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THE IMPACT OF A ONE-YEAR PHYSICAL AND HEALTH EDUCATION PROGRAM ON THE PSYCHOPHYSICAL DEVELOPMENT OF STUDENTS

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ABSTRACT

The Physical education of schoolchildren is necessary for strengthening their psychophysical health, developing physical abilities, and gaining appropriate knowledge in sports, i.e. achieving a high standard in the processing of teaching content. The aim of the research was to determine the impact of a one-year physical and health education program on the physical abilities, sports skills, and quality of life of seventh and eighth grade primary school students. The sample included 128 students aged 13–14 years. Three tests were conducted, at the beginning, halfway through and at the end of the school year. The Modified Agility 'T' test, Illinois Agility Run Test, 10x5 Shuttle Test, Standing Balance Test, and 2-Minute Step in Place Test were used to test physical abilities. Sports skills were assessed using soccer, basketball, volleyball and handball polygons. The Pediatric Quality of Life InventoryTM (PedsQL) was used to assess the level of quality of life. Statistically significant changes were found in most physical ability tests, in all team sports polygons, as well as in the level of quality of life of students ($p<0.05$). It can be concluded that the physical and health education program contributed to positive changes in the psychophysical development of children. Given that the efficiency of organizing the physical

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education process is associated with the diagnostics of the level of psychophysical abilities, basic motor and sports skills, a constant evaluation of the state of readiness and knowledge of students and their satisfaction with the pedagogical process is required.

Key words:
school curriculum, students, physical abilities, team sports, quality of life.

INTRODUCTION

If the paradigm "in a healthy body, a healthy mind" is considered a guideline leading to the overall growth and psychophysical development of each child, then physical education must be a key element of the school curriculum to ensure the achievement of optimal results in the development of a healthy body (Pangrazi & Beighle, 2019). Physical education of school children should be aimed at strengthening their physical and mental health, forming and improving vital physical abilities and appropriate sports-technical knowledge (Halyna et al., 2017). As a typical school day is largely composed of sedentary activities, the school physical and education program has the potential, not to mention the responsibility, to guide and assist children in meeting their daily physical activity needs (Hills et al., 2015). Promoting healthy and physically active lifestyles is a major goal for schools and physical education (UNESCO, 2015). In this regard, the importance of focusing physical education on promoting physical activity is recognized, not only in school settings and not only during school days, but also outside the gym, as a foundation and habit for regular physical activity and exercise in a student's future life (Milenković, 2021; Pangrazi & Beighle, 2019). Physical education is traditionally based on the premise that physical abilities and skills acquired and developed during elementary and secondary school years should provide a foundation for engaging in physical activity in adulthood (Hills et al., 2015), as otherwise, inactive children and adolescents are typically considered inactive adults (Telama et al., 2014).

Regular physical activity in the context of organized physical and health education classes contributes to the improvement of numerous physical components in children (Gea-García et al., 2020). As a mandatory school activity, and with the possible lack of other extracurricular physical activities, physical and health education classes can be one of the rare opportunities for successful work on physical development and, at the same time, intervention against risk factors related to the health status of children (Starc & Strel, 2012). In physical and health education, a lot of attention is paid to the development of physical abilities. By applying various methods and organizational forms of work, the aim is to achieve an optimal level of physical fitness and health (Milenković, 2021). Along with the development of physical abilities, the acquisition of motor knowledge, skills and habits necessary

for application in sports activities is also carried out through skills characteristic of certain sports. Sports content is dominant in the physical and health education curriculum and requires good organization, effort, and sufficient time to master (Milenković, 2022). Sports are an important means for children to achieve the recommended level of physical activity. Most children are first exposed to sports through physical education, which has a major impact on their participation in later years (Somerset & Hoare, 2018).

In recent years, there has been great interest in the professional and scientific community regarding the importance of physical activity for the mental development and health of children and adolescents. In this regard, physical activity is considered to have a positive impact on the quality of life (Shoesmith et al., 2020; Urchaga et al., 2020; Villafaina et al., 2021), mental health (Andermo et al., 2020; Li et al., 2023) and psychological well-being of this age group (Hale et al., 2023; Piñeiro-Cossio et al., 2021). In the development of healthy lifestyle habits during childhood and adolescence, school plays an important role, as it guides students through learning experiences, awareness, and behavior modification (Torres et al., 2019), including among other things, the promotion of physical or sports activities (Rodríguez et al., 2020).

The physical and health education curriculum in the older grades of primary school, and therefore in the seventh and eighth grades, involves working on improving physical abilities and motor skills and knowledge. The most important thing is to preserve the health of students, and then to instill the habit of daily exercise, not only during school years, but also later, which contributes to the overall proper development of the personality. The teaching is designed in three basic areas (physical abilities; motor skills, and sports and sports disciplines; physical and health culture) in such a way that it builds on the teaching contents from the previous grades, complements and expands them. The program emphasizes a differentiated approach, depending on the individual abilities and gender of the students, thus enabling students of different levels of abilities, knowledge and skills to continue to progress from grade to grade.

Ultimately, the aim of this research was to determine the impact of a one-year physical and health education program on the physical abilities, sports skills, and quality of life of seventh and the eighth grade elementary school students. Considering the conclusions of the previous research in this area, it is assumed that there is a positive impact of a one-year physical and health education program on the aforementioned segments of the psychophysical development of school children. In the service of optimal organization of the teaching process, it is necessary to constantly check the effects of work and their impact on the abilities, skills, knowledge and quality of life of students, which is certainly the significance of this research.

METHOD

A Sample of Respondents

The criterion for including students in the study was that they regularly attend physical education classes, that is, that they were not excused from classes. A sample of 128 boys and girls, aged 13-14, was taken from the student population of three elementary schools in the city area. The sample was further divided into seventh (32 boys and 32 girls) and eighth grade students (32 boys and 32 girls). The study monitored physical and health education classes throughout the 2022-23 school year. Three tests were carried out: initial (at the beginning of the school year), transit (at the end of the first term), and final (at the end of the school year). Before the beginning of the research, the consent of the school authorities and childrens' parents for testing the students was obtained. The research was organized in accordance with the approval of the Ethics Committee of the Faculty of Sports, Union University – Nikola Tesla in Belgrade (code 172/22).

Measuring Instruments

Physical Abilities

Physical abilities were tested using five tests (taken from Wood, 2008) that are reliable and valid for their assessment:

- Modified Agility 'T' test – MAT (Sassi et al., 2009);
- Illinois Agility Run Test (Hachana et al., 2014; Kutlu et al., 2017);
- 10x5 Shuttle Test (Boddington et al., 2001);
- Standing Balance Test (Geldhof et al., 2006; Šarabon & Omejec, 2007);
- 2-Minute Step in Place Test (Haas et al., 2017).

Sport Skills

To determine the level of *sports skills*, polygons with team sports (soccer, basketball, handball and volleyball) consisting of basic technical elements that are in the physical and health education program for the seventh and the eighth grades of elementary school were used.

Description of the soccer polygon (Figure 1) (Milenković et al., 2024). From the starting position (point A), the student starts a curvilinear movement between the cones (slalom) during which he dribbles the soccer ball over a length of 10 meters (slalom starts from the left side of the first cone). After exiting the slalom, the student

passes the ball towards the wall, which is 5 meters away. After the ball bounces off the wall, the student receives the ball and returns it the same way by curvilinear movement between the cones by entering the slalom from the left side of the first cone. After exiting the slalom from point B, he shoots the ball towards a small soccer goal measuring 1x0.5 meters, located at a distance of 5 meters. A shot on goal marks the end of the polygon and measures the time. For missing a goal, two seconds are added to the total time. For a task done incorrectly (wrong movement, knocking down a cone, going around the cone from the wrong side, etc.) one second is added to the total time.

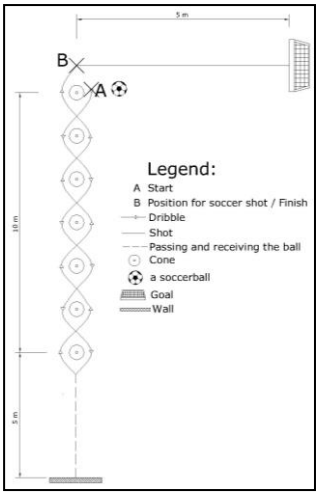

Figure 1. Soccer polygon

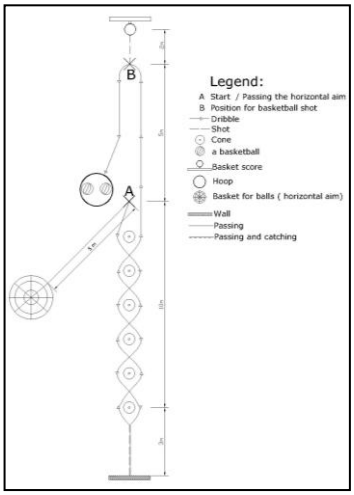

Figure 2. Basketball polygon

Description of the basketball polygon (Figure 2) (Milenković et al., 2024). From the starting position (point A), the student takes the first ball from the hoop and uses both hands to shoot at a horizontal target (basket for balls) 5 meters away using the technique of passing from the chest. Afterwards, he takes the next ball from the hoop with which he performs a curvilinear movement (driving the ball – dribble) between the cones over a length of 10 meters by entering the slalom from the right side of the first cone. The ball is guided alternately with both hands in all phases of the polygon. After exiting the slalom, the student passes the ball towards the wall 3 meters away. The ball is passed with both hands from the chest and on the floor. After the ball bounces off the wall, the student catches the ball and returns the same way by curvilinear movement between the cones by entering the slalom from the left side of the first cone. After exiting the slalom, the student guides the ball in a straight line in a length of 5 meters to point B, from which a jump shot is made at the basket. After the shot, the student takes the ball and takes it back to the hoop where he drops it, which marks the end of the polygon and measures the time. Two

seconds are added to the total time for each missed goal (basket, hoop). For a task done incorrectly (wrong movement, knocking down a cone, going around the cone from the wrong side, etc.) one second is added to the total time.

Description of the handball polygon (Figure 3). From the starting position (point A), the student executes a curvilinear movement between the cones (slalom) by guiding the handball in a length of 10 meters (slalom starts from the right side of the first cone). Then, he goes on in a straight line (leading) to the next cone, which is 5 meters away. The student goes around it and returns the same way and with the same types of movement (straight and curved) to point A. From point A to B, at a distance of 2 meters, the student performs a shot from a step (three-step) (walking position shooting technique) to the handball goal which is 8 meters away from point B. The shot can be taken before reaching point B if the student needs less space to perform the shot from a step. A shot on goal marks the end of the polygon and the time measurement. For missing a goal, two seconds are added to the total time. One second is added to the total time for an incorrectly performed task (wrong movement, knocking down the cone, going around the cone from the wrong side, trespassing when shooting over point B, etc.).

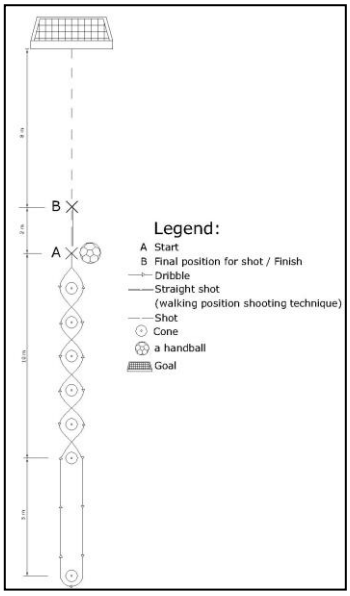

Figure 3. Handball polygon

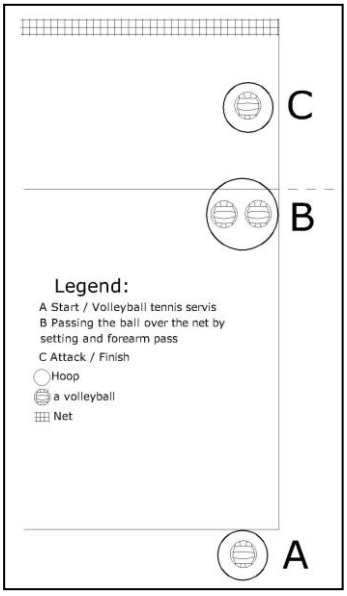

Figure 4. Volleyball polygon

Description of the volleyball polygon (Figure 4). The task begins with a serve from the ground (tennis serve) from point A. Then, from point B, the ball is passed with the fingers (setting) (first ball) and with a hammer (forearm pass) (second ball), so that the polygon and time measurement is finished with a throw (attack) from point C.

The students themselves pass the ball for transfer with their fingers, hammer and scrap. For a correct attempt, it is necessary to hit the opponent's field in any zone of the volleyball court (1-6). One second is added to the total time for each miss in the opponent's field or hit in the net.

Quality of Life

The level of quality of life was determined using the Pediatric Quality of Life InventoryTM (PedsQL) (Varni et al., 1999). It is intended for assessing the quality of life of children and adolescents aged 5–18 years and consists of 23 statements with a five-point Likert-type scale for giving the degree of agreement for a given statement. The offered degrees of agreement range from: 1 – I completely disagree, to 5 – I completely agree. This pediatric questionnaire, which has been culturally adapted and validated for the Serbian language (Stevanović et al., 2011), measures general well-being and functioning in everyday life, regardless of the child's health status. The questionnaire consists of four subscales: Physical functioning (5 items), Emotional functioning (8 items), Social functioning (5 items), and School functioning (5 items). The sum of the scores of all scales represents the overall quality of life. The reliability (Crombach's alpha coefficient) of the scales of this instrument is high (physical functioning α=0.64, emotional functioning α=0.68, social functioning α=0.75, school functioning α=0.57, psychosocial functioning α=0.73).

Physical Education Program

According to The Rulebook of the Ministry of Education, Science and Technological Development of the Republic of Serbia (Pravilnik o programu nastave i učenja za sedmi razred osnovnog obrazovanja i vaspitanja, 2019a; Pravilnik o programu nastave i učenja za osmi razred osnovnog obrazovanja i vaspitanja, 2019b), physical and health education programs for the seventh and eighth grades of elementary school provide for the same teaching content. Since they are planned on the basis of the conditions for the implementation of the program, as well as the assessment of their complexity, it is possible that some teaching contents will be replaced by some other teaching topics for which there are suitable conditions. It is also possible that their number of lessons will be distributed among other teaching contents that are already in the program. In both grades, the implementation of each individual teaching content within the program is carried out three times a week for 45 minutes in the form of basic and extended parts under the guidance of a physical education teacher.

Table 1. Teaching contents that were performed during one school year in the seventh and the eight grade

content name	class numbers	
	seventh grade	*eight grade*
athletics	14	12
artistic gymnastics	14	12
soccer /futsal	10	10
basketball	10	10
volleyball	16	10
handball	10	10
rhythmics and dance	4	6
optional activities – the program offers a number of different activities from which students can choose those the school has facilities for (e.g. fitness training, badminton, table tennis, orienteering, martial arts, self-defense, sports that have already been involved in the compulsory program, training, practicing and improving the elements provided by the expanded parts of the teaching contents, etc.).	10	12
polygon	5	5
swimming and water polo (in the schools where there are not the facilities for performing these activities, that number of classes is distributed to other contents)	10	10
testing and measuring	5	5
total	108	102

Note. The eighth graders attended six lessons less because their school year ends two weeks earlier than the seventh graders.

Given that a physical education teacher may change, modify and arrange some teaching content differently according to the number of lessons, each teacher implemented the planned program is in accordance with their personal teaching plans. Since all schools whose students participated in this research have a functional gym and open school fields, elements of all team (soccer, basketball, volleyball and handball) and basic land sports (gymnastics and athletics), as well as rhythmic and dance, were implemented. Since there is an indoor city swimming pool, students had the opportunity to try out water sports. As for optional activities, some of those mentioned in the program were carried out. The existing mandatory content was

also used, but, according to the interests of the students, some other activities were also included in the program.

Testing Procedure

All three tests were conducted during physical and health education classes in the gym and on the open school grounds. In order to ensure the accuracy and reliability of the testing, a trial test was conducted before the initial testing to familiarize students with all tests and testing areas. The pediatric quality of life questionnaire was completed at the beginning of the class before the physical abilities and sports skills testing.

Statistical Analysis

The basic statistical parameters (Mean±St.Dev) of all groups of respondents are presented. Repeated measures ANOVA was used to determine changes in the anthropological status of male and female students (physical abilities, sports skills and quality of life). After that, post hoc analyses (Fisher LSD) were used to further determine changes between the three tests (pre-test, mid-test, post-test). Statistical significance was presented at the $p \leq 0.05$ level.

RESULTS

The following chapter presents the results obtained in the form of descriptive statistics, analyses of variance (ANOVA) and post hoc (Fisher LSD) and their interpretation. The parameters of the basic statistics (tables 2 and 3) represent the arithmetic mean (Mean) and standard deviation (St. Dev) of all three tests. The analysis of variance (tables 2 and 3) determined the total differences (changes) between the three tests, while the post hoc analysis (tables 4 and 5) obtained an additional difference (change) between the three tests.

Table 2. Descriptive statistics and analyses of variance ANOVA in the seventh grade

		Descriptive statistics			ANOVA	
		pre-test	mid-test	post-test	F	p
boys	soccer	24.99±4.92	24.23±4.72	23.88±4.5	27.37	<.001*
	basketball	23.81±3.33	22.93±3.13	22.7±2.97	50.64	<.001*
	handball	14.26±1.88	13.64±1.74	13.56±1.76	81.45	<.001*
	volleyball	11.2±1.95	10.52±1.65	10.4±1.57	54.27	<.001*
	MAT	8.29±1.25	7.93±1.16	7.83±1.14	59.23	<.001*
	ILL	20.55±2.34	19.38±1.83	19.26±1.74	96.33	<.001*
	10x5	14.93±1.26	14.39±1.04	14.25±1	65.65	<.001*
	SBT	20.11±10.19	20.98±8.44	21.59±8.4	2.94	.060
	2-min	129.69±8.14	131.16±6.3	131.5±6.06	14.36	<.001*
	PQL	78.19±11.32	84±8.08	86.55±6.85	65.01	<.001*
girls	soccer	29.41±2.6	27.9±1.92	27.65±1.96	79.32	<.001*
	basketball	26.22±1.97	24.51±1.78	24.27±1.65	145.37	<.001*
	handball	16.15±2.05	13.96±1.73	13.79±1.67	143.11	<.001*
	volleyball	12.12±1.89	10.85±1.37	10.5±1.26	44.79	<.001*
	MAT	9.32±0.96	8.85±0.92	8.44±0.83	30.33	<.001*
	ILL	23.13±2.29	21.93±1.92	21.57±1.79	78.18	<.001*
	10x5	16.46±1.5	15.84±1.23	15.74±1.16	59.75	<.001*
	SBT	18.16±7.44	20.22±5.25	20.68±4.91	11.58	<.001*
	2-min	121.41±4.88	122.75±3.84	123.41±3.52	22.88	<.001*
	PQL	77.85±6.21	85.39±4.73	87.94±4.37	218.93	<.001*

Note: *Level of significance $p<0.05$; F–F test; p–significance; MAT– Modified agility 'T' test; ILL– Illinois agility run test; 10x5–10x5 shuttle test; SBT– Standing balance test; 2-min–2-minute step in place test; PQL– pediatric quality of life questionnaire.

Table 3. Descriptive statistics and analyses of variance ANOVA in the eight grade

		Descriptive statistics			ANOVA	
		pre-test	mid-test	post-test	F	p
boys	soccer	21.25±4.4	20.18±3.25	19.96±2.89	16.95	<.001*
	basketball	24.85±2.9	22.88±2.04	22.7±1.98	90.74	<.001*
	handball	15.66±2.27	14.78±1.65	14.55±1.61	40.97	<.001*
	volleyball	11.95±2.37	10.89±1.81	10.75±1.73	58.81	<.001*
	MAT	7.7±0.98	7.24±0.81	7.1±0.85	47.34	<.001*
	ILL	19.46±.2.46	18.38±.1.84	18.25±.1.71	53.12	<.001*
	10x5	15.56±2.74	14.61±1.66	14.45±1.48	20.51	<.001*
	SBT	17.16±7.9	19±4.97	20.06±4.86	8.89	<.001*
	2-min	126.84±7.23	128.63±5.58	129.03±5.3	22.38	<.001*
	PQL	76.8±6.72	85.29±4.64	88.65±4.09	217.98	<.001*
girls	soccer	23.86±3.07	22.77±2.94	22.51±2.84	83.4	<.001*
	basketball	23.28±2.16	22.28±2.19	21.97±1.92	59.22	<.001*
	handball	14.78±1.29	13.93±1.23	13.64±1.15	96.73	<.001*
	volleyball	11.3±2.33	10.43±1.71	10.12±1.72	49.77	<.001*
	MAT	7.81±0.99	7.35±0.92	7.16±0.82	61.59	<.001*
	ILL	22.41±.2.23	21.07±.1.96	20.67±.1.76	75.16	<.001*
	10x5	15.58±.1.32	14.93±.1.11	14.75±0.88	52.36	<.001*
	SBT	18.59±6.67	19.92±5.51	20.76±4.63	5.37	.007*
	2-min	124.06±4.58	125.09±3.7	125.56±3.58	22.92	<.001*
	PQL	81.93±9.66	86.31±6.65	88.59±5.38	36.63	<.001*

Note: *Level of significance $p<0.05$; F–F test; p–significance; MAT– Modified agility 'T' test; ILL– Illinois agility run test; 10x5–10x5 shuttle test; SBT– Standing balance test; 2-min–2-minute step in place test; PQL– pediatric quality of life questionnaire.

Tables 2 and 3 present the analysis of variance that calculated changes in physical ability tests, team sports polygons, and quality of life of the seventh and the eighth grade male and female students. Statistically significant changes were not found with the exception of in the standing balance test (SBT) in the the seventh grade boys (p=.060) (Table 2).

Since the results of the analysis of variance are based on three tests, an additional post hoc Fischer LSD test (Tables 4 and 5) is used to precisely determine between which tests there is a statistically significant change. This analysis is used for those tests in which statistical significance in the changes was initially noted.

When analyzing the results of the seventh grade male and female students (Table 4), statistically significant changes can be observed in the results of both groups of respondents (both boys and girls) in the first term in all sports polygons and all physical ability tests. However, in the second term of the school year, only in the results of the soccer polygon for boys were significant changes observed (p=.029). In other sports, there is no significant improvement in both boys and girls. When it comes to physical abilities, the second term instruction affects statistically significant changes in the modified agility 'T' test (MAT p=.026) and 10x5 shuttle test (10x5 p=.028) in boys, or in the modified agility 'T' test (MAT p<.001), illinois agility run test (ILL p=.008) and 2-minute step in place test (2-min p=.033) in girls. The Pediatric quality of life questionnaire recorded a high level of overall quality of life for both boys and girls throughout the school year. Moreover, throughout the school year, scores improved on each subsequent test, i.e. statistically significant differences were recorded.

Table 4. Post hoc results with Fischer LSD test in the seventh grade

		p				p	
soccer		boys	girls	basketball		boys	girls
pre-test	mid-test	<.001*	<.001*	pre-test	mid-test	<.000*	<.001*
	post-test	<.001	<.001*		post-test	<.000*	<.001*
mid-test	post-test	.029*	.108	mid-test	post-test	.051	.062
handball				volleyball			
pre-test	mid-test	<.001*	<.001*	pre-test	mid-test	<.001*	<.001*
	post-test	<.001*	<.001*		post-test	<.001*	<.001*
mid-test	post-test	.232	.280	mid-test	post-test	.148	.055
MAT				ILL			
pre-test	mid-test	<.001*	<.001*	pre-test	mid-test	<.001*	<.001*
	post-test	<.001*	<.001*		post-test	<.001*	<.001*
mid-test	post-test	.026*	<.001*	mid-test	post-test	.251	.008*
10x5				SBT			
pre-test	mid-test	<.001*	<.001*	pre-test	mid-test	////	<.001*

	post-test	<.001*	<.001*		post-test	////	<.001*
mid-test	post-test	.028*	.151	mid-test	post-test	////	.417
2-min				PQL			
pre-test	mid-test	<.001*	<.001*	pre-test	mid-test	<.001*	<.001*
	post-test	<.001*	<.001*		post-test	<.001*	<.001*
mid-test	post-test	.342	.033*	mid-test	post-test	.001*	<.001*

As for the eighth grade students (Table 5), both boys and girls showed statistically significant changes in sports performance in the first term of the school year ($p<0.001$). In the second term, there were no statistically significant changes in boys in any sport (soccer p=.354, basketball p=.323, handball p=.078 and volleyball p=.242), while girls showed noticeable progress, but at a lower level than in the first semestar. In physical ability tests, the situation is similar to the first semester, statistically significant changes are recorded in almost all tests of all students, except for girls in the Standing balance test (SBT p=.051). In the second semester, the changes are less visible, so statistical significance of a lower level is observed in half of the cases, primarily in girls. As in the case of the seventh grade students, in the pediatric quality of life questionnaire, both boys and girls in the eighth grade showed an improvement in their scores on each subsequent test, i.e. statistically significant differences were recorded.

Table 5. Post hoc results with Fischer LSD test in the the eight grade

		p				p	
soccer		boys	girls	basketball		boys	girls
pre-test	mid-test	<.001*	<.001*	pre-test	mid-test	<.001*	<.001*
	post-test	<.001*	<.001*		post-test	<.001*	<.001*
mid-test	post-test	.354	.027*	mid-test	post-test	.323	.016*
handball				volleyball			
pre-test	mid-test	<.001*	<.001*	pre-test	mid-test	<.001*	<.001*
	post-test	<.001*	<.001*		post-test	<.001*	<.001*
mid-test	post-test	.078	.001*	mid-test	post-test	.242	.014*
MAT				ILL			
pre-test	mid-test	<.001*	<.001*	pre-test	mid-test	<.001*	<.001*
	post-test	<.001*	<.001*		post-test	<.001*	<.001*

mid-test	post-test	.043*	.002*	mid-test	post-test	.322	.011*
10x5				SBT			
pre-test	mid-test	<.001*	<.001*	pre-test	mid-test	.010*	.051
	post-test	<.001*	<.001*		post-test	<.001*	.002*
mid-test	post-test	<.407	.035*	mid-test	post-test	.134	.211
2-min				PQL			
pre-test	mid-test	<.001*	<.001*	pre-test	mid-test	<.001*	<.001*
	post-test	<.001*	<.001*		post-test	<.001*	<.001*
mid-test	post-test	<.247	.043*	mid-test	post-test	<.001*	.005*

DISCUSSION

According to the results of this study, a one-year physical and health education program contributed to positive changes in physical abilities, sports skills, and quality of life of seventh and the eighth grade elementary school students.

In the area of physical abilities, statistically significant changes were observed in most tests, except for the SBT balance test in the seventh grade boys (p=.060). Looking at the previous research, physical education programs of shorter or longer duration contribute to improving the physical abilities of children in different grades of elementary schools. Physical education programs are significantly associated with students' cardiovascular endurance, muscular strength and endurance, and flexibility (Chen et al., 2016, 2018). Exercise- and game-based physical education is considered to be a useful strategy for improving physical fitness and skills in primary school children, with the difference that an exercise-based program is more effective than a game-based program when it comes to improving basic motor functions and cardiorespiratory fitness (Jarani et al., 2016). A physical education program based on various modified ball games has a positive effect on improving flexibility, agility, hand dynamometry and abdominal muscle strength (Cocca et al., 2020). Students who attended physical education programs more frequently and for longer periods of time and who participated in school sports were generally more physically active and performed better on physical ability tests, highlighting the importance of integrating physical education into schools and encouraging participation in school sports (Loprinzi et al., 2018). However, there are also results indicating that a physical education program (Texas Fitness Now) implemented every day did not lead to overall improvements in students'

fitness, including cardiovascular endurance, strength, and flexibility (Packham & Street, 2019). It should also be noted that, in addition to the influence of physical education classes themselves, which was the topic of this research, the results are inevitably influenced by the processes of physical growth and development of children. The age group of students studied is in puberty, which is characterized by turbulent changes in the growth and development of children that can be observed over the period of one school year and therefore additionally affect the results of the research. A certain number of students are members of sports clubs in various sports for a shorter or longer period of time, so their organized physical activity is not limited to physical education classes in school.

When it comes to the team sports polygon, this study recorded an improvement in the level of sports skills in all sports for both grades and both genders ($p \leq 0.05$). Otherwise, greater progress in results was achieved in the first semester, between the initial and transit testing, while somewhat smaller or no changes (improvement) were recorded in the second semester, between the transit and final testing. The technical elements that are an integral part of the polygon were familiar to the students because they had been introduced to them in the previous grades. However, the structure of the polygon itself was new to all students. Since the teachers used these polygons in addition to regular content during the classes to practice sports skills, a significant effect of the work was already noted after the first semester. With a new content, greater progress was initially noted in the quality and speed of execution, while it slowed down later. The previous studies also considered that a well-structured physical education training program could effectively improve students' technical and tactical skills in basketball and at the same time increase their level of physical fitness through abdominal and chest muscle strength, agility and sprinting speed (Silva et al., 2023). The implemented physical education programs contribute to the improvement of technical skills in soccer and aerobic and muscular physical fitness (Pesce et al., 2016). The Teaching Games for Understanding (TGfU) physical education model of short duration of 12 weeks can improve technical skills in volleyball (Batez et al., 2021), as well as in handball after 20 school lessons (Mazzardo et al., 2022). Also, the physical education program consisting of sports game content (basketball, volleyball and handball) had a positive impact on the improvement of situational and motor skills in the form of technical elements of dribbling and throwing in basketball and handball, and serving in volleyball (Nikšić et al., 2020).

When it comes to the impact of a one-year physical and health education program on the quality of life of male and female students, this research found statistically significant changes in the level of quality of life in both grades and in both sexes ($p \leq 0.05$). Significant changes occurred after the end of each semester. There are numerous studies that confirm these results, as indicated by Papadopoulos et al. (Papadopoulos et al., 2022) who, after reviewing several papers on this topic,

determined that there is a connection between school physical activity and children's quality of life. It is believed that even a moderate level of physical activity in school settings is sufficient to achieve a higher level of quality of life in school children (Uribe et al., 2021). Vaquero-Solis et al. (Vaquero-Solís et al., 2021) showed that self-concept is a mediator of the association between physical activity and quality of life in children aged 12 to 15 years. In addition to quality of life, physical activity is also positively associated with overall life satisfaction (Urchaga et al., 2020). Mahfouz et al. (Mahfouz et al., 2023) indicate a negative correlation between physical activity and symptoms of mental illness (symptoms of anxiety, depression and stress) and a positive correlation between physical activity and quality of life among young people. In a sample of children aged 11 to 18, it was found that boys who spend more than 30 minutes in physical activity five days a week and girls who do so three to four days a week have a higher level of quality of life (Dong et al., 2020). Along with the impact of physical activity on children's quality of life, there are other factors that should not be ignored. Namely, the children matured to a certain extent during the period from the beginning to the end of the research and gained some significant experiences for them. Thus, since the beginning of the school year, the children have adapted to their school obligations, the new way of spending their time, the workload required of them at school, and the group dynamics in the classroom. They also built better interpersonal relationships with their peers and created a social support network in the classroom. Through the process of functional adaptation, the children gained new knowledge about themselves, which helped them develop self-confidence and a better self-image.

The research covered the entire school year, which is enough time to examine changes in the psycho-physical status of students and to obtain the most relevant results possible, which is one of the advantages of this work. It also covered multiple areas of anthropological abilities and characteristics of children, so that a broader picture of the impact of the physical and health education program can be obtained. Regarding the limitations and shortcomings of this research, in such studies it is always helpful to have a broader population with a larger sample, as well as a larger number of parameters examined and areas monitored. When it comes to assessing quality of life, in addition to the information provided by the students themselves, it is possible, through licensed questionnaires, to obtain significant responses about the level of quality of life of students from their parents as well.

CONCLUSION

The aim of this research was to determine the impact of a one-year physical and health education program on the physical abilities, sports skills, and quality of life of seventh and the eighth grade elementary school students. Therefore, based on the results obtained, it can be concluded that the initial assumption, in terms of the positive impact of this program on the aforementioned segments of the psychophysical development of elementary school children, has not been rejected. As already commented, in addition to the factor of the teaching itself that was monitored, there are other factors that certainly had an impact on the final results of this research. It is a process of physical growth and development, especially since the respondents are in the sensitive period of puberty. Also, other activities, both school and extracurricular, that students have in their daily life and work, including sports and recreational activities, personal hobbies, participation in other creative and educational activities in cooperation with their peers, all with the aim of building the overall personality of a child.

Contemporary professional literature indicates the need for efficient organization of the planned physical education program. Systematic and proper implementation of the program through the subject of physical and health education contributes to the achievement of the basic standards of a teaching content. The standards include the development of movement skills and physical fitness, the study of a large number of basic motor and sports skills, the learning of personal skills related to health, as well as the demonstration of positive social skills (Pangrazi & Beighle, 2019). Effective teaching is linked to the diagnosis of the level of psychophysical development of children, so it is necessary to constantly assess the state of students' general preparedness and knowledge, as well as their satisfaction with the pedagogical process.

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