THE IMPACT OF THE CREATIVE MODEL IN TEACHING FOOTBALL ON PROFESSIONAL KNOWLEDGE AND EFFECTIVENESS OF PLAYERS AGED 12 AND 13

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Key words: creative teaching, young football players, disposition for the game.

Abstract

Aim of the study. The aim of the study was to check the impact of the creative model of teaching young football players proposed by the authors on the level of professional knowledge and performance in the game.

Materials and methods. The subjects of the study comprised the twenty-four player “Młodzik/Junior D” team from the “Slomniczanka” Slomniki Football Club from the age of twelve to thirteen. The study was conducted from September 2015 to June 2016. In the research, we used the method of pedagogical and natural experiment. The technique of parallel groups (the experimental and control ones) was applied in the study. In the evaluation of players, the test of special knowledge and assessment of players’ performance in the game was used.

Results and conclusions. The results showed that the method of creative education in young players effectively develops both special knowledge and efficiency of the players in games.

Using modern methods of training young players based on teaching games comprehensively contributes to the increase of their effectiveness and creativity in the game.

Introduction

Modern trends in training children and youth practicing football are taking a direction towards teaching the game with understanding, based on developing mental dispositions leading to player creativity in the game [1, 2, 3, 4]. Sports training measures applied for this purpose are designed to bring the natural environment of sports competition closer by using methods and forms of teaching the game, which allow the opportunity to collect experience by analysing one’s actions and taking responsibility for them and one’s mistakes [5, 6].

The situational nature of action in a sports game requires its participants not only to be efficient in motor action, but above all, to think in a reproductive manner, based on the use of previously acquired professional knowledge [6, 7].

The knowledge acquired during the sports training process on how to implement various activities in the game enables the player to fully understand its specificity [8], affecting the quality of perception and anticipation processes [9, 10], and while helping to make proper decisions during the game [6, 11].

Research and analysis of the game show that over 60 percent of all ball losses during a football match result from an error in assessment of a situation, its understanding and decision-making [3]. Therefore, it seems that a player wanting to operate effectively in a game
environment should acquire knowledge regarding what should be done in a given situation and how to properly accomplish his/her intention [7].

Considering the numerous studies and opinions of authors[6, 8-10, 12, 13], it can be assumed that to become a good player without a high level of specialist knowledge is difficult, thus, it is worth equipping a young athlete with the opportunity to constantly expand his/her knowledge on the game [6]. The education of young players conducted in this way is visible in modern training concepts based on creative teaching of activities in the game [2-4, 6, 7, 13, 14].

Considering the fact that analysis of information flowing from the training process and the course of the competitions in contemporary football, the authors present the results of experimental research using their own model of creative football teaching based on knowledge and experience of Polish and foreign training professionals of children and youth practicing football.

1. Study aim and research questions

The aim of the work was an attempt to assess the impact of special training conducted with the use of the creative training model for the development of professional knowledge and performance effectiveness in the game of young footballers.

Taking the objective of the work into account, the following research questions were posed:
1. Does the proposed method of creative training favourably affect the development of specialized knowledge?
2. Does the proposed training method improve performance efficiency in the game?

2. Research material and methods

The research was conducted among boys practicing football at LKS Słomniczanik Słomniki. The group consisted of twenty-four young players aged twelve and thirteen (Młodzi /Junior D). During research, the young players took part in the “Młodzi” competition organized by the Malopolska Football Association – Krakow Sub-District.

In the research, we used the pedagogical experiment method and the parallel group technique: (E) experimental and (C) control [15]. The study was carried out from September 2015 to June 2016.

Based on rankings (assessment of the level of knowledge about technical activities used in the game and special physical fitness – special techniques), young players were divided into two equal research groups: experimental (n = 12) and control (n = 12).

Throughout the study period, the E group participated in an experimental training unit once a week (theoret-
The impact of the creative model in teaching football... The experimental training was conducted according to the creative training model developed by the authors, in which two main areas of the young players’ education were distinguished, taking the leading elements of teaching technical and tactical actions into account. These areas were elements of football game technique creative teaching (Fig. 1) and the time structure of the training organization, which included a month-long training plan (theme) (Fig. 2) along with construction of the training unit (Fig. 3).

The first area contained seven interrelated elements based on the intellectualization of teaching movement activities. Their goal was to develop a creative game with understanding, which manifests itself in the form of: purposefulness of actions (e.g. to whom – when – how to pass the ball), awareness (the player knows what thoughts and movements s/he is performing) and freedom (the diversity of utilizing simultaneous motor combinations – 16) – [17].

The second area of young players’ education including the above elements of the discussed model was the time structure of training organization, which included the month-long training plan – training modules (Fig. 2) and the design of the training unit (Fig. 3):

- **The month-long training plan** was divided into four cyclically repeated modules, valid for one week. In each of the modules, the main focus was on a different element of the training - the main topic of the classes. Elements such as goal shots and team game with understanding have been introduced into each training module due to their value in the game.

- **Structure of the training unit** – based on the teaching method “from the whole to the whole through the detail” [9]. In the construction of a training unit, this method manifests itself in the form of “game – exercises – game” [18].

In the control group, the teaching process was carried out using traditional methods. In this group, the same player training programme was implemented, the difference in education included the choice of teaching method: in the experimental group – the creative training model, in the control group – the “traditional” method.

The research procedure was carried out in two stages. The first stage consisted of a preliminary test (pre-test), the aim of which was to determine the base values of competitors and division into two possibly equivalent groups – experimental and control. These activities concerned the determination of the level of special physical fitness (special technique), knowledge of the technical activities and the assessment of performance in the game. The second stage involved re-measurements regarding specialized knowledge and assessment of game performance (post-test). This stage was aimed at assessing the players’ progress after the year-long training cycle.

Wanting to obtain two study groups equalized in their division (experimental and control), the level of game technique was evaluated. For this purpose, a modified version of the special German Football Association –

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**Fig. 2. Month-long training plan – modules of training**

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<table>
<thead>
<tr>
<th>MODULE I</th>
<th>Control of the ball</th>
<th>Intentional strike towards goal (shot)</th>
<th>Team game with understanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODULE II</td>
<td>One-on-one game</td>
<td>Intentional strike towards goal (shot)</td>
<td>Team game with understanding</td>
</tr>
<tr>
<td>MODULE III</td>
<td>Reception and passes</td>
<td>Intentional strike towards the goal</td>
<td>Team game with understanding</td>
</tr>
<tr>
<td>MODULE IV</td>
<td>Speed of action</td>
<td>Intentional strike towards goal (shot)</td>
<td>Team game with understanding</td>
</tr>
</tbody>
</table>
Fig. 3. Structure of the training unit

![Diagram of training unit]

Fig. 4. Example question in test on knowledge about technical actions applied during the game

![Example question diagram]

Tab. 1. Example of comprehensive player assessment in simulated game (fitness – performance) – according to the Panfil concept [12].

<table>
<thead>
<tr>
<th>Action</th>
<th>Efficiency index</th>
<th>Inefficiency index</th>
<th>Activity index</th>
<th>Reliability index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal shot</td>
<td>4</td>
<td>3</td>
<td>7</td>
<td>5.7</td>
</tr>
<tr>
<td>Leading the ball</td>
<td>6</td>
<td>3</td>
<td>9</td>
<td>6.6</td>
</tr>
<tr>
<td>Dribbling, feints</td>
<td>3</td>
<td>2</td>
<td>7</td>
<td>4.2</td>
</tr>
<tr>
<td>Steals</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>6.2</td>
</tr>
<tr>
<td>Passes</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>6.6</td>
</tr>
<tr>
<td>Receptions</td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>6.2</td>
</tr>
<tr>
<td>Assuming position</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

Performance efficiency = 6.18

DFB fitness test was used [19], which is also applicable in the current PZPN (Polish National Football Association) training guidelines [20]. This test included: juggling the ball with the head, juggling the ball with the foot, striking/passing the ball with the medial part of the foot, crossing the ball to the goal; comprehensive technique test – obstacle course, striking the ball/performing headers to the goal, goal shots – penalty kicks.

1 Efficiency index = number of effective actions
2 Inefficiency index = number of ineffective actions
3 Activity index = effective + ineffective actions
4 Reliability index = (effective actions ÷ activity index) x 10.
5 Index of complex action efficiency = (sum of all reliability indices) ÷ 7.
To obtain the assessment of young players’ level of knowledge, the author’s test regarding knowledge on technical actions used in the game was utilized (wt = 0.91, rtt = 0.83) (according to Duda’s concept – 21), which contained the basic elements of football technique – Fig. 4.

The players’ performance assessment was carried out with objectified observation sheets (wt = 0.89, rtt = 0.81) [22]. The players in teams matched in an organized manner (according to rank scores) were evaluated in two games: competitors from the experimental groups against competitors from the control groups. Selected individual actions were analysed (goal shots, leading the ball, dribbling/feints, steals from the opponent) and actions in cooperation with a partner (passes, receptions, assuming position). Effective and ineffective measures were taken into account, which provided a basis for the calculation of reliability ratios [10], – Tab. 1.

In order to compare the obtained results, basic statistical calculations were used: standard deviation, arithmetic mean, coefficient of variation and the significance level of differences was determined using the Student’s t-test [23]. Calculations were conducted using the Statistica 10 programme.

During hypothesis verification, the following level of significance was assumed: \( \alpha = 0.05 (*) - p<0.05 \), \( \alpha = 0.01 ** - p<0.01 \), \( \alpha = 0.001 *** - p<0.001 \) if the upward or downward trends in the research results were significant.

**Presentation and discussion of research results**

On the basis of the results from the first and second tests of special and game-related knowledge, it was observed that both the control and experimental group players improved their results during the one-year train-
In order to present the results more accurately, statistical calculations were performed and presented in Tables 2 and 3.

Analysing the results of research regarding knowledge about technical actions performed in the game, we noted that in the first test among young footballers, there were similar values - no differentiation at the level of significance of differences. However, in the second test (after applying experimental teaching), more progress can be noticed in the experimental group – significance of differences between groups at $\alpha = 0.01$. Also, the progress in given groups between the first and the second study was higher in the experimental group - the level of differentiation: $\alpha = 0.001$, while in the control group: $\alpha = 0.05$.

### Tab. 2. Level of knowledge regarding technical actions applied in the game for assessed groups in the 1st and 2nd tests

<table>
<thead>
<tr>
<th></th>
<th>Control group</th>
<th>Experimental group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arithmetic mean</strong></td>
<td>10.00</td>
<td>9.92</td>
</tr>
<tr>
<td><strong>Standard deviation</strong></td>
<td>1.71</td>
<td>2.27</td>
</tr>
<tr>
<td><strong>Coefficient of variation</strong></td>
<td>17.06</td>
<td>35.70</td>
</tr>
<tr>
<td><strong>Significance of differences between groups</strong> (t-test value)</td>
<td>0.10</td>
<td></td>
</tr>
</tbody>
</table>

### Test 2

<table>
<thead>
<tr>
<th></th>
<th>Control group</th>
<th>Experimental group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arithmetic mean</strong></td>
<td>10.67</td>
<td>13.08</td>
</tr>
<tr>
<td><strong>Standard deviation</strong></td>
<td>1.61</td>
<td>1.78</td>
</tr>
<tr>
<td><strong>Coefficient of variation</strong></td>
<td>15.13</td>
<td>13.62</td>
</tr>
<tr>
<td><strong>Significance of differences between groups</strong> (t-test value)</td>
<td>3.48**</td>
<td></td>
</tr>
<tr>
<td><strong>Level of significance regarding differences between tests 1 and 2 in a given group</strong> (t-test value)</td>
<td>2.35*</td>
<td>13.14***</td>
</tr>
</tbody>
</table>

Significance level of differences: * $\alpha = 0.05$, ** $\alpha = 0.01$, *** $\alpha = 0.001$.

### Tab. 3. Reliability level in simulated game for the assessed groups in the 1st and 2nd tests

<table>
<thead>
<tr>
<th></th>
<th>Control group</th>
<th>Experimental group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arithmetic mean</strong></td>
<td>4.96</td>
<td>5.04</td>
</tr>
<tr>
<td><strong>Significance of differences between groups</strong> (t-test value)</td>
<td>0.67</td>
<td>0.75</td>
</tr>
<tr>
<td><strong>Significance of differences between groups</strong> (t-test value)</td>
<td>13.59</td>
<td>14.93</td>
</tr>
<tr>
<td><strong>Significance of differences between groups</strong> (t-test value)</td>
<td>0.26</td>
<td></td>
</tr>
</tbody>
</table>

### Test 2

<table>
<thead>
<tr>
<th></th>
<th>Control group</th>
<th>Experimental group</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arithmetic mean</strong></td>
<td>5.13</td>
<td>5.93</td>
</tr>
<tr>
<td><strong>Significance of differences between groups</strong> (t-test value)</td>
<td>0.86</td>
<td>0.99</td>
</tr>
<tr>
<td><strong>Significance of differences between groups</strong> (t-test value)</td>
<td>16.80</td>
<td>16.76</td>
</tr>
<tr>
<td><strong>Significance of differences between groups</strong> (t-test value)</td>
<td>2.13*</td>
<td></td>
</tr>
<tr>
<td><strong>Level of significance regarding differences between tests 1 and 2 in a given group</strong> (t-test value)</td>
<td>2.30*</td>
<td>9.10***</td>
</tr>
</tbody>
</table>

Significance level of differences: * $\alpha = 0.05$, ** $\alpha = 0.01$, *** $\alpha = 0.001$. 

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This fact means that the applied experimental teaching, based on the creative training of players, brought about higher effects in the process of developing motor activities to which the experimental group was subjected [23].

In the subsequent course of research on the impact of creative training among players, analysis of the action in the game was performed. In the cognitive aspect, this thread acquires special meaning because it is the essence of a sports game [10].

Analysing the results of players’ performance in the game presented in Table 3, we observed that after the first test, players from the experimental and control groups showed similar values – no variation in the level of significance of differences. On the other hand, the second study (after applying experimental teaching) indicated significant progress among competitors in the experimental group – significance of differences between groups at a level of $\alpha = 0.05$. At the same time, progress in given groups between the first and the second tests was higher in the experimental group – the level of differentiation was $\alpha = 0.001$. Analysing the results of research in the control group, a smaller increase in the efficiency of activities during the game was observed – at the $\alpha = 0.05$ level of significance of differences. This means that the use of experimental teaching based on the creative training of young football players contributed to the effective and rational performance of actions during a simulated game.

Discussion

Scientific research and publications supporting the process of sports education allow to define and implement many valuable training systems and methods in practice that can successfully improve the effectiveness of training young players [14].

According to Czajkowski [9], if we do what we did yesterday during the training session – we will lose, if we do what others do – we will start to compete, but when we add our own initiative to it – we will win.

Taking the opinion of the aforementioned author into consideration, it seems that it is worth considering effective training systems and adapting them to the conditions available to us, enriching then with our own creative solutions, designing a new quality of sports education for children and youth on their basis [24].

In the conducted research, it was observed that competitors belonging to the experimental group obtained greater progress in knowledge about the technical activities used in the game. The mean value in this group increased by 32% compared to the first test. In the control group, this value improved by 6.7%.

We notice a similar relationship when observing the results obtained in the field of players’ performance during the game. Comparison of the players’ game assessment in the 1st and 2nd test indicated that young footballers subjected to experimental teaching improved their game disposition by 17.9%. Meanwhile, in the control group, the average value of performance efficiency in the game increased by 3.2%.

The described results of research indicate that the concept of creating and developing modern models of athletes’ training seems to be an attractive research issue, also having utilitarian values, because information obtained in this way can be used directly in practice, thus improving the education of children and youth in various sport disciplines.

Conclusions:

1. The increase in results of the examined competitors from the control group showed that traditional training compared to the creative model of football education, develops predisposition for playing football to a lesser extent.
2. The model of creative training for children practicing football contributes to the effective development of professional knowledge.
3. Creative methods of training with exhibiting knowledge about the game enrich the process of efficient action in game conditions.

References:


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