BENEFITS OF RUNNING ON CARDIAC PROTECTION AND THE CULTURE OF EXERCISE HEALTH AWARENESS

BENEFÍCIOS DA CORRIDA PARA A PROTEÇÃO CARDÍACA E A CULTURA DA CONSCIÊNCIA SANITÁRIA DO EXERCÍCIO

BENEFICIOS DE LA CARRERA PARA LA PROTECCIÓN CARDÍACA Y EL CULTIVO DE LA CONCIENCIA DE LA SALUD DEL EJERCICIO

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ABSTRACT

Introduction: Several programs to encourage physical activity has been encouraged to reduce the sedentary lifestyle in China. Running is among them because it has potentially positive effects on cardiovascular diseases, hypertension, diabetes mellitus, and hypercholesterolemia, in addition to the intrinsic psychological and social benefits of outdoor sports. Objective: Explore the protective effect of running on the cardiac system by analyzing strategies for cultivating exercise health awareness. Methods: A group of ten healthy volunteers, five women aged 25-35 years, underwent a 45-minute running program, performed four times a week for three weeks. Data collected by spirometry and cardiac monitoring were collected, treated, compared, and discussed. This paper introduced the concept of subjective exercise intensity to find the best analysis and judgment of Cardiac Function. Finally, a quantitative investigation involving the analysis of 315 questionnaires explored the current status of sports health awareness in running fans. Results: Heart rate amplitude during running remained in the range of 120-160, belonging to the normal heart rate range for the surveyed audience. In most cases, women's heart rate was higher than men's ($P<0.05$). The exercise intensity was fixed at a frequency below the value of 16, which is a slightly strenuous stage, and the relative exercise intensity was controlled between 50% and 71.5%. Conclusion: Running has a good cardiac protective effect, and its followers are highly aware of sports health. Due to the beneficial effect of sports practice, its dissemination is recommended as a form of physical and social therapeutic activity. ***Level of evidence II; Therapeutic studies - investigation of treatment outcomes.***

Keywords: Running; Circulatory System; Healthy Lifestyle.

RESUMO

Introdução: Com o intuito de reduzir o índice de sedentarismo na China, diversos programas de incentivo à atividade física foram estimulados. A corrida está dentre eles pois tem potenciais efeitos positivos nas doenças cardiovasculares, hipertensão arterial, diabetes mellitus e hipercolesterolemia, além dos benefícios psicológicos e sociais intrínsecos na prática esportiva ao ar livre. Objetivo: Explorar o efeito protetor da corrida no sistema cardíaco analisando as estratégias para a cultura da consciência sanitária do exercício. Métodos: Um grupo de dez voluntários saudáveis, com cinco mulheres e idade entre 25 a 35 anos foram submetidos a um programa de corrida por 45 minutos, realizado quatro vezes por semana, durante três semanas. Dados coletados por espirometria e monitoramento cardíaco foram coletados, tratados, comparados e discutidos. Este artigo introduziu o conceito de intensidade de exercício subjetivo para encontrar a melhor análise e julgamento da Função Cardíaca. Por fim, uma investigação quantitativa envolvendo a análise de 315 questionários explorou a situação atual da conscientização em saúde esportiva em adeptos da corrida. Resultados: A amplitude de frequência cardíaca durante a corrida manteve-se na faixa de 120-160, pertencente à faixa normal de frequência cardíaca ao público pesquisado. A frequência cardíaca das mulheres foi maior do que a dos homens na maioria dos casos ($P<0,05$). A intensidade do exercício fixou-se numa frequência inferior ao valor de 16, que é um estágio ligeiramente extenuante, e a intensidade relativa do exercício ficou controlada entre 50% e 71,5%. Conclusão: A corrida apresenta um bom efeito protetor cardíaco, seus adeptos possuem elevada conscientização da saúde esportiva. Devido ao efeito salutar da prática esportiva, recomenda-se a sua divulgação como forma de atividade terapêutica física e social. ***Nível de evidência II; Estudos terapêuticos - investigação dos resultados do tratamento.***

Descritores: *Corrida; Sistema Circulatório; Estilo de Vida Saudável.*

RESUMEN

Introducción: Con el fin de reducir el estilo de vida sedentario en China, se han estimulado varios programas para fomentar la actividad física. La carrera se encuentra entre ellos porque tiene potenciales efectos positivos sobre las enfermedades cardiovasculares, la hipertensión, la diabetes mellitus y la hipercolesterolemia, además de los beneficios psicológicos y sociales intrínsecos del deporte al aire libre. Objetivo: Explorar el efecto protector de correr sobre el sistema cardíaco analizando las estrategias para cultivar la conciencia de la salud del ejercicio. Métodos: Un grupo de diez voluntarios sanos, cinco mujeres, con edades comprendidas entre los 25 y los 35 años,

fueron sometidos a un programa de carrera durante 45 minutos, realizado cuatro veces por semana durante tres semanas. Los datos recogidos por la espirometría y la monitorización cardíaca fueron recogidos, tratados, comparados y discutidos. Este trabajo introdujo el concepto de intensidad subjetiva del ejercicio para encontrar el mejor análisis y juicio de la Función Cardíaca. Por último, una investigación cuantitativa que incluyó el análisis de 315 cuestionarios exploró el estado actual de la conciencia de la salud deportiva en los aficionados a las carreras. Resultados: La amplitud de la frecuencia cardíaca durante la carrera se mantuvo en el rango de 120-160, perteneciendo al rango de frecuencia cardíaca normal para el público encuestado. La frecuencia cardíaca de las mujeres fue mayor que la de los hombres en la mayoría de los casos (P<0,05). La intensidad del ejercicio se fijó en una frecuencia inferior al valor de 16, que es una etapa ligeramente agotadora, y la intensidad relativa del ejercicio se controló entre el 50% y el 71,5%. Conclusión: La acción de correr presenta un buen efecto cardioprotector, sus adeptos poseen alta conciencia de la salud deportiva. Debido al efecto saludable de la práctica deportiva, se recomienda su difusión como forma de actividad terapéutica física y social. ***Nivel de evidencia II; Estudios terapéuticos - investigación de los resultados del tratamiento.***

Descriptores: *Carrera; Sistema Circulatorio; Estilo de Vida Saludable.*

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INTRODUCTION

As a very typical and common medium intensity aerobic exercise, jogging should pay attention to the control of heart rate within an effective range in order to achieve its functions of healthy exercise, improving cardiopulmonary function and improving fat accumulation.[1] The research shows that the heart rate of 120 ~ 160 times per minute is the effective range of jogging heart rate. If the heart rate is lower than 120, the exercise intensity is too low and it is difficult to produce effect; If the heart rate is higher than 160, the exercise intensity is too high, which is easy to cause certain pressure on the body, and will also cause the problem of "out of breath" for beginners, which will have a certain adverse impact on the heart and lungs.[2] Therefore, in the process of jogging, we should fully adjust the heart rate according to the current actual situation, so that jogging can protect the heart, cultivate the friendship between jogging friends in the process of jogging, jointly establish the awareness of sports health, and attract more people to join in the form of jogging group, so as to cultivate their good awareness of sports health.[3]

For some elderly people, they have coronary atherosclerosis. If they rashly carry out high heart rate sports activities, it is easy to lead to arterial stenosis, plaque rupture under strong pressure, thrombosis in blood vessels, and then myocardial ischemia. For jogging, because its heart rate is always controlled within an effective range of less than 160, it has not yet reached the pressure on the heart and lungs during strenuous exercise.[4] Combined with effective breathing forms, people can cultivate good breathing habits, which virtually increases the development of cardiopulmonary aerobic exercise and improves cardiopulmonary endurance, thus playing a good protective role for the heart. Therefore, jogging, as an activity with moderate intensity, is a good choice for office workers or non-sports professionals. Through the analysis of volunteers of different ages, this paper discusses the protective effect of jogging on the heart, analyzes the phenomenon of urban jogging group, and studies its awareness of sports health, so as to promote the improvement of urban physique and the sustainable development of national health sports.

METHOD

Questionnaire survey

Through the combination of online and offline, this paper sends relevant questionnaires to the volunteer groups in the study area in the form of questionnaire survey, and collects the completed questionnaires. Among them, 143 questionnaires are collected online, 4 questionnaires have problems and 139 effective questionnaires are excluded. A total of 180 questionnaires were sent out offline and 176 questionnaires were recovered. The problems of two questionnaires were eliminated, and a total of 176 valid questionnaires. Through the integration of online and offline research results, a total of 315 valid questionnaires are available for analysis. The study and all the participants were reviewed and approved by Ethics Committee of Lingnan Normal University (NO. 2019LNUFD-032).

Experimental method

In order to explore the protective effect of exercise on the heart, this paper selects primary runners in the running group, including 5 men and 5 women. They are required to be healthy, aged from 25 to 35, without cardiovascular and cerebrovascular diseases, and have sufficient time to cooperate with the experiment in the research cycle. After fully informing the experimental contents and needs of this paper, the evening when runners have time is selected as the research time. Jogging is carried out four times a week for 45 minutes each time. Data collection is carried out after three weeks of training. Because jogging has the problem of large activity space, in order to facilitate data collection, jogging of sports lovers is carried out on the indoor running platform during the final collection period. The gas analyzer is used to collect and analyze the oxygen intake during jogging, and the heart rate change during exercise is recorded with the heart rate meter. In order to more systematically analyze the jogging feeling and heart rate of joggers, the concept of subjective exercise intensity RPE is introduced in this paper, RPE grading is carried out according to the subjective feeling of athletes, so as to explore the exercise tolerance in the process of exercise, and further analyze and judge the cardiac function.

RESULTS

Basic information of the research object

As shown in Figure 1, according to the questionnaire survey, the age distribution of 315 jogging enthusiasts is wide and relatively balanced. Among them, the number of people under the age of 20 accounts for 5%, mainly college students; 18% of young students or office workers aged 21 to 30; The proportion of office workers aged 31 ~ 40 is 27%; The participation rate of office workers aged 41 to 50 is 32%; The proportion of runners over 51 who are mainly composed of retirees is 18%, which is relatively in the form of balanced participation of all ages. Among them, office workers aged 21-30, 31-40 and 41-50 mainly run at night after work in the afternoon. Only a small number of sports lovers choose to get up early for morning running, while running participants over 51 tend to run in the morning.

As shown in Figure 2, when investigating and analyzing the exercise time of jogging enthusiasts, it can be seen that 19% of jogging enthusiasts have insisted on jogging for more than two years; 33% of runners insist on running for one to two years; 27% of running enthusiasts spend more than 6 months and less than a year; 7% of sports enthusiasts stick to it for 3 ~ 6 months; 10% of the sports enthusiasts insisted for 1-3 months, and another 4% of the participants insisted for less than a month, in the state of new participation. It can be seen from the distribution proportion of exercise time that jogging has a better mass base and is relatively easy to adhere to. It can be seen from the Figure 2 that a large proportion of people stick to it for a long time, and another 21% of participants exercise for less than half a year, which also proves that jogging is always attracting fresh blood, so as to form the purpose of driving the overall exercise enthusiasm of the city with running groups. Through the movement of running groups, the sports health awareness of the people in the region can be effectively improved. So as to promote the continuous development of regional sports.

Changes of cardiac function indexes of jogging participants

On the basis of fully understanding the exercise situation of jogging participants, this paper analyzes various situations during and after exercise through experimental method, including the change of heart rate during exercise, the change of subjective exercise intensity during exercise and the change of cardiac oxygen uptake after exercise. So as to have a more systematic understanding of the protective effect of jogging on the heart. The specific experimental results are as follows:

Figure 3 shows the heart rate changes of jogging participants during exercise. It can be seen from Figure 3 that in the quiet state before exercise, the heart rates of the male group and the female group are within the normal range under quiet. Among them, the heart rate of the female group is slightly higher than that of the male group. Within one minute after exercise, the heart rates of the participants in both groups rise rapidly to about 130, and then fluctuate and rise slowly with the extension of exercise time. Finally, after 240 seconds of exercise, It gradually tends to a relatively stable state, maintained between 140 and 160. The heart rate range during the overall exercise is always maintained within the range of 120 ~ 160, which belongs to the normal heart rate range of sprint. In most cases, the heart rate of women is higher than that of men, which may be related to the fact that women's adaptability to exercise is lower than that of men, so they need a faster heart rate to meet their exercise needs. In the whole research process, $P < 0.05$ shows that there are significant differences.

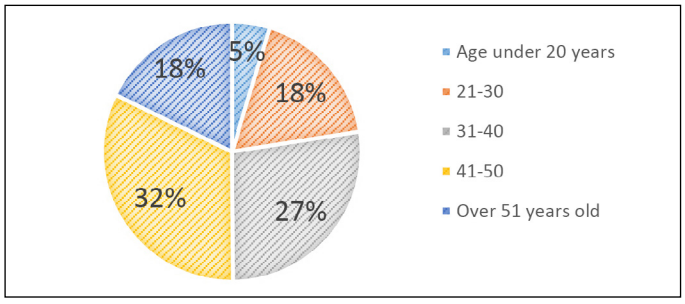

Figure 1. Age distribution of jogging participants (n = 315).

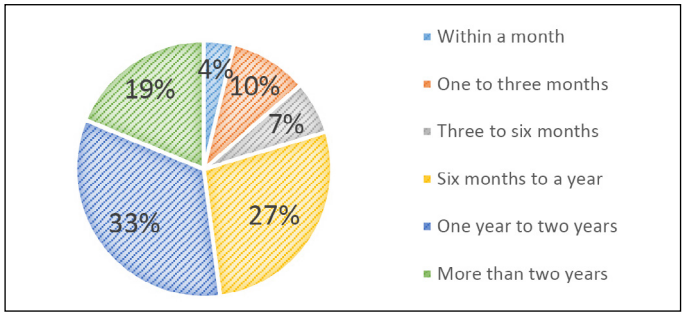

Figure 2. Exercise time of jogging participants (n = 315).

Current situation of jogging participants' sports health awareness

In the questionnaire survey, there are also relevant questionnaires on the sports health awareness of jogging enthusiasts. Through this questionnaire survey, we can clearly analyze the sports needs, sports attitude and health awareness of jogging enthusiasts, so as to carry out targeted learning and induction, and obtain strategies to promote urban residents' sports and improve their overall sports health awareness, Therefore, this chapter analyzes the development status of health awareness of jogging participants, which is characterized as follows:

Figure 4 shows the analysis of jogging participants' sports motivation. It can be seen from the picture that the option of physical health has the highest score, which is 4.036; The second is entertainment and leisure, with a score of 3.826, the third is social needs, with a score of 3.47, the fourth is sports skills, with a score of 3.292, and the last is body shaping needs, with a score of 2.867. Through the analysis of all dimensions of sports motivation, it can be seen that for sports lovers, the most important thing is to keep heart and body healthy, which is also more than four points of the option; The second is the demand for entertainment and social networking, which shows that people are social animals and need to carry out certain social activities. The form of running group effectively combines social networking with sports. In the process of sports, like-minded friends can be obtained. Friends supervise each other and participate in running together, so as to obtain good sustainability. This form can also be applied to other mass sports.

Figure 5 shows the scores of jogging participants in various dimensions of sports health awareness, on a 20-point scale. It can be seen from the Figure 5 that sports health is chosen to enjoy life, with the highest score of 13.43 points, followed by sports health, which is 9.475 points in order to eliminate fatigue, and finally sports health is helpful to cultivate positive psychology, which is 7.02 points. From the perspective of subjective sports awareness, the main motivation of most sports lovers is to

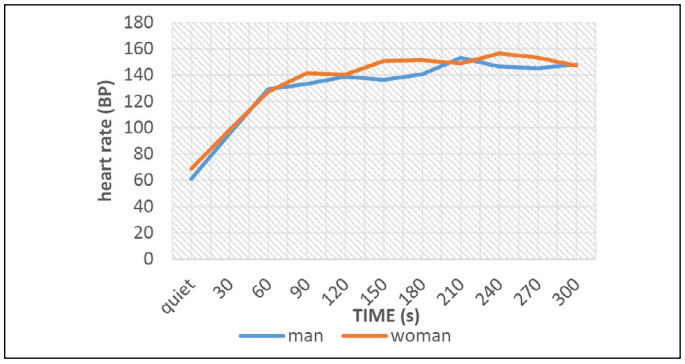

Figure 3. Heart rate changes of jogging participants during exercise.

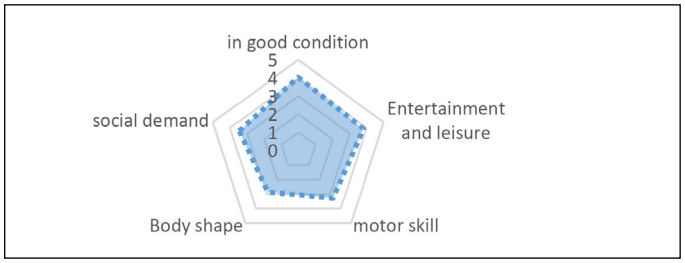

Figure 4. Analysis of scores of jogging participants in various dimensions of sports motivation.

enjoy life. They release more pressure in the form of sports and obtain good physical condition, so as to better enjoy life.

In the previous article, the scores of each dimension of healthy exercise awareness and exercise motivation of jogging participants are analyzed, as shown in Table 1. The two are combined to explore the relationship between them. In terms of enjoying life, it has a positive correlation with physical health, entertainment, leisure sports, skill body shaping and social needs, and there is a very significant difference ($P < 0.01$), which shows that there is a positive correlation trend between the two, the improvement of physical quality, the demand for entertainment and leisure The improvement of sports skills, physical perfection and good social activities can stimulate the positive psychology of sports lovers to enjoy life, which complement each other.

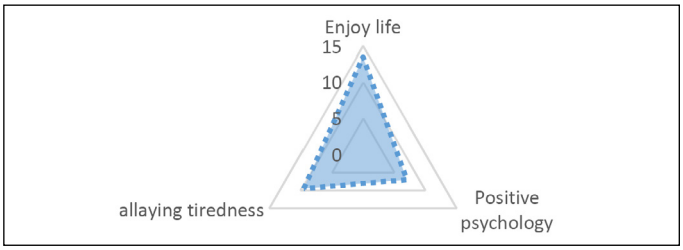

Figure 5. Analysis of scores of jogging participants in various dimensions of healthy exercise awareness.

Table 1. Correlation Analysis between sports motivation and sports health awareness.

Option	Enjoy life	Negative emotions	Fatigue
Healthy	0.5192	-0.4543	-0.1318
Entertainment	0.5425	-0.2625	-0.0340
Sports skills	0.4234	-0.0852	-0.1007
Form shaping	0.3206	-0.1638	-0.1105
Social demand	0.4732	-0.1834	0.0285

DISCUSSION

To achieve the purpose of heart protection during exercise, in short, is to gradually increase the oxygen uptake through appropriate exercise, so as to appropriately increase the oxygen supply of the heart in a short time within the scope of science, so as to improve the heart's oxygen delivery and blood transfusion ability. Through constant exercise, the heart's oxygen supply ability can be improved to a certain extent, so as to gradually enhance the athlete's cardiopulmonary function. The reason why jogging has unique advantages in improving heart function is that its exercise intensity is limited and the exercise time is long. It can make the heart supply oxygen within the pressure range that can be borne for a long time, so as to increase the endurance of the heart and improve the oxygen supply and uptake ability of the body. To reasonably enhance the oxygen supply capacity of the heart, we should start from two aspects.[5]

The first is to reasonably determine the range of heart load and scientifically "increase the burden" for the heart. Sports lovers, especially those who lack heart function, must ask relevant professionals, such as doctors and physical education teachers, before exercising, so as to reasonably determine their exercise range, prevent the pressure on the heart caused by rash and violent exercise, and select a better amount of heart burden increase by scientifically determining the exercise intensity, It can not only effectively exercise heart function, avoid ineffective exercise caused by low intensity, but also prevent the risk of sudden death and thrombosis caused by high exercise, so as to achieve the purpose of scientific fitness.[6]

The second is to reasonably grasp the exercise time. If you want to exercise cardiopulmonary endurance and improve the oxygen supply capacity of the heart, you must exercise effectively. If the exercise time is too short, you can't form a good exercise effect; If the exercise time is too long, the body will also bring some damage to other aspects because it can't bear the pressure of exercise. Therefore, in the process of sports, sports lovers should fully determine the training time according to their actual situation. They should not only make themselves tired and adhere to the situation, so as to break through their own limits, but also reasonably control the exercise time and avoid long-term fatigue exercise. While exercising cardiopulmonary endurance, in order to further improve the bearing capacity of the heart for short-term emergencies, sports lovers can also choose short-term vigorous exercise after aerobic exercise according to their actual situation, so as to enhance the bearing capacity of the heart for instantaneous exercise.[7]

CONCLUSIONS

It is found in this paper that jogging can play an effective role in protecting and improving the function of the city through scientific research. In the process of cultivating residents' sports health awareness, as a form of spontaneous organization integrating social function and sports function, running group has proved its effectiveness and cohesion in many years of operation. Therefore, relevant departments should actively standardize the operation of running group and promote the development of running group in the process of urban sports, so as to improve residents' sports health awareness, Promote the physical and mental health of residents, so as to achieve the purpose of national fitness.

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