HIGH-INTENSITY PHYSICAL TRAINING FOR CHINESE BOXING ATHLETES

TREINAMENTO FÍSICO DE ALTA INTENSIDADE PARA ATLETAS DE BOXE CHINÊS

ENTRENAMIENTO FÍSICO DE ALTA INTENSIDAD PARA ATLETAS DE BOXEO CHINO

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ABSTRACT

Introduction: The activities and competitions related to Chinese boxing continue to grow after its visibility as the national quintessence of the Chinese tradition. A specific training method for its practitioners is necessary to improve its quality and efficiency. Objective: Develop a high-intensity physical training method specific to Chinese boxing athletes. Methods: 130 athletes were volunteers in this research, randomly divided into an experimental group and a control group, both groups trained twice a week on Mondays and Thursdays, each training 90 minutes, for a total of 8 weeks. The experimental group was directed to the sport-specific high-intensity physical training protocol, while the control group practiced traditional training. The two groups underwent a comparative analysis of physical fitness indicators specific to Chinese boxing. Results: The experimental group showed a significant improvement in the test after the experiment, with a 12.32% increase in efficiency compared to the control group. The control group's results showed no statistical improvement, showing a slight decrease, with a rate of decrease of -0.58%. Conclusion: After eight weeks of training, the physical training protocol and high intensity directed to Chinese boxing athletes showed a significant impact on the flexibility and strength of its practitioners, is recommended its use. ***Level of evidence II; Therapeutic studies - investigation of treatment outcomes.***

Keywords: Physical Education and Training; Athletes; Physical Fitness; Boxing.

RESUMO

Introdução: As atividades e competições relacionadas a boxe chinês continuam crescendo após a sua visibilidade como a quintessência nacional da tradição chinesa. Visando melhorar efetivamente a sua qualidade e eficiência, faz-se necessário um método de treinamento específico para os seus praticantes. Objetivo: Desenvolver um método de treinamento físico de alta intensidade específico para atletas de boxe chinês. Métodos: Foram voluntários dessa pesquisa 130 atletas, divididos aleatoriamente em grupo experimental e no grupo de controle, ambos grupos treinados duas vezes por semana às segundas e quintas-feiras, cada um treinando 90 minutos, por um total de 8 semanas. Ao grupo experimental foi direcionado o protocolo de treinamento físico de alta intensidade específico para o esporte enquanto o grupo controle praticou o treinamento tradicional. Os dois grupos foram submetidos a uma análise comparativa dos indicadores de aptidão física específicos do boxe chinês. Resultados: O grupo experimental mostrou uma melhora significativa no teste após o experimento, com um aumento de 12,32% de eficiência em comparação com o grupo controle. Os resultados do grupo controle não evidenciaram melhora estatística, apresentando ligeira diminuição, com uma taxa de diminuição de -0,58%. Conclusão: Após oito semanas de treinamento, o protocolo de treinamento físico e alta intensidade direcionado para os atletas de boxe chines apresentou um impacto significativo na flexibilidade e força de seus praticantes, sendo recomendada a sua utilização. ***Nível de evidência II; Estudos terapêuticos - investigação dos resultados do tratamento.***

***Descritores*:** *Educação Física e Treinamento; Atletas; Aptidão Física; Boxe.*

RESUMEN

Introducción: Las actividades y competiciones relacionadas con el boxeo chino siguen creciendo tras su visibilidad como quintaesencia nacional de la tradición china. Con el fin de mejorar efectivamente su calidad y eficacia, es necesario un método de formación específico para sus practicantes. Objetivo: Desarrollar un método de entrenamiento físico de alta intensidad específico para los atletas chinos de boxeo. Métodos: 130 atletas fueron voluntarios de esta investigación, divididos aleatoriamente en grupo experimental y grupo de control, ambos grupos entrenaron dos veces a la semana los lunes y los jueves, cada uno entrenando 90 minutos, durante un total de 8 semanas. El grupo experimental fue dirigido al protocolo de entrenamiento físico de alta intensidad específico para el deporte, mientras que el grupo de control practicó el entrenamiento tradicional. Los dos grupos fueron sometidos a un análisis comparativo de los indicadores de aptitud física específicos del boxeo chino. Resultados: El grupo experimental mostró una mejora significativa en la prueba después del experimento, con un aumento del 12,32% en la eficiencia en comparación con el grupo de control. Los resultados del grupo de control no mostraron una mejora estadística, mostrando un ligero descenso, con una tasa de disminución del -0,58%. Conclusión: Después de ocho semanas de entrenamiento, el protocolo de entrenamiento físico y de alta

intensidad dirigido a los atletas de boxeo chino mostró un impacto significativo en la flexibilidad y la fuerza de sus practicantes, siendo recomendable su uso. **Nivel de evidencia II; Estudios terapéuticos - investigación de los resultados del tratamiento.**

Descriptores: *Educación y Entrenamiento Físico; Atletas; Aptitud Física; Boxeo.*

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INTRODUCTION

After the rise of the Sanda movement, Sanda-related activities and competitions continued, as the traditional national quintessence of the Chinese nation, Wushu Sanda sports schools or Sanda training halls have sprung up in various places, allowing it to develop rapidly. With the introduction of more and more strict Sanda rules, Sanda is an intense competitive fighting event, and the score of physical fitness in the competition is gradually revealed, athletes need to have good physical strength, endurance, resilience and skill to use endurance, which is the basic quality to become an excellent Sanda athlete.[1] Therefore, in the process of Sanda training, it is necessary to provide effective guidance and practice to strengthen the physical training of athletes, it is particularly important to have scientific and reasonable training methods in the competitive event of Sanda, which is a high-intensity and powerful attack, which has gradually increased the attention of the martial arts community to the analysis and research of Sanda training skills.Various experiments and studies in the martial arts world have shown that the use of scientific training techniques by Sanda athletes can promote the improvement of Sanda skills, improve their skill needs for competition, and improve their ability to prevent and recover from injuries. Experiments by Liang S. et al. have confirmed that the use of core strength to integrate into Sanda training can not only improve the skill level, strength coordination, and strength efficiency of the participants, but also avoid or reduce the combat injury rate.[2] Functional training has played a major role in improving athlete skills, performance and reducing injuries. Functional training plays a very important role in improving athletes' special ability and sports performance, but it is still blank in the field of Sanda. The authors conducted a 12-week experimental study on 130 male Sanda athletes, explore the effect of functional training on the physical characteristics of male Sanda athletes, it provides theoretical basis and practical reference for the physical development of Sanda athletes.[3,4]

METHOD

Research objects

The author took 130 male Sanda athletes as the subjects of this experiment, and randomly divided the subjects into two groups, including 65 members of the experimental group and 65 members of the control group (n=65 in the experimental group; n=65 in the control group).

Research object criteria

1. Sanda athletes with more than 4 years of professional training experience;
2. Exclude athletes who have sports injuries and other adverse factors that affect training.[5]

Research methods

1 Expert interview method

During the research process, the research will involve disciplines and experts in Sanda, physical fitness and sports. We conducted interviews with experts, and timely adjusted and revised the designed experimental plan, the training method adopted, the screened test indicators and the statistical experimental data, which made the whole experimental process more feasible and scientific. (Table 1)

Experimental Method

In this experiment, 130 Sanda athletes were divided into two groups, among them, there were 65 participants in the experimental group and 65 participants in the control group. Among them, twice a week, training on Monday and Thursday, 9:00-10:30 am. The author will participate in the whole experimental training and make detailed records. In this experiment, the experimental group used functional training methods, and the control group used traditional physical exercise.[6]

The author uses Excel and SPSS 17.0 software for mathematical statistical analysis, and the data results are represented by the following formula (1). The data within the group was analyzed by paired-samples T-test, and the data between groups was analyzed by the independent-samples T-test, P value < 0.05 means that there is a significant difference, and P value > 0.05 means that there is no significant difference. P value <0.01 indicated that there was a very significant difference.[7]

$$R=\overline{X}\pm S \quad (1)$$

Where R is the data result, is the mean, and S is the standard deviation.

The basic information of the personnel in the experimental group and the control group is shown in Table 2 below.

Ethical Compliance

Research experiments conducted in this article with animals or humans were approved by the Ethical Committee and responsible authorities of Department of Physical Education, Fujian Jiangxia University following all guidelines, regulations, legal, and ethical standards as required for humans or animals.

RESULTS

Comparative analysis of sitting stereo flexion

After the experiment, the experimental group and the control group were tested again, and the paired-samples T test was used to analyze

Table 1. Expert Interview Form.

Name	research direction	Job title
Zhao xx	Sports Training	Professor
Li x	Sports Training	PhD
cow xx	Physical Training	Professor
Zhang xx	Sports Training	Professor
Zou xx	Sanda training	Echelon Coach
Liu xx	Sanda training	Echelon Coach

Table 2. The basic information analysis Table of the experimental group and the control group ($\overline{X}\pm S$).

	Test group (n=65)	Control group (n=65)	P value
Height (cm)	176.85±6.17	176.53±5.25	0.62
Weight (kg)	65.34±4.44	65.55±5.49	0.46
Age	20.77±1.58	20.83±1.15	0.75
Training years	10.06±1.27	9.91±1.47	0.41

the sit-and-forward flexion scores of the two groups before and after the experiment, the analysis results are shown in Figure 1.

As can be seen from Figure 1, the experimental group showed a significant improvement in the sit-and-forward flexion test before and after the experiment, with an increase of 12.32%, but compared with the experimental group, the scores of the control group did not improve in the test after the experiment, but showed a slight decrease, with a decrease rate of -0.58%. For specific analysis, the experimental group's performance of three-dimensional forward flexion in front of the experiment was 13.71±2.17 (cm), after the experiment, it was 15.40±1.70 (cm), and the average value reflected the improvement before and after the experiment, P(0.000) < 0.01, and the associated probability indicated that the experimental group showed a very significant difference in the performance of sitting, stereo and forward flexion before and after the experiment. In the control group, the three-dimensional forward flexion in front of the experiment was 13.73±2.56 (cm), after the experiment, it was 13.65±2.27 (cm), and the average value reflected a slight decrease before and after the experiment, but P(0.506)>0.05, and the associated probability indicated that the control group had no significant difference in the changes in the performance of sit-and-forward flexion before and after the experiment.

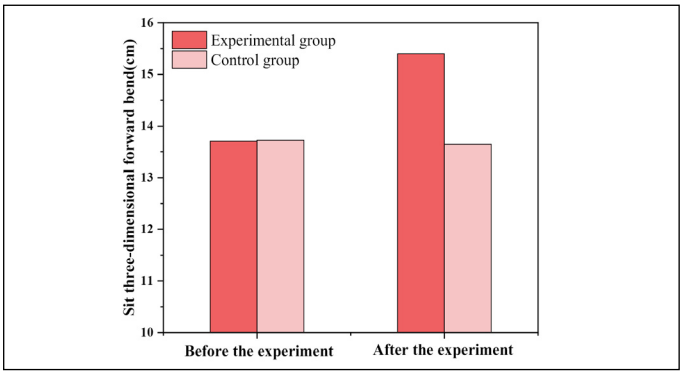

Figure 1. Changes in sitting stereo front flexion scores of the two groups before and after the experiment (unit: cm).

Comparative analysis of 30m running

After the experiment, the experimental group and the control group were tested again, and the paired sample T test was used to analyze the 30m running results of the two groups before and after the experiment, the analysis results are shown in Figure 2.

As can be seen from Figure 2, the experimental group did not show a significant improvement in the 30m running test results before and after the experiment, but decreased, with a decrease of -0.24%, the control group did not improve or slightly decreased in the test after the experiment, with a decrease of -0.48%. Specific analysis, the experimental group members' 30m running performance before the experiment was 4.11±0.10 (s), after the experiment it was 4.12±0.09 (s), the average value reflects a decrease before and after the experiment, P(0.359)>0.05, and the associated probability indicates that there is no significant difference in the 30m running performance of the experimental group before and after the experiment. The team members in the control group had a 30m running performance of 4.10±0.11(s) before the experiment, after the experiment, it was 4.12±0.09(s), and the average value reflected a decrease before and after the experiment, P(0.096)>0.05, and the associated probability indicated that there was no significant difference in the change of 30m running performance in the control group before and after the experiment.

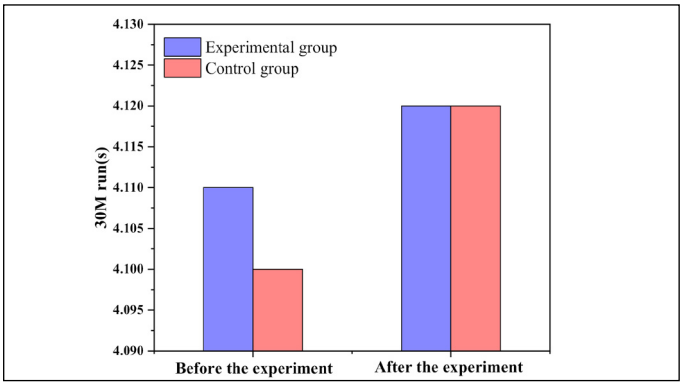

Figure 2. Changes in the 30M running scores of the two groups before and after the experiment (unit: s).

DISCUSSION

Comparative analysis of sitting stereo flexion

The experimental group performed functional movement preparation exercises in the warm-up activities before functional training, and the dynamic stretching part of functional movement preparation, multiple movements such as tuck forward, heel to hip-arm extension, great stretch, walk on all fours, etc., while activating the neuromuscular connection, it also has a positive impact on the practitioner's physical flexibility.[8] In addition, in the functional exercise session, the dumbbell-bent position hand-supporting single-arm and single-leg back-pull training and the seated rowing training of the control group, although they are also exercises for the back muscles, but the difference is that while the former supports the single arm and the heterolateral leg, the single arm lifts the dumbbell so that the practitioner's unilateral back muscles have a greater degree of extension than when the arms are active in the rowing movement, in addition, the degree of forward extension of the shoulder joint during the exercise is correspondingly greater than that of the latter. Functional training increases the range of motion of the joints on multiple anatomical planes, and the synergy between muscles of multiple parts of the body has a positive impact on the flexibility of athletes.

Comparative analysis of 30m running

The test scores of speed quality before and after the experiment did not increase but decreased, and there was no significant difference, this is because the improvement of physical quality is a long-term process, and each physical quality showed different changes during the training process. The training plasticity of speed quality itself is not strong, and long-term and specialized exercises for speed quality are often required to obtain results.[9] Therefore, the author believes that the scores of the two groups of subjects in the 30m test decreased slightly before and after the experiment, it may be related to the approaching of winter events, the players' daily training with balls has increased intensified and their physical fatigue has increased, secondly, the neural excitation of the subjects in the cold climate test is not high, which may have an impact on the performance of the subjects in the speed test.[10]

CONCLUSION

After the eight-week intervention experiment, through statistical analysis of the test scores of the experimental group and the control group after the experiment, it can be found that the two groups of subjects have different degrees of changes in the indicators of various special physical fitness tests. Compared with the control group, the experimental group had a P value of 0.043 < 0.05 on the test index of sitting forward flexion, which indicated that in terms of flexibility, the special physical quality, there were significant differences in performance between the two groups after receiving the experimental

intervention. However, in the 30m running test, the P value between the two groups after the experiment was greater than 0.05, which indicated that there was no significant difference in the test scores between the two groups after the experiment. Physical functional training and traditional strength training showed significant differences in the impact of players' physical flexibility, but the impact on speed quality did not show significant differences.

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

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