

Self-evaluation of aerobic exercise based on exercise prescription

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Abstract: Centering on the concept of exercise prescription, we discuss the self-evaluation of aerobic exercise in detail, puts forward detailed indicators for the changes and effect evaluation of exercise, and designs the self-evaluation effect table of aerobic exercise prescription based on clinical experience, which achieved good results in teaching practice and teaching process.

1. Introduction

This paper discusses the purpose and significance of exercise prescription, evaluate the common method of exercise prescription; scientifically evaluate the implementation effect of exercise prescription and write the evaluation report.

The purpose of implementing exercise prescription for fitness people is to enhance their physical fitness and improve the functional ability of each organ system. To verify the good impact of exercise prescription program on all aspects of the body, it is necessary to objective evaluate the implementation of exercise prescription. The implementation effect of exercise prescription refers to the adaptive changes and good response in the morphology, structure and function of various organs and system under the influence of exercise.

2. Overview of the self-assessment of the exercise effect

2.1 Self-evaluation of exercise effects

Evaluation refers to the comparison of the actual operation of the project with the expected results, that is, whether the objectives specified in the evaluation plan are met and achieved, and the most common evaluation refers to the evaluation at the end of the project.

Exercise effect evaluation refers to the impact and results of physical and mental effects produced through systematic exercise, manifested in the improvement of physical form, function, physical quality; mastery and consolidation of certain skill; enhancement of ability to adapt to the environment and resist disease; improving health level, etc. The evaluation of [1,2] exercise effect is one of the

important contents of scientific exercise. After the implementation of one / multiple exercise prescriptions, the various physiological reactions and the measured relevant data should be recorded, and then the scientific judgment and evaluation should be made on the basis of a comprehensive analysis of each record. Through the assessment, timely understand the effect of the exercise, revise and choose the content and method of the exercise program [3].

2.2 The significance of exercise effect evaluation

The evaluation of exercise effect is one of the important contents of scientific exercise. After the implementation of a exercise prescription, their body indicators are evaluated, comparing the data, and analyzing the effect of exercise training can improve the confidence of exercise and fitness, but also the affirmation of the effect before and after exercise. Verify the rationality and scientificity of the exercise prescription plan, timely understand the exercise effect, and revise and choose the content and method of the exercise plan. In addition, the implementation effect of exercise prescription through the subjective performance of exercise, such as self-feeling, mental state, should reflect [4].

2.3 Evaluation method of the implementation of the exercise effect

The evaluation method of exercise effect is mainly through subjective evaluation and physiological and biochemical index evaluation. [5] subjective evaluation can be done through understanding the process of exercise fitness mood, self feeling and exercise sleep condition, appetite, mental state to assess exercise effect: using exercise and the changes of the body to reflect the exercise effect, commonly used objective indicators have pulse, blood pressure, blood lipid, electrocardiogram, weight, vital capacity, muscle strength, etc.

3. Exercise and exercise effect evaluation index

The implementation effect of the exercise prescription is usually analyzed and evaluated from the objective index and the subjective index; and the physiological index can usually be analyzed from the static and dynamic state.

3.1 Subjective indicators

1. Subjective feeling: Fitness show reactions during the implementation of exercise, such as sleep quality, appetite, mental condition, exercise desire and other aspects. Changes in subjective sensation during quiet and subjective sensory changes during exercise, as well as changes in tolerance to exercise load to reflect the effect of exercise training.

2. Mental state: to reflect the effect of exercise training by investigating the changes of the exercise prescription before and after the implementation of the exercise prescription. These changes are recorded objectively.

3. The desire to exercise: after a period of exercise, whether the body is "addictive" to exercise is to also want to exercise in the future and the duration of exercise to analyze the effect of exercise training.

4. Appetite: a short time of exercise can reduce appetite, but a long period of exercise can improve the appetite of fitness people, often participate in exercise, the body's metabolism is strong, so the appetite is generally better.

5. Bad feeling: Before the exercise prescription, in addition to the above adverse symptoms, such as sleep quality problems, palpitations, palpitation, dizziness, headache, nausea, chest tightness, physical mobility disorders, through a certain period of exercise; that is, after rehabilitation training,

it can indirectly reflect the effect of exercise training.

3.2 Objective evaluation index

The objective evaluation index can be roughly evaluated from three aspects of physical form, physiological and biochemical, and physical function.

1) Body form indicators: there are mainly changes in weight and various circumference, sebum thickness, body composition changes, and body form changes to reflect the effect of physical exercise.

A. Weight: Compared with the weight changes before and after training, it may be an obvious evaluation index for weight-loss people. It is necessary to pay regular attention to the weight changes of fitness professionals. In addition, during the training, the scientific weight loss should be controlled at 0.5-1 jin / week.

B. Surimeter: for circumference, more used is the ratio of waist circumference, hip circumference and derived circumference. The change in circumference can also reflect whether the effectiveness of exercise prescription implementation is achieved.

Waist circumference: on an empty stomach in the morning, upright position, the feet are 30cm~40cm apart, in the middle point of the right axillary midline and the upper edge of the twelfth rib, around the abdomen with a soft ruler, measure the waist circumference at the end of calm breath, accurate to 0cm..1 [6]

Breech circumference: the widest circumference of the hip.

Waist-to-hip ratio (WHR): that is, the ratio of waist and hip circumference to reflect the evaluation basis of exercise training. Common used evaluation criteria: male waist-hip ratio > 1.0 is considered abdominal obesity; female waist-hip ratio > 0.9 is considered abdominal obesity.

The circumference of the limb: through the tension circumference of the femoral biceps, thigh and calf triceps to reflect the effect of exercise training, it is also a commonly used evaluation index for strength fitness in the fitness center.

C. Changes in body composition: Changes in body composition are one of the indicators that can best reflect the effect of exercise training. For Asian populations, ideal body fat percentage ranges widely, ranging from 12% to 23% in men and 16% to 27% in women. But the criteria for obesity are basically the same: more than 25% for men and more than 30% women. In addition, different test methods and different test results of different test instruments will also have certain differences.

2) Physiological evaluation indicators. For fitness exercise before and after exercise effect evaluation muscle strength, joint activity, cardiovascular function after a period of time system exercise of the structure and function of the heart, show quiet heart rate, blood pressure change, lung capacity, nervous system function index can be through the body balance function, coordination function of both hands.

The physiological indicators used in the evaluation of exercise effect before and after exercise training are mainly reflected in the functions and functions of the major systems of the human body.

A. Sports system, composed of muscles, joints and bones.

Muscle strength is an index to evaluate the effect of physical exercise, and we can often use a simple muscle strength measurement meter to determine the maximum muscle strength of its muscle group, and it can also determine the number of repeated times that the body bears a certain load.

During physical exercise, muscle work is strengthened, blood supply increases, protein absorption and storage capacity of nutrients are enhanced, muscle fiber thickening, so the muscles gradually become stronger, stronger, muscle strength is enhanced. As the muscle increases its ability to bind oxygen, the stored nutrients, myoglycogen, and the number of capillaries in the muscle, it is more adaptable to the needs of exercise or labor. General human muscle weight accounts for 35%~40% of their body weight, and people who often participate in physical exercise and exercise training,

especially static strength exercise people, their muscles can reach more than 50% of their body weight. Many people have narrow shoulders, flat chest, chest and ribs, as long as these people adhere to regular physical exercise, will make their muscular, proportioned, bodybuilding and powerful.

The range of activity of the joint: for flexibility practice, the range of movement of the joint reflects the effect of exercise training. The extension of the joint evaluates the flexibility of the subject by measuring the range of activity of the relevant joint. Physical exercise can increase the thickness of the articular surface cartilage, and can make the muscles around the joint developed, strength enhancement, joint capsule and ligament thickening, so it can strengthen the stability of the joint, and strengthen the joint load resistance.

Bone mineral density: Physical exercise can change the structure of the bone. Regular physical exercise can enhance bone, physical exercise causes muscle to pull and pressure the bone, so that the bone not only changes in morphology, but also improve the mechanical performance of the bone. The bone process at the muscle attachment increases, and the dense mass of the outer bone layer is thickened, while the bone pine mass in the inner layer can adapt to the action of muscle strain and pressure. This makes the bone stronger, and can bear a greater load, improving the ability of the bone to resist breaking, bending, compression, elongating, and twisting. Physical exercise can also affect the endocrine system, promote the absorption of phosphorus and calcium, increase the supply of manufacturing bone raw materials, and is conducive to the development and growth of bones.

Changes before and after muscle strength, joint range of movement, and bone density can reflect exercise effects.

B. Circulating system indicators, and circulatory system indicators are mainly manifested in cardiovascular function indicators.

Cardiovascular function indicators mainly include heart rate, electrocardiogram, cardiac output, pulse output, heart rate reserve, ejection fraction, myocardial contractility, myocardial diastolic, and arterial blood pressure. It was measured by a telemetry heart rate meter, electrocardiography, multiple physiological recorder, echocardiography, MRI instrument, and sphygmomanometer.

Common indicators used by exercise professionals are heart rate and blood pressure. Heart rate indicators mainly include basic heart rate, quiet heart rate, exercise center rate, heart rate immediately after exercise, rate of recovery after exercise and other indicators to reflect the effect of exercise training.

Workbuilders can reflect the effect of exercise by comparing the basal heart rate before and after exercise, when quiet, and the rate of heart rate recovery after exercise. If the exercise prescription is scientific and reasonable, the heart rate index of the fitness people will be reduced, and the last index should be an accelerated rate.

Long endurance exercise exercise reduces the blood pressure of fitness people. For hypertensive patients, the change in this indicator can reflect the effect of exercise training. After systematic, scientific and reasonable exercise, their systolic and diastolic blood pressure can drop by 10mmHg (some studies have shown it to be 5 to 7 m m H g). For obese individuals, weight loss was 0.45kg, systolic blood pressure by 1.6mmHg and diastolic blood pressure by 1.3mmHg.

C. Respiratory system indicators, mainly include pulmonary capacity, maximum pulmonary oxygen capacity, pulmonary ventilation capacity, lung capacity per unit time, maximum oxygen intake, respiratory muscle endurance, etc.

The above indicators can be measured by using a spirometer and a gas analyzer. In the process of measuring the above indicators, the gas analyzer can also measure the respiratory quotient and anaerobic indicators that reflect the energy metabolism of the body.

Changes in the breathing frequency of builders after exercise can largely reflect changes in lung ventilatory function. The breathing frequency of the human body is 12 to 16 min when quiet, and the breathing frequency increases significantly during physical exercise. The respiratory frequency can

be measured by the number of undulations of the chest.

Those who improve cardiopulmonary function use more indicators of lung capacity or five consecutive times, reflecting the effect of exercise by comparing the fitness lung capacity or the changes of five consecutive times.

3) Physical function evaluation index

When evaluating exercise prescription, some tests are usually used to understand the changes in the fitness person, such as 12min running and step test.

4. Exercise implementation effect evaluation report

The comparative evaluation of multiple physical indicators before and after the implementation of the exercise prescription is conducted, and the assessment results are analyzed scientifically. The analysis dimensions of the exercise assessment report are shown in Table 1. The recognition part of the effectiveness of exercise and the shortcomings of exercise prescription guidance. The indicators used in the analysis and evaluation report are mainly objective indicators and subjective sensory indicators.

Table 1: Evaluation Report on the effect of exercise prescription

Evaluation index	Before the exercise prescription	After the exercise prescription was implemented	Data change	Health change
Body form	stature			
	weight			
	body composition			
	The degree of obesity			
	waistline			
physiology and biochemistry	waist-to-hipratio			
	heart rate			
	blood pressure			
	vital capacity			
	electrocardiogram			
	cholesterol total			
	glycerin trilaurate			
	HDL			
	LDL			
	Blood sugar test			
somatic function	cardio-pulmonary function			
	Muscle strength / endurance			
	Full body flexibility			
	somatic function			
	mental condition			
	Sleep condition			
Overall evaluation				

Objective indicators:

A. The evaluation of body shape indexes includes height, weight, body composition, obesity degree, various girth and other indexes reflecting body shape.

B. Assessment of physiological and biochemical indexes: assessment of heart rate, blood pressure, blood glucose, blood lipid, urine composition, predisposing factors of certain chronic diseases, before and after physical exercise.

C. Assessment of physical function: Assessment of Cardiopulmonary Function, Muscle Strength Endurance, joint flexibility.

Subjective sensory indicators: mental condition, sleep condition, appetite, self-sensory physical condition before and after physical exercise changes and other indicators. According to the analysis report to give builders a scientific explanation, analyze the effect and deficiencies of exercise, as the basis for the consideration of the next stage of goals.

5. Conclusion

This paper discusses the purpose and significance of exercise prescription and the common method of exercise prescription, mastering the effect of exercise prescription and writing the evaluation report.

The purpose of implementing exercise prescription for fitness people is to enhance their physical fitness and improve the functional ability of each organ system. To verify the good impact of exercise prescription program on all aspects of the body, it is necessary to objective evaluate the implementation of exercise prescription. The implementation effect of exercise prescription refers to the adaptive changes and good response in the morphology, structure and function of various organs and system under the influence of exercise.

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