



### *ANALYSIS OF MODERN TRAINING TECHNIQUES IN BOXING*

*Dragan Vasiljević  
Nemanja Maksimović  
Patrik Drid*



The project is co-financed by the  
European Union

*Good neighbours  
creating  
common future*

## ***CONTENT***

Introduction	3
Analysis of scientific articles	4
<i>Scoring system and analysis of amateur boxing match</i>	4
<i>Guard at winners and losers</i>	6
<i>Elements of offensive techniques</i>	7
<i>Elements of defensive techniques</i>	7
<i>Types of punches delivered during fights</i>	7
Modern boxing training techniques	12
Analysis of modern training techniques used in boxing	20
<i>Focus group analysis</i>	20
An innovative approach to learning basic boxing techniques	30
<i>Boxer stance</i>	30
Kicking technique	36
<i>Direct performance technique</i>	36
<i>Crochet technique</i>	41
<i>Uppercut execution technique</i>	44
How do athletes and coaches react to innovations in sports?	47
Presentation of the education system	48
Recommended actions	49

## **Introduction**

Sports always offer a good opportunity to bring people together, even if they are from a different community or culture. This is no different in the world of boxing, where a well-functioning professional collaboration can be of the greatest importance, as a result of which both boxers and boxing can benefit greatly.

Boxing is one of those sports that doesn't get a lot of attention. As it receives less attention, it has fewer financial resources to work with.

The main goal of the projects is to improve boxing in the border region. In addition to this, the tasks are: popularization and promotion of boxing, education of coaches and athletes, and establishment of cooperation between sports associations of the border region. International boxing competitions are aimed at the development of athletes, the improvement of their competitive abilities, and the popularization of boxing. Developing a strategy in the cross-border region is important not only for research and development of cooperation but also for providing an accurate picture of the current state of boxing in the region and assessing potential development opportunities.

The project includes the analysis of modern techniques used in boxing, which is the main focus of this document, as well as a database of boxing clubs, gyms where boxing is practiced, and relevant infrastructure in the region. The goal of the project is to

enable an easier flow of information in the region and create opportunities for professional cooperation. The new boxing development strategy predicts the development of an efficient system for the development of young talents.

In addition, planning new seminars for boxers and their coaches will create a strong basis for their professional development. Project activities give participants new theoretical and practical knowledge. International boxing competitions aim to develop professional cooperation in the region and increase opportunities for development and participation in competitions.



## Analysis of scientific articles

### *Scoring system and analysis of amateur boxing match*

Boxing is a sport with a very long tradition, dating back to the



ancient Olympic Games.

**Figure 1** . A fight scene.

Namely, today's form of boxing is explicitly divided into two trends. The first one is related to professional boxing, where the judging of the fight is based on the scores. Another trend relates to amateur boxing, where the automated scoring system (ABSS) is used. This system requires using different techniques than those normally used in professional boxing, that is, to adapt their fighting style to this way of scoring (Bianco et al., 2013). Fight analysis is usually done in professional sports and is present in

all combat sports. Sports clubs, led by coaches and sports workers, create databases with multiple aspects, thus enabling the preparation of offensive and defensive techniques and appropriate tactics as well as fighting styles in relation to the individual skills of each competitor (Bianco et al., 2013; Bujak et al., 2013; Kapo et al., 2008; Ashker, 2011).

The regulations that serve to maintain amateur boxing's reputation as a safe and fairly officiated sport have always been subject to change. This happened mainly due to the pressure exerted by the International Olympic Committee, which over the last twenty-five years forced multiple changes related to the scoring system. Having in mind that these changes affected the adaptation of the fighting style in the competitions, an observational study was conducted that examined the direction of changes in boxing fighting styles during the Olympic Games in London 2012. Namely, this research dealt with the analysis of 10 final matches from the Olympic Games. The research dealt with the analysis of offensive and defensive activities (data on the number, type, and efficiency of blows, types of series of blows and data on the number of defensive actions) during the entire fight divided into rounds.

### *Guard at winners and losers*

In the amateur boxing finals during the 2012 Olympic Games, a large number of athletes (meaning the right hand placed forward) who used counter-guard participated. Among the twenty finalists, as many as eleven competitors took counter-guard during the match, and seven boxers won the gold medal.



**Figure 2.** Counter-guard.

### ***Elements of offensive techniques***

*The number of punches* thrown during the fight ranged from 86 to 357. The average number of punches thrown during the final fights was 188.75 punches per competitor (21 punches per minute and ~63 punches per round). As the amateur boxing match is limited to a maximum of 3 rounds, a significantly higher number of punches were registered during the second ( $65.15 \pm 39.4$  punches) and third rounds ( $65.6 \pm 48.3$  punches) compared to the first ( $58 \pm 41.6$  beats).

### ***Elements of defensive techniques***

Blocking, as opposed to counter kicking and footwork, made up almost 2/5 of all defensive techniques and was therefore the most used defensive technique. The recorded high percentage of defensive actions by blocking is due to the fact that this technique is simple to perform and allows defense against several different punch-techniques.

### ***Types of punches delivered during fights***

A significant difference was observed in the number of blows delivered by specific techniques. The average number of strikes was 116, while the average number of crochets was 48 and uppercuts were only 25. The average number of blows with the "front" hand was 106, while the number of blows with the "back" hand was 83. From these data, it can be concluded that

1.3 times more blows are given with the hand placed forward than with the "back" hand (Table 1). The crochet technique was performed twice as often with the "front" hand, while the "wide crochet" technique was used significantly more with the "back" hand. The average number of blows to the head was significantly higher than the number of blows to the torso (6:1). Boxers used short series of 2-3 punches far more frequently than long series (4+ punches).

**Table 1.** Percentage of hits in the final matches of the Olympic Games (2012)

	<b>Directly</b>	<b>Crochet</b>	<b>Uppercut</b>
<b>Kick technique</b>	61%	26%	13%
<b>Kicks with the "back" hand</b>	43%	34%	67%
<b>Punches with the "front" hand</b>	57%	66%	33%

As already stated, a greater number of athletes with counter-guard than boxers with classical guard took part in the final fights. This fact can confirm the tendency observed during the last few years where the use of counter-guard is emphasized, which apparently could increase the competitor's chances of winning.

The analysis showed that certain offensive and defensive techniques were used more often than others, while some were barely used.

There are quite a few studies that attempt to define the technical and tactical aspects of amateur boxing. Certain researchers have confirmed the changes in combat techniques that occurred as a result of the introduction of ABSS. One study confirmed that the introduction of this scoring system contributed to a reduction in the percentage of blows to the torso in all weight categories, even below 20 percent. This means that during the final fights, over 80% of the blows to the head were registered with this scoring system (Nonjak, 1994).

Unfortunately, the tendency to practice more direct punches from a distance causes technical and tactical limitations in boxing and thus makes the matches less spectacular.

Caused by the introduction of the automatic scoring system, in today's boxing, some offensive and defensive techniques are significantly more prevalent while others are completely neglected. This has forced athletes around the world to adapt their fighting style to the current scoring system. Analyzing matches as well as identifying the differences between winners

and losers can be useful for talent recognition, training, tactical battle strategy, and improving performance in the future.

***Literature:***

1. Bianco M, Loosemore M, Daniele G, Palmieri V, Faina M, Zeppilli P. Amateur boxing in the last 59 years. Impact of rule changes on the type of verdicts recorded and implications on boxers' health. *No. J Sports Med.* 2013, 47(7), 452-7.
2. Bujak Z, Gierczuk D, Litwiniuk S. Professional activities of a coach of martial arts and combat sports. *Journal of Combat Sports and Martial Arts* . 2013, 2, 83-89.
3. Kapo S, Kajmovic H, Cutuk H, Berisa S. The level of use of technical and tactical elements in boxing based on the analysis of the 15<sup>th</sup> B&H individual boxing championship. *Homo Sport* . 2008, 2, 15-20.
4. Ashker S. Technical and tactical aspects that differentiate winning and losing performance in boxing. *Int J Perform Anal Sport* . 2011, 11, 356-364.
5. Nowak T. Sędziowanie elektroniczne- ratunek dla boksu czy wielka pomyłka? *Training* , 1994, 3.

## Modern boxing training techniques

Methodology studies laws in connection with ways, types, and forms of training and teaching work (processes). Methodology comes from the Greek word *methodos*, which means a way of investigating phenomena or approaching the phenomena being investigated.

By studying the legality of the training process or educational work, boxing methodology offers concrete and optimal solutions with which physical exercise will maximally affect the transformation of the entire anthropological status of the participants in that process.

When talking about training methodology, most often it means:

- organizational forms of training or teaching,
- methodical forms of training, and
- methods of training or teaching work.

Organizational forms of training are: individual, group, frontal, and combined.

In boxing, the individual form of work can also be called when working with one boxer or with a pair of boxers. There is a methodical exercise of shadow boxing (boxing with a shadow), with which one also learns and perfects the individual boxing technique, but without a partner. In training theory, individual training implies an organizational form of work in which one boxer, under the guidance of a trainer, conducts the entire training or one part of it.



The group form of work in training is common when a group of boxers is determined for a competition and they are worked with additionally or separately, when certain segments of technique or tactics are worked on. For example, when working with a certain group on a combination, with another group improving the shot, while with the third group working on the jab. Group training is organized with a group of boxers who have approximately the same level of motor skills and knowledge. Training is rationalized by forming homogeneous groups.

The frontal form is the most commonly applicable method of working in training, especially in the introductory, preparatory, and very often final parts of training. It is suitable when in training you want to influence team reaction in the area of technical-tactical action, as well as during fitness training.

The Combined organizational form of work implies a combination of at least two of the three mentioned organizational forms of work. The combined form of work is most often used in the training of more experienced boxers.

Working methods in the realization of the program contents of teaching form, along with the organizational forms of work, create a unique teaching unit. So, in pedagogical practice, the following methods are used when teaching or training boxing:

- teaching methods;
- exercise methods; and
- studies methods.

We apply the following teaching methods in the boxing methodology:

- method of oral presentation;

- demonstration method; and
- the method of setting and solving motor tasks.

The oral presentation method is used in all organizational forms of work. It includes the following stages: describing the motor movement, explaining the motor movement, correcting the motor movement and analyzing the motor movement.

Describing motor movements are most often used in the initial phase of learning the technique, where it is necessary to respect the developmental characteristics of the individual in the training or educational process.

The explanation of motor movement is used by the coach when the children do not understand the description of motor movements well or do not properly adopt the technical element through the demonstration method, so they are given additional instructions on the technique being worked on.

Corrections of motor movement include verbal warnings about wrong performances, mistakes, and guidance on how to perform them correctly.

The analysis of motor movement is used when the athletes have mastered the basic structure of the technique with the aim of perfecting it.

It is important that the oral presentation method be short, clear, and understandable for people in the training process.

The demonstration method forms the basis of boxing training practice. Everything that the participants in the training process need to learn must be shown to them beforehand, that is, demonstrated. The demonstration must clearly show the motor movement. The first demonstration must be original, which means that the technical element should be performed in its

entirety, without interruption, and with adequate speed and power as it is performed in the match. A certain technical element is performed by a coach or demonstrator.

The method of setting and solving motor tasks can be at a lower or higher level. At a lower level, children perform the given motor movement as best suits them, by their own choice, while at a higher level, the given motor movement is made more difficult for children by the character of the performance, the direction of movement, the duration or the speed of the performance, which they then solve by their own choice.

The following exercise methods are used for correct dosage, distribution, and load control:

- method of standard repetitive exercises (iterative method),
- variable exercise methods,
- situational method of exercise, and
- combined exercise methods.

Methods of standard repetitive exercises (iterative method) imply that exercises or techniques are repeated, i.e., performed without significant changes in their motor structure and load.

The methods of variable exercise are reflected in the specifics of the application of various exercises and loads. During the performance of the assigned exercises, the tempo, rhythm, duration of work, and load change.

Many authors also call the situational method of exercise the competitive method. This method is used primarily in the

implementation of training content in which the goal is competition.

The combined training method is a combination of different methods, that is, at least two of the three previously mentioned, which depend on the creativity of the coach, that is, on the goal, the task, or the complexity of the technical element.

Teaching methods are divided according to:

- method of transmitting information,
- the way of learning - mastering the motor task.

According to the method of transmitting information, they differ:

- verbal method,
- visual method,
- motor method (demonstration),
- problem method, and
- combined method.

By using the verbal method, the athlete is enabled to create a high-quality representation of the motor task, that is, the technique when describing, explaining, correcting, and analyzing, with an emphasis on improvement, processing - learning boxing technique.

Using the visual method, the technique is shown to the athletes with visual material via video recorders, photographs, personal computers, or other visual records.

The motor method (demonstration) or the demonstration method is still the most common boxing method. By means of this method, the boxer gets an idea of what and how complex an element is through a high-quality motor performance, i.e., a demonstration of a particular technique or combination.

The problem method involves setting a motor task without special previous explanations and methodical instructions. It is applicable for teaching simpler motor tasks. More complex motor tasks at a high level can only be solved by extremely capable athletes.

The combined method implies the use of at least two of the four teaching methods listed here according to the way information is conveyed.

According to the method of acquiring and mastering information, they differ:

- synthetic method,
- analytical method,
- situational method,
- ideomotoric method, and
- combined method.

The synthetic method implies the adoption and improvement of the technique, that is, the motor task as a whole. The boxer tries to realize the task as a whole, concentrating on performing the most important phase of the entire technique as correctly as possible, i.e., global motor activities. It is specific to the synthetic method in boxing that at first the progress is slower, but later on it is faster.

The analytical method of teaching is considered a procedure in which the global motor movement structure (boxing technique) is divided into several phases, i.e., elements, so each phase is adopted separately, and after some time, when individual parts are learned, they are connected into one whole. It is characteristic of this method that at the beginning there is faster progress in performing parts of the technique, but joining the phases into an integrated whole can be a longer and painstaking job that slows down the progress, i.e., prolongs the duration of the acquisition of the motor task.

The situational method means that the elements of technique and tactics are learned and perfected in conditions corresponding to competitive ones. It is recommended to acquire basic information using a synthetic method, but the definitive stabilization and automation of knowledge must take place in situational conditions, i.e., at the situational level.

The ideomotor method consists of the boxer mentally reproducing the task. The importance of thought activities comes to the fore in designing the performance of a motor task through the connection of perceptual and performed movements. Practically, this means that for some time after the training, the boxer repeats in his "head" what was the subject of motor learning.

The combined teaching method tries to connect these four mentioned teaching methods. There are different ways of combining, and some of them are: synthetic - analytical (errors are corrected by analytical procedure), situational - synthetic - analytical, ideomotor - analytical, etc.)

With children, we most often use these teaching methods (according to the method of learning motor information): synthetic, situational, and combined. While teaching the situation, the preferred teaching methods (according to the way of learning motor information) are: in the first place, the

analytical method, then the ideomotoric method, then the situational one, i.e., combined.

The advantages of using the synthetic method are as follows:

- a correct representation of the entire performance structure,
- cause – and - effect connection of individual phases,
- movement is performed in a logical sequence,
- has a positive effect on motivation,
- enables the creation and use of kinesthetic information during the adoption of a new movement,
- from the first moment, the correct rhythm of movement is adopted.

While the disadvantages of using the same method (synthetic method) are as follows:

- individual structural units can be adopted with insufficient precision,
- there are objective difficulties for a boxer in performing a complex structure of movements with adequate control.

The selection of methods is made according to the characteristics of the motor task and the characteristics of the practitioner.

The characteristics of the motor task that conditions the application of an adequate method mean:

- length, complexity, and degree of integration of parts of exercises (technique - motor task);
- more difficult exercise (technique: motor task) combined exercise;
- easier exercise (technique: motor task) synthetic method.

The characteristics of an exerciser, which condition the application of an adequate method, mean:

- that it depends on the motor and cognitive abilities and conative characteristics of the exerciser,
- the more these abilities are used, the more synthetic methods are used and vice versa.

The correct order of learning technical elements enables their application in technical-tactical combinations of connecting techniques.

An improper order of learning technical elements makes it impossible to create technical and tactical combinations and automatically makes the boxer less effective.



## **Analysis of modern training techniques used in boxing**

The 5 clubs from Serbia with the most trophies in the last 5 years in the men's and women's categories were extracted from the database. A focus group discussion (FGD) was organized with the coaches of the clubs. The goal of the FGD was to gain a deeper analysis of the basic and innovative techniques used in boxing.

The expert team developed the important data presented in this document after analyzing the results of three studies, focus groups, and scientific articles.

### ***Focus group analysis***

A boxer's sports career is a long-term process that includes a period of practice from the very beginning of boxing to the last competition. The process of sports preparation must be organized in such a way as to minimize the possibility of injuries and delays in sports development. Contents, methods of work and volume of load in the training process should stimulate the dynamic development of boxers, managing all the sensitive phases for the development of motor-functional abilities and the learning of biotic, general and specific motor skills. Some participants of the focus group discussions support the thesis that the period in which certain motor-functional

abilities are most successfully developed depends on the specifics of boxing, while others advocate the thesis that the sensitive phases for the development of certain abilities are precisely defined and independent of the specifics of boxing.

However, all participants agree on one thing, and that is that the peak of the complete anthropological and competitive potential of the athlete should be achieved at the senior age.

The prevailing opinion is that the process of long-term sports preparation in most sports, including boxing, can be divided into four phases, as AIBA did: 1.) the initiation phase (preliminary phase); 2.) stage of sports development (base); 3.) specialization phase; and 4.) the phase of reaching and maintaining the greatest sporting achievements. Considering that this manual will be about the training of younger age categories of boxers, only the first three phases will be reviewed, which largely overlap with the phases for recognizing the talents of boxers described earlier.

***The initiation phase*** usually covers a period of 6 to 12 years of age. Namely, at that age, children usually start practicing boxing in an organized manner. It begins with the fundamental phase (ages 6-8) where the goal is to learn all natural forms of movement in order to later develop motor skills (technique). At the end of this phase from 9 to 12 years old, the goal is to learn

the basic techniques of sports, including boxing (*"learn to train"*).

It is necessary to learn skills. The basic means of developing anthropological abilities, traits and learning the motor skills of boxers in this period should be the game. At this stage, it is enough for children to train boxing in an organized manner three times a week for an hour. However, they should be encouraged and motivated to engage in other activities and to actively spend their free time on various games. Boxers of that age should be physically active for at least three hours a day. Children should be interested in loving boxing. In the initiation phase, the emphasis must be on learning a large number of different motor skills that are not necessarily related to boxing.

There are two main reasons for this:

- a) Motor skills not mastered at this stage are extremely difficult to compensate for and learn later;
- b) There is an extremely large transfer of knowledge from the above activities to specific motor boxing knowledge, which will be adopted faster and better in the later stages of sports development in that case. It is also desirable to develop basic motor skills (especially coordination, flexibility, and balance) and to require children to acquire only basic specific boxing knowledge. Young boxers should be encouraged to develop

motor skills in a stimulating and pleasant environment. Flexibility is best developed precisely at this initial stage of sports development. Later, the level reached is maintained. Stretching must be static in nature and be combined with various games to make it as interesting as possible for the boxers. The preliminary phase of sports development represents the most important period for the development of coordination in children. Through boxing training, children should encounter as many different activities as possible (elementary games, ball games, fighting games, running, crawling, etc.). Although the fundamental techniques of boxing have a relatively simple movement structure, for children aged 7 to 10, they are complex in nature. Learning these techniques as children further enhances the development of coordination. Balance at this age should be developed primarily through various games that contain some elements of boxing techniques. Also, balance will be improved by learning and practicing different activities such as rollerblading, skiing, etc. As it is a complex ability, improving the remaining abilities will also develop balance. Strength training in the initial phase should be limited to exercises with your own weight and with appropriate props. Emphasis should be directed to the trunk muscles. Static stress should be avoided. It is extremely important that children first develop the flexibility of all joints and strengthen the ligaments. In this way, the child's organism will be better prepared for the later

increasing loads. Speed is an ability that is specific to boxing and is largely genetically conditioned. However, with the correct choice of motor operators, it can be significantly developed in the first phase of sports development. Various relay games are ideal for developing speed in the first phase of a boxer's sports development. At the same time, the development of the upper body region must not be neglected, so it is necessary to perform various exercises (e.g., shooting) with balls. By increasing children's coordination, their speed will also increase. Since children aged 6 to 10 years old have a low stroke volume, low oxygen utilization, and low maximum oxygen consumption and are prone to hyperventilation, cardio-vascular endurance training must be dosed carefully. Children at this age tolerate short and fast activities better than longer and slower ones. In this way, practice should be organized, which should be as competitive as possible. Competitions at this stage of sports development should be kept to a minimum. The best way to develop skills in children is if it happens in a fun environment without pressure. Children should first stabilize the simpler technical elements before using them in the competition, because otherwise there will be an automation of repetition of typical mistakes, which are difficult to correct later.

*The stage of sports development* usually covers the period from 12 to 15 years of age. This is an ideal time for serious boxing work. The goal is the development of personal qualities and

channeling the athlete towards boxing. In this phase, boxers should train 5 times a week for 60-75 minutes. As in the previous phase, boxers should participate in numerous other activities in addition to boxing training in their free time. This is the period in which differences in the biological age of children of approximately the same chronological age are most pronounced. It is important to recognize and respect these differences when programming training. In this phase, it is necessary to gradually increase the load. Boxers are required to automate certain simpler techniques and learn new, more complex ones. It is necessary to continue training for the development of coordination, flexibility, and balance, but increasingly include light general strength training with your own body and props. The emphasis is still on aerobic loads, but anaerobic loads should be included more often in training. It is also important to constantly improve the concentration of boxers. Multifaceted and basic preparations still prevail over special and situational preparations. The flexibility in the stage of sports development should be maintained at a high level if the condition that the boxers have reached a satisfactory level in the initial stage is met. Static stretching exercises predominate, but it is necessary to gradually introduce dynamic ones as well. As the period from 11 to 15 years of life is the period of puberty, it is extremely important for boxers to develop coordination. Namely, during that period, the body grows rapidly, so there is a

temporary drop in coordination. That is why it is necessary to develop coordination by learning new techniques in changing conditions and introducing boxers to various activities (e.g., various sports games). In strength training, the load intensity should still be relatively low. The goal must be harmonious and uniform development of all muscle groups. It is recommended to predominantly use exercises with your own body and props. The stage of sports development is ideal for boxers to learn the proper technique of lifting weights, initially with the help of a wooden bat, and later with the help of an Olympic bar without additional weights. Circuit training is the best form of strength training at this stage (10 to 12 exercises per training session with 8 to 15 repetitions). During puberty, children's speed increases, because hormonal changes in the body lead to an increase in muscle mass. For boxers of this age, speed training must be aimed at improving reaction speed (visual and sound signals). In the stage of sports development, with properly dosed training, a boxer can expect significant progress in anaerobic, and especially in aerobic, endurance. Continuous load of medium intensity still dominates, but more and more interval training of submaximal and maximum intensity for two to three minutes with complete recovery should be done. Most endurance programs, however, can be incorporated into boxing technique and tactic training. It is necessary to gradually increase the loads

for the development of specific cardio-vascular endurance, e.g., through sparring.

When increasing the total load volume, the following sequence must be followed:

1. increase the duration of training;
2. increase the number of training sessions;
3. increase the number of exercises and repetitions;
4. increase the duration of exercises and repetitions (reduce the break).

The number of competitions per year should be gradually increased. However, the result should not be imperative for the children, but during the competition, emphasis should be placed on some technical and tactical tasks that the boxers must fulfill. Boxers should learn from every competition, regardless of the result achieved.

***The specialization phase*** usually starts at the age of 16 and ends at the age of 19. This phase should be started with the sub-phase "*train to compete*" (16–18 years old), where the goal is progress in preparation and not in result. Boxers should train 6 to 8 times a week for 90 minutes. In training, the load volume must be significantly increased, especially the intensity component. Special and situational preparations take over dominance in



relation to multilateral and basic. In the specialization phase, boxers must perfectly master all basic techniques as well as specific techniques selected on the basis of their personal affinities and morphological-motor potential. It is becoming increasingly necessary to include tactical tasks in the training process. It is extremely important for boxers of this age to constantly develop concentration, self-control, motivation, and positive thinking. In order to develop and maintain flexibility, in addition to static and dynamic exercises, other methods should be used (ballistic exercises, so-called PNF stretching, etc.) to reduce the possibility of injuries. Coordination has already reached its climax in the previous phase, so it is difficult to expect significant changes due to training. About 80% of the exercises for the development of coordination must be of a specific character (combinations of techniques, etc.), and about 20% of multilateral and basic exercises for the development of coordination should be kept. Balance will be developed in the specialization phase through specific exercise systems. Strength training in this phase becomes more and more specific. It is necessary to design training programs that will be individual and adapted to each athlete. The training intensity should be gradually increased in the following order: - gradually reduce the break; - increase the number of series; - increase the weight of the weights (if working with an external load). Speed training should be of very high intensity and narrowly focused on the

most technically perfect shots, which should preferably be performed with equal quality and speed with both hands. As with strength training, cardio-vascular endurance training in the specialization phase becomes dominantly specific. Competition in this phase of sports development has a significant but not decisive role. Nevertheless, boxers at this age in competitive situations should show initiative, self-control, competitive spirit, and a certain tactical maturity. It is necessary to progressively increase the number of competitions every year so that in the last year of specialization, young boxers compete as often as seniors and enter the "*train to win*" phase.

## **An innovative approach to learning basic boxing techniques**

### ***Boxer stance***

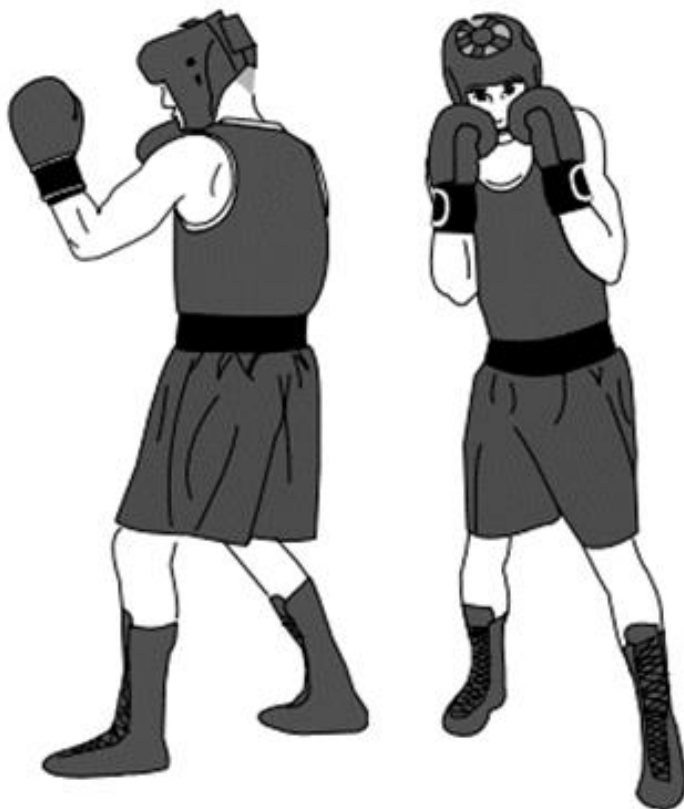
There is a frontal and fighting stance. In the frontal stance, the legs are shoulder-width apart, the feet are parallel, the legs are slightly bent at the knees, the weight of the body is evenly distributed on both legs, the arms are raised to the level of the head, the elbows are extended forward, the hands are clenched into fists, the palms are inward, and the head looks straight. From this stance, kick training begins, as the movements are symmetrical, both with the left and right hand.

In the fighting stance, the legs are shoulder width apart, the left leg is half a step forward, half a turn to the right, the legs are slightly bent, and the body weight is evenly distributed on both legs. The body is slightly bent forward, the head is looking straight, the left arm is bent at a right angle, the hand is extended forward at the level of the head, palm inward. The right arm is bent at a sharp angle, the elbow is pressed against the body and protects the right side of the ribs, the fist protects the head. The left-handed boxer has a "mirror" stance.

Depending on the position of the hands, the fighting stance can be open and closed according to the degree of bending of the legs - high and low, on the strongest hand, left - handed and

right - handed. Depending on the distance - the shorter the distance, the more frontal the stance becomes.

The boxing stance allows the boxer to move efficiently in the ring and to attack and defend while remaining in a balanced position at all times.



**Figure 3.** Boxer's stance (right-handed boxer).

When training with basic boxing techniques, we should keep in mind who the exerciser is, why we are training him, and what his goals are for learning basic boxing techniques. It all needs to fit together to suit the sport of boxing and the way he wants to do boxing. In order to achieve this, the first and most important thing is to develop the basic attitude (Figure 3).

The feet must be positioned correctly in order to have a good boxing stance. In order for the legs to be in a stance or guard, martial stance, the width of the legs must be shoulder width. For the same distance, pull the right (left) leg straight back.

Lower the knees a little lower and perform the movement, transferring the weight from one leg to the other.

Exercise: put your feet together, make the letter T with your feet so that the toes of the right foot are next to the inner part of the sole of the left foot and the heel to the side, turn the foot 180° on the heel to the right, place the center of gravity on the front part of the foot and turn the right foot forward as well (Figure 4).



**Figure 4.** Taking a boxing stance (right-handed boxer).

In this way, a proper boxing stance is obtained (proper distance between the feet). Shift the center of gravity from one leg to the other to feel the stance (leg forward in stance-leg back in stance).

When the correct posture is established, the legs are placed properly and the left hand is raised to the level of the eyes. The fists are closed so that the thumb is placed over the index finger. The impact surface is the first phalanges of the index and middle fingers. A slight downward tilt of the hands represents the next move. Then the right fist is placed next to the face at the height of the mouth or nose, the elbow next to the body. The chin is down and protected by the shoulder. It depends on the style of boxing. After that, the left hand is bent at the elbow joint so that the fist of the left hand is placed in front of the sight to be like a sight through the hands, or aiming through the hands. This is the universal boxing stance (Figure 5).



"It is necessary to make a rectangle in the stance with the legs, this is how you get the basic stance of the legs, without which there is no top boxing. A boxer must practice it as long as he can."

Both legs must be at the same height. This is what a boxer's fighting stance looks like, and it's something every boxing coach should practice with their boxers. Of course, depending on the boxer's height and physical constitution, the leg can be moved closer or further, but this is mostly universal, and everyone can change the guard in a few centimeters and adapt it to their individual characteristics.



**Figure 5.** Taking a boxing stance (right-handed boxer).



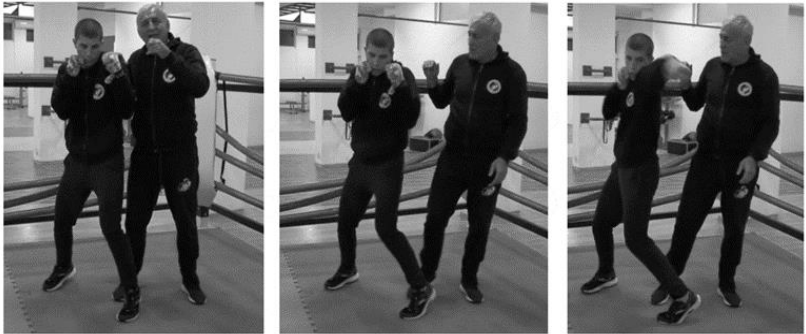
## **Kicking technique**

In the early stages of learning the techniques, all punches, straights, crouches, and uppercuts must be practiced and mastered in place before training with boxing steps.

### ***Direct performance technique***

The front straight is one of the most commonly used punches in boxing. The execution of the left directly begins with a slight rotation of the foot outwards, to which is added a slight rotation of the hip in the same direction, then the extension of the arm at the elbow joint straight forward, and in the last phase of the blow, the hand is rotated so that the blow is delivered on the impact surface. In this way, we transfer the force from the toes, over the knees, hips, and shoulders, and by extending the arm to the striking surface of the hand. When performing a left direct punch, the boxer makes sure that his right hand is at the height of his chin in order to be able to successfully block a possible counterattack by his opponent at the chin while he protects the other side of his chin with his left shoulder. Tactically, it is a very significant blow because it gives numerous opportunities to follow up on the blows, and at the same time, the boxer is minimally exposed and has little chance of receiving a blow. It can be applied to the head and body (Figure 6-7).

When performing directly, it is important in every position that the boxer has a guard, that the elbows do not "jump out", and that the path of the blow is directed in the direction of rotation of this "rectangle".



**Figure 6 . Left direct.**



**Figure 7 . Right straight.**

From the guard, the movement of force is transferred by the fingers to the knee joint, to the hip joint, and to the shoulder

("the hand is just an ordinary stick") (Figure 8). When the boxer rotates well, a good straight right is delivered.



**Figure 8.** Force transmission during impact.

Then move on to practice moving forward and backward and moving to the side.



**Figure 9.** Left straight with a step forward.

The next exercise is even more complicated for the boxer, which consists of three punches to the opponent, entry, left, right, left, and exit (Figure 9).

The next exercise that should be performed is three punches at the opponent, exit, right, left, right (Figure 10).



**Figure 10.** Combination of three direct hits with an exit (exit-right-left-right).

When performing direct kicks, it is extremely important to take care of the defense. When striking, the shoulder protects the chin on one side and the fist of the other hand does so on the other, thus closing the opponent's strike zone. A boxer can counter punch with his forehead, which is the strongest part of his whole body.

Defense from two directs can be performed with deflections and without opening the back, but defense from the right direct requires no legs and is only performed with the body (Figure 11).



**Figure 11.** Defense by legal acts.

### ***Crochet technique***

When performing a crochet, the stroke cuts the middle plane. Execution of the kick starts from the basic stance. Just like directly, it has three phases: preparatory (swing), basic (punch), and final (returning the hand to the initial guard). The left crochet boxer starts with a slight rotation of the right shoulder forward and adds a rotation of the right side of the body to the left side, so that the center of gravity of the body on the left leg makes a slight turn, which increases the amplitude of the blow,

and more force is automatically introduced into the blow. After the turn, the hands remain in the guard without moving. In the next phase (the phase of the blow), from the preparatory phase, it moves with a rotation of the left heels outward, to which is added hip rotation directed to the side (right). When the rotation reaches the hip, the left arm separates from the body, raises the elbow, and rotates the left shoulder forward while simultaneously performing a counterrotation of the right shoulder backward to maximum force is used and the center of gravity of the body is shifted to the right leg, which becomes the landing leg.

In the position in which the boxer delivers the blow, the position of the hands is such that the elbow is at shoulder level or a little lower, the angle between the forearm and the upper arm is 90 degrees, and the right hand is placed high and serves to perform defense techniques. The hand performs a slight rotation with the thumb down. As with all other blows, the impact surface consists of the metacarpal bones of the index and middle fingers. Then the hand returns to the basic position by the shortest route.

The right crochet is done in a similar way. The specificity of the basic stance allows the boxer to not perform additional rotation because the body is already rotated to the right at the very beginning, but if he wants to add more force, he can rotate the

left shoulder and the left side of the body to the right before the punch. Crochet can be performed in the head and body.

Just as there are pre-drills for direct shots, there are also drills for crochets. Stand in the city, raise your hands to shoulder height and start moving forward or backward with rotation of the upper part of the body to the left or right (right leg, left elbow and vice versa). Then move on to performing a kick in motion (Figure 12).





**Figure 12.** Performing crochet in motion.



**Picture 13.** Executing crochet after defending from the right direct.

As the deflections were practiced earlier, the next exercise can be performed as defense from the right direct, deflection, left hook (Figure 13), and counter defense from the left direct, deflection, right hook (Figure 14).



**Figure 14** . Crocheting after defending from the left direct.

### *Uppercut execution technique*

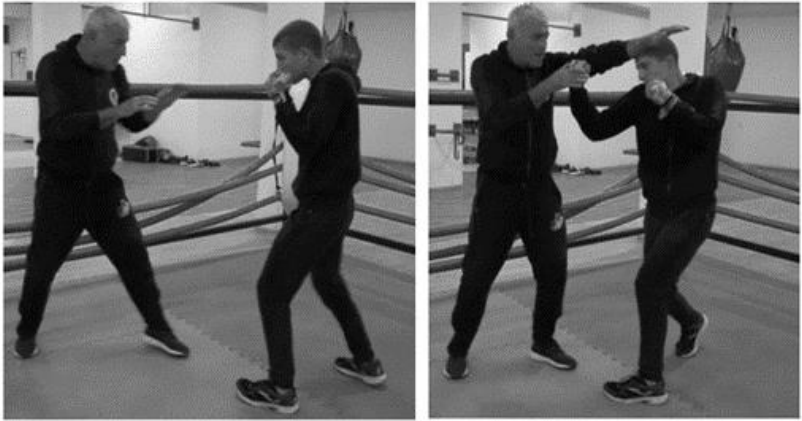
During the uppercut, the punch that the boxer directs upwards is performed in such a way that it cuts the transverse plane. In the methodology of teaching uppercuts, it is important to separate the three basic phases of this blow. The position of the boxer during the execution of the uppercut is the same as with the direct one, and you should pay attention to the position of the foot that is back in the stance, which should be slightly closer to the foot that is in front. In this way, stance stability and a better possibility of generating upward force are obtained. The beginning of the execution of the left uppercut begins with a

slight deviation to the left and a slight flexion of the left knee. Both hands are still in the guard, and the center of gravity of the body is on the left leg. This position makes it possible to use an additional concentric contraction of the lower body, thus increasing the power of the punch. After placing the body in this position, a blow follows. It is important to point out how the rotation of the feet and hips is upwards and not forwards as in direct. After the hit, the boxer returns to the initial guard from which he can continue further combinations.

As with crochet, the following exercise can be performed as defense from the right direct, deflection, left uppercut (Figure 15), and counter defense from the left direct, deflection, right uppercut (Figure 16).



**Figure 15.** Performing a right uppercut after defending from a right direct.



**Figure 16.** Performing a left uppercut after defending against a left direct.

Uppercuts are never done at the beginning of blows and at the beginning of the fight, they are always done in close and half-distance fights. That's what boxers who are shorter and more solidly built do.

## **How do athletes and coaches react to innovations in sports?**

"How can I be more efficient in boxing?"

The basic techniques used by the coaches are based on theory and skills lessons, discussion, and lectures. Analysis of the use of innovative techniques should be based on fundamental training techniques.

The majority of athletes and coaches are extremely keen on innovative approaches to training and that from the earliest age period. Coaches want to be further educated, so it is necessary to organize educational seminars in cooperation with the most experienced coaches and professors of the Faculty of Sports and Physical Education.

## **Presentation of the education system**

Upon inspection of the curriculum of the Faculty of Sport and Physical Education of the University of Novi Sad, it was determined that there was no boxing subject. Boxing techniques are trained as part of the combat sambo course.

After a meeting with the dean of the Faculty and the professor of the Martial Sports subject, it was decided to prepare a proposal for the subject "Boxing" for the next accreditation of the Higher Education Institution, which will be included in the curriculum of Basic Academic Studies as an optional subject.



### **Recommended actions**

Based on the analysis, educational seminars are recommended in both countries for club representatives (practitioners). The seminars will be structured in a way that suits adult learning. Each attendee will receive a handbook after the seminar.



#### DISCLAIMER

This document has been produced with the financial assistance of the European Union. The content of the document is the sole responsibility of <Pokrajinski sekretarijat za sport i omladinu and DJL Dél-alföldi Jóegészség Léti Nonprofit Korlátolt Felelősségű Társaság> and can under no circumstances be regarded as reflecting the position of the European Union and/or the Managing Authority.