Methodology for preparing the Uzbekistan national weightlifting teams for complex international competitions

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Abstract
This article highlights the scientific and methodological foundations for preparing the national weightlifting teams of Uzbekistan for complex international competitions. Athlete preparation is analyzed based on the integration of sports pedagogy, physiology, biomechanics, psychology, and digital monitoring technologies. Modern approaches to training periodization, the individualization and management of training loads, the biomechanical analysis of technical movements, and the monitoring of functional and psychological states are substantiated. Furthermore, a comprehensive methodology that integrates physical, technical, functional, and psychological preparation is proposed.
Keywords: weightlifting, national team, comprehensive preparation, sport periodization, biomechanical analysis, functional monitoring, sport psychology, pedagogical control.

Introduction

Today, the intensifying competition in international sports necessitates a scientific approach to athlete training, effective management of the training process, and the use of modern technologies. In weightlifting, in particular, achieving high results at the Olympic Games, World and Asian Championships, and other major international multi-sport events requires a long-term, phased, and comprehensive training system. Athletic performance in this context depends not only on strength and speed -strength capabilities but also on the optimal planning of training loads, monitoring of functional state, management of recovery processes, and the targeted development of peak athletic form before competitions.

Uzbek weightlifters have been achieving high results in prestigious international competitions in recent years. At the same time, there is a need to improve the preparation of national team athletes for major international multi-sport events based on a unified scientific-methodological system. In practice, issues such as the individualization of training loads, management of athletic form, biomechanical analysis of technical movements, monitoring of functional and psychological states, and the integration of recovery processes into a single, unified system remain pressing concerns.

From this perspective, the methodology for comprehensive training involves integrating physical, technical, functional, and psychological preparation with the processes of medical-biological control, nutrition, recovery, and training load monitoring. The core principles of this approach are long-term, phased planning, individualized load management, evaluation of athletic form dynamics, and forecasting competition results. Furthermore, biomechanical analysis, video monitoring, sensor technologies, and digital sports analytics increase the objectivity of the training process and enable the rapid assessment of technical and functional indicators.

In weightlifter training, managing athletic form is of particular importance, requiring the optimal manifestation of physical, technical,functional, and psychological capabilities during the main competition period. For this reason, it is crucial to individually determine the load-to-recovery ratio, regularly assess the dynamics of athletic form, and adjust the training process during the pre-competition stage.

The purpose of this study is to develop a scientific-methodological model for preparing the national weightlifting teams of Uzbekistan for major international competitions and to substantiate methodological recommendations for improving the main components of athletic training based on a unified management system. The proposed methodology aims to harmonize training components, individualize load management, purposefully develop peak athletic form for the competition period, increase recovery efficiency, and reduce the risk of injury.

Research Objectives:

To achieve the stated purpose, the following objectives were pursued:

to analyze contemporary domestic and foreign scientific-methodological literature on preparing weightlifters for major international competitions;

to identify the core pedagogical and methodological principles of the training pro-

cess for national team athletes;

to develop a methodological model for the periodization and phased management of training loads;

to organize the physical, technical, functional, and psychological preparation of athletes based on a mutually integrated system;

to substantiate effective methods for monitoring the functional state of athletes and for the biomechanical analysis of technical movements;

to develop scientific-methodological and practical recommendations aimed at increasing the effectiveness of the training process.

Methods

This study was aimed at improving the methodology for preparing the weightlifters of the Uzbekistan national team for major international competitions. The research process employed a comprehensive set of scientific approaches from the fields of modern sports pedagogy, sports physiology, biomechanics, sports psychology, and sports medicine.

Results and discussion

Modern weightlifting is a complex sport that demands high levels of maximum and explosive strength, precise coordination of movements, technical mastery, functional preparedness, and psychological stability. Achieving high results in major international competitions is determined not only by the development of an athlete's individual physical qualities but also by the integration of all preparatory components and the scientifically-based management of the training process.

Preparing national weightlifting teams for major international competitions is a multifactorial process requiring a high level of scientific and pedagogical management. In organizing this process, it is essential to consider the interconnected factors of athletes' individual morphofunctional and physical capabilities, their level of technical preparation, the competition calendar, the volume and intensity of training loads, recovery capacities, and their psychological state.

The primary goal of comprehensive training is to bring an athlete to their optimal athletic form by the time of the main competition and to ensure they can fully demonstrate their existing physical, technical, functional, and psychological capabilities under competitive conditions. To this end, the training process is planned in stages, and at each stage, the content, volume, and intensity of the workload, as well as the recovery methods, are determined in accordance with the athlete's individual condition.

In a system of comprehensive training, periodization stands out as a crucial methodological principle. The consistent development of athletic form is ensured by dividing the long-term training process into preparatory, competitive, and transitional periods, as well as their corresponding microcycles and mesocycles. This involves a gradual transition from general preparation to specialized training, and from high-volume workloads to specialized workloads that closely simulate competition.

Considering an athlete's individual capabilities is particularly important when managing training loads. A load of the same volume and intensity can elicit different physiological and pedagogical responses in different athletes. Therefore, when determining training loads, the athlete's level of preparedness, functional state, adaptation to previous loads, recovery level, and pre-competition condition must be taken into account. This approach allows for the prevention of overexertion and enhances training effectiveness.

Technical preparation is another crucial component of a comprehensive methodology. In the snatch and clean and jerk exercises, ensuring the optimal barbell trajectory, coordinating the sequence and duration of movement phases, and maintaining the optimal position of the body and joints directly impact athletic results. Therefore, the use of video monitoring and biomechanical analysis is an important tool for identifying technical errors, assessing movement efficiency, and refining an individual's technical model.

Functional monitoring, in turn, allows for the assessment of an athlete's response to training loads and the dynamics of their recovery process. By regularly recording heart rate, arterial blood pressure, subjective fatigue levels, recovery indicators, and functional test results, it is possible to obtain objective data about the athlete's current condition. This information increases the ability to make timely adjustments to training loads and individually select recovery methods.

Psychological preparation is also one of

Table 1.

Stage	Main Objective	Load Characteristics	Outcome
General Preparation	Building a functional base	High volume, moderate intensity	General physical development
Specific Preparation	Approaching competition readiness	High intensity	Specific strength and technique
Competition Phase	Optimal athletic form	Volume decreases, intensity is maintained	Peak performance
Recovery Phase	*Restoring the body*	*Low load*	*Supercompensation*

the crucial factors in achieving high results in international competitions. Managing pre-competition anxiety, maintaining focus, self-confidence, emotional stability, and success-oriented motivation directly influence an athlete's competitive performance. Therefore, psychological preparation must be conducted systematically at all stages of the training process, especially during the pre-competition period.

In today's environment, the use of digital technologies and sports analytics in managing comprehensive training is also gaining significant importance. The systematic analysis of data collected through video monitoring, sensor devices, electronic databases, and digital monitoring platforms allows for tracking the dynamics of an athlete's preparation, assessing the load-to-recovery ratio, and adjusting individual training programs. This approach strengthens the collaboration among coaches, sports doctors, physiologists, psychologists, and other specialists, serving to organize the training process within a unified management system.

Thus, the methodology for preparing the national weightlifting teams of Uzbekistan for major international competitions must be based on the mutual integration of physical, technical, functional, psychological, and other training components. Within this approach, key methodological principles include considering the athlete's individual characteristics, managing training loads in a gradual and targeted manner, monitoring functional state and recovery processes, conducting biomechanical analysis of technical movements, and utilizing digital analytics tools. Consequently, this comprehensive training system establishes the necessary scientific and methodological foundation for an athlete to reach peak athletic form during the main competition period, ensure consistent results, and attain high sporting achievements.

The systematic planning of training loads (periodization) plays a crucial role in the scientific foundation of comprehensive preparation. The training process is organized at macrocycle, mesocycle, and microcycle levels, taking into account the athlete's functional condition and competitive demands at each stage.

Table 2.

Domain	Indicators	Measurement Tool
Physical	Maximum strength, explosive power, endurance	Tests, dynamometry
Technical	Trajectory, speed, accuracy	Video analysis
Functional	Lactate, recovery	Biochemical tests
Psychological	Stress, motivation	Psychological tests

The pedagogical control system holds a central position in the training process, as it enables an objective assessment of the athlete's development and proper management of training loads. Control is implemented across physical, technical, functional, and psychological domains. Measurement and monitoring indicators are developed for each domain.

Conclusion

This study analyzes the scientific and methodological foundations for preparing Uzbekistan's national weightlifting teams for

major international competitions and defines the main directions for organizing the training process based on a unified management system. The analysis has shown that achieving high athletic results is closely linked not only to an athlete's physical preparation but also to their technical, functional, and psychological readiness, as well as the rational management of training loads and recovery processes.

A crucial condition for effectively organizing comprehensive training is to harmonize all components of sports preparation, account for the individual characteristics of athletes, and plan the process in stages. Purposeful planning of training loads at the macrocycle, mesocycle, and microcycle levels, along with their regular adjustment based on the athlete's functional state, enables the optimal development of athletic form and the management of preparation for the main competition.

The research results indicated that in modern weightlifting, the individualization of training loads, biomechanical analysis, functional monitoring, and the integrated use of digital technologies are key factors in enhancing training effectiveness. In particular, the biomechanical analysis of the snatch and the clean and jerk exercises creates a significant opportunity to determine the optimal structure of technical movements, correct errors in a timely manner, and refine the individual technical model.

Thus, the proposed comprehensive approach serves to integrate physical, technical, functional, and psychological preparation into a unified management system, individually manage workloads, optimize recovery processes, and purposefully direct athletic form toward the main competition. The implementation of this methodology can provide a scientific and practical basis for stabilizing the results of Uzbekistan's national team athletes in international competitions and for achieving high sporting accomplishments.

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Research interests
weightlifting, Olympic games, physical education and sport, Theory of physical education, Analyzing of sport competitions.