

Improvement of technical and tactical training of qualified women epee fencers

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Abstract. Current need for an effective training of qualified sportsmen in fencing that in further can realize their individual abilities on national and international levels can be solved with the content correction of specialized training load that are optimal for conduction on the stage of specialized basic development.

Aim of the research: to improve technical and tactical training of women epee fencers on the stage of specialized basic development with consideration of efficient and meaningful indicators of high qualified sportsmen.

Authorial program of women epee fencers technical and tactical improvement has included the use of a device for fencers technical and tactical training with application of 3D-modeling of individual competitive activity kinematic indicators and opponents preparation and target hits that are placed on vertical directors that are set in collective cube device (Patent № 76884). Training means are differentiated by difficulty (one, two and three actions), distance (close, medium and long) and complexity (combined and repeated).

Use of an authorial device has led to benefits of experimental group sportsmen by intergroup indicators in development of coordination abilities (5,76–51,52% with $p \leq 0,01$), development of differential muscle forces with different provocation character, counterbalanced correlation of braking – excitation, increase of nerve process strength (8,67–58,63%, $p \leq 0,05–0,01$); majority of technical training indicators (5,65–28,38%, $p \leq 0,05–0,01$).

Key words: fencing, improvement, technique, tactic, training, women epee fencers

Introduction

Women epee fencing was first included in the Games of XXV Olympics (Atlanta, USA, 1996) and some of Ukrainian sportsman show outstanding results (Yana Shemyakina – 1st place at Games of XXX Olympiad, London, 2012; Natalia Conrad – 1st place at World Championship in Havana, 2003; Anfisa Pochkalova – 3rd place at World Championship, Antalya, 2009). At the same time, further improvement of training and competitive level in the internal arena is associated with qualitative improvement of sportsman training system at various stages of long-term improvement periods (Craig, 2003; Briskin, 2015; Antonov, 2017).

The need for efficient training of qualified sportsman who will be able to continue to realize their individual abilities at the national and international levels can be solved by adjusting the content of special training loads that can be optimally conducted at the stage of specialized basic training (Vass, 2003; Zoryana, 2013; Briskin, 2014, 2016).

Variant conditions of competitive activity in fencing determinate the priority in the structure of sportsmen training for the effective implementation of technical and tactical training. Its effective formation must be done in accordance with fundamental research, taking into account the current trends of sport, model indicators of training and competitive activity of more qualified sportsmen. It gives the advantage during the match in terms of qualitative and adequate selection of arsenal of technical and tactical actions in response to the actions of the opponents or their prevention, algorithm creation for the duel in general and in separate parts, etc. (Pitman, 2004; Maryan, 2013).

At the same time, the attention of specialists in fencing is concentrated on the consideration of issues related to the structure and content of competitive activity in various types of weapons, improvement of various training aspects in fencing and their control. In studies the training of sportsmen is mostly opened and only partly studied theoretical and methodological training aspects of qualified women epee fencers (Evangelista, 2000; Price, 2003; Jean-Marie, 2003, 2008; Games, 2006; Harmenberg, 2007).

Thus, the lack of a proper scientific and methodological component of model indicators of competitive and training activity of leading sportsmen consideration in qualified women epee fencers training form the actual scientific and practical task of improvement of technical and tactical training of sportsmen at the stage of specialized basic training.

Aim of the research is improvement of technical and tactical training of women epee fencers at stage of specialized basic training, taking into account the results of meaningful indicators of high qualified sportsmen.

Research tasks:

1. To determine the actual directions of technical and tactical training of women epee fencers at the stage of specialized basic training.
2. To reveal meaningful indicators of technical and tactical training of women epee fencers of different qualifications.
3. Determine qualification-deterministic features of technical training of women epee fencers.
4. To develop a program of technical and tactical training of women epee fencers on the stage of specialized basic training, taking into account meaningful indicators of high qualified sportsmen and experimentally verify its effectiveness.

Materials and Methods

Theoretical analysis and synthesis of scientific and methodical literature information gave an opportunity to study the modern problems of technical and tactical training of women epee fencers. Pedagogical observation was used to identify the features of competitive activity and training of women epee fencers of different qualification. Pedagogical experiment was aimed at determining the effectiveness of the experimental program of technical and tactical training of women epee fencers at the stage of specialized basic training. Also were used methods of mathematical statistics.

Organization

The study was organized and conducted in four stages.

During first stage was analyzed scientific and methodological literature for determining the actual issues of the training system and competitive activity of women epee fencers at the stage of specialized basic training; revealed actual directions in the technical and tactical training of qualified fencers and conducted their previous analysis; justified the program of pedagogical observation of competitive activity of high qualified and qualified women epee fencers which also included the choice of methods and means for information recording. Justified program of pedagogical observation for recording special physical and technical training and psychophysical qualities development level of different qualifications women epee fencers.

At the second stage by analyzing scientific and technical literature supplemented and specified information for scientific research; conducted pedagogical observation on competitive activity of high qualified (Doha, Qatar, 60 sportsmen) and qualified (International fencing tournament in memory of the honored coach of Ukraine S.J. Kolchynsky, "Galician autumn" in memory of P.V. Kozitskogo, 60 sportsmen) women epee fencers and made their comparative analysis. On the basis of qualification-deterministic features of competitive activity of women epee fencers was prepared a draft program of pedagogical experiment of improvement of technical and tactical training of qualified women epee fencers at stage of specialized basic training.

At the third stage was conducted pedagogical observation of special physical, technical training and level of development of psychophysical qualities of women epee fencers of different qualifications. Into pedagogical observation were included 13 high qualified women epee fencers from the national team of Ukraine and 32 qualified sportsmen at the stage of specialized basic training (of which 16 were represented by the Youth Sports School of Lviv and 8 people from the Youth Sports School of Ternopil and Uzhhorod). According to the results of the pedagogical research set correlations of the indicators of different sections with the technical and tactical training of women epee fencers of different qualifications and were established their qualification-deterministic features, was done correction of the program and was made a comparative pedagogical experiment.

During fourth stage was conducted elaboration of pedagogical experiment data, comparative analysis with use of methods of mathematical statistics and was determined the level and direction of the authorial training program effectiveness for improvement of technical and tactical training readiness of qualified women epee fencers with the use of authorial training device. The basis for the evidentiary part of the authorial training program effectiveness was the dynamics of indicators of technical and special physical training and indicators of psychophysical qualities level.

Results

The modern system of technical and tactical training should adequately respond to changes in competition rules, features of competitive activity related to its the intensification, new conditions of the training process and every time higher requirements for sportsman training level at different stages of long-term training.

The accumulated scientific knowledge on the technical and tactical training of sportsmen in fencing indicates on the search for new effective means of training, which specialists associate with the use of non-traditional methods of training, various devices, fights without weapons, fights at limited resistance, battles with two opponents and so on.

Actual ways of improvement of technical and tactical training of qualified women epee fencers are increase of quantitative and qualitative parameters of technical and tactical actions realization, increase of efficiency of specialized movements execution with the given algorithm of motor task, realization of technical skills of sportsmen in conditions of competitive activity and taking into account modern trends of fencing.

The scientific and methodological support for improvement of technical and tactical training of qualified women epee fencers at the stage of specialized basic training is characterized by the discreteness of objective information data. This, along with the need to take into account of actual ways of improvement of qualified women epee fencers training, structure and content of competitive activity and indicators of high qualified sportsmen determines the need for solving relevant scientific and practical tasks.

Within the framework of second task solving was conducted pedagogical observation by results of technical and tactical actions of 60 high qualified (competitions) and 60 qualified (competition) women epee fencers and were determined their features.

It was established that in the competitive activity of women epee fencers of different qualifications there are tendencies according to which the greatest number of effective technical and tactical actions (hits) falls into the sector of body T1 (30,5 vs. 37,1%). At the same time, the qualification differences of the effective hits with the superiority of the indicators of high qualified sportsmen are present in the sector T3 of the body (15.6% vs. 8.9%) and qualified fencers for the T2 body sector (20.9% vs. 12.9%). High qualified women epee fencers in comparison with qualified sportsmen perform essentially ($p \leq 0.05$) more effective hits in the shoulders of P1 and feet C2. Qualified women epee fencers during competitive activity do not perform effective hits in opponents shin and head (Figure 1).

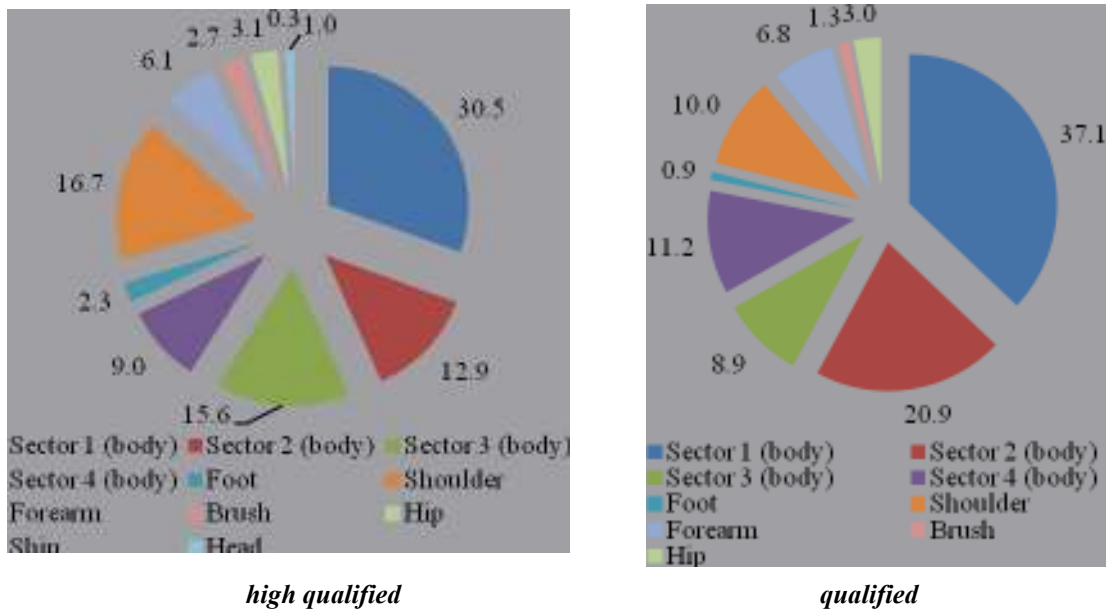


Fig. 1. Effectiveness of hits in competitive activity of women epee fencers (%)

During solving of the third task based on pedagogical observation of 13 high qualified and 32 qualified sportsmen were established qualification-deterministic features of technical training and its prerequisites for special physical and psychophysical preparedness. They consist of a significant advantage of high qualified sportsmen for most indicators of special physical qualities from 4.2 to 49%. The greatest dissonance has been recorded in manifestations of muscles explosive power of the upper extremities, mobility of the hip joints, and separate manifestations of coordination abilities. Exceptions have become manifestations of coordination abilities in the evaluation and regulation of dynamic and spatial-temporal characteristics with a limit value that was 50% of absolute value where there are no differences ($p > 0,05$).

Qualifying-determined features of psychophysical training are in the development of psychophysical qualities of high qualified sportsmen from 26.6 to 66.9% in relation to fewer mistakes when performing test methods related to manifestations of simple and complex reactions (26.64-66.97% with $p \leq 0.05-0.01$) in the absence of significant differences about time of these reactions (5.61-8.56% with $p > 0.05$). The existing differentiation of training is related to the superiority of qualified sportsmen in terms of contact tremorography (47.30-152.53% with $p \leq 0.05$) and high qualified with contact coordination (25.46-39.64% with $p \leq 0.05$) and a significant advantage in the strength of the nervous system on the indicators of the tapping test (31,60 a 35,73 at $p \leq 0,05$).

The technical training of high qualified women epee fencers at the stage of specialized basic training also had significant differences in most indicators from 3.94 to 54.45%. The largest of them are recorded in relation to general indicators of accuracy and effectiveness of the implementation of hits and the effectiveness of maintaining high intensity work at a high quality level.

The solving of the second and third tasks of the study allowed forming an authorial program for improvement of technical and tactical training of qualified women epee fencers at the stage of specialized basic training with taking into account the meaningful indicators of leading sportsmen. It is based on the means of technical and tactical training using the authorial training device (Figure 2). They were distributed according to complexity, distance and their combination.

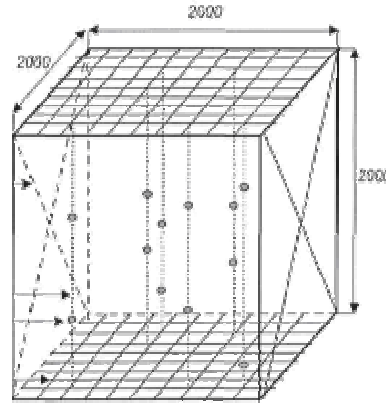


Figure.2. Device for technical and tactical training of fencers: patent 76884 Ukraine, MPKA63B 69/02 (2006.01) / Briskin Yuriy, Pityn Maryan, Semeryak Zoryana – № u201205488

The implementation of the program included the simulation of individual kinematic 3D parameters of competitive activity and anthropometric characteristics of potential opponents and location on the track of the authorial training device which directly provided objective conditions for the performance of the training task in which as affected surfaces were used ball targets on the vertical guides installed in the combined cube-simulator.

The experimental program was designed for the preparatory period of the macro cycles, which lasted from January to September 2013 (32 weeks) and was used for the training for the main competitions of the year.

Were involved 32 qualified women epee fencers at the stage of specialized basic training by 16 in the control (KG) and 16 in experimental group (EG).

According to the results of the pedagogical experiment the effectiveness of the experimental program of improving the technical and tactical readiness of qualified women epee fencers at the stage of specialized basic training has been confirmed.

By most indicators of special physical training sportsmen of both groups have significant intragroup changes (Fig. 3). They are most pronounced in indicators of flexibility (control exercise distance to the floor) where sportsmen improved their result to 63%. It is also necessary to highlight the reproduction exercises of 75% and 50% of fencing lunge and exit from the corridor in the exercise passage from the corridor with closed eyes, where was a big change in the indicators of sportsmen of EG 33-43% and 58% respectively.

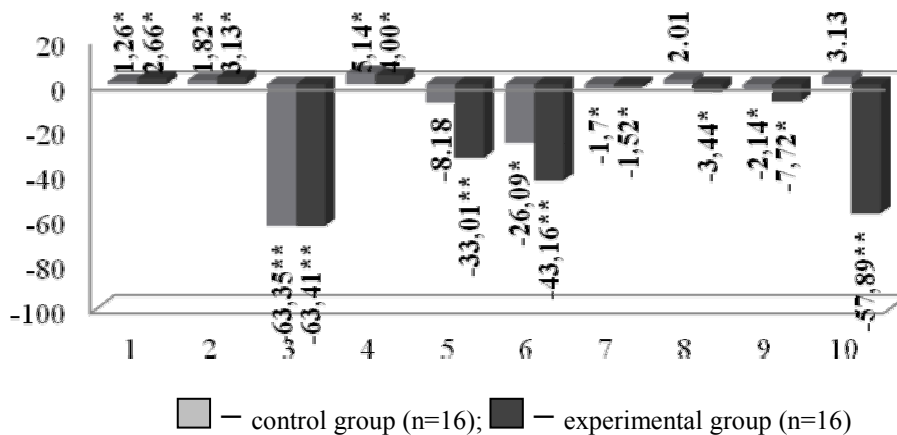


Figure.3. Changes in the indicators of special physical training of women epee fencers in the control and experimental groups for the whole period of the pedagogical experiment: 1 –jump in length from place; 2 –2kg roll ball throw; 3 –twine distance to the floor; 4 – fencing lunge; 5 –reproduction of 75% of fencing lunge; 6 –

reproduction of 50% of fencing lunge; 7 –shuttle running 4x14m (Forward – face, back – back); 8 –acceleration 14 m; 9 –passage of the track with closed eyes 14x1m; 10 –exit from the corridor (in exercise 9).

According to indicators of psychophysical qualities there are significant changes in the representatives of both groups.

We note some of them where the changes in the EG were more pronounced. This is a reduction in the number of errors in the exercise “Profile coordination”, a simple visual-motor response, the reaction of choice, the response of the distinction from 26 to 55%. Separately, let us pay attention to the indicator of the reaction to the moving object where the changes in the representatives of the KG were slightly higher than the representatives of the EG (71 vs. 62%). In addition, we note the number of accurate reproductions in the reaction to the moving object and the number of delays where the representatives of the EG had a significant improvement and representatives of KG had a significant deterioration in 12 and 15 exercises.

The criterion for the effectiveness of our program was technical training (Fig. 4). According to the results of the analysis of intragroup changes presented in the figure it can be concluded that in addition to the frequency of hits in the body of the T1 sector there are more pronounced intragroup changes in sportsmen of EG. The largest of them are 29%, 36%, 35%.

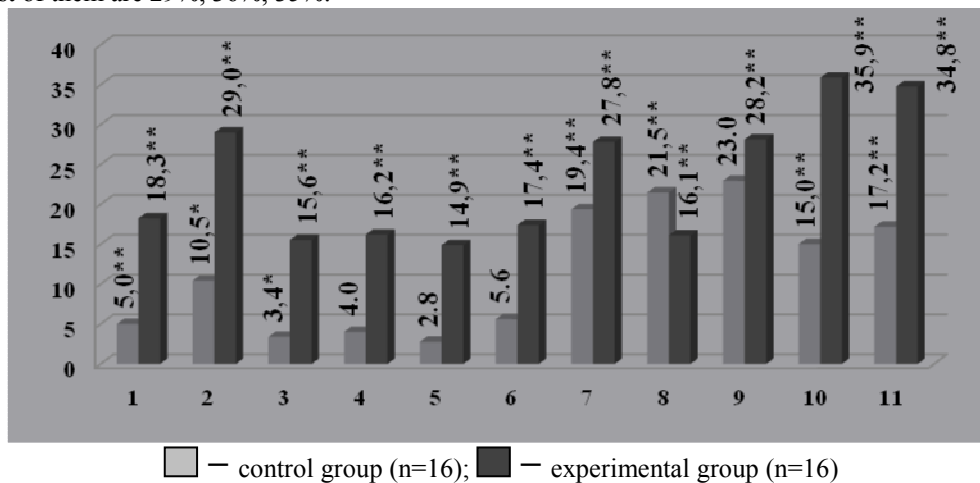


Figure.4. Intragroup changes in the indicators of technical training of women epee fencers in the control group in the pedagogical experiment:

1 – “Lunge from sitting with target hit” (10 times); 2 – “Jump, lunge with target hit” (10 times); 3 – “Lunge, repeat lunge in two targets” (10 times); 4 – “Effectiveness of first lunge”; 5 – “Effectiveness of repeat lunge”; 6 – “Hits frequency from place” (10 sec); 7 – “Hits frequency for body sectors” (40 sec); 8 – sector T1; 9 – sector T2; 10 – sector T3; 11 – sector T4.

Taking into account the specifics of the study we were interested not only in intragroup changes in the indicators of technical training, but also in their intergroup comparisons.

Analysis of intergroup indicators of technical training allowed us to assert that at the initial stage of the KG representatives there was a significant advantage in 7 indicators compared with sportsmen of EG. At the same time, on the basis of the implementation of the pedagogical experiment for two of them the advantage was eliminated. Besides the advantage of sportsmen of the EG was recorded in most of control exercises (7). Note that in only one indicator of the number of hits in the body T1 sector in the exercise “Hits frequency for body sectors” the advantage remained on the side of EG sportsmen. We associate this with the highlights of the program which was used by sportsmen KG to improve the special physical qualities including the muscles explosive power of the of the upper extremities

Discussion

Actual ways of technical and tactical training and improvement of qualified women epee fencers training are increase of quantitative and qualitative parameters of realization of technical and tactical actions, increase of efficiency of execution of specialized movements with the given algorithm of motor task, realization of technical skills of sportsmen in the conditions of competitive activity and taking into account modern trends of the sport.

In the system of sportsmen training in fencing the decision of the actual directions of training can be provided with the wide use of special training devices. Prospects in improving the technical and tactical training of qualified women epee fencers are related to the development of training means aimed at thorough mastering of a specific arsenal of techniques in accordance with the model parameters of competitive activity and training level of high qualified sportsmen.

Fragmentation of the issues of technical and tactical training of women epee fencers' improvement at the stage of specialized basic training along with the need to take into account the structure and content of competitive activity and training of high skilled sportsmen determines the actual direction of scientific research.

Authorial program for improvement of technical and tactical training of women epee fencers included the use of a device for the technical and tactical training of fencers with the use of 3D modeling of individual kinematic parameters of competitive activity and their training level and hits in the target which are located on the vertical guides installed in the combined cube simulator (Patent No. 76884). Training means differentiated according to complexity (one, two and three actions), distance (short, medium and long) and complexity (combined and repeated).

For the first time justified the criteria of formation and created individual kinematic 3D models of competitive activity of high qualified women epee fencers; established meaningful parameters of technical and tactical training of high qualified women epee fencers on the stage of specialized basic training in conditions of intensification of competitive activity; justified structure and content of the program for improvement of technical and tactical training of women epee fencers at the stage of specialized basic training are grounded taking into account the meaningful indicators of technical and tactical training of high qualified fencers and the use of various kinematic 3D models of competitive activity.

On the basis of research were improved methods of training devices use for women epee fencers training. Further development of scientific information about meaningful features of technical training of women epee fencers of different qualifications; indicators of technical training and factors of its support (special physical and psychophysical readiness) of women epee fencers of different qualifications; interconnections of the indicators of technical and other parts (sides) of high qualified and qualified women epee fencers.

Conclusion

1. Meaningful indicators of technical and tactical training of high qualified and qualified women epee fencers have common features due to the fact that the largest shares of effective hits are done into body sector (T1 – 44,9% and 47,4% respectively). A significant advantage ($p \leq 0.05$) was found in the performance of hits of high qualified sportsmen into body sector (T3 – 22.9%), foot sector (C2 – 2.3%), shoulder (P1 – 16.7%), brush (K – 2,7%) over qualified (11,4%, 0,9%, 10,0%, 1,3% respectively) and the advantage of qualified women epee fencers in the effectiveness of hits in body (T2 – 26,7%) over high qualified (18.9%). Effective hits of qualified women epee fencers in the sectors of shin and head were not found.

2. Qualification-determined features of technical training of high qualified and qualified women epee fencers at the stage of specialized basic training are the disproportion of indicators of accuracy and efficiency of hits (8,09-32,40% with $p \leq 0,05-0,01$) and the ability to maintain quality work at high intensity (3.94-54.45% with $p \leq 0.05-0.01$).

The disproportion of indicators ($p \leq 0,05-0,01$) in favor of high qualified women epee fencers was also found in the factors of technical training – the explosive power of the upper extremities (28,21%), the mobility of the hip joints (6,62-46,61%), individual manifestations of coordination abilities (4,20-38,06%); and psychophysical training – contact coordination metering (25.46%), balance of inhibition and excitation (33.99-66.97%), strength of the nervous system, which is on average (31.60-35.73%)

3. The effectiveness of the program for improvement of technical and tactical training of qualified women epee fencers at the stage of specialized basic training based on the consideration of meaningful indicators of high qualified sportsmen is confirmed by more pronounced changes ($p \leq 0.05-0.01$) of intragroup indicators of women epee fencers in experimental group:

- special physical fitness: explosive power (2.66-3.13%), mobility of hip joints (4.00-63.41), coordination abilities (1.52 - 57.89%);
- psychophysical qualities: contact coordination (4.85-35.06%), errors of choice reactions (26.27%), separation reactions (29.91%), reactions to the moving object (7.80-30.98%);
- technical training: effectiveness and accuracy of hits by target area sectors and variants of control exercises “lunge from sitting with target hit” (8.92-31.18%), “jump, lunge with target hit” (8.62-34,52%), “lunge, repeat lunge in two targets” (9.09-17.35%).

The use of the authorial training program led to the superiority of experimental group sportsmen on intergroup indicators in the development of coordination abilities (5.76-51.52% with $p \leq 0.01$), the development of differentiation of muscle effort with stimuli of different nature, balancing of the ratio of inhibition and excitation, increase of nervous processes strength (8,67-58,63%, $p \leq 0,05-0,01$); majority of technical training indicators (5,65-28,38%, $p \leq 0,05-0,01$).

Competing Interests

The authors declare that they have no competing interests.

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