

NATIONAL SPORTS ACADEMY "VASIL LEVSKI"
DEPARTMENT "FOOTBALL AND TENNIS"

PETAR PLAMENOV PETKOV

ABSTRACT

**MODEL OF TRAINING IN TECHNIQUE AND COORDINATION SKILLS FOR 8-
10-YEAR-OLD FOOTBALL PLAYERS**

**FOR AWARDING OF THE EDUCATIONAL AND SCIENTIFIC DEGREE
"DOCTOR",**

in the field of higher education

**7. Health and Sports, Professional Field 7.6 Sports, Doctoral Programme
"Theory and Methodology of Sports Science"**

**SCIENTIFIC SUPERVISOR:
FULL PROF. DANIELA DASHEVA, DSc.**

SOFIA 2025

NATIONAL SPORTS ACADEMY "VASIL LEVSKI"
DEPARTMENT "FOOTBALL AND TENNIS"

PETAR PLAMENOV PETKOV

ABSTRACT

**MODEL OF TRAINING IN TECHNIQUE AND COORDINATION SKILLS FOR 8-
10-YEAR-OLD FOOTBALL PLAYERS**

**FOR AWARDING OF THE EDUCATIONAL AND SCIENTIFIC DEGREE
"DOCTOR",**

**in the field of higher education. 7. Health and Sports, professional field 7.6
Sports, doctoral program "Theory and Methodology of Sports Science"**

SCIENTIFIC SUPERVISOR:

PROF. DANIELA DASHEVA, DSc.

Official reviewers:

Full Prof. Latchezar Dimitrov, PhD

Assoc. Prof. Galina Otcheva, PhD

SOFIA 2025

The dissertation comprises 161 standard typewritten pages, accompanied by an appendix. It is illustrated with 19 figures and 15 tables. The bibliography consists of 120 literary sources, of which 92 are in Cyrillic and 28 are in Latin, as well as one website.

The dissertation was discussed and directed for official defence at a meeting of the Football and Tennis Department at the Vasil Levski National Academy of Sports.

The public defence of the dissertation will take place on 25.09.2025, at 2 p.m., in the Beckenbauer Hall of the Vasil Levski National Academy of Sports.

INTRODUCTION

Football is undoubtedly the most popular sport among young people and middle-aged adults. It has a strong appeal to youth, which supports its development, not only because they feel compelled to play but also as an important means of gaining educational and health benefits. During training and practice, players acquire new knowledge, develop skills, improve their physical abilities, and cultivate valuable moral and mental qualities. The age range of 8 to 10 years is critical for developing football skills in young players, with particular emphasis on technical and coordination training. As they grow older, in their late teens, they reach sufficient physical and intellectual maturity, recognising the potential of technology for future football growth. In early adulthood, talent becomes more apparent, and everything becomes clearer. Observation occurs in various ways—both in Bulgaria and abroad—fostering interest in advanced training methods. We focus on children aged 8 to 10, especially in education and training processes conducted individually or in small groups, to develop practical and nurturing football skills. We believe that one training group for children in this age range should consist of no more than 10 players, with some groups comprising as few as eight and others up to 14, most being nine- and 10-year-olds. Ideally, the main coaching staff should include a conditioning coach and a goalkeeping coach. For a group of 12 to 14 children, it is advisable to base training on one or two trainers. We believe that football academies should adopt a personalised approach, especially as children mature, since personal development is vital. At this stage, coaches' work is not solely focused on immediate wins but on genuine growth and development. Results in matches during the 10th year reflect immediate progress, the players' level of preparation, and their potential to showcase talent at a national level. These principles form the foundation of our vision and model for training in technique and coordination for 8- to 10-year-old footballers.

CHAPTER ONE. LITERARY REVIEW AND PROBLEM STATEMENT

Modern football is characterised by exceptional speed and dynamism, despite the limited time and space available. According to K. Aladzhov (2001), this speed is impossible without a high level of development in fundamental physical qualities, including strength, speed, flexibility, agility, and endurance. In our view, speed both when in possession and without the ball, as well as making the best and most effective decisions during the game, is crucial for efficiency and success. In football, cognitive processes during gameplay are becoming increasingly complex, which requires continuous improvement and refinement of training models for adolescent players.

According to Sergio Lara-Bercial (2013), there are four zones of training, and motor activities always fall within one of these zones. They are:

- ✓ Boredom zone – the task results in boredom. In this zone, no progress or outcome from the training can be achieved.
- ✓ Comfort zone – the task is close to or at the athlete's ability level. Training in this zone makes players happy and helps reinforce what has been learned so far. Excessive stagnation in this zone can lead to boredom.
- ✓ Learning zone – the task exceeds the comfort zone, increasing the trainee's current capacity for knowledge, skills, and abilities.
- ✓ Panic zone – the task is too complex and far beyond the athlete's current potential. In this zone, excessive anxiety can occur, which may lead to a loss of motivation to train and fully engage in the sport.

A. Atanasov (2023) states that successful sports development and progress mainly depend on the initial steps in football. M. Tsenay and K. Lovkov (2018) add that gaps in early childhood training are difficult to compensate for later. According to D. Ivanov (2023), the success of each team, especially children's teams, is primarily determined by two factors: players' technique and fitness level. S. Stoyanov (2005) emphasises the high physical and mental demands placed on football players during competition. K. R. Sokovikov (2022) observes that modern football is characterised by increasing decision-making speed and the execution of these decisions amid rapidly changing on-field situations. The rising demands on football professionals make childhood training particularly important. The effective utilisation of training methods and tools depends on

a clear understanding of the developmental characteristics of young athletes. Experts agree that adolescent bodily changes occur heterochronously—unevenly—necessitating coaching methods that match both the age-specific traits of the athlete and their developmental rates. In Table 1, we compare two coaching models: the traditional and the modern (Beswick, 2010). Notable differences exist between them, reflecting the evolution of modern football. The traditional coach is depicted as isolated, authoritarian, and instinctive, whereas the modern coach is seen as a mentor, democratic, and focused on intelligent rather than purely strenuous work.

Table 1.

Traditional vs. Modern Football Coach

Traditional	Modern
Focused on winning	Focused on winning
Dedicated to the task	Dedicated to the task
Result as dominant	Achievement as a dominant
Instinctive	Careful planning
Dependence on players	Self-reliance
Isolated	Mentor
I am	We
Authoritarian	Democratic
Screaming	Teaching
Talking	Listening and then speaking
Coach	Educator
Former competitor	Qualified coach
Hard work	Smart work

According to L. Dimitrov (2019), technical mastery is one of the main factors contributing to sporting success. It is directly linked to the effectiveness of tactical actions in the later stages of young footballers' development. Evidence of the significance of technical abilities in modern elite football is that players who perform more short passes,

dribbles, successful tackles, shots on target, and other technical skills are in the most successful teams in Europe and worldwide (Rampini, 2009). Against this background, we can identify that technical components such as ball control, dribbling, passing, and shooting should be regarded as fundamental skills in football (Roesch, 2000; Ali, 2011). A. V. Chirva (2001) states that only through a large number of repetitions can players improve their precision in football. Mastery of football technique and the player's fitness are continuously interconnected. At a high level of motor development, opportunities to enhance technical skills are also greater. The more robust the technical preparation, the higher the chances of achieving advanced motor capabilities (Stoyanov, S., 2009).

In the direction of football technique, information is taken into account about:

- ✓ The coordination and ability of the football player to control his body;
- ✓ The feeling for the ball;
- ✓ Accuracy and speed in the execution of technical elements;
- ✓ A set of techniques that the player has mastered;
- ✓ The functional application of these elements to solve problems during a football match or training.

When developing young football players, biological age, rather than calendar age, should be prioritised because of the differing rates of growth and maturation. Often, outstanding sports achievements stem not from innate traits but from early biological maturation, which can result in a decline in training performance later on (Stoyanov, S., 2009). A 2009 study shows that athletes born in the first half of the year typically have better anthropometric measures and physiological qualities. Conversely, footballers born in the second half of the year often enhance their technical and tactical skills, sports intelligence, and ability to solve complex sporting situations more quickly and effectively (Carling et al, 2009).

The condition of the cardiovascular and respiratory systems significantly affects adolescents' working capacity and their ability to adapt to physical effort. O. Kuznetsov (2011) notes that during training, the cardiovascular system of adolescent football players works under considerable stress, as they have less oxygen available per pulse compared to adults. However, children's arteries are more elastic, capillaries are wider, and therefore, the oxidation process is more active, leading to shorter recovery times. From this, it can be deduced that oxygen is the limiting factor in the adaptation of children at this age to sustained muscle activity. The development trends of key psychomotor

functions in footballers enable adolescents to acquire the technical skills and tactical actions necessary in modern football. Meanwhile, the still immature functional development of individual organs and systems results in reduced resilience to physical exertion among young footballers. Consequently, coaches must carefully consider age characteristics, physical development, health status, and level of preparedness when organising and conducting training sessions (Dimitrov, L., 2019). Recent years have seen an increasing emphasis on players' coordination. According to Shamaonin (2009), the development level of physical qualities and coordination abilities between the ages of 7 and 11 determines future sporting success and the capacity to sustain high performance in later years. Y. Nistikakis (2009) states that the development of coordination ability influences motor skills and technical mastery, while Tsvetkov and Gadzhev (2020) identified a strong correlation between coordination abilities and technical skills. The more coordinated a footballer is, the more technically skilled they tend to be, and vice versa. In early childhood (U8-U11), significant changes occur in brain structures and functions. By the time children start school, their brain weight has already reached 90% of adult levels (Dimov, D., I. Ivanov, 2023).

K. Gusev (2022) notes that coordination abilities positively impact technical and tactical readiness, as well as performance in fast-changing game situations. Recently, the relationship between techniques and coordination as factors for sports success has garnered increased interest. Modern football increasingly emphasises football intelligence and its development during training. A high level of football intelligence allows players to make the fastest and most accurate decisions during matches, anticipating opponents' movements and actions. Football intelligence is a vital trait of a modern player, especially in the fast-paced, dynamic game where players are constantly on the move. Therefore, training aimed at developing football intelligence should be included in the educational programme for adolescent players, tailored to their physical and mental capacities. An analysis of literature indicates that to enhance training at this stage, coaches and teams should adopt the most advanced methodologies and approaches. Given football's rapid evolution, coaches and club methodologists must continually refine their work to develop adolescent talent best.

Every coach should recognise that the development process of young football players often involves periods of slowdown and, occasionally, a decline in performance due to various reasons and circumstances. In this context, the coach must be highly

competent and patient when working with children of this age. Over time, these children need to undergo various tests related to their technical skills and speed performance. The results of these tests provide a reliable, objective assessment of their condition and potential, thereby allowing for the monitoring of their progress. This approach improves adolescents' qualities and facilitates the effective implementation of the educational and training process.

In this regard, we formulated the following working hypothesis for our study: *by creating and testing a specific model of football training for 8–10-year-old adolescent football players, we hypothesise that the level of technical skills and coordination abilities can be increased.*

CHAPTER TWO. PURPOSE, OBJECTIVES, ORGANIZATION AND METHODOLOGY OF THE RESEARCH

I 1. Purpose of the study

The purpose of this study is to enhance the effectiveness of the educational and training process for 8- to 10-year-old adolescent football players by developing a tailored training model.

II.2. Tasks of the study

To achieve the set goal, the following main tasks were formulated:

1. Establishing the state of the research problem according to scientific literature data.
2. Revealing the characteristic features of conducting the educational and training process for 8-10-year-old adolescent football players.
3. Developing a test battery to evaluate and assess the technical and coordination skills of 8-10-year-old adolescent football players.
4. Establishing the level of technical skills and coordination abilities of the studied adolescent football players by revealing the average levels and variability of the studied features in dynamics.
5. Revealing the correlation structure of the technical skills and coordination abilities of 8-10-year-old adolescent football players.

6. Development and testing of a training model for football players aged 8-10

The subject of the study is the technical and coordination training of adolescent 8-10-year-old football players.

The study focuses on the parameters of coordination abilities and technical skills in 8- to 10-year-old adolescent football players.

Twenty-four football players, aged between 8 and 10 years, who participated in the training activities of the Petkov Academy Football Club were studied.

II.3. Organization of the study

Over 24 months, three training sessions were held per week, each lasting 60-75 minutes.

Preparation and formulation of the scientific work in the period from January 2021 to September 2023. Exploratory, organizational and research work was carried out, and on this basis, the following stages were distinguished:

II.4. Research Methods

The following scientific methods were used to solve the tasks set:

- 1. Review the study and theoretical analysis of specialised literature.*
- 2. Sports and pedagogical testing - the test battery used includes eight tests for assessing the technical and coordination readiness of adolescent football players (Table 3).*
- 3. Sports and pedagogical experiment.*

The approved training model aims, first and foremost, to ensure that adolescent football players enjoy both the game and each training session. Other goals to be achieved through our training model include:

1. Enabling adolescents to acquire new knowledge and skills that they can further develop and refine during the training process.
2. Fostering confidence and the appropriate attitude during matches.
3. Enhancing the love for football through various exercises with the ball and opportunities to score goals.
4. Cultivating moral and volitional qualities.
5. Emphasising training that is grounded in rules and discipline.
6. Ensuring that children understand the significance and benefits of the exercises they undertake.
7. Teaching adolescent football players to engage in football while playing by incorporating more game situations through small-sided games into the training process.

Table 3.

List of Indicators of technical skills and coordination abilities in 8- 10-Year-Old adolescent football players

Nº	Indicators	Measure units	Direction
1	Maximum number of touches of the ball using the inside of the foot (successively with both feet).	No. of touches	+
2	Maximum number of touches of the ball using the bottom of the foot (successively with both feet).	No. of touches	+
3	Juggling with the thigh and the top of the foot (successively with both feet).	No. of juggles	+
4	Driving the ball at maximum speed while changing direction.	Seconds	-
5	Dribbling and shooting at the goal with the inside of the feet.	No. of goals in a given time	+
6	Dribbling and shooting at the goal with the top of the foot (executing a straight shot).	No. of goals in a given time	+
7	Driving the ball between the cones, followed by a feint movement and shooting at the goal with a straight inside shot.	No. of goals in a given time	+
8	Driving the ball, followed by turning in three different variations towards the goal, and performing a straight or straight inside shot at a predetermined target.	No. of goals in a given time	+

One of the key concepts of the training model is that adolescents should have as much contact with the ball as possible. Experience in Bulgarian and foreign academies indicates that training should last 75 minutes for 8- to 9-year-olds and 90 minutes for 9- to 10-year-olds. Training sessions for both age groups should be held three times a week. The team should consist of children equal to double the number required for the game format. For example, if the team plays in the game format “Football 7”, then the coaches should have 14 children: 12 field players and two goalkeepers. Ideally, there should be two coaches for these 14 children, not including the goalkeeper coach. The structure of a training session is as follows: Preparatory part – studying technical elements in motion (each with a ball) while subsequently acquiring or improving coordination abilities (alternating between reaction speed and linear speed in successive sessions; exercises for training coordination abilities should be included in at least two of the three weekly sessions). Central part – studying various technical elements (in isolated or dynamic conditions) and small game forms (recommended alternation of small game forms of 1v1 and 2v2 in successive sessions). Final part – Small and medium game forms: 3v3, 4v4, 5v5, 7v7. Mood games can be held both at the beginning and the end of the training. Initially, they would foster a better atmosphere during training and encourage the children's adherence to the exercises. Ultimately, they would help normalise the emotional atmosphere after the final game form has concluded. Training coordination and

technical skills are essential components of the training process. The technical elements included in the training programme for adolescents are: dribbling the ball, feint movements, types of turns towards the goal - on the ground and in the air, receiving the ball, taking the ball away, correct execution of an inside kick, straight kick, and straight inside kick, controlling the ball from the air, kicks from the air (volleys), and kicks from movement on the ground - different variants against a ball arriving from various positions on the field. Within the training model, approximately 35% of the training occurs in a different game format. The priority in training 8- to 10-year-old adolescent soccer players is to teach them to dribble the ball, perform various feints, outplay their opponents, and shoot at goal as successfully and efficiently as possible. All of this should take place in a time and space-limited environment to simulate real game situations as closely as possible. The main principles of this training model are: the ball should always be included in the exercises and games – with the exception of specific exercises for speed and improving coordination skills; during the exercises, there should be no delays and waiting at the stations – more groups with fewer children, who should be adequately managed by the coach or coaches; frequent 1v1 and 2v2 games can help improve the ability to outplay an opponent as well as enhance reaction speed and linear speed; frequent games in a small area with a limited number of players – prioritising small game forms, where adolescents will have the opportunity to experience more game situations and have more touches of the ball; frequent study and reinforcement of technical techniques and elements – ensuring correct execution of the basic technical elements such as dribbling, changing direction, and passing; frequent study and reinforcement of feints and feint movements, which are incredibly effective when playing in a smaller and more compact space; when learning new techniques and feints, the overall method should be used most often to maintain the integrity of the sports and pedagogical experiment.

The approved training model aims, first of all, to make adolescent football players enjoy the game and each training session. The other goals that must be realised through our training model are:

1. Acquiring new knowledge and skills by adolescents, which they can further develop and improve during the training process.
2. Creating the necessary confidence and the right attitude during the game.

3. Strengthening the love for the game of football through as many exercises with the ball and scoring goals as possible.
4. Building moral and volitional qualities.
5. Training based on rules and discipline.
6. Children understand the meaning and benefits of the exercises they perform.
7. To teach adolescent football players to play football while playing football, through the content of the training process, including more game situations through small game forms.

One of the key concepts of the training model is that adolescents should have as much contact with the ball as possible. Experience in Bulgarian and foreign academies indicates that training should last 75 minutes for those aged 8 to 9 years and 90 minutes for those aged 9 to 10 years. Training sessions for both age groups should be held three times a week. The team should consist of twice the number of children required for the game format. For instance, if the team plays in the game format "Football 7", then the coaches should have 14 children: 12 field players and two goalkeepers. Given that there are 14 children, the coaches should work in pairs, and this number does not include the goalkeeper coach. The structure of a training session is as follows:

- ✓ Preparatory part – studying technical elements in motion (each with a ball), with subsequent initial acquisition or improvement of coordination abilities (alternation of reaction speed and linear speed in successive sessions; exercises for training coordination abilities are present in at least two of the three weekly training sessions)
- ✓ Central part – studying various technical elements (in isolated or dynamic conditions) and small game forms (recommended alternation of small game forms one vs. 1 and 2 vs. 2 in successive sessions)
- ✓ Final part – small and medium game forms - 3 vs. 3, 4 vs. 4, 5 vs. 5, 7 vs. 7

Mood games can be held at both the beginning and the end of the training. At its start, they would contribute to a better atmosphere during the training and the children's strict performance of the exercises. At its end, they would contribute to normalising the atmosphere from an emotional point of view, after the last game form has ended. Training their coordination and technical skills is an essential part of the training process. The technical elements that are included in the training program for adolescents are:

- ✓ Dribbling the ball
- ✓ Feint movements
- ✓ Types of turns towards the goal - on the ground and from the air
- ✓ Receiving the ball
- ✓ Taking the ball away
- ✓ Correct execution of an inside, straight and straight inside kick
- ✓ Controlling the ball in the air
- ✓ Kicks from the air (volleys)
- ✓ Kicks from movement on the ground - different variants against a ball coming from different positions on the field.

In the training model, approximately 35% of the training occurs in a different game format. The priority in training 8- to 10-year-old adolescent soccer players is to teach them to dribble the ball, perform various feints, outplay their opponents, and shoot at goal as successfully and efficiently as possible. All of this should take place in a time- and space-limited environment to be as close to real game situations as possible. The main principles of this training model are:

- ✓ The ball should always be included in the exercises and games, except for some of the exercises for speed and improving coordination skills
- ✓ During the exercises, there should be no delay and waiting at the stations – more groups with fewer children, who should be adequately controlled by the coach or coaches
- ✓ Frequent 1v1 and 2v2 games – can help both to improve the ability to outplay an opponent, and to improve the speed of reaction and linear speed
- ✓ Frequent games in a small space and with a small number of players – priority for small game forms, where adolescents will have the opportunity to practice more game situations and have more touches of the ball
- ✓ Frequent study and reinforcement of technical techniques and elements – correct execution of the basic technical elements such as dribbling, changing direction and passing
- ✓ Frequent study and reinforcement of feints and feint movements, which, when playing in a smaller and more compact space, are highly effective.

When learning new techniques and feints, the overall method should be used most often so as not to disrupt the structure of movement

- ✓ Everything that is studied must be well explained and tailored to the age and capabilities of the competitors, seeking a balance between the two extremes of the complexity of the exercises - it is essential to know that both more straightforward and much more complex exercises lead to a loss of interest and even sometimes to a child giving up football
- ✓ Understanding that children have the right to make mistakes, even if they are very talented - encouraging and stimulating the execution of exercises with maximum intensity and courage in performing the movements, at the expense of precision; accuracy and precision that is trained in an environment that is too calm is not appropriate because it cannot be applied during the game; adolescent football players must feel free to make mistakes, because mistakes are part of their training
- ✓ Children need attention and a good attitude; adolescents must be understood and supported if they put in the necessary effort during the learning and training process. Our concept for training adolescents excludes all forms of shouting and screaming at children by the coach.

Firstly, in the training model, there is a need for the presence of the ball in training exercises and games. The ball, and especially scoring and preventing goals, is what stimulates children to the limit. This is precisely what makes them come to training - the emotion and passion of football, which is unthinkable without a ball and a goal. The ball must be included from the preparatory part, as we exclude conducting the preparatory part of the activity without a ball. It is included everywhere, except for some exercises that focus on developing coordination skills.

An essential part of the training model is one-on-one and two-on-two games, which have a perfect effect on adolescents. They teach them to outplay an opponent and participate in more football situations within a shorter time frame. In a short time, they manage to evoke a sense of victory or defeat, and regardless of the outcome, they have an exceptionally energising and motivating effect on everyone. Achieving confidence and self-esteem to outplay a direct competitor is a crucial moment in the development and growth of a talent. Nowadays, individual brilliance often determines the outcome of

important matches, with the audience in the stadiums most often admiring the individual performances of the football players. Overcoming an opponent remains one of the significant weaknesses in Bulgarian football. Our idea is to teach children the exact and correct steps to perform feint movements and, accordingly, overcome their opponents more effectively.

It is of great importance to continually study and refine technical techniques that enhance the arsenal of skills and foster the creativity of children. In addition to their complexity, which must be consistent with the age and level of preparation, their large number of repetitions in individual exercises is equally essential. Many repetitions lead to automating the action and turning it into a habit, which is the primary goal of football training at this age. Another key point in the exercises is minimising the waiting time of the children at the stations, which depends on good planning and good organization of the training process.

Games played in small spaces and with a limited number of players benefit the development of young football players. Often, their strengths and weaknesses become apparent. According to our observation, children enjoy engaging in this type of game because they are in almost constant contact with the ball and encounter numerous football situations, which motivates them even further. Another positive aspect is that, after a brief game format, they perform significantly better (in terms of movement on the field and ball handling) on a larger pitch and with more players.

The little talent has the right to make mistakes and must make mistakes to improve and become better. The task and role of the coach here is to support him unreservedly and believe in him!

Table 4 presents an example mesocycle for 8-year-old youth football players, comprising three 75-minute training sessions and one match in the “Football 5” format. Table 5 illustrates an example mesocycle for 9- to 10-year-old youth football players, which includes three 90-minute training sessions and one match in the “Football 7” format. This distribution, in terms of the number of training sessions and matches, is quite adequate for the proper and practical training of youth football players aged 8 to 10. This model is followed by a significant proportion of leading European schools, as well as professional clubs and the so-called football academies.

Table 4.*Example of a Monthly Training Plan (Mesocycle) for 8-Year-Old Youth Football Players*

Week №	Day 1	Day 2	Day 3	Day 4
1	Coordination Feints and direction changes 1v1 and 2v2 small games 4v4 final game form	3v1 Square Receiving the ball (first touch) Shoots at goal from different positions after receiving 3v3 and 4v4 small games, 5v5 final game form	Coordination Air Control One Touch Shots – Ground and Air 1v1 and 3v3 Mini Games 4v4 Final Game Form	Match Φ5
2	3v1 Square Receiving the ball (first touch) Shoots at goal from different positions after receiving 3v3 and 4v4 small games, 5v5 final game form	3v1 Square Receiving the ball (first touch) Shoots at goal from different positions after receiving 3v3 and 4v4 small games	Coordination Feints and direction changes 1v1 and 2v2 small games 4v4 final game form	Match Φ5
3	Coordination AIR Control One Touch Shots – Ground and Air 1v1 and 3v3 Mini Games 4v4 Final Game Form	Coordination AIR Control One Touch Shots – Ground and Air 1v1 and 3v3 Mini Games 4v4 Final Game Form	3v1 Square Receiving the ball (first touch) Shoots at goal from different positions after receiving 3v3 and 4v4 small games, 5v5 final game form	Match Φ5
4	Coordination Air Control One Touch Shots – Ground and Air 1v1 and 3v3 Mini Games 4v4 Final Game Form	3v1 Square Receiving the ball (first touch) Shoots at goal from different positions after receiving 3v3 and 4v4 small games, 5v5 final game form	Coordination Air Control One Touch Shots – Ground and Air 1v1 and 3v3 Mini Games 4v4 Final Game Form	Match Φ5

Table 5.*Example monthly training plan (mesocycle) for 9-10-year-old youth football players*

Week №	Day 1	Day 2	Day 3	Day 4
1	Coordination Air Control One Touch Shots – Ground and Air 1v1 and 3v3 Mini Games 4v4 Final Game Form	3v1 Square Receiving the ball (first touch) Shoots at goal from different positions after receiving 3v3 and 4v4 small games, 5v5 final game form	3v1 Square Ball Control with Different Parts of the Body Aerial Shots 2v2 and 3v3 Small Games 7v7 Final Game Form	Match Φ7
2	3v1 Square Taking the ball (first touch) Shooting at goal from different positions after taking the ball with your back to the goal 3v3 and 4v4 small games Final game form 5v5 with jokers	3v1 Square Ball Control with Different Parts of the Body Aerial Shots 2v2 and 3v3 Small Games 7v7 Final Game Form	Coordination Feints, changes of direction and 1-touch strikes 1v1 and 2v2 mini-games, 4v4 final game form	Match Φ7
3	3v1 Square Ball Control with Different Parts of the Body Aerial Shots 2v2 and 3v3 Small Games 7v7 Final Game Form	Coordination Air Control One Touch Shots – Ground and Air 1v1 and 3v3 Mini Games 4v4 Final Game Form	3v1 Square Taking the ball (first touch) Shooting at goal from different positions after taking the ball with your back to the goal 3v3 and 4v4 small games Final game form 5v5 with jokers	Match Φ7
4	Coordination Air Control One Touch Shots – Ground and Air 1v1 and 3v3 Mini Games 4v4 Final Game Form	3v1 Square Taking the ball (first touch) Shooting at goal from different positions after taking the ball with your back to the goal 3v3 and 4v4 small games Final game form 5v5 with jokers	3v1 Square Ball Control with Different Parts of the Body Aerial Shots 2v2 and 3v3 Small Games 7v7 Final Game Form	Match Φ7

II.4. Mathematical and statistical methods

After the sports and pedagogical tests, we received results processed using the SPSS software with mathematical and statistical methods. The following techniques were employed: descriptive statistics, correlation analysis, and ANOVA to evaluate the effectiveness of the experimental methodology in improving the coordination abilities and technical skills of adolescent football players.

CHAPTER THREE. ANALYSIS OF THE RESULTS

The first aspect of the analysis aimed to establish the mean values and variability of the studied indicators (Figures 9, 10, 11, and 12).

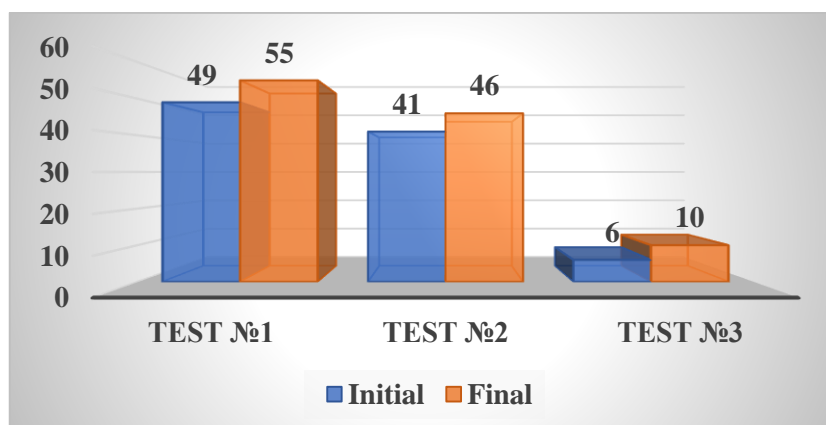


Fig. 9. Average values at initial and final testing of the first three tests, with test No. 1 and No. 2 measuring unit being the number of touches, and test No. 3 measuring unit being the number of juggles

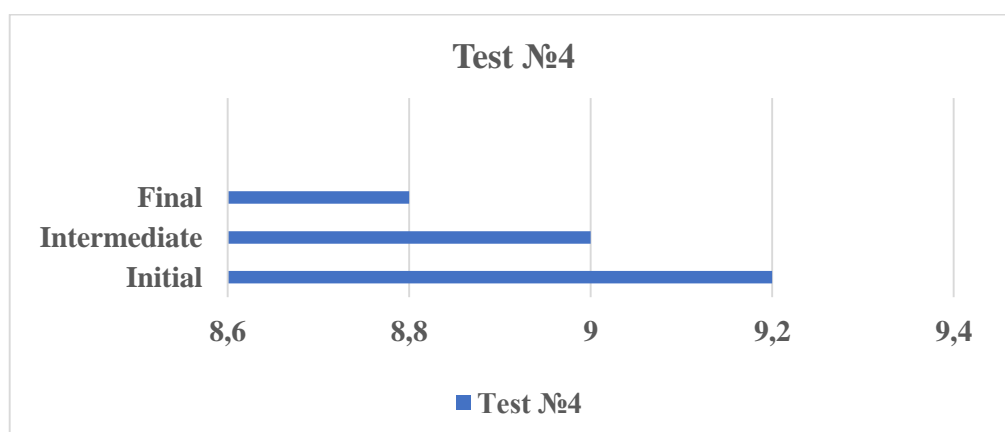


Fig. 10. Results of the three tests in test No. 4, in which the unit of measurement is seconds

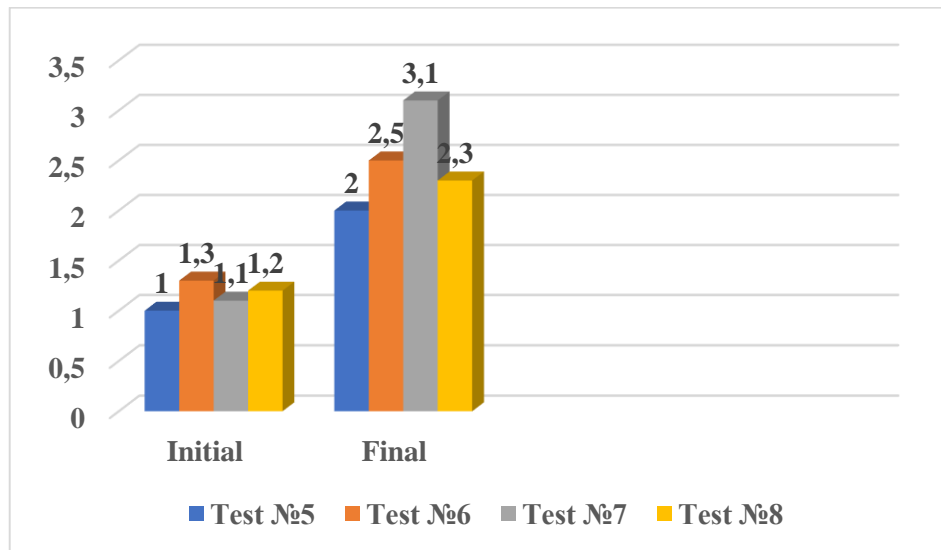


Fig. 11. Average values at initial and final testing for tests No. 5, No. 6, No. 7 and No. 8, where the unit of measurement is number

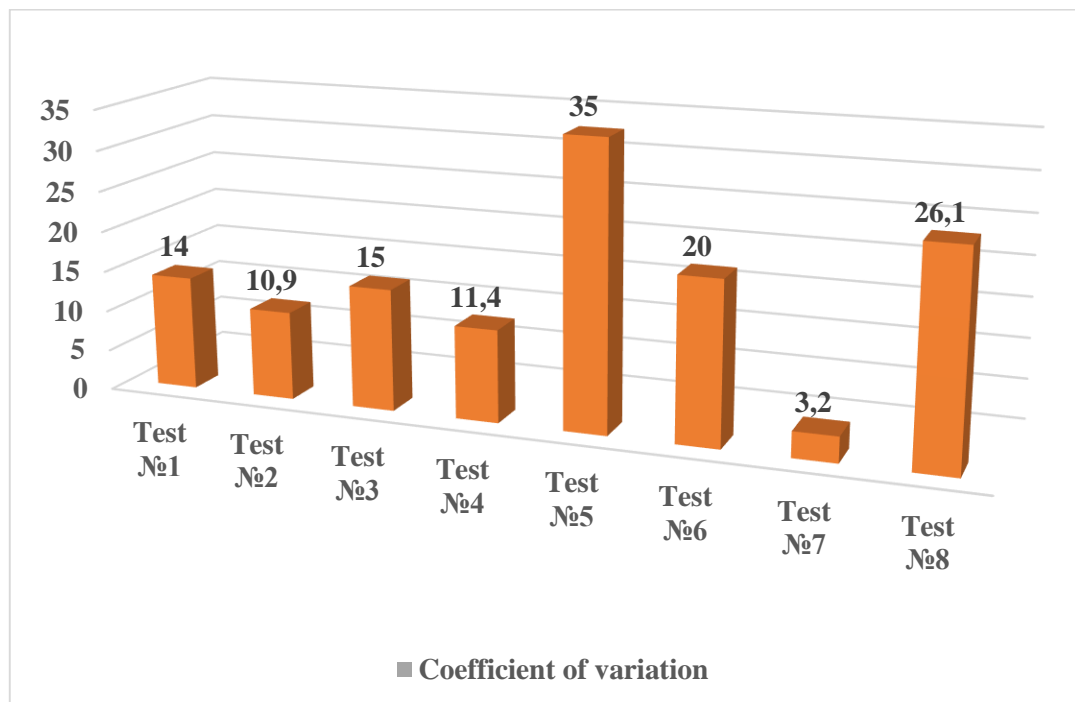


Fig. 12. Coefficient of variation at final testing from all tests

We can summarise that our training model leads to improvements in the technical and coordination skills of adolescent football players aged between 8 and 10. In five of the elements studied through the relevant tests, the coefficient of variation is below 15%. This suggests that the training model largely fosters the development of skills across the entire

group, resulting in fewer instances of significant differences in results for specific elements. Conversely, we believe that at this age, innate talent has a strong influence on the results in each test. In this regard, we assume that where larger differences appear in the results of a specific study, the primary reason is the level of talent and development potential, rather than the effectiveness of the training model itself. The second aspect of the analysis aims to reveal the correlation structure of the studied indicators across the three tests. Tables 9, 10, and 11 present the correlations between the studied indicators.

Tables 9, 10 and 11 present the correlations between the studied indicators.

Table 9.

Correlation structure of the studied indicators at the initial testing

Type of test	Type of test	Pierson coefficient (r)	Degree of correlation
Maximum number of touches using the inside of the foot	Juggling	-0,6	Significant
Maximum number of touches using the inside of the foot	Dribbling with a change of direction	0,3	Moderate
Maximum number of touches with the inside of the foot	Feint and straight inside shot	-0,3	Moderate
Juggling	Straight shot	0,3	Moderate
Juggling	Feint and straight inside shot	0,4	Moderate
Finking and straight inside kick	Turn and shoot at the goal	0,5	Significant

We can summarize that in the three tests there is a negative correlation between the results of the maximum number of touches with the inner part of the foot and the juggling test, as well as a positive correlation between the results of the maximum number of touches with the inner part of the foot and the dribbling test with a change of direction. This means that if we conduct frequent exercises for the maximum number of touches with the inner part of the foot, it will have a positive effect on dribbling with a change of direction, and vice versa. According to the analyses, the dribbling exercises with a change of direction have a positive impact on the execution of feint movements and a straight inside shot. Juggling has a positive effect on the execution of a straight and a straight inside shot, and exercises to improve the inside shot have a positive impact on the execution of both a straight and a straight inside shot.

Table 10.

Correlation structure of the studied indicators in the interim testing

Type of test	Type of test	Pierson coefficient (r)	Degree of correlation
Maximum number of touches with the inner part of the foot	Juggling	-0,5	Significant
Maximum number of touches with the inner part of the foot	Dribbling with a change of direction	0,3	Moderate
Juggling	Straight shot	0,3	Moderate
Juggling	Feint and straight inside shot	0,3	Moderate
Inside kick	Feint and straight inside shot	0,3	Moderate

Performing feints has a significant impact on improving goal-directed play, through which adolescent football players develop the ability to change direction abruptly (Figure 16).

The primary focus of the dissertation is to assess the effectiveness of the experimental methodology used to develop the coordination abilities and technical skills of adolescent football players.

Table 11.

Correlation structure of the studied indicators in the final testing

Type of test	Type of test	Pierson coefficient (r)	Degree of correlation
Maximum number of touches with the inside of the foot	Juggling	-0,5	Significant
Maximum number of touches with the inside of the foot	Dribbling with a change of direction	0,3	Moderate
Dribble with a change of direction	Inside shot	-0,3	Moderate
Dribble with a change of direction	Feint and straight inside shot	0,3	Moderate

The results of the analysis of variance of the final data obtained from our testing of adolescent football players (Figure 19), with a high probability of guarantee ($P_t \geq 95\%$),

suggest that in seven of the eight technical and coordination skills and abilities examined, the null hypothesis concerning the significance of the differences between the average levels in the initial, intermediate, and final testing can be confirmed.

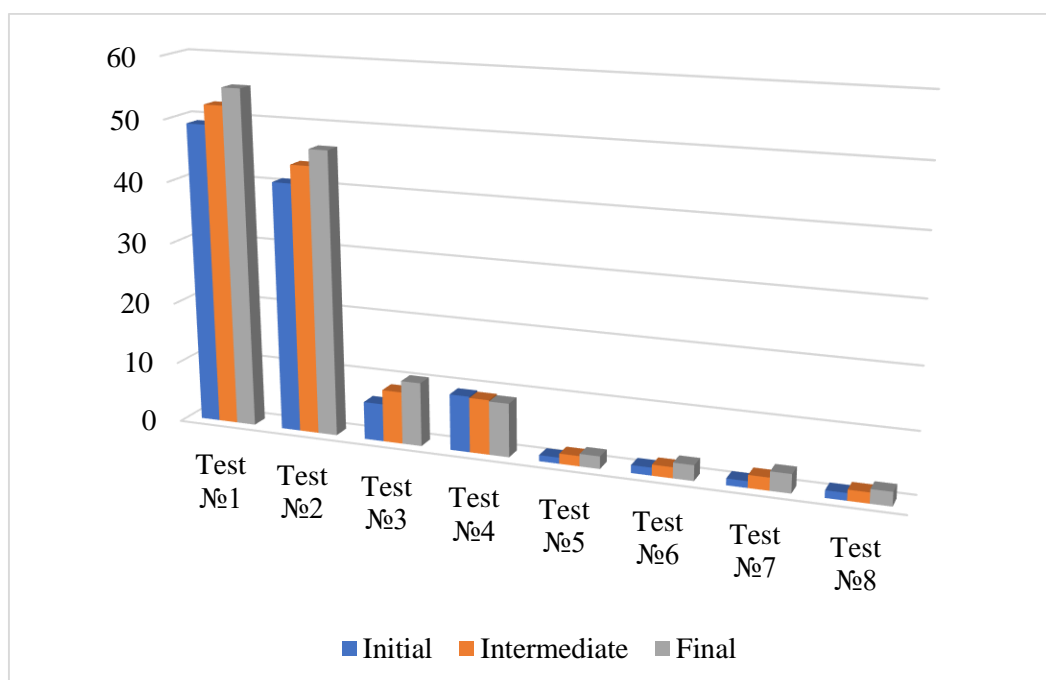


Fig. 19. Results of initial, intermediate and final testing of all eight tests

This is confirmed by the calculated values of Fisher's F-criterion (F_{emp}), which appear in the final results of the study within the range of 3.9 to 60.2. This fact is also supported by the level of significance (α), whose values are between 0 and 0.024. Only in test 4, where the achievement is measured about the time for a specific distance travelled while dribbling the ball and changing direction, the level of significance (α) is 0.415. This is the only test in which statistical significance is not observed; the average time between the initial and final testing is reduced by 0.4 seconds.

The conducted analysis of variance (Figure 20) demonstrates the statistical significance of the obtained results and the development of technical and coordination skills in 8-to 10-year-old adolescent football players.

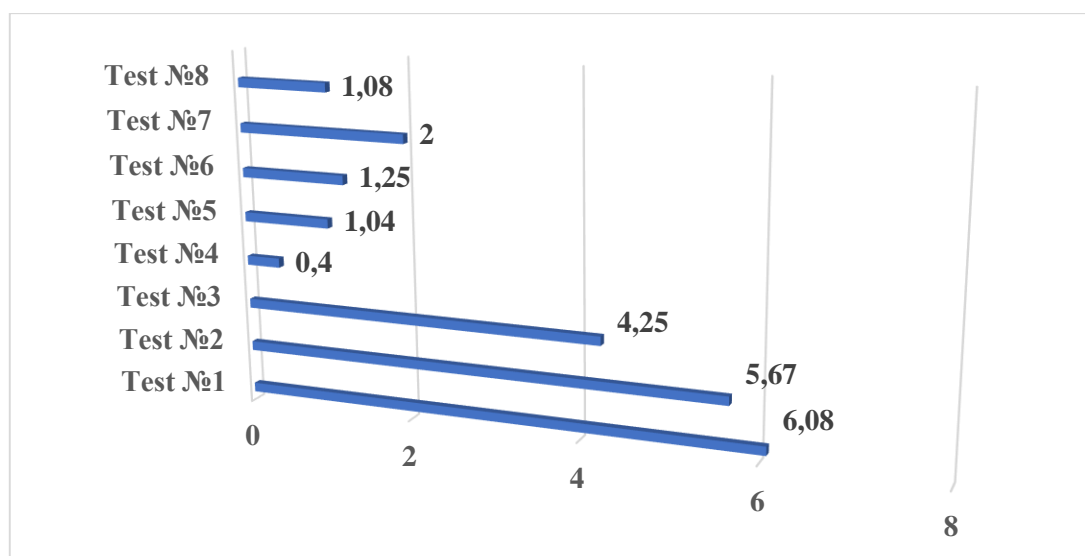


Fig. 20. Development between initial and final testing of all eight tests, expressed in numerical score

CONCLUSIONS AND RECOMMENDATIONS:

1. A new methodological and practical approach has been developed to enhance the coordination abilities and technical skills of 8–10-year-old football players, tailored to the demands of modern football.

2. The average level and variability of some fundamental indicators characterizing the coordination abilities and specific technical skills of adolescent football players aged 8 to 10 have been established. The calculated coefficients of variation indicate that the studied teenage football players are relatively homogeneous, except for the indicators dribbling and shooting with the inner part of the foot. The obtained data enrich the training methodology with new facts of essential importance for the selection and management of the training process with young talents in football.

3. The degree of dependence between the studied indicators has been revealed based on the significant correlation coefficients (at a significance level of α 0.05). From here follow several theoretical, methodological and applied conclusions:

- The structure of the coordination abilities and technical skills of young football players is complex and multi-component. It is composed of various latent signs that do not strictly correlate with one another; each carries independent information about the motor abilities of the football players. This means that

there is no transfer of the motor habit, and each component must be developed with specific means and methods.

- In the correlation structure of the coordination abilities and specific technical skills of the football players studied, some variables do not exhibit a single significant correlation. Among these are indicators 7 and 8—leading the ball between caps with subsequent execution of a feint movement, and shooting at the goal with a straight inside shot; and leading the ball while turning in three different variants towards the goal, executing a straight or straight inside shot at a predetermined target—which do not demonstrate any correlation with the other indicators in all three studies conducted.

4. A one-year training programme for the targeted development of coordination abilities and specific technical skills in adolescent football players aged 8 to 10 has been developed and tested. The results of the pedagogical experiment demonstrate statistically significant differences across the three tests – initial, intermediate, and final. The most notable progress has been achieved in the maximum number of touches of the ball with the inner part of the foot (sequentially with both feet), the maximum number of touches of the ball with the lower part of the foot (sequentially with both feet), and juggling with the thigh and upper part of the foot (sequentially with both feet).

Recommendations for sports pedagogical practice:

1. Enriching the means of training and improving coordination abilities and technical skills in football, based on the inclusion of coordination activities, is an opportunity to increase their effectiveness and, respectively, for choosing options and moves to solve specific technical and tactical tasks.

2. The developed experimental methodology for training in coordination abilities and technical skills in 8–to 10-year-old adolescent football players can be incorporated into unified programs for initial training and the selection of football talents. The proposed methodology, after appropriate adaptation in terms of dosage and load nature, can also be applied to a higher age group of football players.

SCIENTIFIC CONTRIBUTION

A methodology has been developed and scientifically proven for developing the coordination abilities and technical skills of 8-10-year-old football players throughout the entire annual training cycle

PUBLICATIONS

Петков, П. (2021). Систематичен анализ на футболното хулиганство в България и научната активност по посочения проблем в страната през последните 10 години. Годишник на НСА, бр.2, стр.405-414.

Петков, П. (2022). Техническа и координационна подготовка при 8-10 годишни подрастващи футболисти. Годишник на НСА, бр.2, стр.117-126.