

SYSTEMATIC TRAINING IN TRADITIONAL MARTIAL ARTS CHOREOGRAPHY IN COLLEGE



ORIGINAL ARTICLE
ARTIGO ORIGINAL
ARTÍCULO ORIGINAL

TREINAMENTO SISTEMÁTICO EM COREOGRAFIAS DE ARTES MARCIAIS TRADICIONAIS NA UNIVERSIDADE

ENTRENAMIENTO SISTEMÁTICO EN COREOGRAFÍAS DE ARTES MARCIALES TRADICIONALES EN LA UNIVERSIDAD

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ABSTRACT

Introduction: Martial arts choreography is a sporting event of high intensity and speed. The energy metabolism of its practitioners is characterized mainly by anaerobic consumption, complemented by aerobic metabolism. Martial arts routines have particular movement rules, and the systematic training method has played a positive role in developing martial arts routines. **Objective:** This paper explores the role of eight-week systematic training in martial arts routines. **Methods:** 36 martial arts choreography players from colleges and universities were selected by random sampling. The above research subjects were randomly divided into experimental and control groups. The experimental group adopted an exclusive training protocol. The control group was trained traditionally. **Results:** Significant differences were found between the two groups in the test results of eight-speed indicators. A significant difference was also found between the two groups in the test data of the three endurance indicators. **Conclusion:** The personalized training method used in this paper significantly improved athletes' speed and endurance levels. The research results of this paper can provide a reference for routine martial arts staff in improving the professional athletic technical level. **Level of evidence II; Therapeutic studies - investigation of treatment outcomes.**

Keywords: Martial Arts; Resistance Training; Athletes.

RESUMO

Introdução: A coreografia das artes marciais é um evento esportivo de alta intensidade e velocidade. O metabolismo energético de seus praticantes é caracterizado principalmente pelo consumo anaeróbico, complementado pelo metabolismo aeróbico. As rotinas das artes marciais têm suas próprias regras de movimento particulares e o método de treinamento sistemático tem desempenhado um papel positivo no desenvolvimento das rotinas das artes marciais. **Objetivo:** Este artigo explora o papel do treinamento sistemático por 8 semanas nas rotinas de artes marciais. **Métodos:** 36 jogadores de coreografia em artes marciais de faculdades e universidades foram selecionados por amostragem aleatória. Os sujeitos da pesquisa acima foram divididos aleatoriamente em dois grupos: experimental e controle. O grupo experimental adotou um protocolo exclusivo de treinamento. O grupo de controle foi treinado da maneira tradicional. **Resultados:** Foram encontradas diferenças significativas entre os dois grupos nos resultados dos testes de oito indicadores de velocidade. Também se observou diferença significativa entre os dois grupos nos dados de teste dos três indicadores de resistência. **Conclusão:** O método personalizado de treinamento utilizado neste trabalho demonstrou um efeito de destaque na melhoria da velocidade e do nível de resistência dos atletas. Os resultados da pesquisa deste artigo podem fornecer uma referência para a equipe de rotina de artes marciais no aprimoramento do nível técnico profissional atlético. **Nível de evidência II; Estudos terapêuticos - investigação dos resultados do tratamento.**

Descritores: Artes Marciais; Treinamento de Força; Atletas.

RESUMEN

Introducción: La coreografía de las artes marciales es un evento deportivo de alta intensidad y velocidad. El metabolismo energético de sus practicantes se caracteriza principalmente por el consumo anaeróbico, complementado por el metabolismo aeróbico. Las rutinas de las artes marciales tienen sus propias reglas de movimiento y el método de entrenamiento sistemático ha desempeñado un papel positivo en el desarrollo de las rutinas de las artes marciales. **Objetivo:** Este trabajo explora el papel del entrenamiento sistemático durante 8 semanas en las rutinas de las artes marciales. **Métodos:** Se seleccionaron 36 coreógrafos de artes marciales de colegios y universidades mediante un muestreo aleatorio. Los sujetos de la investigación mencionados se dividieron aleatoriamente en dos grupos: experimental y de control. El grupo experimental adoptó un protocolo de entrenamiento exclusivo. El grupo de control fue entrenado de forma tradicional. **Resultados:** Se encontraron diferencias significativas entre los dos grupos en los resultados de las pruebas de ocho indicadores de velocidad. También se observó una diferencia significativa entre los dos grupos en los datos de las pruebas de los tres indicadores de resistencia. **Conclusión:** El método de entrenamiento personalizado utilizado en este trabajo demostró un efecto destacado en la mejora del nivel de velocidad y resistencia de los atletas. Los resultados de la



Descriptor: Artes Marciales; Entrenamiento de Fuerza; Atletas.

DOI: http://dx.doi.org/10.1590/1517-8692202329012022_0377

Article received on 06/08/2022 accepted on 07/15/2022

INTRODUCTION

Martial arts routine players need to undergo special training to achieve good results. Many survey results show that excellent martial arts players must have extraordinary physiques to obtain high-level technical movements. Special physical training in sports is an essential job. Based on the development of physical fitness theory, this paper makes an in-depth discussion of Martial arts routine movement characteristics under the guidance of professional training theory.¹ This article expects to improve the physical quality of martial arts routine athletes and effectively improve their competitiveness. The research results of this paper make a valuable exploration for the competitive and challenging development of Martial arts routines in the future.

METHOD

Research objects

This paper takes 36 martial arts routine players from colleges and universities as the research object. In this study, the above research subjects were randomly divided into two groups: the experimental group and the control group. The study found no significant difference between the age of the experimental group and the control group and the primary conditions of the time to participate in the competition. (Table 1) All participants underwent eight weeks of systematic training. The experimental group adopted a unique training method. The control group was trained in the usual way.²

Test scheme

This paper tested two subjects on unique martial arts routines before and after special training. In the design of the experimental program, the experimental group used unique training methods to conduct experiments, while the control group did not carry out special experimental treatment.³ The experiments were carried out using conventional methods. There are two aspects of unique training methods: one is specialized technical training, and the other is specialized physical training. Athletes in the experimental group underwent professional technical training four times a week and particular physical exercise 5 times a week. The control group did not train after eight weeks.

Recognition and matching of martial arts movements

Assuming that the eigenvectors of a standard posture and a simulated posture are set as $\eta(x_1, y_1, z_1)$ and $\lambda(x_2, y_2, z_2)$. The cosine of the angle between the two postures is:

Table 1. Basic information on subjects.

	n	Average age	Average years of participation
Test group	16	21.142±1.463	6.116±1.342
Control group	16	20.79±2.332	6.358±1.892

Table 2. Design of the test method.

Group	Before training	Eight-week experiment implementation	After training
Test group	Pre-test	Experimental treatment	post-test
Control group	Pre-test	No experimental treatment	post-test

$$\cot \alpha = \frac{x_1x_2 + y_1y_2 + z_1z_2}{\sqrt{x_1^2 + y_1^2 + z_1^2} \cdot \sqrt{x_2^2 + y_2^2 + z_2^2}} \quad (1)$$

α represents the value of an angle. A set of angle values can be obtained by calculating formula (1). It expresses the different degrees of two gestures.⁴ Therefore, this paper can get the sum of each angle value:

$$\beta = \sum_{i=0}^n a_i \quad (2)$$

The following formula calculates the weight value of each corner:

$$\rho = \frac{e^{a_i}}{\sum_{i=1}^n a_i} \quad (3)$$

A set of weights $W = \{\omega_0, \omega_1, \omega_2, \dots, \omega_n\}$ can be obtained by calculating formula (3). Then this paper can get the normalized angle value:

$$M = \sum_{i=0}^n \frac{a_i \rho_i}{\sqrt{a_i^2 + \rho_i^2}} \quad (4)$$

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

RESULTS

Comparison of professional technical inspections

The assessment indicators of particular skills are mainly divided into two sub-indicators: the difficulty and connection difficulty of the complete set of movements and the overall quality of the complete set of movements.⁵ In all difficulty movement indicators, the average scores of the control and experimental groups were 1.5598 and 1.6698, respectively. In the overall exercise quality index, the control group scored 4.8543. The experimental group scored 5.093, while the control group scored 5.093. The results of the trials varied widely. (Table 3)

Comparison of extraordinary speed test results

The Express Index contains eight sub-indicators. The average positive kick score for the control group was 12.2463. The experimental group scored 14.025. The results of the trials vary widely. The control group scored 15.5837 in the click foot index. The experimental group scored 16.5 points. The results of the trials vary widely. The average control group's score in the Outward Swing Index was 13.365. The score of the experimental group was 14.7576. The results of the trials vary widely. The control group scored 11.275 on the leg indicator. The experimental group scored an average of 13.2 points. The results of the trials vary widely. The control group scored an average of 12.1176 on the two-legged supine measurement.⁶ The experimental group scored 13.475. The results of the trials vary widely. The control group scored 9.8373 in the supine-out swing exercise. The score of

Table 3. Technical-specific t-tests for experimental and control groups.

Project	Group	Average	Standard deviation	t
Complete set of complex moves	Control group	1.5598	0.4807	-2.2737
	Test group	1.6698	0.495	
Full action quality	Control group	4.8543	0.1386	-4.9731
	Test group	5.093	0.1034	
Kicking	Control group	12.2463	2.3683	-2.5971
	test group	14.025	2.4871	
10 seconds on one foot	Control group	15.5837	1.9712	-4.048
	Test group	16.5	1.9338	
Ten-Second Swing Kick	Control group	13.365	1.54	-4.1987
	Test group	14.7576	1.9019	
Embedded legs in ten seconds	Control group	11.275	1.4916	-3.7796
	Test group	13.2	1.2408	
Lie on your feet for 10 seconds	control group	12.1176	2.5828	-3.2076
	Test group	13.475	1.8238	
Supine leg swing for 10 seconds	control group	9.8373	1.4762	-4.7531
	Test group	11.6413	1.0956	
Lie on your back for 10 seconds	Control group	10.395	1.3266	-3.3275
	Test group	12.1913	1.0956	
Lie on your back for 10 seconds	Control group	11.55	0.572	-5.5374
	Test group	13.75	0.5742	
Cut wrist flower knife for 30 seconds	Control group	50.1105	3.0173	0.198
	Test group	49.1326	16.6661	
Sabre/Skull Wrap for 30 seconds	Control group	17.2425	3.1064	-3.5178
	Test group	19.3105	4.5386	
Continuous prancing kick	Control group	10.3246	5.5209	-2.8743
	Test group	13.5663	9.8758	
Continuous swirl	Control group	3.4133	2.629	-1.2243
	test group	3.85	2.4145	
Void waving	Control group	36.2043	6.1765	-3.5134
	Test group	38.775	5.4318	

the experimental group was 11.6413. The results of the trials vary widely. The mean score for the control group in the supine position was 10.395. The score of the experimental group was 12.1913. The results of the trials vary widely. The mean score for the control group on the one-leg supine measurement was 11.55. The experimental group scored an average of 13.75 points. The results of the trials varied widely. (Table 3)

Comparison of special ability tests

The Special Ability Index contains two sub-indicators. The mean scores of the control and experimental groups in the Carpet scissors index were 50.1105 and 49.1326, respectively. There were no significant differences in detected values between the two groups. The average score for the control group over 30 seconds was 17.2425. The experimental group scored 19.3105 points. The results of the trials varied widely. (Table 3)

Comparative analysis of particular endurance test

There are three sub-items in the athlete's endurance index. The average scores of the control and experimental groups were 10.3246 points and 13.5663 points, respectively, in the continuous flying feet index. The mean scores of the control and experimental groups in the continuous cyclone foot index were 3.4133 and 3.85, respectively. The results of the trials vary widely. The control group's scores were 36.2043 and 38.775, respectively, in the virtual step and palm swing index. The results of the trials varied widely. (Table 3)

Explore

With the Chinese enthusiastic support for the development of martial arts, there are more and more martial arts competitions. The increase in

competitions has put higher and higher physical requirements on martial arts players, and the new competition rules have become more difficult. The technical characteristics of competitive martial arts are varied.⁷ The requirements for the impressive physique of athletes are also getting higher and higher. The new quality education model highlights the characteristics of specialization and science. In physical education, coaches should make full use of the particularity of physical education and strengthen the cultivation of physical professional quality. The newly specified difficulty for Group C is the 720° whirlwind leg. The explosive power of the legs is an essential factor in ensuring that you can take off and stay in the air. The body's center of gravity is essential in supporting the body. Athletes build strength and flexibility in the legs, waist, and hips. Strengthening the unique abilities of athletes under the new rules can make them better adapted to the competition. Martial arts routine is a comprehensive sports competition. It has high overall requirements in the natural expression of body movements, the display of martial arts culture and combat techniques, and the aesthetic pursuit of movement techniques. Body shape, athletic quality, and functional status significantly impact athletic ability. In the physical training of martial arts routines, we must establish the basic concept of the overall training and pay attention to the coordinated development of athletes' physical shape, sports quality, and functional status.

First, body shape is the essential quality of martial arts routine players. In addition to individual group competitions such as group duels, martial arts routine players are more based on individual martial arts routines to demonstrate their competitive skills and standards. Athletes need to be agile, energetic, smooth, and disciplined. This puts forward higher requirements for the competitive performance of martial arts routine players. Athletes need to strengthen their physical fitness to achieve a good level of competition.⁸ The coaches should closely cooperate with the physical requirements of the martial arts routine competition and make overall arrangements for the training content, intensity, and density.

Secondly, the athletic quality of martial arts routine players is a prerequisite for their competition level. Martial arts routine competitions are complicated in arrangement and complex in technical movements. Overall, games tend to exhibit a combination of both symmetrical and asymmetrical features. Athletes need a lot of skills from one move. There is a rhythm between the athlete's martial arts moves. The practice of the whole movement pays attention to the coordination of hand, eye, body, and mind. Martial arts have high requirements for speed, strength, agility, endurance, and coordination.⁹ Therefore, athletes must pay attention to comprehensive sports quality when practicing martial arts routine physical training. In particular, it should be noted that the sports quality of martial arts routines has its particularity to other sports. It has to do a single action, but it also has to do a complete action.

The final functional state of martial arts routine players is an essential guarantee for their competitive level. The ultimate goal of martial arts routine physical training is to improve its function. This is the basis for ensuring that its three energy supply systems are in the best condition to achieve excellent results in sports competitions. The functional status of martial arts routine athletes is the core content of martial arts routine physical training.

CONCLUSION

There were significant differences between the two groups in exercise quality and difficulty index test results. The 8-week particular training method can effectively improve the movement quality of athletes and increase the success rate of movement difficulty. This method can increase the speed of the athlete. The 8-week particular training method significantly affects the athletes' specific endurance.

The author declare no potential conflict of interest related to this article

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