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Short notice *Kratko saopštenje*

The Effect of the Basketball Program on the Transformation of Motor Skills of Ten-Years Old School Children

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Abstract: *The goal of the research is to determine the effects of the basketball program on the transformation of the motor skills of children in the younger grades of elementary school. The research was conducted in the period from the beginning of September to the end of December 2022 in Kraljevo (Republic of Serbia). The research sample included 40 participants. A battery of seven tests was used to assess motor skills: obstacle course backward, standing long jump, 20-meter running with a flying start, hand plate tapping, wide-angled seated forward bend, lifting the trunk for 60 s and bent-arm hang. At the beginning of the research, an primarily measurement was performed ("initial" measurements). After a period of 16 weeks, the children's motor abilities were re-measured ("final" measurements). Statistical data processing included the calculation of descriptive statistics of variables, the Kolmogorov-Smirnov normality test and the t-test of dependent samples. The programmed transformation training plan included basketball training. Based on the obtained results, it is possible to conclude that the four-month basketball program, which consisted of two sessions per week lasting 45 minutes, along with regular physical education classes of three hours per week, influenced the improvement of results in tests used to assess motor skills.*

Keywords: *anthropological status; boys; kinesiological activities; girls; programmed transformation exercise*

Introduction

Systematic monitoring of anthropological characteristics of primary and secondary school students should be carried out at least twice a year, in the form of initial and final checks. (Martinčević et al., 2022). Motor skills represent one of the factors of anthropological status. "Motor skills are conditionally defined as latent motor structures that are responsible for an infinite number of manifest motor reactions and can be measured and described" (Findak, 1995, 14). Motor skills play a very important role when it comes to optimal growth and development of children. Difficulty in learning motor problems stands out as one of the most common developmental problems, affecting about 6% of children (Budiman et al., 2025). Therefore, motor skills have an impact on children's health. The development of motor skills starts from the birth of children, and over the years the development experiences certain changes. What is also important to emphasize is the fact that the development of motor skills is not always the same in both sexes (Mudrić et al., 2019). In addition, Neljak (2013) points out that boys and girls of younger school age have a relatively easy acquisition and improvement of more complex motor skills, in accordance with the fact that children of that age have more favorable relationships between morphological dimensions and coordination.

In general, the process of physical education is not considered to be anything other than a specific transformational process in which specific means are applied in order to achieve effects. Programmed transformational processes are considered a prerequisite for effective influence on children's development (Mitrović & Stević, 2018). At a time when children are less and less active, the importance of research on the positive impact of programmed kinesiology activities on children's development is great. A large number of researches have been conducted on the topic of the impact of programmed kinesiology activities on the motor skills of students in the younger grades of elementary school (Babin et al., 1999; Babin et al., 2001; Malacko, 2002; Baquet et al., 2004; Jurak et al., 2006; Erceg et al., 2008; Aleksić & Mekić 2010; Babin et al., 2010; Badrić & Prskalo, 2010; Zrnzević, 2010; Bakhtiari et al., 2011; Zrnzević & Zrnzević, 2011; Aleksić et al., 2013; Pelemiš et al., 2014; Mehrtash et al., 2015; Pavlović, 2015; Pelemiš et al., 2017; Anjos & Ferraro, 2018; Mesaroš-Živkov, 2018; Glišović, 2022a; Glišović, 2022b; Nikšić, 2024; Nikšić et al., 2024; Wenming et al., 2024). The authors of these studies agree that there is a possibility that, in the

younger school age, programmed physical exercise and other forms of treatment can affect all areas of anthropological status, primarily motor skills.

The fact that motor skills are a component that can be influenced by different physical exercise programs, i.e. different trainings, is also significant (Mudrić et al., 2019). A potential impact on the development of motor skills in children can be achieved by engaging in physical activity (D'Anna et al., 2024). Basketball is a collective game and belongs to the group of polystructural complex sports in the field of sports kinesiology. Basketball requires players to submit their own abilities to the team, while at the same time it also requires an individual contribution to each action during each stage of the game. The basic and main activity of the team during the competition is considered to score the basket and defend its own basket. The game of basketball is characterized by specific movements of the lower and upper extremities, which are used to regulate the movement of the ball (in the sense of receiving, passing, guiding and subtracting) and the movement of the body and shooting the ball at the opponent's basket (Kukić et al., 2010). At the same time, motor skills are one of the most important factors that determine the success of a basketball player. Every situation that appears during the game must first of all be adequately motorized, and the realization of this through the locomotor system allows the player strength, precision, speed, coordination, balance and agility. Successful basketball players are characterized by precision, speed, explosive start, frequency of movements, coordination, balance, agility and endurance (Matković et al., 2005). The results of the study conducted by Glišović (2022a), in which the impact of basketball training on the morphological characteristics and motor skills of junior elementary school students is analyzed, indicate that there are significant differences between students who train basketball and students who do not train basketball in speed, agility, endurance, coordination and explosiveness. These statements point to the conclusion that basketball training has a positive impact on the growth and development of children of younger school age, as a result of which there is a need to motivate students to participate in these activities by introducing elements of basketball on a larger scale into physical education in the younger grades of primary school (Glišović, 2022a).

These statements support the assumption from which this research is based, that there is a positive correlation between basketball training and the development of children's motor skills. The aim of the research is to determine the effects of the basketball program on the transformation of the motor skills of children in the younger grades of elementary school.

Methods

Sample

The research sample included 20 boys and 20 girls aged 10 years (±6 months) in the fourth grade of primary schooll. Data were collected during the first semester of the 2022/2023 school year, during participation in extracurricular activities in the school's basketball section. The experimental treatment was carried out in the period from beginning of September to the end of December 2022 in Kraljevo (Republic of Serbia).

Sample of Variables

When assessing the motor skills of younger school-aged students, standard motor tests were applied in accordance with the model presented by Bala et al. (2007), and on that occasion a battery was used that includes seven motor tests:

- for evaluation the factor of movement structures: 1) obstacle course backward (s) (in order to assess body coordination and reorganization of movement stereotypes), 2) standing long jump (cm) (in order to assess the explosive power of the lower extremities), 3) 20-meter running with a flying start (in order to assess explosive power and speed of movement);
- for the evaluation of factors of functional synergy and tone regulation: 4) hand plate tapping (s) (in order to estimate the speed of the frequency); 5) wide-angled seated forward bend (cm) (in order to assess flexibility);
- for evaluation of motor unit excitation duration factor : 6) lifting the trunk for 60 s (in order to evaluate the repetitive strength of the trunk), 7) bent-arm hang (s) (in order to assess static endurance in strength).

The Programme of the Experimental Procedure

The total volume of exercises lasted 16 weeks, while the weekly load during the basketball training cycle was twice a week for 45 minutes. During the duration of the program, 32 training sessions were held. The training program covers

the basic elements of basketball techniques and individual and team defense and attack tactics. Basic elements of basketball techniques include: basic basketball stance, movement techniques without the ball, movement techniques with the ball, jumps, turns, passing and catching the ball, attempts to hit the basket while moving and attempts to hit the basket while at rest. The transformative exercise program included the development of motor skills. The training is designed to primarily affect the development of speed, coordination, flexibility, strength and endurance.

Data processing methods

At the beginning of the research, an initial measurement was performed ("initial" measurements). After a period of 16 weeks, the children's motor abilities were re-measured ("final" measurements). After data collection, their statistical processing and calculation of basic statistical parameters was performed. Statistical data processing included the calculation of descriptive statistics of variables: arithmetic mean (AS), standard deviation (Sd), minimum (Min), maximum (Max) values of measurement results, skewness (SKEW) and kurtosis (KURT). The Kolmogorov-Smirnov normality test was used to examine the normality of the results at the initial and final measurements. Dependent samples t-test ($p \leq 0.05$) was used to test the differences between the two groups ("initial" and "final") in the investigated variables. All data processing was performed in SPSS 23 software (SPSS, Inc., Chicago, IL).

Results

Based on the results of descriptive statistics for the motor variables of the girls at the initial measurement (table 1), it can be concluded that the greatest heterogeneity of the results (differences between AS) is for the variables obstacle course backward, standing long jump, wide-angled seated forward bend and bent-arm hang. On the other hand, the smallest heterogeneity between the examined groups was obtained for the variables 20-meter running with a flying start and lifting the trunk for 60 s. Analyzing the normality of the distribution of results (table 1), where the curvature of the curve was tested by skewness and kurtosis, it can be concluded that the variables obstacle course backward, hand plate tapping, bent-arm hang and lifting the trunk for 60 s are within the limits of the normal distribution, while variables wide-angled seated forward bend, standing long jump and 20-meter running with a flying start are not within the limits of the normal distribution (value greater than 1). The second parameter of the normality of the kurtosis distribution explains the analysis of the degree of curvature of the peak of the curve (distribution). For variables whose kurtosis values are less than zero (obstacle course backward, bent-arm hang), it can be concluded that the distribution is platykurtic. For other variables (hand plate tapping, wide-angled seated forward bend, standing long jump, 20-meter running with a flying start, lifting the trunk for 60 s), where the kurtosis values are greater than 0, it can be concluded that the distribution is leptikurtic.

Table 1. *Descriptive statistics for girls at the initial measurement*

Variable	AS	Sd	Min	Max	Skew	Kurt
obstacle course backward (s)	36.72	12.39905	13	57	-.631	-.415
hand plate tapping (s)	41.05	8.37587	20	56	-.666	1.747
wide-angled seated forward bend (cm)	33.35	9.52711	20	59	1.1008	1.242
standing long jump (cm)	119.50	13.16894	104	156	1.173	1.756
20-meter running with a flying start (s)	4.78	1.11431	3	8	1.218	2.459
bent-arm hang (s)	19.35	9.69685	4	4	.182	-.449
lifting the trunk for 60 s	18.00	6.53412	10	10	.994	1.465

Legend: *AS – arithmetic mean, Sd – standard deviation, Min – minimum values of measurement results, Max maximum values of measurement results; Skew - skewness (measure of distribution asymmetry), Kurt - kurtosis (measure of distribution homogeneity)*

Based on the results of descriptive statistics for the boys' motor variables at the initial measurement (table 2), it can be concluded that the greatest heterogeneity of the results (difference between AS) is for the variables obstacle course backward, standing long jump, lifting the trunk for 60 s. On the other hand, the smallest heterogeneity between the examined groups was obtained for the variable 20-meter running with a flying start. Analyzing the normality of the distribution of results (table 2), where the curvature of the curve was tested by skewness and kurtosis, it can be

concluded that the variables obstacle course backward, wide-angled seated forward bend, standing long jump, lifting the trunk for 60 s are within the limits of the normal distribution, while variables hand plate tapping (value less than1), 20-meter running with a flying start, bent-arm hang (value greater than 1) are not within the limits of the normal distribution. For variables whose kurtosis values are less than zero (obstacle course backward, wide-angled seated forward bend, standing long jump and lifting the trunk for 60 s), it can be concluded that the distribution is platykurtic. In the case of other variables (hand plate tapping, 20-meter running with a flying start, bent-arm hang), where the kurtosis is greater than 0, it can be concluded that the distribution is leptikurtic.

Table 2. *Descriptive statistics for boys at the initial measurement*

Variable	AS	Sd	Min	Max	Skew	Kurt
obstacle course backward (s)	30.76	12.34992	14	57	.581	-.038
hand plate tapping (s)	44.90	8.65661	20	56	-1.143	2.270
wide-angled seated forward bend (cm)	31.35	8.53029	18	49	.120	-.667
standing long jump (cm)	127.20	25.39706	85	168	.062	-.905
20-meter running with a flying start (s)	4.63	1.01843	3.15	8	1.950	5.747
bent-arm hang (s)	20.20	8.91834	8	41	1.196	1.034
lifting the trunk for 60 s	23.05	9.46726	8	42	.432	-.428

Legend: *AS – arithmetic mean, Sd – standard deviation, Min – minimum values of measurement results, Max maximum values of measurement results; Skew - skewness (measure of distribution asymmetry), Kurt - kurtosis (measure of distribution homogeneity)*

Since it is not possible to draw a conclusion about the normality of the distribution based only on the values of the mentioned parameters, the value of the Kolmogorov-Smirnov test was also calculated to check the normality of the initial measurements. The results of this test showed that in girls the variables obstacle course backward, wide-angled seated forward bend, standing long jump, 20-meter running with a flying start, bent-arm hang and lifting the trunk for 60 s do not deviate from the normal distribution ($p>0.05$). On the other hand, with girls, the variables hand plate tapping deviate significantly from the normal distribution ($p<0.05$). In boys, the variables obstacle course backward, hand plate tapping, wide-angled seated forward bend and lifting the trunk for 60 s do not deviate from the normal distribution ($p>0.05$). On the other hand, in boys, the other variables (20-meter running with a flying start and bent-arm hang) deviate significantly from the normal distribution ($p<0.05$) (table 3).

Table 3. *Normality of the distribution of motor variables at the initial measurement for girls and boys*

Variable	mesaurement	KS-p
obstacle course backward (s)	girls	.158
	boys	.200
hand plate tapping (s)	girls	.023
	boys	.200
wide-angled seated forward bend (cm)	girls	.196
	boys	.181
standing long jump (cm)	girls	.072
	boys	.200
20-meter running with a flying start (s)	girls	.111
	boys	.001
bent-arm hang (s)	girls	.200
	boys	.017
lifting the trunk for 60 s	girls	.008
	boys	.200

Legend: *t – value of t-test; p – statistical significance of the difference*

Based on the results of descriptive statistics for the motor variables of the girls at the final measurement (table 4), it can be concluded that the greatest heterogeneity of the results (differences between AS) is for the variables obstacle course backward, wide-angled seated forward bend, standing long jump and bent-arm hang. On the other hand, the smallest heterogeneity between the examined groups was obtained for the variable 20-meter running with a flying start. Analyzing the normality of the distribution of results (table 3), where the curvature of the curve was tested by skewness and kurtosis, it can be concluded that the variables obstacle course backward, hand plate tapping, wide-angled seated forward bend, 20-meter running with a flying start, bent-arm hang, lifting the trunk for 60 s are within the limits of the normal distribution, while the variable standing long jump are not within the limits of the normal (value greater than 1). For variables whose kurtosis values are less than zero (obstacle course backward, bent-arm hang), it can be concluded that the distribution is platykurtic. In the case of other variables (hand plate tapping, wide-angled seated forward bend, standing long jump, 20-meter running with a flying start, lifting the trunk for 60 s), where the kurtosis is greater than 0, it can be concluded that the distribution is leptikurtic.

Table 4. *Descriptive statistics for girls at the final measurement*

Variable	AS	Sd	Min	Max	Skew	Kurt
obstacle course backward (s)	33.85	11.45368	12	53	-.606	-.489
hand plate tapping (s)	43.55	8.19804	23	60	-.464	1.838
wide-angled seated forward bend (cm)	36.35	9.60962	22	61	.753	.753
standing long jump (cm)	123.20	13.43052	107	160	1.084	1.533
20-meter running with a flying start (s)	4.37	.98295	2.8	7	.927	1.275
bent-arm hang (s)	20.30	9.50402	6	42	.363	-.190
lifting the trunk for 60 s	21.15	6.33516	12	37	.717	.783

Legend: *AS – arithmetic mean, Sd – standard deviation, Min – minimum values of measurement results, Max maximum values of measurement results; Skew - skewness (measure of distribution asymmetry), Kurt - kurtosis (measure of distribution homogeneity)*

Based on the results of descriptive statistics for the boys' motor variables at the final measurement (table 5), it can be concluded that the greatest heterogeneity of the results (differences between AS) is for the variables obstacle course backward, standing long jump, lifting the trunk for 60 s. On the other hand, the smallest heterogeneity between the examined groups was obtained for the variable 20-meter running with a flying start. Analyzing the normality of the distribution of results (table 4), where the curvature of the curve was tested by skewness and kurtosis, it can be concluded that the variables obstacle course backward, wide-angled seated forward bend, standing long jump and lifting the trunk for 60 s are within the limits of the normal distribution, while the variables 20-meter running with a flying start, bent-arm hang are not within the limits of the normal (value greater than 1). In the case of other variables (obstacle course backward, hand plate tapping, 20-meter running with a flying start, bent-arm hang, where the kurtosis is greater than 0, it can be concluded that the distribution is leptikurtic.

Table 5. *Descriptive statistics for boys at the final measurement*

Variable	AS	Sd	Min	Max	Skew	Kurt
obstacle course backward (s)	28.15	11.80221	12	54	.686	.197
hand plate tapping (s)	47.00	8.60233	23	60	-.918	1.833
wide-angled seated forward bend (cm)	33.70	8.37352	20	52	.222	-.320
standing long jump (cm)	128.90	24.96714	86	168	-.023	-.888
20-meter running with a flying start (s)	4.10	.91334	3	7	1.697	4.562
bent-arm hang (s)	20.80	8.63042	9	41	1.266	1.377
lifting the trunk for 60 s	24.35	9.47170	9	44	.478	-.252

Legend: *AS – arithmetic mean, Sd – standard deviation, Min – minimum values of measurement results, Max maximum values of measurement results; Skew - skewness (measure of distribution asymmetry), Kurt - kurtosis (measure of distribution homogeneity)*

Since it is not possible to draw a conclusion about the normality of the distribution based only on the values of the mentioned parameters, the value of the Kolmogorov-Smirnov test was also calculated to check the normality of the final measurements. The results of this test showed that in girls and boys all observed variables do not deviate from the normal distribution (p>0.05) (table 6).

Table 6. *Normality of the distribution of motor variables at the final measurement for girls and boys*

Variable	mesaurement	KS-p
obstacle course backward (s)	girls	.200
	boys	.200
hand plate tapping (s)	girls	.080
	boys	.200
wide-angled seated forward bend (cm)	girls	.200
	boys	.200
standing long jump (cm)	girls	.144
	boys	.200
20-meter running with a flying start (s)	girls	.129
	boys	.079
bent-arm hang (s)	girls	.200
	boys	.45
lifting the trunk for 60 s	girls	.071
	boys	.200

Legend: *t – value of t-test; p – statistical significance of the difference*

Based on the results of the t-test of dependent samples for motor variables, it can be concluded that in girls there is a statistically significant difference in the "initial" and "final" values for all investigated variables (p<0.05) (table 7).

Table 7. *Paired samples t-test for girls*

Variable	mesaurement	t	p
obstacle course backward (s)	initial	8.933	**.000**
	final		
hand plate tapping (s)	initial	-12.523	**.000**
	final		
wide-angled seated forward bend (cm)	initial	-5.430	**.000**
	final		
standing long jump (cm)	initial	-15.308	**.000**
	final		
20-meter running with a flying start (s)	initial	8.018	**.000**
	final		
bent-arm hang (s)	initial	-4.498	**.000**
	final		
lifting the trunk for 60 s	initial	-4.924	**.000**
	final		

Legend: *t – value of t-test; p – statistical significance of the difference*

Based on the results of the t-test of dependent samples for motor variables, it can be concluded that in boys there is a statistically significant difference in the "initial" and "final" values for all examined variables (p<0.05) (table 8).

Table 8. *Paired samples t-test for boys*

Variable	mesaurement	t	p
obstacle course backward (s)	initial	-4.230	**.000**
	final		
hand plate tapping (s)	initial	-6.332	**.000**
	final		
wide-angled seated forward bend (cm)	initial	-8.029	**.000**
	final		
standing long jump (cm)	initial	-3.048	**.007**
	final		
20-meter running with a flying start (s)	initial	7.060	**.000**
	final		
bent-arm hang (s)	initial	-2.349	**.030**
	final		
lifting the trunk for 60 s	initial	-5.151	**.000**
	final		

Legend: *t – value of t-test; p – statistical significance of the difference*

Discussion

It is possible to say that motor skills for the period of younger school age have not yet been fully defined, and that this is a period that is very important when it comes to developing motor skills, primarily basic. In the period of younger school age, physical education should be based on the formation of the best possible basis for improving specific motor skills in older ages (Mitrović & Stević, 2018). Radovanović (2018) points out that through various physical activities, children get to know their body, develop and improve motor skills through the acquisition of various motor skills and habits and the development of motor skills. Motor skills represent those forms of motor activity that occur within motor structures that can be described with the help of the same parametric system, which can be measured with the help of the same set of measures and within which analogous physiological, biological and psychological processes, i.e. mechanisms, occur. Motor skills are partly inherited, while the other part is acquired primarily through the training process (Mujanović et al., 2021). It is known that all motor abilities are not equally dependent on heredity. A high level of innateness is attributed to speed and balance, medium to coordination and precision, low to strength and mobility (Cemič & Gregorc, 2013).

The results of the research show that in girls, the basketball program had an effect on the improvement of motor skills in all the observed tests: obstacle course backward, which corresponds to the results obtained by Zrnzević (2010), Zrnzević and Zrnzević (2011), Pavlović (2015), Aleksić et al. (2013), Pavlović and Marinković (2015), and Glišović (2022b); hand plate tapping, which corresponds to the results obtained by Zrnzević (2010), Zrnzević and Zrnzević (2011), Pelemiš et al. (2014), and Glišović (2022b); wide-angled seated forward bend, which corresponds to the results obtained by Milanović (2007), Zrnzević (2010), Zrnzević and Zrnzević (2011), Mesaroš-Živkov (2018), and Glišović (2022b); standing long jump, which corresponds to the results obtained by Zrnzević (2010), Pavlović (2015), Pavlović and Marinković (2015), Mesaroš-Živkov (2018), and Glišović (2022b); 20-meter running with a flying start, which corresponds to the results obtained by Pavlović (2015), Pavlović and Marinković (2015), Mesaroš-Živkov (2018), and Glišović (2022b); bent-arm hang, which corresponds to the results obtained by Milanović (2007), Aleksić and Mekić (2010), Pelemiš et al. (2014), Pavlović and Marinković (2015), and Glišović (2022b); and lifting the trunk for 60 s, which corresponds to the results obtained by Zrnzević (2010), Zrnzević and Zrnzević (2011), Pelemiš et al. (2014), Pavlović (2015), and Glišović (2022b).

At the same time, the results of the research show that in boys, the basketball program influenced the improvement of motor skills in all observed tests: obstacle course backward, which corresponds to the results obtained by Zrnzević and Zrnzević (2011), Pavlović (2015), Pavlović and Marinković (2015), and Glišović (2022b); hand plate tapping, which corresponds to the results obtained by Zrnzević and Zrnzević (2011), Pelemiš et al. (2014), and Glišović (2022b); wide-angled seated forward bend, which corresponds to the results obtained by Milanović (2007),

Zrnzević and Zrnzević (2011), and Glišović (2022b); standing long jump, which corresponds to the results obtained by Pavlović (2015) and Glišović (2022b); 20-meter running with a flying start, which corresponds to the results obtained by Pavlović (2015), Pavlović and Marinković (2015), and Glišović (2022b); bent-arm hang, which corresponds to the results obtained by Milanović (2007), Aleksić i Mekić (2010), Pelemiš i suradnici (2014), Pavlović i Marinković (2015), i Glišović (2022b); and lifting the trunk for 60 s, which corresponds to the results obtained by Zrnzević and Zrnzević (2011), Pelemiš et al. (2014), Pavlović (2015), and Glišović (2022b).

In order to ensure the successful transformation of anthropological characteristics, it is necessary to provide a high-quality plan and program of the training process. At the same time, it is very important to choose the most optimal methods and methodological procedures that will provide the possibility of achieving the research goal (Badrić et al., 2015). The results obtained from the research, which show that the training process of basketball contributed to the improvement of motor skills in boys and girls of younger school age, indicate the existence of a quality plan and program of the training procedure, and an adequate selection of the most optimal methods and methodological procedures. At the same time, the obtained results are in agreement with the results of other studies that examined the impact of basketball training on the development of motor skills, which show that there is a positive correlation between basketball and the development of motor skills in children (Radenković et al., 2014; Gašparić, 2015; Ljubojević et al., 2016; Užičanin et al., 2017; Cvitković, 2018; Glišović, 2022a).

It is a fact that in the younger grades of primary school, physical education teaching is most often treated as secondary and less important, compared to physical education teaching in older grades. The teaching of physical education in older grades is an absolute priority in almost all elementary schools, both when it comes to the use of the hall and other facilities intended for exercise, and when it comes to the equipment and use of teaching aids. In addition, it was observed that students of the younger grades of elementary school are represented in a significantly smaller number both in extracurricular activities and in sports sections. The above leads to limiting their overall activity in physical culture and narrowing the space for their timely and permanent engagement in it (Stamatović et al., 2010). Another problem that arises is the motivation of students to participate in physical activities. Considering the contribution that extracurricular activities and sports sections can make to the development of motor skills, it is important to motivate children to use some of their free time to participate in physical activities. Namely, an individual has the possibility of using his free time for rest, entertainment, participation in certain physical activities, etc., depending on his wishes. However, with the advancement of technology, students (especially those in the younger grades of elementary school) are spending more and more free time on computers, phones and other digital devices. For this reason, it is important to emphasize the role that parents and teachers play in encouraging students to apply physical activities that affect the growth and development of students through extracurricular and extracurricular activities (Rosić, 2015). Schools could organize sections for: basketball, rhythmic gymnastics and dance, handball, football, volleyball, etc., intended for students of younger grades of elementary school, in order to improve their anthropological status.

Conclusion

Kinesiological activity has the greatest importance during childhood, in accordance with the fact that it can affect the physical development of children, on the one hand, and the formation of healthy life habits, on the other hand. There is a positive effect of additional exercise on the anthropological status, regardless of whether it is in the form of extracurricular activities or extracurricular activities with regular physical education classes. The results of previous research into the impact of basketball on the anthropological status of students of younger grades of elementary school showed that basketball significantly affects the harmonious development of the whole body, that is, it positively affects a wide range of abilities and traits.

In researching the effects of the basketball program on the transformation of motor skills of fourth-grade elementary school students, it was found out that the programmed transformation exercise had an effect on the improvement of results in all tests used to assess motor skills: obstacle course backward, hand plate tapping, wide-angled seated forward bend, standing long jump, 20-meter running with a flying start, bent-arm hang and lifting the trunk for 60 s. Despite the obtained results, it is important to emphasize that the research is characterized by certain limitations. First of all, it is about the size of the sample, considering that the research was conducted on a small sample. There is a possibility that different results would have been obtained in the case of a larger sample. Another limitation

relates to the tests used to assess motor skills. Regardless of the limitations, the fact is that this work should represent a guideline in the further monitoring and research of the effects of programmed transformational exercise on changes in motor abilities in younger elementary school students.

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