Parental Support and Engagement in Children's Sports Activities, and Perceptions of School Support for Sports Activities. Items with low communalities or high cross-loadings were excluded to refine the questionnaire. Confirmatory Factor Analysis (CFA) was then performed to verify the factor structure identified by the EFA, demonstrating an excellent fit to the data and confirming the internal consistency of the PASSIQ.

Before performing the multiple regression analysis, assumptions of linearity were assessed, and residual diagnostics were conducted to identify deviations from linearity. Outliers and leverage points were identified using influence diagnostics, such as Cook's distance and leverage values. These steps ensured that the data met the assumptions for multiple regression analysis and that any influential data points were appropriately addressed. A multiple linear regression analysis was then performed to investigate the predictors of parental attitudes toward school sports. This analysis focused on parental support, perceptions of school support, duration of children's sports participation, and parents' gender. Interaction terms between sports participation and gender were included to explore potential gender differences in the associations between sports participation and attitudes. Statistical significance was evaluated with a threshold set at 0.05, and residual diagnostics were conducted after the regression analysis to confirm the model's validity. This comprehensive approach provided a detailed understanding of the factors aligned with parental attitudes and support for school sports, accounting for both direct and interaction effects between variables.

RESULTS

A multiple linear regression analysis was conducted to investigate predictors of parental attitudes toward school sports, focusing on parental support, perceptions of school support, the duration of children's sports participation, and gender. Interaction terms between sports participation and gender were included to explore potential gender differences in the effect of sports participation on attitudes.

The analysis revealed several key findings. Parental support emerged as a significant positive predictor of attitudes toward school sports (Estimate = 0.36, t = 12.25, $p < 0.001$), suggesting that higher levels of parental support are strongly associated with more positive attitudes toward school sports.

Perceptions of school support showed a marginally significant positive relationship with attitudes toward school sports (Estimate = 0.07, t = 1.74, p = 0.083). Although this result was not statistically significant, it suggests that more positive perceptions of school support might be associated with higher attitudes toward school sports.

The duration of children's sports participation had varied effects. Participation for up to one year (Estimate = -0.11, t = -0.22, p = 0.824) and 1-3 years (Estimate = -0.68, t = -1.82, p = 0.070) did not significantly influence attitudes. However, participation for over three years was significantly associated with lower attitudes toward school sports (Estimate = -1.21, t = -3.96, $p < 0.001$). This suggests that extended participation in sports might lead to less positive attitudes.

Gender alone did not significantly affect attitudes toward school sports (gender male: Estimate = -0.37, t = -1.10, p = 0.273). However, the interaction between gender and participation for over three years (Estimate = 1.41, t = 2.90, p = 0.004) was significant (see Figure 2). This interaction indicates that for males, extended participation in sports

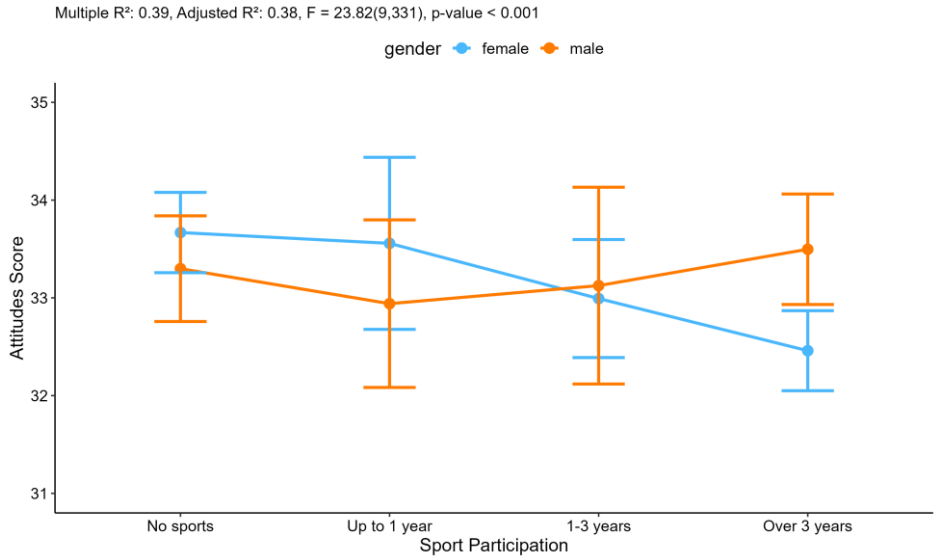

Fig. 2 Interaction plot showing the relationship between sports participation and attitudes toward school sports, moderated by gender. Sports participation is categorized into no sports, up to one year, 1-3 years, and over three years. The plot includes confidence intervals for the regression lines.

(over three years) is associated with significantly higher attitudes toward school sports compared to females.

In summary, the regression analysis underscores that higher parental support is a key predictor of positive attitudes toward school sports. While perceptions of school support show a marginal positive effect, the duration of children's sports participation reveals a more complex relationship. Specifically, extended participation in sports generally correlates with lower attitudes, but for males, it significantly enhances their attitudes toward school sports. These findings emphasize the importance of considering both parental support and gender-specific responses to prolonged sports participation when developing strategies to promote positive attitudes toward school sports.

DISCUSSION

This study aimed to explore predictors of parental attitudes toward school sports, focusing on parental support, perceptions of school support, the duration of children's sports participation, and parents' gender. Our findings provide several notable insights. Parental support emerged as a significant positive predictor of attitudes toward school sports, with higher parental support strongly associated with more positive attitudes. Perceptions of school support showed a marginally significant positive relationship with attitudes toward school sports, suggesting that positive perceptions of school support might be linked to more favorable attitudes. Interestingly, the duration of children's sports participation had varied effects. While extended participation was generally associated with lower attitudes, it significantly enhanced attitudes toward school sports among male parents. These findings highlight the importance of considering both parental support and gender-specific responses to prolonged sports participation when developing strategies to promote positive attitudes toward school sports.

The significant positive relationship between parental support and attitudes toward school sports aligns with existing literature, emphasizing the pivotal role parents play in their children's physical activity and sports engagement. Fredricks and Eccles (2004) found that parental encouragement and involvement are crucial in shaping children's attitudes and motivations toward sports. Similarly, Gustafson and Rhodes (2006) highlighted that parental support is significantly associated with children's physical activity levels and enjoyment of sports. Parents who actively support their children's sports involvement create a positive environment that promotes regular physical activity, as noted by Davison et al. (2011). This support can take various forms, including providing necessary resources such as transportation, attending games, and engaging in sports activities with their children (Edwardson & Gorely, 2010).

Understanding parents' perceptions of school support for sports is equally important. Positive perceptions of school support can enhance parental support by increasing children's sports participation. Schools that offer well-structured sports programs and maintain open communication with parents about the benefits of sports can foster a collaborative environment that supports children's physical activity (Wheeler, 2012). Effective communication and engagement strategies, such as regular updates, workshops, and involvement opportunities, can significantly boost parental support and involvement. This engagement helps parents appreciate the broader benefits of sports, such as social

skills development and improved academic performance, thereby fostering a supportive home environment for children's sports activities (Bailey et al., 2013; Epstein, 2018).

Moreover, incorporating feedback from parents about sports programs is crucial. Schools that actively seek and act on parental input demonstrate a commitment to creating inclusive and effective sports environments, which enhances parental trust and cooperation (Hoover-Dempsey et al., 2005). Positive experiences in school sports can also influence parents' perceptions and attitudes. When children enjoy and succeed in school sports, parents are more likely to actively support these activities (Fredricks & Eccles, 2004). This participatory approach helps ensure that sports programs meet the diverse needs of students and gain broader community support. By fostering an environment that values parental input and highlights the multifaceted benefits of sports, schools can maintain sustained parental support and higher participation rates among students, contributing to the holistic development of children (Trudeau & Shephard, 2008).

The finding that extended participation in sports is generally associated with lower parental attitudes toward school sports is intriguing. This negative relationship may reflect concerns about burnout or a shift in parents' perceptions of the value and benefits of sports over time. As children engage in sports for extended periods, parents may perceive increased demands on their time and resources or become more aware of the physical and emotional strains their children experience (Fredricks & Eccles, 2004; Gould et al., 1996). Additionally, initial enthusiasm and perceived benefits might diminish, leading to more critical evaluations of prolonged sports engagement (Fraser-Thomas et al., 2005; Eime et al., 2013). Understanding these dynamics is crucial for developing strategies that sustain positive parental attitudes and support for school sports throughout their children's athletic involvement.

Our study found that the interaction between parents' gender and children's sports participation significantly affects attitudes toward school sports. Specifically, for male parents, extended participation in sports (over three years) by their children is associated with significantly higher attitudes toward school sports. This finding aligns with Edwardson & Gorely (2010), who noted that fathers often play a more active role in supporting competitive sports, potentially leading to more positive attitudes toward prolonged sports participation. Wheeler (2012) and Gustafson and Rhodes (2006) suggest that fathers and mothers may differ in their approaches to supporting their children's sports activities, with fathers typically involved in competitive aspects and mothers focusing on logistical support. These differences can influence how children perceive and engage in sports, highlighting the need for a nuanced understanding of these dynamics.

The association between extended sports participation and parental attitudes can be multifaceted. Fathers' involvement in competitive sports might be driven by a desire to instill discipline, perseverance, and a competitive spirit in their children, which can result in more favorable attitudes toward school sports (Fredricks & Eccles, 2004). Additionally, fathers who see their children succeed and grow in sports may develop a stronger belief in the benefits of sports participation, thereby enhancing their positive attitudes (Gould et al., 2008).

On the other hand, mothers' logistical support, while crucial, may not provide the same reinforcement of positive attitudes if it is perceived as a routine obligation rather than active engagement in the sports experience (Wheeler, 2012). This distinction underscores the importance of considering different dimensions of parental involvement and how they contribute to attitudes toward school sports. Understanding these dynamics is essential for developing targeted strategies that engage both parents in ways that sustain their positive

attitudes and support for their children's sports activities (Gustafson & Rhodes, 2006; Trost et al., 2003). These findings emphasize the need for a nuanced approach to promoting school sports that accounts for fathers' and mothers' different roles and perceptions. Schools and sports programs can enhance parental attitudes and children's sustained engagement in sports by fostering a supportive environment that leverages both competitive and logistical support.

Existing inventories, such as the Activity Support Scale (ACTS) and the Parental Support for Physical Activity (PSPAQ), have been used to measure similar constructs (Davison et al., 2011; Trost et al., 2003). However, these instruments do not fully capture the specific cultural and contextual factors relevant to Serbian parents and the educational system or the role of schools in supporting sports programs. The present study introduces a novel tool, the Parental Attitudes and Support for School Sports and Perceptions of School Involvement Questionnaire (PASSIQ), developed to assess parents' attitudes, support, and perceptions toward school sports. The PASSIQ aims to fill this gap by incorporating culturally relevant items and assessing three key dimensions: attitudes toward the benefits of school sports, parental support and engagement in children's sports activities, and perceptions of school support for sports activities. This culturally sensitive approach ensures that the questionnaire captures the unique dynamics of parental attitudes and support within the Serbian educational system, which may differ from those in other cultural contexts (Davidov, Meuleman, Cieciuch, Schmidt, & Billiet, 2014).

Developing the Parental Attitudes and Support for School Sports and Perceptions of School Involvement Questionnaire (PASSIQ) involved meticulous item selection and robust statistical analyses to ensure the tool's validity and reliability. Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were employed to verify that the questionnaire items corresponded to theoretically assumed factors, ensuring accurate measurement of the constructs of interest. EFA was used to explore the underlying factor structure of the questionnaire, revealing three distinct factors: attitudes toward the benefits of school sports, parental support and engagement in children's sports activities, and perceptions of school support for sports activities. This analysis was crucial for refining the questionnaire by identifying items with high commonalities and excluding those with low or high cross-loadings.

CFA was then performed to validate the factor structure identified by the EFA. The CFA results demonstrated an excellent fit to the data, confirming the internal consistency of the questionnaire. The fit indices, including the Standardized Root Mean Square Residual (SRMR), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Tucker-Lewis Index (TLI), indicated a robust measurement model, affirming the reliability and validity of the PASSIQ (Hu & Bentler, 1999; Kline, 2015). The high Cronbach's alpha values for each subscale further supported the reliability of the constructs measured.

The PASSIQ offers a comprehensive understanding of factors influencing parental involvement in school sports by integrating assessments of attitudes, support, and perceptions. This tool can facilitate future research and interventions aimed at enhancing parental support for school sports, thereby promoting children's physical activity and overall well-being. The rigorous development process, supported by factor analyses, ensures that the PASSIQ is a reliable and valid instrument for assessing parental attitudes and support within the unique cultural context of Serbian schools.

Our findings have important implications for practice and policy. Schools and policymakers should focus on enhancing parental support and positive perceptions of

school support for sports to foster children's engagement in physical activities. Strategies could include regular communication with parents about the benefits of sports, organizing events involving both parents and children, and providing resources to support parents in facilitating their children's sports participation. Understanding gender-specific responses to prolonged sports participation can also help tailor interventions to address the unique needs and motivations of boys and girls in sports settings.

Further research is needed to explore these relationships in depth. Longitudinal studies could offer more comprehensive insights into how parental support, perceptions of school support, and children's sports participation evolve over time and impact attitudes and motivation toward school sports. Additionally, investigating other potential moderators, such as socioeconomic status, cultural background, and the availability of sports facilities, could enhance our understanding of the complex dynamics influencing children's sports participation.

CONCLUSION

This study underscores the importance of parental support and positive perceptions of school support in shaping parental attitudes toward school sports. While extended student participation in sports generally correlates with lower parental attitudes, the positive impact observed among male parents highlights the need for gender-sensitive approaches in promoting school sports. The introduction of the PASSIQ offers a valuable tool for assessing these constructs in a culturally relevant manner. By incorporating these factors, schools and policymakers can develop more effective strategies to foster a supportive environment for children's physical activity and well-being.

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STAVOVI I PODRŠKA RODITELJA PREMA ŠKOLSKOM SPORTU

Ova transverzalna studija ispitivala je stavove roditelja, njihovu podršku i percepciju uključenosti škola u školski sport koristeći novorazvijeni Upitnik o stavovima i podršci roditelja prema školskom sportu i percepciji uključenosti škole (PASSIQ). Studija je takođe ispitivala povezanost između pola roditelja i sportskog angažovanja dece u odnosu na stavove i nivoe podrške. U studiju je bilo uključeno ukupno 380 roditelja, od kojih je analizirano 341 važeći odgovor. Naši rezultati ukazuju da su veći nivoi roditeljske podrške značajno povezani sa pozitivnijim stavovima prema školskom sportu ($p < 0.001$). Dok su percepcije školske podrške pokazale marginalno značajnu pozitivnu vezu ($p = 0.083$), produženo učešće u sportu generalno je bilo povezano sa nižim stavovima roditelja, što potencijalno odražava zabrinutost zbog izgaranja ili promene percepcija tokom vremena. Značajno je da je interakcija između pola roditelja i sportskog angažovanja dece pokazala da je za roditelje muškog pola duže angažovanje dece u sportu značajno pozitivno bilo povezano sa stavovima prema školskom sportu ($p = 0.004$). Ovi rezultati ističu važnost uzimanja u obzir roditeljske podrške i rodno specifičnih odgovora pri razvoju strategija za promovisanje pozitivnih stavova i podrške za školski sport. PASSIQ se pokazao kao pouzdan i valjan alat za procenu ovih konstrukata, pružajući osnovu za buduća istraživanja i intervencije u cilju stvaranja podsticajnog okruženja za fizičku aktivnost dece.

Ključne reči: *fizička aktivnost, uticaj roditelja, angažovanje škole, sportsko učešće.*

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Original research paper

CHANGES IN BODY COMPOSITION INDUCED BY ORTHODOX RELIGIOUS FASTING ON HIGH SCHOOL STUDENTS

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613.2-057.874

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Abstract. *Scientific research in recent decades has increasingly focused on changes in body composition influenced by Orthodox religious fasting, which the Church has established before major holidays. The purpose of this study is to provide more information on how body composition parameters changed among high school students who followed the recommendations of Orthodox religious fasting for forty days (during Lent). A sample of twenty-eight students from Holy Cyril and Methodius High School in Niš was analyzed. The average age of all male participants was 17.4 ± 1.2 years. Anthropometric measures were taken both before and after the 40-day fast. The Omron BF 511 device, which provided information on body weight, BMI (body mass index), percentage of body fat, percentage of skeletal muscle, and basal metabolic rate, was used to measure body composition values. The acquired data were subjected to statistical analyses, including ANOVA and MANOVA for repeated measures. The results show a statistically significant difference (p = 0.012) between the initial and final measurements based on the MANOVA analysis. This study indicates that students interested in reducing weight while maintaining their muscle mass could benefit from practicing Orthodox religious fasting for 40 days. Further research is needed to confirm these results and explore the long-term effects of religious fasting and the post-fasting period, particularly for this participant sample.*

Key words: *Orthodox religious fasting, body composition, students*

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1. INTRODUCTION

An intentional refrain from consuming forbidden foods for a certain period is known as fasting, which is linked to numerous spiritual and religious practices. People who observe fasting typically eat very little, or nothing at all, and drink only calorie-containing beverages for durations that usually range from 12 hours to three weeks (Moro et al., 2016). Numerous scientific studies have examined fasting as a dietary strategy and a potential (non-pharmacological) intervention for enhancing health and prolonging human lifespan. The three most frequently researched fasting strategies are dietary restriction (DR), alternate-day fasting (ADF), and calorie restriction (CR) (Trepanowski & Bloomer, 2010). CR involves lowering daily caloric intake (kcal) by a specific percentage, usually 20–40%, compared to unrestricted food intake. It represents an approach that consciously involves consuming fewer calories than usual. Findings from Redman and Ravussin (2011) indicate that CR may significantly reduce body fat and decrease body mass index (BMI). Most et al. (2017) examined the effects of CR on body fat loss and found that it may decrease visceral fat, reduce BMI, and enhance metabolism. Studies have also demonstrated that CR can increase longevity (Spindler, 2010). Pertusa & Mavrommatis (2018) conducted a study using the intermittent fasting (IF) protocols, which have been suggested as alternatives to conventional CR. Given that IF is often more convenient to follow than a constant CR diet, the results indicated that IF can be a useful strategy for weight loss and improving body composition (BC). Consequently, different IF regimens might be presented as option to the conventional CR diet strategy in order to optimize BC and reduce overall body weight. With ADF, days of minimal or no food consumption alternate with 24-hour intervals during which regular food consumption takes place. The two phases of ADF are the "fast period," when food consumption is either strictly forbidden or severely restricted, and the "feast period," when individuals can eat as they like. Water can be consumed freely throughout both periods. According to studies, fasting on alternate days may improve metabolic risk factors, decrease inflammation, enhance body weight management, and prolong life (Spindler, 2010). DR is a type of fasting that involves reducing the overall intake of one or more components of food (usually macronutrients) with minimal or no reduction in overall calorie intake and without starvation. A study conducted by Antoni et al. (2018) explored how long-term DR affected BC. The outcomes demonstrated that DR can significantly decrease a participant's body weight and body fat percentage. Research suggested that DR may be associated with several health benefits, such as a decreased risk of obesity, diabetes, heart disease, and cancer (Calle & Kaaks, 2004; Persynaki et al., 2017).

While religious fasting is typically practiced for spiritual purposes, it can have a substantial negative impact on an individual's physical health. In recent decades, there has been a rise in scientific research examining the potential health risks associated with religious fasting. The Eastern Orthodox Christian Church (EOCC) is the second-largest Christian church, with an estimated membership of 300 million. Russian, Greek, Serbian, Romanian, Bulgarian, Ukrainian, Syrian, and Moldovan ethnic groups account for at least 80% of the EOCC’s membership (Lazarou & Matalas, 2010). The Orthodox religious fasting season, prescribed by the Christian Orthodox Church (COC), lasts 180–200 days annually. Extended fasts are those imposed by the Church ahead of major holidays. The four extended fasting periods represent the seasons of the year: The Great Forty Days of Easter (Great Lent) in spring, St. Peter's Fast in summer, Dormition Fast in autumn, and

Nativity Fast (Little Forty Days) in winter. During the 40-day Nativity Fast, practitioners refrain from eating meat, dairy products, eggs, and fish. Additionally, they avoid using olive oil on Wednesdays and Fridays. The dietary rules for eating during the 48 days, which precedes Easter, include abstaining from meat, eggs, and dairy products, with fish and olive oil being permitted only on Palm Sunday and March 25 (Trepanowski & Bloomer, 2010; Trepanowski et al., 2011). The St. Peter's Fast lasts for 15 days, following similar dietary principles, except for August 6th. A partially vegetarian diet is recommended during these periods, particularly given the Mediterranean climate of Crete, Greece, and Cyprus (Kafatos et al., 1991; Trichopoulou et al., 1995). Western diets have recently gained popularity in Greece and other Orthodox nations, notably impacting the health of their citizens (Kafatos et al., 1997). Foods typically consumed during the Orthodox religious fasting period include bread, fruits, vegetables, fish, legumes, nuts, and snails (Sarri et al., 2003). It is less well-known that the fasting rituals observed by the Greek Orthodox Church (GOC) align closely with traditional diets from the Mediterranean region (Cannon, 2004; Sarri et al., 2004; Sarri et al., 2005). This essentially represents a partially vegetarian diet, consisting primarily of fruits, vegetables, grains, legumes, and potatoes, with olive oil serving as the main source of fat. Alcohol is consumed in moderation, while dairy products, fish, chicken, and red meat are eaten occasionally (Sarri et al., 2004). This dietary regimen can be viewed as a form of DR as well as a type of vegetarianism. Due to dietary constraints during religious fasting, individuals must abstain from rich foods and sweets throughout the fasting period, which often contain a significant amounts of processed carbohydrates (Trepanowski & Bloomer, 2010; Trepanowski et al., 2011; Quinton & Ciccazzo, 2007; Sarri et al., 2004). Daily calorie intake may be reduced or kept constant during the fasting period (Sarri et al., 2003; Papadaki et al., 2008; Sarri et al., 2004; Sarri et al., 2005; Sarri et al., 2009). Research indicates that Orthodox religious fasting increases carbohydrate consumption while decreasing fat intake as a percentage of total energy consumed (Sarri et al., 2003; Papadaki et al., 2008; Sarri et al., 2004; Sarri et al., 2009). Furthermore, the ratio of protein to fat and carbohydrates may decrease or remain the same (Sarri et al., 2009). During fasting, the total amount of fat and protein consumed decreases in absolute quantities, while overall carbohydrate consumption remains constant. Monounsaturated fat intake stays steady, whereas saturated and trans fat consumption declines (Papadaki et al., 2008; Sarri et al., 2004; Sarri et al., 2009). Anthropometric measures taken during the fasting phase indicate that BMI may either decrease or remain the same. Notably, after a week of fasting, there was a minor but non-statistically significant ($p=0.059$) decrease in the average body weight of Greek Orthodox monks (Sarri et al., 2003; Papadaki et al., 2008; Sarri et al., 2009). These findings align with previous studies, suggesting that individuals who follow such dietary practices may experience improvements in their BC as a result of Orthodox religious fasting. Despite its long-standing acceptance as a dietary practice, particularly during religious fasting periods, there appears to be a lack of research examining the effects of Orthodox religious fasting on BC among participants in Serbian regions. This highlights the need to provide appropriate data about this specific dietary pattern and to enhance the existing scientific knowledge, which is remarkably similar to the Mediterranean diet followed by people in Greece, Crete, and Cyprus. Thus, the purpose of this study is to provide insight into how parameters of body composition changed in students who adhered to the rules of the Orthodox religious fasting for forty days during the Easter fasting period.

2. MATERIALS AND METHODS

2.1. Study design and sample participants

The study took place in the sports hall at the Faculty of Sports and Physical Education in Niš. The research was conducted in accordance with the Declaration of Helsinki, and the protocol received approval from the Ethics Committee of the Faculty (Approval Document No. 04-504/2). Each adult participant provided written consent to participate in the study after reading and understanding the informed consent form. A question concerning the participants' level of physical activity was also included in the written consent form. They were also able to leave the study at any moment without facing any negative consequences. The parents or guardians of participants who were underage signed the consent form. Participants, their parents, the school administration, and the teachers were all informed about the purpose of the study and the confidentiality of the findings. When planning the scheduled measurements, the school administration and the teachers were always consulted. To be eligible to participate in the study, participants had to meet certain criteria, such as being in good general health, having no long-term comorbidities (such as diabetes mellitus), and being able to complete all anthropometric measurements at the designated times. Twenty-eight students from the Holy Cyril and Methodius High Theological School in Niš made up the sample of participants. The participants followed the same diet, which strictly complied with the recommendations of Orthodox religious fasting, and lived in a boarding facility with tightly regulated living conditions. The average age of the male participants was 17.4 ± 1.2 years. Anthropometric measurements were taken both before and after a 40-day fast.

2.2. Anthropometric measurements and body composition measures

The researchers were instructed on how to properly conduct tests, code data, and maintain the confidentiality of the test findings. Before the measurements began, they set up all the necessary equipment. The study was conducted between 2:00 and 4:00 p.m. in the hall of the Faculty of Sport and Physical Education. Height was measured with an accuracy of 0.5 cm using a Martin anthropometer. The participants were told to stand in shorts and a T-shirt, remove their shoes, relax their shoulders, straighten their legs, hang their arms by their sides, and place their backs against the apparatus (Frankfurt Plane position). Each participant was also instructed to abstain from food and liquids for three hours before the scheduled session. The BC device (Omron BF-511; Omron Healthcare Co., Ltd., Kiyoto, Japan) was used to measure body weight, BMI (body mass index), body fat percentage, muscle mass percentage, and basal metabolic rate (expressed in kilocalories, i.e., Kcal). The unique technology with 8 sensors ensures the most accurate methods of measuring BC. Before using the scale, the participant's age, height (cm), and gender were entered into the device. BMI results were generated following the device's direct weight assessment. The Omron BF 511 analyzer is a tool used in research because of its high precision and repeatability of results (Vasold et al., 2019).

2.3. Statistical data analysis

For the statistical analysis in this research, SPSS software version 21 (Statistical Package for the Social Sciences; SPSS, Chicago, IL, USA) was utilized. Two important statistical methods were employed: one-way analysis of variance (ANOVA) and repeated-measures multivariate analysis of variance (MANOVA), both with a significance level set

at p = 0.05, to examine differences between two measurements and relationships between variables. To determine if the data had a normal distribution, the Kolmogorov-Smirnov test was used. The standard deviations (SD) and mean values of the results are presented. To specifically assess differences between the variables evaluated at the start and end of the study, ANOVA was applied. By comparing the means of the measurements, it was possible to ascertain whether there were statistically significant differences between them. The purpose of this test was to assess changes in different dependent variables between the group's initial and final assessments. Repeated-measures multivariate analysis of variance (MANOVA) was used to assess changes at the multivariate level between initial and final measurements for several dependent variables. Initial data were collected for all dependent variables at the start of the study and final data were collected again after 40 days of Orthodox religious fasting. The dependent variables measured included body weight, BMI, body fat percentage, muscle mass percentage, and basal metabolism.

3. RESULTS

The findings of descriptive statistics at both measurements are shown in Table 1. With the exception of the variable muscle mass (36.977), all other variables results revealed lower values than their initial measurements. The Kolmogorov-Smirnov test indicated that all variables had a normal distribution of results at a significance level of p > 0.05.

Table 1 Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	Std. Deviation	Kolmogorov Smirnov test
Weight (kg) Ini	26	62.6	132.3	88.796	18.6257	.561
Weight (kg) Fin	26	61.1	128.9	87.592	18.4803	.674
BMI (kg/m²) Ini	26	18.2	41.3	27.215	5.9454	.955
BMI (kg/m²) Fin	26	18.2	40.2	27.169	5.8396	1.000
Fat (%) Ini	26	5.8	39.3	25.288	9.5709	.720
Fat (%) Fin	26	6.9	38.2	24.712	9.0429	.912
Muscles (%) Ini	26	29.7	46.3	36.792	4.8698	.689
Muscles (%) Fin	26	29.8	46.7	36.977	4.5747	.690
Basal Metabolism (kcal) Ini	26	1614	2471	1921.46	235.562	.528
Basal Metabolism (kcal) Fin	26	1448	2431	1912.69	241.081	.901

N-number of participants; Minimum-minimum measured value; Maximum-maximum measured value; Mean-mean value; Std. Deviation-standard deviation; Ini-initial measurement; Fin-final measurement.

Table 2 displays the obtained results at the multivariate level, based on the Wilks' Lambda values (0.012), indicating a statistically significant difference between the initial and final measurements. The Wilks' Lambda value of 0.012 indicates that the fasting regimen has a significant overall impact on variables related to BC. The confidence interval provides the range within which the true effect is expected to remain, supporting the statistical significance of the observed differences.

Table 2 Multivariate Analysis of Variance for repeated measurements

Wilks' Lambda	F	Hypothesis df	Error df	Sig.
.521	3.867c	5.000	21.000	.012

The obtained results at the univariate level indicate that the variables: Weight (0.723), BMI (0.693), Fat (0.157), and Muscles (0.605) do not show a statistically significant difference between the initial and final measurements (Table 3).

Table 3 Univariate Analysis of Variance for repeated measurements

Variables	Type III Sum of Squares	df	Mean Square	F	Sig.
Weight (kg)	.236	1.000	.236	.128	.723
BMI (kg/m²)	.028	1.000	.028	.159	.693
Fat (%)	4.327	1.000	4.327	2.130	.157
Muscles (%)	.443	1.000	.443	.275	.605

4. DISCUSSION

To the best of our knowledge, this is the first study conducted in Serbia on the effects of Orthodox religious fasting on the BC of students who follow this diet. Fasting according to Orthodox practices promotes healthy eating and a balanced lifestyle. The general quality of life for those who observe fasting is positively impacted by these practices (Chliaoutakis et al., 2002). Anthropometric characteristics did not show significant differences in the variables between the initial and final measurements in this research. Although there was no significant difference in the BMI, attention should be drawn to the high average values of BMI both before and after the fasting period. The high average values of this parameter - 27.215 before and 27.169 after the fasting period- could be explained by the fact that the majority of participants reported low levels of physical activity, with some never having engaged in any organized physical activity. Students in theological schools require physical activity, even when physical education programs cannot be effectively organized due to specific demands of boarding life. "Gymnastics," or physical education, is not a novel concept in Serbian theological schools; it has long been a part of the tradition. Reforming theological education has been a major topic in Serbian theological discourse in the last two decades of the 20th century and the first two decades of the 21st (Мићић, 2009). A similar study that included 48 participants who did not fast for 40 days and 37 participants who did fast also found high BMI values (Sarri et al., 2004). According to Haddad et al. (1999), the average BMI values for both the fasting group and the control group were in the overweight range. Among those who completed their fasting period, there was a small but statistically significant effect of fasting on BMI, however, this effect did not persist during the subsequent period of a regular, non-fasting diet. The same authors followed a group of vegans and non-vegetarians and found significantly lower BMI values in the vegan group. Research conducted by Mekonen and Haile (2019) found that the vegan diet followed by Orthodox Christians in Ethiopia reduces total cholesterol and improves BC

and basal metabolism. These findings, which demonstrate average basal metabolism values of 1921.46 before and 1912.69 after the fasting period, are consistent with our research. Further studies have shown that vegetarians typically have lower BMI values compared to individuals who consume meat (Burr & Butland, 1988; Key et al., 1999; Key & Davey, 1996). Adhering to the Mediterranean diet has also proven to be beneficial for weight loss (De Lorenzo et al., 1999). Our research demonstrates that average body weight decreased from 87.59 before fasting to 88.79 after fasting. Measurements taken after fasting show lower average of body fat percentage (24.712) and higher average of muscle mass percentage (36.977), supporting the claim that the diet during fasting positively affects BC values. The study by Karras et al. (2018) revealed that monks from Mount Athos have a lower BMI and less body fat than men from the general population who regularly fast. Another study involving 40 days of fasting among nuns and monks found decreases in body weight, upper arm circumference, and triceps skinfold thickness after fasting. A one-week fasting period was also associated with weight loss among monks, although this loss was not statistically significant (Basilakis et al., 2002). According to a year-long longitudinal study, individuals who fasted had 1.5% lower BMI at the end of the fasting phase compared to those who did not fast, with a 1.4% decrease in BMI noted in the same individuals (Sarri et al., 2003). While BMI values slightly decreased after fasting, this change is not likely to have negative consequences for individuals with normal BMI values. The authors concluded that the Orthodox religious fast can be beneficial for weight control. The results of our research also reflect the daily lives of high school theology students during non-fasting period, which can be useful information for their superiors. It is important to consider several factors that could explain the non-significant results in certain variables to better address the observed discrepancies in changes in BC. Hormonal profiles, metabolic rates, and genetic variations can all influence how an individual's BC changes in response to a given regimen. The discrepancies in BC changes and non-significant findings in some variables are likely due to a combination of individual variability, measurement limitations, adherence issues, compensatory behaviors, and other physiological and psychological factors. Addressing these factors in future studies, through longer intervention durations, improved adherence strategies, and consideration of individual differences, could help to clarify the effects of fasting on BC. The results of the research were likely impacted by the participants' reported low levels of physical activity, which limited the intervention's efficacy in terms of fat reduction or muscle maintenance. Regular physical activity (PA) in children and adolescents is associated with a decreased risk of chronic diseases, including obesity, according to meta-analyses and systematic review studies (Ochoa-Martínez et al., 2020). Incorporating initiatives to raise physical activity levels - such as personalized training plans, increased support, and education about the value of regular exercise - will be crucial for improving future outcomes. This could lead to more noticeable and beneficial changes in BC and overall health.

This study has certain limitations. It was conducted on a small sample of male students, which prevents generalizing the findings to the broader population, especially since all participants are male. The sample size is relatively limited due to the small number of enrolled students at the school. Specifically, Serbia has four High Theological Schools: Saint Sava in Belgrade, Saint John Chrysostom in Kragujevac, Saint Arsenius in Sremski Karlovci, and Holy Cyril and Methodius in Niš. Additionally, this study did not include data from dietary diaries, 24-hour meal recall reports, or questionnaires about the frequency of food consumption and physical activities, both on regular days and during

fasting. Most studies in this area have required participants to record food intake in dietary diaries, complete 24-hour meal recall reports, and fill out questionnaires regarding the frequency of food consumption during regular days and during fasting. Although these studies also have certain limitations, they typically involve larger sample sizes, which enhances the ability to generalize the findings to the general population.

5. CONCLUSION

The rules of the Orthodox religious fast are less strict compared to other religious fasts, but they are stricter regarding prohibited foods. Those who observe the fast must be careful about their dietary choices due to these restrictions. Although most participants in clinical studies on humans typically follow the same traditional Mediterranean diet and share the same religion, the results cannot be generalized to individuals from other ethnic groups or the Greek population. A potential advantage of existing research is that it has, for the first time, evaluated a specific dietary pattern, such as Orthodox religious fasting, which is accessible to anyone. Generally, this well-considered dietary regimen, along with the habits and lifestyle associated with Orthodox religious fasting, can support health promotion and reduce the risk of illness. It is recommended that further research should be conducted with larger samples from diverse countries and ethnic groups, considering potential influences on the findings. We believe the information provided by this study will be useful for organizing and conducting future research on the positive effects of Orthodox religious fasting on BC, particularly in health contexts. The study's findings suggest that a 40-day Orthodox religious fasting regimen may effectively support weight loss while preserving muscle mass. Further investigation is necessary to confirm our findings and examine the long-term effects of religious fasting, as well as the period following its conclusion. Due to its strict limitations, this version of the Mediterranean diet leads to significantly lower calorie intake on fasting days, which in turn reduces BC parameters. The authors noted that, because the available data is inconclusive and requires more investigation, the use of this dietary pattern as a health-promoting method should be approached with caution and personalized accordingly. In summary, this study is significant as it presents Orthodox religious fasting as a practical dietary approach for controlling BC. It paves the way for further studies to explore its benefits and limitations, ultimately guiding the development of customized dietary strategies and enhancing our understanding of fasting's role in promoting health. The study positions Orthodox religious fasting as an effective strategy for managing BC, emphasizing its potential to aid in weight loss while maintaining muscle mass. While the findings are specific to a particular sample, the principles of Orthodox religious fasting may be applicable to other populations. This strategy could offer advantages for individuals seeking alternative fasting methods or culturally inclusive dietary strategies. With necessary adaptations to meet individual needs, this approach has the potential to benefit a wide range of populations, including those who diverse dietary preferences or cultural backgrounds.

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PROMENE U TELESNOM SASTAVU UČENIKA SREDNJE ŠKOLE PROUZROKOVANE PRAVOSLAVNIM RELIGIOZNIM POSTOM

Naučna istraživanja tokom poslednjih decenija su sve više usmerena na promene telesnog sastava pod uticajem Hrišćanskog pravoslavnog religijskog posta, koje je Crkva ustanovila pred velike praznike. Cilj ovog istraživanja je da pruži uvid u promene parametara telesnog sastava učenika srednje škole koji su se 40 dana (tokom Usršnjeg posta) hranili u skladu sa principima ishrane pravoslavnog posta. Uzorak ispitanika je bio sastavljen od 28 učenika koji su pohađali srednju bogoslovsku školu Svetih Ćirila i Metodija u Nišu. Svi ispitanici su bili muškog pola, prosečne starosti 17,4±1,2 godina. Antropometrijska merenja su sprovedena pre i posle 40 dana posta. Vrednosti telesnog sastava su merene uz pomoć aparata Omron BF 511 koji je prikazao podatke o težini tela, BMI - indeksu telesne mase, procentu masnog tkiva u telu, procentu skeletnih mišića i vrednosti bazalnog metabolizma. Za analizu dobijenih podataka, osim deskriptivne statistike, korišćene su statističke analize ANOVA i MANOVA za ponovljena merenja. Rezultati MANOVA analize pokazuju statistički značajnu razliku između inicijalnog i finalnog merenja (p = 0.012). Rezultati ovog istraživanja sugerišu da ishrana tokom pravoslavnog posta u trajanju od 40 dana može biti korisna kod učenika koji žele da smanje količinu telesnih masti u organizmu i da održe mišićnu masu. Potrebna su dodatna istraživanja kako bi se potvrdili dobijeni rezultati i istražili dugoročni efekti religijskog posta i perioda nakon prestanka njegove primene, naročito za ovaj uzorak ispitanika.

Ključne reči: *Hrišćanski pravoslavni post, telesni sastav, učenici*

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Review article

THE BACKGROUND OF THE ESTABLISHMENT OF THE "EDUCATIONAL GROUP" (EKPAIDEFTIKÓS OMILOS) (EO) THROUGH THE LETTERS OF THE FOUNDERS OF THE EO AND ITS PIONEERS

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Abstract. *The intense reflection by Greek intellectuals on the state of education led to communication among them, the publication of magazines and the utilization of Delmouzos's experience with the operation of the Higher Girls' School of Volos (APB). The purpose of this article is to explore the background of the later collaborators of the EO, revealing the ideological ferments through the correspondence of its first key executives. The EO assumed the role of preparing society for the acceptance of reform within the context of educational demoticism and the government of Venizelos. The group was founded in 1910, following an agreement between key figures, and included several intellectuals - some modernists and most of whom Terzis describes as idlers. The foundation took place under the initiative of Tsirimokos and Dragoumis, who promptly brought in Delmouzos, Karkavitsas, Fotiadis, Petrokokkinos. Triantafyllidis and Glinos joined in 1912, upon their return from Germany, and immediately took action.*
The Group's goal was to reform education through a thorough study of the existing situation, enlightening teachers and society on educational practices and preparing relevant publications. The EO's activities from 1910 to 1930 included drafting programs for Greek schools, editing and publishing books and brochures, and organizing educational outreach through speeches, and lectures both within and beyond the Club's premises.

Key words: *Correspondence, Educational Association, Demoticism, Ideological ferments, founders*

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1. INTRODUCTION

The Ekpaideftikós Omilos (EO) was essentially an Athenian union with philological and literary learnings, characterized by a liberal urban identity and positioned ideologically as centrist (Dimaras, 1986). It was an intellectual avant-garde union (Bella, 2018, p. 22). Among its 36 founders were 12 members of the "ephorate" of the Model School and 24 elites from both popular and non-popular literary circles. In March 1910, the ephorate of the Model School – comprising Delmouzos, Demertzis, Diomedis, Dragoumis, Melas, Pappos, Petrokokkinos, Sotiriadis, Topalis, Tsirimokos and Fotiadis - convened with the goal of establishing and operating a Model School in Athens, even before the EO was formally established (Tsirimokos, 1927, v. 7, pp. 404, 405).

The ephorate drafted an official declaration for the creation of an experimental school, which also included the decision to form an educational group. This declaration was signed by the ephorate members of the Model primary school (Glinos, 1983, T. B', p. 81). The notarial deed establishing the EO, numbered 42691, was executed on June 8, 1911, and outlined the components of its foundation. At the outset of the contract, the need for a systematic effort to reform our education was emphasized through a thorough study of the situation, the enlightenment of teachers and society on matters of educational practices and the preparation of relevant publications and books. The draft statute included seventeen articles that defined the basic lines of operation and action for the association, covering aspects such as its constitution and purpose, administration, membership status and role, financial management, methods of activity, its headquarters, the role of members, their contribution and other issues related to its ongoing operation. The EO advocated for reform not only in content, but primarily in the teachers' hearts and minds, who were seen as the key drivers of its promotion (DEO, vol. 1, T'. B', 1911, p. 65). Although the ephorate members did not entirely agree on the Language Question, they conceded that the living language of the people, ''the demotic'', should be the primary medium of instruction. The EO was ultimately founded by those who signed the petition, along with a few other like-minded individuals (Tsirimokos, 1927, p. 405). With the establishment of the EO, its influence extended abroad through a network of representatives who registered as members, such as Cavafis in Alexandria, Egypt; Fotiadis in Polis and Glinos in Leipzig (who soon became a key pioneer of the EO).

2. RESEARCH METHOD

In the research, the interpretative method has been used, also known as the traditional historical method, with the purpose of interpreting and citing historical sources in historical studies. This method is a means of understanding with the aim of achieving the fullest and deepest comprehension possible. It subjects historical texts and their creators to an internal examination through their historicity. This is an important form of research for explaining the emergence and evolution of phenomena within a specific historical context, utilizing either the periodization of evidence, classification, comparison. According to Noutsos, the historical method is associated with the citation of abstract technical recipes and patterns of thought (Cohen & Manion, 2000). The archival research includes anecdotal and non-anecdotal material, a collection of evidence from the anecdotal archive of Delmouzos, the archive of Glinos and Triantafyllides entirely digitized by the Institute of Modern Greek Studies of the Aristotle University of

Thessaloniki, as well as books, articles, studies, magazines and newspapers related to the main protagonists of the EO and other important figures or events associated with the Group's activities.

The purpose of this historical research study was to highlight the intentions and goals of the intellectuals of the time that led to the establishment of the EO and the support of educational reforms in Greece. The actions of the EO from 1910 to 1930 involved drafting programs for Greek schools, editing and publishing books and brochures, and organizing enlightening activities such as speeches and lectures within the Club and beyond. The EO played a role in preparing society for the acceptance of reform actions within the context of educational demoticism and the Venizelos government.

3. FOUNDINGS

3.1. The correspondence between the founders of the Group

The correspondence between the founders of the Group and their collaborators began as early as 1909 and 1910. It was dense and frequent, reflecting their concerns and their persistent focus on the issue of educational regeneration in the region. In their correspondence, one could discern the inner drive of each member to act, along with their ideological fervor that demanded expression and implementation. They discussed various issues, including questions and reflections on the demoticist movement, the spoken language, the language used in their studies and books, and their individual efforts. Financial support for their organized activities was also a topic of concern. As conditions had changed, the needs of Greek society required significant disruptions and reforms, provided they could find people who would embrace and pursue these changes. The main proponents of educational demoticism, including Skleros, Vamvetsos, Apostolakis and Glinos, appeared to have the passion to fight for these causes. In a letter from Triantafyllides in Berlin to I. Dragoumis in Athens, July 9, 1911, he introduced Dragoumis to young demoticists, particularly Glinos, who could work for the Educational Club, (see p. 205, Correspondence: 1895-1959, Triantafyllidis Archive). Tsirimokos expressed a desire to regulate the language. On January 12, 1907, he lamented a dead, suffocating, hopeless environment and described their efforts to organize a sort of men's club to foster spiritual communication that would awaken their inner energies. Despite expressing many reservations, he declared his intent to strive as much as possible. Referring to Delmouzos and Triantafyllidis, Tsirimokos wrote: *You two must understand that you have a heavy job to do. So step up*! *And we hope to see you on your return and in the Project*! (Letter from Tsirimokos to Delmouzos, October 12, 1907, F. 11, Delmouzos Archive). In his letter to Triantafyllidis, Glinos expressed his dissatisfaction with the lukewarm and limited actions of the demoticists. He hoped for the creation of a core group of true reformers, a brotherhood dedicated to more direct and effective action and an attack on the educational system, including the organization of an educational conference (Letter from Glinos in Leipzig to Manolis Triantafyllidis, January 12, 1910. Typescript (copy) of letter. For "Brother", p. 123, Correspondence: 1895-1959, Triantafyllidis Archive).

He proposed the need to identify individuals who shared the same spiritual concerns and to unite them in a common effort toward the rebirth and liberation of the national soul. He suggested that these like-minded individuals gather together as spiritual

revolutionaries, even proposing the idea of a conference of demoticists to foster better understanding. He pointed out that there were many who wished to work toward the national regeneration of the country (Document AM/1B, Glinos' letter to Dragoumis, Glinos Foundation). Triantafyllidis, while in Germany, was preoccupied with the publication of his study, all the while anticipating an awakening of public opinion. However, he favored parallel, effective actions from the educators of the time, especially philologists and teachers. He spoke of "many sparks but not enough" and of "foggy thoughts" clouding his mind (Letter from Triantafyllides in Zurich to Penelope Delta in Frankfurt, October 5, 1909. Typescript (photocopy) of letter, Triantafyllidis Archive). In a letter to Penelope Delta, Triantafyllidis expressed concern over the absence of a strong personality in Athens who could serve as a focal point for their cause. He noted that this lack of leadership hindered the advancement of their ideas (Triantafyllidis' letter from Zurich to Penelope Delta, Frankfurt, November 26, 1909. Typescript (photocopy) of letter and comments from the book Correspondence of P. S. Delta, 1906-1940, edited by X. Lefkopatridis, Bookstore of Home, pp. 315-316. For "Brother", see p. 118, Correspondence: 1895-1959). Separating the educational issue from the purely linguistic one, Triantafyllidis expressed the view that the time was ripe to seek a solution to the former. He even considered joining a group dedicated to this cause, though he questioned under what banner he would appear. He outlined three key areas for the group's initiation: securing funds, supporting the printing of relevant books, and ensuring their distribution. He also mentioned the names of the initial contributors to this effort, proposing Petrokokkinos for financial management and Dragoumis, Sotiriadis, Fotiadis and himself as a part of the governing body (Letter from Triantafyllides in Zurich to Penelope Delta in Frankfurt, October 5, 1909. Typescript (photocopy) of letter, Triantafyllidis Archive).

The idea of establishing the Group was clearly articulated in the letter, where he also proposed Delta's active participation. At the same time, Tsirimokos emphasized the importance of publishing a magazine, and Delmouzos wrote that he considered unanimous agreement on all matters related to the Group's establishment to be essential (Triantafyllidis' letter from Zurich, to P. Delta in Frankfurt, November 26, 1909. Typescript (photocopy) of letter and comments from the book Correspondence of P. S. Delta, 1906-1940, edited by X. Lefkopatridis, Biblopolion tis Estias, pp. 315- 316. For "Brother", see p. 118, Correspondence: 1895-1959, Triantafyllidis Archive).

In September 1909, Triantafyllidis designed a programmatic plan for the creation of an association of demoticists, which he shared via correspondence with demoticists in various cities. The recipients included Delta, Dragoumis, Delmouzos, Fotiadis, Hatzopoulos and Glinos. This plan followed the principles of the National Language Association concerning the need for a radical reformation of Greek society, but differed in its emphasis on the necessity of state support to promote its goals. In October 1909, in another letter to D. Petrokokkinos, he suggested that individuals such as Karkavitsas, Tsirimokos, Nirvanas, Fotiadis, Vlastos and Sotiriadis review his plan. The EO later presented Triantafyllidis' plan as a preliminary idea for the establishment of the EO. He mentioned that the letter was crafted and written by two like-minded individuals in September 1909. The letter was also sent to several European cities, including Frankfurt, Rome, Athens, Volos, Polis, Leipzig and Munich, where it was read by demoticists. The letter emphasized the harmful demonization of popular education and the urgent need for societal enlightenment and reform. Enlightened friends were also consulted about the

ongoing developments. Following this letter, the friends in Athens strongly felt the need for an immediate response and proposed the fiscal office of the Model Primary School, which they intended to establish in the future. A few months later, the EO was also officially established.

Triantafyllidis urged Delta, through his letters, to prepare material for the school, including books for children aged 5 to 15, reading books, short stories, etc. He expressed concern about the availability of individuals who could work in primary education. He mentioned that he was in consultation with other demoticists about the possible name of the association and the drafting of its regulations. He emphasized the need for careful preparation before taking revolutionary action and recommended caution when accepting the pedagogues who were not part of the narrow circle of demoticists. However, he was troubled by the role of the living language in Greece (Triantafyllidis. pp. 90-117, 128, 129, 133). In another letter dated March 17, 1909, to the demoticists, he approved "Association of Our Mother Tongue," a name also proposed by Petrokokkinos, as a possible name for the association. He mentioned the need to determine the language type they would use in their book editions (Triantafyllidis. 2001, letter 114). Elsewhere, he expressed concern about the language that the Group would use and about the needs for school and extracurricular books. In a series of letters, he shared his views on the grammar and spelling of the written language, referred to simplifications of words, the abolition of the subjunctive and the increasing influence on the broader perception of the language system formation of the New Greek School (Letters from Triantafyllidis to Delmouzos, November 10, 1909; July 2, 1910; and November 15, 1911, F. 2, Delmouzos Archive). He expressed reservations about the number of concessions, fearing that they were losing the basis of the living ‘’katharévousa’’.[1]

In February 1910, Triantafyllidis mentioned that the issue of establishing the association had been delayed due to the political situation, but he was optimistic that it would be launched soon. A letter from Triantafyllidis to Dragoumis included two drafts of circulars for raising money and finding representatives in various cities. In the first draft, after emphasizing the importance of the book for the education of society and declaring the establishment of the Friendly Club (original name), with the aim of circulating good and affordable books in a living language, readers were asked to contribute with donations or annual subscriptions, which would be sent to the treasurer. In the second draft, after reiterating the purpose of establishing the club, those who wanted to help by representing the Club through consultations with the local press, bookstores, individual actions, and handling financial transactions with the Club's fund were asked to contribute (Triantafyllidis, 2001, letter 10). The first circular was initially published on two pages and was later published in the magazine Noumas in no. 3909 (2.5.1910) and in DEO 1 (1911) (Triantafyllidis, 2001, letter 117, comments). Triantafyllidis received the printed circular on May 2, 1910. After making improvements, he considered it quite presentable, although he noted two mistakes, one spelling mistake and one substantive regarding the use of the word “native”. He recommended using the word “alive” to characterize the language instead. He also requested the organization of an archive to keep track of what the newspapers wrote about the Group so that he could

[1] Katharévousa (the term literally means the language that ‘tends towards purity’) was the only variety of Greek worthy of being called the ‘national language‘ at the end of the 19th and in the beginning of the 20th century in Greece (Mackridge, 2009. p. 7). The written language in Greece, which came to be known as ‘‘katharevousa‘‘, combined ancient orthography with modern pronunciation.

stay informed while in Germany (Handwritten and signed letter from Triantafyllidis in Leipzig to Dimitris Petrokokkinos in Athens on May 2, 1910. Triantafyllidis archive. For the circular to be released by the Educational Association, p. 154, Correspondence: 1895-1959).

In 1910, the draft of the Group's statutes was drawn up, as shown in a letter from Triantafyllidis (Letter from Triantafyllidis from Leipzig to I. Dragoumis, Athens on April 10, 1910. Handwritten and signed letter. Regarding the establishment and activities of the Educational Club, and p. 150, Correspondence: 1895-1959, he wrote that he enclosed a draft of the Statute drawn up by Pallis, although the plan was not found. In January 1910, Dragoumis sent Triantafyllidis a draft of the regulations for the association that was to be founded. Triantafyllidis conveyed his observations, noting that the statute needed attention to language and spelling and that it was not appropriate to include the signatures of Delmouzos, Glinos and himself in the statute. He mentioned that neither he nor Delmozous preffered the name “Aderfatos” and considered “Friendly Group” or simply “Group” to be more appropriate. In general, his remarks showed that he aimed to avoid provoking any faction with extreme language and preffered a more moderate approach (Letter from Triantafyllidis from St. Moritz to Ionas Dragoumis, Athens. January 24, 1910. Typescript (photocopy) of letter. Regarding the publications of the "Brotherhood" and its draft "Regulation" 129, Correspondence: 1895-1959). Among the proposed names for the association, such as “Aderfatos”, “Association of Educational Renaissance”, “Friendly Group” and “Association of Our Mother Language”, the name “Educational Group” ultimately prevailed (Triantafyllidis, 2001). Petrokokkinos agreed not to include the name “Adelphatos” because, as he noted, it not only sounded like a hairdressing term but also evoked the smell of a hospital. *Thus, we were called the “Educational Group*” (Letter from Petrokokkinos to Delmouzos, March 15, 1910, F. 9, Delmouzos Archive).

In a letter to Delmouzos, Tsirimokos announced that he, Dragoumis, Petrokokkinos, and Sotiriadis, along with Topalis, Demertzis, Diomidis, Benakis, Sliman and K. Mela, had concluded that the best strategy for the Brotherhood’s struggle under the EO name was the establishment of a model school. They agreed this should be pursued without neglecting propaganda efforts for books, magazines, lectures and so on. In a subsequent letter, he referred to the model school as the liveliest argument in favor of their cause, describing it as an experiment that would convince the public more effectively than all the arguments in the wisest books. The goal was to create a large association with members from the world of statesmen, headed by the intellectual elite of Athenian society. He believed that this approach would succeed in engaging innovative individuals who were open to new ideas and have the political power to promote them (Letter from Tsirimokos to Delmouzos, March 13 and 14, 1910, F. 11, Delmouzos Archive).

3.2. Date of establishment of the EO & background actions

According to Glinos, the establishment of the Club was part of an effort to overcome the general decline and self-criticism of the nation after the misfortunes of recent years. It focused on addressing the deeper cause of this decline - the deviation from the goals of the educational system. There was a broader mobilization during this period. The EO first sought to present the new ideas to the intellectuals of the time and then to diffuse them throughout Greek society (Delmouzos, A. From the Hidden School, letter to the students of the Upper Municipal Girls' School of Volos, DEO, vol.1, vol. D', 1911, p. 233). The

creation of the Group was recognized early on as a matter of utmost necessity, as evidenced by its success: the formation of the association led to declarations by many people expressing their desire to become members. The Club became a subconscious need in the soul of every educated person.

The acquaintance of the three pioneers of EO took place much earlier than 1910, during their studies in philosophy in Athens. They engaged in discussions and reflections on language and its role as an instrument of expression for the people. It was during this time that they met D. Tagopoulos, editor of Hestia and an ardent supporter of the Demoticist movement, who later decided to publish the magazine ‘’Noumas’’, providing a platform for dialogue to Demoticists such as Psycharis, Pallis and Eftaliotis (Vournas, 1975, pp. 12-13).

At the same time, they also got to know some of the later founders of EO, such as Tsirimokos and Dragoumis., After the first communication with Triantafyllidis and the dissemination of the circular letter in the European cities, Delmouzos agreed with the initial thoughts on establishing the EO. He published responses in the press against the early reactions to the creation of the Group and became a member of the DE for the first years (Ten Years, DEO, vol. 9, 1919, p. 22). The foundation of the Group in Athens, with the circulation of the relevant Tsirimokos circular, took place in April 1910 at the initiative of Tsirimokos and Dragoumis (Vournas, 1975, p. 28, and Glinos, 1983, v. B', Appendix, p. 495). Karkavitsas, Petrokokkinos and Fotiadis joined the union, exchanged opinions with them, took on the role of mediator in Istanbul by distributing leaflets and EO circulars, signed its statutes, handled the registration of new members and provided financial support with personal donations to EO (Papakostas, 1985, p. 97). Triantafyllidis, who was in Germany, was surprised by these developments. In a letter, he expressed his concern, considering the action of announcing its foundation to be hasty. He felt they were not sufficiently prepared for a systematic campaign in the newspapers, the preparation of books, etc. Delmouzos later commented that while Triantafyllidis's broad plans and thorough preparation took time, others, who were not these experts, were in a hurry. They believed the issue was ripe and didn’t account for the difficulties, nor were they willing to wait (Triantafyllidis, 1968). Although he initially had reservations about the haste of founding the association, he was eventually convinced of its benefits (Triantafyllidis, 2001, letter 133).

He promised to help in whatever way he could, but he did not commit to participating in the taxation of the Model school and did not hide his displeasure at the early establishment of the club and the inability to cooperate with some teachers who were, like him, outside of Greece (Triantafyllidis, 2001, letter 118). He did not even co-sign its founding statute, officially keeping his distance, considering the start of the union as merely a passing phase (Triantafyllidis, 2001, letter 120). He justified his cautious attitude to stay (like Glinos) out of the Group at the moment as he believed that this was in the best interests of both the Group and himself (Triantafyllidis, 2001, letter 133). In another letter to Dragoumis, he wrote that he did not consider it appropriate to become a founder as long as he was far away and unable to play an active role. He recommended paying close attention to the people involved (Letter from Triantafyllidis from Leipzig to Dimitris Petrokokkinos, Athens, May 2, 1910. Handwritten and signed letter. For the circular that will be released by the Educational Association, 154, Correspondence: 1895-1959).

He wrote: *Be careful about the faces you put on. If everyone was going to judge and decide, everything needed to be agreed in advance. Something horrible and dangerous was about to happen and I'm afraid of it.* He advised caution because *Hadjidakis and Co. want strong swindles* in the already formulated statute drawn up by Pallis (Letter from Triantafyllidis from Leipzig to Iona Dragoumis, Athens, April 10, 1910. Typescript (copy) of letter. For the establishment and activity of the (Educational) Club, p. 150, Correspondence: 1895-1959). He mentioned that he had enclosed a draft of the Statute drawn up by Pallis, although the plan was not found.

He insisted on the need to plan the actions and tactics of the union and recommended, for example, organizing evening meetings once or twice a week with the founders present (Triantafyllidis, 2001, ff. 133, 148). Triantafyllidis' return to Greece in 1912 led him to the front lines of the Group's activities, where, according to Delmouzos, he moved like a whirlwind and took it upon himself to establish relative uniformity in the language and spelling of the magazine (AUTH, Honorary Edition for the 100th Anniversary of the Birth of Triantafyllidis, 1963). Glinos was excited by the news of the establishment of the Group, he returned to Athens from Leipzig, full of enthusiasm for contributing spiritually. Delmouzos was already in Athens and was dedicating himself to joint action together with Triantafyllidis and Glinos (Vournas, 1975, p. 29).

Delta referred to the circumstances under which the EO was founded in its text about the beginning of the organization: the idea to establish the Group came from some friends during the years when the movement took place in Goudi. Hovewer, they were not in agreement with its establishment at that time, nor with its program, including Mr. Delmouzos, Glinos, and Triantafyllidis. It was eventually founded by like-minded friends in the spring of 1910. Its foundation demonstrated how much the idea of educational and linguistic renaissance was beginning to mature in society. Still, the ideas of those who pioneered at that time were necessarily shaped by the era's intense linguistic reaction. The linguistic article in the constitution, as well as some early initiatives, reflected that they lacked specialized scientific education. During its first years, the Group did not manage to clearly formulate its principles or its program in a consistent and systematic way, which only became defined and later through specific forewords and articles in the Bulletin. Delta summarized some selected articles from the Bulletin, indicating the volume and page, to demonstrate that the language and spelling program of the Group was eventually presented in the DEO as clear and fixed, with the initial uncertainty replaced by the system that continues to be implemented until today· Thus, the Group’s program for language and education, in general, was applied effectively (Notes, Delta letter, Handwritten notes. Series: B. Language Education Archive, folder B 14 Group and Education Committee, subfolder B 2. Minutes of the Education Committee. Statutes, Sessions, Work Programs of the Educational Group, 1910-1920, Triantafyllidis Archive).

At the same time, several more demoticists expressed their support for the basic principles of the association, including Skliros, Vamvetsos, Apostolakis, as well as famous writers of the time such as Papantoniou, Kazantzakis, Cavafis, Nirvanas etc.

4. CONCLUSION

The study of letters between Greek demoticists, who would become the future pioneers of the EO, reveal their deep concern about the issue of promoting the linguistic

renaissance in Greece. There is frequent correspondence between demoticists studying in Germany and Greeks in Athens or elsewhere, as they seek to coordinate their efforts in the fight for demoticism. Their letters reflects their anxiety about how to find supporters to champion the ideals of educational urbanism and secure fundings for this purpose. Various proposals are made, such as organizing parallel effective actions among demoticists, creating an association of demoticists, etc. Suggestions for action include launching an attack against the purists and organizing a language conference. Triantafyllidis urges Delta to begin writing books for Greek school students in the spoken language. He expresses concern about the role of the living language in the group they are about to create and emphasizes the need to find representatives in each city to spread the demoticist idea.

During these discussions, a draft constitution for the future group is drawn up, and potential names are proposed. Shortly before the official establishment of the EO, the desire to establish a Model School is announced. At the EO's founding, Triantafyllidis expresses his surprise, considering it a hasty decision, while Glinos is enthusiastic and returns from Germany to contribute.

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POZADINA OSNIVANJA „OBRAZOVNE GRUPE“ (EKPAIDEFTIKÓS OMILOS) (EO) KROZ PISMA OSNIVAČA EO I NJENIH PIONIRA

Intenzivno razmišljanje grčkih intelektualaca o stanju u obrazovanju dovelo je do komunikacije među njima, objavljivanja časopisa i korišćenja Delmouzos-ovog iskustva sa radom APB. Svrha ovog članka je da istraži pozadinu kasnijih saradnika EO, otkrivajući ideološke fermente kroz prepisku njegovih prvih ključnih rukovodilaca. EO je preuzeo ulogu pripreme društva za prihvatanje reforme u kontekstu obrazovnog demotizma i vlade Venizelos-a. Grupa je osnovana 1910. godine, nakon dogovora između ključnih ličnosti i uključivala je nekoliko intelektualaca – neke moderniste, a većinu njih Terzis opisuje kao neradnike. Osnivanje je održano na inicijativu Tsirimokos-a i Dragoumis-a, koji su brzo doveli Delmouzos-a, Karkavitsas-a, Fotiadis-a, Petrokokkinos-a. Triantafyllidis i Glinos su se priključili 1912. godine, nakon povratka iz Nemačke, i odmah krenuli u akciju.

Cilj grupe je bio da reformiše obrazovanje kroz temeljno proučavanje postojećeg stanja, prosvetljavanje nastavnika i društva o obrazovnoj praksi i pripremanje relevantnih izdanja. Aktivnosti EO od 1910. do 1930. uključivale su izradu programa za grčke škole, uređivanje i objavljivanje knjiga i brošura, kao i organizovanje obrazovnog dometa kroz govore i predavanja unutar i van prostorija kluba.

Ključne reči: *prepiska, prosvetno društvo, demotizam, ideološki fermenti, osnivači*

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INNOVATIVE APPLICATION OF THE OUTDOOR ACTIVITIES PROGRAM - BIVOUAC

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Abstract. *The bivouac program, implemented over three days, provided a dynamic and multifaceted educational experience. It aimed to foster a deep connection with nature, enhance spatial awareness, and promote physical, emotional, and social development among participants. Day one focused on geographical and topographical orientation, utilizing interactive games to teach navigation and environmental interaction. These activities were more than just practical lessons; they deepened the participants' understanding of their surroundings. Day two's activities revolved around family involvement and teamwork. The "Joyful Olympics" incorporated various engaging exercises like sack races and cooking contests. These were designed not only for enjoyment but also to instill values of teamwork, family bonding, and responsibility towards nature. The day emphasized the importance of maintaining active and healthy lifestyles in a community setting. The program culminated with an expedition into Jelašnička Gorge, offering a practical application of the learned skills in a natural environment. This day combined physical challenges with ecological education, reinforcing concepts of biodiversity and conservation. In the end, recognition of individual and group accomplishments highlighted the themes of perseverance, skill mastery, and the value of community achievements. The bivouac program effectively merged educational content with active, participatory*

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learning. It demonstrated the significance of experiential outdoor education in developing comprehensive life skills. The program's success in enhancing participants' connection to the environment and community, as well as receiving positive feedback from all involved underlines its effectiveness as a model for contemporary education, catering to the holistic development of young individuals.

Key words: *outdoor education, environment, physical activity, physical education.*

1. INTRODUCTION

In an era dominated by rapid technological and urbanization advancements, the intrinsic connection between humans and nature often becomes overshadowed. This detachment has led to notable negative impacts on physical and psychological health, particularly among the youth. Recognizing this critical issue, outdoor activities have emerged as an essential component of educational systems worldwide, facilitating a deeper engagement of young individuals with their natural surroundings. These activities endorse a healthy and active lifestyle and cultivate a comprehensive awareness of environmental stewardship. A growing body of research, including works by Kahn Jr and Kellert (2002) and Taylor and Kuo (2006), underscores the significance of integrating nature into the educational and developmental processes of children and young adults.

Globally, the approach to outdoor education exhibits significant variation. Scandinavian countries, for instance, have long embedded outdoor learning into their educational ethos, while other regions are gradually acknowledging its importance. This diverse international landscape illustrates a burgeoning consensus on the benefits of nurturing a connection with nature from a young age. Such practices have been shown to foster creative thinking, enhance problem-solving abilities, and instill a robust sense of environmental responsibility (Kellert, 2018).

In addressing the gap between modern lifestyles and nature engagement, educational institutions in Serbia, particularly the faculties of Sport and Physical Education, have been proactive. Their programs, dating back to their establishment, intertwine physical fitness with outdoor activities, emphasizing a holistic approach to health and environmental awareness (Dabović et al., 2009). This blend of physical exertion and nature immersion is essential in counteracting the sedentary habits and indoor predilections prevalent today, as highlighted in Pellegrini's (2009) work. Recognizing the need for more structured and impactful outdoor experiences, the faculties have adopted the model of stationary camping or 'bivouacking' for primary school children, a three-day initiative. This approach aligns with the educational curriculum guidelines, which advocate for organized outdoor stays, such as trips, bivouacs, and camping, throughout multi-year schooling. Traditionally, these projects have been underutilized in schools despite their inclusion in the mandatory plan for regular physical education in both primary and secondary schools, reflecting their significant educational value, as Miletić (2011) noted.

Bivouacking, a planned, short-term, active stay in nature, offers high adaptability. Participants engage in pre-determined activities tailored to their environment and time constraints. Whether stationary or mobile, this method can be adjusted to meet different educational objectives. The concept, deeply rooted in outdoor education, provides a space for children and adults to experience nature in various forms—tents, makeshift shelters, or other temporary accommodations.

According to the 1975 encyclopedic definition (Flander et al., 1975) and further elaborations by Leskošek (1971), various forms and durations of camping underscore its versatility and adaptability. Bivouacking typically involves an organized, multi-day collective stay in nature (outside of inhabited areas) with accommodation in tents, huts, or improvised shelters, lasting up to five and, at most, seven days. Participants collaboratively equip and maintain the bivouac area with necessary facilities, water, and food, ensuring the group's vital functions (safety, nutrition, supply, hygiene, leisure activities, and other content) (Savić & Miletić, 2022).

The process involves the group's joint action, making it a collective endeavor organized by groups such as scouts, planners, researchers, hikers, students, tourists, and more—the fundamental difference between bivouacking and camping lies in the self-organized nature of life in the natural environment. Unlike typical tourist camping, where the participant is merely a "service user," bivouacking requires participants to actively contribute to the organization.

Savić and Miletić (2022) emphasize the organizational aspect and the collective experience in nature, highlighting the bivouac's pivotal role in fostering group dynamics and environmental appreciation. The bivouac, therefore, is not just an outdoor activity but a structured group effort that instills a sense of responsibility, teamwork, and a deeper connection with nature, making each participant feel like an integral part of the community.

This paper explores the incorporation of bivouacs into the educational system, examining their potential to cultivate well-rounded, conscientious, and healthy individuals. This approach addresses the youth's current challenges and aligns with evolving educational standards and policies, reinforcing the importance of active and immersive nature experiences in the modern educational landscape.

However, implementing effective outdoor education programs has challenges, including safety concerns, logistical complexities, and limited resources. Successful case studies provide blueprints for overcoming these obstacles, showcasing innovative and practical solutions that can be adapted in various contexts. Interestingly, integrating technology in outdoor education is bridging the gap between nature engagement and digital fluency. The use of technology and interactive educational apps for exploring nature exemplifies how digital tools can augment rather than replace outdoor experiences.

The theoretical underpinning of outdoor education draws upon frameworks like Kolb's experiential learning theory (Kolb, 2014) and Bandura's social learning theory (Bandura & Walters, 1977), which offer insight into the efficacy of learning through direct experience and observation in natural settings. Furthermore, the philosophies of natural pedagogy (Kahn Jr & Kellert, 2002) and ecological education (Palmer, 2002) emphasize individuals' holistic development through sustained interactions with nature.

The long-term impacts of engaging with the outdoors extend beyond immediate educational outcomes. Lifelong hobbies, career paths related to environmental sciences, and a persistent consciousness about ecological issues are often rooted in early experiences with nature. Current educational policies play a pivotal role in either facilitating or hindering the incorporation of outdoor activities into standard curricula. Understanding these policy dynamics is crucial for framing outdoor education within the broader global educational trends and challenges.

Therefore, outdoor activity programs have become increasingly significant in educating young individuals about modern challenges. These programs offer opportunities for physical activity, social and emotional skills development, and practical knowledge about nature and the environment. Research shows that such activities are vital for developing healthy lifestyles

and preventing obesity, anxiety, and depression (Bidzan-Bluma & Lipowska, 2018; Ratey, 2008).

In that regard, this paper aims to highlight the significance of outdoor activities in the educational context by analyzing and applying these theories and previous research. Programs like bivouacs, as potential parts of the educational system, offer a unique opportunity to develop holistic, conscious, and healthy individuals ready to face the challenges of the modern world.

2. METHODS

2.1. Program Overview

This paper focuses on a structured outdoor education program, a bivouac, conducted by the Serbian Sport and Physical Education faculties. The program is tailored for primary school students and aims to foster a connection with nature, enhance physical fitness, and develop social and environmental awareness.

2.1.1. Program Duration and Setting

The bivouac is a three-day program meticulously planned in line with the guidelines agreed upon by leading experts in the field: a nature stay of up to three days, organized educational activities with predefined outcomes, and a group stay in unconventional conditions, preferably conducted during summer.

2.1.2. Participant Selection

The program involved students from “Vožd Karađorđe” primary school in Niš and members of the Scout Unit attached to the same school, with a total of 30 participants. This number was chosen based on the standard class size as per Serbian educational law.

2.1.3. Location

The bivouac was held in the village of Brenica, 12 kilometers north of Niš, on the slopes of Kamenički Vis. The base camp was set up at the "Stevan Sinđelić" primary school in the Brenica department.

2.1.4. Activity Schedule

The three-day bivouac program was thoughtfully designed to maximize the participants' engagement with nature and foster a sense of community (see Table 1). Upon arrival at the serene village of Brenica, participants were introduced to the natural beauty of the foothills of Kamenički Vis. The orientation activities on the first day provided an excellent opportunity for students to develop their navigational skills while exploring the environment.

World Parenting Day on the second day brought together students, their families, and local organization members for a memorable celebration. The "Joyful Olympics" allowed everyone to partake in competitive yet enjoyable games, enhancing the communal experience. The award ceremony recognized the children's efforts, adding a special touch to the day's accomplishments.

The final day's ecological excursion to Jelašnička Gorge was educational and adventurous. Participants learned about the unique endemic plant species of the region (Ramonda serbica and Ramonda nathaliae), enriching their understanding of local biodiversity. The mountaineering elements introduced a physical challenge, rewarding students with breathtaking views from Radov Kamen and Prozorac. Throughout the program, activities were designed to be enjoyable, instill an appreciation for nature, and promote participant teamwork and creativity.

Table 1 Bivouac Schedule

Day	Time	Activity
Day 1	14:00	Arrival and setup at base camp in Brenica
Day 1	16:00 - 19:00	Orientation activity in nature
Day 1	20:30 – 22:00	Lantern Night
Day 2	10:00 - 15:00	Joyful Olympics
Day 2	15:00 - 16:30	Communal lunch
Day 2	16:30 – 17:00	Award ceremony
Day 2	20:30 - 22:00	Campfire with songs plays, and dramatic presentations
Day 3	09:00 - 14:00	Guided hike through the village to Potkapina
Day 3	14:00 - 18:00	Mountaineering tour and ascent of Radov Kamen
Day 3	18:00 - 18:30	Return journey

2.2. Educational Objectives

The bivouac's primary goals were to enhance students' orientation skills, encourage active engagement in outdoor physical activities, and educate them about the local environment and its unique characteristics.

2.3. Innovation and Partnership

The program was designed to integrate theoretical and practical aspects covered in the faculty's curriculum. To align educational outcomes with real-world applications, collaboration was established with the "Vožd Karađorđe" primary school and the affiliated Scout Unit.

3. Results And Discussion

The bivouac program, conducted by the Faculty of Sport and Physical Education, primary school "Vožd Karađorđe," and the affiliated Scout Unit represents a nuanced and robust approach to outdoor education. It seamlessly integrates practical experiences with theoretical insights. This comprehensive three-day program was a testament to the practical applications of geographic and topographical skills and a profound exercise in building community, environmental stewardship, and family bonds.

3.1. Integrating Diverse Educational Perspectives

The integration of geographical and topographical orientation in the bivouac program aligns with the systematic review by Bidzan-Bluma and Lipowska (2018), which emphasizes the multifaceted benefits of physical activities on children's cognitive development. These benefits extend beyond physical wellness, encompassing improved

concentration, enhanced problem-solving skills, and better academic performance, which are crucial in today's fast-paced educational environment. This practical application of orientation skills in a natural setting allows children to experience learning dynamically and hands-on, fostering a deeper understanding and retention of knowledge.

Kahn Jr and Kellert's (2002) work on the psychological, sociocultural, and evolutionary connections between children and nature adds a deeper dimension to this approach. Their research suggests that direct experiences with nature during childhood enhance sensory and emotional development and play a crucial role in shaping a child's character and values. By incorporating natural elements into the educational process, the bivouac program offered a unique opportunity for participants to develop a sense of respect and responsibility towards the environment, fostering sustainable behaviors from a young age.

ect and responsibility towards the environment, fostering sustainable behaviors from a young age.

Moreover, these orientation activities transcended traditional educational methods, embracing a more holistic approach advocated in contemporary educational theories. This holistic approach, integrating physical, cognitive, and environmental aspects, is particularly relevant in our technology-driven era, where digital distractions are rampant. By engaging children in outdoor education, the program countered the sedentary lifestyle often associated with increased screen time, promoting a balanced development crucial for the modern child (Louv, 2008).

In essence, the bivouac program's approach to incorporating geographical and topographical orientation activities was not just an educational strategy but also a comprehensive developmental tool. It successfully merged theoretical knowledge with practical skills, fostering an all-rounded educational experience that resonates with current pedagogical trends. This integration of diverse educational perspectives (physical, cognitive, and environmental) underlines the importance of outdoor activities in fostering children's well-rounded development, preparing them not just academically but also as conscientious and engaged citizens of the world.

3.2. Incorporating Physical Culture and Environmental Education

Integrating physical culture in the bivouac program, echoing the principles outlined in Flander, Osterman, and Arlov's (1975) encyclopedia, highlights physical education's significant role in overall personal development. This source provides a rich historical and cultural context to physical education in Serbia, emphasizing its evolution and multifaceted nature. The program's design, which intertwines physical activities with environmental appreciation, aligns well with the contemporary focus on holistic education, as detailed in the works of educational theorists like Dewey and Piaget (Dewey, 1938; Piaget, 2005). In particular, Dewey advocated for experiential and interactive education, a concept reflected in the bivouac's activities.

Palmer's (2002) focus on environmental education adds depth to the program's structure. By combining physical activities with environmental care and sustainability lessons, the program fosters a sense of responsibility towards the natural world among participants. This approach aligns with the principles of outdoor education highlighted by Rickinson et al. (2004) in their comprehensive review of the impacts of outdoor learning experiences. They found that outdoor education significantly enhances personal and social development and fosters a connection with nature.

Furthermore, the bivouac program's efforts in embedding physical culture within an environmental context resonate with the concepts presented by Louv in "Last Child in the Woods" (2008), where he discusses the growing disconnection of children from nature in modern society. Louv's "Nature-Deficit Disorder" concept highlights the negative impact of a sedentary, technology-oriented lifestyle, reinforcing the need for programs like the bivouac to promote a more balanced development.

Fundamentally, the bivouac program's integration of physical culture and environmental education represents a comprehensive approach to learning supported by diverse educational theories and research. It exemplifies a model of education that aligns with the needs of the modern child, bridging the gap between traditional classroom settings and the dynamic outdoor environment. This approach, grounded in the principles advocated by literature, is a valuable blueprint for future educational programs aiming to cultivate physically fit, environmentally conscious, and culturally aware individuals.

3.3. Exploring Biophilic Design and the Role of Play

Applying Kellert's (2018) biophilic design principles in the bivouac program underscores the inherent value of integrating natural elements within learning environments. As detailed in "Nature by Design: The Practice of Biophilic Design," this approach emphasizes creating spaces that connect learners with nature, thereby enhancing their cognitive, emotional, and physical well-being. The program's use of natural settings as a backdrop for learning activities aligns with these principles, offering children an immersive experience that fosters a deeper connection with and appreciation for the natural world. This experience is consistent with the growing body of research supporting nature's role in enhancing creativity, as evidenced in Kellert et al. (2011) publication on environmental psychology and its implications for educational settings.

Pellegrini's (2009) exploration of play's role in human development provided a theoretical foundation for the bivouac's playful and exploratory activities. This approach is crucial in promoting social interaction, emotional development, and cognitive flexibility. The inclusion of play in the program's design aligns with the principles set forth by the National Association for the Education of Young Children (Copple & Bredekamp, 2009), which advocates for play-based learning as a key component in early childhood education.

Additionally, this integration of play within natural settings aligns with the "forest schools" and outdoor learning movement. This approach, gaining traction in Scandinavia and other parts of Europe, is explored in Knight's (2009) work on forest schools and outdoor learning environments. These educational models emphasize the benefits of unstructured play in natural settings, supporting the development of resilience, confidence, and independence among learners.

Therefore, the program's combination of biophilic design principles and play-based learning strategies represents a multifaceted approach to education, addressing children's physical, cognitive, and emotional needs comprehensively. This approach reflects a holistic educational philosophy that values experiential learning in diverse environments. By fostering children's innate biophilic tendencies alongside their playful nature, the program supports the development of well-rounded individuals who are academically proficient, emotionally intelligent, creative, and environmentally conscious.

3.4. Physical Activity and Nature Contact

In the bivouac program, physical activities in natural settings were not just exercises in physical health but also catalysts for cognitive enhancement and emotional resilience (Ratey, 2008). Ratey's work underscores the neurobiological benefits of physical exercise, particularly its role in improving cognitive function and mitigating stress, which are vital components in a child's development. The serene backdrop of Jelašnička Gorge further amplified these benefits through its tranquil and stimulating natural environment. Taylor and Kuo's (2006) research further support this program's approach, suggesting that regular exposure to nature significantly contributes to psychological well-being, reduced attention deficit symptoms, and better stress management in children. The program's design, incorporating nature-based activities, aligns with these findings, providing an environment where children can physically and mentally thrive.

Considering the broader spectrum of student responses, research by Stojanović et al. (2022) offers valuable comparative insights into how students' geographical backgrounds might influence their attitudes toward outdoor activities. This perspective is crucial for contextualizing our findings within the larger scope of outdoor education research and for tailoring future programs to diverse student populations.

Additionally, the hands-on experiences in Jelašnička Gorge may transform abstract environmental concepts into tangible learning experiences. This experiential learning method enhances understanding and retention of knowledge as students engage directly with the subject matter (Kolb, 2014). The physical exploration of Jelašnička Gorge makes environmental education more impactful, connecting students with real-world applications of ecological principles.

This experience in nature transcends traditional educational methods and fulfills the biophilic need outlined by Wilson (1986) in his biophilia hypothesis. Wilson argued that humans have an innate affinity towards nature, and satisfying this affinity is crucial for emotional and intellectual development. By embedding outdoor physical activities into the curriculum, the bivouac program nurtured a respect for the natural environment and instilled a sense of responsibility for its care and preservation.

3.5. Local Perspectives and Educational Practice

The contributions of Serbian educators and researchers are instrumental in shaping a localized approach to outdoor education that resonates with global pedagogical trends (Dabović et al., 2009; Leskošek, 1971; Savić & Miletić, 2022). The work of these scholars not only highlights the importance of physical culture and environmental education but also brings to light the unique challenges and opportunities within the Serbian educational system. Their insights emphasize the necessity of a curriculum responsive to society's evolving needs, where connection with nature and physical activity are integral components. Specifically, these scholars underscore the significance of educators as agents of change, advocating for a shift in teaching methodologies to encompass more outdoor and experiential learning opportunities. This perspective is crucial in an era where traditional classroom-based education often falls short in addressing the diverse learning needs of students. By incorporating outdoor activities, educators can offer more dynamic and engaging learning experiences that cater to different learning styles and foster a deeper understanding of environmental issues.

Furthermore, the emphasis on local cultural and natural heritage in these studies is pivotal. It highlights the importance of contextualizing education within the local environment, allowing students to develop a sense of place and identity rooted in their immediate surroundings. This approach fosters a connection with the local ecosystem and instills a sense of pride and responsibility toward preserving local natural and cultural heritage. Combining local perspectives with broader educational theories presents a comprehensive framework for outdoor education. It advocates for a balanced approach that harmonizes physical well-being, cognitive development, and environmental consciousness. This framework is essential for developing well-rounded, academically proficient, environmentally aware, and physically active individuals.

Integrating these local insights into educational practice presents a compelling model for outdoor education, particularly relevant to the Serbian context. It underlines the need for educational systems to evolve and adapt, ensuring that they remain relevant and effective in preparing students for the challenges of the 21st century. The collaboration between local and global educational perspectives offers a roadmap for future educational initiatives, aiming to cultivate a knowledgeable, environmentally conscious generation actively engaged with the world around them.

In addition, the innovative model of organizing the three-day bivouac presented in this paper illustrates a multifaceted approach to practical education, particularly in outdoor activities. This model provided students with ample material to overcome challenges in planning and executing such activities and emphasized thematic interconnectivity as a key factor for successful planning. The bivouac encompassed a blend of spatial orientation, diverse programmatic activities, and excursions, showcasing a method of practical instruction that prepares students effectively for future courses that follow theoretical and practical learning.

Our ambition to replicate this model under various temporal and spatial conditions during practical instruction reflects our commitment to versatile and comprehensive education. The plan emphasizes interdisciplinary connections, demonstrating to students the integration of physical education, recreation, anthropology, and other academic disciplines. Over three days, the program successfully achieved its intended outcomes, providing a holistic educational experience. This model advocates for the involvement of physical education teachers alongside educators in geography, biology, history, language, arts, and music. Such a multidisciplinary approach reinforces the concept that learning extends beyond the confines of a single discipline in primary and secondary education.

A key innovation of our planning approach was recognizing community needs and integrating them into our activities. We highlighted significant events such a “World Family Day” and initiatives like “In the Steps of Panta's Shoes” to promote the development of the World Scouting Movement, underscoring the importance of community engagement in educational activities. Partnering to implement the program represents an innovative approach to applying outdoor activities in education, aligning with Serbia’s educational transformation from outcome-based to competence-based planning since 2018. This shift enables students to acquire functional knowledge applicable to real-life situations, moving beyond theoretical learning to apply acquired knowledge and habits in practical scenarios. Our innovative approach yielded significant positive effects for our partners, including a primary school and a scouting group. Following the initiative, the primary school incorporated excursions and bivouacs into its annual work program, while the scouting group experienced a notable

increase in membership. These achievements were spurred by active parental involvement and positive feedback shared at parent council meetings.

In the upcoming academic year, the Faculties of Sport and Physical Education plans to introduce new themes focusing on the practical application of activities in school planning, new activity models, and innovations in implementing the "Outdoor Activities" course. This comprehensive approach underscores the crucial role of unified efforts by parents, schools, and the state in fostering free and healthy citizens, a foundational element of democracy in our country. The success of this model lies in its ability to transcend traditional educational boundaries, fostering physical and cognitive skills, a profound connection with nature, community involvement, and holistic development.

4. CONCLUSION

The bivouac program exemplified a holistic educational approach, seamlessly blending theoretical learning with hands-on experiences. It began with teaching navigational skills through engaging activities, fostering spatial awareness and a deeper connection to nature. The second day emphasized family-oriented and team-building exercises, promoting collaboration, responsibility, and healthy living. The final day's hike through Jelašnička Gorge reinforced ecological knowledge and conservation awareness. The program concluded with a celebration of achievements, underscoring the importance of perseverance and communal success. Well-received by participants and educators alike, this approach highlights the value of integrating academic learning with physical, emotional, and social development, essential in forming well-rounded individuals prepared for contemporary challenges.

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INOVATIVNA PRIMENA PROGRAMA AKTIVNOSTI U PRIRODI – BIVAK

Program bivaka, koji je realizovan tokom tri dana, pružio je dinamično i višestruko obrazovno iskustvo. Imao je za cilj da podstakne duboku vezu sa prirodom, poboljša prostornu svest i promoviše fizički, emocionalni i društveni razvoj među učesnicima. Prvi dan je bio fokusiran na geografsku i topografsku orijentaciju, koristeći interaktivne igre za podučavanje navigacije i interakcije sa životnom sredinom. Ove aktivnosti su služile kao više od praktične lekcije; produbili su razumevanje učenika o svom okruženju. Aktivnosti drugog dana su bile bazirane na učešće porodice i timski rad. „Radosna Olimpijada" je obuhvatala niz zanimljivih vežbi kao što su trke u vrećama i takmičenja u kuvanju. Ove igre su dizajnirane ne samo za uživanje, već i da usađuju vrednosti timskog rada, porodičnog povezivanja i odgovornosti prema prirodi. Dan je naglasio važnost održavanja aktivnog i zdravog načina života u okruženju zajednice. Program je kulminirao ekspedicijom u Jelašničkoj klisuri, nudeći praktičnu primenu naučenih veština u prirodnom okruženju. Ovaj dan je kombinovao fizičke izazove sa ekološkim obrazovanjem, jačajući koncepte biodiverziteta i očuvanja. Priznavanje individualnih i grupnih dostignuća na kraju je istaklo teme istrajnosti, ovladavanja veštinama i vrednosti dostignuća zajednice. Sve u svemu, program bivaka je efektivno spojio obrazovni sadržaj sa aktivnim učenjem uz učešće. Pokazao je značaj iskustvenog obrazovanja na otvorenom u razvoju sveobuhvatnih životnih veština. Uspeh programa u jačanju povezanosti učesnika sa životnom sredinom i zajednicom, kao i u dobijanju pozitivnih povratnih informacija od svih učesnika, naglašava njegovu delotvornost kao modela za savremeno obrazovanje, koji se brine za holistički razvoj mladih pojedinaca.

Ključne reči: *nastava u prirodi, životna sredina, fizička aktivnost, fizičko vaspitanje.*

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