

AN OBSERVING STUDY ON THE USE OF PROBLEM-SOLVING IN FOOTBALL FOR THE 11–12-YEAR-OLD CHILDREN

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Abstract: *In this study, we follow the changes generated by applying the problem-solving method based on an observation sheet for two groups of 40 boys aged between 11 and 12 years from “Steaua Bucharest” Children and Junior Centre and from the “Mircea Eliade” Sports High School. Certain effects of the application of this method are represented by: endowing the player with skills, knowledge, and attitudes in accordance with the age-specific objectives, increasing the degree of real participation, developing attention and concentration as well as improving the level of acumen and creative thinking of the athlete within the experimental group.*

Key words: *problem-solving, football, children.*

1. Introduction

A fundamental feature of the football game is the complexity resulting from the variability of competition situations and conditions, the diversity of motor responses during the football game as well as the interaction which includes all the physical, technical-tactical and psychological components. A fundamental feature of the football game is the complexity resulting from the determining factor in choosing this theme is the need to identify certain adjustments in the player's behaviour for an increased efficiency during the game. Problem-solving is a method which consists in presenting a player, the performance or solution difficulties drawn up intentionally by a coach. By solving them, the player learns something new, which requires

imagination and creativity from the coach and the players. “Problem-solving develops creative thinking, imagination, interest, curiosity and other traits or qualities required in the activity of any subjects” [2, p. 98]. As a method frequently encountered in performance sport, mainly in sports games, it requires the creation of problem situations that require the athletes' special attention in finding the most effective solutions”, but also “practice by means of deduction and creative thinking” [4, p. 73].

The application of this method consists of: endowing the player with skills, knowledge, and attitudes in accordance with the age-specific objectives, increasing the degree of real participation, developing attention and concentration as well as improving the level of acumen and creative thinking of an athlete.

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According to Aranda A. [1], when we train a group of children we have to ask ourselves what profile of players we want to develop, players who do what they are told, or intelligent players who can think for themselves, who are independent and able to interpret the football game, players who can deal with game situations, players who can create surprise situations during the game.

Wein H. [5], suggests a model for developing the football activity in children, designed on the problem-solving method leaving aside the analytical method. This model does not require the children any football experience, and the exercises should be adapted to the child's possibilities and not the other way around.

Lapresa D., [3, p. 89], considers that the errors normally committed during the game are not only errors which are related to the technical-tactical level, but they are rather deficiencies in the decision-making process. This requires a learning style towards the problem-solving method.

In the present study, we follow the changes generated by applying the problem-solving method by using an observation sheet on two groups of 40 boys aged between 11 and 12 years from "Steaua Bucharest" Children and Junior Center and from the "Mircea Eliade" Sports High School. The research is carried out during a period of 4 months (51 practice sessions).

2. Research objectives

For this research we aimed at the following objectives:

- highlighting the possibility to use problem-solving in the football game;
- emphasizing the effect produced by using problem-solving in training 11-12-year-old children at football;

To achieve the purpose of research, we performed an experimental study which was based on the following hypothesis: if

we use problem-solving while training the 11-12-year-old football players, three times a week, and if we use technical exercises in different ways, then the technical and tactical level will improve.

3. Materials and methods

Methods used in the research: bibliographical study; observation; experiment; statistical-mathematical method.

Assessment indicators: arithmetic mean, minimum values, maximum values. To demonstrate this aspect we used the recording of 10 competition matches (within the Bucharest City Football Championship) using as a tool. The observation sheet regarding the performance of the technical elements and of the individual and collective tactical actions during the match. This sheet was designed based on the literature study, on the game recording sheet and according to the individual experience and we wanted to assess:

- the technical performance by analysing the number of times receiving and passing the ball successfully (to reach the teammate) and running the ball in the efficient direction;
- performance of the *individual tactics* by interception, feint and dribbling;
- performance of the *collective tactics* by the players' efficiency in case of numerical inferiority, equality and superiority.

Research was carried out at the "Steaua" Bucharest Sports Base. The study's subjects in a number of 40 children, 11-12 years of age, were divided equally into two groups (an experimental group with 20 children and a control group with 20 children). Our research lasted a period of four months, from 17th February to 17th June 2014. To highlight the difference in performance for the children in the experimental group compared with the children in the control group, we organised the training in different ways. With the

control group we worked on the technical and tactical training analytically and globally. These requirements were structured into three categories, according to the number of participants involved in the exercise performance. For the experimental group, we added problem-solving as a method of training, i.e. we included in the training activity at each practice session at least 3 types of exercises. The first type of exercises aims at the acquisition of individual execution techniques carried out by relay races, either by choosing paths according to the visual signal imposed by the coach (for example: three colours that are to be allocated to three paths. The green circle path to practise receiving is to be carried out with the interior and exterior side of the right foot, the red square path to practise receiving is to be carried out with the inside and outside of the left foot, the blue triangle path to practise receiving is to be carried out with the inside and outside of both right and left foot. For the second type of exercises in active confrontation relations with numerical inferiority, equality and superiority, individual tactics (it applies to a 2 against 2 game; 3 against 3; 2 against 1; 3 against 1 and 3 against 2); for the third type of exercises dealing with collective tactics which meets the problem-solving requirements, games between 2 teams of 4, 5 and 6 players are organised complying with various tasks imposed by the coach (for example: a player's approach to the counter offense in side areas of the pitch, by individual action in one-to-one confrontation relation). At each practice session, we included exercises from the three categories to create a variety in the application to solve problems by finding the best solutions. The control group carried out their practice complying with the training requirements of the analytical and global methods, except training involving problem-solving.

4. Results and discussions

In the 2013-2014 second-round competitive season, we attended the matches organised by Bucharest Municipal Football Association with the 11-12 year-old juniors from F. C. "Steaua" Bucharest (the experimental group). At the same time, we observed the 11-12 year-old junior team matches at the "Mircea Eliade" Sports High School (the control group). We recorded 10 matches, in which the experimental and the control groups **elements and actions during the matches** participated, on an observation sheet for the period from 17th February to 17th June 2014.

This is structured according to the three categories of exercises worked during the training of the experimental group. For individual technique, we found it appropriate to observe the technical procedures most often used in the football game for children, namely: receiving and passing the ball as well as controlling the ball. When observing the individual tactics, we focused on the ball's interception, and then to feint and dribbling and for the collective tactics, we chose the observation of the confrontation relation, which is essential in football in terms of numerical inferiority, equality and superiority. The data monitoring included two collaborators from the "Steaua Bucharest". Children, each recording data from one category from those shown in the observation sheet. Data are represented by the number of successful procedures and actions for the experimental and the control group in the 10 championship matches.

Regarding the receiving and passing of the ball (tab. no 1), there is a series of aspects, related to the performance from the first match to the tenth recorded on the observation sheet.

Table 1

The results of the observation sheet on the performance of the individual and collective technical

OBJECTIVES			M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	Result	Mean
INDIVIDUAL TECHNIQUES	Receiving and passing	E	66	71	59	62	72	56	67	73	64	78	668	66.8
		C	59	61	54	62	58	66	55	64	71	73	623	62.3
	Controlling the ball	E	29	33	25	40	42	27	30	46	41	39	352	35.2
		C	24	31	25	23	20	34	32	26	22	32	269	26.9
INDIVIDUAL TACTICS	Intercepting	E	22	26	16	20	41	30	25	33	29	37	279	27.9
		C	18	21	19	20	24	22	17	25	19	17	202	20.2
	Feint and Dribbling	E	21	17	26	15	19	21	27	22	16	29	213	21.3
		C	17	19	16	15	18	17	20	18	17	22	179	17.9
COLLECTIVE TACTICS	Inferiority 1 vs. 2 2 vs. 3	E	8	6	7	8	5	9	7	6	8	5	69	6.9
		C	7	8	6	5	5	7	6	5	8	7	61	6.1
	Equality 2 vs. 2 3 vs. 3	E	7	6	9	7	8	9	6	5	9	8	74	7.4
		C	5	4	6	5	4	5	6	7	7	6	55	5.5
	Superiority 2 vs. 1	E	9	8	11	6	9	9	6	8	8	5	79	7.9
		C	8	6	8	5	9	7	6	5	7	6	67	6.7

Legend : E = experimental group, C = control group, M 1-10 = match 1-10,
Maximum value = , Minimum value =

- for the experimental group, there was a total of 668 ball receptions and passes in the 10 matches. The average of 66.8 for receiving and passing the ball, recorded for the 10 competitions, shows that the experimental group practices a combined game focusing on the ball possession and collaboration between positions and slots. We can observe an ascending dynamics on the number of ball receptions times for receiving recorded from the first match where there was a value of 66 to the last match where there was 78. This explains

the acquisition of knowledge expertise and its use in solving the situations imposed by the pressure and the number of opponents in the area.

The control group recorded a number of

623 ball receptions followed by passes with an average of 62.3. It should be noted that the use of the global and analytical method and the technical training was progressive from the first to the tenth stage, respectively from 59 to 73. Comparing these figures with the average of the experimental group, we can notice that these procedures were less successful.

Therefore, we can observe a total number of ball receptions and passes greater in the experimental group by 45 than in the control group.

Regarding the *ball control*, we can highlight the following:

-The experimental group recorded a number of 352 ball controls with an average of 35.2 per match. This value

expresses the players' preoccupation to take advantage of the spaces left empty by their opponent and controlling the ball on the free space;

- there is an ascending dynamics regarding the number of ball controls recorded from the first match where it had the value of 29 to the last match where it recorded the value of 39 in the experimental group;

- the control group recorded a number of 269 ball controls with an average of 26.9 and an ascending dynamics from 24 in the first match to 32 in the last match.

We can notice a total number of ball controls greater by 83 in the experimental group than in the control group.

The results obtained at *ball interception* highlights the following:

- the experimental group recorded a number of 279 with an average of 27.9 at each match. There is an ascending dynamics on the number interceptions recorded from the first match where it had the value of 22 to the last match where it was 37. Therefore, it results in an involvement of players not only in the construction and attack phases, but also in the defence phase;

- the control group recorded a number of 202 interceptions with an average of 20.2 interceptions per match, and a variable evolution from 18 in the first match to 17 in the tenth match, but also obtaining values of up to 25. The difference of 77 interceptions better in the experimental group to recover the ball from the opponent proves the involvement of the control group in the defence phase.

With respect to feint and dribbling, their number, carried out by the experimental group is 213, with an average of 21.3 per match, and by the control group is 179, with an average of 17.9 per each match. There is an ascending dynamics of the number of feint and dribbling recorded from the first competition where it had the value of 21 to the last competition where it was 29 for the experimental group and

from 17 to 22 for the control group.

Hence, it is clear that the degree of the technical knowledge awareness and of the frequency of the individual action during the game is better than in the experimental group than in the control group.

The results obtained while in *numerical inferiority* emphasize the fact that:

- the experimental group recorded a number of 69 actions in inferiority, with an average value of 6.9 actions.

The number of actions when outnumbered recorded a regression from 8 in the first match to 5 in the tenth match, a fact which demonstrates that the experimental group acquired the technical notions to be applied in defence (marking, doubling) as well as the ability to recover the ball from the opposing team. The control group experienced a number of actions kept at around 7 while being outnumbered. Therefore, a total of 61 actions must to be noted in the 10 matches, with an average value of 6.1 per match, which shows a match approach related more to defensive and less offensive preoccupations.

Regarding the numerical equality, we can observe the following aspects:

- for the experimental group the number of actions related to numerical equality was 74 with an average of 7.4 actions and for the control group, the number of actions was 55 with an average of 5.5 actions.

- an ascending dynamics is observed on the number of interceptions recorded from the first match where it had the value of 7 to the last match where it was 8, and for the control group the number of actions was 5 in the first match and 6 in the tenth match.

The results obtained while in numerical superiority were as follows:

- for the experimental group, there were 79 actions with an average of 7.9, and for control group, we counted 67 actions with an average of 6.7;

- an ascending dynamics is observed on the number of interceptions recorded from

the first match where it had the value of 9 to the last match where it was 5, and for the control group the number of actions was 8 in the first match and 6 in the tenth match.

Thus, we can see a greater preoccupation in the experimental group than the control group while being in numerical superiority.

5. Conclusions

The present research leads to the following aspects:

- based on a comparison of the values for the experimental group (66.8) and for the control group (62.3), there was an increase for receiving and passing the ball which were used by the experimental group, thus, revealing the efficiency of the problem-solving method.

- This fact is supported by the frequency of procedures during the game. By comparing the minimum values (56 for the experimental group and 55 for the control group) and the maximum values (78 for the experimental group and 73 for the control group), we can notice a clear evolution for the experimental group;

- Controlling the ball recorded a significant evolution highlighted by the difference between the minimum value for the experimental group (25) and that of the control group (22), and the difference between the maximum values (46) for the experimental group and (34) for the control group;

- for interception, the minimum values - 16 for the experimental group and - 17 for the control group emphasize a level substantially equal to the use of this procedure during the match, and the maximum values show the degree of the difference in performance between the two groups - 41 for the experimental group and 25 for the control group;

- the same conclusion can be drawn from applying feint and dribbling with an increase in the maximum amount for the experimental group (29) compared to the maximum value for the control group (22);

- For tactics, the maximum values for

the experimental group recorded an increase of the actions in numerical superiority (11) compared to the maximum values for the control group (9). This indicates us the consolidation of the superiority principle in the ball area both in defence and attack;

- the hypothesis according to which if we use problem-solving during practice for the 11-12-year-old football players, three times a week, while doing technical exercises in different ways, we will improve both technical and tactical levels, as well as the motor level, was confirmed.

Finally, we found out that using the problem-solving method during training led to a clear increase for the experimental group compared to the control group. This increase is also supported by the analysis and decision-making ability, creativity in the technical-tactical actions solved while being in numerical inferiority, equality or superiority.

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