EFFECTS OF BRAKE TRAINING ON LOWER LIMBS OF SOCCER PLAYERS

EFEITOS DO TREINAMENTO DE FRENAGEM SOBRE OS MEMBROS INFERIORES DOS JOGADORES DE FUTEBOL

EFECTOS DEL ENTRENAMIENTO DE FRENADO EN LAS EXTREMIDADES INFERIORES DE LOS FUTBOLISTAS

Original Article
Artigo Original
Artículo Original

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ABSTRACT

Introduction: As sports skills and attacking techniques evolved rapidly, so did sports offense and defense, requiring new techniques for improving sports performance on the field. One technique that has been empirically highlighted is braking training, with little scientific research on its practical results. Objective: Study the effects of brake training on lower limb agility in soccer players. Methods: Male soccer athletes participated in the experiment, and patients were divided into experimental and control groups, where lower limb demand and fracture resistance were tested. Results: After 8 weeks of training, the quality of sensitivity and explosive strength of the lower extremities were checked, where the experimental group showed a highly significant difference in training (P<0.01). The sensitivity index scores were all significantly changed. In the control group, there was a variation in bone density before and after exercise but little significant difference in performance. Conclusion: Compared to traditional resistance training, extending and focusing on lower limb braking training can effectively develop explosive strength and agility in soccer players. ***Level of evidence II; Therapeutic studies - investigation of treatment outcomes.***

Keywords: Lower Extremity; Athletic Performance; Soccer.

RESUMO

Introdução: À medida que as habilidades esportivas e a técnica de ataque evoluíram rapidamente, o mesmo foi acontecendo com relação ao ataque e à defesa esportiva, exigindo novas técnicas para o aprimoramento do desempenho esportivo em campo. Uma das técnicas que vem se destacando empiricamente é o treinamento de frenagem, com poucas pesquisas científicas em seus resultados práticos. Objetivo: Estudar os efeitos do treinamento de frenagem sobre a agilidade dos membros inferiores nos jogadores de futebol. Métodos: Atletas masculinos de futebol participaram do experimento, sendo os pacientes divididos em grupos experimentais e de controle, onde a demanda dos membros inferiores e a resistência à fratura foram testadas. Resultados: Após 8 semanas de treinamento, verificou-se a qualidade da sensibilidade e a força explosiva das extremidades inferiores, onde o grupo experimental mostrou uma diferença altamente significativa ao treinamento (P<0,01). Os escores do índice de sensibilidade foram todos significativamente alterados. No grupo de controle, houve uma variação na densidade óssea antes e depois do exercício, porém pouca diferença significativa no desempenho. Conclusão: Em comparação com o treinamento de resistência tradicional, a ampliação e concentração no treinamento de frenagem sobre os membros inferiores pode efetivamente desenvolver a força explosiva e a agilidade nos jogadores de futebol. ***Nível de evidência II; Estudos terapêuticos - investigação dos resultados do tratamento.***

Descritores: *Extremidade Inferior; Desempenho Atlético; Futebol.*

RESUMEN

Introducción: A medida que las habilidades deportivas y la técnica de ataque evolucionaba rápidamente, lo mismo ocurría con el ataque y la defensa deportiva, exigiendo nuevas técnicas para la mejora del rendimiento deportivo en el campo. Una de las técnicas que se ha destacado empíricamente es el entrenamiento de frenado, con poca investigación científica sobre sus resultados prácticos. Objetivo: Estudiar los efectos del entrenamiento de frenado sobre la agilidad de los miembros inferiores en jugadores de fútbol. Métodos: En el experimento participaron atletas de fútbol de sexo masculino, y los pacientes se dividieron en grupos experimentales y de control, en los que se comprobó la demanda de las extremidades inferiores y la resistencia a las fracturas. Resultados: Tras 8 semanas de entrenamiento, se comprobó la calidad de la sensibilidad y la fuerza explosiva de las extremidades inferiores, donde el grupo experimental mostró una diferencia altamente significativa al entrenamiento (P<0,01). Las puntuaciones del índice de sensibilidad cambiaron significativamente. En el grupo de control, hubo una variación en la densidad ósea antes y después del ejercicio, pero poca diferencia significativa en el rendimiento. Conclusión: En comparación con el entrenamiento de resistencia tradicional, extender y centrar el entrenamiento de frenado en las extremidades inferiores puede desarrollar eficazmente la fuerza explosiva y la agilidad en los jugadores de fútbol. ***Nivel de evidencia II; Estudios terapéuticos - investigación de los resultados del tratamiento.***

Descriptores: *Extremidad Inferior; Rendimiento; Atlético Fútbol.*

DOI: http://dx.doi.org/10.1590/1517-8692202329012022_0676 Article received on 11/02/2022 accepted on 11/25/2022

INTRODUCTION

As football skills and offense have rapidly changed, so has football offense and offense and defense. During the competition, the athletes have a short training time for various orientations and tactics, and the athletes have to run, run, break, jump, and physically fight for 90 minutes on an 8,000-square-meter field. meters. , multitasking in competition.[1] The game requires athletes to be quick to accelerate and stop, as well as lower leg braking ability. Agility refers to an athlete's ability to react quickly, dodge, make decisions, brake, slow down and stop quickly.[2] So, is there a certain relationship between athlete's braking ability and agility? This study will further explore. The sensitivity of football players on the field is to make conscious judgments, change directions, dodge, and rationally use technical actions according to the changes in the situation on the field. Lower extremity braking is a conscious and purposeful movement of the body by the athlete, and the body is decelerated to a stationary state to make the most adequate preparation for offense or defense.[3] It can be said that braking is the basis of sensitivity, sensitivity is the external performance of braking, and braking ability is a means of practicing sensitivity. To sum up, most of the exercises for agility quality are to improve agility by improving strength, and a small part is to improve agility by exercising the nervous system and dynamic stability of the body.[4]

METHOD

Experimental subjects

The soccer team consisted of 10 people in the experimental group and 10 people in the control group (Table 1). After interviews with experts and literature review, it is believed that the age of U-17 can withstand the impact strength of fast-stretching compound training.

Research methods

Documentation method

The literature method was used to search the literature about football physical training, strength training and Chinese and foreign literature about fast-stretching compound training.

Questionnaire method

An expert questionnaire was designed on the indicators and methods of football players' sensitivity test, 11 questionnaires were distributed, 10 were recovered, and 1 invalid questionnaire was excluded, there were 9 valid questionnaires in total, with a recovery rate of 91% and an effective recovery rate of 81.8%.

Mathematical Statistics

Before and after the experiment, K.S normality test was performed on the test data of the experimental and control groups, and group comparisons were made by comparing between groups; Experiments, comparisons between groups using independent sample test, and data analysis software package SPSS13.0 for statistical analysis.[5]

Experimental Method

An 8-week experiment was carried out on 20 male soccer players (U-17) of a college with three high soccer teams during the intermission period of the competition, and the designed rapid-stretching compound training was implemented and tested.

Preparation before experiment

Subjects should be physically examined before the experiment, including joint stability and muscle strength. If an athlete has a history of spinal, shoulder, and lower extremity injuries, extreme caution should be exercised when performing quick-stretch compound exercises. Imbalances in muscle strength and flexibility on the left and right sides, or imbalances in the agonist and antagonist muscles, can increase the risk of injury. Studies have shown that lower extremity injuries account for 80% of all sports injuries, while knee and ankle sprains account for 27% of lower extremity injuries. When the difference in flexibility and muscle strength between the left and right sides of the hip and knee joints reaches 15%, the risk of injury is increased by 2.6 times.[6,7]

Ethical Compliance

Research experiments conducted in this article with animals or humans were approved by the Ethical Committee and responsible authorities of Guizhou Normal University, Southwest University and East China Normal University-Xuhui Postdoctoral Workstation following all guidelines, regulations, legal, and ethical standards as required for humans or animals.

RESULTS

Test the subjects before the experiment

Before the formal experiment, 7 items of sensitivity test and 1 item of lower extremity explosive power test were performed on all members of the U-17 football team of a university. The K.S normality test was carried out on the standing long jump scores and the sensitive index test scores before the experiment, P>0.05 indicates that the normal distribution can be tested by £ . P>0.05 was obtained by the £ test on the average score, found that there was no difference between the two groups and the tests were fulfilled. (Figure 1, Table 1)

Experimental results

Results and evaluation of the lower extremity explosive strength test after the test

After the experiment, the test scores of the experimental and control groups were tested for normality by KS, P > 0.05 indicates the presence of normality, and the f test can be used for statistical analysis.[8] A paired-samples f-test was used to analyze the mean values of the lower extremity explosive strength test of the experimental group before and after the experiment. (Table 2)

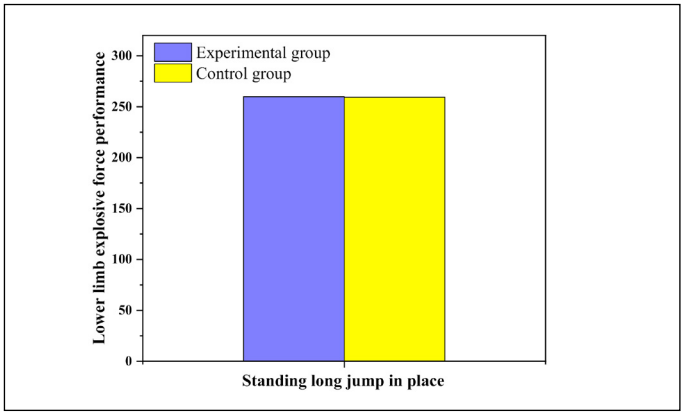

Figure 1. Comparative analysis of lower extremity explosive activity in the experimental and control groups in the pre-test.

Table 1. Comparative analysis of sensitivity performance of pre-test and control groups (unit: S).

Experimental content	Test group	Control group	P value
Pro test	5.5	5.4	P=0.18>0.05
"T" run test	10.4	10.2	P=0.83>0.05
Compass Pointer Test	7.1	7.0	P=0.88>0.05
Nebraska test	12.7	12.3	P=0.14>0.05
AFL off-ball test	7.9	7.7	P=0.28>0.05
AFL ball test	10.0	9.8	P=0.22>0.05
Illinois test	16.9	16.8	P=0.10>0.05

According to the results of the analysis of the explosive test of the lower part of the test group before and after the test, the long jump increased from the vertical position (259.9 ± 17.9) cm before the experiment to (273.2 ± 9.14) cm after the experiment, the difference between the mean values before and after the experiment was 13.3 cm, and the rate of increase was 5.12%, P<0.01. The index analysis results of lower limb explosive power before and after the experiment in the control group showed that, from (259.3 ± 10.7) cm before the experiment to (263.3 ± 7.35) cm after the experiment, the standing long jump distance before and after the experiment increased by 4.0 cm, and the increase ratio was 1.54%, P=0.0ll<0.05.[9]

After 8 weeks of rapid training and regular training in the experimental and control groups, the ratio between the experimental and control groups was higher than before the training, and P<0.01 and P<0.05 are the P values of the two groups, respectively. Results of the experimental group and the control group after the experiment by one-way ANOVA method, P = 0.047<0.05.

Review of test results and post-test pressure readings

After the test, considering the test scores of the experimental and control groups, KS is normal, P>0.05 is normal,and £ test can be used for statistical analysis. After 8 weeks of speed training in the experimental group, a qualitative test was done and a match £ was made based on the values of the experimental group before and after the experiment. (Table 3)

Table 2. Average analysis of the explosive power index of the lower limbs of the experimental group and the control group before and after the experiment (cm).

	Test group	Control group
Before experiment	259.9	259.3
After the experiment	273.2	263.3
Difference before and after the experiment	13.3	4.0
Increase rate/%	5.12	1.54
P value	P=0.005<0.01	P=0.041<0.05

After 8 weeks of regular training in the control group, the scores of the control group in the post-test and the results of the control group in the pre-test and post-test were compared with the competition f-analysis (Table 3). After the experiment, the results of the experiment between the experimental group and the control group for different factors were not analyzed by independent sample £ test.

DISCUSSION

When comparing the experimental and control groups, after 8 weeks of training, 3 times a week (2 lower knee, 1 upper neck, body, alternating) fast training in the field of long jump, the index shows the explosive power of the lower part. athlete's foot improved (P<0.01). After 8 weeks of regular training (4 weeks of muscle hypertrophy resistance exercise and 4 weeks of strength training), standing long jump performance improved. (5.12% in the experimental group and 1.54% in the control group)) showed that speed training was more effective than resistance training in improving back pain in athletes. Research has shown that explosiveness is clearly correlated with well-being. The T" shape of the test can effectively reflect the low-level force of the impact ball, and the breaking force and sensitivity test show a good correlation.[10]

CONCLUSION

Both lower extremity braking training and traditional resistance training can develop the sensitive qualities of U17 football players, but the rapid expansion and contraction compound training has a larger proportion, and the training effect is more effective, and the lower extremity explosion has a certain reflection on the sensitive quality. The effect of compound training combined with traditional resistance training is worthy of further study.

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

Table 3. Difference analysis of each sensitive index in the experimental group before and after the experiment (S1).

	Pro	"T" run	Compass pointer	Nebraska	AFL without the ball	AFL has the ball	Illinois
Before experiment	5.4±0.1	10.2±0.4	7.0±0.5	12.3±0.5	7.7±0.2	9.8±0.3	16.8±0.2
After the experiment	5.1±0.1	9.8±0.4	6.4±0.3	12.0±0.5	7.4±0.3	9.5±0.3	13.6±0.5
Difference before and after the experiment	0.3	0.3	0.6	0.3	0.4	0.3	0.5
Increase rate/%	5.9	3.1	8.3	2.6	4.8	3.8	2.7
P value	P=0.005<0.01	P=0.005<0.01	P<0.01	P<0.01	P<0.01	P<0.01	P<0.01

AUTHORS' CONTRIBUTIONS: Each author made significant individual contributions to this manuscript. Bin Hu: writing and data analysis.

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