

## PEDAGOGY & DIDACTICS

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### Optimization of student-fencers' tactical training

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#### Abstract

**Purpose.** To work out and experimentally test the effectiveness of tactical training means and methods in the initial stages of student-fencers' accelerated training.

**Methods.** In the experiment 2<sup>nd</sup> year students from two academic groups at the university (n=50) participated. In their first year students undertook fencing training twice a week (2 hours per session). The first group (n=24) was an experimental group (EG), the second (n=26) the control (CG). At the beginning of the experiment the technical-tactic fitness of the students in both groups was approximately equal. The experiment lasted 7 months. All the students gave their written consent to participate in the experiment. **Results.** It was found that the exercises for distant manoeuvring, for non-defensive duels and for combat actions accelerate the formation of a personal combat style where the coach's instructions are accurately carried out. They also motivate sportspeople to achieve the correct execution of techniques. It was also found that a fencer's tactical thinking is formed and becomes a special combat skill where they are applied in relevant duel conditions. These requirements can be satisfied by athletes only after special training. We worked out exercises, which reflect almost the entire spectrum of tactical training for fencers.

**Conclusions.** We have proposed a particular suite of fencing exercises to improve tactical thinking, and to expand the arsenal of combat actions as well as the circle of combat situations, preparatory actions, attacks and defences; behaviour in unexpected situations and sense of distance.

#### Introduction

A characteristic feature of teachers' training for school has always been training of some kinds of sports, which to the largest extent facilitate formation of teachers' personality and increase their sportsmanship. Among such kinds of sports there is fencing. After entering university students start to train fencing. For them it is a means of motor functioning intensification, health strengthening and acquiring of physical culture functioning skills. Besides, fencing is regarded as a part of future pedagogue's professional practice. In most cases such students have never trained fencing beforehand. That is why there is a problem of accelerated training that requires new appropriate programs or correction of existing programs.

Accelerated training of students-beginners was regarded for different kinds of sports. The main princi-

ples of martial arts' didactic system on the base of theory of optimal training permitted to determine minimal loads, which should be fulfilled by a student at training [Iermakov, Arziutov, Jagiello 2016]. The authors proved that application of the offered theory of optimal training in martial arts permits to shorten time at initial stage of technique's mastering 2.38 times. On the example of volleyball training the content of sport-oriented physical education technology was worked out [Salatenko, Dubinskaya 2015]. The authors offer to use such technology as an effective method to improve economic specialties of students' psycho-physical qualities. At shaping training (twice a week, 60 minutes every training) they found the trainings' influence on morphological functional indicators of university non-special faculties' girl students [Malenyuk, Kosivska 2014]. The authors offered the methodics, which included exercises of aerobic and

power orientation, health related gymnastics, stretching and relaxation. The methodics included individual regulation of load; consideration of girl students' constitution; their desires; rational eating recommendations. In fencing it was determined that under influence of the worked out complex of pre-start exercises (to be fulfilled during 15-18 minutes), comparing with traditional warming up (to be fulfilled during 40 minutes) there was more expressed mobilization effect [Lopatenko 2016a]. Besides, this mobilization effect was acting longer. The achieved stimulating effects reduced duration of warming up's general part up to 20 minutes. It permitted to organize more rationally the process of pre-start preparation in fencing, comparing with application of traditional means.

Other research showed that there was determined need in rising students' physical functioning significance as the base of development of their motor, coordination and intellectual abilities [Podrigalo *et al.* 2016]; the base for working out of methodics, which would facilitate students' successful health related trainings (students with low motor (physical) fitness level [Kopeikina *et al.* 2016]; substantiation of fitness yoga purposefulness for improvement of special health group girl students' psycho-physical condition and psycho-social health at training and recreational physical culture classes [Skurikhina *et al.* 2016]; application of run loads in aerobic energy supply mode for increase of students' with progressing obesity functional fitness [Furman, Brezdenyuk 2015; Pop 2016]; formation of structural model of students' sport-oriented physical education with the usage of informational technologies [Kozina, Ol'khovyj, Temchenko 2016]. The following issues become very important: choice of adequate tests for control over students' fitness [Ivashchenko *et al.* 2016] and appropriate physical load [Osipov *et al.* 2016], simulation of the process of development of physical [Kozina *et al.* 2016] and psycho-physical qualities [Iermakov *et al.* 2016; Kuzmin *et al.* 2015], monitoring of students' health level [Pryimakov *et al.* 2016], participation in competitions of different level [Bliznevsky *et al.* 2016].

In fencing the influence of out-of-training means' complex on sportsmen's functional potentials was tested [Lopatenko, Tumanova, Gatsko 2015]. The authors showed possibilities of load optimization by results of cardio-respiratory reactions' changes by training impulse. When fulfilling experimental complex, fencers fulfilled on average 64.4% of work in zones of sub-maximal and maximal intensity. For comparison: when fulfilling traditional warming up sportsmen fulfilled on average 71.2% of work with low and moderate intensity. It shows that the offered complex of out-of-training means increases the effectiveness of pre-start warming up and raise organism's potentials for realization of functional potential by sportsmen.

In other work the influence of out-of-training means on fencers' technical-tactic actions were studied

[Lopatenko 2016b]. The author shows that it is possible to use out-of-training means, oriented on workability mobilization in direct pre-start preparation of elite sportsmen. It directly concerns the theory and methodics of fencing training, where competition is connected with manifestation of special fitness of highly specialized components [Lopatenko 2016b]. Optimal organization of fencing trainings is also of great importance. Its development shall be based on systemic analysis of internal and external environment factors, which influence fencing progress in activity of sports school. Besides, it is necessary to consider the strategy of its development in new social-economic conditions [Driukov 2015]. The author offers his own concept, which can serve as a guide for working out and realization of program documents in sphere of fencing or its some directions' development.

Other authors stress the necessity of the following:

- Working out of motor actions' improvement program, which would be built on objective quantitative models of technical actions' basic mechanisms, realized by advanced sportsmen [Gamalij, Shevchuk 2015; Korobeynikov *et al.* 2016];
- To regard fencing training process in context of formation of personality qualities of students and their professional competences [Skvorcova 2015];
- Determination of basic principles and guiding instructions in respect to improvement of theory and methodology of young fencers' training [Tyshler, Ryzhkova 2014; Luczak 2015];
- Optimization of main pedagogic work with sportsmen, which would be oriented on technical and tactic training [Movshovich, Sidorova 2014; Arziutov *et al.* 2016];
- Choice of targeted training influences and formation of duels' means, considering individual features of athletes [Desiaterikov, Tishchenko 2015].

In fencing it is recommended to regard the time of reaction as an important factor of effectiveness of complex motor skills' training and their successful realization in duel [Borysiuk, Cynarski 2010] and with sport selection [Dopico-Calvo, Iglesias-Soler, Morenilla, 2016]. In its turn, knowledge about opponent's possible actions beforehand shortens time of movement and, thus, increases the success of attack [Czajkowski 2011; Gutiérrez-Dávila *et al.* 2014]. Success of such a movement depends on muscular coordination and time of reaction [Guilhem *et al.* 2014; Balkó *et al.* 2016]. The increase of fencing sport results is also facilitated by technical equipment. They are recommended for perfection of tactic skills and tactical thinking [Yuriy *et al.* 2014].

In other research we listed professional and personal qualities of a teacher, which are formed in fencing [Kriventsova 2009a, 2009b]. We drew attention to health related, educational significance of fencing trainings as well as determined its potentials in formation of future teacher's physical culture. In other research we

determined approaches to formation of academic discipline “Fencing” by physical education program for students of higher educational pedagogic establishments. We supplied methodological approaches, which connected the blocks of fencing content with components of future coaches’ physical culture formation. Besides, we showed influence of the author’s program on physical culture-sport activity; on physical perfection, acquiring of pedagogic knowledge, ability to think pedagogically [Yermakov, Kriventsova 2010]. We stated that at first year the main content of academic process shall involve: development, correction and support of students’ personality’s physical qualities; students’ familiarization with self-control methodics when doing physical exercises; training and perfection of main fencing movements and techniques [Kriventsova, Klimenchenko, Odokienko 2011]. We noted that main approaches to fencing training shall include: wholeness, safety, attitude “All are equal”, creation of psycho-emotional positive. The main forms of trainings are: training without an opponent, with a conventional opponent, with a partner and with an opponent. The dynamic of forms’ prevalence during all training process permits to ensure the required quantity of training sessions at the account of acquiring of theoretical knowledge, practical skills.

In our other research we focused on the following: when distributing training means and loads it is necessary to distribute uniformly and do the correlation of the means themselves [Gaskov *et al.* 2016]. In the base of students’ health there is personality-oriented system of formation of their physical, psychic and social moral health [Kudryavtsev *et al.* 2016]; we also approved importance of grip power as a factor of successfulness in martial arts [Iermakov, Podrigalo, Jagiello 2016].

*The purpose of the works* is to work out and experimentally test the effectiveness of students’ tactical training means and methods at initial stages of fencing accelerated training.

## Material

*Participants:* in the experiment the 2<sup>nd</sup> year students of two academic groups of H.S. Skovoroda Kharkiv National Pedagogical University (n=50) participated. In the first year students trained fencing twice a week (2 hours every training). The first group (n=24) was an experimental group (EG), the second (n=26) – the control group (CG). At the beginning of the experiment technical-tactic fitness of both groups’ students was approximately equal. All students gave written consent for participation in the experiment.

The students were divided into groups randomly.

CG engaged in the program in which fencing is used to enhance physical fitness of students and mastering techniques of individual fencing elements. Tactical

components of fencing actions were much more important than EG.

*Procedure:* system of training teachers in some pedagogical universities is the subject of “Fencing”, which is studying by 50% of the students. Some of these students were engaged in fencing before entering university. Therefore there is a need to train students fencing as beginners. A necessary step needs to be taken in order to adapt existing programs for faster learning of fencing.

The experiment lasted from September 2015 to March 2016. The first tactical information was received by the students already when they were familiarized with characteristic of fencing and specificities of duels’ conduct with different kinds of arms. Every kind of fencing has its own rules and combat tactic is constructed according to them. We have chosen epee fencing. Such a choice was conditioned by the fact that competition rules permit to apply shots in any part of opponent’s body and tactical right is not considered by referees. For analysis of tactical fitness students were offered four exercises for tactic:

Exercise 1: accuracy of shot application in pre-set sector of 30 mm diameter. The exercise is focused on the target. Initial position is combat stance at close distance. With it, student shall select distance so that he could apply shot in a circle, depicted on the target, without bending torso; only by a stretched arm. The student is given 10 attempts; the aim is to hit the pre-set sector. Successful hits are considered.

Exercise 2: for quickness of reaction, when doing exercises for accuracy. Initial position is combat stance. By signal student fulfills forward step – lunge – return in combat stance. The aim is to do the exercise maximally quickly and correctly. The time of exercise fulfillment is considered. The time is measured in seconds.

Exercise 3: for accuracy in exercises, performed in pairs for quickness. The exercise is carried out in pairs in turn. Initial position is: partners stand opposite each other at close distance; arm is in 6<sup>th</sup> engagement. The first student passes in the 4<sup>th</sup> engagement, trying to catch the opponent’s epee. The aim is to pass so quickly that it would be possible to touch the opponent’s weapon. The other student shall remove his epee as quick as possible in response, in order to avoid contact with opponent’s epee. Each opponent is given 10 attempts. The quantity of successful avoiding of contact is considered.

Exercise 4: duel with tactic orientation for time. The exercise is carried out on a fencing track with marked lines of start and boundary. The aim is to build the duel so that to apply 5 shots as quickly as possible. The time, for which every student applies 5 shots, is considered. If one student has applied 5 shots, his time is stopped and the duel continues until his opponent also applies 5 shots. For measurements’ accuracy 2 stopwatches are used.

*Statistical analysis:* we used SPSS 22 program. By individual results we calculated mean result for every

exercise separately. Reliability of the received data was determined by Student's t-criterion.

The research was conducted in compliance with WMA Declaration of Helsinki – Ethical Principles for Medical Research Involving Human Subjects, 2013 [WMA Declaration of Helsinki 2016].

## Results

The first tactical information was received by students already when they were familiarized with characteristic of fencing and specificities of duels' conduct with different kinds of arms. Further tactical perfection is of more individual orientation with exact consideration of psycho-physical features, level of fencing techniques and tactic mastering. Just because of this fact we have chosen the 2<sup>nd</sup> year students, who already have some initial knowledge and epee fencing skills. The students were informed about the content of four tests tasks and primary measurements were carried out. We calculated average values for both groups at the beginning of the experiment and they turned out to be nearly equal.

Tactical training of both groups was oriented on familiarization with tactical sense of attacks, counterattacks, defenses and responses. In the course of techniques' mastering the students were given their tactical substantiation, opened possibilities of their application as combat actions in the simplest duels. At initial stages of training we used exercises, which require steady attention, ability to observe and find tactical sense in gestures, movements and actions of opponents; application of efficient means of interaction. Exclusively important was familiarization with the simplest methods of reconnaissance and their realization in intended duels, oriented on mastering of tactical sense of combat situations; training of attacks and counterattacks for response in definite sector; disguise of attacks and defenses. After mastering certain suite of combat actions (as usual rather simple), we gradually expanded application of skills, oriented on mastering of tactical sense of combat situations. The exercises were for selection of actions and sudden moments for their application. Besides, we trained variants of tactical deceptive movements, based on usage of preparatory actions. We tried to train quickness of taking decisions in combination with mastering of specialized skills. Such specialized skills are based on determination of motor reactions, which form “felling of duel”.

As far as tactic is a practical skill to conduct duel reasonably, training was mainly realized in practical forms, in pair exercises, individual lessons and duels. When the main form of exercise was a group task in pairs there appear moments for mastering tactic. It should be noted that group delivery of material requires external and internal discipline from students. It also cultivates independence of thinking, so necessary in duel.

In the experimental group special attention was paid to correct correlation of those, who had experience of training with partner before doing exercises. In this case student was not a “dummy”; actually he was an assistant, interested in successful mastering of material by his partner. While helping each other students watched, corrected, advised and discussed the questions, which appeared during their interactions. For success of the experiment we tried to solve the following pedagogic tasks:

- Expansion of circle of attacks and defense actions, used for fulfillment of definite tactic task;
- Expansion of combat situations' circle for application of perfected attacks and defenses;
- Expansion of circle of inter-supplementing attacks and defenses, which are to be used after mastering of certain trainings means;
- Expansion of preparatory actions' circle, which precede application of the mastered attacks and defenses;
- Mastering of attacks and defenses appearing in sudden situations.

During seven months of the research the control group students were trained by traditional plan of trainings for main health group according to academic program [Kriventsova 2007]. Experimental group was trained also by academic program but for groups of sport orientation. In their training more attention was paid to tactical training with the help of worked out by us complex of special exercises. Here we supply two examples for every kind of tactical training.

*I. Exercises for expansion of combat actions' arsenal pointed at understanding certain tactical task (to be carried out by two sportsmen):*

1. Initial position: middle distance, neutral position. The first fencer does nothing. The second fencer attacks by lunge to arm (performs in turn attacks from above to the sixth position) and performs shots with passing epee inside (in the forth position).

2. Initial position – middle distance, the forth engagement. The first fencer does nothing. The second fencer attacks by lunge, applying shot in arm in turn: from above, from below, at an angle from outside, inside.

*II. Exercises for expansion of combat situations' circle, pointed at attacks and defenses perfection:*

1. Initial position: distant distance. The first fencer is in sixth position and attacks with shot to arm from above. The second fencer is in eighth position. With opponent's approaching, he counterattacks in turn by shot in arm from above, from outside (sixth opposition).

2. Initial position – distant distance. The first fencer is in neutral position. To opponent's attack he responds by forth defense; then counterattacks with lunge, catching opponent's epee in forth position and applies straight shot. The second fencer attacks by lunge and catching in forth position. He also applies straight shots with passing arm inside. After hitting defense the fencer counterat-

**Table 1.** Comparative assessment of tactical exercises' fulfillment by fencers of experimental and control groups in dynamic of the research

Indicator	September, 2015			March, 2016		
	EG (n=24)	CG (n=26)	Student's t-criterion	EG (n=24)	CG (n=26)	Student's t-criterion
Accuracy of shot in pre-set sector (convenient units)	5.,74±0.12	5.80±0.14	0.32 p>0.05	7.74±0.29	7.00±0.17	2.20 p<0.05
Quickness of reaction when fulfilling exercise for accuracy (seconds)	2.86±0.08	2.77±0.07	0.84 p>0.05	2.32±0.06	2.53±0.08	2.10 p<0.05
Accuracy of pair exercises' fulfillment (convenient units)	5.37±0.11	5.53±0.12	0.98 p>0.05	7.32±0.22	6.73±0.18	2.07 p<0.05
Duration of tactically oriented duel (seconds)	97.60±5.81	96.00±5.77	0.19 p>0.05	69.50±2.54	78.00±3.28	2.04 p<0.05

Notes: EG – experimental group; CG – control group.

tacks, moving backwards and trying to pierce arm from outside (sixth opposition).

*III. Exercises for expansion of interconnecting attacks and defenses circle, which are to be used after specific training method:*

1. Initial position – distant distance, sixth position. The first fencer makes forward step and drops epee's guard, opening hand. The second fencer imitates pierce in arm by lunge and closes himself coming back to combat stance. He attacks by lunge and feint to arm, then applies shot in chest.

2. Initial position: distant distance; position by engagement. The first fencer is in sixth position. Making forward step he drops epee in the eighth position, opening arm. In response to opponent's attack he counterattacks through the sixth (or forth) opposition and gives response to arm or chest. The second fencer attacks to arm by lunge, when his opponent drops an epee.

*IV. Exercises for expansion of preparatory actions' circle:*

1. Initial position: distant distance, sixth position. The first fencer fulfills complex attack by lunge or by throw with batman in the forth position, trying to apply shot in torso. The second fencer, in response to complex attack, counterattacks with lunge by applying shot in arm straight or under angle.

2. Initial position: middle distance, sixth engagement. The first fencer drops an epee in the eighth position and straightens legs. In response to the opponent's attack he counterattacks inside to arm by shot from above. The second fencer in response to opponent's dropping epee counterattacks by lunge to arm.

*V. Exercises for mastering attacking and defense actions, which appear in sudden situations:*

1. Initial position: middle distance, sixth engagement. The first fencer attacks by passing inside or by double passing inside (double passing is fulfilled at differ-

ent depth). Second fencer stepping back counterattacks by sixth circle defense and response by shot in arm.

2. Initial position – distant distance, sixth position. The first fencer, approaching to opponent, fulfills batman in sixth position. He repels opponent's counterattacks, continuing approaching and responds by straight shot. The second fencer stepping back counterattacks with passing inside and apply shot in chest.

*VI. Exercises for development and perfection of "sense of distance":*

1. Initial position – close distance. The first fencer increases initial distance by short steps. The second fencer carries out attacks of optimal length, increasing the depth of attacks with increasing distance.

2. Initial position: close distance. The first fencer changes distance by maneuvering. The second fencer attacks by a previously agreed method, adjusting the depth of attack.

*VII. Exercise for development of "sense of time":*

1. Initial position: distant distance. The first fencer approaches and returns to initial distance after opponent's attack. The second fencer keeps distance, chooses the moment of pre-agreed attack in one of the opponent's approaches.

2. Initial position: distant distance. The first fencer comes back and takes initial position with opponent's approaching. The second fencer fulfills preparatory approaching and restores initial distance; he attacks in response to opponent's coming back.

*VIII. Exercises for development and perfection of "sense of epee":*

1. Initial position: middle distance, epee directed below. The first fencer realizes preparatory trials to seize engagement: turn by turn changing quickness, amplitude and depth of epee movements. The second fencer attacks, avoiding contact with opponent's epee.

2. Initial position: distant distance. The first fencer

fulfills different by quickness, depth, amplitude, directions and rhythm of epee's movements attacks. The fencer changes power of batman and duration of captures. The second fencer repels the opponent's attacks, trying to predict his actions.

After realization of the mentioned exercises, we measured test results in both groups again (see table 1).

The results of the conducted experiment found: at the beginning of experiment results of both groups were approximately equal; at the end of experiment in the experimental group, under the influence of recommended by us special complexes, results were nearly by 10% higher than in control group.

We recommend introduction of the worked out by us complex of exercises in fencing training process for students of the Faculty of Humanities. With it, coaches-instructors are recommended to consider specificity of different special abilities' development:

- Sense of distance in duels with certain distance correlation between opponents;
- Time between start of movement and shot in attacks or complex counterattacks for successful counteracting to opponent, which shall be carried out either with coming back or with approaching with different quickness and depth;
- Control over amplitude, quickness, depth and rhythm of preparatory and defensive opponent's actions;
- Training of ability to feel directions, amplitude, depth and rhythm of actions with epee for successful conduct of duel.

## Discussion

Tactic is an intellectual foundation of any kind of sports. In a tactic struggle fencer opens his qualities, potentials, abilities to quickly find himself in sudden situations. The basis of tactic's formation is general understanding of situation, consideration of individual features, actions and one own potential. In different kinds of sports tactic differs by content and character. Though, tactic is a leading factor of victory. Specificity of kind of sports is a decisive factor, determining the structure of sportsmen's tactical fitness. The choice of rational tactical scheme of competition functioning is determined by a number of factors, which depend of the kind of sports and individual technical, physiological and psychological potentials of a sportsmen [Platonov 2015]. When realizing tactical actions two levels of current tasks are characteristic: sensor-perceptive and prognostic. At the first level the choice of decision from several alternatives in sudden situation is realized. At the second level taking decision is fulfilled as result of consideration of regularities in opponent's actions and his reflexive behavior [Platonov 2015].

In opinion of Rodionov [1978] in the process of fencer's tactical training it is necessary to consider:

- Time and level of tactical theoretical knowledge mastering (arsenal of tactical means, conditions of their application and etc.);
- Studying of future competitions' conditions and opponents' potential;
- Mastering tactical skills, combination of them and variations;
- Cultivation of tactical thinking, required for development of tactical skillfulness.

In our research we proved that sport results are formed owing to clear sequence in fulfillment of trainings tasks. Cultivation of tactical thinking is started from embedding of theoretical principles and acquiring of techniques, which are the base of combat arsenal. Besides, tactic is started from expansion of combat situations' circle, abilities to build effective plans of realization of own ideas, formation of preceding mental and physical fencers' abilities.

It is known that fencers' motor functioning in duels is characterized by significant variability of preparatory actions with relative stability of movements' main mechanisms. Due to it the formation of tactical actions' dynamic stereotype in duel is not purposeful [Novikov 1979; Rodionov, Tureckij 1980].

In our opinion the level of initial sport fitness of the 2<sup>nd</sup> year students in the course of accelerated training envisages intensive training of certain movements in response to certain actions of opponent. Understanding of combat situation comes only with experience and with time it is possible to accumulate rich arsenal of different actions. Possibility to create individual style of a fencer gives the following: gradual mastering of attacking and defense techniques, artificial creation of duel's problem situations by coach, clear realization of techniques at trainings.

As leading fencing coaches and scientists note [Bojchenko, Tyshler 1983; Tyshler, Ryzhkova 2014] the main method of tactical duel are preparatory actions. They create style of fencer, his manner, motor behavior on track. The authors divide preparation actions into the following: reconnaissance, disguising, challenges and obstacles, "manipulations with weapon", feint lunges, defenses and counterattacks. Just in these preparatory actions internal system of fencers' intellectual interaction is reflected. It manifests in creation of maximal difficulties for opponent:

- For successful realization of own tactical intentions;
- For disguising of own intentions and disinformation of opponent in respect to possible own behavior in certain moment of duel;
- Creation of activity on track as rejection of compromises; strive for competition on conditions of maximal mental potentials.

Special tactical training in fencing is connected with technique of fencing with a chosen kind of weapon. Technical unfitness, poor arsenal of techniques restrict and nullify fencer's tactical advantage. Thus, fencing tactic

is ability to control techniques reasonably and logically (adequately to duel conditions to create situations, choose and apply attacks, defenses and preparatory actions) [Arkadev 1969]. In modern theory of fencing tactic is divided into two parts:

- First – targeted combat thinking, which operates certain scope of special knowledge;
- Second – direct fulfillment of decisions, taken in the process of thinking.

Difficulties of tactical thinking in combat conditions are that in a very short time it is necessary to assess combat situation. With it, the fencer has to solve two practical tasks simultaneously: to attack successfully and to defend himself successfully. Criterion of tactic's assessment is the final result of fencing phase, duel or competitions.

In our research we studied epee fencing. As it is known the following main moments are intrinsic to such a kind of fencing:

- Competition rules permit to apply shots in any part of opponent's body, except the back of the head that creates a wide space for actions;
- Absence of tactic right criterion in duel rules and following from it conception of fencing rhythm;
- Possibility of application of mutual shots.

Epee is a piercing weapon. The main task for epee fencer is to first touch (to pierce) his opponent or to immediately create conditions for chance to apply a mutual shot. It determines duel tactic. S.V. Paramonov notes that alternative to actions on pre-emption is an attempt to apply shot for holding up or avoiding the opponent's shot with the help of opposition [Paramonov 1986]. Usually epee fencers point at arm with weapon or leg, which is positioned in front. The main means of epee fencers' defense is counterattack, which results in wide usage of attacks of second intention. Other authors [Bojchenko, Tyshler 1983] stress little volume of actions, which threatens with shots in situation of closeness to opponent's epee. In such cases safer means of behavior are chosen. However, action (which threatens with shot) is often accompanied by contact with opponent's weapon. Just because of this fact there appears a need in quicker and more accurate study of opponent, in imposing on him one own's style. Especially effective are such actions in duels with weaker fencers.

We determined that fencers' tactical fitness influences on selection of informative exercises for tactic. The main criterion of our choice was cultivation of students' tactical thinking, which shall include a number of mental operations on making and realization of sport plan of a fight.

In opinion of Sladkov [1989] tactical thinking is based on usage of appropriate knowledge and experience; ability to watch attentively, quickly perceive and assess situation and choose a correct decision. The author stresses that preparation actions are the main means of tactical fight, which are not targeted at direct applying of shot and defense against it.

From the mentioned positions our research expands ideas about formation of students' tactical fitness (if they are trained with an accelerated program). Results of our work also point at the fact that just students' age is the most sensitive to formation of fencer's tactical thinking. Just at this age perception and mastering of arsenal of preparatory actions are the most effective.

In other research [Bojchenko, Tyshler 1983] the following tactical characteristics of duel conduct are marked out: attacking and defensive actions; maneuvering and oppositions; quickness and expectations. The authors note that many factors influence specificities of duel:

- Position of weapon;
- Conduct of duels at different distances;
- Adequacy of action, which is chosen for responding to an opponent in duel (prepared beforehand or spontaneous).

Results of our research also prove the mentioned above. We found that exercises for distance maneuvering, duels without defenses; fulfillment of combat actions by instructor's tasks accelerate formation of personal combat style. They also motivate fencer for correct performance of techniques.

Our research proves that fencer's tactical thinking is formed and becomes special combat skill in conditioned of appropriate application in combat actions. These requirements can be satisfied by student-fencer only after his special training. Just because of this fact we offer the chosen by us exercises for preparation for main tests. The mentioned exercises reflect practically the whole spectrum of tactical fitness.

## Conclusions

1. Tactical thinking is based on the practical application of appropriate knowledge and experience, the ability to watch attentively, and to perceive and assess the situation of a sport fight quickly. In addition it also includes the ability to take correct decisions quickly. The process of tactical perfection stipulates the fencer's mastery of a complex combination of theoretical knowledge (means, methods and conditions), which are directly to other components of sportsmanship (technical, physical, intellectual and psychological training).
2. The modern system of views on tactic in the theory and practice of fencing is being constantly perfected. That is why some principles will be constantly supplemented.
3. The exercises recommended by us facilitate the mastering of technical elements and tactical skills; the improvement of students' results in the sport.
4. The development and perfection of tactical skills have an individual character and require a long term to master them. This fact alone means that this process needs to be realized throughout the entire period of study.

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### Optymalizacja treningu taktycznego studentów-szermierzy

**Słowa kluczowe:** wychowanie fizyczne, szermierka, studenci, taktyka, myślenie taktyczne, ćwiczenia specjalne

#### Abstrakt

Cel. Celem artykułu jest przedstawienie metod przydatnych przy wypracowaniu i przetestowaniu skuteczności środków i metod szkolenia taktycznego studentów na początkowym etapie przyspieszonego szkolenia szermierki.

Metody. W doświadczeniu wzięły udział 2 grupy studentów 2 roku (n = 50). W pierwszym roku studenci ćwiczyli szer-

mierkę dwa razy w tygodniu (2 godzinny trening). Pierwsza grupa (n = 24) była grupą eksperymentalną (EG), drugą (n = 26) – kontrolą (CG). Na początku eksperymentu sprawność techniczno-taktyczna studentów obu grup była w przybliżeniu równa. Doświadczenie trwało 7 miesięcy. Wszyscy uczestnicy wyrazili zgodę na udział w eksperymencie.

Wyniki. Stwierdzono, że ćwiczenia w walce na odległość, pojedynki bez działań obronnych i bojowych, zgodnie z precyzyjnym wypełnieniem instrukcji trenera przyspieszają kształtowanie osobistego stylu walki. Motywują one także sportowców do prawidłowego wykonywania technik. Stwierdzono również, że myślenie taktyczne szermierzy jest kształtowane i

staje się specjalną umiejętnością walki w przypadku odpowiedniego zastosowania w warunkach pojedynku. Wymagania te mogą zostać spełnione przez sportowców dopiero po specjalnym przeszkoleniu. Autorzy opracowali ćwiczenia, które odzwierciedlają praktycznie całe spektrum treningu taktycznego szermierzy.

Wnioski. Autorzy zaoferowali specjalne kompleksy ćwiczeń szermierczych w celu poprawy myślenia taktycznego, rozszerzenia arsenału działań bojowych, a także kręgu sytuacji bojowych, akcji przygotowawczych, sposobów ataku i obrony, a także zachowania w nagłych sytuacjach i poczucia dystansu.