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SCIENTIFIC AND PEDAGOGICAL BASIS FOR IMPROVING THE TRAINING OF QUALIFIED HANDBALL PLAYERS FOR SPORTS COMPETITIONS

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Abstract. The aim of the study was to substantiate the scientific and pedagogical foundations for preparing qualified handball players for competitive activity during the multi-year athletic development phase. The study involved 48 qualified handball players aged 18–24, with at least a first-category athletic qualification. The methods used included analysis of scientific and methodological literature, pedagogical observation, physical and special fitness testing, a pedagogical experiment, and mathematical statistics. The experimental program was aimed at improving the athletes' physical, technical, tactical, and psychological preparedness, taking into account the specifics of competitive activity. The results of the study showed a significant improvement in indicators of special endurance, speed-strength training, tactical thinking, and psychological resilience in athletes in the experimental group compared to the control group ($p < 0.05$). The data obtained confirm the effectiveness of the developed pedagogical approach and can be used in the training of qualified handball players.

Key words: handball, long-term preparation, competitive activity, qualified athletes, sports training, pedagogical principles, sports improvement, sports mastery.

Introduction. The current stage of development of high-performance sport is characterized by a constant increase in the intensity of competitive activity, increasing demands on the physical, technical, tactical, and psychological preparedness of athletes [2, 5]. In team sports, particularly handball, achieving high athletic results is impossible without a scientifically based system of long-term training that ensures the consistent improvement of all components of athletic skill. Therefore, the problem of improving the effectiveness of preparing qualified handball players for competitive activity during the developmental stage of sport is particularly relevant [1, 3].

In modern sports training theory, competitive activity is considered the primary criterion for the effectiveness of athlete training. Performance in official competitions reflects the level of realization of an athlete's motor, functional, technical, and psychological potential. According to leading experts in the field of sports training, the content of the training process should be as closely aligned as possible with the structure of competitive activity and take into account the specific requirements of a particular sport [4, 7, 8].

Analysis of the scientific literature shows that in recent years, research interest in optimizing the training of athletes in team sports has significantly increased. Russian and foreign authors have extensively studied the development of speed-strength qualities, technical mastery, functional fitness, and tactical thinking in athletes. However, many studies focus on individual training components and do not adequately address the issue of comprehensive pedagogical support for the competitive activities of skilled handball players [6, 9].

According to modern concepts in sports pedagogy, the effectiveness of competitive activity is determined by the degree of integration of various aspects of an athlete's preparation. A high level of physical fitness does not guarantee successful performance in competitions without insufficient development of tactical thinking or psychological resilience. Similarly, technical mastery cannot be

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fully realized without appropriate functional support and the ability to make optimal decisions in rapidly changing game conditions [10].

In recent years, considerable attention has been paid to the modeling of competitive activity in training. Experts point out that the use of game exercises that closely approximate official competition conditions contributes to the more effective development of specialized motor skills, the development of tactical thinking, and the refinement of decision-making mechanisms. This approach allows for a greater transfer of training effects to real-life competition practice. An equally important component of preparation is the psychological support for competitive activity. Research analysis shows that the success of skilled handball players largely depends on their level of emotional stability, the ability to control their pre-competition state, maintain concentration, and perform effectively under increased psycho-emotional stress. Therefore, modern training programs should include developing athletes' psychological readiness alongside improving their physical and technical skills.

Materials and Methods. The study was conducted over a six-month period at Termez State University and aimed to assess the effectiveness of pedagogical conditions for preparing qualified handball players for competitive activity during the multi-year athletic development phase.

The study involved 48 qualified male handball players aged 19 years, who regularly practice handball and hold at least a first-class athletic qualification. All athletes had experience participating in regional and national competitions and were cleared for training for health reasons.

For the pedagogical experiment, the athletes were divided into two equal groups: a control group ($n = 24$) and an experimental group ($n = 24$). At the initial stage of the study, no statistically significant differences were found between the groups for the studied parameters ($p > 0.05$), ensuring comparability of the sample. The control group's training followed a traditional handball training program, including physical development, technical refinement, and participation in training games. The experimental group, in addition to traditional training methods, utilized a specially developed pedagogical program aimed at improving the athletes' competitive performance.

To achieve this goal, a combination of theoretical and empirical research methods was employed. The theoretical component included an analysis of scientific and methodological literature, regulatory documents on sports training, and contemporary research in the field of sports training theory and methodology.

The empirical methods employed included pedagogical observation, pedagogical testing, a pedagogical experiment, and expert evaluation. Pedagogical observation was used to study the athletes' behavioral characteristics during training and competition, as well as to evaluate the performance of technical and tactical actions.

The expert evaluation was conducted by coaches and teachers from the Department of Physical Education, who have significant experience in athlete training. Several independent experts were consulted to enhance the objectivity of the results.

The data obtained during the study were subjected to mathematical and statistical analysis. Mean values (M), standard deviations (SD), percentage increases in indicators, and the significance of differences between groups were calculated using Student's t-test. Differences were considered statistically significant at a significance level of $p < 0.05$.

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Results. The results of the educational experiment showed that the developed training program contributed to a more significant improvement in the competitive readiness indicators of skilled handball players in the experimental group compared to athletes in the control group.

At the initial stage of the study, no statistically significant differences were found between the groups for any of the studied indicators ($p > 0.05$), indicating their homogeneity and allowing for an objective assessment of the effectiveness of the experimental intervention. After the six-month educational experiment, positive changes were recorded in both the control and experimental groups, although the dynamics of indicators in the experimental group were significantly higher.

Analysis of the speed-strength training test results showed that athletes in the experimental group improved their indicators by an average of 14.8%, while in the control group the increase was 6.5%. The most pronounced changes were observed in exercises requiring explosive strength and speed of motor actions, which are essential for the successful execution of game actions in handball. The study of specific endurance also revealed significant differences between the groups. In the experimental group, this indicator increased by 17.6%, while in the control group the improvement was only 7.9%. These results indicate that the use of game-based and competitive training methods facilitates athletes' more effective adaptation to the high loads typical of modern handball.

Positive dynamics were also recorded in technical fitness indicators. After the experiment, the accuracy of shots on goal in the experimental group increased by 15.2%, and the number of technical errors during training games decreased by 18.7%. In the control group, similar indicators changed less significantly, amounting to 6.8% and 8.4%, respectively.

Particular attention was paid to the analysis of the athletes' tactical fitness. The expert assessment revealed that the number of correct game decisions in the experimental group increased by 19.3%, while in the control group the increase was 8.1%. Furthermore, athletes in the experimental group demonstrated a higher level of teamwork, adapted more quickly to changing game situations, and utilized tactical schemes more effectively during competition.

Significant changes were also noted in teamwork indicators. In the experimental group, the number of successful combination actions increased by 18.1%, and the effectiveness of transitions from defense to attack increased by 14.6%. In the control group, these figures were 7.5% and 5.9%, respectively.

Statistical analysis of the study results revealed significant differences between the control and experimental groups for most of the studied indicators after the completion of the educational experiment ($p < 0.05$). This confirms the effectiveness of the developed educational program and demonstrates its positive impact on various aspects of the training of skilled handball players.

Conclusion. The study aimed to scientifically substantiate the pedagogical conditions for preparing qualified handball players for competitive activity during the multi-year athletic development phase. The results confirmed the effectiveness of the developed program and allowed for a number of theoretical and practical conclusions.

It was established that a modern system for training qualified handball players should be based on a comprehensive pedagogical approach that integrates physical, technical, tactical, and psychological preparation into a single training process. This organization of training facilitates the full development of athletes' athletic potential and enhances their competitive performance.

It has been proven that simulating game situations as close as possible to official competition conditions helps improve athletes' ability to make effective decisions under time pressure, enhances teamwork, and ensures more successful tactical execution during the game.

An important pedagogical condition for improving competitive effectiveness is the systematic development of athletes' psychological readiness. Developing emotional stability, self-confidence,

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concentration, and self-control enables athletes to perform more successfully under high psycho-emotional stress and challenging competitions.

The practical significance of the study lies in the potential use of the developed program in the educational and training processes of sports clubs, higher education institutions, specialized sports schools, and other organizations training qualified handball players.

Prospects for further research include studying the specifics of individualized training for athletes in various playing positions, improving psychological preparation methods, and developing innovative technologies for managing the training process in team sports.

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