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# THE EFFECTS OF PROGRAMMED WORK ON THE DEVELOPMENT OF SPECIFIC MOTOR SKILLS IN YOUNG FOOTBALL PLAYERS

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**Abstract**
The goal of this research was to determine the effects of programmed work on the development of specific motor skills in young soccer players. The sample of subjects in this research were football players aged 11 and 12 and they were divided into two equal groups of 30 entities. All participants are involved in the regular training process in their football clubs. The research problem was to determine whether there are positive effects of programmed work on the development of specific motor skills. A total of 6 variables from the area of specific motor skills were used in the research. The experimental work program was carried out over a period of three months and included 38 training units. After initial testing and successfully implemented programmed work and final testing, a significant impact of programmed work on the development of specific motor skills was determined. Specific motor skills that were evaluated on 6 variables in the experimental group showed a significant difference on 4 variables.
**Keywords:** specific motor abilities, work program, training effects, young soccer players

## INTRODUCTION

Today's footbal game is looking for universal footballers with maximum concentration and precision. Only those players who possess a high level of technical and tactical, psychological and physical preparation can respond to such demands. In the modern selection of players in football, coaches and managers pay great attention to the universality of players, in the sense of dominating in every space that football requires, in situations with the ball, and also in the way of moving without the ball. In the training of young soccer players, maximum attention should be paid to the development of soccer technique along with the complete development of psychophysical abilities that are necessary for the technique to reach its peak.

The specificity of football and team sports is reflected in the fact that it is difficult to single out a certain ability that is of exceptional importance, which means that in football, in order to meet the quality, a player must be optimally prepared in every area of motor skills, as well as in the area of specific motor skills and techniques, the coach's goal should be to enrich the soccer player in the period of accelerated growth and development with the highest possible quality training for the development of the aforementioned abilities. Achievements in footbal specific tests are significantly more influenced by those indicators of motor abilities, which are under the influence of the system for energy regulation, than abilities that are under the influence of the system for regulation of movement (Przulj, 2016). In order for coaches to have a better insight and opportunity for the advancement of their players and therefore increase the possibility of achieving better results, a lot of attention is paid to testing and measuring parameters from the mentioned areas, what is very important is the long-term monitoring of these results on the basis of which we can assess the state football player. In a research paper (Petric, D., 1994) that dealt with the influence of specific motor skills and cognitive dimensions on success in the soccer game on a sample of 108 soccer players aged 16 to 18 years, five factors were determined in the predictor system: factor 1 - curvilinear running speed with a change of direction; factor 2-accuracy of hitting the target with the ball; factor 3- efficiency of the serial processor; factor 4- the efficiency of the parallel processor and factor 5- the speed of guiding the ball. Also in another paper (Rašić, R., 1997) the relationships between the basic-motor and specific-technical abilities of football players who were divided into three age groups (11-13, 14-16, 17-18) were determined. The results of analyzes to assess the differences between the age groups of subjects showed significant differences between all age groups in all variables of basic motor skills, while in the case of specific technique a significant difference was obtained between the groups of subjects, except in the variables for assessing precision with the left and right leg. In the research (Lolic, V., et al. 2011) of the connection between morphological characteristics and motor abilities with the results of specific-motor abilities in soccer came to the conclusion that the mentioned spaces are connected with three pairs of canonical factors. In

the research, 12 variables were used to assess specific-motor skills. Based on the obtained results, it can be concluded that the success in the football game depends significantly on the connection between morphological and motor skills. The goal of every coach is to improve the sports results of his athletes and teams. The analysis of the influence of motor indicators in the specific-motor tests of the soccer game suggests two basic conclusions: the results in the motor tests significantly influence the level of achievement in all analyzed specific soccer tests.

## RESEARCH METHODOLOGY

### Participants

Participants in this research were soccer players aged 11 and 12 who were divided into two equal groups of 30 entities. All respondents are involved in the systematic training process in their clubs.

### Variables

**I) Accuracy assessment tests:**

1) Shooting a small vertical target with the foot from the spot (GAMVCNOM) – Ten balls are placed in one line at a distance of one meter. One rack is placed three meters behind the middle balls and a goal 1x1 meter ten meters in front of the line where the balls are lined up. The test subject's task is to, running slowly to the first ball around the goalpost and using an arbitrary technique, direct the ball with his foot at the goal from the slow movement of the ball that is in place. After the first shot, the test subject runs back around the stand that is placed 5 meters behind the middle balls, then hits the second ball towards the goal and so on. Five balls are kicked with one foot, five with the other foot. The total number of hits with one and the other leg is counted.

2) Shooting a large vertical target with the foot from the spot (GAVVCNOM) - divide the 5x2m goal into three fields with marked points (middle 1 point, near corner 2 points, far corner 3 points), and ten balls are placed in one line at a distance of one meter 10 meters from the goal. The task of the examinee is to send a stationary ball with his foot to the goal from a light movement using an arbitrary technique. After the first shot, the subject goes around the 5-meter stand, then hits the second ball towards the goal, and so on. The ball must not touch the ground before crossing the goal line. Five balls are kicked once, five balls with the other foot. The total number of points is counted for both one and the other leg.

II) Ball handling assessment tests:

3) Hits of rolling balls against the wall - with the foot (UDKLZS) – In front of a flat wall two meters wide, mark a parallel line at a distance of 0.5 meters. The task of the examinee, standing with the ball behind the line, is to hit the wall with the ball as many times as possible within 20 seconds. The timer stands on the side, including the stopwatch, when the examinee sends the first ball towards the wall and counts the shots on the ball within the set time. Correctly performed shots on the ball in a period of 20 seconds are counted.

4) Speed of guiding the ball in slalom (BRZVLS) - Let's place the goal at the starting position with a width of 1 meter, from the start we make a section of a total of 11 meters, from the start to the first meter we put the first rack, after which every next two meters we put one rack up to 11 meters. The subject's task is to pass with the ball in a slalom between the racks using the arbitrary, fastest and safest technique, go around the last rack and return to the same place, i.e. to the same place where the task started. The test is interrupted if the test taker fails to pass between the racks.

**III) Tests for assessing the ball handling speed:**

5) Speed of driving the ball with a change in the direction of movement (BVLPPK) - Stands are placed three meters in front of the starting line, then at a right angle two meters to the right, two meters forward, five meters to the left, three meters forward, three meters to the right and two meters forward . The subject stands with the ball on the starting line with the task of guiding the ball from the outer sides of the stands in the shortest possible time. The timer stands at the last stand and starts the stopwatch when the subject touches the ball at the start, and stops when the subject and the ball cross the finish line. The result in the test represents the performance time of the described motor task with an accuracy of 0.1 seconds.

6) Speed of driving the ball at 20 meters with a start from the spot (BRZVL20M) - from the starting line to the finish line, make a section 20 meters long, mark the start and finish with stands 2 meters wide, from the start at a distance of 3 meters, place stands 2 meters wide where the subject after the start of the lead in that space, he must have two touches, after that, until the end (in the remaining 17 meters), he must have a minimum of three more touches and must pass through the goal gate. The time result is evaluated with an accuracy of 0.1 second.

### Study design

Initially, initial testing of all subjects was done on the specific variables from the area of specific motor skills, then the subjects were divided into two equal groups. During the duration of the experiment (3 months), the subjects in both groups had identical training load parameters, the same frequency (number) of training per week, the same number of matches played, with the difference that the experimental group performed a technical-tactical football training program that included and certain elements intended for improving specific motor skills. The program contained 38 training units with a duration of 60 per unit, the structure of the program was formed mainly on the basis of sensitive phases, the intensity of the load was adapted to the age, with an emphasis on proper mechanics of work as well as a sufficient level of rest.

The experimental program contained warm-up exercises (dynamic stretching, prorpioceptive content or content for the development of power and speed). The main part was reserved for the improvement of technical and tactical tasks. The final part of the training session consisted of stretching exercises with additional improvement of soccer precision. At the end of the treatment, both groups were tested again in an identical way as before the initial measurement. The difference between the final and initial measurement represented the real effects of the training work for both observed groups individually.

## RESULTS and DISCUSSION

Basic descriptive parameters were calculated for all variables, and the paired t test for dependent samples was used to determine the differences for both groups.

**Table 1. (descriptive parameters of the experimental group - initial/final)**

| INITIAL | | | | | | FINAL | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Min** | **Max** | **Mean** | **SD** | **Variance** | **Min** | **Max** | **Mean** | **SD** | **Variance** |
| 1. GAMVCNOM | 1 | 8 | 4,93 | 1,65 | 2,75 | 3 | 9 | 5,96 | 1,44 | 2,1 |
| 2. GAVVCNOM | 9 | 22 | 16,63 | 3,35 | 11,27 | 12 | 25 | 17,10 | 2,99 | 8,99 |
| 3. UDKLZS | 18 | 36 | 27,3 | 4,11 | 16,9 | 22 | 40 | 32,53 | 4,72 | 22,32 |
| 4. BRZVLS | 10,58 | 16,09 | 12,17 | 1,27 | 1,61 | 8,96 | 14,33 | 11,36 | 1,29 | 1,68 |
| 5. BVLPPK | 10,84 | 19,56 | 13,39 | 1,87 | 3,50 | 9,03 | 15,11 | 11,26 | 1,40 | 1,97 |
| 6. BRZVL20M | 3,38 | 5,43 | 4,44 | 0,49 | 0,24 | 3,34 | 5,50 | 4,40 | 0,57 | 0,33 |

LEGEND: 1) Shooting a small vertical target with the foot from the spot (GAMVCNOM) ; 2) Shooting a large vertical target with the foot from the spot (GAVVCNOM) ; 3) Hits of rolling balls against the wall - with the foot (UDKLZS); 4) Speed of dribbling the ball in slalom (BRZVLS); 5) Speed of dribbling the ball with a change in the direction of movement (BVLPPK); 6) Speed of driving the ball at 20 meters with a start from the spot (BRZVL20M)

**Table 2. (descriptive parameters of the control group - initial/final)**

| INITIAL | | | | | | FINAL | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Min** | **Max** | **Mean** | **SD** | **Variance** | **Min** | **Max** | **Mean** | **SD** | **Variance** |
| 1. GAMVCNOM | 3 | 8 | 5,23 | 1,55 | 2,52 | 1 | 8 | 5,46 | 1,60 | 2,57 |
| 2. GAVVCNOM | 11 | 22 | 16,50 | 2,93 | 8,90 | 10 | 19 | 15,35 | 2,2 | 4,87 |
| 3. UDKLZS | 20 | 39 | 28,38 | 5,01 | 25,12 | 19 | 44 | 31,15 | 5,71 | 32,62 |
| 4. BRZVLS | 9,98 | 15,8 | 12,3 | 1,47 | 2,16 | 9,51 | 15,18 | 11,98 | 1,48 | 2,21 |
| 5. BVLPPK | 9,97 | 16,25 | 12,72 | 1,84 | 3,38 | 8,69 | 19,90 | 11,48 | 2,12 | 4,53 |
| 6. BRZVL20M | 3,70 | 6,50 | 4,72 | 0,58 | 0,33 | 3,81 | 5,86 | 4,86 | 1,09 | 1,20 |

LEGEND: 1) Shooting a small vertical target with the foot from the spot (GAMVCNOM) ; 2) Shooting a large vertical target with the foot from the spot (GAVVCNOM) ; 3) Hits of rolling balls against the wall - with the foot (UDKLZS); 4) Speed of dribbling the ball in slalom (BRZVLS); 5) Speed of dribbling the ball with a change in the direction of movement (BVLPPK); 6) Speed of driving the ball at 20 meters with a start from the spot (BRZVL20M)

**Table 3 (T-test of the initial and final and the size of the achieved effects by groups (%) (Level of statistical significance of the t test: (* p < 0.05 ** p < 0.01. *** p < 0.001)**

| | | |
|---|---|---|
| 1. GAMVCNOM | 20,9%* | 4,3% |
| 2. GAVVCNOM | 2,8% | -6,9% |
| 3. UDKLZS | 19,1%* | 9,7% |
| 4. BRZVLS | 7,1%* | 2,6% |
| 5. BVLPPK | 15,9%* | 10,2% |
| 6. BRZVL20M | 0,9% | -7,2% |

LEGEND: 1) Shooting a small vertical target with the foot from the spot (GAMVCNOM) ; 2) Shooting a large vertical target with the foot from the spot (GAVVCNOM) ; 3) Hits of rolling balls against the wall - with the foot (UDKLZS); 4) Speed of dribbling the ball in slalom (BRZVLS); 5) Speed of dribbling the ball with a change in the direction of movement (BVLPPK); 6) Speed of driving the ball at 20 meters with a start from the spot (BRZVL20M)

Specific motor skills were assessed using a total of 6 variables. Two variables were used to assess ability from the area of accuracy assessment, ball handling assessment and ball handling speed assessment. In the field of accuracy, the subjects of the experimental group achieved statistically significant differences in the variable of shooting a small vertical target with the foot from the spot (20.9%). In the control group, no statistically significant differences were found in the mentioned area of specific motor skills. The area of assessment of ball handling consisted of the variables hits of rolling ball against the wall (UDKLZS) and speed of guiding the ball in slalom (BRZVLS). The experimental group achieved statistically significant differences in both variables, while the control group achieved a statistically significant difference in the variable (UDKLZS), however, the percentage of improvement in results is in favor of the experimental group (19.1% / 9.7%). In the field of assessment of the speed of the ball, the variables of the speed of the ball with a change of direction of movement (BVLPPK) and the test of the speed of the ball at 20 meters with a start from the place (BRZVL20M) were applied. Both groups of subjects achieved statistically significant changes in the variable of speed of guiding the ball with a change in the direction of movement (BVLPPK), with a superior percentage of improvement in the results of the experimental group compared to the control group (15.9% / 10.2%). The variable of the speed of driving the ball at 20 meters with a standing start did not show statistically significant differences between the experimental and control groups. According to research (Nikolaidis Theodoros P., 2016), which investigated the importance and quality of sprint performance according to age, it was found that adult players have a greater enhance in sprint performance with and without the ball at a distance of 20 meters. Also (Mendez-Villanueva A., 2011) confirms through research that this sprint distance with and without the ball increases intensively after 13 years, and even more intensively after 15 years, and only reaches its maximum after 17 years. Despite the slight positive changes that occurred in our research in the experimental group (0.9%), we can certainly contribute to a better quality of the first contact with the ball, especially due to the data that significant changes occurred in the average handling of the ball. In summary, on the basis of the statistical parameters of the variables for assessing specific motor abilities, we can conclude that out of 6 variables, the experimental group achieved a statistically significant difference in 4 variables, the control group achieved a statistically significant difference in two variables, the effects of programmed work in this area also go in favor of the experimental groups. In general, we can conclude that the significant differences that have been achieved in the area of specific motor abilities are effectively in favor of the experimental group. The given data can determine the effects of the applied program at the age of 10 and 11 years, with certain additions to the content of the area of coordination and agility. The development of situational-motor abilities at this age is natural and

becomes even more intense under the influence of programmed work, because it is precisely the connection between work on the technical quality of performance and the intellectual development of this age period. In a study (Sharfen H-E., Memmert D., 2019) in which 15 young soccer players aged 13 participated, the effects were confirmed as well as a high degree of correlation in intellectual, motor and specific-motor areas. Also, the benefits of the program that we implemented based on the optimal development of basic-motor abilities, which certainly represent the basis for the development of specific abilities of soccer players, are the result of confirmed hypotheses in the area of specific-motor abilities. The complexity of the development of these abilities was also shown in the research (Hosseini A., 2017) where 17 young soccer players (10-12 years old) participated, where as a result a lot of problems with motor movements and technical performance in movement were observed in young soccer players, precisely because of these limitations the subjects who were part of the program of the experimental research group worked intensively for three months to build the foundations of basic motor skills followed by elements of technique, which proved to be extremely effective in the results.

## CONCLUSION

Based on everything presented, we can conclude the following: the subject of this research was the situational-motor skills of young soccer players. The problem of this research was to determine whether there are positive or negative effects of programmed work on the development of specific-motor skills in young soccer players. The aim of this work was to investigate the effects of programmed work on the development of specific motor skills. Guided by the results of previous research, as well as the subject, problem and goal of this research, we highlighted a general hypothesis.

## THE PRACTICAL ASPECTS OF THE RESEARCH

Research of this type has equal theoretical and practical significance and can justifiably be classified in the group of applied research. In today's development of young sportsmen, it is extremely important to generally develop all abilities that directly and indirectly affect the game itself, especially in the period when the footballer's body develops quickly, both physically and mentally. Great attention should be paid to the sensitive phases of this age in order to rapidly and timely develop abilities in the period when it is the best time for that. The practical value of this research consists in a global battery of variables from the area of basic motor skills, on the basis of which, by applying them in practice, problems related to sports orientation and the choice of boys in football will be more efficiently solved. The obtained results can contribute to easier and more specific planning and programming of the training process of young football players, which is extremely important in their development.

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