Effectiveness of the methodological model for organizing training processes in the long-term preparation system of highly qualified judokas

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Abstract

Purpose: To conduct a scientific and theoretical analysis of the effectiveness of the methodological model for organizing training processes in the long-term preparation system of highly qualified judokas.

Methods: Questionnaires, analysis of training and competition documents (athletes' diaries, annual individual plans, competition reports); pedagogical observations, test trials, experiments; methods of mathematical statistics, including correlation and factor analysis, as well as testing statistical hypotheses.

Results: In developing the model, we divided the preparation of judokas into 5 main components: (1) general physical preparation, (2) special physical preparation, (3) technical-tactical preparation, (4) psychological preparation, (5) control-analytical preparation. The goals, objectives, and content of each type of preparation were formulated depending on the specific stages of the athlete's long-term development.

Conlcusion: The research results are expected to serve as a practical guide for coaches and sports specialists, contributing to the strengthening of a scientific approach in training judo athletes. In the future, it is planned to test this model in practice, experimentally assess its effectiveness, and, if necessary, modify it.

In conclusion, it can be said that the proposed methodological model, based on the advanced achievements of modern sports science, offers a comprehensive solution for the effective organization of a long-term training system for highly qualified judokas. We hope that through the regular application of this model, our athletes will achieve consistent success in the international arena.

Keywords: judo, long-term training, methodological model, sports training, technical and tactical preparation, psychological preparation, physical qualities, stage-based approach, integrated approach, monitoring and analysis.

Introduction

Judo is an Olympic sport that requires physical strength, speed, agility, and a high level of technical skill. Success in judo depends on many years of regular and scientifically-based training. Becoming a highly qualified judoka requires multi-stage, long-term preparation. Experience shows that an athlete needs at least 10-15 years of systematic training to achieve victory in world arenas. For example, Diyora Keldiyorova, who won the gold medal in the -52 kg weight category at the 2024 Paris Olympics, became the first gold medalist in judo in the history of Uzbekistan. This achievement demonstrates the growth of judo in our country and the importance of an effective training system for reaching the highest levels. Therefore, the comprehensive development of judokas based on a long-term training system and the proper organization of the training process is a very important (urgent) issue today. Since the second half of the last century, the concept of scientifically-based planning of sports training has developed. In particular, the theory of **periodization** developed by L. Matveev provides for the athlete's achievement of optimal sports form for the most important competitions by dividing the annual training plan into preparatory, competitive, and transitional periods. Later, scholars such as T. Bompa proposed a long-term (multi-year) model of athlete development, recommending planning training by dividing it into several stages. They emphasize that a high-level athlete's training program consists of physical, technical, tactical, and psychological preparation components, which must be carried out in close connection with each other.

Currently, competition in the international judo arena has intensified significantly. It is known that athletes undergo high-intensity training for an average of up to 20 hours a week, which consequently increases the risk of overload and injury. Therefore, in long-term planning of the training process, it is crucial to properly distribute workloads and incorporate periods of rest and recovery. Unfortunately, in some cases, coaches and instructors involve young athletes in excessive training or push for early specialization in pursuit of short-term results. Scientific sources, however, recommend a different approach: gradually developing athletes, especially in the initial stages, emphasizing the need to focus more on the training process rather than results. For example, it is stressed that for young children

and beginner judokas, competition results should not be a strict goal, but rather serve as motivation and a means of gaining experience. Researchers warn that putting excessive pressure on young athletes for achievement at an early stage may yield short-term results, but this approach often leads to the athlete's "burnout," meaning it can halt the athlete's development after reaching an early peak. Therefore, the principle of gradual skill improvement within the framework of a long-term training system is highly relevant. Based on pedagogical observations, an organizational and methodological model for the long-term training of highly qualified judokas has been developed.

The model adhered to the following methodological approaches:

The principle of staged progression: Athletes were divided into several stages based on their level of preparedness and age, with specific goals and objectives defined for each stage. These stages are conventionally termed "Initial Training," "Training and Practice," "Sports Improvement," and "High Sports Mastery" (content detailed below).

The principle of comprehensiveness: The model envisions all types of training to be conducted in an interconnected and balanced manner. This means the athlete's physical development is ensured simultaneously with their technical growth and psychological stability.

The principle of continuity: Throughout the multi-year preparation, the stages were interconnected, with each subsequent stage considered a logical continuation of the previous one. As the athlete ages and their skills improve, the content of training and workloads increase proportionally.

Individual approach: The model's application process takes into account each athlete's age, physical capabilities, and psychological characteristics. Particular emphasis is placed on individual planning, addressing weaknesses, and developing the athlete's successful style at the high-performance stage.

Additionally, the study utilized statistical data and results from previous research. Specifically, statistical data on judokas' age and sports achievements over the years, as well as sources on the training experiences of world champions and Olympic medalists, were examined and applied to substantiate the model.

1. Initial preparatory stage (sports introduction period, approximately 1. 7-12 years old): The main goal at this stage is to spark interest in judo among young athletes and provide them with basic physical and technical

Table 1 Methodological model of the long-term training system

Stage (Representative Age)	General Physical Training (GPT)	Special Physical Training (SPT)	Technical and Tactical Training (TTT)	Psychological Training (PT)	Control and Analytical Training (CAT)
1. Initial Preparation Stage (Sports entry stage, ~7-12 years old)	Establishing a general physical foundation: developing coordination of basic movements, agility, and flexibility; game-based physical exercises.	Introducing judo elements through play; light special physical exercises (e.g., balance and minor strength exercises).	Fundamentals of technique: teaching simple techniques (pulling, throwing techniques, basic ground techniques); explaining the fundamental rules of judo; applying rudimentary elements of freestyle wrestling.	Fostering interest in sports, instilling judo philosophy and discipline; developing qualities such as confidence and courage; introducing initial skills of psychological preparation for competition participation (emphasizing the joy of participation over winning).	Initial monitoring: health surveillance (medical check-ups), basic physical tests (flexibility and endurance standards); coaches and parents monitoring the athlete's development, keeping records of daily training attendance.
2. Training Stage (adolescent stage, ~13-16 years old)	Comprehensive development of physical qualities: increasing general endurance, establishing the foundations of strength (exercises using body weight and light weights); improving speed and agility.	Transition to specialized physical training: developing strength and endurance necessary for judo (for example, using special rubber resistance bands to increase grip strength, rope climbing, etc.); developing anaerobic capabilities (through repeated short-duration, high-intensity sparring sessions).	Expanding the technical repertoire: mastering a wider range of throwing and holding techniques; teaching combination techniques and counter-techniques; explaining the basics of tactics (for example, selecting a suitable style, anticipating opponent's actions); gaining initial tactical experience through participation in minor competitions.	Psychological adaptation to competition: developing skills to overcome anxiety and fear through minor competitions; initial psychological training on enhancing motivation, goal-setting and achievement; team conduct and sports ethics.	Monitoring development: conducting annual physical fitness tests (e.g., 30-meter sprint, general endurance tests, strength indicators) and comparing results; analyzing the athlete's performance after each competition (number of wins/losses, techniques used); maintaining training logs by the coach-instructor and regular medical monitoring of the athlete's condition.

training. At the initial stage, **general physical preparation** plays a leading role. Special attention is given to developing children's general motor skills and physical qualities: improving agility and speed through running, jumping, and games; enhancing flexibility and coordination through gymnastics and acrobatic exercises. During this period, coaches and instructors should conduct exercises for children primarily in the form of games and engaging activities to foster a love for sports. **The special physical preparation** component is introduced at a basic level through simple elements - for example, teaching certain movements specific to judo (rolls in various directions, falling technique - ukemi), demonstrating wrestling techniques appropriate for one's weight class. The workload should be light and age-appropriate for the child.

Technical and tactical training at this stage begins with introducing the most fundamental elements of judo. First and foremost, safe falling techniques (ukemi) are taught, as these create a foundation for the wrestler to avoid injuries in subsequent learning processes. Then simple techniques are demonstrated: for example, basic throws related to leg movements (such as De-ashi-barai and O-goshi, which are most suitable and safe for adolescents). Children start practicing judo by performing these techniques in pairs. During this period, the coach-instructor should also gradually explain the **competition rules**, but should not place great importance on competition results at this stage. Instead, it is advisable to organize competitions as a source of celebration and motivation for children. Competitions for young judokas should serve only to test their level of preparedness and gain experience, with minimal pressure to win. This idea was also emphasized by 9 -dan Kazuzo Kudo in his works: according to him, "training only to win is a mistake; training specifically to improve skills is most important." In other words, at the initial stage, a young judoka should focus more on thoroughly mastering techniques, understanding that winning is secondary.

Psychological preparation in the initial stage is, of course, carried out in a simplified form. The main focus is on cultivating a love for sports, particularly judo, and creating positive motivation in the child. Trainers and instructors instill the educational aspects of judo in children - discipline, respect, and resilience. It is important to boost children's self-confidence by having them complete small tasks during training sessions. For example, confidence can be strengthened by encouraging them to demonstrate newly learned techniques in front of the trainer and the group. Before competitions, children are taught not to get nervous or afraid of entering the mat, and are helped to view this as a simple, achievable task. In essence, this period lays the foundation for psychological education.

Control and analytical preparation is in its simplest form at the initial stage. The coach-instructor continuously monitors the athlete's health and development, conducting regular medical examinations. The athlete's attendance and discipline are supervised. Additionally, simple physical tests - such as flexibility, sit-ups, and endurance - are periodically conducted to assess the child's physical condition. The results are discussed with parents, thereby exchanging views on the child's interest in sports and achievements. At this stage, one of the most important "controls" for the coach-instructor is to observe the athlete's attitude towards sports, ensuring not to diminish their motivation.

2. Training Stage (adolescence, approximately 13-16 years): At this stage, the athlete has been practicing judo for several years and is now gradually transitioning from general to specialized training. **General physical preparedness** remains important - the athlete's overall endurance, strength, and speed potential are steadily increased. However, in this process, the share of **special physical training** grows. Judo has its own specific physical requirements: for example, strong grip (finger and wrist strength), explosive power (for lifting and throwing the opponent), anaerobic endurance (to withstand a series of short and intense bouts), and others. Therefore, during adolescence, coaches and instructors begin to adapt the judoka's body to these requirements. For example, the anaerobic endurance of an athlete is enhanced through short-term but high-intensity physical exercises on the tatami (20-30 second wrestling segments, followed by a short rest and repetition). Alternatively, pull-ups on the horizontal bar and exercises with special expanders (rubber bands) are used to increase grip strength. At the same time, the foundation of general strength and endurance is also developed: running and gym exercises are gradually incorporated into the program. At this age, excessive loading is not permitted - loads are gradually increased

and are, of course, under the supervision of the coach-instructor (taking into account the individual developmental characteristics of the athlete).

Technical and tactical training is very intensive during the training stage. If an athlete learned 8-10 basic techniques in the initial period, now it's time to significantly expand their technical repertoire. At this stage, many new techniques from various judo groups (leg techniques, hip techniques, hand techniques, ground techniques) are mastered. The coach-instructor sequentially teaches the athlete more complex throwing techniques such as uchi-mata, seoi-nage, o-guruma, as well as choking and joint locking techniques (such as naked choke, cross-collar choke, armbar). During this period, it's important for the athlete to also learn **combination movements** - that is, transitioning from one technique to another (for example, if the opponent moves to the left, throwing them in the opposite direction using a second technique, and so on). **Counter techniques** (tokui-waza) are also gradually practiced. Regarding tactical elements, adolescents usually begin to show an inclination towards a certain style - for example, some prefer bold offensive wrestling, while others favor a cautious counter-attacking style. The coach-instructor should observe the athlete's abilities and help develop a tactical style that suits them. For instance, it's tactically effective to teach taller athletes who perform leg movements well a more in-depth set of leg throwing techniques (ashi-waza), while for shorter athletes with stronger shoulders, developing a set of arm and shoulder techniques (te-guruma, seoi-nage) is more beneficial. At this stage, athletes begin to actively participate in local and youth competitions, which enhances their **tactical experience**. After each competition, the coach-instructor, together with the athlete, should analyze the matches and work on the mistakes.

Psychological preparation takes on new dimensions during adolescence. At this age, athletes begin to take competition more seriously, and defeat or victory affects them more intensely. Therefore, the coach-instructor should focus on preparing them for competitive stress. In this context, **sports psychology methods** come to the aid: for example, talking to an athlete before a competition, asking them to express their fears and concerns, analyzing them together; concentration exercises - sitting quietly and visualizing the upcoming match (visualization); teaching relaxation techniques through breathing. A teenage athlete is not yet fully emotionally stable, so it's important to teach them how to properly handle defeats: explaining that every lost match is an experience and a lesson, and emphasizing the importance of never succumbing to mental depression. During this period, cases of athletes quitting sports occur; this can be caused by factors such as school workload, changing teenage interests, or feelings of hopelessness due to several defeats. The coach-instructor should anticipate such situations, support the athlete, provide explanations, and take an individual approach to maintain motivation. Team spirit is also crucial: encouraging athletes in the group to support each other and fostering a friendly atmosphere yields positive results.

Control and analytical preparation begins to take on a more systematic character at this stage. Test standards are conducted at least 1-2 times a year to monitor the athlete's growth and development. For example, indicators such as how fast a 15-year-old judoka runs 30 meters, how many pull-ups he performs in 6 minutes, or how many effective attacks he can organize in 5 minutes of randori are recorded. These indicators are compared year by year, and the athlete's progress is assessed. If some indicator lags behind (for example, lack of growth in strength indicators), appropriate adjustments are made to the training plan - additional strength exercises are given, and so on. **Control of the training process** is also relevant for the trainer-teacher: weekly training plans are drawn up, and at the end of each week, the actual number of training sessions conducted, the athlete's mood and condition are recorded. Also, an analysis of competitive fights is introduced: the methods by which the athlete won, the situations in which he lost - the coach-instructor and the athlete jointly review these and draw conclusions from the mistakes. At this stage, the coach-instructor also begins to teach the athlete **self-analysis**: for example, through questions like "how many points would you give yourself in this fight and why?" the athlete develops a critical approach to their actions. Such control and analytical measures serve to prepare the athlete for the next stage - the path to higher mastery.

Conclusion

As a result of the conducted theoretical and methodological research, a methodological model for organizing the long-term training

system of highly qualified judokas was developed. This model, dividing the training process of judokas into four stages, provides for the integrated implementation of general physical, special physical, technical-tactical, psychological, and control-analytical training at each stage.

The main features of the model are as follows:

At the initial stage of training, priority was given to forming the athlete's general physical foundation, teaching the basics of technique, and fostering interest in the sport. During this period, it was substantiated that the correct organization of the process is more important than the result. The principle of not pursuing early success, but rather laying the groundwork for long-term development, was put forward.

At the training stage, the athlete's physical and technical skills are rapidly developed through a combination of general and special physical training. Special exercises aim to build judo-specific strength and endurance while simultaneously expanding the technical repertoire significantly. Initial tactical and psychological experience is gained through participation in minor competitions. At this stage, the coach begins to identify the athlete's weaknesses and strengths and accordingly intensifies the individual approach.

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