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# PEDAGOGICAL SCIENCES

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## THE INFLUENCE OF WUSHU ON THE INDICATORS OF THE RESPIRATORY SYSTEM OF ATHLETES 17-18 YEARS OLD

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**Abstract.** The problem of achieving high results in wushu sports requires the improvement of methods and tools of the training process, which is associated with a comprehensive study of the abilities and functional capabilities of athletes. It is established that at the stage of sports improvement of wushu athletes the main emphasis in training of athletes should be put on increasing the level of functional possibilities of an organism of athletes. The obtained results indicate a positive effect of training on the functional state of the respiratory system of athletes. The largest relative increase in the indicators of the respiratory system was found in the Stange sample (33.4%). Taking into account all other indicators there was a significant relative increase, for more than 10%.

**Key words:** functional state, respiratory system, wushu, athletes, preparatory period.

**Introductions.** The current state and development of the wushu world is characterized by a relentless search for increasingly effective tools, methods and organizational forms of training athletes. A special role in the long-term training of athletes is played by the stage of sports improvement, which realizes the opportunities of athletes to achieve high sports results, provides the maximum manifestation of its individual characteristics [1].

The most important condition for improving the quality of training process management is to increase the efficiency and accuracy of management on the basis of objective comprehensive control of special training of athletes, their functional state in the process of year-round training, as well as timely operational correction of training process at certain stages of training [2].

In modern wushu, the density of hostilities is constantly increasing, which requires athletes to show significant physical and functional capabilities [1, 2].

Modern wushu competitions are a unique model of motor activity, which is conducted in the area of maximum load and to the highest degree reveals the natural capabilities of man. The content of sports training includes various aspects of training: physical, technical, tactical, moral and volitional, and others. As a result of training in the body of the athlete there are various functional and morphological changes, which together determine the level of training of the athlete [1].

So, in sports wushu there are a number of problems that are waiting to be solved. Managing the training process in sports wushu is a very difficult problem. Since wushu is a complex coordination sport, of particular interest are the generalized data in similar sports.

Among the main tasks at the stage of sports improvement of the wushu athlete in the first place are to increase the functional capabilities of the body of athletes and improve the general and special physical qualities, technical, tactical and psychological training.

Analysis of a large amount of literature data shows that high results in sports can be achieved only with purposeful long-term systematic training [1, 2]. Moreover, all stages of training should be carefully planned to use a systematic approach in the

process of training the athlete and taking into account age-related functional changes in the body.

**Aim.** The purpose of the study was to determine the effect of regular wushu on the respiratory system of athletes aged 17-18.

The object of research is the training process of wushu athletes.

The subject of the study is young people aged 17-18.

The subject of research is indicators of the respiratory system and their change under the influence of regular wushu.

**Materials and methods.** To achieve this goal we used the following methods: theoretical analysis and generalization of scientific and methodological literature sources; pedagogical observations of the educational and training process of wushu athletes; assessment of indicators that characterize the functional state of the respiratory system of athletes (Stange test, c; Genchi test, c; VCL, ml; BR, breath / min; MVB, l / min; MV, l / min); methods of mathematical statistics [3].

The study was conducted on the basis of the sports club "Satori" in Zaporozhye. A total of 17 wushu athletes aged 17-18 took part in the study.

The number of training sessions per week was 6-8 sessions of 2 hours. In general, the content of training was aimed at improving the physical and functional fitness of wushu athletes.

**Results and discussion.** As a result of scientific theoretical research it was found that the modern training process of qualified wushu athletes has a complex structure of interconnected components aimed at improving special physical and functional training, technical skills, and education of willpower [2].

According to leading scientists, the introduction of fundamentally new competition rules, which provide for a significant complication of the program, requires the coaching staff to significantly review existing methodological approaches to the organization of the training process.

**The main tasks at the stage of sports improvement of wushu athletes are:**

- increasing the functional capabilities of the body of athletes;
- improvement of general and special physical qualities, technical, tactical and

psychological training;

- stability of demonstration of high sports results at regional and all-Ukrainian official sports competitions;

- maintaining a high level of sports motivation;

- maintaining the health of athletes.

The high level of achievements in wushu requires, along with the constant improvement of methods and tools of the training process, a more in-depth study of the possibilities of maximum individualization of athletes' training, based on a comprehensive study of athletes' abilities and capabilities. Characteristic of this is that as sports improve, the transition of athletes from children's groups to adults, the requirements for the individualization of the training process are increasing.

From the functional point of view, training athletes in wushu can be divided into the following main areas, the main purpose of which is to improve the following physical qualities: muscle strength; agility; explosive force; endurance; flexibility; coordination and, as an integral result of such work - increasing the functional training of athletes.

It is an obvious fact that the basis of modern sports training should be the principle of adequacy of the training load to the functional state of the athlete, i.e. its individualization. The development and correction of training programs should be based on the study of physiological changes that occur in the body of the athlete under the influence of physical activity. Not only sports result is important, but also its "price" - "price of adaptation" to the offered loadings.

Therefore, the solution of the research tasks involved the study of changes in the indicators of the respiratory systems of wushu athletes during the preparatory period. Table 1 presents the results of the assessment of functional indicators of the respiratory system of young wushu athletes at different stages of the study.

Thus, the VCL index at the beginning of the experiment corresponded to  $3161.8 + 127.9$  ml, and at the end of the experiment it significantly improved and amounted to  $3656.9 + 124.1$  ml.

The indicators of the Stange and Genchi tests ( $t = 3.2$  and  $4.57$ ), respiratory

rate ( $t = 5.88$ ), and MV ( $t = 9.5$ ) also underwent significant changes.

The MVB indicator showed a tendency to reliability ( $t = 1.82$ ).

The largest relative increase in these indicators was found in the Stange sample (33.4%). All indicators show a significant relative increase, more than 10%. The Genchi sample rate changed by 20.35%, VCL – by 15.66%, BR – by 11.45%, MVB – by 21.95%, MV – by 22.2%.

Thus, we can state that the content of training sessions had a positive effect on the functional state of the respiratory systems of young people aged 17-18. Thus, the obtained experimental material proves a positive impact on the functional state of athletes in the content of the training process in the preparatory period.

**Table 1**

**Comparative analysis of the respiratory system athletes 17-18 years (M ± m,%)**

Indexes	The beginning of the study	The end of the study	t	%
Stange sample, s	54,8±4,4	73,1±4,5*	3,20	33,4
Genchi's test, s	34,4±0,8	41,4±1,3*	4,57	20,35
VCL, ml	3161,8±127,9	3656,9±124,1*	2,78	15,66
BR, breath / min	19,2±0,2	17,0±0,6*	5,88	-11,45
MVB, l/min	4,01±0,4	4,89±0,3	1,82	21,95
MV, l / min	83,8±1,7	102,4±1,3*	9,5	22,2

Note: \* - statistically significant differences

**Conclusions.** As a result of studying the scientific and methodological literature it is established that the high level of achievements in sports wushu requires along with the constant improvement of methods and means of training process more in-depth study of maximum individualization of training, based on a comprehensive study of abilities and functionality. the development of which will be most conducive to achieving victory in competitions. Among the main tasks at the stage of sports improvement of wushu athletes in the first positions are to increase the functional capabilities of the body of athletes.

The obtained experimental material proves a positive effect on the functional state of the respiratory system of athletes and the content of the educational and training process in the preparatory period.



The functional parameters of the respiratory system of wushu athletes at the end of the study significantly improved. Significant changes were made in the VCL, Stange and Genchi samples, respiratory rate and MV. The MVB indicator shows a tendency to improve. The largest relative increase in the indicators of the respiratory system was found in the Stange sample (33.4%). All indicators show a significant relative increase, more than 10%.

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