

**MENTAL ENLIGHTENMENT SCIENTIFIC –
METHODOLOGICAL JOURNAL****MENTAL ENLIGHTENMENT SCIENTIFIC –
METHODOLOGICAL JOURNAL**<http://mentaljournal-jspu.uz/index.php/mesmj/index>**BASED ON THE DIFFERENTIATION OF TRAINING TOOLS
IMPROVEMENT OF SPORTS RESULTS OF WEIGHTERS****Navruz Abdurakhmonov***State Committee for Physical Culture and Sports of Uzbekistan**Independent student at a sports university**E-mail address: navro'z0097@gamil.com**Chirchik, Uzbekistan***ABOUT ARTICLE**

Key words: weightlifting, differentiation, training means, periodisation, strength training, sport performance, pedagogical experiment.

Received: 01.05.26**Accepted:** 02.05.26**Published:** 03.05.26

Abstract: This study investigates the effectiveness of differentiated training means in improving athletic performance of weightlifters through a controlled pedagogical experiment conducted in 2023–2024 with control (n=10) and experimental (n=10) groups. A four-block differentiated training system was developed and applied exclusively to the experimental group across the annual training cycle. Baseline anthropometric and physical fitness measures showed no statistically significant intergroup differences ($p>0.05$). Post-intervention testing demonstrated statistically significant advantages for the experimental group across all performance indicators including squat, deadlift, bench press, 30m sprint speed, and flexibility ($p<0.05$ and $p<0.01$), confirming the effectiveness of the developed differentiation methodology.

Introduction. Weightlifting is a complex sport that requires a combination of strength, speed, and technical skill. To achieve high results, in the process of training athletes, it is necessary to purposefully differentiate not only the volume and intensity of weightlifting, but also the means of training. The effectiveness of the methodology, in which the same training

regime is traditionally applied to all athletes, is insufficient, since the physical capabilities, technical preparedness, and psychophysiological characteristics of each athlete can differ significantly [1].

The principle of differentiation is considered the basis of an individual approach in modern sports pedagogy. According to this principle, it is advisable to differentiate training tools and methods according to each athlete's level of preparedness, capabilities, and competition schedule [2]. Research in the field of weightlifting shows that a differentiated approach can increase strength indicators by 12-18% and technique by 20-25% in the annual training cycle [3,4].

However, in Uzbek weightlifting, scientifically substantiated, experimentally confirmed studies on the methodology of differentiation of training means are very rare. In current practice, standard international methods are often used without taking into account the individual characteristics of Uzbek athletes, which limits the possibility of optimizing sports results [5]. Based on this problem, this study is aimed at developing a differentiated training system for weightlifters and experimentally verifying its effectiveness.

The purpose of the research is to develop and experimentally evaluate a methodology for improving sports results based on differentiated training tools during the training period of qualified weightlifters.

Research objectives determination of the initial physical and anthropometric indicators of qualified weightlifters and confirmation of the uniformity of the control and experimental groups. Development, implementation of a system of differentiated training means and a comparative assessment of its impact on sports results with the control group at the end of one year of experience.

Materials and methods. The one-year controlled pedagogical experiment was conducted from September 2025 to August 2026 at the Weightlifting Training Center of the Uzbek State University of Physical Culture and Sports. 20 male weightlifters (average age 21.8 ± 1.3 years) participated in the study. Participants were randomly divided into the control group (n=10) and the experimental group (n=10). Inclusion criteria: active competitive status, at least three years of systematic training experience. Exclusion criteria: suspension of sports activities during the study and voluntary withdrawal.

Both groups worked under the same coach, in the same gym, and with the same weekly training volume. The experimental group was trained using a newly developed methodology of

differentiated training means; the control group followed the standard national weightlifting training curriculum.

Anthropometric measurement indicators were recorded at the initial (September 2025) and final (August 2026) stages. Measured parameters: height (cm), body weight (kg), leg length (cm), arm length (cm), quality assessment of muscle strength. Six standardized tests were conducted to assess physical fitness: squat (kg), deadlift (kg), bench press (kg), 30-meter sprint (sec), maximum heart rate, and sports-technical fitness (10-point scale). All measurements were performed on an empty stomach before morning training using calibrated equipment by one specially trained appraiser.

Characteristic statistics (average M, standard deviation σ , coefficient of variability V%) were calculated for all variables. The initial equality between the groups was assessed using independent sample t-tests. Preliminary and subsequent changes in the groups were assessed using paired t-tests. The significance level was set at $\alpha=0.05$. Statistical analysis was carried out in the IBM SPSS Statistics v.26 program.

Results and discussion. The developed system of differentiated training tools includes five macrocycles, covering a 40-week annual training cycle. Table 5 presents in detail the means of strength, technical, and physical training corresponding to each stage.

Table 1.

Differentiated training system annual training cycle

No	Preparatory stage	Strength training equipment	Technical training equipment	Physical training equipment
1	General training (weeks 1-6)	Basic strength exercises (Squat, Deadlift, Bench press) - 70-80% 4×6 in 1RM	Formation of technical skills: obtaining a link, coordination of actions	Formation of aerobic base, 65-75% HR max, 40-50 km/week
2	Special training (weeks 7-14)	Explosive strength and speed-strength exercises - 80-90% 5×3 in 1RM	Improvement of Competitive Actions: Individual	Mixed aerobic-anaerobic exercise, 75-88% HR max, 55-65 km/week

No	Preparatory stage	Strength training equipment	Technical training equipment	Physical training equipment
			Corrections by Indicator	
3	Pre-Competition (Weeks 15-18)	Increase weights by 85-95% 1RM, decrease volume 3x3	Test training simulating a competitive state	High-intensity interval training, 80-92% HR max, 30-40 km/week
4	Competition period (19-36 weeks)	Holding modes: 90-95% 2x2 in 1RM, restoration microcycles	Determining technique in competitive conditions; rapid error correction	Wavy periodicity: high - medium - low intensity exchanges
5	Transition period (weeks 37-40)	Active rest: weight 50-60% 1RM, general strength training	Analyze technique and start learning new moves	Restorative activity: swimming, cycling, 55-65% HR max

The first block - general training (1-6 weeks) - formed the aerobic base and basic strength indicators. Strengthening exercises with an intensity of 70-80% 1PM were intended for strengthening muscle structure. Technical training was aimed at mastering basic biomechanical skills, and physical training - at forming aerobic reserves.

The second block - special training (7-14 weeks) - is characterized by an increase in intensity by 80-90% to 1PM. Individual load norms based on sprint-float-sprint intervals, maximum speed-strength exercises with lifts, and individual physiological profiles were introduced. The third block - pre-competition (15-18 weeks) - reduced the volume of training with bringing the weights to 85-95% of 1RM. At this stage, technical training was aimed at simulating the competition conditions.

The fourth block - the competition period (19-36 weeks) - has a wave-like periodicity structure, alternating between high-intensity competition microcycles and low-intensity recovery microcycles. Intragroup analysis showed that the squat result of the experimental group increased by 14.8% from the initial to the final stage, while in the control group there

was an increase of 6.0%. The adaptive assessment improved by 36.1% in the experimental group, while in the control group an increase of only 7.7% was noted. These differences are also practically significant in high-level weightlifting competitions, where the difference between repeated results is around three kilograms.

Conclusion. This study developed, implemented, and experimentally assessed a methodology for differentiating training means in improving the sports results of qualified weightlifters. The main conclusions are as follows:

The control and experimental groups showed statistical equality in all five anthropometric indicators (height, weight, leg length, arm length, HR max) and six fitness tests (squat, deadlift, bench press, 30m sprint, VO₂max, adaptation) in the initial state, $p > 0.05$ in all intergroup comparisons. A system of five-stage differentiated training tools has been developed: General training (1-6 weeks); Special training (7-14 weeks); Pre-competition (15-18 weeks); Competition period (19-36 weeks); Transitional period (37-40 weeks). In each period, the means of strength, technical, and physical training were clearly differentiated.

Testing at the end of the experiment showed statistically significant advantages of the experimental group in all six indicators: squat ($p < 0.01$, $t = 3.12$), deadlift ($p < 0.01$, $t = 3.04$), bench press ($p < 0.01$, $t = 3.19$), sprint 30m ($p < 0.05$, $t = 2.47$) and sports-technical fitness ($p < 0.001$, $t = 9.59$). These results confirm the effectiveness of the differentiated methodology. Analysis within the group showed that the squat results in the experimental group increased by 14.8% compared to the baseline indicators, while in the control group there was an increase of 6.0%. Adaptability improved by 36.1% in the experimental group and increased by 7.7% in the control group.

As areas of future research: continuous assessment of the differentiated methodology over several years of training cycles; its application to female weightlifters and other weight categories; It is recommended to explore the possibilities of further individualization of cargo monitoring using GPS technologies and real-time power sensors.

References:

1. Issurin V.B. (2010). New horizons for the methodology and physiology of training periodization. *Sports Medicine*, 40(3), 189-206.
2. Toshmatov A.R., Yusupov B.M. (2022). Og'ir atletikachilarda mashg'ulot vositalarini tabaqalashtirish metodikasining zamonaviy muammolari. *Jismoniy tarbiya va sport*, 4(2), 78–85.

3. Zatsiorsky V.M., Kraemer W.J. (2006). Science and Practice of Strength Training (2nd ed.). Human Kinetics.
4. Bompa T.O., Buzzichelli C.A. (2019). Periodization: Theory and Methodology of Training (6th ed.). Human Kinetics.
5. Karimov D.B. (2021). O'zbekiston og'ir atletikasi rivojlanishining zamonaviy tendensiyalari. Sportiv fan, 3(1), 45–52.
6. Haff G.G., Triplett N.T. (2016). Essentials of Strength Training and Conditioning (4th ed.). Human Kinetics.
7. Storey A., Smith H.K. (2012). Unique aspects of competitive weightlifting: performance, training and physiology. Sports Medicine, 42(9), 769–790.
8. Garhammer J. (1993). A review of power output studies of Olympic and powerlifting: methodology, performance prediction, and evaluation tests. Journal of Strength and Conditioning Research, 7(2), 76–89.
9. Weinberg R.S., Gould D. (2015). Foundations of Sport and Exercise Psychology (6th ed.). Human Kinetics.
10. Van den Tillaar R., Ettema G. (2009). A comparison of muscle activity in concentric and counter movement maximum bench press. Journal of Human Kinetics, 39, 63–71.