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Original article

THE MODERN GOALKEEPER IN ELITE YOUTH FOOTBALL: A QUANTITATIVE ANALYSIS OF U17 MATCHES

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Abstract

Aim. This study aimed to evaluate the performance of goalkeepers from PFC Levski Sofia U17 by analyzing their actions during both offensive and defensive phases of the game throughout the 2023/2024 season. The objective was to assess their influence on the match beyond traditional shot-stopping, including their role in ball distribution and initiating team actions.

Methods. An observational analysis was conducted on ten official U17 matches using LongoMatch software. Qualified experts carried out the evaluation and included all goalkeeper actions during the entire match. Specific offensive indicators were analyzed, such as passes by foot and hand (short, medium, long), attack transitions, line-breaking passes, and defensive actions and decision-making quality rated as poor, good, or excellent.

Results. Goalkeepers primarily used short passes by hand and foot to initiate attacks, with foot passes achieving an 81% line-breaking rate. Transitions by foot occurred more frequently but with less accuracy. Only one goal was conceded due to a possession error. Defensively, goalkeepers showed consistent involvement in organizing play and responding to threats.

Conclusions. The modern goalkeeper plays a vital role in both phases of play, emphasizing the need for technical proficiency, game intelligence, and decision-making under pressure in elite youth football.

Keywords: goalkeeper, elite football, defensive, goalkeeping skills, youth football.

Introduction

In recent years, football has experienced a tactical evolution that redefines the role of the goalkeeper. No longer limited to stopping shots, modern goalkeepers now play a strategic part in the team's build-up play. They are responsible for distribution, positional organization, and tactical decision-making under pressure (Seaton & Campos, 2011).

This shift reflects the game's broader movement toward possession-based and press-resistant strategies. Small-sided games (SSGs), commonly used in training, have also been shown to impact goalkeeper behavior. Pitch size manipulations significantly affect tactical and technical outputs—altering spatial dynamics, passing opportunities, and defensive positioning—highlighting the importance of contextual design in goalkeeper training (Rumpf et al., 2025). Modern goalkeepers follow the trends of outfield players by covering large distances at varying intensities during official matches, highlighting the increased physical demands of the position (Nancheva & Ivanov, 2024; Dimitrov, Gutev, & Gadzhev, 2022).

Furthermore, youth performance analysis has begun to uncover goalkeeper-specific metrics that integrate offensive and defensive actions. A multivariate study identified key performance indicators that encompass distribution quality, sweeping actions, and decision-making during transitions, affirming the dual-phase contribution of goalkeepers (Jara et al., 2023). Bulgarian football experts emphasize that early specialization between the ages of 8 and 12 is often seen as necessary to achieve high performance, but they also highlight the crucial role of diversified training means for the all-round development of young players (Tsvetkov et al. 2021). There is a need for greater coherence between pedagogical models and everyday coaching practices, particularly at the grassroots level, as methodological inconsistency continues to limit long-term player development (Ivanov, 2025). Coaches should prioritize holistic development approaches that blend physical preparation with technical refinement and cognitive engagement in youth football (Gadzhev & Ivanov, 2025).

Additionally, comparative match analysis using T-pattern methods has revealed consistent sequences in goalkeepers' behavior—both defensive (e.g., crosses, goal exits) and offensive (e.g., foot distribution)—demonstrating their pivotal role in team positional structure (Mikikis et al., 2021; Santos et al., 2022).

Despite these insights, there remains a gap in the literature regarding the comprehensive tactical and technical performance of youth goalkeepers within elite football academies. Most studies focus on physiological attributes or isolated performance outcomes, rather than on in-game distribution, communication, and structural integration. National perspectives also emphasize that youth football training requires a holistic approach. For example, Ivanov (2024) highlights that methodological aspects of sports preparation in youth football necessitate the integration of technical, tactical, psychological, and conditioning components to achieve optimal player development. Similarly, Ivanov (2021)

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stresses that the monitoring and evaluation of technical and conditioning indicators in youth football are essential for the long-term development of players and the optimization of the training process.

This study aims to address this gap by examining U17 goalkeeper performance at PFC Levski Sofia. Through video analysis of official matches, this research will quantify distribution types and success rates, sweeping actions, defensive organization, and involvement in offensive build-up phases.

Objectives

The objectives of this study were to evaluate the performance of goalkeepers from PFC Levski Sofia U17 by analyzing their actions during both offensive and defensive phases of the game throughout the 2023/2024 season. The objective was to assess their influence on the match beyond traditional shot-stopping, including their role in ball distribution and initiating team actions.

Methods

The study involved the U17 team of PFC Levski Sofia during the 2022/2023 season. The sample included all goalkeepers who participated in official championship matches of the Bulgarian Elite Group. A total of 10 matches were analyzed, featuring 2 goalkeepers.

This study employed observational performance analysis, focusing on the technical and tactical behavior of goalkeepers during competitive matches. The research is non-interventional, using video recordings and coding schemes to register actions during match play.

The matches were recorded using a fixed wide-angle camera, positioned centrally behind one of the goals to provide a comprehensive tactical view. Each goalkeeper's actions were manually coded using a predefined analysis protocol based on established performance indicators.

The analysis protocol included detailed criteria that reflect the goalkeeper's contribution in both defensive and offensive phases of the game. Each goalkeeper's actions throughout the entire 10 matches were assessed by expert analysts using video footage.

In the defensive phase, the analysis focused on: shot-stopping techniques (catching, parrying, diving) for shots originating from inside and outside the penalty area; aerial ball handling (catches, punches, or missed interventions); 1v1 situations (saved or conceded); and clean sheets versus goals conceded.

In the offensive phase, the goalkeeper's distribution was examined according to: Short passes (up to 10 meters), with and without breaking the opponent's defensive line; Medium passes (11–20 meters), with and without line-breaking effect; Long passes (over 21 meters), also classified based on whether they bypassed the opponent's lines. Throws were also evaluated: Short throws (up to 15 meters); Long throws (over 15 meters). Transition play was assessed in terms of attack initiation via feet or hands. Additional variables included errors leading to goal-conceding turnovers and the quality of decision-making in attack (rated as poor, good, or excellent).

These indicators provided a comprehensive and objective analysis of the goalkeepers' performance, aiming to quantify both effectiveness and the tactical role of the goalkeeper in real match conditions. The performance indicators were categorized into defensive and offensive contributions, with a particular emphasis on distribution quality, positional responsibility, and decision-making under pressure.

The statistical processing of the data was conducted using Microsoft Excel 2019, applying descriptive methods (absolute frequencies and relative percentages) to evaluate the technical and tactical performance of the goalkeepers across the observed matches.

Results

During the research process, the performance of the goalkeepers was analyzed across 10 individual matches, against the teams occupying the top 10 positions in the standings of the U17 Elite League during the autumn half-season of the 2023/2024 campaign, according to the Bulgarian Football Union (BFU) system. The analysis included the following events (Table 1):

Table 1. Analyzed matches of Levski U17.

Match	Home Team	Result	Away Team
1.	CSKA – Sofia	0:2	PFC Levski Sofia
2.	PFC Levski Sofia	0:0	Cherno More
3.	PFC Levski Sofia	4:0	PFC Etar
4.	CSKA 1948	0:1	PFC Levski Sofia
5.	PFC Levski Sofia	1:2	PFC Ludogorets
6.	PFC Lokomotiv PD	3:4	PFC Levski Sofia
7.	PFC Slavia	0:2	PFC Levski Sofia

8.	PFC Levski Sofia	4:0	FC Nacional
9.	PFC Levski Sofia	0:0	PFC Dunav
10.	FC Hebar	1:2	PFC Levski Sofia

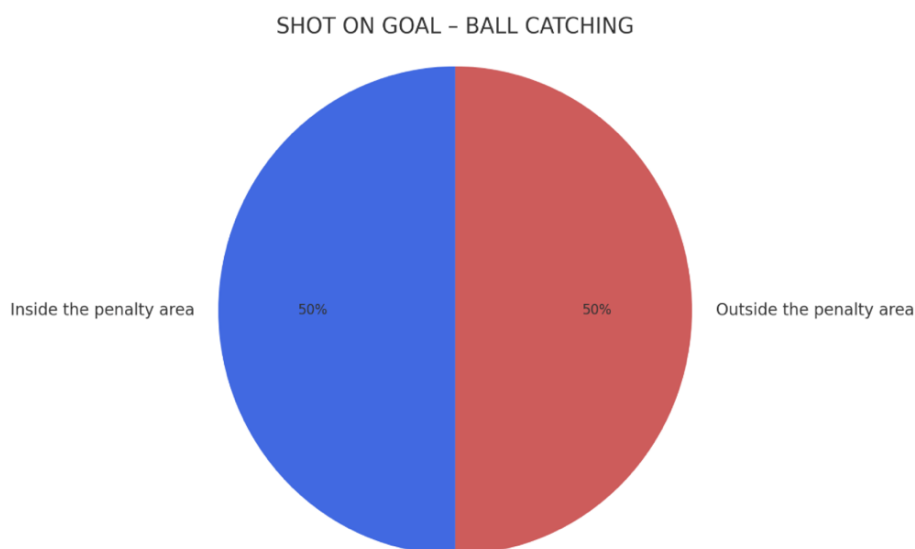


Figure 1. Shot on goal – ball catching by the goalkeeper

The first performance indicator analyzed was ball-catching after shots on goal. The actions were categorized based on shot origin—inside or outside the penalty area (Figure 1). The goalkeepers of PFC Levski successfully caught 14 shots from each zone, totaling 28 saves using catching technique. These results indicate a high level of proficiency in this fundamental goalkeeping skill, essential for elite-level development.

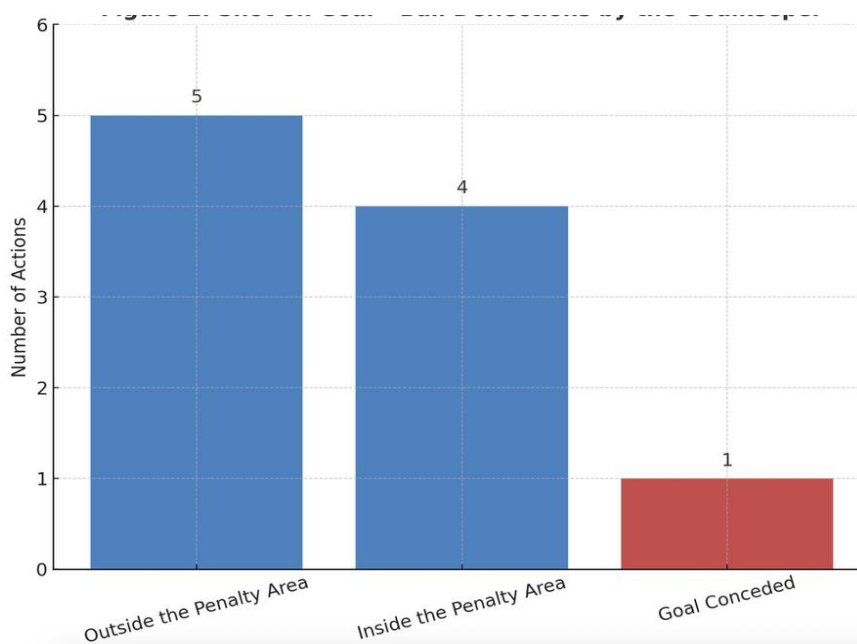


Figure 2. Shot on Goal – Ball Deflections by the Goalkeeper

A detailed analysis was conducted on goalkeeper deflections following shots from inside and outside the penalty area (Figure 2). A total of 10 such actions were recorded—5 from outside and 5 from within the box. While Levski's

goalkeepers effectively cleared all long-range attempts without conceding follow-up shots, one deflection from inside the penalty area resulted in a second attempt and a conceded goal.

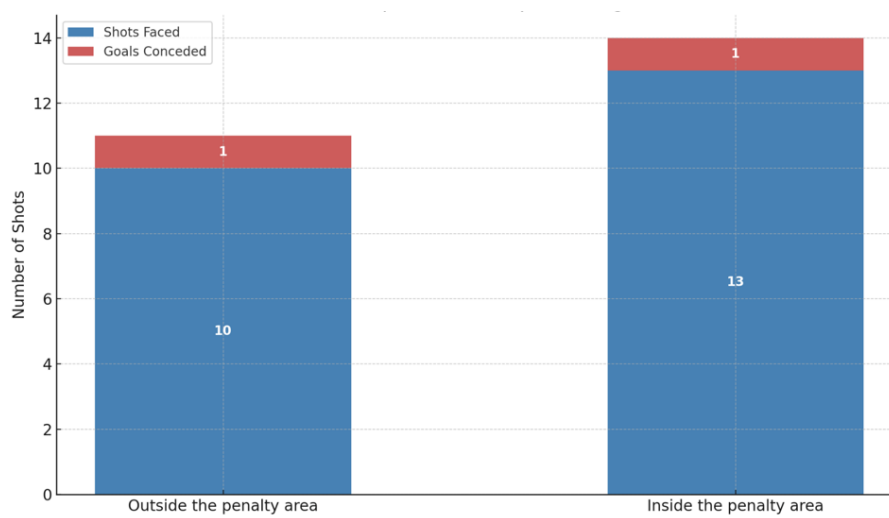


Figure 3. Goal Attempts – Goalkeeper Diving Saves

A total of 23 instances were recorded in which PFC Levski U17 goalkeepers used the diving save technique in response to shots from both inside and outside the penalty area. Opponents attempted 30% more shots from outside the box, likely due to Levski's effective defensive organization limiting close-range opportunities. Two goals were conceded—one from each zone—demonstrating a generally effective use of diving saves in managing long- and short-range threats (Figure 3).

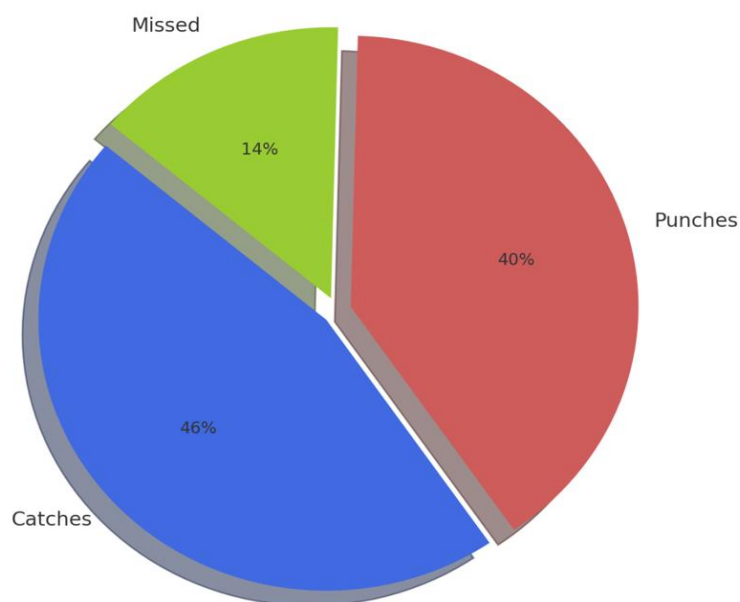


Figure 4. Goalkeeper Aerial Ball Interventions

A detailed analysis was conducted on aerial balls delivered toward the goalkeepers. Each aerial intervention was categorized as either a catch, a punch, or a missed action, where a miss was considered an unsuccessful outcome. Out of 35 total high balls, goalkeepers successfully caught the ball in 46% of the cases, punched it away in 40%, and failed to make contact in 14% (Figure 4). Although the missed actions did not result in goals, they are viewed as significant errors. Effective handling of aerial deliveries is a key indicator of goalkeeper proficiency. An overall 86% success rate in this

aspect demonstrates strong technical competence, which is essential for a smoother transition from youth to senior-level football.

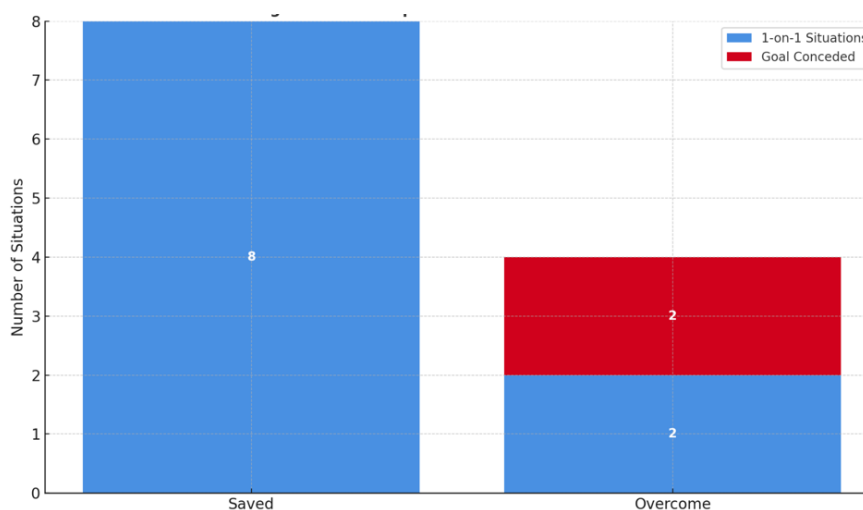


Figure 5. Goalkeeper performance in 1-on-1 situations during the defensive phase

One-on-one situations are considered fundamental in the development of high-level goalkeepers for professional football. All 1v1 encounters were extracted and analyzed (Figure 5). Out of 10 total situations, Levski's goalkeepers successfully saved 8 (80%) and were beaten in 2 instances, both resulting in goals. This performance indicates a high level of ability in managing confrontations with opposing attackers.

Throughout the 10 analyzed matches, Levski's goalkeepers conceded a total of 6 goals, while keeping a clean sheet in 7 of them. Notably, all 6 goals were conceded across only 3 matches, averaging 2 goals per match in those specific games. This concentration suggests a strong overall defensive performance and effective goalkeeper play in most matches. The 7 clean sheets also highlight good coordination within the defensive unit and the goalkeeper's key contribution to team stability.

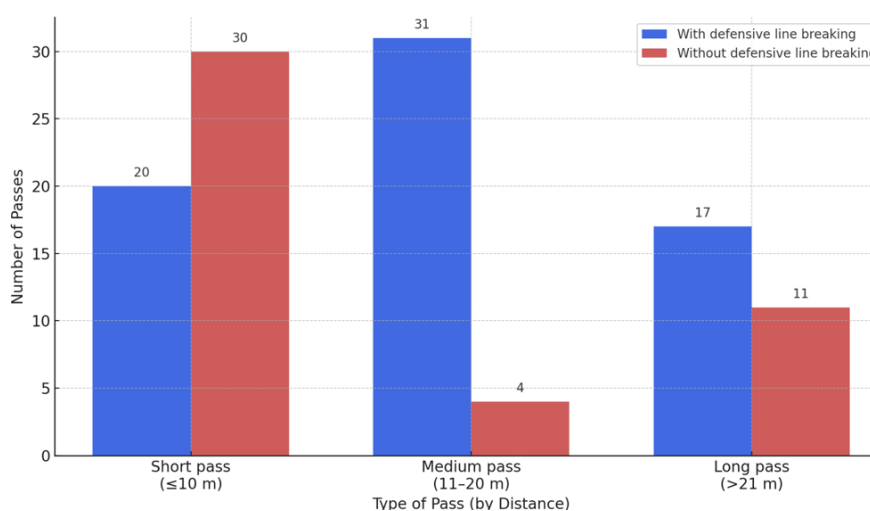


Figure 6. Goalkeeper Build-Up Play with the Foot

To analyze the goalkeeper's contribution during the attacking phase, we categorized passes into three types based on distance: short (≤ 10 meters), medium (11–20 meters), and long (> 21 meters). Each pass was evaluated based on whether it successfully bypassed an opponent's defensive line. As shown in Figure 7, short passes were the most frequently used, yet 60% of them did not overcome a defensive line, limiting their offensive impact. In contrast, **81%** of medium-range passes successfully bypassed a defensive line, highlighting their strategic importance in initiating effective build-up play, particularly against high-pressing opponents. Regarding long passes, **60.7%** overcame at least one defensive line, which is expected due to the extended distance and trajectory involved. The analysis of goalkeeper hand distributions for Levski

U17 revealed that 74% of all throws were short (up to 15 meters), while 26% were classified as long throws exceeding 15 meters. In contrast to initiating attacks by hand, goalkeepers from Levski U17 most frequently used their feet to transition into attack, accounting for 73% of the situations. In 27% of the cases, they used hand distribution to quickly switch from defense to offense.

Table 2. Expert Evaluation of Goalkeeper's Actions in the Attacking Phase

Action Category	Poor	Good	Excellent
Total Decisions – Short Passing	22	87	42
Short Passing	9	30	11
Medium Passing	2	20	14
Long Passing	9	13	4
Transition to Attack	2	5	3
Build-up Play with Hands	0	17	10

To assess the goalkeeper's attacking contribution (Table 2), all actions were rated using a three-point scale: Poor, Good, and Excellent. Overall, 57.6% of the decisions were rated as good, 27.8% as excellent, and 14.6% as poor. Short passes were mostly positive, with 60% rated as good, 22% as excellent, and 18% as poor. Medium-range passes were particularly effective: only 2 poor decisions were recorded, while 20 were good and 14 were excellent. However, long passes showed a higher rate of poor decisions—34.6%, meaning roughly every third long ball lacked purpose. Notably, all actions involving throws showed either good or excellent decision-making, with no poor evaluations in this category.

Discussions

The results of this study emphasize the evolving demands on the modern goalkeeper in elite youth football. Goalkeepers are no longer confined to traditional shot-stopping duties but play a pivotal role in both the defensive structure and the attacking transitions of their teams. Our analysis demonstrated a high rate of success in 1v1 situations (80%) and aerial duels (86%), supporting findings from Otte et al. (2023), which highlight decision-making speed and perceptual awareness as core traits for goalkeeper effectiveness under match conditions. The distribution patterns revealed a strategic use of medium-distance passes to overcome defensive lines, with 81% of those contributing directly to attack progression.

This confirms earlier findings by Sarmento et al. (2018), who noted that effective build-up play initiated by goalkeepers is now considered a critical performance indicator in elite-level football. Despite this progress, the study also identified a relatively high error rate in long passes (34.6%), suggesting an area for further development. These findings align with Lago-Peñas, Gómez-Ruano & Yang (2017), who argue that tactical context—such as press intensity and spatial constraints—strongly influences passing outcomes and styles of play.

Furthermore, the decision-making evaluation showed that 85.4% of all goalkeeper actions during attacking phases were categorized as either good or excellent. This reinforces the growing evidence that modern goalkeepers must be capable of initiating structured attacks, a skill often underemphasized in traditional training regimes (Gabbett et al., 2016). Importantly, our findings also connect with broader outcomes at the team level. Andersen & Sally (2014) found that clean sheets in the English Premier League between 2002 and 2012 were associated with an average of 2.5 more points than merely scoring a goal—emphasizing the disproportionate value of defensive efficiency, particularly the goalkeeper's role.

From a physical and tactical development standpoint, Gabbett et al. (2016) suggest that undertraining is as detrimental as overtraining, particularly for position-specific roles that require rapid transitions and consistent high-level execution. Goalkeepers must be routinely exposed to high-intensity, decision-rich match scenarios to achieve the necessary level of robustness in professional football. In support of our findings, Szwarc et al (2010) emphasize that goalkeeper contributions to team play extend far beyond defensive actions, particularly through the accuracy and tactical timing of distributions. Their match analysis underscores that goalkeeper interventions in offensive transitions are critical in sustaining possession and applying pressure, which aligns with our observation that over 80% of medium range passes broke opponent defensive lines.

In addition to sport-specific technical and tactical factors, the development of young goalkeepers is also shaped by broader social influences. The COVID-19 pandemic clearly demonstrated that social isolation, family well-being, and community stability can significantly affect the resilience and progression of junior athletes. Such findings emphasize that methodological frameworks for goalkeeper training should not only account for physical and technical preparation but also consider the social environment in which players grow and perform (Stoilov et al. 2020).

In conclusion, this study confirms the need for an integrated developmental model for goalkeepers that goes beyond isolated technical drills. It must incorporate situational training, tactical awareness, distribution under pressure, and mental

resilience. These competencies, supported by evidence-based metrics, should guide goalkeeper education across elite youth academies.

Conclusions

This study highlights the evolving role of goalkeepers in elite youth football, emphasizing their importance in both defensive and offensive phases of the game. The results demonstrate that PFC Levski Sofia U17 goalkeepers exhibit high technical competence in actions such as ball-catching, aerial duels, and 1v1 situations, as well as effective ball distribution. Notably, medium-range passes (81% line-breaking success) played a crucial role in initiating attacks. However, the study identifies areas for improvement, such as the accuracy of long passes and reducing distribution errors.

Additionally, the findings support the need for an integrated training approach for goalkeepers, incorporating not only technical skills but also tactical awareness, quick decision-making, and mental resilience under pressure. This research confirms that modern goalkeepers are key figures in team success, and their development must be holistic to meet the demands of contemporary football. Future training programs should prioritize situational drills, game intelligence, and position-specific conditioning to further enhance their contributions on the field.

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