

CHANGING PROCESS OF THE FUNCTIONS OF THE RESPIRATORY, CIRCULATORY SYSTEMS IN STATIC STATE OF ADVANCED MALE FREESTYLE WRESTLING ATHLETES

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Abstract:

Through the method of regular research in the field of Physical education and sports, especially through medical examination, the article analyse the changing process of the functions of the respiratory, circulatory systems of advanced male freestyle wrestling athletes depend on phases of the yearly training period.

Key words: Changing process, respiratory system, circulatory system, advanced male freestyle wrestling athletes...

INTRODUCTION

Studying the function of the respiratory, circulatory system in the static state is one of the important factors in the selection and evaluation of athletes' training level. At different times, the level of expression of the respiratory, circulatory systems is different and under the influence of biological laws. Tracking allows the coaches to control and adjust appropriate training plans to improve the performance of freestyle wrestling athletes.

RESEARCH METHODS

Topic uses two main research methods include: Method of test-based pulmonary function test results of measuring respiration machine. These parameters are: Vital capacity (ml / kg); Sudden vital capacity (%). Method of examining the circulatory function is based on electrocardiogram test results with parameters: PQ (second); QRS (second); QT (second); TP (second); Cardiac cycle (second)..

RESULTS AND DISCUSSION

The topic examined the respiratory, circulatory functions norms at the end of each phase: general preparation; professional preparation and competing phase in the training period in 2015. The test subjects included 67 male high-level athletes (35 athletes of professional level and 32 athletes of level 1) who were practicing at units such as: National

Sports Training Center I; Ministry of Public Security; Department of Culture, Sports and Tourism of Bac Ninh and Thai Nguyen provinces... The results are shown in Table 1 and Table 2.

The results in Table 1 and Table 2 show that the value of respiratory, circulatory function norms in the static state of freestyle wrestling athletes is more optimal than that of the Vietnamese. The norms are adapted to the amount of exercises in the yearly training periods. The highest growth rate is in the vital capacity norm (12.10% for the Professional level and 13.16% for the level 1) between the preparation and competition phases. The growth rate of cardiovascular function norms is relatively small (3.50 - 6.45%) between the general preparation and competition phases. Growth difference in the static state between phases of general preparation and competition was statistically significant at $P < 0.01$. In the five norms which assess the circulatory function of athletes in the static state, there is only TP norm (second) has a difference between the general preparation and competition phases at the threshold of $p < 0.05$. The remaining norms, though there are variations but not statistically significant. Specifically:

Relative vital capacity is highest at competition phase and lowest at general

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Table 1. Changing process of functions of respiratory, circulatory systems in the static state of advanced male freestyle wrestling athletes in the training period of the year (Professional level= 35, level 1 = 32)

No	Norms	Level	General preparation phase (1)		Professional preparation phase (2)		Competition phase (3)	
			$\bar{x}$	$\pm\sigma$	$\bar{x}$	$\pm\sigma$	$\bar{x}$	$\pm\sigma$
1	Vital capacity (ml / kg)	Professional Level	52.8	5.75	57.5	6.05	59.6	6.12
		Level 1	51.63	5.06	56.8	5.58	58.9	5.8
2	Sudden vital capacity (%)	Professional Level	84.5	6.56	88.78	7.02	91.13	7.14
		Level 1	82.62	8.11	87.7	8.62	90.06	8.87
3	PQ (second)	Professional Level	0.158	0.015	0.154	0.015	0.152	0.015
		Level 1	0.159	0.016	0.154	0.015	0.153	0.015
4	QRS (second)	Professional Level	0.072	0.007	0.07	0.007	0.0693	0.007
		Level 1	0.0723	0.007	0.0702	0.007	0.0694	0.007
5	QT (second)	Professional Level	0.39	0.038	0.379	0.037	0.375	0.037
		Level 1	0.391	0.038	0.38	0.037	0.376	0.037
6	TP (second)	Professional Level	0.645	0.063	0.669	0.066	0.686	0.067
		Level 1	0.641	0.063	0.666	0.065	0.684	0.067
7	Cardiac cycle (second)	Professional Level	0.877	0.084	0.894	0.085	0.908	0.096
		Level 1	0.874	0.086	0.891	0.088	0.907	0.089

Table 2. Comparison of the function changing process of respiratory, circulatory systems in static state of advanced male freestyle wrestling athletes in the training period of the year (Professional level= 35, level 1 = 32)

No	Norms	Level	t			W (%)		
			t ₁₋₂	t ₁₋₃	t ₂₋₃	W ₁₋₂	W ₁₋₃	W ₂₋₃
1	Vital capacity (ml / kg)	Professional Level	3.33	4.79	1.44	8.52	12.1	3.59
		Level 1	3.88	5.34	1.48	9.54	13.16	3.64
2	Sudden vital capacity (%)	Professional Level	2.64	4.05	1.39	4.94	7.55	2.61
		Level 1	2.43	3.5	1.08	5.96	8.62	2.66
3	PQ (second)	Professional Level	1.13	1.57	0.45	2.65	3.71	1.06
		Level 1	1.11	1.59	0.48	2.73	3.91	1.18
4	QRS (second)	Professional Level	1.2	1.65	0.45	2.81	3.88	1.07
		Level 1	1.19	1.66	0.48	2.91	4.08	1.17
5	QT (second)	Professional Level	1.22	1.68	0.46	2.86	3.95	1.09
		Level 1	1.21	1.69	0.48	2.96	4.15	1.19
6	TP (second)	Professional Level	1.53	2.6	1.07	2.86	3.95	1.09
		Level 1	1.54	2.62	1.09	3.78	6.45	2.68
7	Cardiac cycle (second)	Professional Level	0.83	1.45	0.67	1.89	3.5	1.61
		Level 1	0.81	1.5	0.69	1.99	3.7	1.71

preparation phase. The pace of growth in the midst of general preparation and professional preparation is better than that of between professional preparation and competition. Growth rate of male athletes level 1 is higher at all periods than professional level male athletes. The difference in vital capacity between competition and general preparation phases is statistically significant at the threshold of $p < 0.01$.

Sudden vital capacity dramatically increases in each phase of the preparation and highest in the competition phases, which indicates that the training level of the athletes increase through the phases of the yearly training period. The sudden vital capacity norm move towards the value of vital capacity when the ventilation of the respiratory system, strength and muscles involved in the respiratory progress occur very

fast and strong, the myotonus of the alveolus maximized in a very short time.

Cardiac cycle in high-level male freestyle wrestling athletes during the general preparation phase (Professional level: 0.877s, level 1: 0.874s) correspond to the heart's frequency in static state (Professional level 68.40 l / min; level 1: 68.66 l / min) which is better than normal people. That confirms the athletes' hearts has adapted to the amount of exercises and competition which leads to the phenomenon of cardiac muscle hypertrophy, mainly ventricles of the hearts; increase in size and weight of the hearts; increase the volume of the heart chambers that reduces the heart's frequency in the static state and prolongs the duration of a cardiac cycle. The cardiac cycle of the athlete varies between phases, the best value at the time of competition and the worst at the general preparation phase. The growth rate of cardiac cycle between the general and professional preparation phases is better than that of between the professional preparation phase and the competition phase; level-1 male athletes between the preparation phase and competition phase is higher than professional-level male athletes; There is no statistically significant difference between the preparation phases.

The PQ in male freestyle wrestling athletes is within the physiological limits of a healthy Vietnamese. The gained value of the PQ interval tends to decrease between the phases of the yearly training periods. The difference of PQ interval between phases is not statistically significant. The PQ of the professional-level male athletes is better than that of the level-1 male athletes at all phases. That suggests the cardiovascular function of professional level male athletes is better than that of level 1 male athletes. The growth rate of the PQ interval between the general preparation phase and professional is better than between professional preparation and competition.

The QRS complex in advanced male freestyle wrestling athletes tends to decrease between the preparation phases of the yearly training period. QRS of professional level male athletes is better than level 1 male athletes in all phases. The growth rate of the QRS complex between the general preparation and the

professional preparation phases is better than between the professional preparation and competition phases.

The QT interval tends to vary shorter between phases of training, demonstrating the cardiac contraction function has been increased. However, the change in QT interval between phases did not reach the reliable level required by the statistical probability.

TP (diastolic period) interval is the resting time of the heart from the top of the T wave to the beginning of the P wave. The average person's heart beat is 75 times / minute, the TP lasts 0.4s. The TP of male freestyle wrestling athletes are better than normal people and tend to stretch out through training phases. The difference in diastolic time between the general preparation and competition phases was significant at the threshold of $p < 0.05$, the professional level athletes are better than level 1 athletes at all phases. The growth rate of TP interval general preparation and professional preparation phases is better than that of between the professional preparation and competition phases.

CONCLUSION

The results of the study have determined the changing progress of the functions of the respiratory, circulatory system of advanced male freestyle wrestling athletes according to the phases in the training period of the year. The norms are best reached in the competition phase, there are differences in many norms between the general preparation and competition phases. The respiratory and circulatory norms have increased over the phases of the training period. Norms of professional level male athletes increased from 3.5% to 12.10%; Level 1 male athletes increased from 3.7% to 13.16%.

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