

## NEW APPROACHES TO THE ORGANIZATION OF PRESTART PREPARATION OF QUALIFIED ATHLETES IN SINGLE COMBATS (ON AN EXAMPLE OF FENCING)

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**Abstract.** *Purpose:* to develop and investigate the effectiveness of complex extra-training means to enhance the prelaunch qualified athletes in fencing. *Material:* the study involved 12 qualified male fencers. Measurements were made of the latent period of simple and complex visual-motor response. *Results:* recommended set of proposed actions prelaunch 45 minutes before the start of the competition. The maximum stimulating effect of the experimental complex extra-training means in terms of neural properties of the organism is observed from the tenth to thirty minutes after the impact. *Conclusions:* We have reached the stimulatory effects of reduced overall duration of the workout to twenty minutes, allowing you to more efficiently organize the process of prelaunch qualified athletes in fencing as opposed to using traditional means.

**Key words:** single combats, fencing, training, extra-training, means, competition.

### Introduction

In elite sports intensification of sportsmen's training implies still more targeted application of extra-training means [4, 9, 14, 15] and working out of new technologies of special mobilizing (stimulating) type for perfection of special workability.

Considering this fact one of the most urgent and, at the same time, the least researched direction is working out of technologies of extra training means' application, which would render mobilizing (stimulating) influence and be oriented on increase of prestart training's effectiveness of sportsmen in certain kind of sports [1, 3, 5; 10, 12, 13].

General conception of extra training means' application existing in fencing [17, 18] there is deficit of attention to seeking of special means, which could be used in prestart training for improvement of special workability and sportsmen's competition functioning. In this kind of sports there are no scientifically grounded technologies of application of stimulating influences, considering specificity of this kind of sport.

There exists an idea that present system of prestart training is in contradiction with modern system of competitions in fencing, where recent time competitiveness has increased, duels have become more tensed and dynamic. Requirements to special workability in initial duels, at the end of tournament and in conditions of tiredness's accumulation also have increased [2, 6, 17; 20]. It reduces potentials of organism reserves' realization and provisioning of competition functioning's optimal structure.

In this connection all researches, oriented on working out of prestart stimulation of workability as well as integration of such means in system of qualified fencers' training acquire high *importance and urgency*.

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

*The purpose of the research* was to develop and analyze effectiveness of extra training means' complex in increasing of qualified sportsmen's prestart training's efficiency in fencing.

12 of qualified fencers (male – 6 international masters of sports of Ukraine and 6 masters of sports of Ukraine) of 18-24 years old age participated in the research.

For achievement of our target we used the following methods: theoretical analysis and generalization of scientific research literature, methods of analysis of sportsmen's neuro-dynamic functions, pedagogic experiment, methods of mathematical statistic.

### Results of the research

For increasing of qualified sportsmen's prestart training's effectiveness we worked out complex of extra training means, which is composed of two parts: general and special.

Exercises of general part of the complex were selected in the sequence ensuring quick "warming up" of organism, considering character of main muscles groups' activation with realization of kinematic structure of fencers' technical actions during duel.

For the first time, in general part we used exercises with partner, accompanied by special rhythm of breathing. In fulfillment of such exercises sportsman overcomes resistance, which can vary in wide range and adapt to potentials of sportsman's muscles. With fulfillment of exercises in such mode, activity of muscles remains at maximal level and nervous impulses, coming to muscles, are maximally intensive during all amplitude of movements [4]. Sportsman's efforts in movements are close to maximal; duration of one movement is about 6 seconds. Every movement is fulfilled intensively 4-6 times. Special part of the complex includes exercises to be fulfilled in fencing stance with the rest on partner. These exercises are preparatory for special part of prestart warming up, which is fulfilled with coach or partner. General duration of complex is within 20 minutes.

For determination of specificities of quick adaptation responses of fencers' organism to experimental complex we used methods of analysis of sportsmen's neuro-dynamic functions. The choice of this methodic was connected with specificities of functional provisioning of fencers' special workability, where kinetic of nervous processes plays dominating role [6, 11].

In this connection we fulfilled analysis of latent period of simple visual motor response (LP SVMR) and latent period of complex visual motor response (LP CVMR) under influence of extra training means' complex and under influence of traditional fencers' warming up [7]. Measurements were carried out at 1<sup>st</sup>, 10<sup>th</sup>, 20<sup>th</sup>, 30<sup>th</sup> and 40<sup>th</sup> minutes of recreational period in control and experimental part of the researches (see table 1).

Table 1

*Indicators of visual motor response after traditional warming up and after experimental complex of extra training means*

Period of time	Indicators of visual motor response, m.sec.							
	After traditional warming up (n=12)				After complex of prestart means (n=12)			
	LP SVMR		LP CVMR		LP SVMR		LP CVMR	
	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
At the moment	238.8	1.2	408.3	4.6	234.5*	1.2	397.5	4.7
After 10 minutes	238.7	1.2	415	6.3	230.7*	2.4	399.8*	5.3
After 20 minutes	243.9	3	419.3	6	231.3*	3.7	397.3*	6
After 30 minutes	246.7	2.8	421.1	6.5	231*	2.6	400.1*	6.5
After 40 minutes	247.3	3	422.6	6.2	243.6	2.5	404.5*	3.8

Notes: \* – statistically significant differences comparing with data, received after traditional warming up, at level of  $p < 0.05$

After experimental complex we registered confident change of LP SVMR time. Comparing with control measurements LP SVMR improved by 4.3 m.sec. just after application of experimental means, by 7.4 m.sec. after 10<sup>th</sup> minute, by 12.6 m.sec. after 20<sup>th</sup> minute, by 157 m.sec. after 30<sup>th</sup> minute ( $p < 0.05$ ). After 40<sup>th</sup> minute we registered reduction of effect. The highest improvement of LP SVMR indicators was in period from 1<sup>st</sup> to 30<sup>th</sup> minutes after fulfillment of our complex. It is vividly illustrated by results of statistical analysis ( $p < 0.05$ ).

Analysis of LP CVMR showed that just after fulfillment of complex there was no confident change in time of response, comparing with control measurements. After 10<sup>th</sup> minute improvement was 15.2 m.sec., after 20<sup>th</sup> minute - 22 m.sec., after 30<sup>th</sup> minute – 21 m.sec. After 40<sup>th</sup> minute difference between control and experimental measurements was 18.1 m.sec. ( $p < 0.05$ ).

In the course of experiment we considered international rules of FIE (sportsman shall be near place of duel 10 minutes before the start of duel). Application of experimental complex permits to shorten time for warming up and it reduces level of physical and emotional tension and, in its turn, preserves potential of workability for further competition functioning.

In fig. 1 it is shown that application of offered complex of prestart exercises is the most effective 45 minutes before start of competitions. It is connected with the fact that under influence of this complex (15–18 minutes), comparing with after effect of traditional warming up (40 minutes) more expressed stimulating effect was registered, which lasted for longer period of time. It is proved by indicators of LP CVMR and LP SVMR. We also registered high subjective self assessment of sportsmen's condition: increased workability, high quickness of movements, quick restoration after loads of warming up's special part, desire to participate in competitions.

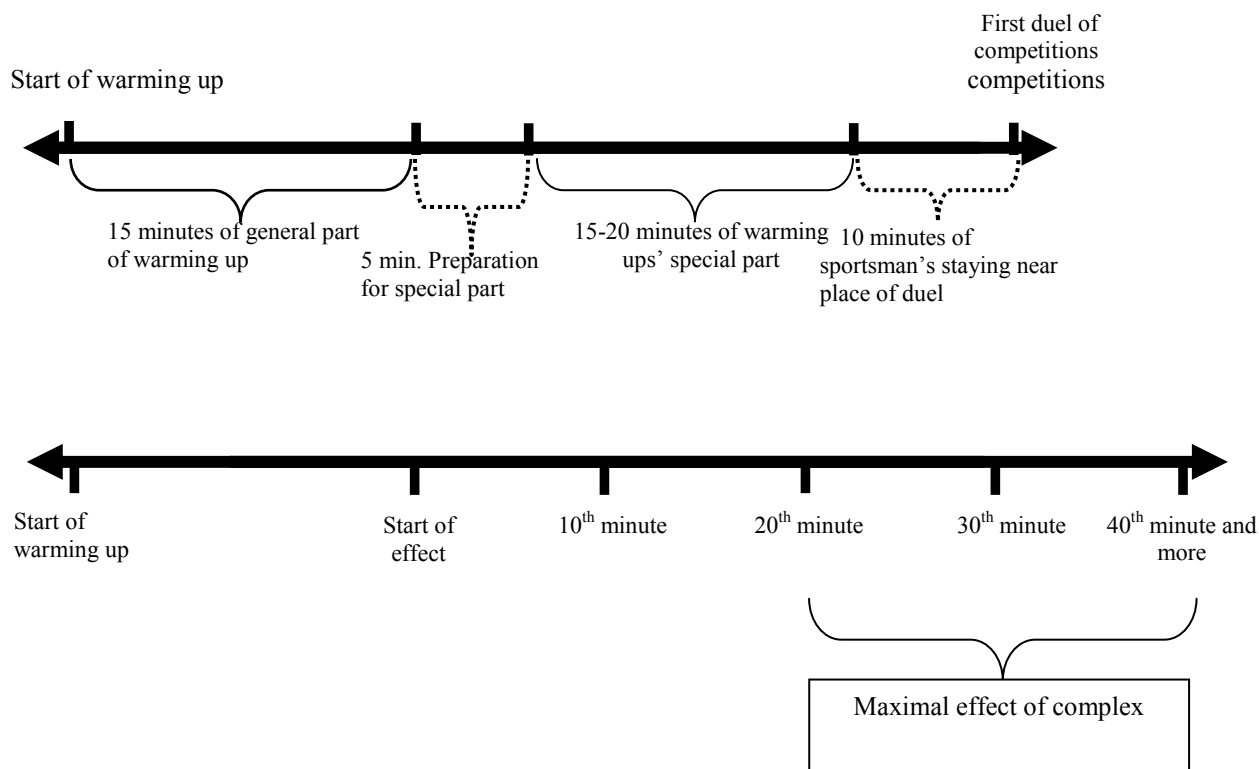


Fig.1. Application of prestart means' complex

### Discussion

The fulfilled work proved results of researches of a number of authors, devoted to complex and rational application of training and extra training means in system, of sport training that result in increasing of competition functioning's effectiveness in general [5, 3, 10, 13]. Also we supplemented theoretical principles of realization of qualified sportsmen's available functional potential in the course of direct preparation for competitions [1, 4, 12, 16] as well as modern approaches to optimization of prestart training of qualified sportsmen, specializing in fencing, with the help of extra training means [10, 17, 18].

Alongside with it, the conducted research permitted to give ground to purposefulness of application of extra training means' experimental complex in process of prestart training of qualified sportsmen, specializing in fencing. The received results permit to affirm that the offered complex of extra training means increase effectiveness of prestart warming up and, as a result, widen opportunities for qualified fencers' organism to realization of available functional potential. For the first time we obtained data about influence of extra training means on indicators of neuro dynamic functions of sportsmen. The received results witness about positive influence of experimental complex on indicators of fencers' special workability. It gives ground for application of this complex in process of prestart training of qualified sportsmen in fencing.

### Conclusions

1. We worked out complex of extra training means for increase of prestart training effectiveness of qualified sportsmen. Specializing in fencing. With working out of the complex we considered specificity of fencing competition functioning.
2. Application of experimental means resulted in reduction of latent period of simple visual motor response, comparing with indicators, received after traditional warming up. Just after fulfillment of experimental complex time of simple visual motor response reduced by 10.6 m.sec. ( $p < 0.05$ ); after 10<sup>th</sup> minute – by 11.9 m.sec. ( $p < 0.05$ ); after twentieth minute – by 13.3 m.sec. ( $p < 0.05$ ); after thirtieth minute time of latent period of simple visual motor response was by 15 m.sec. ( $p < 0.05$ ) better than after traditional warming up.
3. Just after fulfillment of experimental complex time of complex visual motor response did not change confidently. Confident reduction of the response was registered after 10<sup>th</sup> minute and was 15.2 m.sec. ( $p < 0.05$ ); after twentieth minute difference was 22.0 m.sec. ( $p < 0.05$ ); after thirtieth minute – 21 m.sec. ( $p < 0.05$ ); after 40<sup>th</sup> minute – 18.1 m.sec. ( $p < 0.05$ ). In most of the sportsmen (81 %) stimulating effect was registered in period from 10<sup>th</sup> to 40<sup>th</sup> minutes.
4. By neuro dynamic indicators maximal stimulating effect of experimental complex of extra training means was registered in period from 10<sup>th</sup> to 30<sup>th</sup> minutes after fulfillment of the complex.

5. The received stimulating effects reduced duration of warming up's general part up to 20 minutes that permits to more rationally organize the process of fencers' prestart training in comparison with traditional methods.

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#### Conflict interests

The authors declare they have no conflict interests.

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