

## APPLICATION OF MOBILIZING EXTRA-TRAINING MEANS IN PROCESS OF PRE-START MARTIAL ARTS SPORTSMEN'S TRAINING (ON EXAMPLE OF FENCING)

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**Abstract.** *Purpose:* to test experimentally influence of worked out extra-training means' complex on functional potentials of elite fencers. *Material:* in the research 12 qualified sportsmen participated. Changes in cardio-respiratory system's responses were detected by training impulse. *Results:* application of experimental complex resulted in increase of training impulse by 1.94 conv.un., than traditional sportsmen's warming up. With usage of experimental complex sportsmen fulfilled, in average, 64.4% of work in zones of sub-maximal and maximal intensity. Restoration of heart beats rate of all sportsmen was within standard requirements (restoration of 120 b.p.m. during 3 minutes). In conditions of traditional warming up sportsmen fulfilled, in average, 71.2% of work with low or moderate intensity. *Conclusions:* the offered complex of extra-training influences increase effectiveness of pre-start warming up, raise organism's potentials for realization of available functional potential.

**Key words:** martial arts, fencing, training, extra-training means, competitions.

### Introduction

Sportsmen's workability and effectiveness of their organisms' functional systems in competitions to large extent are determined by rationally built pre-start training [8, 12]. In sport practice pre-start training is regarded as one of the most important factors of formation of functions' high mobilization, which influence on realization of available motor potential and determine achievement of high sport result [10, 13, 15].

In modern fencing intensification of sportsmen's training suggests still wider purposeful application of extra-training means and development of new technologies of special (mobilizing) influences for perfection of special workability and rising of competition functioning's effectiveness [5, 9]. One of sides of such mobilization is preliminary stimulation of workability before competitions.

Alongside with it, analysis of special literature, devoted to training of qualified fencers, points at certain contradiction of existing pre-start training system and modern system of fencing competitions. Contest has grown greatly at present in fencing; duels have become more tensed and dynamic, Requirements to realization of special workability in initial duels, at the end of tournament and in conditions of tiredness have also increased [17, 18, 19, 20]. All these reduce opportunities for realization of organism's reserves and ensuring of optimal competition functioning's structure.

In this connection research and working out of special means, ensuring rising of pre-start training's effectiveness in fencing, are rather important and urgent.

### Purpose, tasks of the work, material and methods

*The purpose of the research* is to experimentally test influence of the worked out extra-training means on functional potentials of qualified fencers.

We used the following *methods of the research:* theoretical analysis and generalization of scientific-methodic literature data, pedagogic observation, pedagogic experiment, radio-telemetric pulse metering, methods of mathematical statistics.

### Results of the research

Among specific features of modern stage of fencing competitions there exists deficit of attention to seeking of special means, which could be used in pre-start-training for increasing of special workability and effectiveness of sportsmen's competition functioning. In this connection we worked out special complex for increasing of qualified fencers' special workability. This complex consists of extra-training means to be fulfilled with partner's resistance and special fencers' exercises [5, 6]. In the process of our researches we found that application of experimental means positively influences on indicators of sportsmen's neuro-dynamic functions. It also permits to optimize the structure of fencers' pre-start training [6].

For determination of the worked out experimental means' influence on organism's functional potentials we carried out assessment of cardio-respiratory system's (CRS) responses to fulfillment of the worked out complex of pre-start influences. The received results were compared with CRS indicators, registered in the process of fencers' traditional warming up.

Changes in CRS responses in process of control and experimental tasks' fulfillment were assessed by indicators of training impulse – integral indicator of training work's tension [7]. This indicator is an integral characteristic of power, kinetics, stability of cardio-respiratory system and determines correlation “doze-effect” of load.

As a result of fulfilled series of experiments we received data, which permitted to compare influence of traditional warming up and warming up with the help of experimental complex of pre-start influences on indicators of sportsmen's CRS. Indicators of CRS responses in fulfillment of control and experimental tasks are presented in table 1.

Table 1

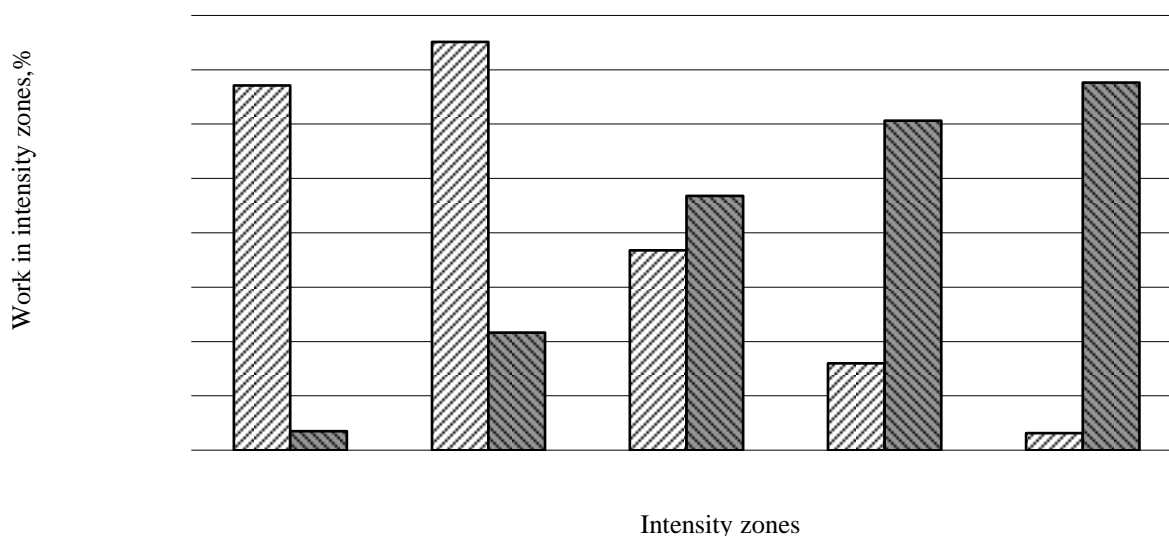
*Indicators of cardio-respiratory system's responses in fulfillment of control and experimental tasks*

Statistical indicators	Indicators of cardio-respiratory system's responses					
	Experimental complex (n=12)			Traditional warming up (n=12)		
	HBR av. b.p.m. <sup>-1</sup>	HBR max.b.p.m. <sup>-1</sup>	TI** conv.un.	HBR av.b.p.m. <sup>-1</sup>	HBR max.b.p.m. <sup>-1</sup>	TI** conv.un.
$\bar{x}$	151.2	177.4	9.92*	115.4	150	7.98
S	14.61	13	0.65	9.2	14.4	0.52

Notes: \* – differences are statistically significant, comparing with received after traditional warming up (in compliance with Wilkison's criterion at level of  $p < 0.05$ ); \*\* TI– training impulse; HBR – heart beats rate

Results of analysis witness about presence of differences in responses of sportsmen's organisms under influence of traditional warming up and experimental complex of pre-start influence. After experimental complex of pre-start influences indicator of training impulse was confidently higher ( $p < 0.05$ ), than after traditional warming up (see table 1). Difference, comparing with indicators, received in traditional warming up, was 1.94 conventional units. It witnesses that application of experimental complex influences more expressively on sportsman's organism. It can be noticed by confident increase of training impulse, "doze-effect" indicator's effect in response to fulfilled work. Increase of "doze-effect" influence is connected with increasing of HBR indicators in the process of fulfillment of pre-start tasks.

Analyzing indicators of fulfillment of pre-start experimental complex we can see that mean HBR indicator in group was 1512 b.p.m.<sup>-1</sup>, maximal HBR indicator in group was, in average, 1774 b.p.m.<sup>-1</sup> (see table 1).



*Fig.1. Percentage of work in different intensity zones:*

- 1 – zone of middle intensity; 2 – zone of moderate intensity;  
 3 – zone of high intensity; 4 – zone of sub-maximal intensity; 5 – zone of maximal intensity;  
 ▨ – traditional warming up;  
 ▤ – application of experimental complex of pre-start means

In fig.1 we can see that with application of experimental complex of extra-training means sportsmen, mainly, fulfilled work in sub-maximal intensity zone (30.5% of total scope of work) and maximal (33.9% of total scope of work) In the process of traditional warming up sportsmen were in the mentioned zones only 8% and 1.6% of total scope of work.

It is evident that work in zones of low and moderate intensity is not effective in conditions of pre-start training. Such work does not cause required functional changes in sportsmen's organisms. As a result sportsman can not achieve optimal readiness by the moment of competition's beginning.

The worked out complex of pre-start influences implies highly intensive work, lasting up to 20 minutes, mainly in zones of sub-maximal and maximal intensity. Such approach facilitates effective mobilization of all organism's functions and permits to effectively fulfilled tasks of pre-start training.

The results, presented above permit to speak about purposeful application of the worked out complex of pre-start influences in the process of qualified fencers' competition functioning.

## Discussion

The conducted research proved results of some authors' works, devoted to complex and rational application of training and extra training means in system of sport perfection that result in increasing of competition functioning's effectiveness in general [2, 3, 4, 11]. Besides, we supplemented theoretical principals of realization of existing functional potential of qualified sportsmen in the process of direct preparation for competitions [1, 2, 14, 16]. Besides, we supplemented information about modern approaches to optimization or pre-start training of qualified fencers with the help of extra training means [9, 17, 18].

Alongside with it, the conducted research permitted to substantiate purposefulness of application of experimental means' complex in sportsmen's pre-start training. The received results permit to say that the offered complex of extra training means increase effectiveness of pre-start training, sportsmen's potentials for realization of their skills. For the first time the data about influence of extra training complex means on cardio-respiratory systems' indicators were obtained. The received results witness about positive impact of experimental complex on functional potentials of qualified fencers.

## Conclusions:

1. Analysis of research's results showed that application of experimental complex influences more expressively on sportsman's organism. It was shown that worked out complex of extra-training means positively influences on CRS indicators in the process of pre-start training of qualified fencers.
2. Increasing of CRS responses was registered by integral indicator - training impulse: after application of experimental complex training impulse was in average by 1.94 conv. un. ( $p < 0.05$ ) higher than after usage of traditional warming up of fencers.
3. Using experimental complex, sportsmen fulfilled in average by 64.4% more work in zones of sub maximal and maximal intensity. With it restoration of HBR of all sportsmen was within standard (restoration of HBR up to 120 b.p.m<sup>-1</sup> within 3 minutes). Fulfilling traditional warming up, sportsmen realized in average 71.2% of work with low and moderate intensity.

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## Conflict of interests

The authors declare absence of any conflict of interests.

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