

Impact of the use of training programs for mixed martial arts qualified fighters with different fighting styles on the efficiency of competitive activity

ZHANNETA KOZINA¹, OLEKSANDR PUSTOMELNIK¹, YURII BOYCHUK², OLEKSII KOZIN³, IRYNA SOBKO¹, STANISLAV POLISHCHUK¹, OLGA SHYYAN⁴

¹Department of Olympic and Professional Sports, Sports Games and Tourism, Faculty of Physical Education and Sports, H. S. Skovoroda Kharkiv National Pedagogical University, UKRAINE

²Rector, H. S. Skovoroda Kharkiv National Pedagogical University, UKRAINE

³Educational and scientific Laboratory of Biophysics, Biomechanics and Kinesiology, Faculty of Physical Education and Sports, H. S. Skovoroda Kharkiv National Pedagogical University, UKRAINE

⁴Department of Physical Education and Health Fundamentals, Faculty of Civil Engineering, Ukrainian State University of Science and Technologies (Prydniprovsk State Academy of Civil Engineering and Architecture), UKRAINE

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Abstract

Background and purpose. Mixed martial arts (MMA) require a high level of technique, tactics, strategy and cognitive activity. A stable complex of the manifestation of all these capabilities forms a fighting style unique to each fighter. Purpose: to develop and substantiate a system of differentiated training of MMA fighters with different fighting styles. **Material and methods.** The study involved 42 qualified MMA fighters. Athletes were randomly divided into control and experimental groups of 21 athletes each. The training program of MMA fighters of the control group in the annual cycle was identical for all athletes. In the experimental group, the training program was different for representatives of different fighting styles. The effectiveness of the developed system of differentiated training of MMA fighters with different fighting styles was assessed based on the results of all-Ukrainian competitions. **Results.** It was determined that the use of the system of differentiated training of athletes depending on the fighting style had a positive effect on their competitive efficiency. The control and experimental groups, which did not differ before the experiment, had significant differences after the experiment. **Conclusion.** A significant increase in the coefficient of competitive efficiency was observed in MMA fighters of the experimental group. At the same time, these changes are not significant in the control group. It is recommended to use the training system developed by us for fighters of different fighting styles based on fighting styles.

Keywords: Mixed Martial Arts, Style, Fighters, Training, Competition

Introduction

Mixed martial arts, also known as MMA, combines a variety of fighting techniques, including striking and grappling, both standing and on the ground. This full-contact sport, sometimes mistakenly called “fights without rules,” received its current name in 1995 (Romanenko, et. al., 2020, Cooper, et. al., 2022). MMA uses two main strategies: striking techniques, which include punches, kicks, elbows, and knees, and grappling techniques, which include throws, grabs, and painful techniques (Carvalho, et. al., 2023, Watanabe, et.al., 2025). To improve these skills, fighters use various martial arts, such as boxing, Muay Thai, karate, freestyle and Greco-Roman wrestling, judo, sambo, Brazilian jiu-jitsu, and grappling (Chernozub, et. al., 2018, 2022, Bezkorovainyi2024, et.al., 2024, Tyshchenko et.al., 2023, Kozin, et.al., 2022a, Rahmawati, et. al., 2023). Mixed martial arts are primarily based on striking techniques (Kozin, et. al., 2022, Korobeynikov, et. al., 2025a). Therefore, one of the main components of displaced martial arts is striking movements (Kozin, et. al., 2022, Trybulski, et. al., 2024a, 2024b, 2024c). In this regard, the features of tactics and strategy of mixed martial arts, in our opinion, should be considered, first of all, by analogy with the types of martial arts based on striking movements. But in mixed martial arts, movements inherent in different types of fighting are also important. Based on these provisions, fighting styles in mixed martial arts should be considered by analogy with boxing and different types of fighting.

Thus, MMA requires a high level of technique, tactics, strategy and cognitive activity (Korobeynikov, et. al., 2025b). A stable complex of manifestation of all these capabilities forms a fighting style unique for each fighter (Kozin, et. al., 2022a, 2022b). Currently, in martial arts, all possible fighting styles are combined into certain groups. Both in boxing and in wrestling, there are several fighting styles, each of which has its own unique features. Currently, there are many different classifications of fighting styles (Korobeynikov, et. al., 2025a, 2025b, Kozin, et. al., 2022b). One such classification involves dividing them into three main styles based

on the prevalence of the development of different physical qualities: tempo, power, and game (Tyshchenko, 2023, (Korobeynikov, et. al., 2025a, 2025b, Kozin, et. al., 2022a, 2022b).

A tempo style fighter ("tempo fighter") is a fighter who relies on speed, agility, and rhythm. His main task is to control the pace of the fight, which allows him to anticipate the opponent's actions and quickly react to them. Tempo fighters often use deviations and movements to avoid blows and create opportunities for counterattacks. They are able to effectively combine their blows, thereby forcing the opponent to lose focus and make mistakes (Kozin, et. al., 2022a, 2022b).

A power style fighter ("power fighter") is a boxer who focuses on the power of his blows and the physical impact on the opponent. He strives to finish the fight by knockout, relying on the development of power (speed-strength qualities) and endurance. Representatives of the power style often choose more stationary positions and attack with subsequent pressure, thus suppressing the opponent with power struggle (Chernozub, et. al., 2018, 2022).

A representative of the game style of fighting, a "gamer", is a fighter who uses creativity and non-standard techniques to achieve victory. This style includes elements that require a high level of speed qualities, quick response to a changing situation, and the ability to quickly switch attention. Representatives of the game style of fighting often use various combinations and can very quickly change tactics depending on the situation in the ring (Chernozub, et. al., 2018, 2022, Kozin, et. al., 2022a, 2022b).

Modern scientific research focuses on the questions of how different fighting styles in mixed martial arts are formed, how they correlate with the genetic characteristics of athletes and with the features of individual biomechanics of movements, how to implement an individual approach in the training of fighters of different fighting styles, whether an individual approach is effective for competitive activities (Tota, et. al., 2022, Góra, et. al., 2023, Ageev, et. al., 2024).

A number of studies (Polechonski, et. al., 2022, 2024, 2025, Schiffner, 2025) have revealed that different fighting styles in martial arts can be determined using various genetically determined indicators. Among the genetically determined indicators of ease of use are psychophysiological: reaction speed in different testing conditions, ability to switch attention, stability of the nervous system, and others. Also, individual biomechanical indicators are widely used to determine fighting styles in martial arts, such as the speed of movement of different points of the body, angles in the joints when performing basic techniques, and others (Chernozub, et. al., 2018, 2022, (Korobeynikov, et. al., 2025a, 2025b, Kozin, et. al., 2022a, 2022b, Tyshchenko, et. al., 2023). In our previous studies (Kozin, et. al., 2022a), it was determined that psychophysiological and biomechanical indicators are effective indicators of different fighting styles in mixed martial arts (MMA).

The existence of different fighting styles in MMA and other martial arts implies a differentiated approach to the training of athletes. By a differentiated approach, we mean a training process that differs (differentiates) in fighters with different fighting styles (Alnuman, et. al., 2022, Antonietto, et. al., 2023, Barley, 2025a, 2025b). It is logical to assume that the use of a differentiated approach to the training process of fighters with different fighting styles will be more effective for competitive activities compared to the approach without taking into account the peculiarities of the fighters' fighting style.

Purpose: to develop and substantiate a system of differentiated training of MMA fighters with different fighting styles.

Material and methods

Participants

The study involved 42 qualified MMA fighters (age 20-25 years, body length - 178.67 ± 8.26 cm, body weight - 70.96 ± 9.38 kg). The total experience of MMA training for the participants was 3-5 years. Athletes were randomly divided into control and experimental groups of 21 athletes each. Each group had 7 athletes from each of the three fighting styles.

Athletes were selected to participate in the experiment as follows.

Inclusion criteria for participation in the study:

- sports qualification not lower than the first category or candidate for master of sports (winner of competitions not lower than the city and region level) in MMA or boxing;
- regularity of MMA classes for the last 3 years 3-4 times a week;
- age of athletes 20-25 years.
- exclusion criteria for participation in the study:
- age younger than 20 years or older than 25 years;
- lack of appropriate sports qualification;
- lack of appropriate experience in MMA classes.
- The study was conducted on the basis of sports clubs in Kharkiv, Ukraine.

Ethical Committee Statement

The research protocol for this study was reviewed and approved by the Ethics Committee of the H.S. Skovoroda Kharkiv National Pedagogical University (No. KhNPU/PhES/EC/2/4/2023), confirming its adherence to the World Medical Association's Declaration of Helsinki on ethical principles for human-involved medical

research. Comprehensive information regarding the study's purpose and procedures was provided to all participants, from whom informed consent was subsequently obtained

Procedure

Determining the effectiveness of competitive activity of MMA fighters

The effectiveness of each athlete's activity was determined based on the technical protocols of the competitions, which were conducted by independent experts according to the formula (1) (Romanenko, et. al., 2020):

$$R = \frac{N \sum K_i n_i \sum x_i b_i}{10 S_n K_s (100 N - \sum K_i n_i) (N + P)} \quad (1)$$

where:

R – the effectiveness of the athlete's competitive activity

N – the number of participants in the weight category at the competition;

K_i – the average value of the qualification (rank) of the participants in the weight category;

n_i – the number of participants in the weight category with whom the athlete fought;

x_i – the qualification of each opponent;

b_i – the result of the fights (from 0 to 4 points);

S_n – the number of fights;

K_s – the athlete's own qualification (rank);

P – the place occupied

The effectiveness of the competitive activity was determined at the Ukrainian Cups in September 2023 and September 2024. The total number of participants in the competition was 124 fighters in 2023 and 132 fighters in March 2024. The total number of fights was 12 for each athlete under study. The competitive efficiency of only the experimental fighters, i.e. the fighters of the control and experimental groups, was calculated.

Training programs for MMA fighters in the control and experimental groups

The fighting styles of qualified MMA fighters were determined on the basis of our previous studies (Kozin, et. al., 2022a). In this series of studies, a methodology for training MMA fighters of each fighting style in the annual training cycle of athletes was developed. The distribution of training process resources in exemplary shock microcycles of the competitive period for fighters of each fighting style was also developed. The control group used a standard approach to distributing training loads. The experimental group used a differentiated approach to distributing training loads in the annual training cycle and in individual microcycles. The control group trained without taking into account the fighting styles of MMA fighters, that is, the training program for MMA fighters in the control group in the annual cycle was identical for all athletes. In the experimental group, the training program was different for representatives of different fighting styles. At the beginning and end of the experiment, the effectiveness of the competitive activity of fighters in the control and experimental groups was determined. The experiment lasted during the competitive period of the annual training cycle of athletes from September 20, 2023 to March 22, 2024.

Planning training sessions for MMA fighters in the weekly shock microcycle of the competitive period

General weekly microcycle for MMA fighters (applied in the control group)

This general plan focuses on the balanced development of all aspects important for an MMA fighter, regardless of his individual style.

- Monday: Technique and Sparring

- Warm-up: 15 minutes (cardio, dynamic stretching)

- Technique practice (punching, wrestling, transitions): 60 minutes

- Sparring (light/medium contact): 45 minutes

- Cool-down: 10 minutes (static stretching)

- Tuesday: Strength and functional training

- Warm-up: 10 minutes

- Strength exercises (squats, deadlifts, bench presses, incline presses): 45 minutes (3-4 sets of 6-8 reps)

- Functional exercises (burpees, bench jumps, kettlebell swings): 20 minutes (circuit training)

- Cool-down: 10 minutes

- Wednesday: Active recovery / Wrestling techniques

- Light cardi(running, swimming, cycling): 30-45 minutes OR

- Wrestling Technique Practice (Grappling, Wrestling): 60 minutes

- Thursday: Striking Technique and Sparring

- Warm-up: 15 minutes

- Striking Technique Practice (Combinations, Footwork/Bags): 60 minutes

- Sparring (Medium/High Contact, Focus on Striking Technique): 45 minutes

- Cool-down: 10 minutes

- Friday: Explosive Strength and Endurance
 - Warm-up: 10 minutes
 - Plyometric Exercises (Jumps, Explosive Push-Ups): 20 minutes
 - Interval Cardio (Sprints, HIIT): 30 minutes
 - Cool-down: 10 minutes
- Saturday: General Physical Training / CrossFit
 - Workout that combines elements of cardio, strength, and gymnastics (e.g., CrossFit complex): 45-60 minutes
- Sunday: Rest
 - Weekly microcycles for MMA fighters with different fighting styles (applied in the experimental group)
 - 1. Power style
 - Power style fighters usually strive to dominate the ground, use their physical strength to control the opponent and perform painful/suffocating techniques.
- Monday: Wrestling / Grappling (Technique and sparring)
 - Focus on taking to the ground, position control, painful/suffocating techniques.
 - Intense sparring on the ground.
- Tuesday: Maximum strength (Heavy basic exercises)
 - Squats, deadlifts, bench press, army press, pull-ups with weights.
 - Fewer reps, heavier weight (3-5 sets of 3-5 reps).
- Wednesday: Striking Technique (Fundamentals) / Clinch
 - Practice basic strikes tender the clinch or reduce distance.
 - Intensive work in the clinch (clinch theater, throws, exits).
- Thursday: Wrestling / Grappling (Repetition and practice)
 - Review of the technique learned and practice it with a partner.
 - Positional sparring (fighting for the best position).
- Friday: Submaximal strength
 - Kettlebell swings, sled push/pull, farmer's walk, medicine ball throws.
 - Circuit training with a high number of repetitions.
- Saturday: Active from recovery / Light cardio
 - Swimming, stretching, yoga.
- Sunday: Rest
 - 2. Tempo style
 - Tempo style fighters rely on speed endurance, accuracy, timing, distance work and counter-attacks.
 - They often avoid ground fighting, preferring to work in a standing position.
- Monday: Striking technique (Combinations and speed)
 - Working on complex combinations, speed strikes, mobility work.
 - Leg work, air bags, light speed sparring.
- Tuesday: Plyometrics and explosive power
 - Jumps on the curb, jumps, explosive push-ups, medicine ball throws.
 - Track and field (sprints, long jumps).
- Wednesday: Striking Techniques and Defense from Takedowns
 - Intensive work on defense from takedowns, quick return to the stance.
 - Sparring with a focus on striking techniques and defense from grappling.
- Thursday: Footwork and Distance
 - Working on quick movement, distance changes, entrances and exits from attacks.
 - "Shadow" sparring with an emphasis on movement.
- Friday: Cardio-Endurance (Interval Training)
 - High-Intensity Interval Training (HIIT) with an emphasis on speed and explosiveness.
 - Simulated rounds.
- Saturday: Active Recovery / Wrestling Techniques (Defense)
 - Light wrestling warm-up, practicing basic defensive positions on the ground.
- Sunday: Rest
 - 3. Game Style
 - Game style fighters strive to be adaptable, able to work effectively both in the stance and on the ground, and to transition between them. They often use non-standard attacks and are unpredictable.
- Monday: Combined sparring (Stand and ground)
 - Alternating work in the stance, clinch, transfers and work on the ground.
 - Imitation of a full-fledged fight.
- Tuesday: Strength endurance (Circuit training)
 - Combinations of strength exercises with elements of cardio.
 - Exercises with your own weight, kettlebells, medicine ball.

- Wednesday: Transitions and reaction
Practicing quick transitions between striking techniques and wrestling.
Exercises for speed of reaction and decision-making.
- Thursday: Strike and wrestling techniques (Combination)
Practice striking combinations that end with a takedown.
Or wrestling techniques that open up opportunities for strikes.
- Friday: Functional training and cardio
Workouts that develop coordination, balance, and overall endurance.
Intense cardio (cross-training, swimming).
- Saturday: Flexibility and mobility
Yoga, Pilates, deep stretching to increase range of motion and prevent injuries.
- Sunday: Rest

Characteristics of the complex application of the system of means and methods of differentiated training of MMA fighters

The training process in the experimental group included the following key elements:
Most of the training (60-80%) was aimed at developing the strengths of fighters of different styles of fighting, and a smaller part (20-40%) was aimed at improving the weaknesses. This concept is associated with modern views on the training of qualified athletes, according to which a greater percentage of time should be devoted to the development of crown techniques, i.e. the strengths of fighters.

On the eve of competitions and during periods of increased performance, the emphasis on strengths increased.

Table 1. Distribution of means in the training programs of MMA fighters in the competitive period of the annual training cycle in the experimental and control groups (%)

Group	Technical-tactical fighting style	Preparation tools													
		Physical preparation (% of 100)						Technical preparation (% of 100)		Tactical preparation (% of 100)		Technical-tactical preparation in sparring		Psychological preparation (% of 100)	
		Development of general and special endurance			Development of speed and strength qualities			Development of coordination		Improving basic techniques		Improving "crown" techniques		Improving own fighting style	
		Aerobic endurance	Anaerobic glycolytic endurance	Anaerobic phosphate capacities	Development of speed and strength qualities		Development of coordination		Improving basic techniques		Improving "crown" techniques		Improving own fighting style		Improving basic tactical skills
Experimental group	Tempo style	15	25	10	20	30	30	70	70	30	30	Working to exhaust of partner	50	30	70
	Game style	15	20	15	25	25	20	80	60	40	40	Feints	70	50	50
	Power style	10	15	25	30	20	40	60	70	30	30	Knockouts	95	70	30
Control group	Excluding fighting styles	15	10	10	15	25	25	80	60	40	40	Without respecting the fighting styles	70	50	50

Statistical analysis

To assess the significance of differences in competitive performance indicators between the control and experimental groups, Student's *t*-test was employed. The preliminary Kolmogorov-Smirnov test indicated a normal distribution for all analyzed indicators across all three athlete groups ($p > .05$, as presented in Table 2). This finding supported the use of a parametric method, specifically the Student's *t*-test, for group comparisons. A significance level of $p < .05$ was set for all statistical analyses, which were performed using IBM SPSS Statistics 23.

Table 2. Results of checking samples for corresponding to normal distribution (Kolmogorov-Smirnov test)

One-sample Kolmogorov-Smirnov test			
N			42
Parameters of normal distribution ^{a,b}	Average		1.09
	Standard deviation		0.03
Largest extreme deviations	Absolute		0.197
	Positive		0.184
	Negative		0.197
Criterion statistics			0.197
Monte Carlo Importance (Bilateral)	Significance		0.066 ^d
	99% confidence interval	Lower bound	0.060
		Upper bound	0.073

a. The distribution being tested is normal.

b. Calculated from the data.

c. Liljefors significance correction.

d. Based on a sample of 10,000 tables with a starting value of 2,000,000.

Results

As can be seen from the tables presented (Tables 2, 3), according to the results of the study, the developed methodology for training MMA fighters has proven its effectiveness. This is evidenced by the following results.

Table 3. Results of determining the change in competitive efficiency (conditional units) in the experimental and control groups as a result of the experiment

Testing period Group	Before the experiment		After the experiment		Reliability of discrepancies	
	$\bar{x}$	S	$\bar{x}$	S	t	p
Experimental (N=21)	1.12	0.04	1.29	0.03	4.31	<0.001
Control (N=21)	1.14	0.05	1.13	0.04	1.56	>0.05

• Increased competitive efficiency:

MMA fighters from the experimental group significantly improved their results in competitions ($p < 0.001$). In the control group, which did not use the method, the results practically did not change ($p > 0.05$).

• Comparison of groups:

Before the experiment, both groups had similar indicators ($p > 0.05$).

After the experiment, a significant difference was found between the groups ($p < 0.001$), which confirms the effectiveness of the method.

• Effectiveness of the differentiated approach:

The results confirm the effectiveness of differentiated training, which takes into account the fighting styles of fighters.

Table 4. Results of determining the differences in competitive efficiency (conditional units) between the experimental and control groups before and after the experiment

Group Testing period	Experimental (N=21)		Control (N=21)		Reliability of discrepancies	
	$\bar{x}$	S	$\bar{x}$	S	t	p
Before the experiment	1.12	0.04	1.14	0.05	1.247	>0.05
After the experiment	1.29	0.03	1.13	0.04	4.326	<0.001

The construction of the educational and training process based on the peculiarities of the fighting style of MMA fighters had a positive impact on the effectiveness of their competitive activity. MMA fighters of the experimental group showed a significant increase in the coefficient of competitive efficiency (Table 2, 3). Thus, in the fighters of the experimental group, the competitive efficiency, calculated by the sum of positive points per fight, is 1.12 points, and as a result of the experiment it became 1.29 points. This change is significant at $p < 0.001$ (Table 2).

In the control group, these changes are much less pronounced. We can explain this by the fact that the experiment was held in the second half of the competitive season, when the athletes are already quite tired, and some decrease in competitive efficiency is quite natural. However, this decrease is not observed in the athletes of the experimental group. In addition, the control and experimental groups, which did not significantly differ in terms of average competitive efficiency and stability of game efficiency before the experiment (Table 3), began to significantly differ in terms of these indicators after the experiment (Table 3).

Thus, the average group indicator of the effectiveness of competitive actions in the experimental group significantly increased, while in the control group this indicator remained practically unchanged: 1.14 points before the experiment and 1.13 points after the experiment (Tables 2, 3).

The data obtained show that the use of a system of differentiated training of athletes depending on the style of fighting in the competitive period had a positive effect on their competitive efficiency.

Discussion

Our study confirmed that a differentiated approach to training MMA fighters, tailored to their individual fighting styles, significantly improves their competitive performance. This underscores the importance of personalized and individualized training for enhancing athlete skill. We also contributed to the classification of fighting styles based on athlete movements and highlighted the role of psychophysiological and biomechanical indicators in defining these styles. Our work shows this approach is particularly effective for highly skilled MMA fighters and has broad applications, including self-defense and fitness.

Our research revealed that a differentiated training approach for Mixed Martial Arts (MMA) fighters, which considers their individual fighting styles, is far more effective for competitive activity than standardized methods. Our hypothesis was confirmed: personalizing the training process positively impacts athletes' athletic performance. As a result, a system for differentiated training of MMA fighters with various fighting styles was developed and substantiated.

A crucial factor in improving fighter skill is enhancing differentiated and individualized training processes (Chernozub, et. al., 2018, 2022, (Korobeynikov, et. al., 2025a, 2025b, Kozin, et. al., 2022a, 2022b, Tyshchenko, et. al., 2023). This aligns with studies emphasizing the importance of individual movement characteristics for increasing the speed of various body parts, including the striking hand.

Our study also contributes to the classification of fighting styles based on the specific movements of athletes. It pertains to the core martial arts that formed the basis of MMA and, consequently, different fighting styles. For instance, wrestling styles are characterized by numerous throws and painful techniques.

Key factors determining the high effectiveness of fighter training include:

- A rational and well-founded methodology for teaching combinations of striking and wrestling techniques.
- High levels of strength, power endurance, coordination, and speed qualities.
- Fighters' ability to rationally combine technical actions, disorient opponents through high variability and unpredictability of preparatory actions.
- The skill to correctly choose distance, regulate the force and timing of strikes and throws, and anticipate and quickly recognize an opponent's actions and intentions.
- Consideration of athletes' individual psychophysical characteristics and their unique fighting style.

Among the indicators for comparing athletes with different fighting styles, movement technique indicators are particularly highlighted, as features of individual technical skill are reflected in a certain movement style. Perfect technique is also a major factor in preventing injuries (Alnuman, et. al., 2022, Antonietto, et. al., 2023, Barley, et. al., 2025a, 2025b). Various research methods are employed for this, including observing fighters during a match and recording applied technical and tactical elements, as well as more in-depth biomechanical analysis of individual movements. Biomechanical analysis allows for objective determination of limb and torso speed development features, joint angle changes, and other athlete movement indicators (Batra, et. al., 2025, Bueno, et. al., 2024, King, et. al., 2024, Kirk, et. al., 2024a, 2024b, Kotrba, et. al., 2023). This research area holds scientific promise for both fighters and the general public, aiding in understanding the formation of individual motor activity manners and styles.

Furthermore, a promising area involves determining psychophysiological indicators, particularly the speed of impulse conduction through various central nervous system structures. The physiological basis for style formation lies in relatively unchanging, genetically determined functions, such as neurodynamic processes and psychophysiological capabilities (Korobeynikov, et. al., 2025a, 2025b, Kozin, et. al., 2022a, 2022b, Tyshchenko, et. al., 2023). Recording these indicators during training will help determine a fighter's predisposition to a specific fighting style. It has been established that the development level of psychomotor reactions and athletes' specific perception have certain relationships with typical fighting styles.

Our study builds upon the work of the aforementioned authors, as well as our own research, which proved the feasibility of using biomechanical and psychophysiological indicators to determine fighting style and confirmed that fighting style is determined by the nervous system's genetic characteristics (Korobeynikov, et. al., 2025a, 2025b, Kozin, et. al., 2022a, 2022b, Tyshchenko, et. al., 2023). In our opinion, qualified MMA

athletes are among the most suitable groups for studies aiming to determine the effectiveness of a differentiated approach to training athletes with different activity styles. This is because, as an athlete's qualification increases, technical skill improves, individual psychological and psychophysiological characteristics become more apparent, and studying the features of skilled athletes' technical abilities in relation to individual psychophysiological functions is crucial for understanding motor and psychophysiological manifestations of different activity styles (Chernozub, et. al., 2018, 2022, Korobeynikov, et. al., 2025a, 2025b, Kozin, et. al., 2022a, 2022b, Tyshchenko, et. al., 2023).

Other studies (Batra, et. al., 2025, Kirk, et. al., 2024a, Kotrba, et. al., 2023) have attempted to determine individual fighting styles of qualified fighters based on factor values from the analysis of psychophysiological and biomechanical indicators. Using factor analysis, two main factors were identified in the complex preparedness structure of qualified MMA fighters: "Speed" and "Speed and coordination endurance." (Kozin, et. al., 2021, Kozin, et. al., 2022a, 2022b) The varying prominence of these factors among athletes indicates significant individual differences, confirming the necessity of individualized training programs.

Mixed martial arts are currently experiencing significant development in both professional and amateur sports. MMA classes are widely adopted for self-defense among youth, middle-aged, and elderly individuals for various reasons: maintaining physical fitness, acquiring self-defense skills, relieving psychological stress, among others. MMA classes are particularly important for athletes who have completed their careers in other martial arts but possess a certain athletic qualification. For these MMA fighters, motives extend beyond maintaining physical fitness to include preserving and improving self-defense skills, relieving psychological stress, enhancing individual skills, refining technique, and the ability to continue fighting in the ring against equal or superior opponents. From this perspective, our study on the impact of a differentiated training system for MMA fighters with various fighting styles is crucial for a deep understanding of the patterns in individual skill development as sports careers continue.

Based on the above, we recommend applying the developed differentiated training system for athletes with different fighting styles in the training process of high-level MMA fighters.

So, our research confirmed that individualized training for MMA fighters, tailored to their unique style, significantly boosts their performance. We developed and validated a new training system that proved effective. This highlights the critical importance of considering each athlete's psychophysiological and biomechanical characteristics. This approach is relevant not only for professional fighters but also for anyone engaging in MMA for self-defense and fitness.

Conclusions

A system of training of qualified MMA fighters with different fighting styles was developed. The system is aimed at improving both leading factors (60-80% of the total training time) and working out aspects that are not leading for the athlete (20-40% of the total training time). Power style fighters mainly performed exercises aimed at developing speed-strength qualities, in particular, explosive strength. They also performed exercises aimed at improving the speed of striking movements and reaction speed. Tempo style fighters mainly performed exercises to develop speed endurance, which is provided by the development of aerobic and anaerobic glycolytic endurance. Also in technical training, they mainly performed exercises aimed at developing speed technique and endurance. Fighters of the game style mainly used exercises aimed at developing coordination abilities with high requirements for switching attention.

It was determined that the use of a system of differentiated training of athletes depending on the style of fighting had a positive effect on their competitive efficiency. The control and experimental groups, which did not differ before the experiment, had significant differences after the experiment. MMA fighters of the experimental group showed a significant increase in the coefficient of competitive efficiency. At the same time, these changes were not significant in the control group. It is recommended to use the training system we have developed for fighters of different fighting styles based on the style of fighting.

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