



SHOOTING EFFECTIVENESS IN BASKETBALL AMONG STUDENTS IN THE 8TH GRADE

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ABSTRACT

Basketball, as a component of the core “Sports Games” in the secondary school curriculum, occupies a central place among the wide variety of means of physical education used for the development and progress of the young generation. One of the main problems in sports education is technical training. It is achieved through technical education, which is actually a long and complex process. Given the age and abilities of the students, it is necessary to present the learning tasks so that the game situation is perceived as accurately as possible. One of the ways to increase the effectiveness of the learning process in physical education is through the correct selection of means and the combined use of specific knowledge and experience in the form of a mastered model of the technique that must be skillfully applied in the game.

Keywords: sports games, technical elements, curriculum, preparatory sports exercises

INTRODUCTION

Basketball sport training consists of the following types – physical, technical, tactical, theoretical and psychological. Each type of training has its own purposes and tasks, uses specific means and methods according to the age and gender of the people involved, the stages of training, and the degree of preparation of the students. (1)

In specialized sport literature, basketball is probably the most collective sports game. The weak technical training of even one player from the team immediately hinders the actions of the others and spoils the efforts of the whole team. On the other hand, the great number of mistakes breaks the game and makes it unpleasant to watch. That is why the training of the basic skills is the most important aspect in basketball. It is no coincidence that the famous American coach A. Auerbach (2) points out that for a player who possesses the basic skills, it would be a simple matter to adjust to any offense or defense system in the game. Technical training is an essential aspect of modern sports training

in basketball. It is a primer without which it is not possible to master the other elements of the basketball game. According to many local and foreign experts who play a leading role in the training of basic skills, this should be done not with exercises that look impressive on the surface, but only with such that are intended to be applied in the game.

Shooting in the basket – this is the most important technical element in basketball. It has to be taught just after the keeping, passing and catching of the ball are mastered sufficiently. The leading sports educators in the basketball field hold the opinion that the best way to develop the basic basketball skills, including the shooting in the basket, is through performing multiple repetitions using different techniques. Subject to tactical training in basketball are the organized actions of the entire team, a group of players or individual players for leading the game. This is a creative application of means, methods and forms of offense and defense to win the game. When the basic technical skills are considered in terms of biomechanics of movement, they are a constituent part of the technique. When these techniques are used in a particular game situation, they become a means of tactics. When these means are used in organized group or team actions, they are methods of keeping the game. Forms determine

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the choice of passive or active ways of applying the means and methods. (3)

The importance of psychological training in the process of sports activity has been a topic of discussion for years. According to specialists, in the future, the difference between sports players would be based more on psychological factors rather than on physical ones. According to V. Tsvetkov (4) attention is a part of every activity and has a significant influence on the game actions of basketball players. Considering the needs of practice, he recommends the work to be differentiated by positions for increasing the concentration of attention. In order to obtain substantial growth of both properties – concentration and resistance, the following methods have to be used: exercise which requires quick reactions; exercise in complex conditions; increasing the requirements for quality performance of the exercise; exercise for long periods combined with the above requirements in a state of fatigue, emotional excitement and artificially created extreme conditions.

According to T. Simeonova (5), the structure and characteristics of the teaching of sports games – basketball, is in line with the European trends. The compulsory preparation of students in basketball according to the State educational requirements and standards is based on the principles for variety of the sports-technical and tactical competence, practical skills and habits and variety in the development of the morphosomatic characteristics and biomotor abilities of the students.

The acquisition of educational content in basketball at school serves as a basis for sports competition activities in this dynamic and emotional sport, as well as for meeting the needs of separate activities.

Education in the pre-secondary stage of the primary educational level 5. – 8. grade is organized in accordance with the Law for degree of education, the educational minimum and curriculum. (6)

Educational content in core “Sports games” – Basketball requires the student how to learn pass and catch the ball, keeping the ball with right and left hand without visual control, static shot and shooting after keeping the ball, shooting from distance, participating in group actions in offense, individual actions – crossing, stealing the ball and individual defense. (7)

Based on a research of various literature sources, internet resources as well as a summary of the pedagogical experience, it was discovered that the special training exercises for the improvement of basketball shooting accuracy are not used effectively enough.

By looking for new opportunities and alternatives for the improvement of basketball technique, and offering an educational curriculum comprised of sports training exercises and games, we will provide a way to deal with the tasks set by the state requirements and standards for the school subject Physical education and sports. The aim of the research is to be developed and use an educational curriculum of means, methods and forms that are to be applied during the school practice and module education. The aim of the sports training exercises that are used is to improve the technical element – shooting.

METHODOLOGY

Working on the aims and objectives of the experiment two groups were formed – Control group /C.G./ consisting of 46 boys, and Experimental group /E.G./ consisting of 42 boys. The experiment was conducted in the time period September 2015 – May 2016 with 88 students from the 8th grade from First Language School – Varna and High School of Mathematics and Science “Nancho Popovich” – Shumen. At the beginning and end of the research students were subject to the following tests: TEST № 1 – Spot shooting, clockwise. 15 shots from 6 different spots without defense; TEST № 2 – Performance of 15 consecutive shots from the free throw line; TEST № 3 – Time for shooting from the free throw line. Every participant performs fifteen shots. The time is counted from the moment of receiving the ball to the shooting in the basket; TEST № 4 – Foul shot. During the game, after a foul in the paint, every player performs 15 shots; TEST № 5 – Performance time of a foul shot. In the attempts in TEST №4 for performance of fouls during the game, time is measured from the moment the referee passes the ball until the shooting of the ball towards the basket; TEST № 6 – Group Bourdon Test. This test is designed to assess the concentration of attention. The test consists of the following: on a sheet with 40 lines and 40 characters from left to right are tracked all the letters of each line and A and B are crossed out with a slash. One has to work as quickly as possible. The time for work is 5 minutes. The start is signaled, after the end a vertical line is drawn to the point of tracking;

TEST № 7 – Shooting on the move after catching a pass. It is done from both sides of the basket after a catch of a passed ball (from the best trained student in the class) with a 1-2 step. Successful shots are counted from the 10 made attempts on each side of the basket – strong and weak side; TEST № 8 – Shooting after keeping an angle of 30 degrees – 40 degrees to the right and to the left of the basket – 10 attempts on each side. Start from the center of the court. At the inconvenient side the ball is kept with the weak hand, and the shot is performed with the other. Successful shots are counted. Through a

methodology of teaching more special preparatory exercises with our experimental group (diagnosed with nine tests), to achieve an increase in the shooting efficiency of the students, which is the main task set in our research. At the end of the experimental period, the experimental group significantly outperformed the control group in terms of shooting accuracy in learning games. This is evidence of a successful choice of means, methods and their combination reflected in the proposed new curriculum.

RESULTS

Table 1. Statistical parameters of control group – beginning/end of the experiment

№	n	X_1/ X_2	S_{X_1}/ S_{X_2}	$V \%_1/ V \%_2$	X_{max1}/X_{max2}	X_{min1}/X_{min2}	R_1/ R_2
1	46	2,65/3,87	0,62/0,78	25,73/20,15	4/5	2/3	2/2
2	46	2,50/4,35	1,33/1,01	53,20/23,22	6/6	1/3	5/3
3	46	1,41/2,30	0,43/0,44	30,49/19,13	2,40/3,28	1,04/1,90	1,36/1,38
4	46	1,43/2,96	0,65/0,63	45,80/21,28	3/4	1/2	2/2
5	46	1,73/2,60	0,20/0,44	11,56/16,92	2,2083,76	1,56/2,10	0,64/1,66
6	46	0,73/0,78	0,09/0,05	12,33/6,41	0,89/0,89	0,50/0,72	0,49/0,17
7	46	2,83/4,13	1,01/0,96	35,69/23,24	5/6	2/3	3/3
8	46	3,24/4,22	1,10/0,99	33,95/23,46	6/6	2/3	4/3

The analysis of the statistical parameters of the data from the described tests is done both for the control group and the experimental group.

Table 1 shows the summarized data for the control group of boys at the beginning and end of the experiment. In the table, the numbers 1, 2, 3, 4, 5, 6, 7, 8 stand for the tests that were conducted, and **Table 2** shows the data for the experimental group.

A compulsory and essential part in the search of statistical accuracy is the use of Student's t-test and the respective guarantee probabilities rated in percentages. Based on the comparative analysis of

results between the control and experimental group, the working hypothesis shall be confirmed.

At the beginning of the experiment, we receive high values for the coefficient of variation for both groups, which proves the different abilities of the students. In regard to the discussed values of variability, some additional interpretations could be made. At the stage of theoretical study and review of the existing methodology there are not any exercises set for improvement of shooting, and no foul shots are performed in the practical games.

Table 2. Statistical parameters of experimental group, boys – beginning/end of the experiment

№	n	X_1/ X_2	S_{X_1}/ S_{X_2}	$V \%_1/ V \%_2$	X_{max1}/X_{max2}	X_{min1}/X_{min2}	R_1/ R_2
1	42	2,24/5,53	0,96/0,97	42,86/17,57	4/7	1/4	3/3
2	42	3,54/6,95	1,69/1,27	47,33/18,27	7/9	1/5	6/4
3	42	1,38/4,20	0,34/0,32	24,64/7,62	1,94/4,74	0,96/3,58	0,98/1,16
4	42	1,90/5,29	0,69/1,13	36,32/21,36	3/7	1/3	2/4
5	42	1,76/4,39	0,23/0,18	13,07/4,10	2,02/4,68	1,42/4,14	0,60/0,54
6	42	0,75/0,87	0,07/0,05	9,33/5,75	0,89/0,97	0,62/0,80	0,27/0,17
7	42	2,57/5,71	0,99/0,77	38,52/13,48	4/7	1/5	3/2
8	42	3,05/6,12	1,12/0,93	36,72/15,20	5/7	1/4	4/3

In the reviewed literature, the fact that the time for performance of the shooting/ foul shot is of great importance is not reflected on, and the existing methodology does not emphasize on spending more time concentrating prior to performing. This is also confirmed by the initial values of time of the experimental group – respectively 1,38 seconds from the free throw line and 1,76 seconds for performing a foul shot. The time for which a foul shot is performed in the control group, $X = 1.73$ seconds compared to the time for shooting from the free throw line – $X = 1.41$ seconds rises. If we make a comparison between the data for the control and the experimental group at the beginning and at the end, almost even abilities will be observed. Both groups show considerably low accuracy for static shooting and on the move. Both groups show a GOOD index for the coefficient of concentration of attention, respectively 0,73 and 0,75.

Of great interest to the present study are the changes which have occurred in the groups during the school year in relation to the analyzed indicators. If we compare the results of the control group from the beginning and the end of the experiment, no significant changes will be observed for the average values for shooting accuracy. Despite the increased average values for accuracy from $X = 2,65$ to $X = 3,87$; static shooting from $X = 2,83$ to $X = 4,13$; shot after a pass from a partner from $X = 3,24$ to $X = 4,22$, and shooting on the move, it cannot be assumed that this increase is due to the applied methodology, the values of Student's t-test – 1,13; 1,30; 1,32 and the confidence level $P / t/ = 35 \%$; 67% and 46% .

Therefore, the improved shooting is due to unspecified side factors. Considering the decrease in the rank of variation and the variational coefficient at the end of the experiment, we can talk of relatively matching shooting abilities of the students during the basketball education.

A considerable increase is observed in the shooting from the free throw line- from $X = 2,50$ to $X = 4,35$, however, we cannot assume that this increase is a result of the applied methodology due to the values of Student's t-test – 1,51 and the confidence level $P / t/ = 59 \%$. If we compare the data for the control group from the beginning and end of the experiment,

no significant changes in the average values of the coefficient of concentration of attention could be observed – GOOD.

There is an increase of about a second in the performance time of a foul shot and the shooting from the free throw line at the end of the experiment. This shows that in the course of teaching students have evaluated the influence of time on the improvement of the shooting accuracy.

Comparing the beginning and end results, a considerable increase can be observed in the accuracy of static shooting and on the move. For static shooting from $X = 2,24$ to $X = 5,52$; after a pass from a partner from $X = 2,57$ to $X = 5,71$; and after keeping the ball from $X = 3,05$ to $X = 6,12$.

From the obtained data, it can be assumed that the targeted use of special preparatory exercises is a factor for increasing the shooting effectiveness. This could also be proven by calculations of Student's t-test and the confidence level $P / t/$ that is within 98% .

There is no doubt that the main reason for these results is the structure (means, methods and their combination) of the experimental teaching program. The equal abilities of individual students are reflected in the decrease of the coefficient of variation at the beginning and at the end of the experiment $V\% - 42,86 \%$ to $17,57 \%$ for static shooting, and for shooting on the move from $36,72 \%$ to $15,70 \%$. The impact of the changed program of the experimental group could also be proved by the decrease in the rank of variation as a sign of improved shooting abilities of the students.

If we compare the start and end indicators for the experimental group, we will see that the resulting difference for the coefficient of attention is from GOOD to VERY GOOD.

The increased concentration of attention is a factor for the improvement of the shooting accuracy from the free throw line from $X = 2,22$ to $X = 6,95$ which could also be proved by calculating Student's t-test (**Table 3**). The change of 4,73 units is confirmed by confidence level $P / t/ = 96 \%$. There is no doubt that the main reason for this change is the structure of the experimental teaching program.

Table 3. Significance of the differences between the average levels - experimental group

Test	BEGINNING		END		d	t	Pt
	X	S	X	S			
1	2,09	0,47	5,52	0,92	3,43	-2,87	96%
2	2,22	1,35	6,95	1,27	4,73	4,21	96%
3	1,48	0,63	4,20	0,32	2,72	3,88	95%
4	1,66	0,39	5,29	1,13	3,63	-3,75	97%
5	1,36	0,51	4,39	0,18	3,03	4,90	98%
6	0,79	0,31	0,87	0,05	0,08	5,59	97%
7	2,20	1,20	5,71	0,77	3,51	5,44	95%
8	2,81	1,13	6,12	0,93	3,31	3,86	95%

The improved accuracy during the time of play on the performance of a foul shot from $X = 1,66$ to $X = 5,29$ is a result of the applied methodology as well. This can be proved by Student's t-test which is 3,75 which means confidence level $P/t = 97\%$.

As a result of the positive effect of the experimental program, the performance time for static shooting has increased from $X = 1,38$ to $X = 4,20$ seconds at the end of the study, and the performance time for a foul shot from 1,76 to 4,39 seconds. The confidence levels for the received differences give us a reason to assume that they are the result of the impact of the teaching program used during the pedagogical experiment in sport.

The change in the time of shooting from the free throw line and the foul shot prove that students realize the interrelation between the concentration of attention and the shooting accuracy. In most of the cases, when the concentration time is longer, the shot is successful.

CONCLUSIONS

1. It can be argued with high probability guarantees that during the time period of the pedagogical experiment, a considerable rise in the level of all examined signs could be observed among the boys from the experimental group. Our opinion is due to the pedagogical process of education with the applied methodology and basketball program.
2. At the end of the research, certain stabilization of the indicators was observed

in the experimental group. It retains its homogeneity in terms of technical preparedness – shooting, as well as psychological preparedness – concentration of attention.

3. It is beyond dispute that at the end of the test period the experimental group is significantly superior to the control group in terms of the level of shooting accuracy in the games. This is a proof for the successful choice of means, methods and their combination reflected in the proposed new curriculum.

REFERENCES

1. Tsvetkov, Vl. et al, Basketball., NSA, Sofia, Bulgaria, 2005
2. Auerbach, A., Basketball for coaches, players, audience, M&F, 1979
3. Simeonova, T., N. Tsvetkova, Basketball - Learning Aid, university press "Ep. K. Preslavski", Shumen, 2006
4. Tsvetkov, Vl., Concentration and attentional stability in highly skilled basketball players, "TM", 1988.
5. Simeonova, T., Control and evaluation of the technical preparation in basketball of students in grades 5-8, monograph, "Ep. K. Preslavski" Secondary Educational Institution, Shumen, 2015.
6. The Law for degree of education, the educational minimum and curriculum.
7. State educational requirements (standards) for the subject "Physical Education and Sports"