



Using artificial intelligence to attract talented football players

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Abstract

This article discusses the introduction of artificial intelligence and modern technologies in professional football as a way to improve teamwork, enhance data analysis and optimize the training process. The author emphasizes the importance of using technology in modern football to improve team performance and tactical strategies. The use of the latest developments, such as machine learning algorithms, player movement monitoring systems and analytical platforms, significantly expands the possibilities for tactical analysis, improves the physical fitness of players and contributes to the improvement of their interaction on the field.

Keywords (talented football player, artificial intelligence, modern technology)

استخدام الذكاء الاصطناعي لجذب لاعبي كرة القدم الموهوبين

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الملخص

تناقش هذه المقالة استخدام الذكاء الاصطناعي والتقنيات الحديثة في كرة القدم الاحترافية كوسيلة لتحسين العمل الجماعي، وتحليل البيانات، وتحسين عملية التدريب. ويؤكد المؤلف على أهمية استخدام التكنولوجيا في كرة القدم الحديثة لتحسين أداء الفريق والاستراتيجيات التكتيكية. إن استخدام أحدث التطورات، مثل خوارزميات التعلم الآلي، وأنظمة مراقبة حركة اللاعبين، والمنصات التحليلية، يُوسّع بشكل كبير إمكانيات التحليل التكتيكي، ويُحسّن اللياقة البدنية للاعبين، ويُسهّم في تحسين تفاعلهم في الملعب.

الكلمات المفتاحية: لاعب كرة قدم موهوب، الذكاء الاصطناعي، التقنيات الحديثة

Introduction: In recent years, the issue of using artificial intelligence in sports has attracted increasing interest. Innovative technologies that penetrate various spheres of human activity are becoming not only popular, but also necessary. The emergence of unique developments, intelligent methods and new approaches to the study of information technology helps to solve the most complex problems that arise in the sports sphere. The capabilities of artificial intelligence are acquiring an increasingly significant potential. Modern processes in society are becoming multifaceted and multitasking, covering a wide variety of aspects of life. Today, scientists and practitioners are actively monitoring the development and improvement of physical training programs. The use of artificial intelligence in athlete training helps to improve their results. This approach allows not only to



predict the risks of injuries, but also to optimize game strategies, which increases the effectiveness of training and the results of athletes.

When considering the topic of artificial intelligence, it is important to understand the essence of this phenomenon in detail. Artificial intelligence is an evolving technology that includes software solutions that create machines capable of analyzing data and making predictions, which is especially relevant for sports analytics [1]. Over time, this concept has expanded significantly, covering new areas and applications where artificial intelligence can reveal its capabilities. One of the constant aspects is the ability of neural networks to imitate human skills and automate various processes taking into account specific tasks. In addition to the sports industry, AI innovations are actively being introduced into such areas as linguistics, business, logistics, medical diagnostics, education, as well as industry and transport. According to E.I. Stoyanov and N.V. Danilov, the tasks of sports are becoming more and more multifaceted every year, which requires the introduction of various transformations and innovations [3]. Despite the fact that at certain stages of the development of artificial intelligence there were periods of stagnation, modern neural network technologies play a key role in the sports field, demonstrating their importance and effectiveness. Using artificial intelligence, including machine learning and data analysis, it is possible, for example, to predict outcomes

sporting events, as well as developing personalized training programs that are optimally suited to each athlete, taking into account their individual characteristics [5].

As recent data shows, the number of applications of artificial intelligence and neural networks in sports has increased significantly in recent years [4]. These technologies are most actively used in sports analytics, where a huge amount of information is processed to create accurate forecasts. The use of software and hardware to solve sports problems allows us to collect data on athletes, analyze the effectiveness of the coaching staff, and study other factors that affect the results of sports competitions [2]. The variety of methods used to solve these problems significantly increases the accuracy of assessing the strengths and weaknesses of athletes, and also helps to effectively study team strategies and identify key dynamics of their game.

Research conducted by these authors and other experts in the field of sports analytics shows that the introduction of artificial intelligence and new technologies in professional football has significantly improved team performance, increased predictability, and optimized training processes. Overall, these works highlight the importance of integrating technological solutions into modern football to achieve new heights in sporting achievements.



1- Purpose of the study

To study the effectiveness of using artificial intelligence to select talented football players

2- Method and Procedure:

Experimentation was conducted with one group

2-1 Research Sample:

An experimental study was conducted to evaluate the effect of neck strength training on football kicking technique. The study involved football players aged 17-19 years. The study involved 10 players from the experimental and control groups.

To assess the effectiveness of using artificial intelligence, control tests were conducted in two groups of young football players. The experimental group included football players who were selected using artificial intelligence programs. The control group consisted of football players selected in a standard way.

2-2 Tools and equipment used in research:

- football field
- Metric tape measure
- Signs
- Colored adhesive tape
- Football goals with squares for checking accuracy
- Cameras

3 — Activities on the application of artificial intelligence in the selection of football players.

3.1. Talented Football Player Selection Program

In football, in addition to preparing the team for competition, the key role of managers, coaches and other professionals (including technical and medical staff) is to recruit and select players to form the optimal squad. The focus is on technical and tactical aspects. The main objective of the player recruitment process is to select the most suitable candidates for specific positions and roles on the pitch. As a result, decision makers are constantly looking for the most effective ways to



identify talented players and build high-quality teams. One of the most important decisions they have to make is the selection of players to participate in a specific football match. The introduction of artificial intelligence technologies in the football industry is no longer a novelty. For example, Google's DeepMind has developed a generative AI tool that helps suggest tactical strategies, improving team performance in game situations such as set pieces. Sports data company Second Spectrum uses machine learning to analyze live sports broadcasts, creating accurate and insightful data sets that can be used to make decisions during a match, such as determining offsides or which team should take a throw-in.

However, the use of AI in player scouting opens up new and unique opportunities. With the help of such technologies, clubs can significantly improve the efficiency of their academies, as well as build squads with the necessary characteristics, while saving a lot of time. These technologies give clubs a competitive advantage, allowing them to more accurately and quickly identify talent and create optimal squads for their teams.

As part of this study, a program for selecting football players using artificial intelligence services was developed and tested. This program included several stages:

1. Selection of services for selecting football players.
2. Analysis of candidates and group formation.
3. Testing candidates and evaluation of results.

During the first stage, an analysis of currently existing services was conducted and the most user-friendly options were selected. Thus, the following services were identified:

1. aiScout — is a mobile application that provides clubs and players with the ability to view training videos and compare players, primarily with those on the scout team. Using artificial intelligence, aiScout automatically generates analyses and conclusions about the videos, allowing you to create player ratings across a variety of parameters. This can be a useful tool for clubs during the pre-selection stage to ensure that potential recruits meet basic requirements before moving on to more traditional scouting methods.
2. Scout Advisor — is an innovative tool that uses both traditional and generative AI techniques to improve scouting and player selection at Sevilla FC. It uses natural language processing (NLP) using IBM's watsonx to search and evaluate the club's scouting database. This includes analyzing both quantitative data (such as player fitness and statistics) and qualitative data, such as scouts' written reports. The platform uses multiple language models to improve the accuracy of player searches and evaluations. By integrating scout feedback, Scout Advisor generates personalized player lists and consolidates individual reports, freeing up scouts'



time for deeper analysis and streamlining the player selection decision-making process.

3. Sberbank, together with the AIRI Institute of Artificial Intelligence and the Moscow football club CSKA, has developed an AI model that evaluates the potential of players and provides recommendations for their development. The project solves several high-tech problems: automated data collection from matches through sports broadcasts, the creation of algorithms for assessing the playing potential of a team and players, and the development of a generative football AI assistant for the club's board of directors. This assistant helps make economically sound decisions on player selection and is used by the coaching staff to make adjustments to the game strategy on the fly.

Next, the selection of football players was carried out using the selected software. As a result, based on the data analysis, 10 football players were selected, whose results the services assessed as the highest. This group formed the experimental group.

Also, to evaluate the effectiveness of such selection, a control group was created from those football players who were selected as a result of the standard system. To evaluate the effectiveness of the proposed program, control testing was conducted.

3.2. - Results of control testing

To assess the level of training of football players, control testing was conducted. To conduct the study, control exercises (tests) of physical training were used for enrollment in groups at the training stage (the stage of sports specialization) in the sport of football, the standards of which are presented in Table 1.

Table 1 - Standards of general and special physical fitness for enrollment in groups at the training stage (sports specialization stage)

Developed physical quality	Control exercises (tests)	Standard
Rapidity	15m sprint from a high start	no more than 2.8cm
	Running 15 m on the move	no more than 2.4cm
	30m sprint from a high start	no more than 4.9cm
	Running 15 m on the move	no more than 4.6cm
Speed-strength Qualities	Long jump from a standing position	not less than 1 m 90cm
	Triple jump	not less than 6 m 20cm
	High jump without arm swing	not less than 12cm
	High jump with arm swing	not less than 20cm



Strength	Throwing a medicine ball weighing 1 kg from behind the head	not less than 6 m
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The analysis of the results in the experimental and control groups is presented in Table 2.

Developed physical quality	Control exercises (tests)	Experimental group	Control group	Wilcoxon t-test
Rapidity	15m sprint from a high start	2,75	2,81	11,2**
	Running 15 m on the move	2,33	2,42	10,8**
	30m sprint from a high start	4,83	4,88	9,1
	Running 15 m on the move	4,57	4,62	9,7
Speed-strength Qualities	Long jump from a standing position	195	189	10,9**
	Triple jump	622	620	9,7
	High jump without arm swing	12,5	12,1	9,4
	High jump with arm swing	20,5	20,3	9,1
Strength	Throwing a medicine ball weighing 1 kg from behind the head	6,4	5,8	10,9**

To determine the significance of differences, the Wilcoxon T-test was used, which showed statistical significance in such indicators as 15 m sprint from a high start (Temp = 11.2 at $P \leq 0.05$), 15 m sprint from a running start (Temp = 10.8 at $P \leq 0.05$), standing long jump (Temp = 10.9 at $P \leq 0.05$) and throwing a 1 kg medicine ball from behind the head (Temp = 10.9 at $P \leq 0.05$).

4.1 Conclusions

Artificial intelligence is one of the promising areas for the development of sports. Insufficient study of this area does not yet allow using its functions to the fullest extent. However, even at this stage, it is possible to use systems that bring great effect. The work of artificial intelligence in sports has shown how multifunctional the range of application of ideas is. Developments can be used in almost all sports



and contribute to the achievement of the main goals: training, organization of competitions, rehabilitation of athletes, ensuring safety and creating equipment.

The use of artificial intelligence and modern technologies is an important area of development in professional football. It not only increases the efficiency of the game, but also contributes to the improvement of the physical training of players, data analysis and tactical aspects of the game. The results of research in this area confirm the significant potential of technologies to improve team performance and create a more successful game strategy.

4.2 Recommendations

1. To increase the efficiency of the process of selecting young football players for a team, the capabilities of artificial intelligence can be used, with the help of which the performance of football players is assessed with a minimum amount of time.
2. Currently, a number of special services have been developed to evaluate football players based on the use of artificial intelligence technology. When selecting services, it is worth considering such characteristics as the number of parameters to be evaluated, evaluation criteria, and report accuracy.
3. Using a set of services with different characteristics will allow you to obtain a more accurate and comprehensive assessment result.

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