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PLANNING THE EDUCATIONAL AND TRAINING PROCESS OF YOUNG CYCLISTS IN THE ANNUAL TRAINING CYCLE BASED ON STRUCTURED GROUPS OF METHODS AND TRAINING LOADS IN COMBINATION WITH AN INCREASE IN THE VOLUME AND INTENSITY OF EXERCISES

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ABOUT ARTICLE

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Abstract: This article discusses the process of appropriate construction of training and competitive loads of cyclists of initial sports specialization, both to the conditions of sports training and competitions. Methods of complex assessment of signs of physical condition, prognostic possibilities and the value of these methods in the selection of the main composition of the youth national team are given.

Introduction. The current state of performance indicators in Olympic cycling disciplines has reached the maximum limits of physical and functional capabilities. In the stage of initial training, the forced increase of training loads often negatively affects the athletes' bodies and subsequently leads to a decline in performance at the stage of high sports mastery.

This problem is primarily associated with the insufficient study of the optimal distribution of training and competitive loads within the annual training cycle of athletes in world cycling practice and sports science. Of particular interest is the distribution of exercise volumes of varying power in combination with competitions during the transitional, preparatory, and competitive periods of cyclists' training [8].

Planning the preparation of young cyclists is impossible without constructing a well-defined structure and content of the educational and training process within the long-term

training system of road cyclists. One of the key directions for improving the effectiveness of training young road cyclists is the development of the riders' strength and speed abilities, the level of which largely determines the speed of covering a race distance. The specific nature of the manifestation of these qualities in cycling lies in the relationship between strength and speed characteristics of pedaling, reduction in the amplitude of oscillations, and the level and volume of competitive and specialized training loads. This approach will make it possible for young athletes to reach the maximum level of strength and speed potential by the time they participate in competitions during the season, as well as during selection for the main youth national team and further participation in national and international competitions, which determines the relevance of the chosen research topic [4].

The present study will, to a certain extent, contribute to the implementation of the tasks outlined in the Resolution of the President of the Republic of Uzbekistan No. PP-525, the Decree of the President of the Republic of Uzbekistan dated January 28, 2022 No. UP-60 "On the Development Strategy of New Uzbekistan for 2022–2026," as well as the Resolution of the President of the Republic of Uzbekistan No. PP-221 "On the comprehensive preparation of athletes of Uzbekistan for the XXXIV Summer Olympic Games and the XVIII Paralympic Games to be held in Los Angeles (USA) in 2028," dated November 5, 2021 [1,2].

Research Objective:

The objective of the study is to optimize the structure and content of the educational and training process of road cyclists at the stage of initial training by determining the timing of stages and periods of the annual training cycle, taking into account the annual distribution of training loads in certain proportions and assessing the anthropometric complex.

Object of the Study: the process of sports training of young cyclists.

Subject of the Study: the structure and content of the educational and training process of cyclists at the stage of initial training.

Research Tasks:

1. To analyze the dynamics of competitive and training loads at the stage of initial training, as well as their influence on the level of cyclists' fitness within the annual training cycle.

2. To develop, structure, and implement in the educational and training process methods of comprehensive assessment of physical condition and to study their impact on cyclists' sports performance.

3. To experimentally prove the effectiveness of the proposed structured groups of methods and training loads in combination with increased exercise volume and higher intensity within the annual training cycle.

Methodology. Analysis and generalization of scientific and methodological literature, which made it possible to determine the anatomical and physiological characteristics of adolescence; pedagogical observation; ascertaining and formative experiments; and methods of mathematical statistics.

Results and Discussion. The initial studies were conducted to directly assess the effectiveness of the sports training methodology and training loads within the annual training cycle. A total of 30 cyclists (n = 30) participated in the experimental study. During the ascertaining experiment, the athletes' preparation was focused on participation in the Uzbekistan Championship.

Analyzing the two-year pedagogical experiment in the training of young athletes, it was observed that the majority of training time was devoted to specialized preparation (February–September). During this period, training sessions in both groups were conducted 4–5 times per week, each lasting 1.5–2 hours.

The main means of general physical preparation in the experimental group included general developmental exercises, weightlifting exercises, sports and active games, swimming, and stretching exercises. Specialized training loads were performed mainly on the road, where the total volume of a single training session ranged from 20 km in February to 70 km in August (see Table 1).

Table 1. Parameters and Structure of Specialized Training Loads in the Training of Young Cyclists

Load Parameters	**Groups**	
	CG (Control Group) $\bar{X}\pm\sigma$	EG (Experimental Group) $\bar{X}\pm\sigma$
Volume of load with intensity 20–50% of maximum (km)	2900±121.1	2760.5±124.2
Volume of load with intensity 55–80% of maximum (km)	660±37.8	1524.0±112.4
Volume of competitive load (km)	170±14.2	386±44.6
Volume of control trial races (km)	2.0±0.80	8.4±1.2
Number of competitions	9.2±0.91	10.6±1.2

Load Parameters	Groups	
Total volume (km)	3824±214.02	4812±240.4

The characteristics of the specialized loads in the control group (CG) and experimental group (EG) differed. In the control group, the main volume of specialized training was performed at low intensity, using smaller gear ratios, focusing on improving pedaling technique and mastering cycling techniques.

In contrast, the experimental group performed training with larger volumes of specialized loads at higher intensity.

Based on the data obtained during the research, a modified training program and methodology for cyclists at the initial specialized stage of preparation was developed.

The results of sports training largely depend on the monitoring not only of functional capabilities, but also of the physical capabilities of the body, especially in young cyclists. Accordingly, the training regimen was adjusted according to the athletes' individual capabilities [7].

To conduct a special endurance test, a WattBike cycling ergometer with a braking device was used, with a load of 16.8 kgm per pedal revolution, a pedaling cadence of 106 rpm, and a duration of 4 minutes. The test consisted of the cyclist maintaining the specified cadence under the control of POLAR or GARMIN monitoring devices.

During the study, the results of this test demonstrated a high correlation coefficient not only with competition results in the 4 km distance, but also with results in competitions over longer distances. Based on the correlation analysis, a set of tests and control trials was selected (Table 2).

Table 2. Monitoring Program for the Level of Special and Physical Preparedness

Direction of Test Assessment	Complex of Tests and Control Trials (considering dosage and result – 100%)
Assessment of general fitness level	60 m run (standing start)
	800 m run (standing start)
	Standing ten-step jump
	Vertical jump
	Push-ups in the prone position
Assessment of special fitness level	Leg flexion to a 90° angle with a 16 kg load (tempo – 1 lift per second, timed)

Direction of Test Assessment	**Complex of Tests and Control Trials (considering dosage and result – 100%)**
Assessment of fitness level in main sports activities	Squats with a barbell weighing 70–75% of body weight (tempo – 1 squat per 2 seconds, timed)
	Pedaling on a cycling ergometer for 10 seconds
	Performing standard work for time (force – 7 kg, cadence – 106 rpm ≈ 30 kgm/sec)
	200 m flying start
	200 m standing start
	Time trial at 75% of maximum speed

All presented tests showed a high correlation with sports performance results, ranging from 0.5 to 0.8 and higher.

During the preparatory and competitive periods, testing according to the program was conducted twice, while some individual tests were performed more frequently (weekly or monthly). As a result, the findings were summarized and presented in Figures 1 and 2.

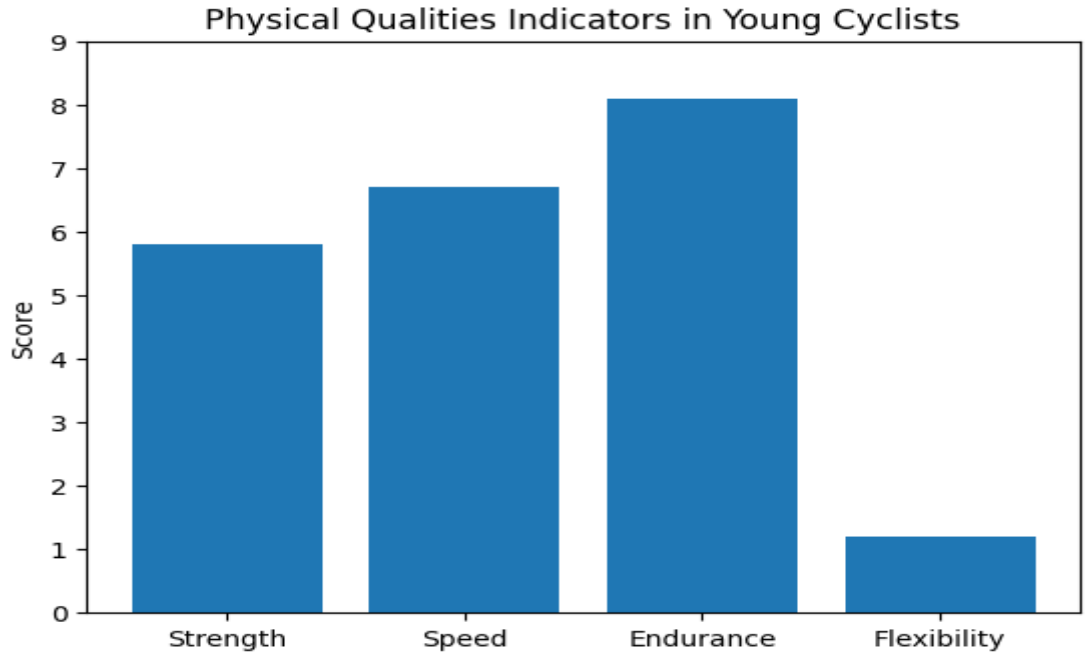

Figure 1. Training load volume in the control group (CG).

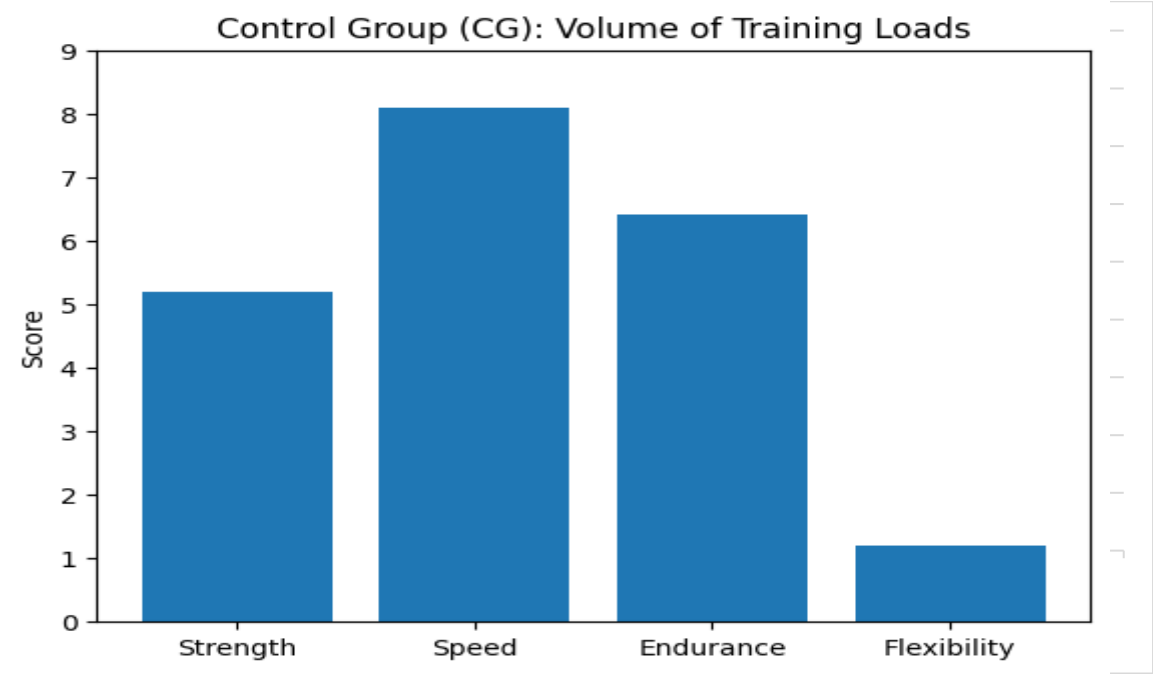

Figure 2. Volume of training loads in the experimental group (EG).

Based on the materials obtained from our research, it can be concluded that over the course of two years the average level of performance among the athletes increased significantly. This indicates both the correct organization of the educational and training process and the strong correlation between the tests and control trials with the main sports activity.

At the stage of preliminary basic training, no statistically significant changes were observed. At the same time, during this stage of testing, higher indicators were recorded among athletes of the experimental group in all testing procedures. Thus, in the middle of the competitive period, significant differences were recorded between the discussed indicators of representatives of the experimental and control groups, with higher growth rates in the experimental group.

In the annual cycle of the training process of athletes at the stage of initial sports specialization, particularly in sports with a cyclical structure of activity, a wave-like distribution of training and competitive loads is widely used.

In terms of constructing the structure of the training process for the studied young road cyclists aged 12–14, the existing methodological approaches differ little from those used for adult athletes. This is especially noticeable in the technique of pedaling [6].

Practically optimal values of the amplitude and volume of competitive and special training loads at different stages of the annual training cycle were determined. In percentage terms relative to the average monthly load, they are as follows:

- at the junction of two annual training cycles – 22.9%,

- at the beginning of the stage of specialized basic training during the preparatory period – 0.42%,
- at the transition between the end of the preparatory and the beginning of the competitive period – 8–10%,
- during the remaining time – not exceeding 6%.

It was considered advisable, which was confirmed by the results of the pedagogical experiment, to apply special exercises (road training) at all stages of the annual training cycle in the following proportions:

- in the transition period – up to 60%,
- during the preliminary and specialized basic stages of the preparatory period – about 67% and 80% respectively,
- in the competitive period – 96%.

Their annual volume should be approximately 75–80% [3,5].

The established parameters of the structure and content of the educational and training process of cyclists in the annual training cycle ensure a significant increase in aerobic and anaerobic performance indicators without increasing the total volume of competitive and specialized training loads in the long-term training perspective.

Conclusion. As a result of the comparative analysis, the following generalizations can be made:

1. The experimental training methodology was based on several components that distinguish it from the conventional approach:

a) the use of intensive training loads throughout the entire annual cycle, with their volume reaching 20.02% (compared to 12.44% in the conventional training system). For completing the total training and competitive load with approximately equal volumes, cyclists of the experimental group spent 18 hours less training time;

b) the amplitude of fluctuations in the level of the total volume of special training load at the junction of annual cycles was 22.06% in the experimental group and 30.30% in the control group; during the transition and preparatory periods it was 18.80% and 44.26% respectively, and during the preparatory periods 8.52% and 54.22%.

2. The experimental training methodology ensured significantly higher development of the functional capabilities of the body and improvement of special physical qualities of cyclists in the experimental group, compared with the traditional training methodology. This was confirmed by the dynamic growth of their sports performance results.

3. The use of the uniform method in the educational and training process when preparing young cyclists contributes to better development of both aerobic and anaerobic capabilities of adolescents.

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