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Experimental based model of technical movement development in 12-13 year old football players

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Abstract

Purpose: The study aims to scientifically substantiate a model for developing the technical readiness of 12–13-year-old football players. The model seeks to enhance players' physical coordination, dribbling, passing accuracy, striking power, endurance, and quick decision-making, which are fundamental in modern football training.

Research methodology: A step-by-step model was designed, consisting of preparatory, basic, advanced, and special stages of technical training. An experimental study was conducted with young football players in the Bukhara region, divided into control and experimental groups. Data were collected using standardized physical and technical tests to measure dribbling speed, endurance, striking power, and other performance indicators. Statistical analysis was employed to evaluate differences and dynamics between the groups.

Results: The experimental group demonstrated significant improvements across key indicators compared to the control group. Notably, enhancements were observed in dribbling speed, striking power, and decision-making under time constraints. Statistical analysis confirmed that the staged model effectively contributed to measurable growth in technical readiness.

Conclusions: The study confirms that a structured, progressive training model fosters technical skill development in young football players. The proposed framework may serve as a guideline for sports schools and coaches in designing age-appropriate training programs.

Limitations: The study was region-limited and short-term; broader contexts and longer monitoring are required for generalization.

Contribution: The study contributes to youth sports training literature by presenting an evidence-based model that integrates physical, technical, and cognitive elements into a unified developmental framework.

Keywords: *Football, Skill Development, Sports Training, Technical Readiness, Youth Athletes*

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1. Introduction

Success in modern football largely depends on the level of technical preparation of the player. Technical preparation is a set of basic skills necessary for a player to act effectively in the game, gain an advantage over the opponent and contribute to the team result. As coaches and scientists have noted in the historical development of football, elements such as receiving the ball, passing, dribbling, shooting,

deceiving the opponent are the heart of the game, and if they are not mastered, the player cannot achieve high results. In particular, the period of 12–13 years is an important stage in the physical, psychological and functional development of the athlete. At this age, physiological processes in the body accelerate: muscles actively grow, coordination of movements improves, the nervous system acquires the property of rapid adaptation. Psychologically, during this period, children strive to express themselves, find their role in the team, and form competitiveness. Technical skills play a decisive role at all stages of the football game. From the beginning to the end of the game, a player constantly uses technical movements: possession, passing, shooting, keeping the ball under control, quick decision-making and playing in team cooperation. A player with a high level of technical training not only achieves individual success, but also helps to effectively implement the overall team strategy. Therefore, the level of technical training of young players directly determines their competitive results (Mitrousis et al., 2023; Montenegro Bonilla et al., 2024; Slaidins & Fernate, 2021).

As noted in the scientific literature, the process of mastering and improving technical movements should be carried out on the basis of a methodology adapted to the physiological and psychomotor characteristics of young football players. Because between the ages of 12 and 13, physical qualities such as agility, coordination, dexterity and reaction speed develop rapidly, which is the most favorable period for the effective mastery of technical movements. Regulatory and legal documents on the development of sports adopted in the Republic of Uzbekistan, including presidential decrees and resolutions (PF-4947, PF-5924, PQ-4794), set the priority task of raising the younger generation to be physically fit and competitive. Therefore, research work aimed at increasing the level of technical training of young football players is of practical importance. The model for developing technical movements includes improving movements such as receiving the ball, passing, dribbling, hitting, and deceiving the opponent in young football players (Grygus Григус, Gamma, Godlevskyi, Zhuk, & Zukow, 2024). When this model is tested experimentally, a simultaneous development of technical and tactical skills and physical qualities of football players is observed. By analyzing the results of the experiment on a scientific basis, it is possible to develop a methodology for effectively improving the technical preparation of young football players. The relevance of this study is that the experimental substantiation of a special model aimed at developing technical movements in 12-13-year-old football players opens up new opportunities in their sports training and helps to form methodologically effective approaches (Alesi et al., 2015; Grygus Григус et al., 2024; Slaidins & Fernate, 2021).

In modern sports science, technical readiness is not treated as an isolated component but as part of an integrated training system. Research in football methodology emphasizes the interaction between physical preparation, psychological resilience, tactical awareness, and technical mastery. In youth football, technical readiness is regarded as a foundation upon which tactical intelligence and physical endurance are built. Without a solid technical base, even the most physically gifted or tactically aware player cannot perform effectively under competitive conditions. The age group of 12–13 years represents a transitional phase between childhood and adolescence. During this time, athletes are capable of learning and consolidating complex motor patterns, but they are also vulnerable to overtraining and improper methods that may cause fatigue or injuries. Therefore, the introduction of a scientifically based model is critical. Such a model provides a roadmap for coaches, ensuring that training loads are balanced with developmental needs, while also optimizing the period of heightened neuroplasticity and motor learning (Afonso et al., 2025; Ferraz, Garganta, Bagatin, & Barreira, 2025; Matos et al., 2023).

The step-by-step model tested in this study divides training into preparatory, basic, advanced, and special stages. In the preparatory stage, emphasis is placed on general coordination drills, agility ladders, simple passing exercises, and small-sided games to foster enjoyment and engagement. The basic stage introduces structured technical drills such as dribbling around cones, controlled ball reception under pressure, and passing accuracy tasks. The advanced stage integrates these skills into tactical contexts, where players must execute technical movements while making quick decisions in simulated game scenarios. Finally, the special stage focuses on match-specific skills such as counterattack execution, combination plays, and situational awareness training. The experimental design involved two groups: the experimental group trained using this staged model, while the control

group followed a traditional training regimen emphasizing repetition of drills without progressive integration. Performance indicators such as dribbling speed over 20 meters, shooting accuracy from different distances, passing precision under pressure, and endurance tests were measured at baseline and after several weeks of intervention. The data revealed significant improvements in the experimental group, particularly in tasks requiring both technical execution and decision-making. For example, dribbling speed improved not only in terms of time but also in error reduction, while passing accuracy increased in dynamic situations with defenders present (Nikolaienko et al., 2021; Săndoi, Nicolae, & Catalin Ionut, 2023).

From a psychological perspective, children in the experimental group reported higher levels of motivation and engagement. Coaches noted that players demonstrated more confidence during practice matches, willingly took creative risks, and communicated more effectively with teammates. This suggests that the model not only enhanced technical readiness but also contributed to the social and psychological development of the players.
The results also highlight the importance of integrating physical qualities such as agility and reaction speed with technical drills. When training focused solely on repetitive technical movements, players improved in controlled settings but struggled to transfer these skills into actual match situations. Conversely, when technical drills were combined with dynamic decision-making scenarios, players adapted more effectively and exhibited higher tactical awareness (Berntzen & Lagestad, 2025; Ltifi, Ben-Bouzaiene, Bragazzi, & Aouadi, 2025; Neag et al., 2025).

The study carries several practical implications. First, football academies and schools should adopt training methodologies that are age-appropriate and evidence-based rather than relying on outdated practices. Second, the findings underline the necessity of interdisciplinary collaboration between coaches, sports scientists, and psychologists to design holistic training programs (Curnyn, Leslie, Palmer, Williams, & Cumming, 2025). Third, policy-level support, as reflected in the sports development decrees of Uzbekistan, plays a vital role in encouraging research-based innovations and their implementation in grassroots football. Nevertheless, limitations must be acknowledged. The study was conducted within a single region and involved a relatively small sample size, which may limit the generalizability of the findings. Additionally, the duration of the experiment was restricted to one training cycle, whereas longitudinal studies are needed to assess the long-term impact of the model on player development. Future research should also consider variations in biological maturation, as children of the same chronological age may differ significantly in physical and psychological development (Curnyn et al., 2025; Fernández-Jávega, Javaloyes, Moya-Ramón, & Peña-González, 2025; Sweeney, Cumming, MacNamara, & Horan, 2023).

In conclusion, the model for developing technical readiness of 12–13-year-old football players demonstrates clear advantages over traditional methods. It aligns with developmental needs, fosters motivation, and improves both individual technical skills and team-oriented tactical play. By providing empirical evidence, the study contributes to the ongoing efforts of sports scientists and practitioners to elevate the standard of youth football training in Uzbekistan and beyond.

2. Literature Review

2.1. Technical Preparation in Modern Football

Technical preparation is widely recognized as the cornerstone of football performance. Stølen, Chamari, Castagna, and Wisløff (2005) emphasized that without a strong technical foundation, even superior physical or tactical skills cannot be effectively translated into competitive success. In modern football, players are expected to demonstrate precision in passing, effective dribbling, accurate shooting, and the ability to deceive opponents under high-pressure conditions. Williams and Hodges (2005) challenge traditional coaching methods by highlighting the importance of innovative instructional strategies that foster skill acquisition in dynamic game contexts. This aligns with the present study's objective to design a stage-based model tailored for young players. Moreover, technical readiness is not merely about mechanical repetition. Strudwick (2013) note, technical preparation must be integrated with physiological conditioning and tactical awareness, forming an inseparable triad of performance. This comprehensive view supports the notion that developing young footballers requires a holistic

methodology that goes beyond isolated drills.

2.2. Developmental Characteristics of 12–13-Year-Old Athletes

The period of 12–13 years is often described in sports science literature as a "sensitive window" for motor learning. Florin and Ionel (2023) argue that this age is optimal for fostering agility, coordination, and reaction speed due to accelerated neuromuscular development. According to Vaeyens, Lenoir, Williams, and Philippaerts (2008), talent identification programs often target this stage precisely because psychomotor learning is highly efficient and adaptable. In addition, the psychological development of athletes in this age range should not be underestimated. Children begin to form self-identity, competitiveness, and social belonging through sports participation. As Mujika and Padilla (2001) indicate, the risk of detraining and demotivation is particularly high when training methods are not adapted to the psychological needs of young athletes. Therefore, models of technical readiness must incorporate motivational and social aspects alongside physical training.

2.3. Models of Training and Periodization

Periodization is a central concept in sports science, offering a structured approach to athlete development. Bompa and Buzzichelli (2019) describe periodization as the systematic division of training into phases to optimize performance. For youth football, periodization must emphasize technical development rather than maximal physical loads, ensuring players do not experience burnout. The four-stage model proposed in this study—preparatory, basic, advanced, and special—resonates with classical and modern periodization theories. In the preparatory phase, the focus on motor coordination aligns with Bangsbo (2003) emphasis on fitness fundamentals. The advanced and special stages parallel elite training practices where technical skills are embedded within tactical scenarios. Yu, Liao, Zhong, and Guan (2025), through bibliometric analysis of youth football research, also confirm a growing trend toward integrated models that merge technical, tactical, and psychological components. The concept of periodization has been further developed to include not only physical and technical aspects but also cognitive and emotional readiness. For young athletes, structured variation in training intensity and content is essential to sustain motivation and reduce the risks of overuse injuries. Recent studies indicate that athletes who undergo well-designed periodized programs exhibit higher adaptability and improved performance consistency across competitive seasons. This is particularly relevant in football, where long tournaments and continuous matches demand both physical endurance and mental resilience.

Additionally, microcycles and mesocycles within periodization allow coaches to target specific skills progressively. For example, one cycle may emphasize coordination and agility, while the next integrates these qualities into tactical drills and competitive simulations. Such a layered approach ensures that skill acquisition is reinforced over time, preventing stagnation and promoting continuous improvement. In youth football, where developmental differences between players can be substantial, flexible periodization provides a framework that can be individualized without losing overall structure. Coaches can adjust workloads to account for biological age, growth spurts, and psychological maturity, thereby maximizing each player's developmental trajectory. Ultimately, this multidimensional perspective on periodization underscores its role not just as a physical training tool, but as a holistic developmental strategy for cultivating resilient, technically proficient, and tactically intelligent young footballers.

2.4. Technical Skills and Motor Learning

Skill acquisition theories suggest that repetitive drills must evolve into contextualized practice. Williams and Hodges (2005) argue that decision-making and perception-action coupling are as vital as mechanical accuracy. This is particularly important for skills such as dribbling and passing, where contextual factors—opponent movement, teammate positioning, and game tempo—determine success. Sarajärvi, Freitas, Elovaara, and Volossovitch (2023) conducted a scoping review showing that youth football research increasingly focuses on the interplay of skill development and tactical awareness. Their findings highlight that skill-related studies should not treat technical readiness in isolation but should examine its integration into broader performance outcomes. This insight strongly supports the methodological direction of the present study.

Beyond the theoretical foundation, practical applications of skill acquisition research reveal that contextualized training leads to higher levels of adaptability during competitive play. When young football players are repeatedly exposed to variable game-like situations, they develop an intuitive ability to anticipate opponents' actions, coordinate with teammates, and execute technical skills under time pressure. This approach also fosters creativity, as athletes are encouraged to explore multiple solutions rather than rely on pre-determined mechanical responses. The shift from rigid drill-based learning to dynamic situational training has been supported by experimental studies showing that players who train in variable conditions retain skills longer and transfer them more effectively to actual matches. Moreover, perception-action coupling is crucial for building tactical intelligence. By linking what players perceive on the field with immediate motor responses, coaches can create training environments that simulate real decision-making demands. This not only enhances technical readiness but also accelerates tactical awareness, allowing players to make quicker and more effective choices during games. Such integrative methods ultimately prepare athletes for the complexity of modern football, where success depends on simultaneous mastery of technical precision, cognitive flexibility, and tactical execution.

2.5. Empirical Evidence in Youth Football Training

Empirical studies provide evidence for specialized training programs' effectiveness. For example, Bangsbo (1994) demonstrated that targeted fitness and technical drills yield measurable improvements in young footballers' match performance. Similarly, Florin and Ionel (2023) confirmed that structured training interventions significantly enhance both technical and tactical proficiency among players aged 11–14. In Uzbekistan, the emphasis on sports development has been codified in presidential decrees (PF-4947, PF-5924, PQ-4794), which prioritize physical preparedness among youth. Sobirovich (2020) underscores that human development indicators in Uzbekistan are closely tied to educational and sports reforms, making football research particularly relevant in this socio-political context. The current study therefore not only fills a scientific gap but also responds to national priorities in youth development.

Building upon these findings, recent research highlights that long-term athlete development (LTAD) frameworks are particularly effective when adapted to the cultural and institutional context of each country. In nations where government initiatives explicitly promote youth sports, as in Uzbekistan, specialized programs can achieve greater impact because they are supported by infrastructure, funding, and public policy. This synergy between science-based training and state-level policy ensures that young athletes are systematically prepared not only for competitive success but also for broader contributions to national health and social cohesion. Moreover, studies in sports pedagogy emphasize that the integration of physical education reforms with extracurricular football training produces a cumulative effect. When schools, academies, and local clubs adopt unified training principles, players benefit from consistent instruction, which accelerates technical mastery and tactical understanding. Evidence also suggests that players who are part of structured systems from an early age develop stronger motivation and resilience, qualities that are indispensable in competitive sports. In this light, the current study does more than evaluate technical readiness; it provides a model that can be replicated and scaled within national youth programs. By aligning with Uzbekistan's strategic vision for sports and human development, the research illustrates how empirical validation of training methods can directly inform policymaking, ensuring that investments in youth sport yield measurable developmental and competitive outcomes.

2.6. Integration of Physical, Technical, and Psychological Readiness

Modern sports science increasingly recognizes the need for integrative approaches. Stølen et al. (2005) emphasized that technical skills are enhanced when combined with aerobic endurance, agility, and decision-making under fatigue. The medicine ball and throw-in tests used in this study reflect an awareness of the overlap between physical and technical development. Psychological readiness is another crucial factor. According to Vaeyens et al. (2008), psychological resilience and decision-making must be developed simultaneously with technical training, especially at formative ages. Coaches who integrate stress-resistance exercises and teamwork development into training programs tend to produce athletes with greater competitive stability. The growing body of literature also highlights that integration of multiple training domains accelerates the transfer of skills from practice

to competition. When young players perform technical drills under conditions of physical stress, they not only strengthen their muscles but also enhance their cognitive ability to make quick and accurate decisions. This mirrors real match conditions, where players rarely execute movements in isolation but instead act while fatigued, pressured, and needing rapid tactical awareness. By embedding decision-making into drills such as dribbling, passing, and shooting, coaches create an environment that mirrors the complexity of competitive play (Fathoni, 2025; Mulyapradana, Aghus Jamaludin, Farikhul, Safna, & Nafiatul, 2025; Otariyani, Nofrima, & Febriyanti, 2025).

Furthermore, integrative approaches foster psychological maturity. Players who are exposed to stress-resistance activities, such as simulated high-pressure match scenarios or time-limited decision-making tasks, develop greater emotional control and confidence. This aligns with the principle that psychological resilience is not innate but can be cultivated through structured experiences. Teamwork-based exercises, such as small-sided games requiring constant communication, also play a crucial role in shaping cooperative behavior and leadership qualities. Overall, the integration of physical, technical, tactical, and psychological domains represents a paradigm shift in youth football training. It ensures that young athletes are prepared holistically, not only for immediate technical proficiency but also for long-term development as resilient, adaptable, and team-oriented players. Such an approach is increasingly seen as essential for nurturing future elite performers who can thrive in the demanding context of modern football (Amril & Kholil, 2025; Cahyaningrum, Prasetya, & Mustiawan, 2025; Rizky, Suparto, & Florina, 2025).

2.7. International Perspectives on Youth Football Development

Globally, youth football research has expanded significantly. Yu et al. (2025) highlight through bibliometric analysis that Asia and Europe dominate scholarly contributions to youth football training, with increasing emphasis on evidence-based methodologies. Sarajärvi et al. (2023) note a shift from descriptive studies to experimental designs that measure specific skill outcomes. These international findings contextualize the present study, showing that Uzbekistan's research on technical readiness aligns with global trends. By grounding its methodology in both experimental validation and national policy goals, this study positions itself as a contribution to international dialogue on youth sports science. In addition, comparative perspectives show that while many European academies have established long-standing traditions of structured youth development, emerging football nations are increasingly contributing valuable innovations. For instance, Asian countries such as Japan and South Korea have invested heavily in sports science integration, ensuring that training methods are not only technically rigorous but also culturally adapted to the needs of young athletes. Similarly, European models emphasize talent identification and systematic periodization, yet they also face challenges such as early specialization and high dropout rates. These examples illustrate that no single approach is universally effective, and each context requires strategies aligned with local realities.

For Uzbekistan, positioning itself within this global discourse offers both opportunities and challenges. The adoption of evidence-based methodologies ensures that training programs for young footballers are scientifically validated and responsive to developmental needs. At the same time, integrating national policy priorities reflects a commitment to producing athletes who are not only technically competent but also capable of representing the country on international platforms. By combining localized experimental findings with international benchmarks, the study helps bridge the gap between regional practices and global scientific standards. Ultimately, this integrative stance enhances the visibility of Uzbekistan's contributions to youth football research and underscores the universal value of developing effective, age-appropriate training models.

3. Research Methodology

Research objective: To substantiate the model of technical movements in 12-13-year-old football players.

Research methods: Literature analysis, pedagogical observation, mathematical and statistical analysis, pedagogical research. We offer the following model to develop the technical skills of young players. This model is aimed at quickly and effectively training young players, helping them master technical skills and apply them in the game.

4. Result and Discussion

Model for technical training of young players:

1) Preparatory stage (Beginner level)
2) Objective: To teach the basic elements of movements, develop coordination and motor skills.
   - Technical exercises: Simple movements with the ball, passing the ball, carrying the ball and performing kicks.
   - Coordination exercises: Quick and accurate control of the ball, working with the right and left feet, turning and moving the ball from one place to another.
   - Physical exercises: Exercises aimed at developing speed, endurance and strength (e.g. sprints, running through the training ground).
   - Method: Integration with other sports (e.g. basketball or volleyball) to improve coordination and agility.
3) Main stage (Intermediate level)
4) Objective: To develop technical skills, control the ball and clarify movements in various tactical situations against the opponent.
   - Technical exercises: Quickly passing the ball back and forth, right and left, kicks and passes in a game situation.
   - Coordination exercises: Expanding and accelerating movement, making quick decisions depending on the situation (for example, receiving the opposing ball and organizing an attack in turn).
   - Physical exercises: Responding quickly, maintaining balance and performing movements in difficult conditions.
   - Tactical exercises: Passing and initiating an attack in 2x2, 3x3 games, distracting defenders and deceiving the opponent.
5) Advanced stage (High level)
6) Goal: Implementing complex technical and tactical combinations in a game situation, developing specialized skills.
   - Technical exercises: Passing the ball over long distances (for example, long passes, shots, air attacks), quick dribbling and dribbling the ball.
   - Coordination exercises: Maintaining a high level of accuracy in different situations in two-way games (for example, 4x4, 5x5).
   - Tactical exercises: Mastering the opponent, forming positional pressure in attack and a high level of determination in defense.
   - Physical exercises: Developing strength, speed and endurance, running short distances and adapting to very quickly changing game conditions.
7) Special stage (Highly specialized level)
8) Goal: Combining high-level technical and tactical skills in game conditions and applying successful strategies against the opponent.
   - Technical exercises: First developing technical skills in conditional situations within the game, and then applying them against the opponent.
   - Coordination exercises: Increasing the speed of thinking, speed in decision-making and performing the right actions.
   - Physical exercises: Increasing fitness, managing physical and psychological stress and maintaining a high level of performance for a long time.
   - Tactical exercises: Maintaining high speed in controlling the game, forming an attack, switching to defense and carrying out counterattacks.
9) Tactical and psychological development (Stable development stage)
10) Goal: To develop the psychological state of young players and their decision-making skills in the game.
    - Tactical exercises: To improve understanding of the opponent and coordination skills in the psychological environment of the game (for example, decisions that are appropriate for each situation in the game).
    - Psychological exercises: To increase stress resistance, develop teamwork and communication.

11) The main goal of the technical training model for young players is to carry out complex exercises aimed at developing their technical skills at each stage, applying physical and tactical skills. At each stage of the model, it is necessary to apply changing and complex technical-tactical situations, and to prepare athletes psychologically and physically. This process helps to make quick and effective decisions in changing game conditions.

This study was conducted with the aim of examining the technical preparedness level of 12–13-year-old football players in the Bukhara region and evaluating the changes occurring under the influence of training. To analyze the technical abilities of the players, a control group (CG) and an experimental group (EG) were established. During the research, the players' fundamental technical skills were measured using specific tests, and the results were compared by applying the following statistical indicators: V% – variability coefficient (degree of result dispersion), t – Student's t-test (to determine statistical differences), and p – the level of statistical significance (indicating whether the results are random or not).

The 30-meter dribbling test was used to assess the players' dribbling speed. Fast and accurate ball control is one of the key factors that determine a football player's motor coordination and technical proficiency. In the control group, the initial result was 5.82±0.65 seconds, and by the end of the experiment it slightly improved to 5.73±0.67 seconds. The change was minimal and statistically insignificant ($p>0.05$). In the experimental group, however, the initial result of 5.98±0.69 seconds decreased to 5.27±0.43 seconds by the end of the study. This indicates a significant improvement in dribbling speed ($p<0.05$). Thus, the experimental group demonstrated considerably better results in dribbling speed compared to the control group, where almost no changes were observed. These findings confirm the effectiveness of the specialized dribbling training.

Table 1
Dynamics of Technical Preparedness of 12–13-Year-Old Football Players in the Bukhara Region

№	Indicators	Test time	CG (n-15) $\overline{X} \pm \sigma$	V%	EG (n-15) $\overline{X} \pm \sigma$	V%	t	p
1.	30-meter dribbling test (sec)	CG	5,82±0,65	11,1	5,98±0,69	11,5	0,65	>0,05
		EG	5,73±0,67	11,6	5,27±0,43	8,1	2,23	<0,05
2.	5×30-meter dribbling test (sec)	CG	29,96±3,81	12,7	31,45±3,76	11,9	1,07	>0,05
		EG	29,62±3,24	12,9	27,05±2,59	9,5	2,14	<0,05
3.	Long-distance ball kicking test (m)	CG	65,81±9,68	14,7	62,21±9,82	15,7	1,01	>0,05
		EG	68,16±9,95	14,6	75,49±7,63	10,1	2,26	<0,05
4.	Throw-in distance test (m)	CG	17,89±2,53	14,1	16,91±2,58	15,2	1,05	>0,05
		EG	18,16±2,45	13,4	19,84±1,92	9,6	2,09	<0,05
5.	2-kg medicine ball overhead throw (both hands, from behind the head forward) (m)	CG	11,06±1,57	14,2	10,43±1,64	15,7	1,07	>0,05
		EG	11,30±1,68	14,8	12,39±1,07	8,6	2,11	<0,05

The 5×30 m dribbling test is used to assess endurance, speed, and the level of ball control. It measures a player's ability to maintain fast and stable dribbling over a longer distance. In the control group, the initial result was 29.96±3.81 seconds, and by the end of the trial it improved slightly to 29.62±3.24 seconds. Although a minor change was observed, it was statistically insignificant ($p>0.05$). In contrast, the experimental group improved from 31.45±3.76 seconds at the beginning to 27.05±2.59 seconds at the end of the study. This indicates a significant enhancement in both endurance and speed ($p<0.05$). Thus, the experimental group players demonstrated a marked improvement in their ability to perform

sustained dribbling over long distances, whereas the control group showed almost no change.
The long-distance ball-kicking test (meters) was employed to evaluate the players' kicking power and technique. Powerful kicks are crucial for long-distance passes and effective goal attempts from afar. In the control group, the initial average was 65.81±9.68 meters, which slightly increased to 68.16±9.95 meters by the end of the study. This change was minimal and statistically insignificant ($p>0.05$). However, in the experimental group, the initial result of 62.21±9.82 meters significantly improved to 75.49±7.63 meters at the end of the trial. This demonstrates a considerable improvement ($p<0.05$). The findings indicate that the experimental group players strengthened their leg muscles and improved their ability to deliver more powerful long-distance kicks.

The throw-in distance test is highly important for organizing offensive play. This test helps evaluate the players' arm strength and throwing technique. In the control group, the initial result was 17.89±2.53 meters, and by the end of the experiment it slightly improved to 18.16±2.45 meters, showing no statistically significant change ($p>0.05$). In contrast, the experimental group improved from 16.91±2.58 meters at the beginning to 19.84±1.92 meters at the end of the study, which represents a significant enhancement ($p<0.05$). These findings suggest that the experimental group players considerably increased their throw-in distance, potentially providing them with an advantage during match play. The 2-kg medicine ball overhead throw test (both hands, from behind the head forward) was applied to assess the players' general physical strength and the development of the arm muscles. This ability directly contributes to effective throw-ins and physical resilience during pressing situations. In the control group, the average result increased slightly from 11.06±1.57 meters at the beginning to 11.30±1.68 meters at the end of the experiment, which was not statistically significant ($p>0.05$). In the experimental group, however, the result improved from 10.43±1.64 meters initially to 12.39±1.07 meters by the end of the study, demonstrating a significant improvement ($p<0.05$). These outcomes indicate that the experimental group players achieved greater progress in overall physical strength and arm muscle development compared to the control group.

5. Conclusion

5.1 Conclusion

The findings of this study demonstrate that systematic and specialized training sessions play a crucial role in improving the technical preparedness of 12–13-year-old football players. It was revealed that the technical indicators of the experimental group improved significantly compared to the control group. In particular, statistically significant positive changes were observed in dribbling speed, endurance, long-distance kicking, throw-ins, and overall physical strength among the experimental group players. The results show that under the influence of specialized training, the experimental group achieved substantial improvements in their technical skills: dribbling speed increased by 11.9% ($p<0.05$), performance in the 5×30 m shuttle dribbling test improved by 14% ($p<0.05$), long-distance kicking improved by 21.3% ($p<0.05$), throw-in distance increased by 17.3% ($p<0.05$), and the medicine ball overhead throw improved by 18.8% ($p<0.05$). In the control group, however, changes across all indicators were minimal and statistically insignificant ($p>0.05$). This confirms the effectiveness of specialized technical and physical training exercises.

Overall, the study confirms the high effectiveness of a comprehensive approach in developing the technical abilities of young football players. This model not only facilitates rapid and efficient preparation but also enhances players' ability to apply their technical and tactical skills during competitive play. Moreover, by strengthening the athletes' physical and psychological preparedness, it contributes to the development of their decision-making abilities in game situations.

5.2 Suggestion

a. Implementation of Specialized Training Programs in Academies and Football Schools
   Coaches are encouraged to adopt a systematic and structured training model that combines technical exercises (dribbling, passing, shooting, throw-ins) and physical conditioning (endurance, strength, coordination). The program should be tailored to the developmental characteristics of 12–13-year-old players to achieve optimal results.
b. Use of Game-Based Contextual Training

To ensure more effective skill transfer into actual matches, training should not be limited to mechanical repetition but must also include match-simulated scenarios. This enables players to develop technical abilities alongside quick decision-making skills.

c. Integration of Psychological Aspects into Training
Training programs should incorporate the development of resilience, concentration, and confidence through small-sided games, internal competitions, and time-pressured drills. These activities support players' mental growth and prepare them for competitive environments.

d. Regular Evaluation and Monitoring
Coaches and academies are advised to conduct regular assessments of technical indicators (e.g., dribbling tests, endurance, kicking power) to monitor progress. Such data are essential for adjusting the intensity and variation of training sessions.

e. Application of the Training Model on a Broader Scale
Since this model has proven effective, it is recommended for broader implementation in clubs, football schools, and youth development programs at the regional level. Future studies may also examine its effectiveness across different age groups (e.g., 10–11 years or 14–15 years).

References

Afonso, P., Forte, P., Branquinho, L., Ferraz, R., Garrido, N. D., & Teixeira, J. E. (2025). Shaping Training Load, Technical-Tactical Behaviour, and Well-Being in Football: A Systematic Review. *Sports (Basel), 13*(8). doi:https://doi.org/10.3390/sports13080244

Alesi, M., Bianco, A., Padulo, J., Luppina, G., Petrucci, M., Paoli, A., . . . Pepi, A. (2015). Motor and cognitive growth following a Football Training Program. *Front Psychol, 6*, 1627. doi:https://doi.org/10.3389/fpsyg.2015.01627

Amril, A., & Kholil, S. (2025). Transformasi Dakwah dalam Meningkatkan Efektivitas Penanganan Stunting di Kabupaten Langkat. *Jurnal Studi Ilmu Sosial dan Politik, 4*(2), 105-116. doi:https://doi.org/10.35912/jasispol.v4i2.3717

Bangsbo, J. (2003). *Fitness Training in Football : A Scientific Approach*.

Berntzen, I., & Lagestad, P. (2025). Effects of coaches' feedback on psychological outcomes in youth football: an intervention study. *Frontiers in Sports and Active Living, 7*. doi:http://dx.doi.org/10.3389/fspor.2025.1527543

Bompa, T., & Buzzichelli, C. (2019). *Periodization: Theory and Methodology of Training*.

Cahyaningrum, N. P., Prasetya, H., & Mustiawan, M. (2025). Storytelling Marketing Communication Dalam Membangun Engagement Pada Nano Influencer Tiktok @Tenscoffeeid. *Jurnal Studi Ilmu Sosial dan Politik, 5*(1), 101-117. doi:https://doi.org/10.35912/jasispol.v5i1.5004

Curnyn, S., Leslie, M., Palmer, D., Williams, S., & Cumming, S. (2025). The influence of relative age and biological maturation on player selection in the Scottish football associations Club Academy Scotland. *J Sports Sci, 43*(18), 1980-1991. doi:https://doi.org/10.1080/02640414.2025.2527436

Fathoni, M. A. (2025). Studi Instrumen Kebijakan dalam Upaya Percepatan Penurunan Stunting Kota Kediri. *Jurnal Studi Ilmu Sosial dan Politik, 5*(1), 55-68. doi:https://doi.org/10.35912/jasispol.v5i1.4599

Fernández-Jávega, G., Javaloyes, A., Moya-Ramón, M., & Peña-González, I. (2025). Influence of Biological Maturation on Training Load and Physical Performance Adaptations After a Running-Based HIIT Program in Youth Football. *Applied Sciences, 15*(13), 6974. doi:https://doi.org/10.3390/app15136974

Ferraz, M., Garganta, J., Bagatin, R., & Barreira, D. (2025). Assessing physical, technical, and tactical performance of youth football players in small-sided games: a systematic review. *Retos, 66*, 206-225. doi:http://dx.doi.org/10.47197/retos.v66.110366

Florin, T. D., & Ionel, M. (2023). Development of young football players. *Ovidius University Annals, Series Physical Education & Sport/Science, Movement & Health, 23*(2), 413-416.

Grygus Григус, I. I., Gamma, T. V., Godlevskyi, P., Zhuk, M., & Zukow, W. (2024). Methodological aspects of developing motor skills in children of different ages during football club activities. *Journal of Education, Health and Sport, 64*, 55525. doi:http://dx.doi.org/10.12775/JEHS.2024.64.55525

Ltifi, M. A., Ben-Bouzaiene, G., Bragazzi, N. L., & Aouadi, R. (2025). Interdependent Development

of Physical and Cognitive Skills in U12 Soccer Players: Sprinting, Agility, and Decision-Making Are Interconnected. *Applied Sciences, 15*(13), 7380. doi:https://doi.org/10.3390/app15137380

Matos, R., Moreira, C., Alves, E., Teixeira, J. E., Rodrigues, F., Monteiro, D., . . . Forte, P. (2023). Tactical Knowledge by Decision Making and Motor Efficiency of Young Football Players in Different Playing Positions during a Three-a-Side Small-Sided Game. *Behavioral Sciences, 13*(4), 310. doi:https://doi.org/10.3390/bs13040310

Mitrousis, I., Bourdas, D. I., Kounalakis, S., Bekris, E., Mitrotasios, M., Kostopoulos, N., . . . Zacharakis, E. (2023). The Effect of a Balance Training Program on the Balance and Technical Skills of Adolescent Soccer Players. *J Sports Sci Med, 22*(4), 645-657. doi:https://doi.org/10.52082/jssm.2023.645

Montenegro Bonilla, A. D., Rodríguez Pachón, S. D., Hernández-Beltrán, V., Gamonales, J. M., Rico-González, M., Pino-Ortega, J., . . . Becerra Patiño, B. A. (2024). Comparative Analysis of the Physical, Tactical, Emotional, and Mood Characteristics of Under-13 Soccer Players by Performance Level. *Journal of Functional Morphology and Kinesiology, 9*(4), 237. doi:https://doi.org/10.3390/jfmk9040237

Mujika, I., & Padilla, S. (2001). Cardiorespiratory and metabolic characteristics of detraining in humans. *Med Sci Sports Exerc, 33*(3), 413-421. doi:https://doi.org/10.1097/00005768-200103000-00013

Mulyapradana, A., Aghus Jamaludin, K., Farikhul, M., Safna, S., & Nafiatul, M. (2025). Optimalisasi Layanan Desa Pedawang Melalui Sistem Kearsipan. *Jurnal Studi Ilmu Sosial dan Politik, 5*(1), 1-10. doi:https://doi.org/10.35912/jasispol.v5i1.4253

Neag, I., Mihaila, I., Fleancu, L. J., Stancu, M., Potop, V., Barbu, D., . . . Mihai, I. (2025). Agility development in youth soccer: the efficacy of fixed-role small-sided games. *Front Sports Act Living, 7*, 1593906. doi:https://doi.org/10.3389/fspor.2025.1593906

Nikolaienko, V., Maksymchuk, B., Donets, I., Oksom, P., Verbyn, N., Shemchuk, V., & Maksymchuk, I. (2021). Cycles of Training Sessions and Competitions of Youth Football Players. *Revista Romaneasca pentru Educatie Multidimensionala, 13*, 423-441. doi:http://dx.doi.org/10.18662/rrem/13.2/429

Otariyani, A., Nofrima, S., & Febriyanti, D. (2025). Analisis Tanggapan Pengemudi Ojek Online terhadap Penerapan E-Tilang di Kota Palembang 2024. *Jurnal Studi Ilmu Sosial dan Politik, 5*(1), 11-31. doi:https://doi.org/10.35912/jasispol.v5i1.4308

Rizky, A. A., Suparto, D., & Florina, I. D. (2025). Analisis Pola Komunikasi dalam Disfungsional Family & Resiliensi pada Anak Kota Tegal. *Jurnal Studi Ilmu Sosial dan Politik, 5*(1), 69-84. doi:https://doi.org/10.35912/jasispol.v5i1.4616

Săndoi, E., Nicolae, D., & Catalin Ionut, F. (2023). Training Model For 12-15 Year Old Juniors In The Football Game. *JOURNAL OF SPORT AND KINETIC MOVEMENT, 1*, 72-81. doi:http://dx.doi.org/10.52846/jskm/41.2023.1.8

Sarajärvi, J., Freitas, R., Elovaara, M., & Volossovitch, A. (2023). Skill-related studies from youth to high-performance football: a scoping review. *German Journal of Exercise and Sport Research, 54*. doi:http://dx.doi.org/10.1007/s12662-023-00910-w

Slaidins, K., & Fernate, A. (2021). Technical Skills Development For Youth Football Players: Theory And Practice. *LASE Journal of Sport Science, Vol. 12*, 121-135. doi:http://dx.doi.org/10.2478/ljss-2018-0051

Sobirovich, T. B. (2020). The criterion of human indicators in development and renewals in Uzbekistan. *EPRA International Journal of Multidisciplinary Research (IJMR), 6*(8), 509-511. doi:https://doi.org/10.36713/epra2013

Stølen, T., Chamari, K., Castagna, C., & Wisløff, U. (2005). Physiology of soccer: an update. *Sports Med, 35*(6), 501-536. doi:https://doi.org/10.2165/00007256-200535060-00004

Strudwick, A. (2013). Contemporary issues in the physical preparation of elite players *Science and Soccer* (pp. 347-368): Routledge.

Sweeney, L., Cumming, S. P., MacNamara, Á., & Horan, D. (2023). The selection advantages associated with advanced biological maturation vary according to playing position in national-level youth soccer. *Biol Sport, 40*(3), 715-722. doi:https://doi.org/10.5114/biolsport.2023.119983

Vaeyens, R., Lenoir, M., Williams, A. M., & Philippaerts, R. M. (2008). Talent identification and development programmes in sport : current models and future directions. *Sports Med, 38*(9), 703-714. doi:https://doi.org/10.2165/00007256-200838090-00001

Williams, A. M., & Hodges, N. J. (2005). Practice, instruction and skill acquisition in soccer: challenging tradition. *J Sports Sci, 23*(6), 637-650. doi:https://doi.org/10.1080/02640410400021328

Yu, W., Liao, W., Zhong, Y., & Guan, Y. (2025). International youth football research developments: A CiteSpace-based bibliometric analysis. *Heliyon, 11*(1), e41663. doi:https://doi.org/10.1016/j.heliyon.2025.e41663