

Development of Tactical Thinking in Young Judokas through Competitive Situation Modeling

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Annotation. This article examines the development of tactical thinking in young judokas through systematic modeling of competitive situations as a key component of modern sports training. The study emphasizes that tactical thinking in judo extends beyond the execution of techniques and includes the ability to analyze rapidly changing conditions, anticipate opponents' intentions, and select the most effective actions under pressure. By recreating realistic fight scenarios during training sessions, athletes experience conditions that reflect the complexity and unpredictability of actual competitions, fostering the integration of physical preparedness, psychological resilience, and cognitive flexibility.

Special attention is given to the pedagogical foundations of tactical preparation, including the design of situational exercises, the gradual increase in the complexity of training drills, and the use of feedback mechanisms for self-analysis and error correction. The study highlights that age-specific and individual characteristics of athletes must be considered to ensure consistent skill development and sustained motivation. It also emphasizes the role of situational modeling in improving decision-making speed, stress tolerance, and strategic adaptability, which are essential for achieving success in high-level competitions.

In addition to pedagogical and psychological aspects, the article discusses practical issues related to integrating competitive modeling into training programs, such as balancing simulated and real fights, applying innovative coaching methods, and using interdisciplinary knowledge from sports psychology, pedagogy, and biomechanics. The findings confirm that systematic modeling of competitive situations enhances both technical and tactical proficiency and contributes to the holistic development of young athletes.

Finally, the paper outlines directions for future research, including the implementation of digital technologies, video analysis, and interactive training tools to further improve tactical learning processes. These approaches can significantly increase the effectiveness of sports training and help prepare judokas to compete successfully at national and international levels.

Keywords: cognitive training, pedagogical methods, strategic decision-making, anticipation, psychological resilience, sports training.

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Розвиток тактичного мислення в молодих дзюдоїстів через моделювання змагальних ситуацій

Анотація. У статті досліджено процес розвитку тактичного мислення в молодих дзюдоїстів шляхом цілеспрямованого моделювання змагальних ситуацій. Розкрито особливості використання навчально-тренувальних методик, які імітують реальні поєдинки, сприяючи формуванню навичок стратегічного аналізу, прогнозування дій суперника та прийняття оптимальних рішень у динамічних умовах боротьби. Наголошено, що моделювання поєдинків дозволяє поєднати фізичну, психологічну та когнітивну підготовку, створюючи умови для комплексного розвитку спортсмена. Акцентовано на педагогічних підходах до організації тактичних вправ і їх адаптації до вікових та індивідуальних особливостей юних дзюдоїстів. Виявлено, що систематичне використання моделювання змагальних ситуацій не лише підвищує рівень техніко-тактичної майстерності, а й розвиває гнучкість мислення, стійкість до стресових чинників та здатність приймати рішення під тиском часу. Актуальність дослідження зумовлена зростанням вимог до спортивної підготовки та потребою формування конкурентоспроможних спортсменів у сучасних умовах. Представлено перспективи подальших досліджень, зокрема вдосконалення тренувальних програм, використання інноваційних підходів і міждисциплінарної інтеграції знань для оптимізації розвитку тактичного мислення в єдиноборствах.

Ключові слова: когнітивна підготовка, педагогічні методики, стратегічні рішення, прогнозування, психологічна стійкість, спортивна підготовка.

Introduction

The modern development of combat sports requires the continuous improvement of training methods, among which the formation of athletes' tactical thinking plays a particularly important role. In judo, where success depends not only on technical mastery but also on the ability to make quick decisions in dynamic conditions, the issue of developing tactical skills in young athletes has become especially relevant. Constantly changing situations during a match demand from young judokas a high level of cognitive flexibility, psychological resilience, and the ability to anticipate the opponent's actions.

Researchers are increasingly focusing on the problem of effectively developing tactical thinking in young athletes through the modeling of competitive situations. In particular, D. Skrynnyk, N. Boichenko, and I. Barbas emphasize that the use of specialized training process models significantly influences the dynamics of the development of judokas' technical and tactical preparedness [1]. Similar approaches are supported by M. Myhaliuk, who developed a model for the development of tactical and technical thinking in freestyle wrestling, which has considerable potential for adaptation in judo [2].

The importance of analyzing competitive performance of highly qualified athletes as a foundation for forming tactical strategies is highlighted by N. Boichenko and V. Shandryhos [3]. Psychological aspects of preparation are emphasized by H. Korobeinykov and A. Kokhanevych, who underline the role of mental state in achieving athletic performance [4]. The use of movement games as an effective tool for developing tactical and physical readiness has been studied by O. Dubovyi and co-authors [5].





The issue of improving the training process is explored by K. Ananchenko, who draws attention to the importance of adapting technical and tactical actions to different fighting styles [6]. A comprehensive review of modern innovative training tools in combat sports is provided by D. Petrushyn and Ye. Krenikov, who emphasize the integration of advanced technologies into the process of developing tactical mastery [7].

A number of foreign researchers also confirm the importance of modeling competitive situations. For instance, L. Santos et al. analyze acceleration profiles during judo bouts, which allows for a deeper understanding of the dynamics of tactical actions [8]. The features of technical and tactical preparation of elite athletes at World Championships and Olympic Games are characterized by W. Błach et al. [9]. The approaches of coaches to identifying and developing talented judo athletes are examined by A. De Souza Ribeiro et al. [10].

However, despite the significant amount of scientific research, the issue of the comprehensive development of tactical thinking in young judokas through systematic modeling of competitive situations remains insufficiently studied. In this context, our research aims to substantiate the pedagogical and practical foundations of applying this approach in modern athlete training.

The **purpose of the article** is to examine the pedagogical and psychological aspects of developing tactical thinking in young judokas through the modeling of competitive situations and to determine the effectiveness of this approach in forming technical and tactical mastery.

The **objectives of the article** are as follows:

-  to analyze theoretical approaches to the development of tactical thinking in judokas;
-  to determine the role of competitive situation modeling in the training process;
-  to assess the psychological and physiological factors influencing tactical decision-making;
-  to formulate recommendations for the practical implementation of this approach in the training of young athletes.

Materials and Methods

The study employed a set of methods, including the analysis and synthesis of scientific and methodological literature on the development of tactical thinking in combat sports, a comparative analysis of pedagogical approaches, and the systematization and interpretation of scientific data. The theoretical framework of the research is based on the findings of contemporary domestic and international studies, which made it possible to identify the main pedagogical and psychological factors influencing the formation of tactical skills in judokas.

Results

Tactical thinking is a crucial factor in the preparation of young judokas, as it determines the effectiveness of applying technical actions under competitive conditions. The development of this quality ensures an athlete's ability to quickly analyze the situation on the tatami, make optimal decisions, and adapt personal strategy to the opponent's actions. Research indicates that a high level of tactical thinking directly correlates with performance outcomes in matches, particularly among athletes in younger age categories [6, p. 9].

International judo practice demonstrates that leading national schools have developed their own approaches to cultivating tactical thinking. For instance, the Japanese school, grounded in the traditional principles of martial arts, combines the development of tactical abilities with the formation of analytical skills. Considerable attention is devoted to the in-depth comprehension of typical tactical situations, the use of game-based methods, and specialized exercises that simulate variable combat scenarios. This approach enables athletes to develop not only technical proficiency but also the capacity for strategic anticipation [11, p. 13].

European judo schools (Ukrainian, Georgian, and Azerbaijani) tend to combine multi-component technical training with logical analysis of situations on the tatami. The focus is placed on the use of pre-developed tactical schemes, the ability to rapidly adjust strategy depending on the opponent's fighting style, and the application of combination techniques [3].

At the same time, American practice emphasizes the development of situational thinking through intensive training models characterized by a high degree of uncertainty, where young athletes learn to improvise based on fundamental combinations and standard scenarios [5, p. 188].

The Iranian school also deserves special attention, as tactical thinking there is often formed intuitively through the accumulated experience of numerous matches. This approach relies on a figurative sense of the moment for attack or counterattack, complementing the athlete's technical foundation and creating preconditions for unpredictability in competitive performance [2, p. 3]. Such a system fosters flexibility in tactical decision-making even under unforeseen circumstances.

Therefore, considering the diversity of national approaches to the development of tactical thinking, it is advisable to systematize methodological techniques for athlete training. This allows for a clear assessment of their potential and limitations and helps identify the most effective ways to adapt these methods for young judokas. The main approaches to developing tactical thinking in combat sports are presented in Table 1.

Table 1

Main Approaches to the Development of Tactical Thinking in Combat Sports

Approach	Characteristic	Examples of Application
Imitative exercises	Reproduction of standard and variable competitive situations	Modeling an opponent's attack with different completion options
Game-based method	Use of educational and game tasks with tactical load	"Mini-bouts" with conditional limitations
Analytical method	Analysis of match video recordings, self-analysis, and assessment of the opponent's actions	Collective analysis of competition performances
Combined approach	Integration of several methods considering the athlete's individual characteristics	Tactical and technical sparring sessions followed by reflection

Source: compiled by the author

Analysis of the presented approaches shows that each has its own advantages; however, the most effective appears to be the combined approach, which allows for consideration of individual athlete characteristics while integrating various forms of training. Imitative exercises develop reaction speed and cognitive flexibility, game-based methods enhance motivation and create conditions closely resembling real matches, whereas the analytical method promotes the ability for strategic planning. Thus, the systematic integration of these approaches ensures the most comprehensive development of tactical thinking in young judokas.

This conclusion logically links the development of tactical thinking with the broader context of athletes' cognitive processes. In the process of preparing for competitions, it is particularly important to understand how different training methods influence the athlete's thinking speed, concentration level, and ability to anticipate the opponent's actions. International experience demonstrates that regular use of situational training, practice of complex tactical scenarios, and implementation of cognitive exercises aimed at developing analytical and strategic skills are essential for the effective formation of cognitive structures in combat athletes. At the same time, approaches that focus exclusively on the automation of technical actions without tactical analysis prove to be less effective, since in modern judo the advantage is held by athletes with well-developed tactical thinking [12, p. 170].

The formation of tactical thinking in judokas follows a step-by-step pattern and is closely related to the overall dynamics of athletic development. Each stage of this process reflects qualitative changes in the athlete's ability to analyze situations on the tatami, anticipate the opponent's actions, and construct an individual strategy. Understanding the regularities of the gradual development of tactical thinking enables coaches to select training tools and methods more effectively, ensuring their alignment with the athletes' age-related and individual characteristics. Table 2 presents the main stages in the formation of tactical thinking in judokas, their characteristics, the objectives of the training process, and examples of exercises.

Table 2

Stages of the Development of Tactical Thinking in Judokas

Stage	Characteristics of Thinking	Main Training Objectives	Examples of Exercises
Initial	Focus on simple combinations, lack of anticipation of the opponent's actions	Formation of basic technical and tactical actions	Practicing counterattacks following standard attacks
Intermediate	Emergence of the ability to analyze the opponent's actions and select tactics depending on the situation	Training variability in technique	Simulation of bouts with opponents of different fighting styles
Advanced	Anticipation of match development and rapid decision-making	Formation of individual tactics	Modeling critical competitive situations (score, time, penalties)

Source: compiled by the author

Analysis of the data presented in Table 2 indicates that the formation of tactical thinking is a gradual process that begins with mastering simple combinations and culminates in the ability to engage in strategic forecasting and construct an individual tactical plan. At the initial stage, the main objective is to acquire basic technical and tactical actions that provide the foundation for further development. It is during this stage that the athlete begins to develop initial response skills to the opponent's actions; however, in-depth analytical mechanisms are not yet fully formed.

The initial stage in judo represents a critical period in the development of fundamental physical, technical, and cognitive qualities that determine the athlete's subsequent progress in their sporting career. At this time, the foundations of integral tactical thinking are established, along with the ability to analyze the opponent's actions, make optimal decisions, and adapt one's own strategy to the dynamics of a bout. For young judokas aged approximately 13 to 16, specialized basic training involves intensive acquisition of technical elements, formation of an initial tactical repertoire, and development of speed, strength, endurance, and coordination, as well as the establishment of psychological readiness for competitive activity.

Particular importance at this stage lies in the gradual transition from predominantly reproductive activity, in which the athlete reproduces pre-learned combinations, to productive application of the technical and tactical arsenal under changing conditions of confrontation. The development of cognitive and tactical skills in young judokas requires the active use of variable training methods, encouragement of creative approaches to solving tactical problems, and implementation of competitive situation modeling that closely replicates real bouts [2, p. 4]. Such models foster the ability to anticipate the opponent's actions, quickly assess the situation on the tatami, and select the most effective technical and tactical solutions.

In the training of children of primary school age (6–7 years), the method of modeling competitive situations is systematically applied in a simplified form. The main objective of this approach is the gradual development of essential physical, technical, and tactical skills in an accessible, comprehensible, and safe manner. Through this method, young judokas master the basic actions necessary for the subsequent development of tactical thinking, including maintaining balance, executing and defending grips, maneuvering within the limited space of the tatami, improving reaction speed, and adapting to the partner's actions [5, p. 188]. Modeling competitive situations also facilitates the formation of the initial elements of strategic thinking, as children learn to anticipate the opponent's actions and make prompt tactical decisions.

Thus, specialized basic training for young judokas is a comprehensive process that combines the development of technique, physical qualities, and cognitive abilities. The use of variable exercises and competitive situation modeling creates the prerequisites for the formation of a high level of tactical thinking, which will serve as the foundation for effective athletic performance in subsequent stages of preparation.

The transition to the intermediate stage is accompanied by qualitative changes: athletes begin to consciously analyze the opponent's actions, compare different options, and select the most effective tactics depending on the situation. This enhances technical variability and creates the prerequisites for developing a flexible fighting style.

At the advanced level, tactical thinking acquires a comprehensive character. Judokas become capable of predicting the course of a match and making rapid decisions even under critical conditions (for example, limited time, penalties, or the need to recover a lost advantage). At this stage, the primary focus is on the formation of individual tactics, enabling athletes to maximize their potential in competition.

Thus, the gradual development of tactical thinking not only reflects the increasing complexity of cognitive processes but also requires coaches to purposefully select training methods and exercises appropriate to the athlete's level of readiness. A systematic approach to organizing this process is a key factor in the successful preparation of young judokas and their gradual transition from basic actions to high proficiency in tactical decision-making [17, p. 8].

A logical continuation of the step-by-step formation of tactical thinking in young judokas is the application of specialized training methods that closely replicate real competition conditions. One of the most promising approaches at this stage is the modeling of competitive situations. This method makes it possible to integrate the educational process with practical challenges by reproducing the dynamics of an actual fight and creating the prerequisites for developing rapid reactions, cognitive flexibility, and the ability to anticipate the opponent's actions. The use of modeling based on the analysis of young athletes' performances represents an important component of preparation, helping to understand and improve their competitive activity while forming a foundation for the further development of technical and tactical skills [1, p. 102].

The implementation of this method in combat sports has demonstrated high effectiveness, as it enables coaches to individualize tasks according to each athlete's style and level of preparedness [2; 5; 7]. Moreover, modeling increases athletes' motivation by creating a sense of proximity to real competitive conditions and fostering confidence in their own abilities.

Table 3

Examples of Competitive Situation Modeling

Situation	Objective	Expected Athlete Reaction
Losing by score 30 seconds before the end of the match	Development of aggressive offensive tactics	Active attacks, use of risky techniques

Leading with a minimal advantage	Improvement of defensive and counterattacking tactics	Control of tempo, avoidance of penalties
Opponent with an opposite stance	Adaptation of tactics to the opponent's fighting style	Use of techniques against a "mirror" stance
Receiving a warning (shido)	Formation of psychological resilience	Maintaining concentration, adjustment of fighting style

Source: compiled by the author

Analysis of the presented examples of competitive situation modeling demonstrates that this approach promotes the comprehensive development of tactical thinking in young judokas. First, modeling various competitive scenarios enables athletes to adapt to different match conditions, practice alternative strategies, and anticipate the opponent's actions, which constitutes a key component of effective tactical preparation. Second, the use of situations with varying levels of complexity (for example, simulation of critical moments in a bout, changes in score, or time constraints) stimulates the development of rapid and analytical thinking, enhances concentration, and strengthens the ability to make optimal decisions under psychological pressure [6, p. 7]. Such training experience cultivates athletes' skills of flexible response and independent adjustment of tactics during real competitions.

Third, the individualization of modeling according to each athlete's fighting style makes it possible to account for both strengths and weaknesses, promotes the development of personalized tactics, and enhances the overall effectiveness of the training process [5, p. 188]. This is confirmed by studies indicating that the systematic use of competitive situation modeling increases performance outcomes in matches among athletes in younger age groups.

Thus, the analysis of the data presented in the table shows that competitive situation modeling is not only an effective method for developing technical and tactical preparedness but also a comprehensive tool for shaping strategic thinking, decision-making speed, and psychological resilience in young judokas. The integration of such models into the training process ensures a harmonious transition from basic skills to a high level of mastery in tactical decision-making.

Analysis of the competitive activity of highly qualified judokas shows that the process of tactical decision-making is determined by the complex interaction of such factors as the level of technical mastery, physical preparedness, psychological state, and experience gained in previous matches [3]. The psychological component is of particular importance, as the ability to maintain emotional stability, control stress responses, and make rapid decisions in critical situations directly influences the effectiveness of performance [4, p. 56]. In this context, the combination of technical training with psychological exercises aimed at developing concentration, self-regulation, and confidence in one's actions is especially significant.

Given these considerations, the model for developing technical and tactical thinking in young judokas at the stage of specialized basic training is based on a set of interrelated principles that define the logic, content, and methodology of the training process. The formation of technical and tactical thinking is viewed as the result of the integrated interaction of an athlete's technical, tactical, physical, psychological, and cognitive preparation.

The development process occurs gradually, with a consistent increase in task complexity and the expansion of the athlete's cognitive repertoire in accordance with the psychophysiological characteristics of young judokas. The educational and training process takes into account the athlete's individual characteristics, cognitive strategies, rate of mastering technical and tactical material, and specific psychophysiological responses. A key role is played by the contextual nature of training, which is implemented through the systematic involvement of athletes in modeling competitive situations that closely replicate real combat conditions.

Effective development of tactical thinking requires continuous analysis of both training and competitive performance, followed by the adjustment of technical, tactical, and cognitive strategies based on objective and subjective indicators [2, p. 6].

Thus, these conceptual foundations and principles create a solid methodological basis for constructing a model that effectively ensures the development of technical and tactical thinking in wrestlers during the critical period of specialized basic training. The developed model integrates cognitive, technical, tactical, physical, and psychological components of preparation, providing for the gradual formation of cognitive structures capable of flexible responses to changing conditions of competitive confrontation. For clarity and ease of practical application, the model is appropriately presented in the form of a diagram (Fig. 1).

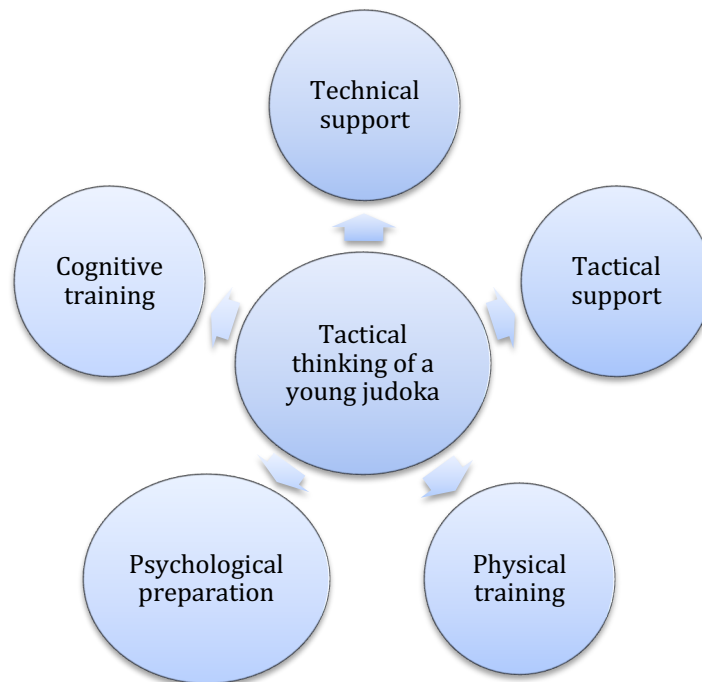


Fig. 1. Model of the Development of Tactical Thinking in Young Judokas through Competitive Situation Modeling

Source: compiled by the author

Figure 1 illustrates a comprehensive model for the development of technical and tactical thinking in young judokas at the stage of specialized basic training. The central element of the model is the integration of cognitive, technical, tactical, physical, and psychological components of preparation, which ensures the gradual formation of the athlete's cognitive structures. The principle of systematization demonstrates the interconnection of all components, while the principle of gradualness emphasizes the progressive complication of tasks in accordance with the young athlete's level of readiness.

Individualization and contextualization make it possible to adapt the educational and training process to the specific needs of each athlete and to bring exercises as close as possible to real competition conditions. Through feedback and corrective measures, the coach can continuously analyze performance results and adjust tactical strategies, thereby increasing the effectiveness of preparation and promoting the formation of strategic thinking and the ability to anticipate the opponent's actions [18, p. 61].

Several researchers emphasize the necessity of integrating tactical and physical preparation. For instance, Yu. Palamarchuk and colleagues note that a high level of athletes'

technical and tactical readiness, as demonstrated at leading international competitions such as the Olympic Games, directly correlates with indicators of physical fitness [13, p. 83]. Similar conclusions were obtained in analytical studies using statistical models to evaluate the technical actions of highly qualified female judokas, which made it possible to identify patterns of effective combat performance and determine key aspects for improving the training process [14, p. 25].

International experience confirms the appropriateness of applying comprehensive approaches to the development of tactical thinking. In particular, L. Santos et al. demonstrated that during competitions, the acceleration profiles of athletes in different weight categories exhibit distinct patterns, which allow for the prediction of typical tactical decisions and optimization of preparation. This can also be useful in designing training exercises for young judokas [8]. F. Garbeloto et al. emphasize that tactical thinking develops not only as a sports competence but also as a social one, encompassing decision-making skills in both team and educational contexts, which is highly important for the preparation of young athletes [15]. W. Błach et al. identified characteristic patterns of technical and tactical preparation among elite athletes at World Championships and Olympic Games, which can be adapted to the training process of young judokas, helping to cultivate flexible and strategic thinking [9].

Particular attention should be given to the use of analytical network processes in forecasting performance outcomes and adjusting athlete preparation. M. Uriarte et al. demonstrated that this approach increases performance efficiency in highly competitive weight categories by evaluating the interrelations among various training parameters and modeling optimal strategies [16]. Studies conducted by Brazilian coaches have also shown that the identification and development of talented athletes must include a mandatory component of tactical thinking formation from the early stages of training, ensuring a gradual transition from basic technical actions to complex strategic thinking [10].

Thus, the development of tactical thinking in young judokas is a multifaceted process that involves the integration of technical, physical, psychological, and innovative training methods. Competitive situation modeling serves as an effective tool that combines theoretical knowledge with practical skills, fosters the ability for strategic thinking, rapid decision-making, and adaptation to real competitive conditions, and promotes the development of athletes' confidence and independence in selecting optimal tactics.

Conclusions

The development of tactical thinking in young judokas is a multifaceted and gradual process that combines technical, physical, psychological, and cognitive preparation. The central element of this process is the modeling of competitive situations, which enables athletes to learn how to rapidly analyze the opponent's actions, anticipate the progression of a match, and make optimal tactical decisions.

International experience indicates that comprehensive approaches to the formation of tactical thinking are effective not only for elite athletes but also for young judokas. The adaptation of methods and patterns identified in studies of highly qualified competitors makes it possible to take into account the individual characteristics and levels of preparedness of young athletes, stimulating the development of strategic thinking and flexibility of action in various competitive conditions.

The most effective approach is the combined one, which integrates imitative exercises, game-based methods, and match analysis. This approach ensures the holistic development of tactical thinking, fosters the ability to make independent decisions, and supports adaptation to changing combat conditions, thus creating a solid foundation for further athletic advancement.

The proposed model for developing tactical thinking through competitive situation modeling provides coaches with a clear and practically applicable tool for the effective training

of young judokas. It promotes the formation of strategic, analytical, and adaptive thinking necessary for successful athletic performance.

Future research in this field should focus on an in-depth study of individual differences in the development of tactical thinking among young judokas, taking into account their age and psychological characteristics, as well as on the adaptation of training methodologies to different stages of athletic preparation.

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