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## Theoretical and methodological aspects of the development of a sense of distance in the technical and tactical training of boxers of various qualifications

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### Abstract

**Relevance.** Training a sense of distance in boxing, crucial for success in fights, proves challenging due to its complexity, closely tied to technical and tactical training. The relevance of the study is conditioned upon the need to find means and methods of sports training of boxers that will contribute to achieving high results in boxing.

**Purpose.** The purpose of the study is to summarise the theoretical and methodological aspects of the development of a sense of distance among boxers of different qualifications.

**Methodology.** To achieve the purpose, the following methods were used: analysis of theoretical works and empirical research, analysis, synthesis, interviews with trainers, questionnaires, modelling.

**Results.** The study examined the development of a sense of distance in boxers of varying skill levels, taking into account their physical attributes, psychological traits, and fighting styles. Through interviews with 14 male trainers aged between 27 and 43, as well as a thorough review of theoretical literature, the research identified, isolated, and categorized the key features influencing distance perception in boxing. It was found that a boxer's proficiency in gauging distance significantly influences their tactical approach to a fight, with more talented or experienced boxers demonstrating a heightened sense of distance.

**Conclusions.** The study underscores the lack of detailed research on the development of a boxer's sense of distance across various skill levels. Existing exercises are not tailored to individual boxers' qualifications, body types, or fighting styles.

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Trainers acknowledge the importance of distance perception but rely mainly on general training exercises. The findings of the study are expected to enhance overall training effectiveness by providing targeted strategies for cultivating distance awareness at each stage of a boxer's development. The results of the study have practical value for trainers, athletes, and sports theorists.

**Keywords:** distance; boxing; qualification; training; coordination.

## **Introduction**

The importance of achieving success in sports determines the need to search for effective strategies and tactics of preparation. The ability to keep an optimal distance for striking and simultaneously protecting oneself from the blows of an opponent is one of the keys to success in boxing. In the general theory of athletes' training, the sense of distance refers to complex coordination abilities, namely, the ability to assess and regulate dynamic and spatiotemporal parameters of movements [1]. Athletes with sensory-perceptual capabilities, which is manifested in the senses of distance, opponent, and time, achieve the highest sporting achievements [2]. H. Singh and G. Wulf [3] write that the sense of distance develops with the growth of the athlete's qualifications and an increase in their motor experience. Accordingly, a sense of distance in the technical and tactical training of boxers is one of the most important qualities that boxers need to develop. Let us consider the conducted research on the sense of distance for boxers and the features of distance in a boxing match.

According to boxing theorists, distance determines the tactical type of a fight – at long, medium, and short distances. The choice of the distance (preferred since the distance changes during the fight) for the fight allows the boxer to fulfil their potential. During a fight at a certain distance, the time limit of actions determines the quality of impact protection, the choice of tactics, and the techniques of boxers. The time limits for performing actions at different distances are determined by the choice of the tactics and techniques that can be developed by various training tasks [4]. For effective protection against blows, it is necessary to have a developed speed of reaction to movements to react to the actions of the opponent in time. The timing and density of the battle depend on the distance [5]. Therewith, each fight has its characteristics and depends on both opponents. The conducted study shows the following patterns of choice of tactics and distance of fighting by boxers: boxers with an attacking style mostly fight at long and medium distances; the choice of distance depends on the individual characteristics of boxers, height (high choose long distance more, short – medium and close; long distance is effective for boxers with highly developed speed abilities and agility) [2].

At a medium and short distance, the duration of the blow is actually equal to the duration of the defensive movement. At a long distance, a boxer has more time to defend, respectively, the distance determines the characteristics of the time to perform the necessary movements [6]. Therefore, at each distance, the time limit determines the importance and quality of impact protection and time limits at different distances determine the choice of techniques and tactics used by the boxer [2; 7; 8]. Interesting are the results of S. Kapo [4], who investigated the specific features of the tactics of the winners in the series of competitions. Their results show the success of using a direct blow at a long distance, which could lead an

opponent to a knock-out, and give enough time for maneuvers rather than collecting points in medium and close-quarter boxing. The analysed studies, which mentioned the features of a fight distance, show the investigative results of the choice of tactics from a fight distance [2; 7; 8] imposed by rivals, the effectiveness of some blows, techniques and combinations at various distances [4]. However, a review of scientific and empirical studies does not give a complete answer to the question of how to develop this specific sense of distance among boxers of different qualification levels. There are examples of the choice of tactics and the effectiveness of techniques at different distances but aspects of the development of a sense of distance are not fully disclosed.

In this regard, the purpose of this study is to generalise the theoretical and methodological aspects of developing a sense of distance among boxers of different qualifications.

## **Literature Review**

The search and analysis of data in the Scopus database since 2018 by the keywords "perception of distance in boxing", "feeling a distance in boxing", "sense of a distance in boxing" show that this issue is little investigated at the international scientific level. M. Pic and G. Jonsson [9] studied the specific features of fighting among the winning and losing boxers, and determined that some temporary features of fighting, the use of a certain space, and reaction time are more inherent in all the winners who participated in the study. The winners spent more time in the centre of the ring, while the losers spent more time closer to the ropes. In addition, the winners differed from the losers by the greater complexity of the actions. Thus, the ability to feel the distance, time, and complexity of performing actions and the ability to take an advantageous position contribute to winning. G.B. Erickson [10] also points to the need to develop motor-visual skills to achieve high results in modern sports activities. T. Romeas et al. [11] write about the effectiveness of using virtual reality tools for boxers who were preparing for the Olympics. Virtual reality tools had a positive impact on the development of the necessary motor skills, perceptual skills, decision-making, and training of boxers in the conditions of the 2020 pandemic in general.

A study of the issue in international publications that are not included in the Scopus database shows that the subject of developing a sense of distance is also not fully covered. Thus, L. Sulaymon and A.Q. Polvonovich [12], write about the need to develop coordination abilities (especially at the initial stage of preparation). J. Beauchez [13; 14], writes about the development of many aspects of a boxer's behaviour in the ring, points to some modelling of the behaviour of each boxer, including the distance of fighting, the need to master the models of behaviour in the ring. It has been investigated that the behaviour of opponents is an essential regulator of exercise intensity

[15]. The decision-making process can be improved by creating certain conditions.

A study of scientific literature, training programmes for boxers since 2000 shows that there is little information about the development of a sense of distance among boxers, not to mention the specific features of the development of this sense at different stages of training. The training manuals for boxers [16–18], indicate only the features of fighting at different distances but there is no information about the development of a sense of distance. Accordingly, the sense of distance develops in practice during the improvement of technical and tactical preparedness. Yu.B. Nikiforov [19] writes in detail about the sense of distance. He touched on earlier studies and described a lot of exercises and features of the development of a sense of distance at different stages of sports improvement. However, the experimental data were conducted with boxers aged 15-16 years and the proposed exercises are not scheduled for other stages of preparation. The authors Yu.B. Nikiforov [19], J. Lyle [20] write that trainers often do not use all possible theoretical material to improve the boxers' training process. Accordingly, a small amount of information about the development of a sense of distance in the scientific literature is not fully used in practice.

## Materials and Methods

The following methods were used for this study: analysis of theoretical works and empirical studies, analysis, synthesis, conversations with trainers, questionnaires, modelling. The study was carried out in three stages. Analysis of theoretical works and empirical research. The availability of works on the subject under study was investigated by setting keywords: "the sense of distance of boxers", "the development of a sense of distance of boxers of various qualifications" in English in the Scopus search database (since 2018) and other databases (since 2018). A study of the issue in the data of scientific and methodological literature on the general theory of athletes' training (since 2000) has also been conducted. The features of the technique and tactics of a fight at different distances, time indicators of the execution of blows, defences, attacks at different distances are studied. These indicators can be used as model indicators of exercise performance to develop a sense of distance and boxing at different distances. The features of tests for determining the psychomotor indicators of boxers, determining the distance at which boxers are comfortable performing movements, selecting exercises for distances in which it is difficult for boxers to conduct fights and separate technical and tactical bundles are investigated. The analysis and synthesis of the received information were carried out.

Studying the issue by conducting interviews with trainers, questionnaires. To get information about the specific features of the development of a sense of distance, 14 conversations were held with trainers of children's and youth schools, schools of higher Olympic skill, whose work experience exceeds 5 years (14 men, age 27-43 years). During the interviews, the participants were asked about the means they use to develop a sense of distance in boxers of different qualifications, with different anthropometric indicators, psychomotor abilities, and different fighting manners. The opinions of trainers

regarding the development of a sense of distance were studied using questionnaires on such issues:

1. Do you think a sense of distance is an innate or trained quality?
2. From what stage of boxer training is it advisable to start developing a sense of distance?
3. What tools do you use or can recommend for the development of a sense of distance in boxers at the stage of initial, preliminary basic, basic stages of training, at the stage of preparation for the fulfilment of maximum opportunities?
4. What means are recommended to take to develop a sense of distance in boxers of different weight categories with different anthropometric indicators, psychomotor abilities, and different fight manners?
5. Do you think a sense of distance develops during technical and tactical training? Is there a need to apply additional exercises?

The results of the conducted information search in theoretical works and empirical studies obtained information during interviews and questionnaires allowed identifying aspects of the development of a sense of distance among boxers of various qualifications considering their anthropometric indicators, weight category, psychomotor characteristics, fighting style. The results of the survey of empirical studies, conducted interviews are summarised and aspects of the development of a sense of distance in the technical and tactical training of boxers of various qualifications are investigated. The identification of aspects of the development of a sense of distance also allowed simulating the process of developing a sense of distance for boxers of different qualification levels and other features, selecting effective means and methods for developing a sense of distance, highlighting theoretical and methodological aspects of the development of a sense of distance. This study was conducted in Kazakhstan with trainers who have more than 5 years of experience in boxing. The participation of more respondents from other countries may show different results.

## Results and Discussion

Let us consider the theoretical aspects of the development of a sense of distance in boxers presented in scientific publications and literature. Thus, in the general theory of sports, it is recommended to develop a sense of distance using exercises, the performance of which requires: increased requirements for the activity of analysers regarding the accuracy of dynamic and spatio-temporal parameters of movements; exercises that must accurately reproduce the parameters of a given time, effort, pace, space; exercises performed with the exception or limitation of visual and auditory analysers [1; 21]. A linear increase in the fight time spent at a long distance with an increase in the weight category, especially in the first round, was investigated. In addition, practically boxers of all weight categories have a long-distance fight duration of at least 80 seconds [8]. It is recommended to train with a conditional opponent at different distances and acquire muscle senses during blows at different distances [7; 22]. The choice of effective blows by a boxer during victorious fights can give information about the effective distance of fighting for them [9; 23; 24]. Cognitive functions and the ability to

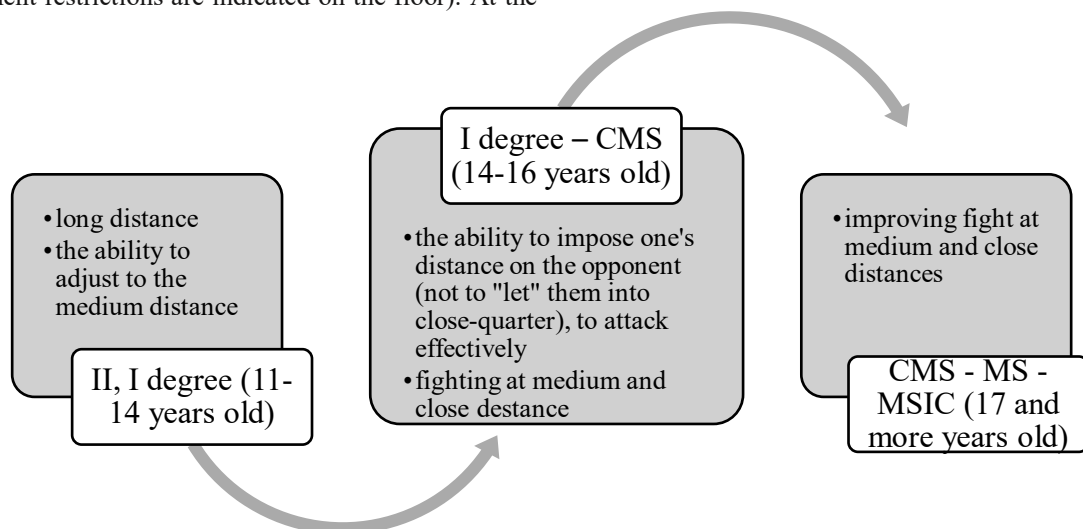
simulate and anticipate the opponent's movements are better developed in highly qualified boxers than in beginners, as well as a sense of distance [25-27]. In turn, movements form ideas about the features of the time spent on their execution, respectively, and distance determines the characteristics of the time to perform the necessary movements [6].

A study by H. Singh and G. Wulf [3] shows that it is more effective for novice athletes to concentrate on the details when performing movements (different distance, goal, opponent), whereas, for experienced athletes with automated movement skills, it is more effective to concentrate on the general characteristics of movements. This is explained by the accumulated technique and experience and gives an idea of how to train a sense of distance in novice boxers. Interviews with trainers helped to clarify the situation regarding the development of a sense of distance, and the answers to the questions are as follows: 85.71% of trainers believe that the sense of distance is innate. Therewith, all the interviewed trainers believe that the sense of distance naturally develops during the preparation process but still, there are especially "sensitive" boxers who have a strongly developed sense of distance, the ability to "hover" over an opponent, "impose" their distance on an opponent, and there are those who do not have such a sense. In addition, all the trainers unanimously replied that the sense of distance grows with the increase in boxers' experience. All the trainers who participated in the study believe that a sense of distance should be developed from the initial stage of training, during the training of the specific features of fighting. At this time, the trainers explain the features of the fights at different distances. In addition, all the trainers interviewed believe that training should be conducted from a long distance. With the increasing complexity of technical and tactical training, the tasks and means that can be used to develop a sense of distance become more complex.

The answers to the question about the means of developing a sense of distance in boxers at different stages of training are as follows: at the stage of initial preparation, this is a story, showing the execution of attacks, defences, counterattacks at different distances, the use of additional means during the development of movement techniques (movement restrictions are indicated on the floor). At the

stage of preliminary basic training, 78.57% of trainers recommend using sparring with certain conditions for fighting at uncomfortable and difficult distances for each boxer but also improving movements at convenient distances. At the stages of basic training and at the stage of preparation for the fulfilment of maximum capabilities, it is possible to use the means of the previous stages, complicate them by limiting the visual analyser, improving the time characteristics of fight performed at each distance. At these stages, it is advisable to conduct video analysis of one's own fights, study the effective distance for oneself, improve the ability to "impose" the opponent one's fighting distance. Interesting answers regarding the means of developing a sense of distance in boxers of different weight categories, with different anthropometric indicators, psychomotor abilities, with different fighting styles. Thus, lightweights mainly fight at medium and short distances, they need to improve the time characteristics of performing movements and increase the variability of actions with limited space. Heavyweights are more inclined to fight at a long distance but successful blows are rarely performed. It is necessary to train transitions to medium and short distances after an attack or counterattack at a long distance.

All trainers agree that the sense of distance develops during technical and tactical training and 35.71% say that additional exercises should be used for purposeful development and improvement of the sense of distance. The trainers also pointed out that boxers with a high level of development of a sense of distance are more inclined to a play manner of fighting, which can be explained by the need to develop dexterity skills, specific senses inherent in the game, to fight at a convenient distance. Examining the data on improving the sense of distance, the exercises are divided into two types, for the accuracy of determining the distance and for the accuracy of maintaining the distance. Summarising the data obtained in the scientific literature and during interviews with trainers, it can be concluded that at each stage of sports improvement, exercises for developing a sense of distance become more complicated. The skills necessary for boxers, which depend on the development of a sense of distance at different stages of training, are mostly the following (Figure 1).



**Figure 1.** Determination of skills regarding the sense of distance at different stages of training

**Note:** CMS – candidate to master sport; MS – master of sport; MSIC – master of sports of international class

Based on the skills necessary for boxers regarding distance, it is possible to distinguish such theoretical and methodological aspects of the development of a sense of

distance in the technical and tactical training of boxers of various qualifications (Table 1).

**Table 1.** Theoretical and methodological aspects of the development of a sense of distance in the technical and tactical training of boxers of various qualifications

Qualification level	Theoretical aspects	Methodological aspects
III degree II degree	Performing exercises to study and improve actions at a long distance and, according to the degree of mastering sports equipment, at an average distance.	<ul style="list-style-type: none"> <li>– explanation and demonstration of the varieties of the battle distance, the study of the specific features of fighting at a long distance and, according to the degree of assimilation of sports equipment, at an average distance;</li> <li>– exercises in pairs: one boxer breaks the distance, the other keeps it. First, the "violation" of the distance is performed in one step, and then, as the exercise is mastered, by manoeuvring;</li> <li>– game sports;</li> <li>– game exercises.</li> </ul>
I degree	Determination of convenient and inconvenient fighting distances for each boxer, improvement of strengths and weaknesses, study and improvement of close-quarter fight. Performing exercises to maintain a comfortable distance after manoeuvring. Performing exercises with the restriction of analysers.	<ul style="list-style-type: none"> <li>– "pad work" with the performance of tasks at different distances;</li> <li>– the study of a convenient distance for applying a left direct blow to the head – the boxer stands near the wall cushion and takes a position convenient for performing a left direct blow to the head. Marks the position of the foot on the floor, takes a step back, and marks the position of the foot again (long distance);</li> <li>– performing manoeuvres at a long distance – an attack, a study of the position of the legs relative to the marked line of impact;</li> <li>– pad work;</li> <li>– sparring in a limited space (dividing the ring into 4 or 6 parts), training in such conditions for 3-4 months;</li> <li>– "shadow fight", blindfolded;</li> <li>– game sports;</li> <li>– game exercises.</li> </ul>
CMS MS		

Another means of improving the sense of distance can be exercises to improve the ability to perform movements at different distances, for example, to calculate the time required for a boxer of a particular height and qualification to blow and defend at different distances during training. To improve the execution of blows and defences at specified distances with their variation, improving the time characteristics of the execution of defences and blows. Determine the distance convenient for each boxer and build a fight at the appropriate distance. With increasing skill and reducing the time required for protection, one can adjust the distance of the fight. The conducted research shows a small amount of experimental data on the effectiveness of means or methodology for developing a sense of distance in boxers, which is explained by the small amount of information in the scientific literature on this issue. In the scientific literature, there are few studies on checking the effectiveness of programmes, the presence of methodological aspects regarding the development of a sense of distance among boxers of different qualifications. Some studies have confirmed the need to develop boxers'

sense of distance [8; 13; 28], others indicate the influence of a high level of development of a sense of distance for achievements in boxing.

Some guidelines on the methodology of developing a sense of distance are described by Yu.B. Nikiforov [19], general guidelines on the development of a sense of distance for athletes are described by V. Platonov [1]. V.N. Ostyanov [29] writes that the training of actions at close range should not be carried out at the initial stages of preparation, as this leads to the assimilation of incorrect techniques. Foreign boxing training programmes contain only instructions on what actions to perform effectively at different distances. Therewith, it is natural that experienced and highly qualified trainers have their own means to develop a sense of distance but there is no written methodology in the literature. Interviews with trainers confirmed the specific features of the issue under study, the need for more detailed study and experiments in this area. Thus, most trainers agree that the development of a sense of distance occurs during tactical training. The basics of developing a sense of distance are described by Yu.B.

Nikiforov [19], but the tasks are given for different age groups, not differentiated by training stages or qualification level. Some exercises have indications that they are for beginners, but nothing more. It follows from this that the available exercises need to be considered, differentiated by the stages of preparation or by the level of qualification and this will provide prerequisites for testing the effectiveness of exercises, means, and methodology for developing a sense of distance in boxers of different qualification levels.

From the standpoint of the general theory of athletes' training, this issue is also given little attention, especially in fighting sports. There are only a few studies that emphasise the importance and necessity of developing a sense of distance. The study of the process of developing a sense of distance in practice, that is, during training, also showed the spontaneity of this process. According to the results of the interviews conducted, in most cases, the sense of distance is being developed without the use of special exercises, and those that are used and help to develop a sense of distance have the goal of improving technical and tactical training. Some trainers do not attach importance to the development of specific senses, although they know about their importance. The fact that the obtained results of the research are not used enough by trainers in the process of sports improvement is also mentioned by Z. Khadiyatullayev [5], Yu.B. Nikiforov [19], J. Lyle [20]. The majority of highly qualified boxers have a high sense of distance, which can be explained by their experience. This is indicated by trainers and described by researchers [6; 7; 15].

Thus, the sense of distance naturally develops with the growth of sportsmanship, but a natural question arises whether the purposeful development of a sense of distance can improve the level of boxers' fitness, whether it will affect other physical abilities, the fitness of boxers in general, has not been considered in the scientific literature. The authors believe that at the stages of basic training, preparation for the maximum fulfilment of opportunities, at the stage of maximum fulfilment of opportunities, this will be a very effective means of improving sports qualifications. These stages fall at the level of candidates for masters of sports, masters of sports, when the basics of technology are already well mastered and there is a need to start improving specific senses. At the stages of initial, basic training, the development of a sense of distance will help to quickly understand and acquire the technique and tactics of a fight, achieve better results, and develop technical and tactical skills at the highest level. An insufficiently developed sense of distance is an obstacle to achieving high results for boxers at the basic stages, preparation for maximum fulfilment of opportunities, at the stage of maximum fulfilment of opportunities [19; 30-32]. Accordingly, the development of a sense of distance will help to improve the fitness of boxers in general.

## **Conclusions**

The conducted study shows the need for a more detailed study of the development of a sense of distance among

## **References**

- [1] Platonov V. The system of training athletes in Olympic sports. General theory and its practical applications. Kyiv: Olympic Literature; 2004.

boxers of different qualification levels. There are few literature data on this issue and experiments conducted on the effectiveness of tools and methodological techniques. Those exercises that are recommended for the development of a sense of distance are not differentiated according to boxers' qualification level, anthropometric data, and the manner of the fight. Accordingly, the effectiveness of exercise complexes, which are in the scientific and methodological literature for boxers with different training indicators, anthropometric data and different fighting styles cannot be investigated. The practice trainers mostly agree that a sense of distance determines the success of a boxer but, due to various circumstances, special exercises are used little, and in most cases these are exercises to improve technical and tactical training, which also contribute to the development of a sense of distance.

According to the received responses of trainers and according to the literature, it was identified that the level of development of a sense of distance is determined genetically in many respects. This is a rather specific sense, which is difficult to train, and for the development of which there is little information in the scientific literature. Therewith, a high level of development of a sense of distance determines the presence of high sporting achievements in boxing. This is one of the obvious advantages of boxers, which allows keeping the opponent in suspense, perform accurate blows, win and reach the heights of sportsmanship. A boxer with a high level of a sense of distance is more agile, strikes more clearly, scores more points during the fight, can better choose the moment to strike.

The study examines the data in the scientific and methodological literature on the development of a sense of distance. Analysing the indications of theoretical sources and the results of interviews with trainers, the study highlighted the necessary skills of boxers regarding the ability to measure and maintain distance, and based on the need to train the necessary skills, exercises for developing a sense of distance at different stages of training boxers were selected and differentiated. This allows making an experimental test of their effectiveness on the development of other physical abilities, to study the effect of increasing the level of development of a sense of distance on boxers' level of training in general. Future research will help to determine the effectiveness of the means used in the training process of boxers of different qualification levels, which will complement the data of the study and will contribute to improving the effectiveness of practical work for trainers.

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## **Conflict of Interest**

There are no competing interests.

- [2] Nelepenko S, Dercacenco I, Polevaia-Secareanu A. Individual manner particularities of fight conduct in boxing. *Știință Cultur Fizice*. 2018;1(30):82-85.
- [3] Singh H, Wulf G. The distance effect and level of expertise: Is the optimal external focus different for low-skilled and high-skilled performers? *Hum Mov Sci*. 2020;73:102663.
- [4] Kapo S, El-Ashker S, Kapo A, Colakhodzic E, Kajmovic H. Winning and losing performance in boxing competition: a comparative study. *J Physic Edu Sport*. 2021;21(3):1302-1308.
- [5] Khadiyatullayev ZS. Trainer's professional competence in improving the tactical training of boxing girls. *Curr Res J Ped*. 2021;2(09):142-145.
- [6] De Kock R, Gladhill KA, Ali MN, Joiner WM, Wiener M. How movements shape the perception of time. *Trend Cogn Sci*. 2021;25(11):950-963.
- [7] Junayduloevich AM, Istamovich A.K. Analysis of modern technologies for the development of psychophysical qualities of boxers in the process of training. *Web Sci Int Sci Res J*. 2021;2(05), 1-14.
- [8] Borisova VV, Pavelis AE. The features of training highly-qualified boxers for a long-distance competitive combat. *Ped-Psychol Med-Biol Prob Physic Cult Sport*. 2021;16(1):64-68.
- [9] Pic M, Jonsson G. Professional boxing analysis with T-Patterns. *Physiol Behav*. 2021;232:113329.
- [10] Erickson GB. Visual Task Analysis in Sports. In: G Erickson (Ed), *Sports Vision (Second Edition)* (7-15). Elsevier; 2022.
- [11] Romeas T, More-Chevalier B, Charbonneau M, Bieuzen F. Virtual-Reality Training of Elite Boxers Preparing for the Tokyo 2020 Olympics during the COVID-19 Pandemic: A Case Study. *Case Stud Sport Exerc Psychol*. 2022;6(1):21-35.
- [12] Sulaymon L, Polvonovich AQ. Pedagogical system of physical training of boxers. *Middle Eur Sci Bull*. 2021;11:527-535.
- [13] Beauchez J. *Boxing, the Gym, and Men*. Cham: Palgrave Macmillan; 2018.
- [14] Beauchez J. Embodying combat: How boxers make sense of their "conversations of gestures". *Ethnography*. 2019;20(4):483-502.
- [15] Konings MJ, Hettinga FJ. Pacing Decision Making in Sport and the Effects of Interpersonal Competition: A Critical Review. *Sports Med*. 2018;48:1829-1843.
- [16] Balyi I, Way R, Higgs C. *Long-term athlete development*. Leeds: Coachwise UK; 2013.
- [17] *Coaches Manual*; 2017. <https://cutt.ly/2Ju26nE>.
- [18] McAtee M. A guide to USA boxing; 2017. <https://aart.assembly.ca.gov/sites/aart.assembly.ca.gov/files/USA%20Boxing%20Guide%20-%20Mike%20McAtee.pdf>
- [19] Nikiforov YuB. A boxer's sense of distance. Moscow: Book on Demand; 2013.
- [20] Lyle J. The Transferability of Sport Coaching Research: A Critical Commentary. *Quest*. 2018;70:419-437.
- [21] Selvakumar RD, Alkaabi AK, Ryu J, Lee H. Role of dielectric force and solid extraction in electrohydrodynamic flow assisted melting. *J Energ Stor*. 2023;73:109169.
- [22] Fialko NM, Prokopov VG, Meranova NO, Borisov YuS, Korzhik VN, Sherenkovskaya GP. Temperature conditions of particle-substrate systems in a gas-thermal deposition process. *Fiz Khim Obrabot Mater*. 1994;(2):59-67.
- [23] Rubino L, Rubino G. Electrical Power Center with energy management capability for aeronautical applications. In: *2016 International Symposium on Power Electronics, Electrical Drives, Automation and Motion, SPEEDAM 2016 (pp. 940-945)*. Capri: Institute of Electrical and Electronics Engineers; 2016. DOI: 10.1109/SPEEDAM.2016.7525944
- [24] Deryaev AR. Choosing the profile of an inclined – directional well in the Caspian sea area of Turkmenistan. *SOCAR Proceed*. 2024;1:32-39.
- [25] Russo G, Ottoboni G. The perceptual – Cognitive skills of combat sports athletes: A systematic review. *Psychol Sport Exerc*. 2019;44:60-78.
- [26] Capasso C, Rubino L, Rubino G, Veneri O. Data Analytics for Performance Modelling of Photovoltaic Systems in the Internet of Energy Scenario. In: *2021 IEEE 15th International Conference on Compatibility, Power Electronics and Power Engineering, CPE-POWERENG 2021*. Florence: Institute of Electrical and Electronics Engineers; 2021. DOI: 10.1109/CPE-POWERENG50821.2021.9501202
- [27] Sydorets V, Korzhik V, Khaskin V, Babych O, Bondarenko O. Electrical characteristics of the equipment for the hybrid plasma-MIG welding. In: *58th Annual International Scientific Conference on Power and Electrical Engineering of Riga Technical University, RTUCON 2017 (pp. 1-6)*; 2017.
- [28] Deryaev A. Drilling of horizontal wells in western Turkmenistan. *J Balk Tribol Assoc*. 2023;29(6):1028-1046.
- [29] Ostyanov VN. *Education and training of boxers*. Kyiv: Olympic Literature; 2011.
- [30] Ali M, Alkaabi AK, Lee JI. CFD simulation of an integrated PCM-based thermal energy storage within a nuclear power plant connected to a grid with constant or variable power demand. *Nucl Eng Des*. 2022;394:111819.
- [31] Biliuk I, Shareyko D, Tubaltsev A, Havrylov S, Savchenko O, Fomenko A. Expansion of Measurement Grid in Field Problems. In: *Proceedings of the 20th IEEE International Conference on Modern Electrical and Energy*

*Systems, MEES 2021*. Kremenchuk: Institute of Electrical and Electronics Engineers; 2021. DOI: 10.1109/MEES52427.2021.9598576

- [32] Korzhik VN. Theoretical analysis of amorphization conditions for metallic alloys under gas-thermal spraying. III. Transformations in the amorphized alloy under building-up of coatings. *Poroshk Metall.* 1992;(11):47-52.

## **Теоретико-методологічні аспекти розвитку почуття дистанції в техніко-тактичній підготовці боксерів різної кваліфікації**

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### **Анотація**

**Актуальність.** Навчання почуттю дистанції в боксі, що є важливим фактором успіху в боях, виявляється складним завданням через комплексність, тісно пов'язану з технічною та тактичною підготовкою. Актуальність дослідження зумовлена необхідністю пошуку засобів та методів спортивної підготовки боксерів, які сприятимуть досягненню високих результатів у боксі.

**Мета.** Мета дослідження – узагальнити теоретико-методологічні аспекти розвитку почуття дистанції у боксерів різної кваліфікації.

**Методологія.** Для досягнення мети були використані такі методи: аналіз теоретичних праць та емпіричних досліджень, аналіз, синтез, інтерв'ю з тренерами, анкетування, моделювання.

**Результати.** Дослідження вивчило розвиток відчуття дистанції у боксерів різного рівня кваліфікації, беручи до уваги їхні фізичні якості, психологічні риси та стилі бою. За допомогою інтерв'ю з 14 тренерами-чоловіками віком від 27 до 43 років, а також завдяки ретельному огляду теоретичної літератури, дослідження виявило, виокремило та класифікувало ключові особливості, що впливають на сприйняття дистанції в боксі. Було виявлено, що вміння боксера вимірювати дистанцію суттєво впливає на його тактичний підхід до бою, причому більш талановиті або досвідчені боксери демонструють підвищене відчуття дистанції.

**Висновки.** Дослідження підкреслює відсутність деталізованих праць про розвиток почуття дистанції у боксерів на різних рівнях навичок. Наявні вправи не адаптовані до кваліфікації окремих боксерів, типу статури чи стилю бою. Тренери визнають важливість сприйняття дистанції, але покладаються переважно на загальні тренувальні вправи. Очікується, що результати дослідження підвищать загальну ефективність тренувань шляхом надання стратегій для виховання дистанційної обізнаності на кожному етапі розвитку боксера. Результати дослідження мають практичне значення для тренерів, спортсменів і теоретиків спорту.

**Ключові слова:** дистанція; бокс; кваліфікація; тренування; координація.