

SPECIAL TRAINING FOR BOXER'S ATHLETIC ABILITY AND BODY CONTROL



ORIGINAL ARTICLE
ARTIGO ORIGINAL
ARTÍCULO ORIGINAL

TREINAMENTO ESPECIAL PARA HABILIDADE ATLÉTICA DE BOXEADOR E CONTROLE CORPORAL

ENTRENAMIENTO ESPECIAL PARA LA CAPACIDAD ATLÉTICA DEL BOXEADOR Y EL CONTROL CORPORAL

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ABSTRACT

Introduction: Boxing is a global sport, including tactics, body, and mind for intense fighting. Athletes need high strength, speed, endurance, agility, and endurance. Through professional training, athletes' agility and body control are continuously improved. **Objective:** To develop special fitness training for professional boxers. This conclusion can provide a reference for boxing education and training. **Methods:** This paper studies the special training of professional boxers by employing literature materials, expert interviews, and self-experience methods. **Analysis of the results is done using mathematical statistics. Results:** This paper found several particular boxing training methods, such as high-intensity, intensive and developmental training, through analysis. **Conclusion:** Professional training has a particular promoting effect on improving the physical fitness and competition level of boxers. **Level of evidence II; Therapeutic studies - investigation of treatment outcomes.**

Keywords: Physical Conditioning, Human; Competitive Behavior; Boxing; Athletes.

RESUMO

Introdução: O boxe é um esporte global, incluindo táticas, corpo e mente para uma luta intensa. Os atletas precisam de muita força, velocidade, resistência, agilidade e resistência. Através do treinamento profissional, a agilidade e o controle corporal dos atletas são continuamente melhorados. **Objetivo:** Desenvolver um treinamento especial de aptidão física para boxeadores profissionais. Esta conclusão pode fornecer uma referência para o ensino e treinamento do boxe. **Métodos:** Este artigo estuda o treinamento especial de boxeadores profissionais empregando materiais de literatura, entrevistas com especialistas e métodos de auto experiência. Faz-se análise dos resultados empregando estatísticas matemáticas. **Resultados:** Este trabalho encontrou vários métodos particulares de treinamento de boxe, tais como treinamento de alta intensidade, intensivo e de desenvolvimento, através de análise. **Conclusão:** O treinamento profissional tem um efeito particular de promoção na melhoria da aptidão física e do nível de competição dos boxeadores. **Nível de evidência II; Estudos terapêuticos - investigação dos resultados do tratamento.**

Descritores: Condicionamento Físico Humano; Comportamento Competitivo; Boxe; Atletas.

RESUMEN

Introducción: El boxeo es un deporte global, que incluye la táctica, el cuerpo y la mente para un combate intenso. Los atletas necesitan mucha fuerza, velocidad, resistencia, agilidad y resistencia. Gracias al entrenamiento profesional, la agilidad y el control corporal de los atletas mejoran continuamente. **Objetivo:** Desarrollar un entrenamiento físico especial para boxeadores profesionales. Esta conclusión puede servir de referencia para la educación y la formación del boxeo. **Métodos:** Este trabajo estudia el entrenamiento especial de los boxeadores profesionales empleando materiales bibliográficos, entrevistas con expertos y métodos de auto experiencia. El análisis de los resultados se realiza mediante estadísticas matemáticas. **Resultados:** Este trabajo encontró varios métodos particulares de entrenamiento de boxeo como el entrenamiento de alta intensidad, intensivo y de desarrollo a través del análisis. **Conclusión:** El entrenamiento profesional tiene un efecto especial de promoción en la mejora de la condición física y el nivel de competición de los boxeadores. **Nivel de evidencia II; Estudios terapéuticos - investigación de los resultados del tratamiento.**

Descriptorios: Acondicionamiento Físico Humano; Conducta Competitiva; Boxeo; Atletas.



DOI: http://dx.doi.org/10.1590/1517-8692202329012022_0331

Article received on 06/07/2022 accepted on 07/15/2022

INTRODUCTION

Boxing is a technically based competitive game. Athletes compete in all aspects of physical fitness, skills, combat ability, intelligence, and other aspects under the prescribed competition rules and skills. The athlete's physical fitness and on-the-spot adaptability are the keys to determining the outcome. Because strength occupies a large proportion of the physical fitness of athletes, how to effectively carry out special

strength training for boxers has always been a concern of many scholars and coaches.¹ The coaches need to carry out targeted training for different boxers. This paper applies the methods of "high-intensity special training method," "intensive special training method," and "developmental training method" to "boxing teaching and training." This has a specific guiding effect on boxers' physical fitness and tactical training.

METHOD

Research objects

This paper takes unique training methods in boxing as the research object.

Research methods

The methods and theories of boxing and sports training at home and abroad have been studied in depth through many literature readings. This article takes the boxing team of the Sports Academy as an example to conduct a field investigation.² The author summarizes the relevant experience in many years of boxing training and teaching practice.

Simulation of virtual boxing training system

Here (a, b, c) is the coordinates of the left elbow and (d, e, f) is the coordinates of the left arm. This paper projects this vector onto three planes.³ The included angle $(\alpha_x, \alpha_y, \alpha_z)$ determines the left and proper rotation of the virtual fist around the center point of the fist. α_x is calculated in a formula (1) as follows:

$$\alpha_x = \arccot \left(\frac{a-d}{c-f} \frac{b-e}{c-f} \right) \quad (1)$$

In the same way, this paper can rotate and convert the Z, y, and x-axes into different angles so that the virtual fist can be rotated according to the posture of the arm. Assume that the height and width of the rectangular area of the sandbag are:

$$\begin{aligned} A: & (a + o * \sin \alpha \cos \alpha - \frac{w}{2}, b - a * (1 - \cos \theta \sin \alpha) + \frac{h}{2}) \\ B: & (a + o * \cos^2 \alpha + \frac{w}{2}, b - a * (1 - \sin^2 \alpha) - \frac{h}{2}) \\ C: & (a + o * \cos^2 \alpha - \frac{w}{2}, b - a * (1 - \cos \theta \sin \alpha) + \frac{h}{2}) \\ D: & (a + o * \sin \alpha \cos \alpha - \frac{w}{2}, b - a * (1 - \sin^2 \alpha) - \frac{h}{2}) \end{aligned} \quad (2)$$

When the screen coordinates of the virtual glove fall within this range, it is considered valid.

There is no need for a code of ethics for this type of study.

RESULTS

Boxing is characterized by its teaching and training. In boxing, athletes perform high-intensity exercises for a short period. And the athlete doesn't get enough rest between rounds.⁴ These are in line with specialized training methods. In the ever-changing boxing ring, if a player wants to take the initiative, he must grasp the rhythm and wait for an opportunity to win. In daily training, athletes use the three subtypes of training methods in special training for different competition periods. Its training value is obvious. (Table 1)

Athletes can use high-intensity special exercises to combine proficiency in single or composite techniques with speed, explosive power, endurance, ATP-CP system, and glycolysis for energy supply. Repeated training in pairs at full speed or 70% aggression with high-intensity, high-intensity, and interval training. This helps to improve the stability

Table 1. Physical exercise design of high-intensity particular training method in boxing.

load nature	Exercise content	Specific requirements
Practical project	Pas de deux	50s, five sets
Special needs	Pull up	50s, five sets
Special quality	Push-ups	50s, five sets

of the player's technical movements. This training helps players to complete technical movements during the competition successfully. This is a high load of one or more technical movements.⁵ The interval between each exercise should be no more than 40 seconds, and a combination of training techniques should be performed. The interval is short. We should drop the heart rate to 120~140 beats/min. Its energy supply system is mainly ATP-CP and glycolytic energy. (Table 2)

The application of intensive particular training methods in boxing teaching

Intensive special training is an essential form of exercise. It can promote the energy metabolism of glycolysis and the energy supply of the aerobic metabolic system, and it can also promote the heart's function. Boxing requires a high mix of reflexes, speed of change, and energy.⁶ The limit for enhanced stunts is 40-180 seconds. This training method can quickly improve the physical fitness of athletes, increasing their speed, endurance, and strength endurance. Its characteristic is that each training time is 40~180 seconds. It can be trained differently according to the specific training method. The heart rate was controlled at 180-170 beats/min, and the heart rate dropped to 120-140 beats/min at intervals. (Table 3)

Intensive special training can combine single structural, technical movements to improve the flexibility of a boxer's technical movements. In daily training, we must ensure the single technical movement structure.⁷ The connection and combination of multiple single-section structural technologies have problems such as high load and insufficient intermittent time. The A-type strengthening stunts can effectively improve the combined technical movements with high load capacity. (Table 4)

Application of developmental unique training methods in boxing

Developmental training is an effective method for improving a boxer's aerobic metabolic system and cardiac function. In boxing, each round is short. This doesn't seem to have anything to do with aerobic energy. When using tactics, players are deliberately controlling their rhythm. Players let their bodies "rest." This is why aerobic metabolism provides energy in boxing.⁸ This method has the characteristics of low intensity and long time. It can effectively improve the boxer's aerobic endurance and oxygen-carrying capacity. Each training load should be more than 5 minutes, and the heart rate should be controlled at 160 beats/min. Based on the heart rate falling to 120 beats/min. (Table 5)

Developmental training can combine boxing tactics with aerobic endurance. This allows the players to achieve balance throughout the

Table 2. Design of high-intensity unique training methods in tactical training.

load nature	Exercise content
Straight swing combo	50s, five sets
Straight uppercut combo	50s, five sets
Defense becomes attack	40s, four sets

Table 3. Physical exercise design of intensive stunts in boxing.

load nature	Exercise content	Specific requirements
Speed and endurance	400m run	5 sets, 20 reps/set
Strength endurance	Clean barbell	Five sets of 50% of maximum strength
Special agility	Footwork practice	2min, five sets

Table 4. Design of intensive stunt training method.

Exercise content	Specific requirements
Punching sandbags	1min/group, three groups, pay attention to attacking
Hit the wall	1min/group, three groups, pay attention to attacking

game. So players can achieve the goal of stability. During boxing training, coaches should train according to the athlete's physical and acidity. Active use of developmental specific training increases movement stability and tactical effectiveness.⁹ The body has the best control of aerobic function when the exercise time exceeds 5 minutes. The type of load is based on specific endurance—diversification of technical movement training. The energy metabolism is mainly dominated by metabolism.¹⁰ (Table 6)

DISCUSSION

Different categories of strength attributes can be divided into many aspects. According to their special meanings, we can divide them into basic abilities and special abilities.¹¹ The different strength attributes of physical fitness can be divided into three categories: strength, speed, and endurance. This article will evaluate boxers' unique strength qualities from the three perspectives above. Because the focus of special forces is different, domestic and foreign scholars and experts and scholars have not yet reached a consensus. "Special strength" refers to the muscle tissue involved in a specific physical activity. Extraordinary strength refers to the strength that strictly follows the movement laws of particular sports in terms of time and space characteristics. Specific strength refers to the ability of muscle groups or muscle contractions to resist resistance within the time and space specified by the athlete's sports techniques and tactics.¹²

A good boxer's full strength training should be 2-3 times a week. Athletes should not engage in high-intensity training for two weeks before the competition. Maximum strength training to reach 85%, the frequency of three times a day. This promotes the growth of muscle fibers for maximum exercise effectiveness. By changing the training method, the intensity of exercise load, the number of compound sets, and the

Table 5. Physical exercise design for developmental training methods in boxing.

Exercise content	Specific requirements
6min comprehensive quality practice	6min, two sets
6min skipping rope	Two groups, single shake

Table 6. Tactical training design of developmental unique training methods in boxing.

Exercise content	Specific requirements
pear ball	10min, two sets
"1 to 2" turns with actual combat exercises	5min

AUTHORS' CONTRIBUTIONS: Each author has made important personal contributions to this manuscript. XZ: Writing and presenting research directions; NC: Data analysis and surgery, article review and knowledge concepts.

form of energy supply can be changed.¹³ The most extraordinary strength training for good boxers is to stimulate the muscles with jumping changes. This allows them to maximize their strengths. The change in the maximum force load in the rung boxer takes a step change. This ensures that athletes can gradually increase their maximum strength without causing fatigue and injury. High-level and high-level athletes use 85% of their maximum strength in training.¹⁴

Speed force refers to the ability of the muscles of the body to release their force quickly. It's the perfect combination of power and speed. Going through lower intensities quickly is a quick form of strength training. This is an effective way to ensure fast strength training without slowing down the movement. The results show that high-load training is more effective than low-load training in building rapid strength. Athletes develop explosive power at 30% of their maximum load. Athletes' physical fitness and endurance are usually 25%-40% of their body weight. Athletes train 6-8 sets at a time. The athlete's heart rate returns to 110-120 beats/min.¹⁵ Athletes of different levels will also perform differently. Athletes should follow a particular sequence when using the cycle method to develop strength and endurance. The athlete strictly controls the repetitions and intervals of the movement. This keeps the body in a state of fatigue all the time. This kind of training can promote the development and improvement of an athlete's strength and endurance.¹⁶

CONCLUSION

The particular training method is not only to adapt to the rules of boxing but also to exercise the athlete's respiratory system and cardiovascular system to adapt to various situations during the competition. In addition to using unique training methods to improve the overall quality of athletes, coaches also formulate targeted training programs for athletes' different physiques and competition characteristics. High-intensity training and intensive training can effectively exercise a boxer's active offensive ability in the early stage. This will accumulate enough energy for the next game. Athletes can properly perform some special training when performing anaerobic training. The purpose is to ensure the competitive state of the athletes in the later stages of the game.

All authors declare no potential conflict of interest related to this article

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