Team composition in epee fencing which accounts for sportsmen’s individual performance

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Abstract
The research was devoted to team composition in epee fencing with accounting of sportsmen’s individual performance. Analysis of the literature enabled to reveal that one of the ways of improvement of the quality of fencers training process and their achievements in team competitions is the substantiation of team forming with accounting results of bouts at different positions during team matches.

Problem and aim. The issue of team formation in fencing is mentioned fragmentally, which points at absence of substantiated approaches in its realization at different stages of team competitions. There is the need for deep analysis of athletes’ results in the bouts with various opponents and their comparison at different positions.

Methods. Theoretical analysis and synthesis, analysis of documentary material, comparison, abstraction, methods of induction and deduction, pedagogical observation, methods of mathematical statistics.

Results and Conclusions. For the solvation of the set tasks the sequence of athletes’ performance in team competitions and their effectiveness depending on the serial number of the performance were analyzed. The protocols of the competition for the 2016-2017 season were used for assessment of athletes’ performance of national teams such as Estonia, China, Korea. For assessment of Ukrainian team performance there were analyzed the results of all competitions during the 2016-2017 season. It was revealed that at the present stage of epee fencing there are used five approaches of team forming with accounting of sportsmen’s individual performance. They are substantiated by results of athletes’ performance at different positions.

Key words: fencing, team competitions, positions, individual performance, sequence, tactics

Introduction
The development of fencing at the present stage requires the improvement of the various components of the training of highly qualified athletes. It is obvious that coaches should implement the most progressive and scientifically substantiated recommendations for increasing of the athletic performance and skills (Ashmarin, 1978; Tyshler, 1997; Platonov, 2004).

The urgent trends in fencing indicate that success of particular team or sportsmen depends on range of methods and features of technical, tactical and theoretical training. The organization of team competitions in fencing creates prerequisites for the implementation of the mental qualities and physical capabilities of the athlete as part of the team. This is the only one way for achievement high results (Diaz, 1984; Tyshler, 1997; Jean-Marie, 2008). However, the specificity of team competitions demands the solving of such important tasks as rational sequence of athletes, forecasting and simulation of matches and particular bouts (Tyshler, 1997). At the same time, an inadequacy of tactical decisions eliminates possible advantages over opponents, within amount of tactical mistakes certainly leads to defeat.

It is mentioned that the effectiveness of different combinations depends on the appropriate use of individual capabilities and the level of athletes’ collaboration during team competitions (Szabo, 1977; Smith, 2003). Moreover, the most important prerequisites for the implementation of the components of technical and tactical preparedness are the interrelations between the indicators of the use of the main varieties of actions in the matches and the functional capabilities of the motor and mental spheres. In addition, the choice of tactics in team competitions is connected with the difference in the account, the sequence number of the match and the need to take into account the capabilities of team members and members of opponent teams (Tyshler 1997: 212-218; Szajna 2006).

The current researches illustrate that evolution of competitive activity in fencing identifies changes in training system of fencers (Cheris 2002). Nowadays the level of development of fencing is characterized by the intensification of competitive activity. Certainly, it requires improvement of various aspects of training of high-qualified athletes (Cheris 2002; Harmenberg 2007).

On the one hand, the importance of scientific researches devoted to analysis of fencers’ performance is obvious. This issue is considered in the works dedicated to effectiveness of technical and tactical skills in competitive activities (Smith 2003; Jean-Marie 2008). But on the other hand, the indicators of athletes’ performance in individual and team competitions are used mainly to control the level of preparedness of athletes.
At the same time, a great amount of researches was devoted to development of coach’s skills and it’s using during training process and competition (Matveev 1997: 310-323; Busol 2011: 23-31). Thus, many scientists make an accent that there should be some kind of compromise between innovations in training process and the achievements of different fencing schools. But there is still lack of researches devoted to problems of team fencing. Despite the huge range of fencing schools which were considered in researches of Harmenberg J. (2007), Guittet M., Palmai M. (2010), there is still lack of works devoted to problems of team fencing. Majority of works is dedicated to improvement of tactical and technical skills particularly for individual bouts (Barth 1975; Briskin et al. 2014; Johnson 2017; Smyrnovskyy 2014). Some publications are aimed at development of theoretical preparedness as the prerequisite for future achievements (Buylin, Kuramshin 1980; Zadorozhna et al. 2018). There is mentioned that analysis of team opponents’ tactics and strategy is obligatory part of training process. But at the same time, tactics and strategy of team fencing are considered fragmentally and concern merely individual bouts during match (Tyshler 1997: 299-307; Szajna 2006; Busol 2011: 12-18).

In our opinion, the indicators of athletes’ performance in team competitions might be the basis for the optimal team composition for participation in high level competitions and the choice of a tactical scheme for the matches with different teams of the world.

Connection with academic programs, plans, themes. The research is planned according to themes 2.8 "Improvement of training of athletes in individual sports groups" Consolidated Plan research in the field of physical culture and sports in 2011-2015 the Ministry of Education, Youth and Sports of Ukraine.

The aim of research was to determine the individual performance of leading athletes of the world as a factor for improving the team composition in epee fencing.

Material and methods.

There were used such methods as theoretical analysis and generalization of the literature and Internet data, analysis of documentary materials. Those methods helped us to find out the problem field of the chosen topic, to determine the object, object and purpose and to substantiate the results. In particular, pedagogical observation and analysis of protocols of competitions in epee fencing during the season 2016-2017 and the world ranking of teams in fencing, were used. There were also used methods of mathematical statistics for assessing the indicators of athletes’ individual performance. Thus, the sum of scored and received points was calculated, and the difference between them (positive or negative) was considered an indicator of individual performance (effectiveness). Such indicators were determined on the basis of all the performances of the participant in team matches during the season ("general index of individual performance") and on the positions of the first-third numbers ("index of individual performance at the position of the first / second / third number"). It should be mentioned that the first number of team was considered as the strongest participant who takes the biggest responsibility on the general team result. At the same time, the third number was considered as less effective member of team.

There were analyzed matches of Ukrainian team during the season 2016-2017, including The Olympics, world and European championships, World Cup. We also analyzed matches of three teams which were the leaders ow world ranking during the season 2016-2017, particularly national teams of People's Republic of China, Korea and Republic of Estonia.

All stages of research were held due to the financial support of Lviv State University of Physical Culture.

Results

In the course of the research, the sequence of athletes’ performance in team competitions and their effectiveness depending on the serial number of the performance was analyzed. For this purpose, the protocols of the competition for the 2016-2017 season were used, in particular, the performances at the three major annual macro cycles (The Olympics 2016 in Rio de Janeiro, the World Cup in Barcelona, the World Championship in Leipzig). Those results were used for assessment of athletes’ performance of national teams such as Estonia, China, Korea. For assessment of Ukrainian team performance there were analyzed the results of all competitions during the 2016-2017 season.

Table 1. The general performance of Ukrainian epee fencing team during the 2016-2017 season

<table>
<thead>
<tr>
<th>Athlete</th>
<th>Amount of bouts at different positions</th>
<th>Amount of bouts in comparison with entire amount of team bouts, %</th>
<th>General index of individual performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kryuyska O.</td>
<td>76.2 4.7 5.24</td>
<td>29.3</td>
<td>+15</td>
</tr>
<tr>
<td>Panteleyeva K.</td>
<td>8.3 52.6 2.62</td>
<td>21.9</td>
<td>+12</td>
</tr>
<tr>
<td>Bezura F.</td>
<td>13.1 25.75 38</td>
<td>24.8</td>
<td>+7</td>
</tr>
<tr>
<td>Pochkalova A.</td>
<td>2.37 16.95 54.14</td>
<td>24</td>
<td>+12</td>
</tr>
</tbody>
</table>
The next step of our research was performances analysis of three teams-leaders of world ranking – Estonia, China and Korea.

**Table 2.** The general performance of Estonian epee fencing team during the 2016-2017 season

<table>
<thead>
<tr>
<th>Athlete</th>
<th>Amount of bouts at different positions</th>
<th>Amount of bouts in comparison with entire amount of team bouts, %</th>
<th>General index of individual performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1, %</td>
<td>2, %</td>
<td>3, %</td>
</tr>
<tr>
<td>Embrich Irina</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beljiaeva Julia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kuusk Kristina</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Kirpu Erika</td>
<td></td>
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</tbody>
</table>

Analysis of indexes of individual performance of athletes in team competitions at different positions allowed to determine the optimal sequence of athletes: the first number – Embrich Irina, the second – Beljiaeva Julia, the third number – Kuusk Kristina, the fourth number – Kirpu Erika.

Analysis of the generalized indexes of the individual performance of China team in the period of three competitions (XXI Olympiad Games in Rio de Janeiro, World Cup Cup in Barcelona, World Championship in Leipzig in the 2016-2017 season) gave the opportunity to determine the following.

**Table 3.** The general performance of China epee fencing team during the 2016-2017 season

<table>
<thead>
<tr>
<th>Athlete</th>
<th>Amount of bouts at different positions</th>
<th>Amount of bouts in comparison with entire amount of team bouts, %</th>
<th>General index of individual performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1, %</td>
<td>2, %</td>
<td>3, %</td>
</tr>
<tr>
<td>Zhu Mingue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sun Yiwen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zhong Peiyin</td>
<td></td>
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<tr>
<td>Xiang Yixuan</td>
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<tr>
<td>Sun Yulie</td>
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<tr>
<td>Xu Chengzi</td>
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<td></td>
<td></td>
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<tr>
<td>Hao Jialu</td>
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</tbody>
</table>

Despite the fact that team members took part in different amount of bouts, the analysis of the individual performance allowed to determine the optimal sequence of participants: the first number – Sun Yiwen, the second number – Xiang Yixuan, the third number – Zhu Mingye.

**Table 4.** The general performance of Korea epee fencing team during the 2016-2017 season

<table>
<thead>
<tr>
<th>Athlete</th>
<th>Amount of bouts at different positions</th>
<th>Amount of bouts in comparison with entire amount of team bouts, %</th>
<th>General index of individual performance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1, %</td>
<td>2, %</td>
<td>3, %</td>
</tr>
<tr>
<td>Kang Young Mi</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choi Injeong</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yu Junsil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hsien Kaylin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shin A Lam</td>
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<td></td>
<td></td>
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<tr>
<td>Choi Eunsook</td>
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<td></td>
</tr>
<tr>
<td>Song Sera</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Kong Man Wai</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Choi Ka Mang</td>
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</tbody>
</table>
Discussions

It should be noted that in team fencing competitions three athletes take part in the matches and one athlete is involved as a reserve and enters a match if necessary (injury, fear, inability to compete with a particular opponent, tactical task of coach etc.).

The performance of Ukrainian national team

Four sportsmen were involved in the Olympics 2016 in Rio de Janeiro: Kryvytska O., Panteleyeva K., Shemyakina Y., Pochkalova A. At the same time, during the 2016-2017 season, the Ukrainian team was represented by in the following composition: Kryvytska O., Bezhura F., Panteleyeva K., Pochkalova A.

We would like to mention that Shemyakina Y. participated only in the Olympics 2016 in Rio de Janeiro. She took part in nine matches (three victories, six defeats) and she scored 48 points. Index of her individual performance was "+7". It should be noted that the athlete fences only at the position of the first number.

At the position of the first number in the team during the other competitions in the 2016-2017 season, the greatest amount of battles (64) was conducted by Kryvytska O., which is 76.2% of all the team's competitive activities during this period. The athlete scored 284 points, 32 wins (50%), five defeats (29.6%) and three draws (20.4%). Index of her individual performance was "+19", which is a high indicator of competitive activity among other athletes in the team.

Kryvytska O. spent only four matches, which is the smallest amount at this position in comparison with other athletes – 4.7%. She got three wins (75%) and one defeat (25%). As a result, the index of her individual performance was also the highest ("+15")

The results of the participation at the position of the second number were as follows. Panteleyeva K. hold 45 battles, representing 52.6% of the total number of matches of the team members at this position. The athlete scored 178 points, 19 victories (42.2%), 20 defeats (44.4%), and six draws (13.4%). The index of her individual performance was "+19", which is a high indicator of competitive activity.

Bezhura F. and Pochkalova A. – "+12".

Panteleyeva K. hold four matches less than the previous athlete (7 matches), which was 8.33% of the entire team participation at the position of the first number. The athlete received the same number of victories and defeats – three (42.8%) and one match finished in a draw (14.4%). In seven battles the athlete scored 40 points, and index of her individual performance was "-2".

It should be mentioned that only one athlete Kryvytska O. was successful at the position of the first number. The amount of her matches was much bigger than other athletes. The index of her individual performance was also the highest ("+15")

Bezhura F. spent twice the number of matches on the position of the second number than the previous athlete, - 22 battles (25.7%), among them seven wins (31.8%), nine defeats (40.9%), and six draws (17.3%). The index of her individual performance was "-4".

Pochkalova A. at the position of the second number took part in 54 matches, scored 54 points, seven wins (46.6%), five defeats (33.3%) and three draws (20.1%). The index of her individual performance was "+11".

Kryvytska O. spent only four matches, which is the smallest amount at this position in comparison with other athletes – 4.7%. She got three wins (75%) and one defeat (25%). As a result, the index of her individual performance was "+4".

To sum up, it should be noted that two athletes – Panteleyeva K. and Pochkalova A. were the most successful at the position of the second number.

At the position of the third number all the athletes tried to achieve success. The greatest number of matches was held by Pochkalova A. (41), which is 54.14% of the participation of all other athletes in the team at the position of the third number. In general, she got 23 victories (56%), nine defeats (22%) and nine draws (22%). She also scored 200 points, and the index of her individual performance was "+5". At the same time, the best indicator of individual performance at this position was demonstrated by Bezura F. ("+10"). In 29 fights (38%), the athlete scored 126 points. At the same time, she received 13 wins (44.8%), eight defeats (27.6%) and eight matches ended with a draw (27.6%).

Kryvytska O. and Panteleyeva K. held the smallest number of fights at the position of the third number. The first athlete held four fights (two defeats, two draws) and scored 10 points, the second – two fights (two defeats) and five points. Indexes of individual performance for both athletes were low ("-4" for Kryvytska O. and "-5" for Panteleyeva K.). However, we believe that making the final conclusions based on a relatively small number of athletes matches at this position is incorrect. Thus, at the position of the third issue we would like to mention two of the best athletes - Bezura F. and Pochkalova A.

At the same time, the general analysis of Ukrainian team performance during the season 2016-2017 at three positions made it possible to determine the general index of individual performance. The general indexes of athletes’ individual performance (the difference between scored and received points in all matches) by the results of the 2016-2017 season were as follows: Kryvytska O. – "+15", Panteleyeva K. – "+12", Bezura F. – "+7", Pochkalova A. –"+12".

However, at the positions of different numbers athletes demonstrated other results. Thus, analysis of the indexes of their individual performance at different positions allowed to determine the optimal sequence of participants: at the position of the first number – Kryvytska O., at the position of the second number – Panteleyeva K., at the position of the third number – Bezura F. and Pochkalova A.

The performance of Estonian national team
Four sportsmen were involved in the competition in the national team of Estonia: Embrich Irina, Beljiaeva Julia, Kuusk Kristina, Kirpu Erika. The largest number of bouts at the position of the first number held Embrich Irina – 30 fights, which was 93.7% of all fights carried out by the team. It should be noted that the athlete acted exclusively under this number. In addition to it, Beljiaeva Julia also fenced at the position of the first number – 2 fights (6.3%). It was found that in 30 battles Embrich Irina got 13 wins (43.3%), 11 defeats (36.7%) and 6 draws (10%). In general, she scored 138 points, and the index of her individual performance was "+9".

Beljiaeva Julia got one victory and one defeat. In this case, six points were inflicted, and the index of her individual performance was "+3". However, we are certain that it is incorrect to estimate the rate of her individual performance on the results of only two matches held at the first position. Other athletes (Kuusk Kristina and Kirpu Erika) did not play at the position of the first number.

At the position of the second number the largest number of bouts were held by Beljiaeva Julia (21), which is 70% of the total number of matches for this period. The athlete scored 60 points, won 13 bouts (62%), five defeats (24%), three draws (14%). The index of her individual performance was "+28". Considerably fewer bouts were held by Kuusk Kristina – six (20%), including three wins, two defeats, one draw. But at the same time the athlete put 30 points, and the index of her individual performance was "+2".

Kirpu Erika at this position had only three matches, in which she defeated. In general, she scored 10 points, and the index of her individual performance was "-10". Summing up the athletes’ results at the position of the second number, we might note the only one athlete – Beljiaeva Julia. Her participation is much bigger than other athletes, and index of her individual performance was "+25".

At the position of the third number in Estonia national team there were only two athletes – Kuusk Kristina and Kirpu Erika. Kirpu Erika held eight battles, accounting for 20% of the total number of matches held by the team. In addition, she won and lost in three bouts, scored 27 points. The index of her individual performance was "+1". During this competition period Kirpu Erika was involved as the reserve fourth number, but despite this, at the position of the third number her performance was quite high.

At the same time, at the position of the third number Kuusk Kristina in 24 matches got 12 wins (50%), eight draws (33.4%) and three defeats (16.6%). In general, she scored 79 points, and the index of her individual performance was high – "+26". Thus, Kuusk Kristina was the best at the position of the third number.

*The performance of the national team of China*

Another team leader in epee fencing is the national team of China. Due to the high competition in the national rating, the composition of the team is constantly changing. During the competition season 2016-2017 seven athletes were involved in team: Zhu Mingue, Sun Yijie, Zhong Peiyiing, Xiang Yixuan, Sun Yulie, Xu Chengzi, Hao Jialu.

Analysis of athletes' performances at different positions indicated that the largest number of battles at the position of the first number was held by Sun Yijie – 21 battle, representing 27.3% of all the combat team. She got nine wins (42.8%), six defeats (28.6%), six draws (28.6%). At the same time the athlete scored 66 points, and the index her its individual performance was "+3".

Zhu Mingue held nine fights (27.3%) and three fights were held by Sun Yijie. Zhu Mingue won three bouts (33.3%), four defeats (44.4%) and two bouts ended in a draw (23%). At the same time, the index of her individual performance was "-3", and in general, 54 points were scored. Sun Yijie won two battles (66.6%), got one defeat (24.4%). The index of her individual performance was equal to "0". In addition, other athletes did not fence at this position.

Moreover, four athletes: Xu Chengzi, Xiang Yixuan, Zhu Mingue and Sun Yijie fought at the second position. The greatest number of battles was spent by Xu Chengzi – 11 fights (30.5%), while 64 touches were received. The index of her individual performance was "+8", despite the fact that she received only two victories. She also had five defeats and four draws. Zhu Mingue and Xiang Yixuan spent six matches. The first of them got 20 touches, three wins (50%), one defeat (16.8%) and two draws (33.2%). Sun Yijie held three battles, in which he won one victory and scored 12 touches. The index of her individual performance was "+6".

At the position of the second number we should mention Xiang Yixuan. Despite the negative index of individual performance ("-1"), she got five wins – the best result among other athletes.

At the third position all seven athletes were involved: Zhu Mingue, Sun Yijie, Zhong Peiyiing, Xiang Yixuan, Sun Yulie, Xu Chengzi, Hao Jialu. The number of matches of each athlete was small. At this position we would like to mark Zhu Mingye, who held nine fights, including five (55.5%) wins, three defeats (33.3%) and one draw (11.2%). The athlete scored 30 touches, and the index of her individual performance was "+5". Sun Yulie ("+12") had the highest individual performance score at this position, but she held only three bouts at this position and made 23 touches. The indexes of individual performance were negative for two athletes – Xu Chengzi ("-6") and Hao Jialu ("-1"). However, a small number of fights made it impossible to evaluate correctly the effectiveness of athletes at this position.

*The performance of the national team of Korea*

The last team, whose results were analyzed, was the Korean team. Characteristics of performances of its participants is similar to the characteristics of the members of the team in China. In our opinion, this is due to the fact that coaches often change the composition of athletes in order to create a supportive atmosphere of intense competition.
During the 2016-2017 season nine athletes were involved in the team competition: Kang Young Mi, Choi Injeong, Yu Junsil, Hsien Kaylin, Shin A Lam, Choi Eunsook, Song Sera, Kong Man Wai Vivien, Choi Ka Mang.

The analysis of athletes’ performances at the first position indicated that the largest number of battles was held by Shin A Lam – 22 fights, representing 64% of all battles carried out by the team. The athlete gained nine wins (41%), seven defeats (32%) and six draws (27%). She scored 89 touches, and the index of her individual performance was "+3".

At the same position Kang Young Mi held six fights (18%), including four wins (66.6%) and two defeats (24.4%). She scored 32 touches, the index of her individual performance was "+4".

The same amount of battles were performed by Choi Injeong and Kong Man Wai Vivien – three. The first one won two victories and one defeat by putting 15 touches. The index of her individual performance was "+2". As for Kong Man Wai Vivien, the index of her individual performance was the best in comparison with other athletes – "+7". In general, the participants in the event had two wins (66.6%) and one draw (24.4%) and 19 touches.

At the same time, five athletes fought at the position of the second number: Kang Young Mi, Choi Injeong, Yu Junsil, Hsien Kaylin, Choi Eunsook and Song Sera. Choi Injeong had 11 fights, with six wins (54.5%), two defeats (18%) and three draws (27.5%). The athlete put 24 touches at the position of the second number and demonstrated the best index of individual performance – "+8".

Yu Junsil and Choi Eunsook held six bouts in the second position. The first one received three defeats (50%) and three victories (50%), with 24 touches and a negative index of individual performance – "-4". The rest of those five athletes (Kang Young Mi, Hsien Kaylin, Song Sera) held three battles and received negative indexes of individual performance.

At the position of the third number all the fencers were represented, exception for Hsien Kaylin and Kong Man Wai Vivien. The largest number of bouts was held by Choi Injeong – 12 with 36 touches. In general, she won four battles (33.4%), five defeats (41.6%) and three draws (25%). As a result, the index of her individual performance was "+3".

Kang Young Mi held seven bouts at the third number position (22%). The athlete demonstrated the best index of individual performance – "+14", won six bouts (85.7%) and one draw (14.3%).

Yu Junsil, Song Sera, Choi Eunsook, Choi Ka Mang held three fights. In addition, Song Sera was the most successful, with the index of her individual performance "+5".

The analysis of the general indexes of individual performance of Korean national team athletes and those indexes at different positions did not allow to determine exactly the optimal sequence of participants. At the position of the first number the best index of individual performance was demonstrated by Kong Man Wai Vivien – "+7". In general, the participants in the event had two wins (66.6%) and one draw (24.4%) and 19 touches.

The approaches to the team composition of the taking into account the individual performance of the competitive activities of leading swordsman fencing.

Due to the results of the members’ performances analysis during the season 2016-2017 at different positions, we outlined the main approaches to the team composition that are used in different countries:

• The team composition is stable during the season, all participants play under the established sequence numbers. Partly the team of Estonia uses the approach of the formed team unchanged: Embrich Irina (93.7% of fights in first position) Beljajeva Julia (70% of fights in second position) and Kuusk Kristina (80% of fights in third position).

• The team composition is stable throughout the year, the number/position varies depending on the level of the competition, the team ranking and the composition of the opponent team. This approach is used by Ukrainian national team. In the season 2016-2017 the team included only four athletes: Kryvytska Olena, Bezhura F., Pochkalova A., Panteleyeva K. Each of the athletes was involved in three positions. Kryvytska O. as the leader of the women's team held majority of the battles (76.2%).

• The team composition is unstable, the number/position varies depending on the level of the competition, the team ranking and the composition of the opponent team. This approach is typical for the teams of China and Korea. During the season there were involved seven Chinese athletes. The participation of each athlete was from 10 to 30% of the matches at any position. The composition of the team is formed during the season, at each competition, the sequence of performances of athletes is changing. Despite this, the team remains one of the leaders in the world ranking.

A similar situation was observed in the team of Korea. Nine athletes were involved in team competitions. Shin A Lam had the largest number of bouts in the first position (64%), the participation of other athletes is small, from 3% to 37% in each position.

• The team composition changes in the positions of the second and third numbers depending on the level of competition, team rating and composition of the rival team, but the position of the first number is unchanged. This approach is used by the Estonian national team. During the 2016-2017 season, Embrich Irina was almost stable at the position of the first number (93.7% of the battles).
• The team structure is stable during the season at the first and second numbers, the third and fourth numbers vary with each other depending on the level of the competition, the team ranking and the composition of the opponent's team. This approach is typical for teams that show a relatively stable result during most competitions in the season. Depending on the situation and the participation of athletes, the last numbers are replaced.

Conclusions
1. The specific of team competitions in epee fencing require the definition of a rational tactical scheme, that is the sequence of performances of athletes during a team match. The basis for such a sequence should be indexes of athletes’ individual performance at a certain position during the fights with different opponent teams.
2. The optimal sequence of athletes’ performances in team competitions should be formed on the basis of indexes of individual performance of athletes at different positions:
   • the national team of Ukraine: on the position of the first number – Kryvytska O., on the position of the second number – Panteleyeva K., at the position of the third number – Bezhura F. and Pochkalova A.;
   • the national team of Estonia: at the position of the first number – Embrich Irina, at the position of the second number – Beljiaeva Julia, at the position of the third number – Kuusk Kristin;
   • the national team of China: at the position of the first number Sun Yiwen, at the position of the second number – Xiang Yixuan, at the position of the third number – Zhu Mingye;
   • the national team of Korea: at the position of the first number – Kong Man Wai Vivien, at the position of the second number – Choi Injeong and Choi Eunsook, at the position of the third number – Kang Young Mi.
3. At the present stage of development of epee fencing the following approaches are used to form a team:
   • the team composition is stable during the season; all participants play under the established sequence numbers;
   • the team composition is stable throughout the year, the number/position varies depending on the level of the competition, the team ranking and the composition of the opponent team;
   • the team composition is unstable, the number/position varies depending on the level of the competition, the team ranking and the composition of the opponent team;
   • the team composition changes in the positions of the second and third numbers depending on the level of competition, team rating and composition of the rival team, but the position of the first number is unchanged;
   • the team structure is stable during the season at the first and second numbers, the third and fourth numbers vary with each other depending on the level of the competition, the team ranking and the composition of the opponent's team.

References


