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SYSTEMATIZATION OF COMBAT TECHNIQUES ADAPTED TO THE LEVEL OF A BOXER

Summary. *This report proposes a classification scheme of basic boxing techniques (stance, movement, attack, defense, and counterattack) with specific reference to the adaptation of these techniques for highly skilled boxers. Classifications of fighting techniques that existed and the characteristics of technical and tactical training of athletes at all skill levels are examined. It is shown that the technique is key to the successes of a boxer as a fighter: as with both strikes and defenses the ability to put off a punch is heavily conditioned by the mastery of the movement and accuracy of technique. A review of scientific and methodological literature, an exploration of the skills of well-regarded coaches were part of the research methodology, as were comparisons of technical movements in athletes with different skill levels. The findings of the review illustrate that as boxers grow more proficient they adjust their technique further (i.e. increase economy of movement as well as stylistic diversity at individual level). This article recommends and offers guidelines to develop technique with respect to boxers and future research avenues in the domain of technical and tactical training.*

Key words: *boxing, technical training, stance, movements, attack, defense, counterattack, technical and tactical skills.*

Introduction. Technical preparation is the foundation of a boxer's athletic prowess. Even classic works noted that "technique is the foundation of boxing mastery." Modern research confirms the crucial role of proper technique: the effectiveness of a punch is determined not only by an athlete's physical attributes, but also by the ability to optimally utilize body weight and the kinematics of movement. For example, it has been established that there is no direct correlation between anthropometry and punching force-experienced boxers, through skill, are able to generate greater striking momentum regardless of body weight. Thus, improving athletic prowess is directly linked to improving fighting technique.

Highly skilled boxers (Masters of Sport and above) demonstrate a higher level of technical and tactical arsenal compared to novices. They are distinguished by confident and economical movements, a variety of offensive and defensive moves, and the ability to execute effective counterattacks. Research shows that experienced athletes deliver punches with a more efficient trajectory and greater force than less experienced ones: significant differences in the trajectory and force of their punches were found between them and novices. Furthermore, expert-level boxers have a better sense of distance and timing-for example, when delivering a straight punch (jab), they employ a greater rotation of the body, increasing the contribution of the core muscles, which is not observed in novices. A widespread use of counterpunches and complex counterattacks is also a sign of a high-level athlete. All this necessitates a special systematization of boxing technique applicable to the Master of Sport level.

The purpose of the study: to develop a classification and systematization of combat techniques (stance, movement, attack, defense, counterattack), adapted to the level of a boxer - master of sports, and to determine methodological approaches to improving technique at this stage.

Research methodology. The study is theoretical and methodological in nature. It included a comprehensive analysis of scientific and educational literature

on the technical and tactical training of boxers. Classic works (Degtyarev, Denisov, Filimonov, and others), modern research, and articles, including classifications of boxing techniques, as well as works devoted to the training of highly skilled athletes, were examined.

To assess the adaptation of technique to skill level, a comparative analysis of the technical actions of boxers of varying skill levels was conducted. Data from studies on the biomechanics of punches was used, comparing the force and trajectory of punches in experienced and novice athletes. The results of pedagogical observations of the training process of national teams, described in the literature, were also taken into account. In particular, the characteristics of stance, movement, offensive, defensive, and counterattacking actions in boxers of various ranks and masters of sport were examined. Using an expert assessment method (a survey of top-level coaches), the practical aspects of adapting technique for elite athletes were clarified. This approach allowed us to summarize the best practices of the training process for masters of sport and correlate them with scientific data on technical and tactical preparedness.

Classification and systematization of combat techniques

Modern boxing training emphasizes a number of key components of fighting technique: fighting stance, footwork, offensive actions (strikes), defensive actions, and counterattacks. Below is a classification of these technical elements and their variations.

Fighting stances. Stance determines a boxer's starting position in a fight and the foundations of their balance and defense. The classic boxing stance is a versatile position, allowing the athlete to simultaneously attack and defend. Beginners are typically taught the classic left- or right-handed stance (depending on their dominant hand). This stance ensures stability and mobility: the feet are shoulder-width apart, with one foot slightly forward, maintaining a balanced center of gravity. The arms

are raised to protect the head and body, and the chin is lowered. From a classification perspective, a distinction is made between left-handed and right-handed stances (left-handed or right-handed), as well as open and closed stances (which differ in body position and angle relative to the opponent).

It's important to note that a fighting stance can vary depending on individual style and the fight situation. Experienced boxers often deviate from the classic stance, adapting it to their strengths. For example, some practitioners prefer a lower, more composed stance to enhance defense, while others maintain a higher, looser stance, emphasizing maneuverability. However, the basic principles of stance-stability, balance, readiness for attack and defense-remain constant. Stance is the starting point for all subsequent technical actions.

Footwork. Moving around the ring allows you to gain an advantageous position for attack and evade your opponent's attacks. Footwork techniques include steps (forward, backward, sideways, diagonally), hops (jumping movements), side steps, and body turns with foot transfers. Classic classification distinguishes between sliding steps (short movements that maintain constant foot contact with the platform) and leaping movements (faster movements with a lift-off). For example, to approach an opponent, a forward step with the left foot is often used (for a left-sided stance), and to break the distance, a backward step with the right foot.

Proper footwork ensures both mobility and stability. Movement is considered the foundation of technical and tactical training in boxing – the ability to timely close or increase the distance is a key factor in a successful attack and defense. At long range, a boxer must actively use their feet to keep their opponent at bay, and at close range, they must be able to instantly close the distance for an attack or retreat after an exchange of punches. Movement can also involve simultaneous technical actions: for example, a sidestep with a side step, a step forward with a simultaneous counterpunch, etc. Such complex coordination is typical of high-class boxers.

Attacking moves (strikes). The arsenal of punches in boxing includes straight punches (jabs with the front hand, crosses with the back hand), hooks, and uppercuts. These basic punches can be delivered to the head or body, from a standing position or while moving, singly or in combinations. Punching technique involves the coordinated work of the entire body-from the legs and pelvis to the shoulder girdle and fist. The primary source of force in a punch is the body mass involved in the movement and the explosive contraction of the muscles.

Punches are often classified by trajectory (straight, hook, or underhand) and by the punching hand (left or right). A distinction is also made between accentuated (power) punches and preparatory punches (like the jab used to test the distance). Research into the biomechanics of punches shows that straight punches are more effective at transferring momentum than hook punches: for example, the effective mass involved in a straight punch (cross) averages ~31 kg, while a hook punch only ~12–14 kg. This explains why a properly placed straight punch can knock out an opponent even with a smaller apparent amplitude-it better transfers body mass.

Punch combinations (trains) are a crucial element of attack. Masters of Sport typically possess a wide range of combinations that allow them to penetrate their opponent's defense. Attacks can be conducted in trains, alternating strikes on different planes (for example, a jab-cross-hook train). A key indicator of technical skill is the precision and power of the strikes, coupled with high-speed execution, as well as the ability to interrupt a train of strikes or switch to defense while conserving energy. At the master level, strikes become more focused and economical-the athlete strikes only when there is an opportunity to deliver an effective strike, avoiding unnecessary, "throwing" movements.

Defensive actions. Defensive techniques include techniques that prevent an opponent's strikes from landing. All defensive actions can be divided into three main groups based on their execution: leg defense, arm defense, and body defense.

Movement defense involves evading a strike by moving the body: steps backward, to the side, diagonal steps, or pivots (avoiding the attack). For example, a straight strike can be defended by stepping back or to the side. These defenses are considered the simplest and are learned first, as they naturally utilize leg movement.

Hand defenses include various blocking actions: stances (a firm block of a strike with the forearm or palm), parries (a deflecting movement of the hand, disrupting the strike's trajectory), and pads (softening the strike with the palm or glove). Hands are typically used to defend against straight and side strikes at mid- and close-range. The advantage of hand defenses is that they allow you to immediately prepare the ground for a counterattack-the hand that parried the strike can immediately launch a counterattack.

Body defenses include dodging (pulling the body back or to the side) and ducking (crouching with the head down or to the side). These elements require high coordination and a sense of distance, and are therefore considered the most difficult to master. By dodging the body, a boxer "blanks" the opponent's punch-for example, ducking the head to the side to avoid a side punch. A duck allows a boxer to avoid punches by ducking under the opponent's arm (typically used against sweeping side punches).

There are dozens of variations of defensive moves in boxing-for example, there are approximately 36 basic types of a defense, considering the various execution methods. Experienced athletes combine defenses: stepping back while simultaneously extending a hand, dodging while simultaneously parrying, etc. A competent defense is characterized by minimal energy expenditure and optimal positioning for a subsequent counterpunch.

Counterattacks (counter-strikes). A counterattack is a strike or series of strikes delivered in response to an opponent's attack after a successful defense, or almost simultaneously. Counterattacks are divided into counter-strikes

(preemptively delivered, simultaneously with the opponent's attack) and retaliatory strikes (immediately following a defense). In any case, a counter-strike is closely linked to a defensive action: it is always delivered in conjunction with defense, otherwise it risks being intercepted by the opponent's strike.

A classic example of a counter-attack is parrying or evading a strike with an immediate counter-strike. In close combat, counter-attacks are typically delivered with short punches (hook, uppercut), while at medium range, counter-strikes are effective. Using a counter-strike "in tempo," that is, almost simultaneously with the opponent's attack, is considered a sign of a high-class boxer, as it requires impeccable timing and reaction. To successfully counterpunch, a boxer must accurately neutralize the opponent's attack - either block the punch or avoid it - and immediately take advantage of the opening.

Counterattacks also include tactical combinations: optimal defenses and subsequent counterstrikes are selected for each typical opponent's attack. A high-level athlete meticulously learns these combinations and perfects them to the point of automatism. Achieving effective counterattacks requires extensive specialized training aimed at developing the automation of technical actions and quick response. Therefore, it is masters of sport, with their extensive experience, who most successfully employ counterattacks in fights.

Thus, fighting technique is systematically divided into these five components. A boxer's level of preparation can be characterized by the breadth and flexibility of their technical arsenal in each of these components. During the initial training phase, the emphasis is on mastering basic forms (classical stance, simple movements, single strikes, and elementary defenses). As skill increases, technique becomes more complex: combinations, individual variations of stances and evasions, and active counterattacking are introduced. Next, we will consider how technique is adapted to the level of a master of sport.

Adaptation of technology

An athlete's transition to the Master of Sport category is accompanied by a qualitative leap in technical and tactical mastery. Classic techniques acquire a personalized twist, and the technique is optimized for the individual boxer and his or her fighting style. While in the initial stages of training, technique is relatively standardized (athletes are taught the same basic moves), a unique fighting style is developed based on these basic techniques.

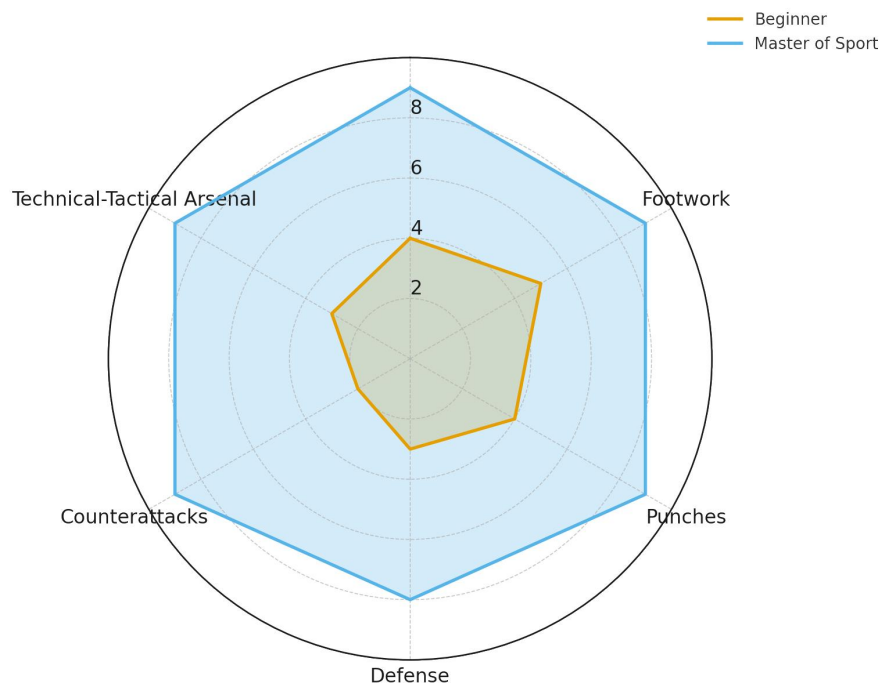
One manifestation of adaptation is the modification of stance and fighting position. As skill improves, the classic fighting stance is transformed into a customized stance that best suits the individual's fighting style. For example, a highly skilled boxer with an aggressive style may maintain a more open stance to maneuver and provoke an opponent, while a counterattacking specialist, conversely, will adopt a closed, low stance to strengthen defense and prepare for counterpunches. A customized stance takes into account the athlete's strengths (speed, punching power, reaction time) and mitigates their potential weaknesses. Coaches note that at the masters of sport level, there are no longer strict requirements for standardized stances – what is more important is the effectiveness and convenience of the position for a given boxer, and its compliance with the tactical plan.

Economy and efficiency of technique are key signs of mastery. Masters of sport typically move and attack more economically, without unnecessary movements. Every step, dodge, and strike is executed with precision. A study of the training process of highly skilled boxers has shown that, under high-intensity training, they are able to maintain purity of technique: all exercises are performed at high speed with excellent striking, defense, and movement technique, while coaches continually correct subtle details such as body position during strikes, stance composure, synchronicity of footwork and arm movement, and economy of movement. This means that the athlete is able to maintain proper technique even

under fatigue and pressure from an opponent, which distinguishes them from a lower-ranked boxer.

Individualization of a boxer's technical arsenal is another hallmark of mastery. A high-class athlete typically has signature moves-particularly effective punching combinations, favorite counterpunches, and a distinctive defensive style. For example, one expert might excel at the jab and build a fight from a distance, while another specializes in close combat, using a series of slips and uppercuts. At the same time, a highly skilled boxer remains versatile: a variety of technical moves is one of the hallmarks of mastery. A wide range of punches (various variations of straight, hook, and bottom punches) characterizes an athlete's technical prowess, and the ability to combine them with reliable defense determines their combat effectiveness. Experts note that a boxer's level of combat effectiveness is largely determined by the breadth of their defensive arsenal-at a high level, an athlete must be able to neutralize various types of attacks and immediately launch a counterattack.

Counterattacking is especially effective at the master's level. While a novice boxer often alternates between defense and attack, a skilled boxer is capable of performing them seamlessly: parrying a punch and instantly responding. The extensive use of counter-punches and counter-punches requires automatic technique and anticipatory reactions, which are achieved through years of practice. Therefore, master's training places special emphasis on developing speed, strength, and reaction skills specifically for counterattacks-simulating combat conditions in which the athlete learns to parry an attack and immediately strike open targets. This skill significantly improves competition effectiveness, as at the highest level, a single effective counterpunch can decide the outcome of a fight.



It's worth emphasizing that at the Master of Sport level, the role of tactics continues to grow, but tactical plans can only be implemented with a sufficient technical foundation. An experienced boxer quickly analyzes the situation during a fight and selects the optimal technique from their arsenal. Thus, technical and tactical training at the highest stages of athletic development are inextricably linked.

To summarize, adapting technique to the master of sport level involves:

- individualizing stance and fighting style;
- increasing the efficiency and precision of all technical actions;
- expanding and mastering the arsenal of strikes and defenses;
- integrating defense and attack into unified counterattacking maneuvers;
- developing specialized physical qualities to meet the demands of complex technique (speed-strength endurance, reaction, coordination).

These changes are supported by an appropriate training system, which will be discussed below.

Practical Application and Training

To achieve and maintain a high level of technique, a boxer requires a well-thought-out, multi-year training process. The training of a Master of Sport in boxing is structured around both the development of physical fitness and the constant refinement of technical skills. Below are the main methodological approaches to practical technique development at this level.

Improving Technique in Specific Conditions. At the elite level, training is as close as possible to competitive activity. Sparring is widely used, including sparring with tasks (simulated fights), where the athlete hones their signature techniques and adapts them against a variety of opponents. For example, to improve counterattacking, exercises are conducted where the boxer must immediately counterpunch after each defensive move. This practice improves automaticity: repeated "defense-counterpunch" situations become reflexive. It is important for a Master of Sport not only to know the techniques, but also to be able to apply them instantly and appropriately in combat, which is achieved through regular combat practice.

Individualized training. At the highest level, the role of an individualized approach increases dramatically. The coach, working with the boxer, analyzes their fighting style, strengths, and weaknesses, and adjusts the training program accordingly. For example, if an athlete excels at long-range techniques (jab, movement) but struggles in close combat, the plan includes additional work on close-range striking, improving body defense, and internal combat. Individualization also applies to the selection of sparring partners and specialized exercises. Experts note that planning the training process during difficult stages of preparation is the key to success. It is necessary to alternate high-stress mental training (sparring, competitive matches) with gentle technical refinement exercises to simultaneously promote progress and avoid overtraining.

Comprehensive development of physical and technical fitness. Technique and physical fitness complement each other. Specific physical qualities (punching power, hand and foot speed, endurance) allow for more effective execution of technical plans. At the same time, refined technique makes physical actions more effective. In the training of masters of sport, specialized strength and speed exercises are used, aimed at improving boxing performance. According to reviews, properly planned strength training can significantly improve boxers' punching power and speed without compromising their striking technique. For example, developing explosive strength in the legs and core through plyometric exercises and weightlifting leads to increased punching speed and power. Research shows that after targeted strength interventions, boxers experience increases in maximum punching power and the power of their upper and lower extremities. This means that, along with technical training, the athlete must complete a physical training program (general and specific) that will provide the material basis for technique – strong legs for movement, a powerful body for punches, and functional endurance for fighting at a high pace.

Technical training tools. Modern technological means for technique monitoring are widely used in the training of masters of sport. Video analysis of fights and sparring sessions helps identify errors and potential areas for improvement: athletes and their coaches review recordings of their matches, assessing areas for improvement in stance, punch timing, or defensive maneuvers. Innovative sensors (wearable sensor systems) for punch monitoring have recently been introduced. For example, the use of specialized sensors on gloves provides objective information about the trajectory, speed, and force of punches in experienced athletes. This digital analysis of technique provides feedback for targeted adjustments. Simulation exercises ("boxing kata")-complex movement sequences performed without a partner, aimed at developing proper biomechanics-

are also used. Research has shown that simulated technical actions improve the effectiveness of initial training and can be used to develop automaticity in highly skilled athletes.

Psychological and tactical preparation are combined with technical training. Experience shows that even perfectly developed technique can fail without adequate psychological stability and tactical thinking. Therefore, during training for masters of sport, technical exercises are often performed under stressful conditions: simulating pressure from an opponent, working under extreme fatigue, and sparring with obviously difficult opponents. This teaches athletes to maintain technique under pressure. Tactical scenarios are also practiced: the athlete practices applying the right technique at the right moment in a fight (for example, a counterpunch against a specific opponent's attack). This integrated approach-technique + tactics + psychology-is typical for the training of elite athletes.

In practical terms, a coach working with a master of sport-level boxer should focus on regular technique correction. Even a highly experienced athlete can develop undesirable movement patterns without systematic analysis. Therefore, it is recommended to include special "technical sessions" in the plan on a weekly or monthly basis, focusing solely on the quality of striking, defense, and movement (without extreme training). For example, conducting technical sparring at a controlled speed, working in front of a mirror, on a heavy bag, or on mitts, emphasizing technical details. This "boxing school," combined with general intensive training, allows a master of sport to progress even at the peak of their career.

Prospects and Further Research

Improving boxing technique at the highest level of athletic mastery is an ongoing process, and a number of questions remain open for research. Promising areas of scientific research in this area include the following:

- **Individual boxing styles and morphotypes.** Research is needed linking technical fighting style with individual athlete characteristics, such as anthropometry, psychomotor skills, and higher nervous system activity. For example, it would be interesting to study how height and reach influence preferred techniques (long-range vs. close-range tactics) among masters of sport and develop recommendations for adapting techniques to individual morphotypes. Such studies would help coaches more accurately develop techniques tailored to the athlete's natural abilities.
- **Biomechanical analysis of elite technique.** Modern technologies (high-speed video, inertial sensors, force platforms) offer the potential for in-depth analysis of boxers' movements. Biomechanical studies involving Masters of Sport and Honored Masters of Sport are promising, aimed at quantitatively assessing their technique: punch trajectories, force distribution, and movement coordination. Comparing these data with those of less skilled athletes will allow for a clear identification of the biomechanical characteristics that distinguish elite technique. For example, recent studies on the effective mass of punches have provided valuable insights into the contribution of body mass to punching force and demonstrated the importance of technique in maximizing this contribution. Further similar studies could help optimize training methods (for example, by increasing the proportion of exercises that synchronize body movements during punches).
- **Training technologies and tools.** The future is expected to see the development of electronic technical training systems, including virtual sparring partners, augmented reality systems for practicing strikes and defenses, and smart training equipment. Scientific support for the implementation of these technologies is another promising area. For example, initial studies using audiovisual biofeedback are already showing

improvements in athletes' technical performance. Further work is needed to integrate such tools into regular training and evaluate their effectiveness compared to traditional methods.

- **Psychophysiological aspects of technical mastery.** High technical skill is associated not only with muscle memory but also with the nervous system-quick decision-making, sustained attention, and anticipation of an opponent's actions. Studies combining technical tests with neurocognitive ones are of interest-for example, how mental fatigue affects the accuracy and timing of defensive and counterattacking actions in boxers of different skill levels. Evidence has already been obtained that mental fatigue impairs the ability to predict punches in athletes, which may be more pronounced in less experienced ones. Further study of these factors will help develop optimal training and recovery regimens.
- **Comprehensive model for training a master of sport.** Methodologically, the development of integrated models describing the multi-year development of a boxer's technique from the initial stages to the highest level of mastery is promising. Such models would take into account the stages of training, sensitive periods for the development of certain skills, and their integration with physical and tactical training. The results of our review confirm the effectiveness of the principle of integrating the development of technique and physical qualities in the training of highly skilled athletes. Theoretical interpretation of this experience in the form of models and recommendations will be a valuable contribution to the development of sports talent.

Overall, further research should be aimed at scientifically substantiating methods for improving boxers' technical skills. This is important both for

maximizing the potential of individual athletes and for improving the overall level of training within sports schools and national teams.

Conclusion. Boxing technique can be systematically divided into basic components: stance, movement, attack, defense, and counterattack. At the highest level of athletic mastery, each of these components reaches a high level of development and acquires individual characteristics tailored to the athlete's style and capabilities. An analysis of literature and experience shows that masters of sport demonstrate significantly more effective, efficient, and versatile technique than lower-ranking athletes. They use a customized stance, confidently master all types of movement, deliver precise strikes with optimal trajectory, possess a rich arsenal of defensive moves, and are able to instantly counterattack after defending.

Systematizing technique adapted to the master of sport level allows for the development of methodological recommendations for coaches. In training highly skilled boxers, it is advisable to emphasize the following: developing the automaticity of complex technical moves (especially counterattacks), maintaining high-quality technique under maximum loads, individualizing stance and preferred techniques, and integrating technical, physical, and tactical training. Practical experience confirms that systematically improving specialized physical fitness alongside technique increases the effectiveness of the training process.

Thus, a boxer's skill is formed on a solid technical foundation. A Master of Sport is an athlete who has elevated basic technique to the level of art, able to adapt it to their personal style and combat conditions. A systematic approach to teaching and practicing technique, taking into account the stage of athletic development, ensures a gradual transition from mastering the basics to the heights of individual mastery. Further accumulation of scientific data on the technical and tactical training of elite boxers will contribute to the improvement of training programs and the emergence of new champions.

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