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Pedagogical Conditions for Improving Technical and Tactical Training of Young Football Players Through Game-Based Exercises

Improving the technical and tactical training of young football players requires the development of pedagogical approaches that ensure the integration of technical and tactical training within a unified training process. The aim of the study was to theoretically substantiate, develop, and experimentally test a pedagogical model for improving the technical and tactical training of young football players aged 8–10 years, based on the implementation of a set of pedagogical conditions through the systematic use of game-based exercises. The study involved 24 young football players who were divided into control and experimental groups. The research methods included analysis of scientific and methodological literature, pedagogical observation, a pedagogical experiment, pedagogical testing, and mathematical statistical methods. Following the completion of the pedagogical experiment, the experimental group demonstrated more pronounced positive dynamics across all studied indicators compared with the control group. The most substantial changes were observed in the accuracy of shots and tactical preparedness. The results indicate more pronounced positive dynamics in technical and tactical preparedness under the comprehensive implementation of the pedagogical conditions compared with the traditional organization of the training process. The developed pedagogical model may be recommended for use at the initial stage of football training, taking into account the observed positive dynamics of the indicators associated with the integration of technical and tactical training through game-based activities.

Keywords: young football players; technical and tactical training; pedagogical conditions; pedagogical model; game-based exercises; decision-making; training process; youth football.

Introduction

The modern system of training young football players places increasingly high demands on their level of technical and tactical preparedness. Already at the initial stage of sports development, the effectiveness of game actions is determined not only by the quality of technical skill execution but also by the ability to perceive the game situation in a timely manner, make an optimal decision, and implement it effectively under opposition from an opponent. Therefore, technical and tactical training is considered a unified pedagogical process in which the improvement of technical skills is inextricably linked to the development of tactical thinking [1-2].

Despite the widespread use of game-based exercises in youth football practice, their role within the structure of the training process remains ambiguous. In many cases, game-based exercises are used primarily as an auxiliary component of a training session, either concluding the main part of the session or serving to increase the participants' emotional engagement. At the same time, the teaching of technical skills is still predominantly based on repeated performance of motor elements under relatively stable conditions. Such an organization of training contributes to the acquisition of individual technical skills but is less effective in developing the ability to apply them in rapidly changing game situations [3].

This contradiction is particularly evident in the training of football players aged 8–10 years. It is during this age period that the foundations of ball-handling technique are established, initial concepts of interaction with teammates are formed, and the ability to orient themselves in game situations develops. At the same time, a high need for play remains a characteristic feature of children of this age. Therefore, the effectiveness of the training process largely depends on the extent to which the content of training sessions corresponds to the age-specific characteristics of the participants while maintaining their natural cognitive and motor activity [4, 5].

In the studies reviewed, considerable attention is devoted to evaluating the effectiveness of individual game-based exercises, small-sided games, or improving specific technical components of young football players' training. Considerably less attention is paid to the pedagogical conditions that ensure their systemat-

ic use within the structure of the training process. Meanwhile, the findings of recent systematic reviews indicate that the effectiveness of game-based exercises depends not only on their content but also on the specific features of the pedagogical organization of training activities [1, 4–6].

In the present study, game-based exercises are considered not as an independent training tool but as the basis for developing a pedagogical model aimed at improving the technical and tactical training of young football players. Its effectiveness is based on a set of interrelated pedagogical conditions: gradual complication of game situations; integration of technical and tactical training within each training task; simulation of episodes of competitive activity; increasing each player's individual motor activity through the use of small-sided games; and systematic organization of game-based exercises throughout the training cycle. It is assumed that the comprehensive implementation of these pedagogical conditions creates a favorable educational environment for developing stable technical and tactical skills in young football players [7, 8].

Thus, the continuing contradiction between the need to prepare football players for effective actions in real game situations and the predominance of traditional teaching approaches determines the relevance of the present study.

Aim of the study — to theoretically substantiate, develop, and experimentally test a pedagogical model for improving the technical and tactical training of young football players aged 8–10 years, based on the implementation of a set of pedagogical conditions through the systematic use of game-based exercises.

Materials and Methods

The study was conducted at the Shakhtar Football Club Academy in Karaganda from September 2025 to April 2026. The pedagogical experiment involved 24 young male football players aged 8–10 years who were undergoing initial sports training. The study was conducted under natural training conditions, with the usual training schedule and duration of training sessions maintained. Prior to the study, verbal consent to the children's participation was obtained from their parents or legal guardians.

The methodological basis of the study was the concept of comprehensive development of technical and tactical preparedness, which assumes the interrelated development of technical skills and game-related thinking. In contrast to the traditional approach, which is primarily based on repeated performance of individual technical actions, the developed model provided for the systematic use of game-based exercises as the main means of organizing the training process.

The effectiveness of the proposed model was based on the implementation of the following pedagogical conditions: gradual complication of game situations as technical skills were acquired; integration of technical and tactical training into each training task; simulation of game episodes approximating competitive conditions; increasing the individual motor activity of each football player through the use of small-sided games; systematic use of game-based exercises at the initial stage of training.

The implementation of these pedagogical conditions was aimed not only at improving ball-handling skills but also at developing young football players' ability to make rational decisions in changing game situations, interact with teammates in a timely manner, and effectively apply the acquired technical skills under game opposition.

To achieve the aim of the study, a set of complementary research methods was used, including analysis of scientific and methodological literature, pedagogical observation, a pedagogical experiment, pedagogical testing, and methods of mathematical statistics.

The results of the developed pedagogical model were evaluated based on control tests characterizing the level of technical and tactical preparedness of the young football players. The testing program included exercises designed to assess the speed of motor actions with the ball, shooting accuracy, and the performance of game actions under conditions approximating those of competitive activity. The control tests were conducted before the beginning of the pedagogical experiment and after completion of the experimental program, allowing for a comparative analysis of the dynamics of the studied indicators.

Statistical processing of the experimental data was performed using methods of mathematical statistics. The results are presented as the arithmetic mean and the error of the arithmetic mean ($M \pm m$). Descriptive statistics were calculated for the analysis of the results, and the data were interpreted based on a comparison of the results of the control and experimental groups [9, 10].

Results and Discussion

Before the beginning of the pedagogical experiment, the technical and tactical preparedness of the young football players in the control and experimental groups was assessed. The assessment program includ-

ed control tests designed to evaluate the quality of basic technical actions, as well as the results of tactical testing. The data obtained were used for a comparative characterization of the study groups prior to the implementation of the developed pedagogical model.

Table 1

**Baseline indicators of the technical and tactical preparedness
of young football players before the pedagogical experiment ($M \pm m$)**

Control test	Control group (n = 12)	Experimental group (n = 12)
30-m ball dribbling, s	6.80 ± 0.17	6.87 ± 0.11
30-m shuttle run with the ball, s	8.25 ± 0.16	8.23 ± 0.17
Shooting accuracy, points	6.40 ± 0.45	6.16 ± 0.46
Tactical preparedness, points	42.83 ± 2.50	43.00 ± 2.87

As shown by the data presented in Table 1, before the beginning of the pedagogical experiment, the mean values of the studied indicators were similar in the control and experimental groups. The smallest differences were observed in the 30-m shuttle run with the ball (8.25 ± 0.16 and 8.23 ± 0.17 s) and in the assessment of tactical preparedness (42.83 ± 2.50 and 43.00 ± 2.87 points). Small differences were also observed in the indicators of ball dribbling and shooting accuracy, characterizing the baseline level of the studied indicators as similar in both groups.

Following the baseline testing, the pedagogical model aimed at improving the technical and tactical training of young football players through the systematic use of game-based exercises was implemented in the experimental group. In contrast to the traditional organization of the training process, game-based tasks were considered not as a separate element of the training session but as the main means of developing technical skills and tactical thinking.

The experimental program was developed based on the creation of pedagogical conditions facilitating the transfer of acquired motor skills to real game situations. Particular attention was paid to the relationship between technical and tactical training, the gradual complication of game tasks, and the organization of exercises that closely approximated competitive conditions.

The key pedagogical conditions underlying the implementation of the developed model are presented in Table 2.

Table 2

**Pedagogical Conditions for Improving the Technical and Tactical Training
of Young Football Players Through Game-Based Exercises**

Pedagogical condition	Implementation in the experimental program
Use of game-based exercises as the main means of instruction	Game-based tasks were systematically used throughout the pedagogical experiment
Gradual complication of exercise content	A gradual transition from simple game actions to exercises requiring game-related decision-making
Integration of technical and tactical training	Technical skills were developed in game situations requiring the selection of an effective course of action
Increasing motor activity	The organization of exercises ensured the continuous involvement of each football player in game actions
Approximating training tasks to competitive activity	Exercises were used to simulate typical game situations arising during a match

The pedagogical conditions presented in Table 2 were implemented not in isolation but within a unified system for organizing the training process. This approach made it possible to simultaneously improve the execution of game actions, develop decision-making skills, and enhance the ability to apply acquired technical skills under changing game conditions. It was assumed that the comprehensive implementation of the pedagogical conditions would result in greater gains in technical and tactical preparedness compared with the traditional organization of the training process.

Following the completion of the pedagogical experiment, the participants in the control and experimental groups underwent repeated testing using the same control tests as at the baseline stage of the study.

Comparison of the results before and after the implementation of the pedagogical model made it possible to assess changes in the technical and tactical preparedness of the young football players and to conduct a comparative analysis of the dynamics of the results in the control and experimental groups.

Table 3

Dynamics of Technical and Tactical Preparedness Indicators of Young Football Players Before and After the Pedagogical Experiment ($M \pm m$)

Control test	Control group — Before	Control group — After	Experimental group — Before	Experimental group — After
30-m ball dribbling, s	6.80 ± 0.17	6.50 ± 0.11	6.87 ± 0.11	6.45 ± 0.10
30-m shuttle run with the ball, s	8.25 ± 0.16	8.03 ± 0.15	8.23 ± 0.17	7.67 ± 0.12
Shooting accuracy, points	6.40 ± 0.45	7.25 ± 0.84	6.16 ± 0.46	8.30 ± 0.35
Tactical preparedness, points	42.83 ± 2.50	51.08 ± 3.05	43.00 ± 2.87	60.00 ± 2.22

The results of the repeated testing (Table 3) showed positive dynamics in the studied indicators in both groups, with more pronounced changes observed in the experimental group. The most substantial improvements were found in shooting accuracy and tactical preparedness. Improvements were also observed in the ball dribbling and shuttle run with the ball tests. Thus, based on the absolute values of the indicators, the experimental group demonstrated more pronounced positive dynamics compared with the control group.

However, a comparison of the absolute values does not fully reflect the differences in the performance of the approaches used. Therefore, the rates of increase for the studied indicators were calculated for each control test, allowing a comparative assessment of the results of the experimental pedagogical model (Table 4).

Table 4

Rates of Increase in Technical and Tactical Preparedness Indicators of Young Football Players After the Pedagogical Experiment

Control test	Control group, %	Experimental group, %
30-m ball dribbling	4.41	6.11
30-m shuttle run with the ball	2.67	6.80
Shooting accuracy	13.28	34.74
Tactical preparedness	19.26	39.53

The results of the implementation of the developed pedagogical model are more clearly reflected by the rates of increase in the studied characteristics (Table 4). The rate of increase was calculated as the ratio of the absolute increase in the indicator (AI) to its mean value at baseline (M_1), expressed as a percentage ($RI = AI \times 100 \% / M_1$). For time-based indicators, a reduction in completion time was considered a positive change. Analysis of the data obtained showed positive dynamics in both groups; however, the rate of increase was higher in the experimental group across all control tests.

The most pronounced differences were identified in the tests assessing the accuracy of technical actions and the level of tactical preparedness. Thus, the rate of increase in shooting accuracy in the experimental group was 34.74 %, whereas the corresponding value in the control group did not exceed 13.28 %. A similar pattern was observed in the assessment of tactical preparedness, where the increase in the experimental group reached 39.53 %, which was more than twice the corresponding value in the control group (19.26 %).

Less pronounced but consistent differences were also observed in the tests reflecting the players' technical preparedness. The rates of improvement in ball dribbling and the shuttle run with the ball were also higher in the experimental group than in the control group, indicating a positive effect of the pedagogical model on the quality of basic technical actions.

The results obtained suggest that the more pronounced dynamics observed in the experimental group were associated with the comprehensive organization of the training process, which included the systematic use of game-based exercises and interrelated pedagogical conditions. Technical skills were not acquired in isolation but under constantly changing game conditions requiring analysis of the game situation, selection of

the most appropriate course of action, and interaction with teammates. This approach was aimed at simultaneously improving the execution of game actions and developing elements of tactical thinking [11].

The findings generally agree with recent studies addressing game-based approaches to the training of young football players. In particular, studies have shown that training based on small-sided games and game-based tasks contributes to the development of decision-making skills, improvement of tactical behavior, and greater effectiveness of technical actions under conditions approximating competitive activity. At the same time, the authors emphasize that the magnitude of the positive effect depends not only on the content of the exercises but also on the principles underlying their pedagogical organization [12, 13, 14].

A similar trend can be observed in recent systematic reviews. It has been noted that game-based pedagogical approaches involving the simulation of competitive situations create more favorable conditions for the development of tactical thinking than traditional instruction focused primarily on the isolated acquisition of technical skills. At the same time, researchers highlight substantial heterogeneity in the methods used and the insufficient development of approaches to the comprehensive organization of the training process [15].

Analysis of the studies reviewed shows that a number of published studies focus primarily on the effectiveness of individual training tools, including small-sided games, game-based tasks, or exercises aimed at developing specific components of technical and tactical preparedness. The present study focuses on the pedagogical conditions that ensure the systematic use of game-based exercises within the structure of the training process. Within the developed model, game-based exercises are considered not in isolation but as a means of implementing a set of pedagogical conditions aimed at integrating technical and tactical training in young football players.

Certain limitations of the study should also be considered when interpreting the results obtained. The pedagogical experiment was conducted at a single sports organization and involved a relatively small sample of football players aged 8–10 years undergoing initial sports training. The experimental program lasted 8 months. In addition, the participants were assigned to the groups within the existing organization of the training process, which limited the possibility of fully controlling baseline differences between the groups. Therefore, the generalization of the findings to athletes of other age categories and stages of long-term athletic development requires further experimental verification.

Overall, the findings are consistent with the view that the pedagogical conditions under which game-based exercises are applied are important for integrating technical and tactical training.

Conclusion

The study showed that the systematic use of game-based exercises within the developed pedagogical model was associated with more pronounced positive dynamics in the technical and tactical preparedness of young football players aged 8–10 years compared with the traditional organization of the training process.

The practical significance of the study lies in the potential use of the developed pedagogical model in organizing the training process at the initial stage of football training. The proposed approach can be used by coaches in youth sports schools and football academies when planning training sessions aimed at the comprehensive improvement of athletes' technical and tactical preparedness.

The findings reflect the experience of implementing the pedagogical model within a single sports organization and do not claim universal applicability. Further research should assess the effectiveness of the proposed model at subsequent stages of long-term athlete development, as well as examine its application among football players of different age categories and levels of sports qualification.

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