

Improving the Technique of Players using New Innovative Technologies in the Game of Basketball

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Abstract: innovative technologies provide ample opportunities for improving the techniques of basketball players. The use of artificial intelligence and machine learning technologies, training in VR and AR simulators, physical fitness control using biometric sensors and psychological state control through neurotechnologies - all this opens the door to great opportunities for modern basketball players. Through this, both individual skill and team success of the players increase significantly.

Keywords: basketball, innovative technologies, artificial intelligence, VR, AR, biometric sensors, neurotechnologies.

Introduction: modern technologies are causing great changes and developments in the field of sports. Especially in sports that require physical fitness, technical skill, and tactical thinking, such as basketball, innovative technologies are instrumental in improving players' techniques. This article will talk about the latest technologies used in the game of basketball, how they affect the technique and performance of players. Artificial intelligence (AI) and machine learning (ML) in game analysis.

Artificial intelligence and machine learning technologies have been widely used in the analysis of basketball games in recent years. These technologies allow teams and coaches to conduct in-depth analysis of players' technical actions during the game. With artificial intelligence, players' actions in dribbling, ball passing, defense, and attack are automatically analyzed. Through these processes, players can identify their weaknesses and plan the training they need. For example, coaches can give clear instructions by making an inaccurate pass on offense or by detecting a misalignment on defense. AI-based analysis programs also help to explore the opposing team's style of play, providing tactical advantage. Data collection and analysis: AI and ML algorithms collect large amounts of data in basketball games. For example, by collecting data on strikes, passes, defenses, and offensive moves made during the game, AI technology provides detailed information about players' techniques, style of play, and fitness. Motion tracking and recognition: AI algorithms automatically track players' movements on the field during a basketball game. With the help of videos and data collected through the camera or sensors, the actions of the players and their results are analyzed. This technology allows you to determine at what point the player is better or where they are making mistakes. Forecasting: machine learning algorithms forecast what results players can show in future games based on their previous performance. For example, with AI analysis, it is possible to predict in advance how the performance of a particular player in the game will develop or what the strategy of the opposing team will be.

Materials.

Individual and Team Development: AI technology helps determine which exercises players should pay more attention to in order to improve their individual performance. Through recommendations developed on the basis of machine learning algorithms, players have developed personalized training programs. AI and the impact of ML technologies on players to improve technique: the analysis obtained through AI allows players to determine in which direction they need to develop technically. For example, errors in dribbling, incorrect ball passing, or incorrect shot execution are analyzed by AI, and coaches

direct players to work on these mistakes. Game strategy optimization: AI helps optimize the team's strategy during the game process. Many indicators, such as the team's offensive and defensive actions, how the field is positioned, and the pace of play, are analyzed by AI and recommendations are made to the team on how to achieve an advantage over the opponent. Real-time analysis during the game: AI technologies are able to process data in real time during the game. This helps coaches and the team make quick decisions. For example, AI can determine if the player is tired or positioned in the wrong position, and coaches can use this information to make a quick change or strategy change decision. Analysis of the opponent using AI and ML analysis of the game style of the opposing team is one of the most important features of AI technology. AI studies the actions of the opposing team in past games and analyzes their offensive and defensive strategies. Machine learning algorithms identify the weaknesses and strengths of the opposing team and recommend what tactical decisions the team should make. Through this, coaches can carry out effective tactical planning towards the opponent.

Research and methods.

Accuracy of decisions made through AI and ML technologies, artificial intelligence and machine learning technologies provide precision analysis based on player actions, results and statistics. Through these analyses, coaches and teams are able to make more effective decisions. Compared to traditional game analysis, AI technologies are more conducive to improving game outcomes, due to their more detailed and faster analysis of the gameplay. The use of artificial intelligence (AI) and machine learning (ML) technologies in basketball games significantly improves individual player techniques and team strategies. Through these technologies, the data is analyzed accurately and quickly, which gives coaches and teams a great advantage to improve their capabilities. From analyzing the opposing team to technical training of players, in-depth analysis and recommendations can be obtained through AI technology. These technologies are becoming one of the main areas of great development in the world of sports. In the basketball game, virtual Reality (VR) and augmented reality (AR) technologies can be used to prepare players during training in conditions close to the real game. VR technology lets players enter a virtual gaming environment, exposing them to complex gaming situations. Through this, players will be able to mentally and technically prepare and reduce their error in the game. Augmented reality (AR) technologies, on the other hand, can provide real-time players with specifications and information directly in the field. For example, when passing the ball or performing defensive actions, an AR can be used to measure accuracy and time through a trainer or simulator. Biometric and sensor technologies.

Results.

Biometric and sensor technologies also play an important role in working on the physical fitness and technique of basketball players. During the exercise, players' indicators such as heart rate, muscle activity, breathing rate are constantly monitored. With sensors, it is possible to analyze the actions of players and create individual preparation programs based on this information. Through these technologies, coaches monitor players' tiredness levels, strength dissipation, and overall fitness levels to help prevent their overexertion. At the same time, the necessary instructions are developed to ensure proper movement during the game.

Discussion.

Video analysis and drone technologies new techniques are being used in basketball games to improve player techniques using drone and high-definition video analysis technologies. With the help of drones, games are filmed from above, and this creates a number of advantages, especially in tactical appearance. Based on images from drones, individual actions and team cooperation of players are analyzed in detail. Also, through cameras capable of high-speed photography, the techniques and movements of the players are analyzed in depth. Through this technology, players are able to revise their actions and correct their technical errors. Neurotechnologies and cognitive training are being used in psychological and mental

training of players. These technologies help to increase the attention of players by monitoring and developing brain activity. Through neurofeedback technology, players are taught to control their mental and emotional state, which helps to reduce stress States and provide better performance in the game.

Conclusion: innovative technologies provide a wide range of opportunities for improving the technique of basketball players. The use of artificial intelligence and machine learning technologies, training in VR and AR simulators, physical fitness control using biometric sensors and psychological state control through neurotechnologies - all this opens the door to great opportunities for modern basketball players. Through this, both individual skill and team success of the players increase significantly.

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