ORIGINAL ARTICLE

Special abilities and qualities of young fencers aged 10-12 as criteria for success in sports

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Abstract

Background and Study Aim: The success of young athletes depends on many personality characteristics and elements of the training system. The purpose of the study is to identify the most significant special abilities and qualities of young fencers aged 10-12 years old at the initial stage of training.

Material and Methods: Leading coaches and qualified fencers of sports clubs participated in the study (n=21). The participants were selected according to their rating among Ukrainian specialists, most of whom are representatives of fencing clubs in Kharkiv (Ukraine). A questionnaire containing questions about the main elements of general training of young fencers was used.

Results: The main indicators of a fencer's general readiness are: intellectual development (knowledge, skills, abilities); physical development (anthropometric data and psychosomatics); physical qualities; technical readiness; tactical preparedness (understanding, ability, skills). The levels of significance of the specified indicators of the young fencer's personality have been established. The most important indicators are: intellectual skills (95.23%) and skills (90.47%); development of dexterity (61.90%) and speed (42.85%); the fencer's understanding of the purpose of performing technical techniques (71.42%).

Conclusions: At the initial stages of training young fencers, it is recommended to pay attention to the special abilities and qualities of young fencers. This approach makes it possible to promote the success of young fencers in sports.

Keywords: Kharkiv, Ukraine, fencing, intellectual, technical, tactical, training, physical development, physical qualities.

Introduction

At the initial stages of training athletes, special abilities and qualities characteristic of the chosen sport become important. Therefore, their early detection allows for an optimal preparation process and contributes to the athletes' further success in sports.

In this aspect, Fernandez Ortega et al. [1] analyzed the influence of relative age, amount of training, early specialization and diversification of sports practice in sports success.

Blume et al. [2] and Bezuglov et al. [3] note the need to take into account indicators of the athlete's health and stress level, which contribute to success in competitive activities. The authors believe that these indicators should be taken into account to regulate training, change intensity, and to predict and ensure optimal performance improvement of athletes. Such approaches contribute to the success of athletes in sports activities.

The training of fencers requires constant study and adjustment of training elements. At the same time, the conditions and peculiarities of the educational and training process are taken into account. Physical and functional readiness is the basis for the formation and improvement of special motor skills. Understanding the tactics of fencing sports also plays an extremely important role.

Wazir et al. [4] note the need to take into account the anthropometry, physical capacity and motor coordination of young fencers in the process of identifying talents. Milic et al. [5] suggest using an efficiency index that takes into account reaction time, attack speed, and absolute error in fencers' actions. The Johne's study [6] examines ways of developing individual coordination abilities of fencers. The author claims that symmetrical training has a positive effect on reaction time indicators and movement time indicators. Movshovich et al. [7] analyzed the methodological foundations of the development of coordination abilities, which can contribute to increasing the accuracy of a beginner rapier's strike. The authors offer a method of developing the speed abilities of a young fencer, which allows him to anticipate and counteract the opponent's defense. They also note that its complexity does not contradict the level of technical training of the fencer.

In the study of Viktorov et al. [8] justified the method of increasing the accuracy of jabs in young fencers during their technical and tactical training. The authors found that execution of jabs (as a

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three-stage system of movements – start, hitting the target, finish) for direct damage to the opponent allows to increase the effectiveness of attacks in young fencers.

In general, the analysis of the competitive activity of fencers proves that the movements of fencers during a duel are characterized by high complexity and variety. They consist of preparatory actions, techniques of attack and defense. In addition, performing attacks, defenses with a response, deception, etc. This requires adequate, fast and timely movements. This approach requires the formation, development and improvement of specific complex coordination skills (coordinated work) of the arm and leg, which is in front; variable rhythmic characteristics of individual movements and the pace of their execution, speed of reaction and movements, special dexterity and endurance.

The purpose of the work is to investigate the role and place of types of preparation in the educational and training process of young fencers aged 10-12 years at the stage of basic training.

Material and methods

Participants

Leading coaches and qualified fencers of sports clubs participated in the study (n=21). The participants were selected according to their rating among Ukrainian specialists, most of whom are representatives of fencing clubs in Kharkiv (Ukraine). A questionnaire containing questions about the main elements of general training of young fencers was used.

The study is in accordance with the Declaration of Helsinki and granted approval by the Ethics Committee of the University.

Research Design

The questionnaire was developed by analogy with the Likert scale [9, 10, 11]. When working with the scale, the participant rates the degree of his agreement or disagreement with each judgment, from "completely agree" to "completely disagree". The sum of the evaluations of each separate judgment allows to reveal the attitude of the participant on any issue. The questionnaire was checked for reliability and validity (initial questionnaire and repeated questionnaire: comparison of average values of assessments, determination of correlation coefficient, α-Cronbach's test). The participants were asked to evaluate the level of development of the structured qualities of fencers at the stage of basic training. Respondents had the opportunity to choose qualities according to the degree of importance. Score "5" - high degree of importance of qualities, "4" - higher than average; "3" - average; "2" is low. The section of the questionnaire "Theoretical training" has been expanded to include knowledge, skills and intellectual development skills. The section "Physical training" is represented by levels of physical development (taking into account anthropometry and psychosomatics) and five physical qualities. There are also separate "Technical and tactical preparedness" sections. Similar approaches using questionnaires are shown in various studies [12, 13, 14, 15]. We used the recommendations of Mata et al. [12]: 1) the questionnaire was administered using the Google Forms online program; 2) researchers were present at all times to answer questions and guide correct completion and delivery of responses.

Statistical analysis

The internal validity of the questionnaire was determined using the α-Cronbach's test. The reliability of the questionnaire was checked in the initial survey and repeated survey. The level of significance was taken as $p<0.05$.

Results

Calculations showed that the α-Cronbach's criterion is 0.773. It follows that the internal consistency of this survey is acceptable.

Not a single respondent gave a low rating to the preparedness components proposed in the questionnaire. And this means that all qualities are important. The answers ranged between high and medium importance. The vast majority of respondents (95.23%) believe that the ability to listen to the interlocutor, perceive information, retell, explain, etc., is extremely important for young fencers (Table 1). The skills to analyze, evaluate and acquire the necessary knowledge are also important (90.47%). General erudition in this section of questions received the lowest score.

The majority of respondents (76.19%) answered that anthropometric data can only indirectly affect the growth of fencing skills. Individual characteristics in the formation of combat styles were noted as more significant from a high (28.57%) to an average value (71.42%). Respondents noted that the most important qualities for fencers are dexterity (61.9% and 38.09%) and speed (42.85% and 57.14%). The development of flexibility, strength and endurance is more important at other stages of training. The majority of respondents noted the sufficient importance of understanding the movements of performing technical techniques, as well as the skills of performing technical techniques. It turned out to be important to understand the purpose of performing technical techniques (71.42%). Opinions about the importance of the ability to apply techniques in combat and the skills of combat tactics were divided into almost equal parts.

Table 1. Results of a survey of experts (n=21), regarding the level of significance of the types of preparation of young fencers

№	Main components	Quality indicators	Score			
			5 (%)	4 (%)	3 (%)	2 (%)
1.	Intellectual development	Knowledge (general erudition)	38,09	42,85	19,04	-
		Skills (listen to the interlocutor, perceive information, explain, etc.)	95,23	4,76	-	-
		Abilities (analyze, evaluate, learn, etc.)	90,47	9,52	-	-
2.	Physical development	Anthropometrical data	-	23,80	76,19	-
		Psychosomatics	28,57	71,42	-	-
3.	Physical qualities	Flexibility	9,52	23,80	66,66	-
		Agility	61,90	38,09	-	-
		Speed	42,85	57,14	-	-
		Strength	-	23,80	76,19	-
		Endurance	19,04	23,80	57,14	-
4.	Technical preparedness	Understanding the movements of performing technical techniques	28,57	52,38	19,04	-
		Ability to perform	19,04	28,57	52,38	-
		Skills in performing technical techniques	23,80	61,90	14,28	-
5.	Tactical preparedness	Understanding the purpose of performing technical techniques	71,42	-	28,57	-
		The ability to use techniques in battle	38,09	28,57	33,33	-
		Skills of combat tactics	47,61	-	52,38	-

Note: α-Cronbach's – 0.773.

Discussion

The use of questionnaires to attract experienced specialists is often used in fencing [16, 17, 18, 19, 20]. The authors analyzed the important problems of training athletes in fencing: improving the technical and tactical training of fencers by differentiating the possession of weapons [16]; the influence of transfer (interhemispheric) training using the non-dominant hand on the efficiency of the dominant hand [17]; engagement in physical activity among Australian adolescents, emphasizing the creative, intellectual and inclusive aspects of sport [18]; creating a special program of warm-up and exercises to strengthen the ligaments of the ankle and knee joints to prevent injuries for fencers [20]; the impact of dietary supplement consumption and possible consequences for health and/or athletic performance [12].

We adapted and expanded the questionnaire aimed at identifying the most significant special abilities and qualities of young fencers aged 10-12 years at the initial stage of training.

The results of this study provide supporting evidence that the most important qualities for fencers are agility and speed. The development of flexibility, strength and endurance is more important in other stages of training. These results are consistent with Guan et al. [21] that increasing the strength and power of the posterior knee extensors is important for fencers to increase lunge speed. Abzalov et al. [22] recorded the speed of movements and speed endurance of fencers under conditions of physical activity. The authors argue that the adaptation of the body to speed training contributes to an increase in cardiac output at rest compared to endurance training. Yao [23] studied the effect of various training methods on the reaction time of fencers. It has been found that regardless of a student's swordsmanship level, different training methods can significantly improve his reaction time.

Taken together, our findings indicate the need to pay special attention to the development of agility and speed in the training of young fencers. We believe that our study raises various intriguing questions for future research. We hope that ongoing research will stimulate further exploration of this important area.

Conclusions

It is recommended to take into account that at the stage of basic training the most important are the following: intellectual development of athletes; among physical qualities, dexterity is in the first place; the understanding of the purpose of performing technical techniques should also be formed precisely at this stage of the fencer's training.

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