The relationship of indicators of functional training of jumpers in the training group with sports results

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Abstract
Purpose: Study and analysis of the state of functional readiness of athletes in triple jumps in the training group.
Methods: analysis of scientific and methodological literature on the topic; pedagogical observation, pedagogical testing, methods of mathematical and statistical analysis.
Results: In the course of the study, the following indicators of participants' functional readiness were noted. According to his data, systolic and diastolic blood pressure in the experimental group was 109.7±9.6; 75.4±4.2, while in the control group these indicators were 111.7±10.2; 75.1±7.4, the vital capacity of the lungs in the experimental group was 4.7±0.64 according to the spirometer norm, 3.19±0.74 according to the spirometer, as a percentage with a ratio of 69.9±2.04 liters. It can be seen that in the control group, the norm of the spirometer was 3.44±0.39, the actual spirometer was 2.93±0.9, and the percentage was 78.8±6.2 liters.
Conlcusion: When testing triple jumpers using the Polar H 10 Heart Rate (HR) measuring tape, it was found that the level of functional readiness and recovery time of the participants in the experimental group were close to their previous heart rate within 3-5 minutes after training, while the recovery time of the participants in the control group was delayed. It was found that the time was a bit late and the accuracy level was low.
Keywords: Athletes' training, pedagogical technology, reaction to exercise, heart rate, lung vitality.

Introduction

In the modern rapidly developing era, we see such features in the stages of development of the field of physical education and sports, which have a serious impact on the athlete's training process and set new, complex tasks and assignments for the coach and athlete. This entails the search for the most appropriate forms of training organization in the training of highly qualified athletes, further improving the level of high results achieved by athletes, as well as methods for fully improving the organizational and methodological tools that have been used for a long time. The current stage of development has necessitated the search for new methods of training management based on modern advanced technologies, since such training tools, along with physical, technical and tactical training, affect the functional state of athletes, that is, the consumption and restoration of energy reserves during training involves the creation of the most suitable conditions for its full implementation, taking into account adaptive capabilities. the activity of the organism, based on its specific relationship with the environment. Functional training determines the effectiveness and optimality of movement performance and ultimately directly affects athletic performance. An athlete's functional fitness reflects his body's adaptation to mental and physical stress during training and competition. The lack of necessary functional training can lead to injuries and diseases of athletes.

Results and discussion

The functional systems of an athlete's body are monitored by recording the ability of the cardiovascular and respiratory systems to adapt to training. When assessing the body's response to physical activity, it is important to determine the activity of the cardiovascular system. Pulse and blood pressure are measured before training, after warming up, during the main part of the workout, after performing individual exercises, after rest, or during periods of reduced exercise intensity.

The vital capacity of the lungs is the maximum volume of air that can enter the lungs after exhaling all the air from the lungs. The volume of air that a person can exhale after a deep breath is measured using a spirometer. The vital lung capacity (VLC) and maximum lung ventilation (MLV) are determined during training, before training, between training and after training. After light physical activity, these indicators increase or decrease slightly (VLC by 100-200 ml, MLV by 2-4 liters). After extreme physical exertion, the VLC may decrease by 300-500 ml, and the MLV by 5-10 liters.

In the course of the study, we divided the triple jumpers from the training group into experimental and control groups and checked their functional training.

An important indicator of the functional state of the body is the rate of pulse recovery. In well-trained athletes, the pulse rate decreases

Table 1. **Indicators of functional readiness of participants in the experimental group**

N	Full name	SB mm.sm.us	DB mm.sm.us	Standard Spirometer	Actual Spirometer	The spirometer in %
1.	*S-ev M*	105	78	3,87	3,50	91
2.	*A –ev N*	120	80	4,32	4,53	100
3.	*V-ev*	117	70	3,88	2,79	72
4.	*R-ev E*	100	85	3,63	2,61	71
5..	*I-ov M*	103	75	4,34	3,36	77
6	*S-ov*	90	68	4,84	2,38	49
7.	*T-ev E*	100	70	5,12	3,34	74
8.	*G-ov V*	113	70	5,23	4,07	78
9.	*U-ov S*	120	82	5,34	3,91	73
10.	*E-ov G*	119	75	5,04	3,60	71
11.	*J-ov Sh*	120	80	5,55	2,85	51
12.	*J-ov U*	110	75	5,29	4,13	84
	$\overline{X}$	109,7	75,4	4,7	3,19	69,9
	Σ	9,6	4,2	0,64	0,74	2,04
V		8,7	5,5	13,6	23,4	2,9

from 60-80 beats per minute at rest and from 180 to 120 beats after 2 minutes of physical activity. Changes in blood pressure make it possible to determine the body's tolerance to physical exertion.

Table 2. **Indicators of control readiness of participants in the experimental group**

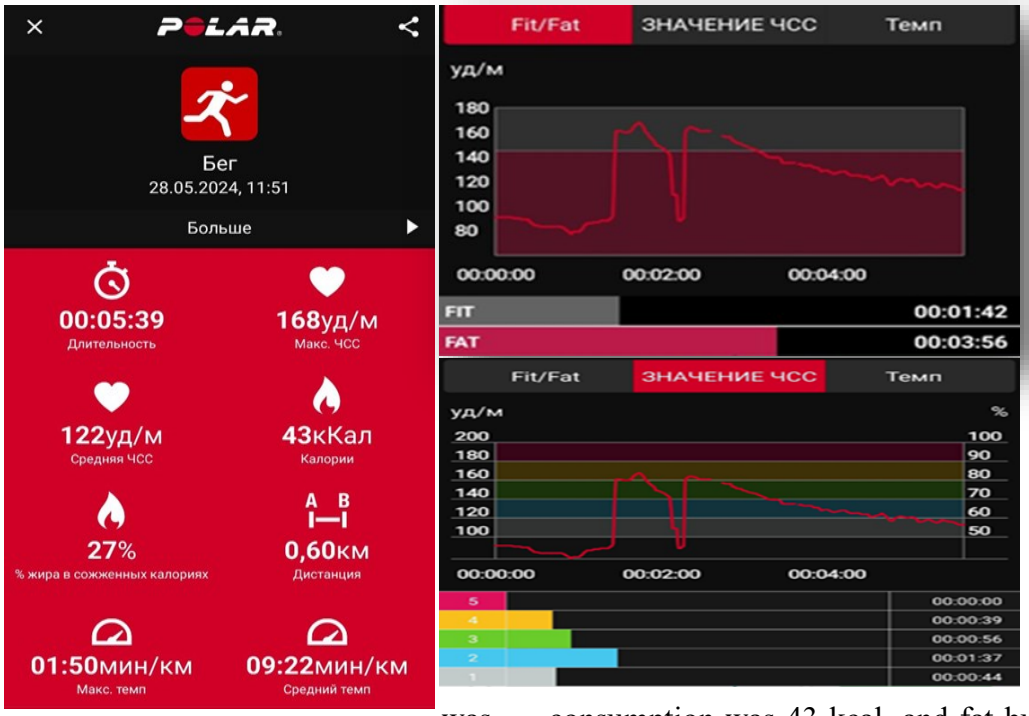
N	Full name	SB mm.sm.us	DB mm.sm.us	Standard Spirometer	Actual Spirometer	The spirometer in %
1.	*S-ov M.*	120	79	3,57	3,41	97
2.	*A-ov G*	103	75	3,38	3,57	85
3.	*A-ev J.*	94	60	4,28	3,74	90
4.	*T-ov U.*	100	75	2,8	3,35	100
5.	*X-ev Z.*	120	80	3,33	3,07	95
6.	*U-rov I.*	126	84	3,53	2,17	70
7.	*N-ov N.*	97	69	3,42	2,14	72
8.	*O-ov J.*	118	73	3,04	1,11	42
9.	*A-ov S.*	113	70	4,11	2,59	51
10.	*M-ov Sh.*	120	85	3,26	1,89	44
11.	*Q-ov J.*	110	70	3,34	3,91	100
12.	*O-yev I.*	120	82	3,29	4,28	100
	$\overline{X}$	111,7	75,1	3,44	2,93	78,8
	Σ	10,2	7,4	0,39	0,9	6,2
	V	9,1	9,8	11,4	30,09	8,1

Depending on the intensity and nature of the load, changes in pulse rate and recovery rate make it possible to determine the level of the functional state of the body. For example, if an athlete’s heart rate reaches 160 beats per minute during a 400-meter run for 70 seconds and recovers to 120 after 2 minutes, but at the same time, after the next similar load, it reaches 150 beats per minute and recovers after 3 minutes, this indicates a functional impairment of the cardiovascular system. and it indicates a deterioration in the condition.

In our study, we measured the athletes' body response to physical activity, i.e., functional state, energy consumption, intensity zone distribution, and duration of the recovery process before, during, and after training using the Polar H 10 HR measuring tape.

In this image, the functional state of the

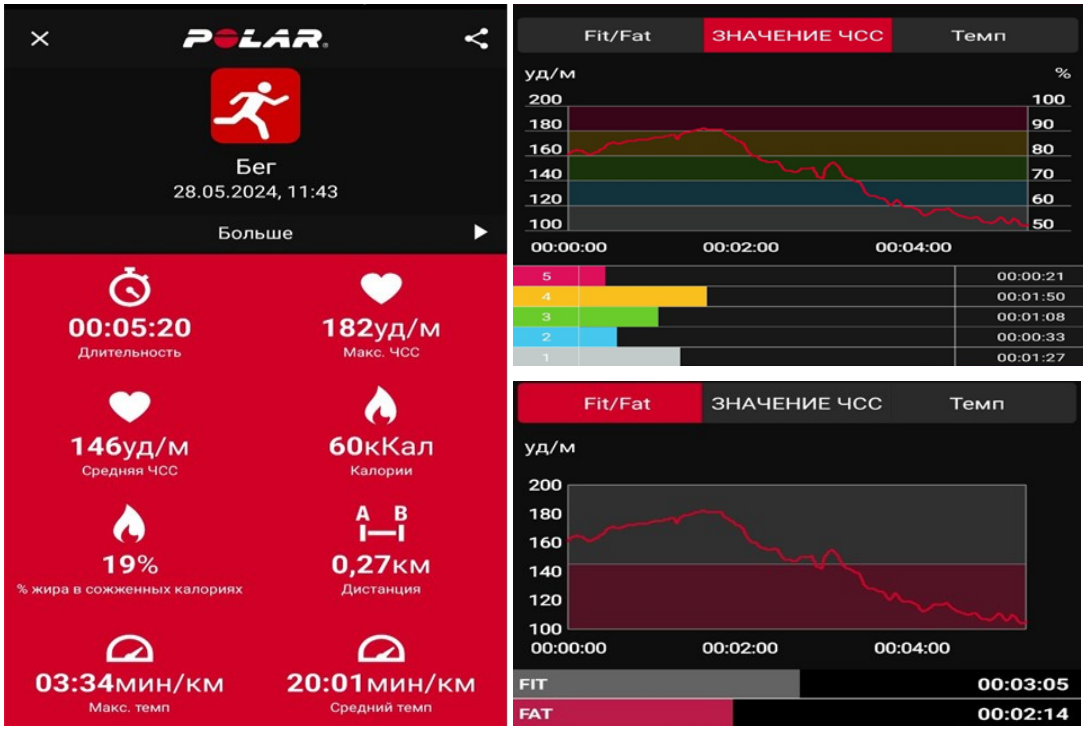
Fig 1. Indicators of functional readiness of participants in the experimental group (by using Polar H 10 HR measuring tape)



body was monitored by running on a special treadmill for triple jumpers in the experimental and control groups.

The running time in the experimental group was 5:39 minutes. The maximum heart rate was 168 beats per minute. The average heart rate was 168 beats per minute. Energy consumption was 43 kcal, and fat burning was 27%. Athletes spent 3.56 minutes of training in the aerobic zone, and 1:42 minutes in the anaerobic zone. If we analyze the training by intensity zones, it was 0.44 minutes in intensity zone 1, 1:37 minutes in intensity zone 2, 0:56 minutes in intensity zone 3 and 0:39 minutes in intensity zone 4. In the maximum zones, the

Fig 2. Indicators of functional readiness of participants in the control group (by using Polar H 10 HR measuring tape)



load value was not observed. According to these indicators, it can be concluded that the overall level of physical fitness of the triple jumpers of the experimental group turned out to be normal.

Conclusion

Based on our research, we can conclude that all aspects of the training of highly qualified athletes; physical, technical, tactical, spiritual, mental and functional training are closely related. The effectiveness, sustainability and priority of athletes' technical and practical skills in competitions are assessed by high indicators of their adaptive ability in the body's activities, based on a clear relationship between the consumption and recovery of energy reserves, i.e. functional fitness has an impact on the results of athletes.

When testing jumpers using the Polar H 10 HR measuring tape, the functional readiness level and recovery time of the participants in the experimental group were close to their previous heart rate within 3-5 minutes after training, while the recovery time of the participants in the control group was slightly longer and was also considered late and satisfactory.

The duration of the triple jumpers of the control group on a special treadmill was 5:20 minutes. The maximum heart rate was 182 beats per minute. The average heart rate was 146 beats per minute. Energy consumption was 60 kcal, and fat burning was 19%. Athletes spent 2:14 minutes of training in the aerobic zone, and 3:05 minutes in the anaerobic zone. Analyzing the training by intensity zones, the load values were 1:27 minutes in intensity zone 1, 0:33 minutes in intensity zone 2 and 1:08 minutes in the third intensity zone, 1:50 minutes in intensity zone 4 and 00:21 minutes in intensity zone 5. According to these indicators, it can be concluded that the overall level of physical fitness of the control group jumpers is considered satisfactory.

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