MODERN APPROACHES ON THE IMPROVEMENT OF TECHNICAL SKILLS TO STUDENTS WHO ARE PART OF THE FOOTBALL SCHOOL TEAM IN PRIMARY SCHOOL

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Abstract

Using the modem methods of training in the training sessions is just one of the scientific news imposed by social changes and science breakthroughs. In this context, updating and modernizing the training process, regardless of age, is an aim determined by the need to ensure a correspondence between the content of the training and the current requirements in competitions. The purpose of the research is to improve the technical skills of the students who make up the football school team in primary school, by applying a training program based on the G.A.G. (global; analytical; global) method. The investigated sample group consists of 28 students, aged 10-11, students who make up the football school team of the schools included in the research. The experimental research took place in the 2022-2023 school year. We have made the evaluation by applying tests specific to primary education, tests held at the beginning and the end of the experiment. To measure the differences between the initial testing and the final testing we used the t (Student) test and the Wilcoxon test for independent samples. The statistical data to compare the average values were made using the SPSS for Windows. The results validate the working hypothesis and ascertain the significant progress ($p < 0.05$) for all the tests used in evaluating the technical skills of the students in the experimental group compared to the students of the control group.

Introduction

In a social context that offers various opportunities and reasons to capture the children's attention (internet, video games, social networks), it is more and more difficult to get children involved in sports. [9]

The activity of the Physical Education teacher is not limited only to PE classes, but also to another series of activities that they must carry out to demonstrate they have the qualities of a coach and a good manager. They include important actions meant to help carry out the sports activities in school. Building a football team for the school level remains and must be one of the main issues in the activity of Physical Education teachers, being considered as important as the teaching activity carried out in the usual classes of Physical Education. [8]

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The teacher's activities also include the research task about the endowed students, identifying the ones that are best fit for football, elements that can also be, if applicable, the object of a guiding towards "the echelon of the mainstay for the professional sport represented by various Associations and Sports Clubs ". [4]

No other team sport has such a power of fascination over children as football. This special feature of attracting very enthusiastic young footballers is not due to a scientific, modern, creative capacity, which will "produce" as a conveyor belt children who are very technical but also with physical qualities for the current football game. The training concept of a football team, even a children's team, must have principles, methods, means, materials, which put together make up the strategic training arsenal. [3] In designing the training program, one must not forget about the individual training approach (adapted to each player) and then the collective training (all that is individual to be adapted and subordinated to the collective) and see if the principles, methods and means of training, specifically executed by a player, groups of players, team are also included. The efficiency of the training methods used will determine the progress in improving the technical skills of the students. [10]

The aim of the technical training is to create for the student the opportunity to use permanently, the functional potential in his competitive actions. The importance of the technical training factor is also addressed by Constantin Ploeşteanu who has a different "vision" regarding the main element, the technique. In his opinion, the technique is characterized by a basic technique and a game technique. [7,8] In order to emphasize the importance of technical training, recalls the factors that influence the learning and improvement of the technique. In his opinion, the technique is particularly important, first of all, due to the economism of movement and its effectiveness. It should not be learned in isolation, but to a large extent conditioned by the other components of the training. [1,6]

For this reason, teachers involved in the technical training of the students who make up the football school team constantly research modern methods or ways of training aiming to maximize the performance and improve the technical skills of the students. [2]

Material- Method

The purpose of the research is to improve the technical skills in the students who make up the football school team, in primary school, by applying a training program based on the G.A.G. method. This experimental study aims to apply the above-mentioned method to the experimental group while the control group is applied a training program based on the classical sports training lesson.

The researched sample consists of 28 students, aged 10-11, students who make up football school teams, 14 of them from the "Stefan cel Mare" High School and 14 students from the no.28 Middle School, both from Galati. The conduct of the experimental research took place in the sports hall and on the sports field of the two

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schools, under similar training conditions. The training program was applied in the 2022-2023 school year, for nine months, avoiding school holidays.

The research included the following stages: stage 1- carrying out the initial evaluation; Stage 2- Applying the training program based on the G.A.G. method. Stage 3- carrying out the final evaluation; Stage 4- Interpretation of results and elaboration of the conclusions.

The following research methods were used: analysis of the specialized literature, the observation, the experiment, the measurement and testing method, the statistical-mathematical method, the methods of graphical and table representation. For the statistical analysis we used the IBM SPSS Statistics, version 26. The experimental curriculum included a training program based on the G.A.G. method (global; analytical; global), the method that is applied in Grassroots football. This method includes in its fundamental part [11]:

- The first game - the first stage of the key part of the session is composed of one or two games on certain topics that will highlight the main objective of the session. Games with numerical superiority 2x1 are mostly used; During this part, the teacher emphasizes the main objective by intervening and giving advice, thus identifying the theme of the session.
- Training and exercises - once the students have identified the objective through the game, the analytical exercises (without an opponent) will ensure the repetition of this technical movement and the correction of any details. The teacher's intervention during the analytical period in the session is very important because he/she must prove, observe, correct and encourage students.
- The second game - the second game can be guided and/or played freely and must offer the students the opportunity to use what they have learned in training in real "match" situations. In this part of the session, the teacher leaves the children to express themselves freely through play without too many interventions. Games with equal number of players 1x1, 2x2 are mostly used.

The evaluation of the subjects was carried out by applying the following specific tests and level of training of the students:

1. Keeping the ball in the air. A square with a 5-meter side is drawn. The student must keep the ball in the air with any part of the body except for his hand. The exercise ends when the ball falls to the ground. The number of executions is written down.

2. Driving the ball around the cones back and forth. The 4 cones are located 3 meters away from each other. The student and the ball are at a distance of one

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meter from the first cone. They go back and forth. The stopwatch starts when the student first touches the ball with his foot and stops when the ball led by the student has finished the round trip, passing over the starting line.

3. Driving the ball around the cones followed by a shot on goal. 1 meter away from the center of the field 4 cones are placed 3 m away from each other. The last cone is 10 m away from the gate. The student starts from the middle of the field, leads the ball around the 4 cones and then shots on goal. The timer starts when the student first touches the ball with his foot and stops when the ball has got over the gate line.

Results

To perform the data analysis we used the IBM SPSS statistics software package, version 26.

The t test for two independent sample groups checks if the difference between the average values of two groups made up of different subjects is statistically significant. Thus, we can compare the results of the experimental group with the results of the control group. The equality of the variants for the two groups, which is necessary for the interpretation of the t test for independent samples, was done with the Levene test.

The t test for paired samples compares the average values of a variable for the same group analyzed at different times. This is necessary to compare the results obtained by the athletes to the initial test with the results obtained at the final test.

We used the correlation coefficient (R) to determine whether or not there is a dependence connection between two phenomena, as well as the degree of correlation.

The significance threshold chosen for the statistical tests is $\alpha = 0.05$.

Control group

Table 1. Descriptive Statistics

	Minimum		Maximum		Mean		Std. Deviation		Variance	
	Initial test	Final test	Initial test	Final test	Initial test	Final test	Initial test	Final test	Initial test	Final test
Keeping the ball in the air (success)	5	10	13	14	8.21	11.93	2.155	1.385	4.643	1.918
Driving the ball around cones back and forth (seconds)	15.40	14.70	17.40	16.9	16.193	15.471	0.509	0.568	0.259	0.322
Driving the ball and shot on goal (seconds)	12.31	11.90	13.50	12.95	12.734	12.389	0.319	0.318	0.101	0.101

Experimental Group

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Table 2. Descriptive Statistics

	Minimum		Maximum		Mean		Std. Deviation		Variance	
	Initial test	Final test	Initial test	Final test	Initial test	Final test	Initial test	Final test	Initial test	Final test
Keeping the ball in the air (success)	5	12	12	17	8.07	14.07	1.979	1.639	3.918	2.68
Driving the ball around cones back and forth (seconds)	14.70	13.5	18.40	16.7	16.8	14.479	1.242	0.892	1.542	0.79
Driving the ball and shot on goal (seconds)	12.02	11.12	13.43	12.23	12.819	11.916	0.349	0.323	0.122	0.10

The t test for paired samples
Test – Keeping the ball in the air

Table 3. Paired Samples Statistics

		Mean	Std. Deviation	Std. Error Mean
Pair 1	Keeping the ball in the air(success) **initial test, control group**	8.21	2.155	0.576
	Keeping the ball in the air(success) **final test, control group**	11.93	1.385	0.370
Pair 2	Keeping the ball in the air(success) **initial test, experimental group**	8.07	1.979	0.529
	Keeping the ball in the air(success) **final test, experimental group**	14.07	1.639	0.438

Table 4. Paired Samples Correlations

		Correlation	Sig.
Pair 1	Keeping the ball in the air(success) **initial test, control group** & keeping the ball in the air (success), **final test, control group**	0.727	0.003
Pair 2	Keeping the ball in the air(success) **initial test, experimental group** & keeping the ball in the air (success), **final test, experimental group**	0.710	0.004

Table 5. Paired Samples Test

Paired Differences	t	df

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		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				Sig. (2-tailed)
					Lower	Upper			
Pair 1	Keeping the ball in the air(success) **initial test, control group** & keeping the ball in the air (success), **final test, control group**	-3.714	1.490	0.398	-4.575	-2.854	-9.328	13	0.000
Pair 2	Keeping the ball in the air(success) **initial test, experimental group** & keeping the ball in the air (success), **final test, experimental group**	-6.000	1.414	0.378	-6.817	-5.183	-15.875	13	0.000

Test – Driving the ball around cones back and forth

Table 6. Paired Samples Statistics

		Mean	Std. Deviation	Std. Error Mean
Pair 1	Driving the ball around cones, **initial test, control group**	16.193	0.509	0.136
	Driving the ball around cones, **final test, control group**	15.471	0.568	0.152
Pair 2	Driving the ball around cones, **initial test, experimental group**	16.8	1.242	0.332
	Driving the ball around cones, **final test, experimental group**	14.479	0.892	0.238

Table 7. Paired Samples Correlations

		Correlation	Sig.
Pair 1	Driving the ball around cones, **initial test, control group** & Driving the ball around cones, **final test, control group**	0.912	0.000
Pair 2	Driving the ball around cones, **initial test, experimental group** & Driving the ball around cones, **final test, experimental group**	0.674	0.008

Table 8 Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			

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Pair 1	Driving the ball around cones, **initial test, control group** - Driving the ball around cones, **final test, control group**	0.721	0.233	0.062	0.587	0.856	11.603	13	0.000
Pair 2	Driving the ball around cones, **initial test, experimental group** - Driving the ball around cones, **final test, experimental group**	2.321	0.919	0.246	1.791	2.852	9.45	13	0.000

Test – Driving the ball around cones and shot on goal

Table 9. Paired Samples Statistics

		Mean	Std. Deviation	Std. Error Mean
Pair 1	Driving the balla round cones and shot on goal, **initial test, control group**	12.734	0.319	0.085
	Driving the balla round cones and shot on goal, **final test, control group**	12.389	0.318	0.085
Pair 2	Driving the balla round cones and shot on goal, **initial test, experimental group**	12.819	0.349	0.093
	Driving the balla round cones and shot on goal, **final test, experimental group**	11.9157	0.323	0.086

Table 10. Paired Samples Correlations

		Correlation	Sig.
Pair 1	Driving the ball around cones and shot on goal, **initial test, control group** & Driving the ball around cones and shot on goal, **final test, control group**	0.919	0.000
Pair 2	Driving the ball around cones and shot on goal, **initial test, experimental group** & Driving the ball around cones and shot on goal, **final test, experimental group**	0.666	0.009

Table 11. Paired Samples Test

	Paired Differences				t	df	Sig. (2-tailed)
	Mean	Std. Deviation	95% Confidence Interval of the Difference				

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			Std. Error Mean	Lower	Upper			
Pair 1	Driving the ball around cones and shot on goal, **initial test, control group** - Driving the ball around cones and shot on goal, **final test, control group**	0.346	0.128	0.034	0.272	0.42	10.098	13	0.000
Pair 2	Driving the ball around cones and shot on goal, **initial test, experimental group** - Driving the ball around cones and shot on goal, **final test, experimental group**	0.903	0.276	0.074	0.744	1.062	12.258	13	0.000

The t test for independent samples

Table 12. Group Statistics

|	Group	N	Mean	Std. Deviation	Std. Error Mean
Keeping the ball in the air(success) - **initial test**	Control	14	8.21	2.155	0.576
	Experimental	14	8.07	1.979	0.529
Keeping the ball in the air(success) - **final test**	Control	14	11.93	1.385	0.370
	Experimental	14	14.07	1.639	0.438
Driving the ball around cones back and forth (seconds) – initial test	Control	14	16.193	0.509	0.136
	Experimental	14	16.8	1.242	0.332
Driving the ball around cones back and forth (seconds) – final test	Control	14	15.471	0.568	0.152
	Experimental	14	14.479	0.892	0.238
Driving the ball around cones and shot on goal (seconds) – initial test	Control	14	12.734	0.319	0.085
	Experimental	14	12.819	0.349	0.093
Driving the ball around cones and shot on goal (seconds) – final test	Control	14	12.389	0.318	0.085
	Experimental	14	11.916	0.323	0.086

Table 13. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Keeping the ball in the air (success) – initial test	Equal variances assumed	0.107	0.746	0.183	26	0.856	0.143	0.782	-1.464	1.750
	Equal variances not assumed			0.183	25.815	0.856	0.143	0.782	-1.465	1.751

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Keeping the ball in the air (success) – final test	Equal variances assumed	0.199	0.660	-3.737	26	0.001	-2.143	0.573	-3.322	-0.964
	Equal variances not assumed			-3.737	25.294	0.001	-2.143	0.573	-3.323	-0.962
Driving the ball around cones back and forth (seconds) – initial test	Equal variances assumed	8.601	0.007	-1.693	26	0.102	-0.607	0.359	-1.344	0.13
	Equal variances not assumed			-1.693	17.251	0.108	-0.607	0.359	-1.363	0.149
Driving the ball around cones back and forth (seconds) – final test	Equal variances assumed	2.665	0.115	3.514	26	0.002	0.993	0.283	0.412	1.574
	Equal variances not assumed			3.514	22.045	0.002	0.993	0.283	0.407	1.579
Driving the ball around cones and shot on goal (seconds) – initial test	Equal variances assumed	0.100	0.755	-0.668	26	0.510	-0.084	0.126	-0.344	0.175
	Equal variances not assumed			-0.668	25.790	0.510	-0.084	0.126	-0.344	0.175
Driving the ball around cones and shot on goal (seconds) – final test	Equal variances assumed	0.001	0.973	3.903	26	0.001	0.473	0.121	0.224	0.722
	Equal variances not assumed			3.903	25.993	0.001	0.473	0.121	0.224	0.722

Discussions

Test – Keeping the ball in the air
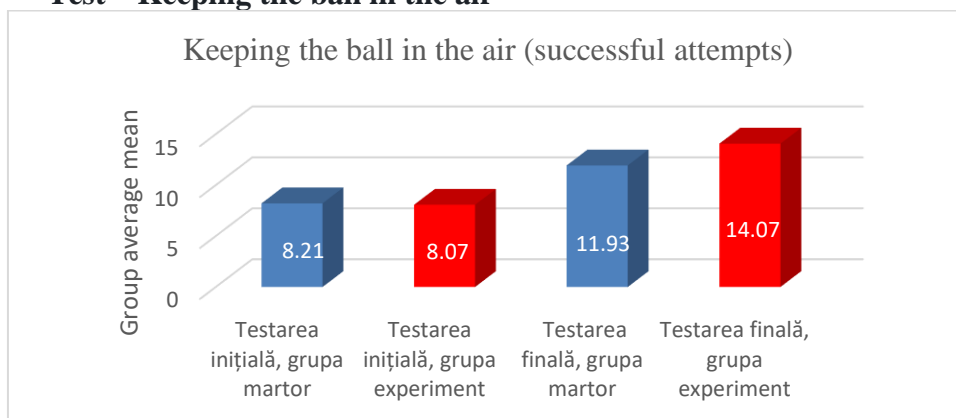
Graph 1. Arithmetic mean for test one, initial and final testing

At the initial test, for the number of successes when keeping the ball into the air we determined an average value of 8.21 with a standard deviation of 2.155 for the control group and an average value of 8.07 with a standard deviation of 1.979 for the experimental group.

On analyzing the results of the final test for the number of successes when keeping the ball in the air, the athletes in the control group had an average value of 11.93 with the standard deviation 1.385, which represents a progress of 45.27% compared to the initial test. In the case of the experimental group, the final test

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resulted in an average value of 14.07 with the standard deviation of 1.639, that is a progress of 74.35%.

After doing the t test to identify the difference between the averages of two paired samples, when comparing the values obtained by the control group at the initial test, respectively at the final test, we obtained the value t = -9.328 which, compared to the value corresponding to the number of cases in the Fisher table for the significance threshold p<0.001, shows that there are significant statistical differences between the values obtained at the initial test, respectively at the final test for the control group. The t test shows statistically significant differences both between the number of successes when keeping the ball in the air at the initial test compared to the final test and for the experimental group (t= -15.875, p <0.001).

Analyzing the number of successful executions when keeping the ball in the air, the Pearson correlation test shows that there is a strong positive correlation between the initial test and the final test values, both for the control group (r = 0.727, p = 0.003 <0.05), as well as for the experimental group (r = 0.710, p = 0.004 <0.05).

Analyzing the results of the initial testing for keeping the ball in the air, the Levene test confirms the equality of the variation of the two groups: f = 0.107 and p = 0.746> α = 0.05. Thus, the result of the t test is read on the first line of the table (Equal Variaces Assumed). Because t = 0.183 and sig (2-tailed) or p = 0.856> α = 0.05 or taking into account that the limits of the trusted interval for the difference between the average groups (95% CI for the Mean Difference: (-1.464, 1.750)) contains the zero value, it results that there are no significant differences between the average values recorded for the two groups (control and experimental).

In the case of the final test for keeping the ball in the air, the Levene test also indicates the equality of the variations of the two groups (f = 0.199 and p = 0.660> α = 0.05). Because the value of the test is t = -3.737, and p = 0.001 <0.005 and the limits of the confidence interval for the difference between the averages of the two groups (-3.322, -0.964) does not contain the 0 value, there are significant differences between the number of successful executions at the final test when keeping the ball in the control group and the number of successful executions of the experimental group. The average value which is greater than 17.96% for the experimental group compared to the control group at the final test shows that the training program was effective.

Test – Driving the ball around cones back and forth
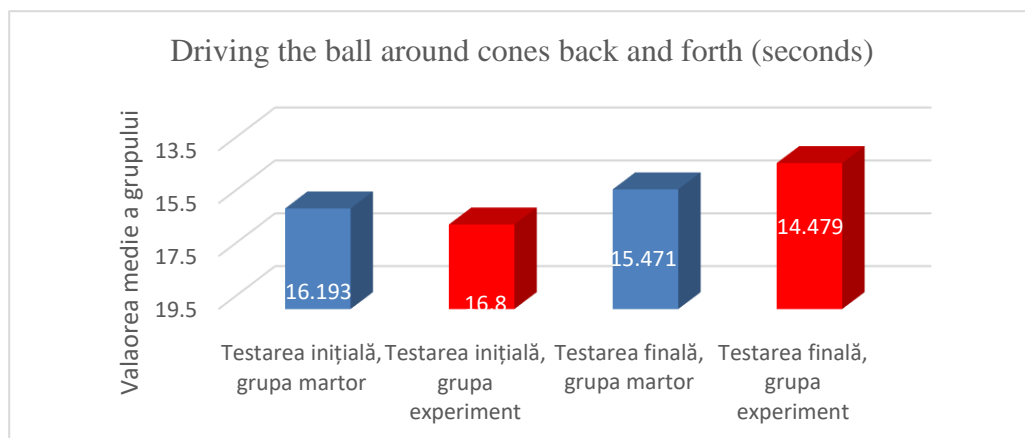
Graph.2 Arithmetic mean for test two, initial and final testing

When driving the ball around cones back and forth at the initial test an average value of 16.193s with the standard deviation of 0.509 for the control group was obtained, and an average value of 16.8s with a standard deviation of 1.242 for the experimental group.

At the final test the average value for the control group was 15.471s with the standard deviation of 0.568 which represents a decrease by 4.45% in the execution time compared to the initial test. For the experimental group we obtained at the final test an average value of 14.479s with a standard deviation 0.892 resulting in a decrease by 13.82% in the average number of seconds compared to the initial average.

After doing the t test for paired samples when driving the ball around cones back and forth, there were statistically significant differences between the initial test and the final test for the control group (t = 11,603, p <0.001), but also for the experimental group (t = 9.45, p <0.001).

When driving the ball around cones back and forth we obtained very strong significant correlations (p <0.05) between the initial and final tests in the case of the control group (r = 0.912, p <0.001), but also in the case of the experimental group (r = 0.674, p = 0.008).

For the test of driving the ball around cones back and forth, the variations of the two groups were not equal in the initial test (f = 8.601, p = 0.007 <α = 0.05) while they were equal in the final test (f = 2.665, p = 0.115> α = 0.05). The t test for two independent samples has shown that there is no statistically significant difference between the average number of seconds obtained by driving the ball around cones back and forth in the control group, respectively the experimental group compared to the initial test (t = -1.693 , p = 0.109> α = 0.05, CI for the Mean Difference: (-1.363, 0.149)). There were significant differences between the control group and the

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experimental group in the final test (t = 3.514, p = 0.002 <0.005, but for the Mean Difference: (0.412, 1.574). The average number of seconds obtained at the final test of the experimental group was by 6.42% smaller compared to the control group.

Test – Driving the ball around cones and shot on goal
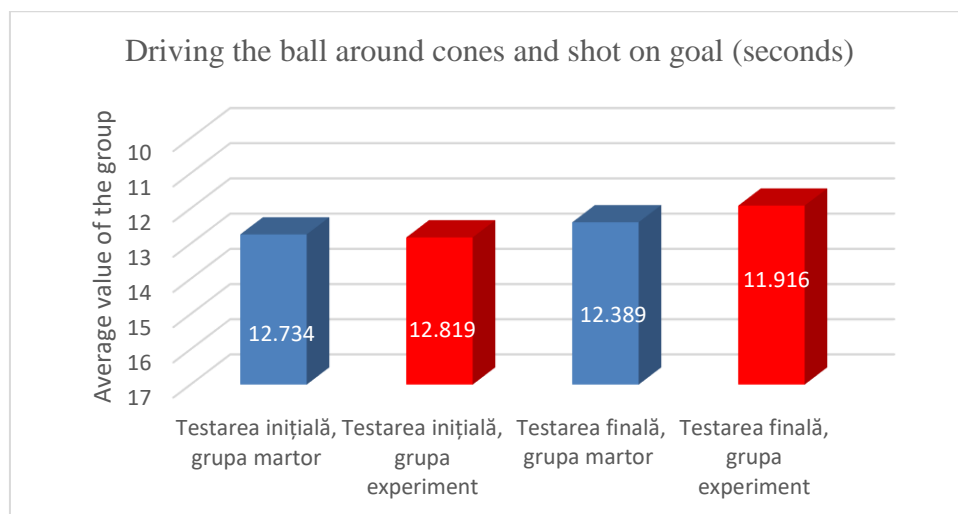
Graph.3 Arithmetic mean for test three, initial and final testing

In the case of driving the ball around cones and shot on goal test we obtained an average value of 12.734s at the initial test with a standard deviation of 0.319 for the control group, and an average value of 12.819s with a standard deviation of 0.349 for the experimental group.

For the final test the average value for the control group was 12.389s with a standard deviation of 0.318 which represents the decrease of the average number of seconds by 2.72% compared to the initial test. For the experimental group we obtained an average value of 11.9157s at the final test with a standard deviation 0.323 resulting in a decrease of the average number of seconds by 7.04% compared to the initial average.

The results of the t test for paired samples in the case of driving the ball around cones and shot on goal indicated that there were statistically significant differences between the initial test and the final test for the control group (t = 10.098, p <0.001), but also for the experimental group (t = 12.258, p <0.001).

For driving the ball around cones and shot on goal (seconds), very strong significant correlations (p <0.05) resulted between the initial and final tests in the case of the control group (r = 0.919, p <0.001), but also in the case of the experimental group (r = 0.666, p = 0.009).

For driving the ball around cones and shot on goal, the equality of variations in the two groups for the initial test (f = 0.100, p = 0.755> α = 0.05) resulted. The t test for independent samples showed that there were no statistical significant differences between the averages of the two groups for the initial test (t = -0.668, p = 0.510> α = 0.05).

At the final test for driving the ball around cones and shot on goal, it turned out that the variations of the groups (control and experimental) were equal (f = 0.001, p = 0.973> α = 0.05). The t test confirmed the difference of the averages of the two groups in this sample (t = 3.903, p = 0.001 <0.005, but for the Mean Difference: (0.224, 0.722)). The average lower values by 3.38% of the experimental group compared to the control group confirmed the effectiveness of the training programs.

Conclusions

The research carried out allows us to draw several conclusions. When using a new training structure, the first impression is very important for students, for this reason, the teacher must know all the exercises and prepare the session in advance and with clear objectives. The training sessions must be adapted to the participants' abilities. The teacher must make students understand the seriousness of their preparation. After they understand this, the session will be much more enjoyable and full of play and learning opportunities. However, the teacher must be prepared to adapt the training session and exercises if he considers the changes will increase the motivation and involvement of children.

From the point of view of the recorded results, a statistically higher performance of the students in the experimental group can be noticed compared to the students of the control group (p <0.05) at all tests. At the same time, we also noticed significant progress obtained by both groups between the initial and the final testing. Thus, we can say that the use of the method has improved the technical skills of the students in primary school, who make up the school football team, fact which proves the efficiency of their training program, based on the G.A.G. method and which validates the purpose of the research.

It was found that the set of control tests used to verify the research was appropriate, this aspect being supported by the following arguments:
• they were attractive and stimulating for students, engaging them in most of the cases;
• the tests assessed the acquisitions at the level of technical skills and highlighted the obvious progress of the students.

The most important aspect of the training is that this method must attain the objectives proposed by the teacher for the training sessions. The session, at this age, should be made up mainly of games with a small number of players. The main way in which students progress and improve their technical skills is by playing a lot; thus,

the students have fun and reach their training objectives proposed by the teacher. Hence, the modern approach to training.

It is worth mentioning that these students should not be treated as small adults; sessions prepared for adults should not be copied to be used for those with children.

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