

Improving the Process of Sports Training in The System of Professional Development of Weightlifting Coaches

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Abstract: This article analyzes the issues of improving the process of sports training in the training system of trainers in weightlifting. The importance of using innovative pedagogical technologies and scientific-methodical approaches in the conditions of modern sports training is based on the research. Also, the possibilities of improving the training and performance of athletes by developing the professional competences of trainers have been shown.

Keywords: Weightlifting, trainer qualification, sports training, methodology, innovation, sports training, competence.

Introduction: Today, weightlifting is one of the fastest-growing sports in Uzbekistan and requires achieving high athletic performance. In the context of ongoing reforms aimed at developing the field of physical education and sports in the country, the professional competence and qualifications of coaches play a decisive role in improving athletes' training.

Studies by local scholars emphasize that the scientific organization of the training process, the optimal distribution of training loads, and the monitoring of athletes' functional condition are key factors in enhancing sports performance [3, 7]. Furthermore, improving the methodological competence of coaches and introducing modern approaches into practice are essential conditions for ensuring the effectiveness of sports training.

Research conducted by Uzbek scientists highlights that ensuring the continuous professional development of coaches, improving the system of professional development, and organizing the training process in accordance with modern requirements are pressing scientific issues [3, 9].

At the same time, there is an increasing need to

preserve the traditions of the national sports school while integrating them with modern pedagogical and scientific approaches. This necessitates improving the sports training process within the professional development system of weightlifting coaches [16].

Based on the above, enhancing the sports training process on a scientific and methodological basis within the professional development system of weightlifting coaches is of significant scientific and practical importance.

The scientific novelty of this study is as follows:

A combined approach integrating traditional methods with digital technologies (video analysis and functional monitoring) to improve sports training within the professional development system of weightlifting coaches was proposed.

A methodology aimed at developing the professional competence of coaches was developed, incorporating tools for the individualization of training, as well as the coordination of load and recovery processes.

The assessment of coaches' professional competence was based on indicators such as training planning, load distribution, and monitoring of athletes' functional

condition.

The effectiveness of the proposed methodology was confirmed through the results of a pedagogical experiment and statistical analysis ($t = 2.37$; $p < 0.05$).

Practical recommendations for improving the professional development system of weightlifting coaches were formulated.

The purpose of the study is to develop a scientific and methodological framework for improving the sports training process within the professional development system of weightlifting coaches, to enhance coaches' professional competence based on modern pedagogical and digital technologies, and thereby to increase the level of athletes' training and performance.

Research object. The system of sports training implemented in the process of retraining and professional development of weightlifting coaches.

Research subject. A set of pedagogical approaches, methods, and tools aimed at improving the sports training process within the professional development system of weightlifting coaches.

Analysis of relevant literature.

Recent scientific research in the fields of sports pedagogy, sports physiology, and sports theory clearly demonstrates the need to modernize coach training systems. According to contemporary scientific perspectives, achieving high athletic performance largely depends on the scientific organization of the training process and the professional competence of coaches. Therefore, integrated and systematic approaches are of great importance in improving the sports training system.

The works of foreign researchers [2, 4, 5] emphasize the importance of the scientific organization of training, optimal load distribution, and the development of coaches' professional competence as key factors in enhancing sports performance. In particular, block periodization, high-intensity interval training, and methods aimed at the balanced development of strength and endurance are considered effective. Moreover, the use of digital technologies-including video analysis, biomechanical modeling, and data analysis systems-enables further optimization of the training process.

In addition, modern studies highlight psychological

preparation, motivation levels, and stress resistance of athletes as important factors in achieving high performance. In this context, the need to deepen coaches' knowledge in sports psychology is emphasized.

Research conducted by local scholars pays significant attention to improving the methodological competence of coaches and enriching their practice with modern scientific approaches while preserving the traditions of the national sports school. In particular, combining national experience with advanced international methods in organizing the training process, improving the system of long-term athlete development, and ensuring continuous professional development of coaches are considered priority areas.

At the same time, the analysis of scientific literature indicates that further improvement of the weightlifting coach training system requires the широкое внедрение инновационных педагогических технологий, effective implementation of research findings into practice, and in-depth study of international experience.

METHODS

This study was aimed at improving the training system of weightlifting coaches and increasing the effectiveness of the sports training process. The research was designed as a quasi-experimental study.

The research was conducted at the Institute for Retraining and Professional Development of Specialists in Physical Education and Sports under the State Sports Academy of Uzbekistan during 2024–2025.

A total of 40 coaches ($n = 40$) participated in the study. They were divided into two groups: an experimental group ($n = 20$) and a control group ($n = 20$). The experimental group applied a methodology based on innovative pedagogical and digital technologies, while the control group followed traditional training methods. The following scientific methods were employed in the study:

- scientific and theoretical analysis: analysis and generalization of scientific literature, educational and methodological sources, and both domestic and foreign research;
- pedagogical observation: evaluation of coaches' activities and the effectiveness of training organization

through direct observation;

- pedagogical experiment: implementation of the developed methodology and assessment of its effectiveness;
- comparative method: comparison of the results of the experimental and control groups;
- testing: assessment of coaches' professional competence;
- statistical analysis: processing and analysis of the obtained data using mathematical and statistical methods.

In the study, the level of coaches' professional competence was assessed at the beginning (diagnostic stage) and at the end (control stage) of the experiment.

The mean (M), standard deviation (σ), and Student's t-test were used for data analysis. Statistical significance was determined at the level of $p < 0,05$.

The results of the study demonstrated that the

professional competence of coaches and the effectiveness of training organization in the experimental group increased significantly compared to the control group.

RESULTS

During the study, the training methods of weightlifting coaches, the level of training organization, and their practical effectiveness were comprehensively evaluated. The results of the diagnostic stage showed that the indicators of the experimental and control groups were nearly identical ($65,3 \pm 5,2$ and $66,1 \pm 4,8$ points, respectively). This indicates that both groups were equivalent in terms of training level at the beginning of the study.

During the pedagogical experiment, the experimental group applied a methodology based on innovative pedagogical and digital technologies, while the control group continued to use traditional training methods.

Table 1

Indicators of Professional Competence of Coaches

Group	Stage	Indicator (points) $M \pm \sigma$	Growth (%)
Experimental group (n=20)	Diagnostic stage	$65,3 \pm 5.2$	–
Experimental group (n=20)	Final stage	$78,6 \pm 5.9$	20,4%
Control group (n=20)	Diagnostic stage	$66,1 \pm 4.8$	–
Control group (n=20)	Final stage	$70,2 \pm 5.1$	6,2%

Note: M – mean; σ – standard deviation

According to the table, the indicators of coaches' professional competence in the experimental group increased significantly compared to the diagnostic stage (from $65,3 \pm 5,2$ to $78,6 \pm 5,9$), representing a 20.4% increase. In contrast, the increase in the control group was relatively low and amounted to 6.2%.

The mean (M), standard deviation (σ), and Student's t-test were used to analyze the data. The results showed that the difference between the experimental and control groups was statistically significant ($t = 2,37$; $p < 0,05$). This indicates that the positive effect of the proposed methodology on coaches' professional

competence is statistically reliable and not due to chance.

A detailed analysis of the results suggests that the positive changes observed in the experimental group can be explained by the following factors:

- the individualization of the training process, allowing for a tailored approach to each athlete;
- effective management of athletes' functional state through the scientifically grounded coordination of load and recovery processes;
- an increased ability to accurately and rapidly assess training progress through the use of video analysis and

digital monitoring tools.

The relatively low improvement in the control group can be attributed to the limited effectiveness of traditional training methods. In addition, the lack of access to digital technologies reduced coaches' ability to analyze performance and make timely adjustments.

Thus, the findings of the study substantiate that the integration of innovative pedagogical approaches and digital technologies into the training process is more effective than traditional methods in developing coaches' professional competence and enhancing the overall effectiveness of sports training.

DISCUSSION

The results of the study are consistent with the scientific views presented in modern sports theory and practice. In particular, it was confirmed that the development of coaches' professional competence, the individualization of the training process, and the use of digital technologies are key factors in achieving high athletic performance.

The findings of this study are also consistent with data reported in both foreign and domestic research. The scientific literature indicates that the individualization of sports training, maintaining an optimal balance between load and recovery processes, and regular monitoring of athletes' functional condition contribute to improving the effectiveness of the training process. The results of this study further confirm the effectiveness of these approaches.

At the same time, the study demonstrates that the

acquisition of modern knowledge and skills by coaches—particularly the ability to apply knowledge in sports physiology, biomechanics, and sports psychology in practice—significantly enhances the effectiveness of the training process. This highlights the need to place greater emphasis on the development of practical skills within the professional development system of coaches, alongside theoretical knowledge.

The main professional competencies identified in the study include:

- knowledge of sports physiology and biomechanics, which enables understanding of functional processes in the athlete's body and scientifically grounded determination of training loads;
- application of an individualized approach, ensuring the adaptation of training programs to the physical, functional, and psychological characteristics of each athlete;
- use of modern technologies, enabling effective management of the training process through video analysis, monitoring systems, and digital tools;
- management of psychological preparation, contributing to increased athlete motivation and the development of stress resistance.

Furthermore, the results indicate that the introduction of innovative approaches into the coach training system is important not only for increasing the efficiency of the training process but also for ensuring the long-term development of athletes.

Table 2

Ways to improve the process of sports training

T/p	Improvement of the training process is carried out in the following directions	
1.	Individualization	Creating a personal training program
2.	Load and recovery balancing	Balancing the boot and recovery process
3.	Implementation of digital technologies	Improving the quality of training through video analysis, biomechanical programs and monitoring systems.

4.	Innovative methods	Use of functional training, interval training and combined methods.
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Table 3**A model for improving the system of professional development**

T/p	The following model is considered effective:	
1.	Regular educational seminars	Seminars and training classes
2.	Online learning platforms	Distance learning programs
3.	Practical training	Practical work and experiences
4.	International exchange of experience	Sharing experience with foreign trainers

CONCLUSIONS

In conclusion, improving the professional development system of weightlifting coaches is one of the key factors in enhancing the effectiveness of sports training. Achieving high athletic performance in the modern sports system depends not only on athletes' physical fitness but also on the level of coaches' theoretical knowledge, practical skills, and ability to apply innovative approaches.

In this regard, it is essential to widely implement modern pedagogical technologies, scientifically grounded training methods, and digital monitoring and analysis tools in coaching practice. In particular, the individualization of the training process, maintaining an optimal balance between load and recovery, and regular monitoring of athletes' functional condition play a crucial role in improving sports performance.

It is also necessary to ensure the continuous professional development of coaches by familiarizing them with international experience and advanced scientific achievements, as well as by organizing professional development programs based on innovative approaches. This will contribute to increasing the competitiveness of the national sports system at the international level.

Based on the research findings, the following practical

outcomes can be expected:

- improvement in the level of athletes' physical, technical, and functional preparedness;
- reduction in the risk of injuries caused by excessive load and improperly organized training;
- increased effectiveness of the sports training process and overall improvement of the training system;
- enhancement of coaches' professional competence and methodological literacy;
- increased competitiveness of the national sports system in the international arena.

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