ASSESSING THE ABILITY TO ADJUST TO THE EXERCISE AMOUNT OF AVERAGE-DISTANCE RUNNING ATHLETES IN HO CHI MINH CITY AT THE BASIC PREPARATION PHASE

Nguyen Dang Chieu[1]; Huynh Huy Phong[2]
Tran Van Dung[3]; Le Thi Hang[3]
Nguyen Pham Hoang Duy[4]; Nguyen Huy Vu[5]
Nguyen Nhu Y[5]; Bui Tran Khanh[6]

Abstract:
Assessing the ability to adjust to the exercise amount of average-distance running athletes in HCMC through fitness exercises in basic preparation stage, to help coaches assess the amount of exercise in training, thereby making adjustments in the training process in a scientific manner, timely and suitable to each specific object and gradually improving the athletes' achievements to achieve the efficiency in the work of training.
Keywords: Assess the amount of exercise, sports coaching, physiological index, biochemical index, average-distance running athletes, basic preparation stage.

INTRODUCTION

The level of training is always associated with the categories of "development" and "adaptation".

Effective sports training is the process of adapting and responding to changes of the organs, body systems of athletes in scientific and systemic sports coaching.

Assessing the ability to adjust to the exercise amount of athletes through physical fitness exercises is getting more and more attention from coaches in most sports and has become an indispensable method in evaluating the training level development of athletes .

When assessing the suitable amount of exercise of athletes, we are certain to quantify the elements inside the body, such as the biomedical criteria including morphological, physiological, biochemical, biomechanical, and at the same identify external factors including pedagogical indicators of general fitness, professional fitness, tactical techniques and psychological qualities of each athlete at the most prolific time, which means before the competition.

When exercising with different amount of exercise time and intensity, aerobic and anaerobic energy systems will participate in supplying energy with different ratios, so physiological and biochemical indicators are also very different. Therefore, only the physiological, biochemical blood criteria are used to assess the content, training methods and exercising intensity for the development of the capacity of each energy section to participate in correspondingly sports exercises.

If we only rely on methods of assessing the level of training and testing professional achievements after long training cycles to review the effectiveness of the training work, it will no longer be able to promptly detect and adjust the unreasonable in the exercises to make the training process scientific.

In order to support effective training, we: "Assess the ability to adjust to the exercise amount of average-distance running athletes in HCMC at the basic preparation stage”

RESEARCH METHODS

Methods of analyzing and synthesizing documents;

(1) Associate. Drof. PhD, Ho Chi Minh City University of Sports; (2) Master, Coach of the Ca Mau Department of Sports
(3) Master, Ho Chi Minh City University of Sports; (4) Master, Sports Medicine Center, HCMC;
(5) Master, Phu Yen University; (6) Master, Ho Chi Minh City Security University

Medical examination method;

Statistical mathematical methods;

Experimental method. .

Check for pulse: (Basic pulse, still , after exercising , recovery after 3 minutes)

Check for Hb, Bla, BU , testosterone, cortisone contents in the blood: While being still, right after exercising and 1 night after exercising.

Check for Hb, Bla, BU , testostreron, cortisone contents in the blood of the athletes by taking blood directly from vein, testing with a modern machine under a closed procedure, at Hoa Hao Medical Laboratory Ho Chi Minh City.

Implementation of physical exercises: Conducted according to the training plan of the average-distance running team of Ho Chi Minh City in 2018.

Experimenting with running exercise: (50m x 10): Run 50m with maximum intensity; do 10 times, rest time between repetitions is 1 minute (60 seconds).

Implementation of strength durability running exercise is 45 minutes, running record is 7 - 7.5 km.

Requirements when conducting trial experience:

Take blood at still status: Take in the early morning, the athlete does not do physical exercises (still state).

Take blood right after the athlete completes a physical exercise , completes the exercise: 50m x 10; 7 km for 45 minutes running exercise. (do one exercise after a week).

Get the blood to check for Hb, AL, Urea, testostreron, cortisone contents in the blood in the morning when athletes hasn't eaten breakfast and the next morning, 1 night after the athletes perform physical exercises.

Research subject:

Average-distance running team of Tp. Ho Chi Minh (10 athletes including 5 males and 5 females) , aged 18 - 20 .

RESULTS AND DISCUSSION

1. Examine the pulse frequency development, Hb, Bla, BU, Tetosterone, Cortisone in the blood of athletes in average - distance running team of HCMC through different physical exercises at the basic preparation phase

Through table 1 shows:

+ ***Still status***:

- *Basic pulse, still pulse frequency (times / minute)*: The above results show that the basic and still pulse frequency of the study subjects is lower than that of normal and healthy young men and women who do not exercise at the same age ($p < 0.05$). This shows that the study subjects have exercised before selection, because under the influence of exercising, the basic and still heart rate decrease, responding to exercise adaptation.

- *Hb, Bla, BU, testosterone, cortisone*: contents of Hb, Bla; UB , testosteron, cortisone in the blood in the still state of the average-distance running athletes in Ho Chi Minh City are within the limits of biological constants of Vietnam, no difference compared to healthy Vietnamese people of the same age (P> 0 , 05).

+ ***Right after the exercise:***

Through the research, the contents of Hb, Bla, BU, testosterone, cortisone in the blood of average-distance running athletes HCMC after different physical exercises at the basic preparation phase varies differently, depending on different durability exercises, the indexes rises highly and has a significant difference compared to the still state, the indexes increase highly depending on the purpose and nature of the physical exercises. Therefore, we have the following comments:

Pulse frequency: Right after the physical exercises, the pulse frequency of the average-distance running athletes in HCMC rose very highly compared to the pulse frequency at the still state, the highest frequency is after the running exercises (50m x 10), lower is after the 7km running exercise (45 minutes), the difference is statistically significant at $P < 0.001$. The pulse frequency increases or decreases depends on the nature and purpose of the exercise

Basis pulse after 1 night of rest: After exercise, the basic pulse frequency over 1 night of rest (basic pulse after exercising) increased higher than the initial basic pulse frequency and

Table 1. Development of pulse frequency, Hb, Bla, BU , testosteron, cortisone in the blood of average-distance running athletes in Ho Chi Minh City after different physical exercises at the basic preparation phase

Index			Run 50m x 10 times	Run 7km (45 mins)
Pulse (times / minute)	Basic	Male	62.3 ±1.6	62.3 ±1.6
		Female	69.7 ±1.5	69.7 ±1.5
	Still	Male	63.6 ±1.4	63.6 ±1.4
		Female	70.9 ±1.7	70.9 ±1.7
	After exercising	Male	182.9 ± 12.6	151.7 ± 12.5
		Female	180.5 ± 11.2	154.2 ± 11.8
	Pulse recovery after 3 mins	Male	106.3 ± 12.1	89.5 ± 12.1
		Female	110.7 ± 15.2	92.9 ± 13.7
	Basis pulse 1 night after exercising	Male	64.6 ±1.9	64.3 ±1.7
		Female	72.2 ±1.6	71.7 ±1.9
	p		<0.001	<0.001
Hb .Male: 12–16mg%. Female: 11 - 15mg% The optimal level is 16mg%	Still	Male	14.7 ± 0.8	14.7 ± 0.8
		Female	14.1 ± 0.7	14.1 ± 0.7
	After exercising	Male	13.6 ± 1.2	13.2 ± 1.4
		Female	13.2 ± 0.9	13.1 ± 1.6
	Recovery after 1 night	Male	14.0 ± 0.7	13.7 ± 0.8
		Female	13.5 ± 0.9	13.1 ± 0.5
	p		<0.001	<0.001
Bla (mmol / l) (0.63 - 2.44)	Still	Male	2.15 ± 0.6	2.15 ± 0.6
		Female	2.03 ± 0.5	2.03 ± 0.5
	After exercising	Male	18.6 ± 2.5	5.2 ± 0.9
		Female	17.9 ± 2.1	5.9 ± 1. 3
	Recovery after 1 night	Male	6.4 ± 0.8	3,4 ± 0.6
		Female	5.5 ± 0.7	3.8 ± 0.9
	p		<0.001	<0.001
Blood **BU** (mmol / l) (2.5 - 7.5)	Still	Male	3.7 ± 0.7	3.7 ± 0.7
		Female	2.9 ± 0.5	2.9 ± 0.5
	After exercising	Male	4.6 ± 0.9	9.8 ± 1.9
		Female	4.3 ± 0.7	8.7 ± 1.6
	Recovery after 1 night	Male	3.3 ± 0.6	4.9 ± 0. 9
		Female	3.1 ± 0.8	4.5 ± 0.7
	p		<0.001	<0.001
Testosteron . (nmol / l) (Male: 28 Female: 2,4)	Still	Male	26.7 ± 0.6	26.7 ± 0.6
		Female	2.15 ± 0.4	2.15 ± 0.4
	After exercising	Male	22.6 ± 3.2	21.9 ± 2.5
		Female	1.9 ± 0.9	1.7 3 ± 0.6
	Recovery after 1 night	Male	24.8 ± 0, 8	23.9 ± 0.9
		Female	2.09 ± 0.7	1.98 ± 0.4
	p		<0.001	<0.001
Cortisone . (µg / dl) (12 - 15)	Still	Male	13.8 ± 0.9	13.8 ± 0.9
		Female	12.6 ± 0.7	12.6 ± 0.7
	After exercising	Male	15.4 ± 4.7	1 5.7 ± 3.2
		Female	14.2 ± 3.1	14.5 ± 2.9
	Recovery after 1 night	Male	14.2 ± 0.9	14.6 ± 0.5
		Female	13.4 ± 0.7	13.5 ± 0.8
	p		<0.001	<0.001

higher than the still pulse. Whether the increase is high or low depends on the amount of physical exercises. This conclusion is statistically significant at P <0.001 .

Hb: Right after exercising , Hb of the athletes fell 6-8 % (P <0.0 01). Hb decreases more or less depending on the nature and purpose of the exercise

Bla: Right after exercising, Bla of the athletes increased very highly compared to the still state. The highest increase was after the running exercise (50m x 10), the lowest was after the 7 km (45 minute) running exercise , the difference was statistically significant at P <0.001, the Bla increase highly depending on the nature, the purpose of the physical exercises.

BU: Right after exercising, blood urea index of the athletes increase very highly compared to the still state. The highest increase was after the 7 km (45 minute) running exercise, the lowest was after the running exercise (50m x 10) with P <0.001. BU increase highly depending on the nature and purpose of the physical exercises.

Testosteron: Right after exercising, testosterone in the blood of athletes greatly reduced compared to the still state, the difference is at P <0.001

Cortisone: Right after exercising , cortisone in the blood of athletes increased significantly compared to the still state, the difference is at P <0.001.

2. Assessing the adaptability of average-distance running athletes in HCMC at basic preparation phase through physical exercises

2.1. Assessing the adaptability to anaerobic, aerobic endurance exercise through pulse frequency, Bla and BU of average-distance running athletes in Ho Chi Minh City right after the exercises.

- *Exercise (running 50m x 10 is n)*: When performing the exercise (50m x 10 times) the pulse frequencies of male and female athletes were greater than 180 times/ minute, with the intensity nearly reached the maximum, repeated many times with time off between repetitions of 60 seconds, this exercise belongs to the anaerobic energy domain of divided glucose system (anaerobic system with lactic acid) . Therefore, the content of Bla in male, female increased very highly, female 17.9 ± 2.1, male 18.6 ± 2.5 mmol/l , reaching more than 252.7%, but conversely, the content of BU in male, female athletes did not increase highly, women 4.3 ± 0.7 , men 4.6 ± 0.9 mmol / l reaching over 41.1% compared to the still state, because the oxygen's participation in this exercise is very low (low aerobic energy exchange), so the content of BU did not increase highly. Blood BU increased very highly among women 4.3 ± 0.7, male 4.6 ± 0.9 reaching 41.1% higher than the still state, Hb decreased, female 13.2 ± 0.9, male 13, 6 ± 1.2 mg due to red blood cells being broken when performing the exercise with nearly maximum intensity (anaerobic threshold), therefore it reduced about 9.3%. Testosterone decreased, female 1.9 ± 0.9, male 22.6 ± 3.2 mmol/l, it decreased about 44.3%, Cortisone increased, female 14.2 ± 3.1, male increased 15.4 ± 4.7 mg / dl , an increase of more than 26.7%, so the exercise just reached the fatigue threshold for athletes to adapt to the exercises of anaerobic endurance of the divided glucose system.

- *7 km (45 minutes) running exercise:* When performing the 7 km (45 minutes) running exercise, male and female athletes have the pulse frequency of more than 150 beats / minute, with average intensity, exercise time last for 45 minutes, in the domain of aerobic energy, high oxygen demand, so the BU indicator in the blood of male and female athletes greatly increased, female 8.7 ± 1.6, male 9.8 ± 1.9 mmol / l, 109,1% higher than the still state, but in contrast, the male and female athletes' Bla indicators increased not too high, female 5.2 ± 0.9, male 5.9 ± 1.3 mmol / l, 70.3 % higher compared to the still state. Because in this exercise, the participation of oxygen is very high, in the aerobic energy domain that takes 80 - 85 %. The research shows that the physical exercise above is an aerobic endurance exercise. The Hb decreased, female 13.1 ± 1.6, male 13.2 ± 1.4 mg because the red blood cell was broken when performing a high-volume and long exercise, therefore it decreased 9.7%.

Testosteron index decreased, female 1.73 ± 0.6, male 21.9 ± 2.5 mmol / l decreased by 40.1%, Cortisone index increased, female 14.5 ± 2.9, male 15, 7 ± 3,2 g / dl, an increase of 23.2%, so the exercise has just reached the fatigue threshold so that the athlete will adapt to the amount of aerobic endurance exercise.

The determination of Testosterone/Cortisone ratio in exercise can evaluate the balance between the anabolism and catabolism of the metabolic processes taking place in the body. This high ratio indicates that the anabolic process is dominant, if it's low then it indicates that the cortisone level in the blood is still high, the body recovers slowly due to overtraining.

When training with exercises with different time and intensity, the aerobic and anaerobic energy systems will participate in providing energy with different rates so the Bla concentration is also very different. Therefore, Bla criteria are used to monitor and evaluate the content, training method and exercising intensity for the abilities development of each energy system of the corresponding sport.

Through the above research, Bla is the criterion to know the exercising intensity, assessing the adaptability of the body to exercise. Especially, Bla is considered to be an indicator in evaluating anaerobic endurance and an indispensable means in endurance training, Bla index also reflects the level of recovery of the body after the impact of previous exercises and the psychological state before and during the competition period.

2.2. Evaluate adaptability to exercise through physical fitness at the level of recovery of physiological, biochemical indicators of average-distance running athletes in HCMC

Pulse frequency:

- Pulse frequency recovery (after 3 minutes) of male and female athletes fell very fast from 160-180 beats / minute down to 97-109 times / minute, differ significantly from right after performing the exercises (P <0.001).

- Basic pulse frequency of male and femal athletes after one night of rest : The basic pulse frequency after 1 night of rest (Basic pulse after exercising) increased higher than initial basic pulse frequency from 2 - 2.5 times / minute and higher than the pulse in still state.

Hb: Hb recovery of male and female athletes after 1 night has recovered very quickly, almost corresponding to the initial Hb, the recovery depends on the nature and purpose of the anaerobic or aerobic endurance exercises and the adaptability of athletes.

Bla: Bla after 1 night of rest after the amount of physical fitness exercises (Bla recovery), decreased very fast, male 6.4 ± 0.8 mmol / l and women 5.5 to 0.7 mmol / l with anaerobic endurance exercise; male 3.4 ± 0.6 mmol / l, female 3.8 - 0.9 mmol / l with aerobic endurance exercise. Bla decrease was significantly different from after the physical fitness exercises with P <0.001. Therefore, Bla recovery depends on the nature and purpose of the exercise and the athlete's adaptability.

BU: BU of male and female athletes 1 night of rest after the physical exercises dropped very quickly , almost corresponding with the original BU. BU reduction depends on the nature and purpose of the physical exercises .

Testosterone: Testosterone recovery of male and female athletes after one night of recovery increased to nearly the same as initial testosterone ..

Cortisone: Cortisone recovery of male and female athletes after one night of recovery decreased to almost the same as the initial cortisone.

Comment: By studying the indicators of pulse frequency, Hb, Bla, BU, testosterone, cortisone in the blood, we assess the ability to adapt to the amount of exercises through physical fitness exercises of average-distance running athletes in HCMC at basic preparation phase. It shows that, the amount of physical fitness exercises fits the nature and purpose of the coaches as well as athletes' adaptability to physical exercises. Physical exercises leads to functional changes in the body and to fatigue. Fatigue after exercise does not completely disappear but leaves "traces". The process of accumulating "traces" will lead to an adaptation that enhance the level of training.

CONCLUSION

Through the research results presented above, we draw the following conclusions:

1. The index of basic and still pulse frequencies of average-distance running athletes in HCMC at basic preparation phase are lower than the basic and still pulse frequencies of other Vietnamese men and women of the same age, the difference is statistically significant ($p < 0.05$). The contents of Hb, Bla, BU, testosteron, blood cortisone at still state average distance running athletes in HCMC at basic preparation state is in the range of normal biological constants of healthy Vietnamese people of the same age.

2. After physical exercises with different time and intensity, the aerobic and anaerobic energy systems will participate in supplying energy with different ratios, so the pulse frequency, Hb, Bla, BU, blood testosteron, cortisone contents are also very different. Through the blood biochemical indicators after physical exercises studied above, we can evaluate that the amount of physical exercises is very suitable with the purpose and nature of the exercises in the training content, plans and adaptability of athletes to an amount of exercises to enhance the training level, achievements.

REQUEST

1 . The method of determining the pulse rate, Hb, Bla , BU, testosteron, cortisone in the blood should be paid attention to widely and completed, so that this method can be used in assessing the amount of exercising, fatigue level and recovery. of athletes to improve the effectiveness of the training process.

2. This is the initial research on the physiological, biochemical indicators on average-distance running athletes in HCMC at basic preparation phase, we request to continue research on a wider scale and a variety of research subjects. Preliminary data can be used á reference in the practice of sports medicine examination and teaching sports medicine in schools.

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Main responsible: Nguyen Dang Chieu

Emai: tsndchieu@yahoo.com.vn)