

SCIENTIFIC AND PEDAGOGICAL FOUNDATIONS OF TRAINING HIGHLY QUALIFIED PARA-ATHLETIC THROWERS

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Abstract:

This scientific work investigates the scientific and pedagogical foundations of training highly qualified para-athletic throwers. During the research, existing theoretical sources were analyzed, and a training program adapted to the physical, technical, and psychological preparedness of para-athletes was developed. The experimental implementation of this program showed a significantly positive effect on athletes' performance results, movement coordination, and technical skills.

Keywords: Para-athletics, throwing disciplines, highly qualified athlete, training program, physical preparedness, technical skill, pedagogical methodology, adaptive sport, athletes with disabilities, experimental analysis.

Introduction:

In the 21st century, the field of sports has become not only a means of promoting a healthy lifestyle but also a significant factor in elevating a nation's prestige on the international stage. In particular, various areas of athletics, especially the throwing disciplines (shot put, discus throw, javelin throw), require a high level of physical and technical preparedness for athletes to successfully compete internationally.

Especially in the field of para-athletics, the process of training highly qualified athletes requires a unique approach, scientifically grounded methodology, and pedagogical solutions.

Today, para-sport plays an important social and cultural role by engaging individuals with disabilities in sports and allowing them to fully showcase their abilities. From this perspective, the use of modern scientific-pedagogical approaches, the development of individualized training programs according to athletes' physical capabilities, and in-depth research to improve their technical movements are essential in training high-level para-athletes.

The relevance of this topic lies in the fact that special methodological approaches, adaptive physical training, and psychological preparation are of great importance in training para-throwers. Scientific-pedagogical approaches make it possible to fully unlock these athletes' potential and achieve high results in competitions.

Level of Study and Literature Review:

In recent years, research on the training processes of para-athletes, particularly in the throwing disciplines of athletics, has been rapidly developing. However, most scientific studies are based on general approaches, and there is a relative lack of research specifically focused on the training systems of highly qualified para-athletic throwers.

The general principles of preparation in athletics, including the throwing events, have been widely covered by both Uzbek and international scholars. For instance:

N. G. Ozolin, L. P. Matveyev, and Y. V. Verkhoshansky are considered the founders of sports training theory and methodology, having substantiated the step-by-step planning of athletes' preparation, development of physical qualities, and methods for maintaining sports form.

P. A. Gorshkov, A. A. Dmitriyev, and others developed criteria for technique, tactics, and physical training for track and field athletes.

S. N. Bezuglov, V. I. Lyakh, and similar authors have studied athlete health, rehabilitation, and issues related to adaptive sports.

In terms of para-athletes' training and adaptive training methodologies, the following researchers have contributed significantly:

T. V. Kuvaeva, E. A. Zhuravlyova, R. Kh. Aliev have conducted research on the physical training and social adaptation of athletes with disabilities.

Among Uzbek researchers, U. Jo'rayev, A. Karimov, Z. Tursunov, and others have explored ways to improve the training processes in para-sports.

In addition, scientific-methodological manuals and recommendations published by the International Paralympic Committee (IPC) serve as important resources in athlete preparation. These materials highlight the importance of technical training tailored to para-athletes' abilities, individualized approaches, and psychological support strategies.

Nevertheless, there is still a lack of comprehensive scientific work that systematically examines the scientific and pedagogical foundations of training highly qualified para-throwers. This gap indicates the need for new research in this specific area.

Research Objective:

To develop scientifically grounded pedagogical methods for training highly qualified para-athletic throwers and implement them in practice.

Research Tasks:

1. To identify effective training methodologies for para-athletics throwers;
 2. To study methods of improving technical preparedness;
 3. To develop training programs adapted to the individual physical characteristics of athletes;
 4. To substantiate pedagogical approaches that integrate theoretical and practical knowledge.
- Studying this topic not only contributes to the realization of para-athletes' full potential but also supports the development of sports pedagogy. Therefore, a comprehensive study of this area and the creation of an effective training system based on it will help improve our athletes' performance in international competitions.

Novelty of the Research:

The novelty of this scientific study is manifested in the following points:

1. For the first time, a systematic pedagogical approach to training highly qualified athletes in para-athletic throwing events was developed based on scientific foundations. While previous studies mostly focused on general physical preparation or the involvement of persons with disabilities in sports, this work specifically developed specialized approaches for para throwers.
2. Individual training programs were created based on athletes' type of disability, physical capabilities, and skill level, and their effectiveness was experimentally tested. Unlike existing methodologies, this approach is based on an in-depth analysis of athletes' individual psychophysiological characteristics.
3. Through scientific-pedagogical foundations, the interrelation between technical and functional preparedness of para throwers was identified, and methods to harmonize these components were recommended. This positively impacts athletes' performance both before and during competitions.
4. A multi-stage training model was proposed to ensure the continuous development of highly qualified para athletes, enabling long-term and stable achievements.
5. Psychological status, motivational factors, and adaptive capabilities of para athletes were integrated into the training system. This psycho-pedagogical approach supports athletes in maintaining consistency in their sports activities.

Thus, the research results are significant not only in theoretical terms but also in practical pedagogical and methodological solutions. This enriches existing scientific-pedagogical views and introduces a novel approach to research in the field of para-sports.

Research Methods:

To achieve the goals and objectives of this scientific study, the following scientific-methodological approaches and research methods were used:

1. Theoretical Analysis Method

Scientific research, methodological manuals, textbooks, and legal-regulatory documents on para sports, especially para-athletics throwing events, conducted in Uzbekistan and abroad, were analyzed. This method helped to study the scientific-theoretical foundations, previous approaches, and existing experiences.

2. Pedagogical Observation

The training sessions of para athletes were regularly observed, including their technical movements, physical activity levels, and psychological states. This method helped to study the real condition of athletes and their attitudes toward training.

3. Experimental Work

A specially developed training program was introduced to the experimental group, and their results were compared with those of the control group. Changes in physical qualities, technical

skills, and performance outcomes of athletes were assessed based on the dynamics observed during the experiment.

4. Diagnostic Methods

Special tests (strength, speed, endurance, balance, etc.) were used to determine the physical preparedness levels of para athletes. Psychological status was assessed using surveys, interviews, and diagnostic tests.

5. Mathematical-Statistical Analysis

Quantitative data obtained from the experiment were analyzed using mathematical-statistical methods. Average values, variances, t-tests, and other statistical indicators were used to determine the effectiveness of the training program.

Analysis and Discussion of Results:

During the study, the physical, technical, and psychological preparedness levels of highly qualified para-athletic throwers were examined, and the effectiveness of the specially developed training program was tested experimentally.

1. Initial Condition Assessment

Before the experiment, the physical qualities of athletes in both experimental and control groups were assessed using the following tests:

- Shot put distance (explosive strength)
- Long jump (general strength)
- 30-meter sprint (speed)
- Balance test (coordination)
- Reaction time (psychomotor speed)

Results showed no statistically significant difference between the experimental and control groups at the initial stage ($p > 0.05$), indicating equal baseline conditions.

2. Implementation of the Training Program

The experimental group underwent a 12-week modular training program characterized by:

- Individualized approach for each athlete
- Technique exercises adapted to the type of disability
- A set of exercises to improve functional capabilities
- Integration of psychological preparation elements

3. Final Analysis and Results

Tests were repeated at the end of the experiment. The following positive changes were recorded:

Indicator	Experimental Group	Control Group	Difference (%)
Shot put distance (m)	+14.3%	+4.1%	+10.2%
Vertical jump (cm)	+11.5%	+3.8%	+7.7%
30 m sprint (sec)	-8.6% (improvement)	-2.9%	-5.7%
Balance test (sec)	+17.2%	+6.3%	+10.9%
Reaction time (ms)	-9.4%	-3.2%	-6.2%

Statistical analysis (Student's t-test) showed that the changes in the experimental group were statistically significant at $p < 0.01$.

The training program positively influenced not only the physical but also the psychological stability of the athletes (according to survey results, motivational indicators increased by an average of 20%).

Conclusive Summary

The experiment and analyses conducted demonstrated that:

- The specially developed training program significantly improved the technical and physical performance of para athletes;
- Individualized and adaptive approaches allowed athletes to maximize the use of their capabilities;
- The effectiveness of the developed methodology was scientifically and statistically confirmed and is recommended for practical application.

Conclusions

Based on scientific-pedagogical research, observations, experiments, and analyses, the following main conclusions were drawn:

1. The training system for para-athletic throwers requires a specific approach because their physical and psychological capabilities differ from those of able-bodied athletes. Existing methodologies are based on general recommendations and are not fully adapted for athletes with disabilities.
2. The experimentally developed training program, tailored to athletes' individual characteristics, type of disability, and skill level, led to significant positive changes in their physical, technical, and psychological preparedness.
3. Integrating exercises that improve functional capabilities, adaptive technical methods, and psychological preparation elements into the training process played a crucial role in enhancing the overall effectiveness of the athletes.
4. It was practically proven that even experienced athletes can significantly improve their results through deepening technical skills, strength development, and coordination training.

5. A scientifically based pedagogical training system serves to thoroughly prepare para athletes for competitions, ensure their sports stability, and maximize their potential.
6. Based on the obtained results, methodological recommendations have been developed for coaches of sports schools and clubs specializing in para athletics.

References

1. Абдиев, Шерзод Абдурахмонович. "ПАРАЕНГИЛ АТЛЕТИКАЧИЛАРНИ МАШҒУЛОТ ЮКЛАМАЛАРИНИ РЕЖАЛАШТИРИШ ОРҚАЛИ ЮҚОРИ НАТИЖАЛАРГА ЭРИШИШ." *Research Focus International Scientific Journal* 2.12 (2023): 70-75.
2. Абдиев Шерзод Абдурахмонович. "ПАРАЛИМПИЯ ЗАҲИРА СПОРТЧИЛАРНИ БИОМЕХАНИК ТАВСИФЛАРИ БЎЙИЧА САРАЛАШ" *Research Focus*, vol. 3, no. 5, 2024, pp. 140-146.
3. Abdiyev Sherzod Abdurakhmonovich. "IMKONIYATI CHEKLANGAN SPORTCHILARNI PARA YENGIL ATLETIKANING YUGURIB KELIB UZUNLIKKA SAKRASH TURIGA O'RGATISH USLUBIYATI" *Research Focus*, vol. 3, no. 5, 2024, pp. 94-101.
4. Abdiyev, Sherzod Abdurakhmonovich. "Adaptive Physical Education and Methodology for Selection of Athletes with Disabilities." *Research Focus*, vol. 4, no. 1, 2025, pp. 93–98. doi:10.5281/zenodo.14712123.