

The Impact of Crossfit Open 2019 on the Functional State of Amateur Athletes

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Abstract—The aim of the study was to study the functional state of amateur athletes engaged in crossfit, before the load and 5 minutes after its completion, on the complex of functional diagnostics "omega-C". Testing was carried out 4 times before and after the performance of the complexes: Crossfit Open 19.2, Crossfit Open 19.3, Crossfit Open 19.4, as well as after the training, planned taking into account the peculiarities of the energy supply involved. The study involved 13 men aged 24-32 years, 1-2 years of experience. According to the results of testing the functional state of amateur athletes, it was found that the lowest increase in heart rate (up to 92.2 beats / min) 5 minutes after the load was revealed after training, planned taking into account the peculiarities of energy supply of the participants. After such training, the lowest stress index was recorded (475.25). ed.). The highest heart rate (103.6 beats / min) and "voltage index" (1049.2).units) are fixed after performing the crossfit Open 19.4 complex. Also after a workout planned with the features of energy involved, revealed the smallest decrease in the level of adaptation to physical loads (to 21.1%), the fitness level of the body (to 18.2%), the level of energy security (to 29.7%), emotional state (to 28.4%), the cumulative index sportswear (24.4 per cent). The most significant decrease in these indicators was also recorded after the crossfit Open 19.4 complex.

Keywords—*crossfit; functional state.*

I. INTRADUCTION

Strength functional training (crossfit) is a special training system developed by G. Glassman [1]. Its purpose is to achieve a high level of general physical fitness. One of the most important advantages of crossfit is the lack of narrow specialization. This highly effective program combines exercises from different sports areas [4]. An important disadvantage of crossfit is a large proportion of the competitive method in the training of amateur athletes, when almost every training session is tasked to perform a high-intensity set of exercises in a minimum time, in the absence of control over the physiological characteristics of the athlete, and without taking into account his individual characteristics. This often leads to such consequences as increased injuries [3, 7], negative effects on the myocardium during prolonged work at a high pulse [6] and the possibility of rhabdomyolysis [7]. Such consequences arise as a result of

the sports training theory and methodology basic principles neglect when planning classes [5].

II. RESEARCH METHODOLOGY

The purpose of the study: to compare the impact of crossfit Open 2019 complexes and training, planned taking into account the provisions of the theory and methodology of physical education and individual characteristics of the participants, on their functional state.

The study involved 13 men aged 24-32 years, 1-2 years of experience.

Before the training and 5 minutes after its completion the subjects were tested on the complex of functional diagnostics "omega-C". This is a specialized software and hardware complex designed for an objective assessment of the physical condition of athletes.

The following indicators were evaluated: heart rate, stress index, level of adaptation to physical activity, level of the organism fitness, level of energy supply, psycho-emotional state, integral indicator of sports form.

The study was conducted 1 time per week for 4 weeks.

The following complexes were performed:

Week 1-Crossfit Open 19.2.

Week 2-Crossfit Open 19.3

Week 3-Crossfit Open 19.4

Week 4-Training planned taking into account the peculiarities energy of students supply (table 1).

All subjects were divided into 3 groups "aerobic type", "mixed type" and "anaerobic type" after preliminary testing using the method of "rapid diagnosis of functional state and reserve capabilities of the organism D&K Test" [2].

III. RESULTS

To plan the training, the athletes were divided into 2 groups "aerobic type" and "anaerobic type". Athletes of the "mixed type" were assigned to one of these groups

according to their preferences. Table 1 shows the structure of the training.

TABLE 1- PLANNED TRAINING TAKING INTO ACCOUNT FEATURES OF POWER SUPPLY OF THE ENGAGED

Part of the workout	Content	Dosage for "aerobic type"	Dosage for "anaerobic type"
Workout	Self-warming	15 Min	
		2 rounds with each hand	4 rounds with each hand
	The weighty jerk	16 Times	8 Times
	Mill	16 Times	8 Times
	Squats with weights in 1 hand	16 Times	8 Times
The main part (improving the technique)	Exits on the crossbar	5 episodes 2 times, run every 2 minutes	
The main part (force development)	Squats with a barbell on the shoulders	5 series 4 times weight 80 % of 1 PM, rest 3 minutes	5 episodes 2 times weight 90 % of 1 PM, rest 3 minutes
The main part (development of special endurance)		Runs every 2 minutes for 18 minutes	Runs every minute for 18 minutes
	Taking a barbell from a hanging	12 times (weight 60% from 1PM)	6 times (weight 60% from 1PM)
	Lunges with pancake	20 Times	10 Times
	Прыжки в длину	16 Times	8 Times
The final part (conducted after testing at the Omega-C complex)	Running	2000 m	
	Flexibility exercises	10 Min	

IV. DISCUSSION

According to the results of testing the functional state of amateur athletes, it was found that the lowest increase in heart rate (up to 92.2 beats / min) 5 minutes after the load was revealed after training, planned taking into account the peculiarities of energy supply.

After such training, the lowest stress index was recorded (475.25). units). The highest heart rate (103.6 beats / min) and "voltage Index" (1049.2).units) are fixed after performing the crossfit Open 19.4 complex

Also, after the training, planned with the characteristics of the participants energy supply, the lowest reduction (figure 3-7) level of adaptation to physical activity (up to 21.1%), the level of training of the body (up to 18.2%), the level of adaptation to physical activity (up to 18.2%), the level of physical activity (up to 18.2%), the level of energy security (up to 29.7%), psycho-emotional state (up to 28.4%), integral indicator of sports form (24.4%).

V. CONCLUSION

A characteristic feature of Crossfit trainings is their multidirectional and high intensity, which makes them a highly effective means of training athletes. However, too much of the competitive method often leads to adverse effects on the body involved, the emergence of overtraining state and increased injuries. The performance of Crossfit complexes of various directions lead to a decrease in the functional state of the participants after training by 40-60 % and to a significant increase in the voltage of the regulatory systems of the body after training (over 1000). the greatest decrease in the functional capabilities of the body, the greatest increase in heart rate and stress index of the regulatory systems of the body, recorded after the complex "Open 19.4". As a result of high-intensity training with regulated intervals of rest and load planned taking into account the type of energy supply of the muscular system, a smaller decrease in indicators characterizing the functional state of the body was recorded. Lower values of heart rate after exercise and lower stress in the regulatory systems of the body are recorded.

Planning training in Crossfit should be carried out taking into account the type of energy supply of the muscular system involved and in strict accordance with the basic provisions of the theory and methodology of sports training. Strictly regulate the intervals of rest. Significantly reduce the share of the competitive method. To carry out operational control over the state of the patient with the help of heart rate monitors.

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