ТАКТИЧНА ПІДГОТОВКА СПОРТСМЕНІВ ВІКОМ ВІД 15 ДО 17 РОКІВ У СУЧАСНИХ ОЛІМПІЙСЬКИХ СПОРТИВНИХ ЄДИНОБОРСТВАХ: ПРАКТИЧНИЙ ДОСВІД ТА АКТУАЛЬНІ НАПРЯМИ

TACTICAL TRAINING FOR ATHLETES AGED FROM 15 TO 17 YEARS OLD IN MODERN OLYMPIC COMBAT SPORTS: PRACTICAL EXPERIENCE AND CURRENT TRENDS

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Summary

The present work studied specifics of tactical training as an important side of training process in modern Olympic combat sports. In most scientific papers and official documents, the views on tactical training are contradictory and do not reflect all current trends of the development of Olympic combat sports.

The aim of the research was to analyze practical experience and current trends of tactical training in Olympic combat sports for athletes at the age from 15 to 17 years old.

Material and Methods. We recruited 40 experts in Olympic fencing, boxing, wrestling, judo, taekwondo and karate. They were asked to fill out a form (questionnaire), which included 15 questions on athletes' tactical training such as directions, means and methods, control of tactical preparedness, components of tactical knowledge. In order to confirm the accuracy of the answers, the concordance coefficient (W) was determined in each group of experts. To compare the answers in different expert groups we also used the average rank.

Results. It was found that a lot of issues of tactical training were estimated as the most significant in most combat sports. The same was typical for he least significant issues. The agreement of experts' opinions in different sports within one question was average, strong, weak ($p<0.05$) or unreliable ($p>0.05$). In some questions expert's answers were similar, but in other questions they were different inside groups and between them. Average ($0.69>W\geq0.5$, $p<0.05$) and strong concordance ($W\geq0.7$, $p<0.05$) was found in such groups of experts: fencing – about factors that influence on strategy of preparing to competitions and visual methods of tactical training; wrestling – about visual and practical methods; boxing – about factors that influence on strategy of preparing to competitions and practical methods; judo – about visual methods and control tests. In taekwondo WTF and karate WKF most answers had strong concordance ($W\geq0.7$, $p<0.05$).

Conclusions. It is recommended to use the common algorithm for improving athletes' tactical preparedness with the possibility of its modification in particular kinds of Olympic combat sports. This algorithm consists of eight steps and is aimed to expand competitive practice, to prepare for competitions of different levels (national, international, individual, team) and in different age categories.

Анотація

У роботі висвітлено специфіку тактичної підготовки як однієї з найбільш значущих сторін тренувального процесу в сучасних олімпійських спортивних єдиноборствах. У більшості наукових праць та офіційних документів погляди на тактичну підготовку є суперечливими та не відображають усіх тенденцій розвитку сучасних олімпійських спортивних єдиноборств.

Метою дослідження був аналіз практичного досвіду та актуальних напрямів тактичної підготовки спортсменів віком від 15 до 17 років у сучасних олімпійських спортивних єдиноборствах.

Матеріал та методи. У дослідженні взяли участь 40 фахівців з фехтування, боксу, боротьби, дзюдо, тхеквондо та карате. Їм було запропоновано заповнити бланк опитування

(анкету), що включав 15 запитань щодо тактичної підготовки спортсменів. Серед них: напрями, засоби та методи, контроль тактичної підготовленості, компоненти тактичних знань. Для визначення ступеню узгодженості думок у кожній групі експертів обчислювали коефіцієнт конкордації Кендала (W). Для порівняння відповідей у різних групах експертів також використано середнє арифметичне отриманих рангів.

Результати. Встановлено, що більшість положень тактичної підготовки були оцінені як найбільш значущі в більшості груп експертів. Те саме характерно для найменш значущих положень. Ступінь узгодженості думок експертів з різних видів спорту в межах одного запитання міг бути середнім, сильним, слабким ($p<0,05$) або недостовірним ($p>0,05$). Відповіді експертів на деякі запитання були схожими, проте в інших запитаннях їхні думки відрізнялися всередині груп та між ними. Середній ($0,69>W\geq0,5$, $p<0,05$) та сильні ступені узгодженості думок експертів ($W\geq0,7$, $p<0,05$) виявлені у межах таких запитань: у фехтуванні – про чинники, які визначають стратегію підготовки до змагань, та наочні методи тактичної підготовки; у боротьбі – про наочні та практичні методи; у боксі – про чинники, які визначають стратегію підготовки до змагань, та практичні методи; у дзюдо – про наочні методи та засоби контролю. У тхеквондо WTF та карате WKF більшість відповідей мали високий ступінь узгодженості ($W\geq0.7$, $p<0.05$).

Висновки. Рекомендовано використовувати загальний алгоритм підвищення тактичної підготовленості спортсменів з можливістю його модифікації в окремих видах олімпійських спортивних єдиноборств. Цей алгоритм складається з восьми кроків та спрямований на розширення змагальної практики, підготовку до змагань різного рівня (національних, міжнародних, особистих, командних) та у різних вікових категоріях.

Introduction

The development of combat sports at the present stage could be characterized by intensification of competitive activity, increase of rivalry in the international competition and, accordingly, the search for new ways of improving different sides of athletes' mastership (Avelar-Rosa et al. 2015; Bober et al. 2017; Boroushak et al. 2018).

The specificity of competitive activity in combat sports influences the requirements for the implementation of different aspects of athletes' training. The current trends in such Olympic combat sports as fencing, boxing, wrestling, judo, taekwondo, karate include various changes in competition rules, intensification of bouts in preliminary matches and finals, the use of different technical and tactical actions which are based on individual psychological and physiological parameters of top athletes. Accordingly, in any situation of the bout athletes put their effort to analyze quickly all factors which may influence on his or her effectiveness, estimate all the risks, make a correct decision and use a proper technical and tactical action (Borysiuk, Waskiewicz 2008; Chernozub et al. 2018).

Practical experience illustrates that athletes who are best prepared physically do not always win top-level competitions such as World Championships or the Olympic Games. As a rule, the winners are those sportsmen who know how to act quickly, change tactics depending on the circumstances, and make non-standard, creative decisions. That is why, from an early age, much attention in the training process should be paid to the formation of athletes' ability to adequately assess the situation and choose the right solution of competitive tasks from among all the alternatives. Numerous publications of scientists confirm this fact (Cynarski 2006; Johnson 2017; Korobeynikov et al. 2019).

Analysis of recent scientific works illustrates that during the last five-ten years researches in combat sports were focused on issues of technical and tactical training, physical skills and their indicators, psychological aspects of training and formation of special knowledge (Kruszewski et al. 2011; Tabben et al. 2014; Szajna, Bak, Kulasa 2019). Moreover, a great number of researchers are convinced that the main reason for the low and unstable results of competition performances is the insufficient level

of sportsmen's technical and tactical actions (Tarrago et al. 2016; Ryzhkova 2016; Korobeynikov et al. 2019).

From this point of view, the main accent during the training process in combat sports should be made on improving technical and tactical preparedness, while other components of athletes' mastership are apperceived as additional elements (Ryzhkova 2014; Boroushak et al. 2018).

Analysis of scientific works indicates that such an approach is typical for the majority of combat sports represented in the Olympic program. In most of the papers, tactical training is considered mainly in combination with technical one (Guittet, Palmai 2010; Antonov et al. 2014; Busol 2014) and the main focus is made on the development of innovative tools and methods of technical and tactical training (Harmenberg 2007; Johnson 2016; Kriventsova et al. 2017).

Moreover, technical preparedness is presented as the main part of athletes' skills, while tactical one is almost neglected. This fact could be confirmed by the content of the official documents (programs for the sports clubs, curriculums at physical education colleges) and the scientific literature (Guittet, Palmai 2010; Antonov et al. 2014; Busol 2014).

We assume that this situation might be connected with different understanding of the term tactics. In scientific papers there is a lot of definitions of this word. However, the main explanations were given by Platonov (2015). He explains tactics as a theory and practice of organizing and conducting specialized activities to achieve goals in specific conflict situations on the basis of principles, schemes and norms of behavior (2015).

At the same time, in most works on combat sports during the last ten years, term tactics means athlete's ability to use proper technical action in the most adequate situation in the bout (Ryzhkova 2014, 2016). From our point of view, this definition does not allow to create a holistic view of all the features of tactics. Moreover, it enables to make conclusions about its transformation due to the current trends: complication of Olympic qualification system, changes of international and national calendars, competition rules, selection systems in national teams. On the contrary, explanation given by Tumanyan (2006) is more appropriate. He insists that tactics in combat sports is a kind of activity implemented on four levels: 1 – in special situation, 2 – during the whole bout, 3 – during the tournament and its stages, 4 – in the competition system. The principle position of the author is that at each level tactics is inseparable from the strategy. Both categories are types of activities of the coach and the athlete (Tumanyan, 2006). We are ensured that we are convinced that the fullest possible understanding of the essence of tactics is the basis for the introduction of effective tactical training for athletes at any age.

Fortunately, the issues of tactical training in combat sports are represented in a large number of scientific and methodological works. During the last 10-15 years the authors have been most focused on the following areas: the activity of athletes in different conflict situations (Tabben et al. 2014; Szajna, Bak, Kulasa 2019); tactical training as a basis for modeling the motor actions of coaches and sportsmen (Bober et al. 2017; Chen et al. 2017; Boroushak et al. 2018), individualization of tactical training of experienced athletes and formation of special style (Tarrago 2016 et al.; Korobeynikov et al. 2019); formation and development of tactical knowledge, skills and abilities in the system of long-term training (Cynarski 2006; Borysiuk & Waskiewicz 2008; Ryzhkova 2014; Szajna, Bak, Kulasa 2019); structure and content of technical and tactical actions of athletes of different age and qualification (Tamura et al. 2012;

Johnson 2017); planning of technical and tactical improvement in the annual macrocycle (Johnson 2016).

However, the researchers' attention is mostly aimed at analysis of technical and tactical arsenal, revealing of the most effective actions that allow to compete successfully against different opponents, and developing innovative tools and methods of such training (Shevchuk 2009; Busol 2014; Tupeev, Bojko 2015; Korobeynikov et al. 2019). Instead, the formation of tactical knowledge and tactical thinking, which are the basis of the tactical mastership of athletes, are considered fragmentary. As rule, the majority of such researches is devoted only to the use of information which allows the athletes to perform quickly and efficiently in different situations of competition bouts (Cynarski 2006; Shevchuk 2009; Avelar-Rosa et al. 2015; Johnson 2016).

In our opinion, the most successful solution of this problem have been represented in works by Ryzhkova (2014) and Kryventsova et al. (2017) in fencing. Ryzhkova (2014) has implemented a system of formation of tactical thinking for fencers of different ages on the basis of assimilation of special information. However, the main approaches of this system corresponded only to the specifics of fencing and didn't provide the extrapolation to other kinds of Olympic combat sports.

At the same time, the research by Kryventsova et al. (2017) was devoted to the formation of tactical skills of students. In both works, the main focus was made on the use of specific information as a basis for a proper decision-making during the bout. To our mind, the content and the amount of these blocks should be expanded as well as the range of approaches to the formation of tactical preparedness should be substantiated properly.

The aim of the research was to analyze practical experience and current trends of tactical training in Olympic combat sports for athletes at the age from 15 to 17 years old.

Material and Methods

Our research included few stages. Theoretical analysis and generalization were used during work with literary sources on the problems of research and identification of the main problems of tactical training in combat sports represented in the Olympic program. We analyzed the common and distinctive features of tactical training in fencing, wrestling, boxing, judo, taekwondo, karate.

The next step of our research was to develop a questionnaire, which included all controversial questions. The questionnaire included the following five sections: 1) Tactical training directions (5 components), 2) Factors that influence on the training strategy for competitions (5 components), 3) Theoretical material within the tactical training (9 components in each of 3 questions: basics of tactics in sports, competition performance, theory and methodology of tactical training), 4) Methods and means of tactical training (6 components in 2 questions about verbal and visual methods, and 10 components in question about practical methods of tactical training), and 5) Control in tactical training (9 components).

The next step included expert's assessment (February – August 2019). There were 6 expert groups recruited. The total number of 40 experts included 8 in fencing, 8 in wrestling (freestyle and Greco-Roman), 6 in amateur (Olympic) boxing, 6 in judo, 6 in taekwondo WTF, and 6 in karate WKF. The experts were well educated (ten among them held Ph.D. diplomas) and experienced 4 coaches of the national teams (three of Ukrainian national teams, one of USA national teams), 2 world category referees, and 8 athletes–national team's members. On average, experts had almost 15 years of experience in training Olympic combat sports athletes of different ages. Each expert was asked to fill out a form (questionnaire), which included 15 questions.

The questionnaires were administered to the experts in two different ways. 25 questionnaires were administered in a paper form and filled under the supervision of the researcher. The other 15 questionnaires were distributed by e-mail. Each expert was asked to rank the components of tactical training in each section. The number of components in sections ranged from 5 to 10. Rank 1 was always considered the most significant. The highest rank indicated the least important component (eg. in section with 9 components, rank 9 was the least important). In most questions, experts could add their components and to rank them, but none of them did.

In order to confirm the accuracy of the answers, the concordance coefficient was determined in each group of experts (W). The statistical validity of the concordance coefficient was verified using the $\chi 2$ criterion (Pearson's chi-squared test). According to Shiyan, Edinak, Petryshyn (2012), the critical value of the concordance coefficient was defined as W=0.5. Therefore, at $0.69>W\geq0.5$, the agreement of experts' opinions was evaluated as average, at $W\geq0.7$ as high (strong), and at $W<0.5$ as low (weak).

To compare the answers in different expert groups we used the average rank (arithmetic mean of all ranks assigned to a particular position of tactical training provisions in every expert group).

Results

Analysis of experts' answers indicated that a lot of issues of tactical training were estimated as the most significant in most combat sports. The same was typical for he least significant issues. At the same time, within some questions the degree of agreement of experts' opinions in different sports within one question could be average, strong, weak ($p<0.05$) or unreliable ($p>0.05$). As we can see from Table 1, there are various points of view on tactical training of athletes in combat sports. In taekwondo and karate they are mostly similar, but in other sports sometimes they are contradictive.

Table 1. Experts' opinions on the importance of the components of tactical training in Olympic combat sports (n=40, $p<0.05$)

№	Components of tactical training	Average rank form groups of experts					
		1	2	3	4	5	6
1	The study of the essence and basics of sports tactics	2.75	2.62	2.67	3.17	3.08	3.00
2	The study of the basic elements, techniques, options of tactical actions	2.37	2.62	1.83	3.33	2.00	3.17
3	The study of information necessary for practical implementation of tactical preparedness (information about opponents, competition)	2.00	3.25	3.33	3.00	1.75	2.67
4	Practical implementation of tactical preparedness (the use of tactical actions during competition)	3.37	2.87	3.33	3.17	3.75	3.25
5	Improvement of tactical thinking (how to trick an opponent and make him make a mistake)	4.50	3.62	3.83	2.33	4.42	2.92
Concordance coefficient		0.38	0.08*	0.24*	0.06*	0.55	0.02*

Groups of experts: 1 – fencing (n=8); 2 – wrestling (n=8); 3 – boxing (n=6); 4 – judo (n=6); 5 – taekwondo (n=6); 6 – karate (n=6); * − unreliable concordance coefficient ($p>0.05$).

It was revealed that the priority directions of tactical training are: in fencing, taekwondo WTF, karate WKF – the study of information necessary for practical implementation of tactical preparedness (average ranks – 1.75-2.67), in wrestling, boxing and judo – the study of the basic elements, techniques, options of tactical actions (average ranks – 1.83-2.62). At the same time, the study of the essence and basics of sports tactics was recognized as equal in wrestling, although according to the logic of planning training process, it should be the most significant in the previous stages of athletes' development. When choosing the least relevant issues, experts were mostly unanimous. In all groups, except karate WKF, the last place in the ranking of issues was the improvement of tactical thinking (average rank – 3.17-4.50). At the same time, experts in judo believe that the study of the essence and basic theoretical and methodological issues of sports tactics and the study of information necessary for the practical implementation of tactical training deserve less attention during the training process. On the other hand, in karate WKF the practical implementation of tactical training was recognized as the least significant (average rank – 3.25).

Among the factors influencing the strategy of preparation for competitions, the leader in all expert groups, except karate WKF, was the level of technical and tactical training of the athlete or team with average ranks 1.62-2.33 (Table 2).

Table 2. Experts' opinions on the importance of components influencing the training strategy for competitions (n=40, $p<0.05$)

№	Components of tactical training	Average rank form groups of experts					
		1	2	3	4	5	6
1	The level of technical and tactical skills of athletes (teams)	1.87	1.62	1.67	2.33	1.50	1.75
2	Functional preparedness and psychological status of athletes (teams)	1.87	2.37	1.67	2.67	2.17	1.67
3	The level of competition and their formula	3.25	3.25	3.67	2.67	3.33	3.92
4	The level of opponents' preparedness	3.12	3.50	3.67	3.50	3.67	4.25
5	Knowledge about the opponents' preparedness	4.87	4.25	4.33	3.83	4.33	3.42
Concordance coefficient		0.61	0.42	0.62	0.16*	0.53	0.6

Groups of experts: 1 – fencing (n=8); 2 – wrestling (n=8); 3 – boxing (n=6); 4 – judo (n=6); 5 – taekwondo (n=6); 6 – karate (n=6); * − unreliable concordance coefficient ($p>0.05$).

In fencing and boxing, experts also recommend paying attention to the functional fitness and psychological state of the athlete or team. This factor is the most important for the formation of the strategy of preparation for karate WKF competitions (average rank – 1.67). The least relevant factor in fencing, wrestling, boxing and taekwondo WTF is the possession of information on the level of preparedness of opponents (average ranks – 4.33-4.78), in judo – the level of competitions and their formula (average rank – 3.67), in karate WKF – the level of training of opponents (average rank – 4.25).

To improve tactical knowledge in the section “Basics of Tactics in Sports” (Table 3) experts recommend to study more carefully the material on the following topics: in fencing, wrestling, judo and taekwondo WTF – “The varieties and content of tactical techniques and actions” (average ranks – 2.25-3.33), in boxing – “Competition strategy and tactics” (average rank – 2.50), in karate WKF – “Forms of tactics” (average rank – 3.17). The latter topic was considered the most important in judo.

Table 3. Experts’ opinions on the importance of components in information block “Basics of Tactics in Sports” (n=40, p<0.05)

№	Components of tactical training	Average rank form groups of experts					
		1	2	3	4	5	6
1	“The importance of tactics in sports”	6.00	4.37	4.00	5.33	7.50	6.17
2	“The interrelation of tactical skills with other parties of preparedness”	4.87	4.00	4.33	4.50	4.33	6.50
3	“The varieties and content of tactical techniques and actions”	2.37	2.25	4.50	4.17	2.50	3.58
4	“Competition strategy and tactics”	5.25	6.00	2.50	3.83	3.17	6.83
5	“Forms of tactics”	4.62	5.62	4.67	5.17	3.33	3.17
6	“Directions of tactical training”	5.12	6.00	4.16	5.67	4.33	3.33
7	“The interrelation of the athlete's specialized feelings with tactics”	5.62	6.37	6.00	4.75	6.17	6.58
8	“Tactical plan. tactical scheme”	4.75	3.75	6.33	4.83	5.83	4.17
9	“Current trends in tactics of the chosen sport”	6.37	6.62	8.50	6.75	7.83	4.67
Concordance coefficient		0.18	0.29	0.40	0.10	0.50	0.31*

Groups of experts: 1 – fencing (n=8); 2 – wrestling (n=8); 3 – boxing (n=6); 4 – judo (n=6); 5 – taekwondo (n=6); 6 – karate (n=6); * − unreliable concordance coefficient (p>0.05).

In contrast, the topic “Current trends in tactics of the chosen sport” is recognized as the least relevant in fencing, wrestling, boxing and taekwondo WTF (average ranks – 6.37-7.83). In judo, this was the theme: “The importance of tactics in sports” (average rank – 6.67), which, in our opinion, is logical, because athletes have to study this information at the previous stages of development. In karate WKF, the least attention should be paid to the study of the topic “Competition strategy and tactics” (average rank – 6.83).

In information block “Competition performance” the most relevant topic is “Competition rules” with average ranks – 1.00-3.50 (Table 4).

Table 4. Experts' opinions on the importance of components in information block "Competition performance" (n=40, $p<0.05$)

№	Components of tactical training	Average rank form groups of experts					
		1	2	3	4	5	6
1	"Competition rules"	1.87	2.00	4.67	3.67	1.00	2.00
2	"International competition system"	6.25	5.375	3.05	4.25	3.08	3.17
3	"National competition system"	6.00	4.00	4.33	4.33	3.00	3.83
4	"Duties of judges and refereeing of competitions"	5.37	5.00	3.67	5.67	4.75	5.67
5	"Organization of competitions"	6.25	3.875	5.17	4.83	5.75	6.33
6	"Competition terminology"	5.00	6.875	5.17	5.50	5.67	4.83
7	"Requirements for equipment and inventory"	3.87	6.50	6.67	5.92	6.67	5.33
8	"Participation of national and foreign athletes (teams) in competitions of different levels"	4.75	7.00	6.17	5.83	7.50	6.83
9	"Individual styles of competition performance"	5.62	4.375	5.67	5.00	7.58	7.00
Concordance coefficient		0.27	0.36	0.15*	0.08*	0.68	0.39

Groups of experts: 1 – fencing (n=8); 2 – wrestling (n=8); 3 – boxing (n=6); 4 – judo (n=6); 5 – taekwondo (n=6); 6 – karate (n=6); * − unreliable concordance coefficient ($p>0.05$).

During the selection of the least important topic, the opinions of experts were different: in taekwondo WTF and karate WKF – "Individual styles of competition" (average ranks – 7.00-7.58), in fencing – "Organization of competitions" (average rank – 6.25), in wrestling "Participation of national and foreign athletes (teams) in competitions of different levels" (average rank – 7.00), in boxing – "Requirements for equipment and inventory" (average rank – 6.67), in judo – "Duties of judges and refereeing of competitions" (average rank – 6.50).

In information block "Theory and Methodology of Tactical Training" the most popular in wrestling, boxing, taekwondo WTF and karate WKF is the topic "Methods and tools of tactical training of athletes", average ranks – 1.83-3.12 (Table 5).

Table 5. Experts' opinions on the importance of components in information block "Theory and Methodology of Tactical Training" (n=40, p<0.05)

№	Components of tactical training	Average rank form groups of experts					
		1	2	3	4	5	6
1	"Basics of tactical training in sports"	2.87	4.12	4.83	6.33	6.33	3.33
2	"Individual training plan"	4.62	3.87	4.17	4.17	6.67	4.17
3	"Methods and means of tactical training"	5.81	3.12	1.83	5.33	1.83	2.67
4	"Control of tactical skills"	6.00	3.62	3.67	5.83	4.50	4.67
5	"Model characteristics of tactical skills of elite athletes"	7.06	5.00	5.17	3.33	3.33	7.33
6	"Periodization of tactical training"	5.18	5.75	6.50	5.17	5.00	4.83
7	"Planning of tactical training"	4.44	5.87	5.33	5.33	5.67	4.83
8	"Formation of a tactical plan and choice of a tactical scheme"	3.56	5.87	5.67	4.00	4.00	4.33
9	"Forming a team. Defining the functions of its members"	5.44	7.75	7.83	5.50	7.67	8.83
Concordance coefficient		0.23	0.29	0.39	0.12	0.44	0.49

Groups of experts: 1 – fencing (n=8); 2 – wrestling (n=8); 3 – boxing (n=6); 4 – judo (n=6); 5 – taekwondo (n=6); 6 – karate (n=6); * − unreliable concordance coefficient (p>0.05).

Instead, in fencing, the most significant is another – "Basics of tactical training in sports" (average rank – 2.87), and in judo – "Formation of a tactical plan and choice of a tactical scheme" (average rank – 3.00). The least important in wrestling, boxing, taekwondo WTF and karate WKF was the topic "Forming a team. Defining the functions of its members" (average ranks – 7.67-8.83), in fencing – "Model characteristics of tactical skills of elite athletes" (average ranks – 7.06), in judo – "Control of tactical skills" (average rank – 7.17).

Among the verbal methods, experts recommend the use of the following: in fencing, wrestling and boxing – stories and conversations with average ranks – 2.75-3.12 (Table 6), in boxing – conversation (average rank – 2.67), in judo – analysis and discussion (average rank – 2.83), in taekwondo WTF and karate WKF – explanation (average ranks – 2.00 and 1.67 respectively).

Table 6. Experts' opinions on the importance of verbal methods of tactical training (n=40, p<0.05)

№	Components of tactical training	Average rank form groups of experts					
		1	2	3	4	5	6
1	Story	2.75	3.12	4.83	4.17	2.83	4.33
2	Explanation	2.87	3.25	3.17	4.50	2.00	1.67
3	Lecture	5.125	4.00	3.33	4.50	5.67	5.00
4	Conversation	2.75	3.75	2.67	4.00	2.83	3.17
5	Analysis and discussion	3.62	3.12	3.16	1.83	3.33	3.17
6	Guidelines and Recommendations	3.87	3.75	3.83	2.00	4.33	3.67
Concordance coefficient		0.25*	0.04*	0.16	0.44	0.49	0.38

Groups of experts: 1 – fencing (n=8); 2 – wrestling (n=8); 3 – boxing (n=6); 4 – judo (n=6); 5 – taekwondo (n=6); 6 – karate (n=6); * − unreliable concordance coefficient (p>0.05).

The least relevant are the use of the following methods: in fencing, wrestling, taekwondo WTF and karate WKF – lectures (average ranks – 4.00-5.67), in boxing – stories (average rank – 4.83), in judo - instruction and recommendations (average rank – 4.83).

Experts' answers to questions about visual methods were similar in all except boxing and wrestling (Table 7). The greatest attention should be paid to the use of videos (average ranks – 1.33-2.00), in boxing – photos (average rank – 2.17), in wrestling – educational films (average rank – 2.00).

Table 7. Experts' opinions on the importance of visual methods of tactical training (n=40, p<0.05)

№	Components of tactical training	Average rank form groups of experts					
		1	2	3	4	5	6
1	Graphs and diagrams	4.75	4.87	4.33	3.67	5.75	5.17
2	Tables	5.00	4.87	4.00	4.25	4.92	4.50
3	Slides	4.00	3.62	2.83	4.42	3.92	3.00
4	Photos	3.25	3.50	2.17	3.83	3.00	4.17
5	Videos	2.00	2.12	2.33	1.75	1.67	2.00
6	Educational films	2.00	2.00	5.33	3.08	1.75	2.17
Concordance coefficient		0.53	0.45	0.45	0.29	0.84	0.49

Groups of experts: 1 – fencing (n=8); 2 – wrestling (n=8); 3 – boxing (n=6); 4 – judo (n=6); 5 – taekwondo (n=6); 6 – karate (n=6); * − unreliable concordance coefficient (p>0.05).

In fencing, both videos and educational films were selected as the most significant (average rank – 2.00). When determining the least relevant method in judo, taekwondo, WTF and karate WKF, experts pointed to graphs (average ranks – 4.87-

5.17), in wrestling – to graphs and tables (average rank – 4.87), in fencing – only on the table (average rank – 5.00).

The leader among practical methods is training with a partner – 1.00-3.25 (Table 8).

Table 8. Experts' opinions on the importance of practical methods of tactical training (n=40, p<0.05)

№	Components of tactical training	Average rank form groups of experts					
		1	2	3	4	5	6
1	Training with a partner	3.25	1.75	2.17	2.83	1.00	1.83
2	Training with an opponent	4.00	2.12	3.00	2.83	2.92	3.83
3	Training with an imaginary opponent	4.12	4.00	2.83	4.83	3.00	2.83
4	Training without a rival	4.12	4.50	5.17	6.33	4.17	5.92
5	Keeping and checking diaries	4.87	7.25	5.67	5.83	7.50	6.33
6	Referee practice	6.12	8.75	8.50	6.33	7.83	8.67
7	Use of technical devices	6.25	6.50	6.00	4.67	6.00	5.50
8	Conducting training sessions by athletes	7.12	7.75	6.83	7.17	8.50	9.00
9	Execution of intellectually-developing tasks (training games)	7.56	5.62	6.67	5.17	6.42	4.58
10	Learning tactical actions from other sports	7.56	6.75	8.17	9.00	7.67	6.50
Concordance coefficient		0.29	0.61	0.54	0.39	0.72	0.59

Groups of experts: 1 – fencing (n=8); 2 – wrestling (n=8); 3 – boxing (n=6); 4 – judo (n=6); 5 – taekwondo (n=6); 6 – karate (n=6); * − unreliable concordance coefficient (p>0.05).

However, there was no unanimity in the answers of the experts regarding the lowest priority methods. In judo, experts do not consider it appropriate to use the study of tactical actions from other sports (average rank – 8.00), in fencing, in addition to this method, they do not recommend to use intellectual tasks and games (average rank – 7.56), in wrestling and boxing – referee practice (average ranks – 8.75 and 8.33, respectively), in taekwondo WTF and karate WKF – conducting training sessions by athletes (average ranks – 8.50 and 9.00, respectively).

To control tactical preparedness in wrestling, boxing and karate WKF most effective experts recommend to use control standards – 1.17-3.00 (Table 9).

In fencing, making conclusions on tactical skills is possible according to the analysis of athletes' participation in control competitions (average rank – 3.25), and in judo and taekwondo WTF – analysis of competition performance (average ranks – 1.83 and 1.33, respectively). The attitude of specialists to additional methods of control in tactical training was different. In fencing and boxing, the refereeing of training and competition bouts is recognized as the least significant (average ranks – 6.31 and 8.33, respectively). In karate WKF, in addition to it, athletes should conduct training sessions or their parts (average rank – 7.67). In taekwondo WTF, this method is also considered uninformative (average rank – 7.50). In wrestling, experts do not see prospects in the

use of training devices to estimate tactical preparedness (average rank – 7.50), and in judo - in the use of intellectual tasks and training games (average rank – 7.17).

Table 9. Experts' opinions on the importance of means and methods of control of tactical preparedness (n=40, p<0.05)

№	Components of tactical training	Average rank form groups of experts					
		1	2	3	4	5	6
1	Analysis of competitive performance	4.18	3.75	3.50	3.00	1.33	4.33
2	Participation in competitions	3.25	3.25	6.17	1.33	2.00	3.17
3	Control standards	5.00	2.87	3.00	3.17	3.33	1.17
4	Testing (topic-specific surveys)	5.68	5.25	4.50	6.17	4.92	3.67
5	Keeping and checking athletes' diaries	5.18	5.00	4.67	6.17	5.00	6.33
6	Conducting training sessions by athletes	5.06	5.50	5.83	6.00	7.50	7.67
7	Refereeing of training and competitive bouts	6.31	6.62	8.33	6.17	7.42	7.67
8	Execution of intellectually-developing tasks (training games)	5.06	5.50	4.83	6.83	6.33	4.50
9	Use of technical devices	5.25	7.50	4.17	6.17	7.17	6.50
Concordance coefficient		0.1	0.31	0.34	0.51	0.73	0.65

Groups of experts: 1 – fencing (n=8); 2 – wrestling (n=8); 3 – boxing (n=6); 4 – judo (n=6); 5 – taekwondo (n=6); 6 – karate (n=6); * − unreliable concordance coefficient (p>0.05).

Analysis of experts' answers on the priority method of implementing tactical training showed that their opinions are different. In fencing, 25.00% of experts believe that tactical training should be combined with theoretical and technical sides. Another 25.00% are convinced that the most effective is a combination of tactical, physical, technical and theoretical parts.

In wrestling, the attitude of experts was also ambiguous: 25.00% of specialists chose theoretical training, 25.00% – all parties, another 25.00% – technical and physical training. In karate WKF and judo, the answers were similar: 33.33% of experts preferred to improve all aspects of training at the same time. Another 33.33% of experts from both groups believe that it is best to combine tactical training with technical and physical parts. The only groups with unanimity are boxing and taekwondo WTF. According to 66.67% of experts, in boxing tactical training should be implemented comprehensively with all other parties. The same opinion is held by all experts in taekwondo WTF.

The question of the recommended amount of tactical training loads in the annual macro cycle of training was also controversial. The optimal amount of time is the range from 21 to 30%. 50.00% of experts in fencing, 66.67% – in judo, 83.33% – in taekwondo WTF and karate WKF voted for this answer. In wrestling, 37.50% of experts are ensured that no more than 10% of the annual amount of time is enough

for tactical training, another 37.50% – from 11 to 20%. In boxing, 50.00% of professionals also supported the option of 11 to 20%.

Discussion

Tactical preparedness is an essential component of athlete's mastership in combat sports (Harmenberg 2007; Tamura et al. 2012; Johnson 2016, 2017). The classical structure of tactical preparedness consists of tactical knowledge (a set of ideas about sports tactics), tactical skills (ability to guess the plans of the rival, to predict different situations in the bout and to use a proper action or their combinations), tactical thinking (specific thinking aimed at solving tactical tasks) (Platonov 2015; Ryzhkova 2016; Tarrago et al. 2017). Thus, tactical preparedness in combat sports largely depends on athletes' intellectual sphere, appropriate knowledge and experience, the ability to analyze a lot of factors, to perceive and estimate every situation, to make correct decisions immediately and to act efficiently.

In scientific works on Olympic combat sports the structure and content of tactical training, its' aim and means are contradictory issues. In our opinion, it could be explained by various understanding of term tactics and its' connection with other sides of athlete's preparedness (first of all, with technical part). That is why in most papers tactical training is concerned only in combination with technical (Tamura et al. 2012; Johnson 2017). On the one hand, we agree with such an approach. On another hand, we are ensured that tactical training should be substantiated properly.

From this point of view, the most fundamental research devoted to tactical was conducted by Ryzhkova (2014, 2016). The author developed several technologies for improvement of tactical thinking, tactical skills and actions in fencing. The main idea was the following: tactical decision-making (act immediately or wait, provoke a rival or make a real action) depends on the ability to perceive and analyze information. Tactical information about the construction of bouts could be divided into two parts. The first one is an assessment of the specialized positions and movements of the blade and tactical operations which are chosen before the bout. The second one includes analysis of the opponent's actions during the bout. Based on above, author developed several technologies of tactical training for athletes at different age. Each technology included special tasks for tactical decision-making and analysis of information (Ryzhkova, 2014). In the works by Kriventsova et al. (2017) similar approach was proposed for students-beginners. However, both technologies were developed only for fencers.

In this paper we represent the main aspects of tactical training for athletes at the age from 15 to 17 years old. The choice of this age is connected with the specifics of Competition Rules in most Olympic combat sports. According to the official documents of sports clubs and federations, at this age, athletes take part in a large number of competitions during the season. Some of them are included into the national teams in age category "Cadets". Some of them even take part in elder age groups ("Juniors" and "Seniors"), and perform at World and European Championships, Youth Olympic Games and even Olympic Games.

In previous papers we discussed the issues of tactical training for elite athletes (Zadorozhna et al., 2020). We discovered that despite the fact that in modern Olympic combat sports, the coaches use various approaches, there could be used the general algorithm of tactical training for elite athletes. It consists of six steps and is aimed to prepare for the main competition of the year (the Olympic Games or World Championship). The tasks are to choose an effective strategy; to develop the most effective tactical actions against the main rivals; to train to make a correct decision

during the bout; to learn how to predict the opponent's actions (Zadorozhna et al., 2020). But as for youth sportsmen, there are some differences.

The analysis of the obtained results showed that experts' opinions were similar not only in determining the prior (most significant) issues of tactical training, but also in choosing secondary ones. The most similar answers were found among experts in taekwondo WTF and karate WKF.

It was established that in all Olympic combat sports, priority should be given to the following issues: in the section "Competitive activity" – to the topic "Competition rules", among the practical methods – training with a partner.

As for other issues, in most Olympic combat sports it is possible to use the same algorithm of tactical training, but in some cases it could be modified. The priority should be given to the following issues:

- among the directions of tactical training – to the study of information necessary for practical implementation of tactical preparedness (in fencing, taekwondo WTF, karate WKF) and the study of the basic elements, techniques, options of tactical actions (in wrestling, boxing and judo);
- among the factors influencing the strategy of preparation for competitions – to the level of technical and tactical training of the athlete or team (except for karate WKF);
- in information block "Basics of Tactics in Sports" – to the topic "The varieties and content of tactical techniques and actions" (except boxing and karate WKF);
- in information block "Theory and Methodology of Tactical Training" – to the topics "Methods and means of tactical training" (except fencing and judo);
- among verbal methods – to conversation (in fencing, wrestling, boxing) and explanation (in taekwondo WTF and karate WKF);
- among visual methods – to videos (except wrestling and boxing);
- among the means and methods of control of athletes' tactical preparedness – to control standards (in wrestling, boxing and karate WKF) and analysis of competition performance (in judo and taekwondo WTF).

Experts in fencing, judo, taekwondo WTF and karate WKF also recommend to use from 21 to 30% of the annual amount of hours for tactical training; and from 11 to 20% – in wrestling and boxing.

In brief, the algorithm of tactical training for athletes 15-17 years old in Olympic combat sports is should be the following. The aim is to expand competitive practice, to prepare for competitions of different levels (national, international, individual, team) and in different age categories.

The tasks are: to learn more about tactics, current competition rules and their recent changes; to develop own most effective tactical actions and to analyze their quality in comparison with top athletes; to improve decision-making during the bout and to learn how to predict the opponent's actions.

The developed steps of tactical training are:

1. To study the basic elements and tactical actions;
2. To learn more about competition rules;
3. To improve the knowledge of methods and means of tactical training;
4. To study information about opponents and each competition;
5. To determine the range of own most effective and reliable actions;
6. To analyze and discuss videos of top athletes, to determine the range of their most effective and reliable actions;
7. To improve tactical skills with a partner;

8. To use the obtained tactical knowledge and skills in training and competition bouts with different opponents.

In our opinion, this algorithm of tactical training might be useful for 15-17 years old athletes in all Olympic combat sports, especially, in the conditions of the COVID19 pandemic, when training process is quite complicated. At the same time, it could be more detailed depending on the types and amount of competition during the season, the level of athlete's preparedness and competition performance. On the contrary, for elite athletes the main aim this algorithm is to prepare for the main competition of the year (the Olympic Games or World Championship).

Conclusions

1. Tactical training is one of the most important components of athletes' tactical preparedness in modern Olympic combat sports. It is aimed to develop tactical knowledge and skills which are essential to defeating different opponents.

2. Despite the fact that in modern Olympic combat sports, the coaches use various approaches, there could be used the general algorithm of tactical training for athletes at the age of 15-17 years old could be used. It consists of eight steps and is aimed to prepare for various contests during the season: 1) To study the basic elements and tactical actions; 2) To learn more about competition rules; 3) To improve the knowledge of methods and means of tactical training; 4) To study information about opponents and each competition; 5) To determine the range of own most effective and reliable actions; 6) To analyze and discuss videos of top athletes, to determine the range of their most effective and reliable actions; 7) To improve tactical skills with a partner; 8) To use the obtained tactical knowledge and skills in training and competition bouts with different opponents.

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Conflict of interests

The authors declared no conflict of interests concerning this manuscript.

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