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Recreational Sports Participation Model to Enhance the Physical Fitness of Students at Fuzhou Institute of Technology

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Abstract

Background and Aim: In recent years, the physical fitness of Chinese college students has been declining. There are many reasons for this situation, such as students' lack of physical exercise. How to let students make rational use of recreational time, actively participate in sports activities, develop long-term exercise habits, develop students' recreational sports participation, improve sports skills, cultivate sports interest, and gain sports experience are issues that schools should pay attention to. This study aims to develop a recreational sports participation model to improve the physical fitness of students. The main research aims are (1) to study the current situation of college students' physical fitness and recreational sports participation at Fuzhou Institute of Technology. (2) To develop a recreational sports participation model to enhance the physical fitness of students at Fuzhou Institute of Technology. (3) To evaluate the effectiveness of the recreational sports participation model in enhancing the physical fitness of students at Fuzhou Institute of Technology.

Materials and Methods: This study adoption of Research and Development(R&D) research methodology. Has the following 4 steps. Step 1 Research (R1) is to study the theories of recreational sports and the current situation of sports participation. The population is 1889 juniors in 26 majors at Fuzhou Institute of Technology, 1,133 males and 756 females. (2) Teachers of 26 majors at Fuzhou Institute of Technology. The sample are questionnaire of 344 students, interviews with 30 students, and 8 teachers. Step 2 Development (D1) is to develop the recreational sport participation model. The tools are (1) the Recreational Sports Participation Model and (2) the Physical Fitness Test Form. Step 3 Research (R2) is to implement the program of the recreational sport participation model. Stratified random sampling was used to select 104 students from 1889 juniors to participate in the 8-week experimental study. The control and experimental groups had 52 students each. There were 26 male students and 26 female students. Step 4 Development (D2) is to evaluate the recreational sport participation model. Analyze the test scores of the experimental and control groups before and after the experiment. Data analysis:(1) Experimental pre-test and post-test data were subjected to a paired samples t-test. (2) An independent samples t-test was done for the comparison of pre-test performance scores and post-test performance scores of the two groups.

Results: Research (R1): The lack of organization and management in the school's sports policy. Students have enough recreational time to spend every day. However, due to the lack of awareness of physical exercise, and lack of exercise goals and plans, most of the time is spent on non-sports recreational activities. The types of projects for physical exercise are single, mainly for ball sports and running, such as basketball, badminton, and table tennis. The number of exercises and the duration of exercise are not fixed. Participating in sports helps relax the body and mind and maintain good health. Development (D1): The recreational sport participation model developed in this study uses the FITT principle. It was developed by combining the relevant dimensions of recreational sports and sports participation. That is, frequency (F), intensity (I), time (T), and type (T): behavior, motivation, limitation, and satisfaction. Research (R2): Students' post-test scores were better than pre-test scores. Students' physical fitness is enhanced, and significant changes occur. Development (D2): The results of the paired samples t-test, the post-test scores of the experimental group were higher than the pre-test scores, and there was a significant difference. The analysis of the independent samples t-test results, there is no significant difference between the pre-test scores of the experimental and control groups. The posttest scores of cardiorespiratory endurance, muscular strength and endurance, and flexibility. There is a significant difference. And there was no significant difference in the comparison of the two groups' scores for body composition. Recreational sports participation models are effective.

Conclusion: College students have plenty of recreational time, but the lack of rational use of recreational time to participate in physical activity limits the discovery of physical fitness. This study analyzes the relevant theories of recreational sports and sports participation, combining students' interests, exercise habits, sports experience, satisfaction, and other factors, and is based on the relevant theories of the FITT principle. A recreational sports participation model aimed at developing college students' bodies was developed. The experimental study showed that the physical fitness post-test scores of the students in the experimental group showed a better improvement compared with the pre-test scores, and significant changes occurred. The

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recreational sport participation model developed in this study to develop college students' physical fitness is effective. Recreational sports participation models are effective.

Keywords: Recreational Sports; Sports Participation; Physical Fitness; Model

Introduction

The report physical fitness monitoring of Chinese college students analyzes that the physical fitness of college students is gradually declining. College students' body size and body fat percentage have changed negatively. The behavior and lifestyle of college students are direct factors affecting their physical fitness. With the development of the economy, people's spare time has changed significantly. The percentage of recreational time spent participating in sports has been decreasing. College students spend more time on activities such as watching TV, surfing the Internet, and playing video games, and the decrease in physical activities will affect the development of college students' physical fitness (Fu, 2019). According to the report related to the physical quality of students in Fujian province in 2023. The physical quality of college students in Fuzhou City has declined for five consecutive years, and it has become particularly important to study how to develop the physical quality of college students(Huan, 2024). Analyzed from the settings of school physical education courses in various colleges and universities in Fujian province, and a load of professional courses, college students have a certain amount of recreational time, while individual professional students lack recreational time because of the different nature of their professions. But most of the college students can ensure sufficient recreational time. However, according to previous studies, college students are now addicted to the Internet in an increasing proportion, in addition to studying and life, most of the time is used for non-sports recreational projects, such as playing mobile games and watching TV. The school neglected the development of recreational sports.

People's understanding of recreational sports is insufficient. Recreational sports are sports activities that people do in their recreational time for relaxation (Hao, 2019). Recreational time is the basis, self-development is the motive, recreation and relaxation are the purposes, and sports activities are the means. Recreational sports should be comprehensive in terms of time, mentality, and activity (Qian, 2023). Sufficient extracurricular time provides prerequisites and conditions for college students to engage in physical exercise, but due to the influence of the school environment, stadiums, sports equipment, their own sports skills, physical quality, and other factors, college students are not highly motivated to participate in physical exercise, do not form a good habit of physical exercise, and lack a systematic physical exercise program (Guo, 2023).how to help college students manage their recreational time reasonably and spend more recreational time on physical exercise to develop their physical fitness is a problem for schools to consider. Since recreational sports are an important part of college physical education, positive and correct guidance is conducive to the cultivation of lifelong sports concepts of college students, and has a positive significance in promoting the development of college students' physical fitness.

In recent years, the theory of physical fitness, as a new concept of health development, effectively reflects the condition of human body function and fitness level, and its assessment system contains many factors such as body composition, flexibility, muscular endurance, muscular strength, cardiorespiratory endurance, etc., which has good timeliness and operability and can be used as a scientific basis for designing exercise programs (Shaw, 2015). The American College of Sports Medicine understands physical fitness as a non-monotonous concept that people possess or acquire a set of elements related to the ability to perform physical activities about physical fitness At present, countries have formed a relatively stable student physical fitness evaluation system. Which mainly includes five aspects: body composition, flexibility, cardiorespiratory fitness, muscular strength and explosive power, and muscular endurance, and most of the assessment items, such as BMI, pull-ups, standing long jumps, seated forward bending, sit-ups, are common to all countries (Wang, 2019). The selection and determination of test indicators are not static but dynamic fluctuations, which need to be flexibly adjusted according to the national situation, social needs, developmental characteristics of the population, and other factors, as well as to be in line with international standards (Pan, 2019).

In the process of exercising physical fitness, it is important to focus on the development of students' interest in sports. In previous surveys, it was found that the main factor limiting students' participation in sports in most cases was time. In addition, the lack of sports skills and the lack of friends who can participate in sports together are also the main factors limiting students' participation. It is also important to focus on the scientific nature of exercise methods. According to the findings of previous studies, the use of moderate or high-intensity interval training will have a positive impact on the physical fitness of athletes. This study will use the relevant theories of FITT, looking mainly at intensity and type. The element of frequency relates more closely to the question of motivation or the duration of an exercise session. Combined with the characteristics of recreational sports and sports participation, to fully combine interest, hobbies, recreation, and exercise, and to develop a model to develop the physical fitness of college students. It is of great significance to the overall development of college students' bodies and minds.

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Objectives

1. To study the current situation of college Students' physical fitness and recreational sports participation at Fuzhou Institute of Technology.
2. To develop a recreational sports participation model to enhance the physical fitness of students at Fuzhou Institute of Technology.
3. To evaluate the effectiveness of the recreational sports participation model in enhancing the physical fitness of students at Fuzhou Institute of Technology.

Literature review

Physical fitness refers to the level of development that is directly related to an individual's ability to perform daily life and work (Costa, 2019), and includes four dimensions: body composition, muscle fitness, flexibility, and cardiorespiratory fitness. Developing recreational sports and encouraging students to actively participate in physical exercise can effectively improve their physical fitness. Recreational sports as sports activities in which individuals participate to achieve the purposes of entertainment, fitness, recreation, stimulation, acquisition of sports knowledge and skills, improvement of physical fitness, and development of health, choosing their favorite physical exercises and sports programs, and then obtaining a positive experience in their recreational time (Lee, 2020).

Literature research has found that the definition of sports and recreational participation should be defined from the comprehensive consideration of individual participation in terms of attitude, behavior, emotional experience, and Satisfaction, Recreational sport participation refers to a kind of sports behavior in which people choose to use sport as a vehicle or pathway in their own recreational time due to their intrinsic personal drive, seeking to improve and satisfy the individual in terms of physical, psychological and social adaptation (Chen, 2010). Recreational sports participation is a way to participate in physical exercise activities and a form of intervention in recreational time to enhance physical health, develop physical fitness, enrich life, and perfect the self, and it includes four dimensions: participation behavior, participation motivation, participation limitation, and participation satisfaction.

Recreational sports behavior occurs during recreational time and is generated by using sports as a vehicle or means(Qian, 2023). Recreational sports participation motivation is an intrinsic psychological factor that drives people to participate in recreational sports activities. The factors Limiting college students' recreational sports activities mainly include interest in sports activities, sports skills, cognitive level of sports activities, self-management ability, venue facilities, social environment, and support from family and friends(Wang, 2019). Recreational sport participation Satisfaction, as a cognitive result formed and obtained by individuals when participating in or choosing recreational activities, is the degree of Satisfaction that individuals feel with their recreational experiences or situations(Yao, 2011). The degree of satisfaction felt in the process of recreational sports participation will vary with experience(Cao, 2009).

The FITT principle can be used to formulate exercise prescriptions using the characteristics of frequency, intensity, time, and type. Interval training is used to scientifically control the training intensity and the interval time of each exercise according to the trainee's physical function and athletic ability, the purpose, and requirements of the training. Frequency refers to how often a person exercises per week, intensity governs how energetically a person exercises at light, moderate, or vigorous intensity, time simply refers to the duration of an exercise session, and type is that of the exercise being performed, aerobic and anaerobic sports projects (ACSM, 2018).

Conceptual Framework

This study combines factors related to recreational sports and sports participation based on the FITT principle to develop a model that can enhance students' physical fitness. The theoretical framework of the study is as follows:

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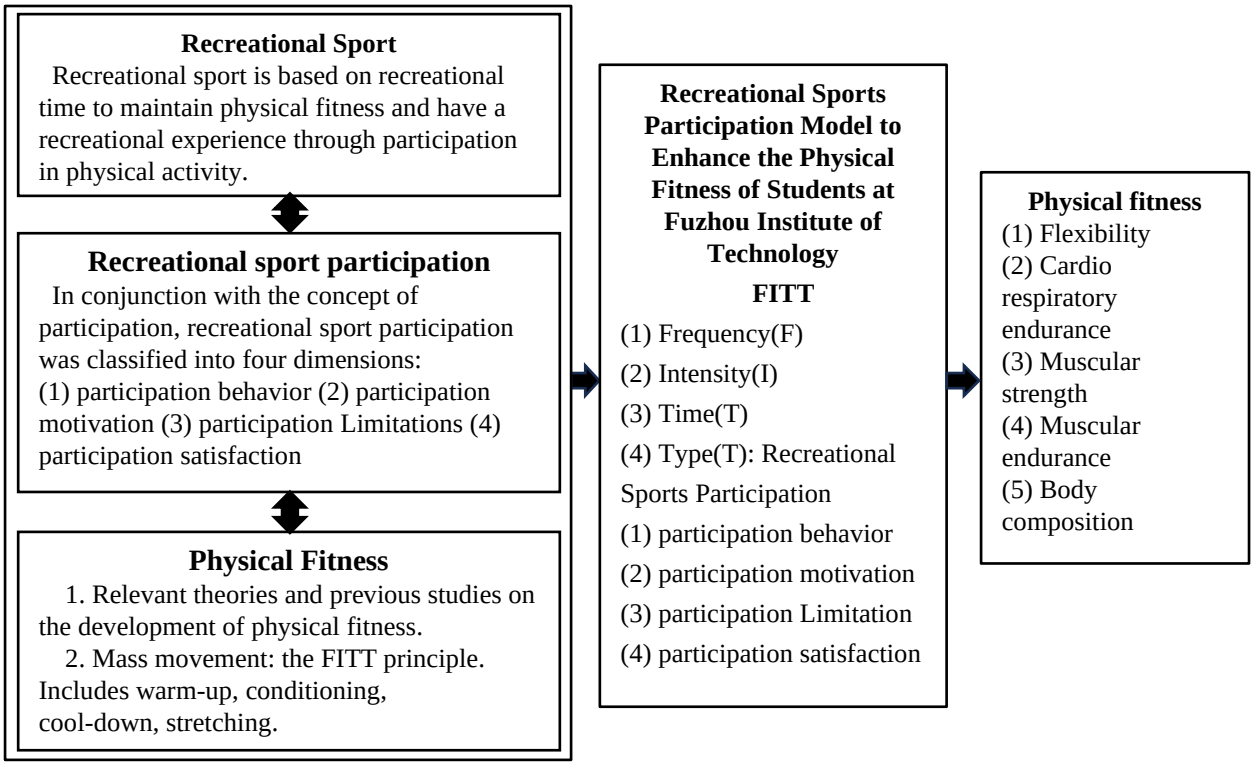

Figure 1 Conceptual Framework

Methodology

This study is about developing a recreational sports participation model to enhance the physical fitness of students at Fuzhou Institute of Technology. This study adopts the research and development (R&D) research method. Has the following 4 steps:

Step 1 Research 1: To study the theories of recreational sports and the current situation of sports participation.

Population:(1)1889 juniors in 26 majors at Fuzhou Institute of Technology. 1,133 males and 756 females. (2) Teachers of 26 majors at Fuzhou Institute of Technology.

Sample: (1) 344 juniors for the questionnaire and 30 juniors for interviews. (2) 8 teachers for interviews.

Tools

1. Questionnaire

To investigate the content of Students' recreational sports participation, duration and frequency of exercise, motivation for participation, constraints to participation, and physical fitness. The questionnaire was divided into 3 parts as follows: (1) Basic information of respondents. (2) Recreational sports of college students. (3) College students' participation in recreational sports. Invite experts to evaluate the validity of the revised interview content. The validity test of the questionnaire was carried out to assess the content validity of the questionnaire, and the index of objectivity consistency (IOC) method was used to evaluate the model; if the value than 0.6, then the validity test passes. Detected IOC values between 0.66 and 1.00. So, the research tool is valid.

2. Interview

(1) Interview with students in the three major grades to investigate the current status of students' recreational activities and sports participation. (2) Interview with school teachers to investigate the school's views on the development of students' physical fitness and recreational sports. (3) Expert IOC Interview Form. Invite experts to evaluate the validity of the revised interview content. The validity test of the questionnaire was carried out to assess the content validity of the questionnaire, and the index of objectivity consistency (IOC) method was used to evaluate the model; if the value than 0.6, then the validity test passes. Detected IOC values between 0.66 and 1.00. So, the research tool is valid.

Data collection: (1) Questionnaires were distributed to 344 juniors. (2) Interviews were conducted with 30 juniors and 8 teachers.

Data analysis:(1) Based on the results of the questionnaire, frequency and percentage were analyzed. (2) Content analysis of interviews

Step 2 Development 1: To develop the recreational sport participation model.

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Tools: (1) Recreational Sports Participation Model, (2) Physical Fitness Test Form.

Data collection: The validity of the recreational sport participation model and the fitness test were tested by five experts.

Data analysis

1. Model

Validity of the development of the recreational sport participation model and implementation program by 5 experts. Mean and standard deviation were used to assess validity. Validity is feasible if the mean is greater than 3.5 and the standard deviation is less than 1. Based on the analysis of test results (Mean=4.91, S.D.=0.288), the model has validity.

2. Physical Fitness Test Form

(1) Validity of physical fitness testing methods by 5 experts. Mean and standard deviation were used to assess validity. Validity is feasible if the mean is greater than 3.5 and the standard deviation is less than 1. Based on the analysis of test results (Mean=4.50, S.D.=1.000), the model has validity.

(2) Reliability test, sample of about 52 samples, not the sample in R2. The reliability of the pre-experiment was assessed according to (Cronbach's α). How the (Cronbach's α) value is greater than 0.7 indicates reliability. According to the analysis of the test results, (Cronbach's α) = 0.897 indicates specific reliability.

Step 3 Research 2: To implement the program of the recreational sport participation model.

Population: 1889 juniors at Fuzhou Institute of Technology. 1,133 males and 756 females.

Sample: Using stratified random sampling, 104 people were drawn to participate in the experiment. Through a simple random sampling method, 52 people were drawn to participate in the experimental control group. The remaining 52 people participated in the experimental group. There were 26 boys and 26 girls in the experimental and control groups, respectively.

Tool:(1) Recreational sports participation model to enhance the physical fitness of students at Fuzhou Institute of Technology. (2) Physical fitness test.

Data collection: 8-week experimental study subjects. Experimental and control groups were set up. The experimental group was trained according to the content of the recreational sports participation model implementation program. Both experimental and control groups were pre-tested and post-tested. And collect the data of pre- and post-test scores.

Data Analysis: (1) Controlling variables, both groups should use the same sampling method, the same number of people taken, the same proportion of men and women, and the same test content and method should be used. (2) Evaluate the changes before and after the experiment with a different score.

Step 4 Development 2: To evaluate the recreational sport participation model.

Data collection: Collect the data of pre- and post-test scores.

Data analysis:(1) Experimental pre-test and post-test data were subjected to a paired samples t-test. (2) An independent samples t-test was done for the comparison of pre-test performance scores and post-test performance scores of the two groups.

Results

The research results of Research (R1)

The lack of organization and management in the school's sports policy has affected students' participation in recreational sports activities. Due to the different arrangements of various majors, students have enough recreational time to spend every day. However, due to the lack of awareness of physical exercise, and lack of exercise goals and plans, most of the time is spent on non-sports recreational activities. At present, most students are in a healthy and sub-healthy state. The types of projects for physical exercise are single, mainly for ball sports and running, such as basketball, badminton, and table tennis. The number of exercises and the duration of exercise are not fixed. Participating in sports helps relax the body and mind and maintain good health. Teachers and students hope that the school can attach importance to the development of students' recreational sports, hold sports competitions with recreational sports as the theme, and regularly organize recreational sports activities to keep students motivated to participate in sports and develop good sports habits. Enable students to improve their sports skills through sports competitions and activities, and provide them with a good entertainment experience. Overcome the limitations of sports participation and improve students' motivation and satisfaction in participating in sports.

The research results of Development (D1)

The model diagram is as follows:

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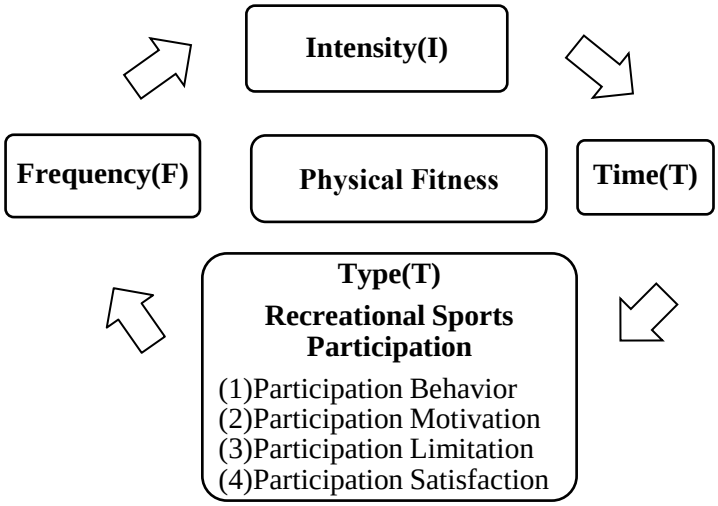

Figure 2 The model diagram

The contents of the model are as follows:

(1) Frequency(F): 3times a week

(2) Intensity(I): Moderate to high-intensity interval training.

(3) Time(T): 60 minutes each time.

(4) Type(T): Recreational Sports Participation

According to the related theories of recreational sports participation, there are 4 dimensions, which are participation behavior, participation motivation, participation limitation, and participation Satisfaction. The specifics are as follows:

1. Participation Behavior

Physical activity: Basketball, Badminton, and Table tennis.

2. Participation Motivation

Interest: It refers to the motivation of students who want to participate in sports activities, such as basketball, badminton, and table tennis. Good interest can also improve the training effect.

3. Participation Limitation

(1) Partner: 2 or more people can work out together to help and encourage each other to improve the effect of exercise.

(2) Sports Skill: it means that students can improve and learn new sports skills when they participate in physical activity, and also promote physical fitness.

(3) Limitations: These are weather conditions, lack of partners, and lack of sports skills that limit participation in physical activity.

4. Participation Satisfaction

(1) Exercise Fun: It refers to the feeling of happiness that students get after exercising, and it is a factor that encourages students to continue to participate in physical activity next time.

(2) Relaxation: Physical and mental relaxation after exercise.

(3) Experience: It refers to the feelings obtained after participating in sports, including the improvement of physical fitness, relaxation, having fun, and maintaining health.

The research results of Research (R2)

Table 1 Physical fitness test results of the experimental group

Physical fitness		Group	Mean	S.D.	Sig.
Flexibility		Pre-Test	11.73	4.16	0.001
		Post-Test	13.79	4.30	
Cardiorespiratory Endurance		Pre-Test	31.20	6.33	0.001
		Post-Test	35.85	8.64	
Muscular strength and endurance	Upper Body	Pre-Test	21.25	7.30	0.001
		Post-Test	24.17	6.60	
	Core Body	Pre-Test	21.90	5.62	0.001
		Post-Test	24.69	4.80	
	Lower Body	Pre-Test	27.83	4.16	0.001

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Physical fitness	Group	Mean	S.D.	Sig.
	Post-Test	30.77	4.17	
Body Composition	Pre-Test	45.55	14.02	0.001
	Post-Test	42.75	11.86	

The flexibility post-test score (Mean=13.79, S.D.=4.30) is higher than the pre-test score (Mean=11.73, S.D.=4.16). The Cardiorespiratory Endurance post-test score (Mean=35.85, S.D.=8.64) is higher than the pre-test score (Mean=31.20, S.D.=6.33). The Muscular Strength (Upper Body) post-test score (Mean=24.17, S.D.=6.60) is higher than the pre-test score (Mean=21.25, S.D.=7.30). The Muscular endurance (Core Body) post-test score (Mean=24.69, S.D.=4.80) is higher than the pre-test score (Mean=21.90, S.D.=5.62). The Muscular endurance (Lower Body) post-test score (Mean=30.77, S.D.=4.16) is higher than the pre-test score (Mean=27.83, S.D.=4.16). The Body Composition post-test score (Mean=13.79, S.D.=4.30) is higher than the pre-test score (Mean=11.73, S.D.=4.16). Based on the analysis of the above results, there is a significant difference between the pre-test and post-test (sig.<0.05).

Table 2 Physical fitness test results of the control group

Physical fitness		Group	Mean	S.D.	Sig.
Flexibility		Pre-Test	11.91	3.56	0.083
		Post-Test	12.07	3.43	
Cardiorespiratory Endurance		Pre-Test	30.63	6.05	0.002
		Post-Test	31.79	6.91	
Muscular strength and endurance	Upper Body	Pre-Test	20.88	7.22	0.010
		Post-Test	21.40	7.47	
	Core Body	Pre-Test	22.48	4.68	0.384
		Post-Test	22.71	4.77	
	Lower Body	Pre-Test	28.06	2.78	0.053
		Post-Test	28.48	2.61	
Body Composition		Pre-Test	45.22	14.75	0.359
		Post-Test	45.51	14.92	

The flexibility post-test score (Mean=12.07, S.D.=3.43) is higher than the pre-test score (Mean=11.91, S.D.=3.56). The Cardiorespiratory Endurance post-test score (Mean=31.79, S.D.=6.91) is higher than the pre-test score (Mean=30.63, S.D.=6.05). The Muscular Strength (Upper Body) post-test score (Mean=21.40, S.D.=7.47) is higher than the pre-test score (Mean=20.88, S.D.=7.22). The Muscular endurance (Core Body) post-test score (Mean=22.71, S.D.=4.77) is lower than the pre-test score (Mean=22.48, S.D.=4.68). The Muscular endurance (Lower Body) post-test score (Mean=28.48, S.D.=2.61)is higher than the pre-test score (Mean=28.06, S.D.=2.78). The Body Composition post-test score (Mean=45.51, S.D.=14.92) is higher than the pre-test score (Mean=45.22, S.D.=14.75). Based on the analysis of the above results, Flexibility, Muscular strength, and endurance (Core Body, Lower Body), there is no significant difference between the pre-test and post-test (sig..>0.05). Cardiorespiratory Endurance, Muscular strength, and endurance (Upper Body) There is a significant difference between the pre-test and post-test (sig.<0.05).

Table 3 Physical fitness test pre-test results of experimental and control groups

Physical fitness		Group	n	Mean	S.D.	t	Sig.
Flexibility		Experimental	52	11.73	4.16	-0.240	0.811
		control	52	11.91	3.56		
Cardiorespiratory Endurance		Experimental	52	31.20	6.33	0.467	0.642
		control	52	30.63	6.05		
Muscular strength and endurance	Upper Body	Experimental	52	21.25	7.30	0.256	0.798
		control	52	20.88	7.22		
	Core Body	Experimental	52	21.90	5.62	-0.568	0.571
		control	52	22.48	4.68		
	Lower Body	Experimental	52	27.83	4.16	-0.332	0.740
		control	52	28.06	2.78		

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Physical fitness	Group	n	Mean	S.D.	t	Sig.
Body Composition	Experimental	52	45.55	14.02	0.118	0.906
	control	52	45.22	14.75		

The flexibility pre-test scores (Mean=11.91, S.D.=3.56) of the control group were higher than those of the experimental group (Mean=11.73, S.D.=4.16). The Cardiorespiratory Endurance pre-test scores (Mean=30.63, S.D.=6.05) of the control group were lower than those of the experimental group (Mean=31.20, S.D.=6.33). The Muscular Strength (Upper Body) pre-test scores(Mean=20.88, S.D.=7.22) of the control group were lower than those of the experimental group(Mean=21.25, S.D.=7.30). The Muscular endurance (Core Body) pre-test scores (Mean=22.48, S.D.=4.68) of the control group were higher than those of the experimental group (Mean=21.90, S.D.=5.62). The Muscular endurance (Lower Body) pre-test scores (Mean=28.06, S.D.=2.78) of the control group were higher than those of the experimental group (Mean=27.83, S.D.=4.16). The body composition pre-test scores (Mean=45.22, S.D.=14.75) of the control group were lower than those of the experimental group (Mean=45.55, S.D.=14.02). Based on the analysis of the above results, there is no significant difference between the experimental group and the control group (sig>0.05).

Table 4 Physical fitness test Post-test results of experimental and control groups

Physical fitness		Group	n	Mean	S.D.	t	Sig.
Flexibility		Experimental	52	13.79	4.30	2.255	0.026
		control	52	12.07	3.43		
Cardiorespiratory Endurance		Experimental	52	35.85	8.64	2.646	0.009
		control	52	31.79	6.91		
Muscular strength and endurance	Upper Body	Experimental	52	24.17	6.60	2.003	0.048
		control	52	21.40	7.47		
	Core Body	Experimental	52	24.69	4.80	2.109	0.037
		control	52	22.71	4.77		
	Lower Body	Experimental	52	30.77	4.16	3.355	0.001
		control	52	28.48	2.61		
Body Composition		Experimental	52	42.75	11.86	-1.042	0.300
		control	52	45.51	14.92		

The flexibility post-test scores (Mean=13.79, S.D.=4.30) of the experimental group were higher than those of the control group (Mean=12.07, S.D.=3.43). The Cardiorespiratory Endurance post-test scores (Mean=35.85, S.D.=8.64) of the experimental group were higher than those of the control group (Mean=31.79, S.D.=6.91). The Muscular Strength (Upper Body) post-test scores (Mean=24.17, S.D.=6.60) of the experimental group were higher than those of the control group (Mean=21.40, S.D.=7.47.The Muscular endurance (Core Body) post-test scores (Mean=24.69, S.D.=4.80) of the experimental group were higher than those of the control group (Mean=22.71, S.D.=4.77). The Muscular endurance (Lower Body) post-test scores (Mean=30.77, S.D.=4.16) of the experimental group were higher than those of the control group (Mean=28.48, S.D.=2.61). The body composition post-test scores (Mean=42.75, S.D.=11.86) of the experimental group were higher than those of the control group (Mean=45.22, S.D.=14.75). Based on the analysis of the above results, there is a significant difference between the experimental group and the control group (sig.<0.05).

The research results of Development (D2)

According to the results of the paired samples t-test, the post-test scores of the experimental group were higher than the pre-test scores, and there was a significant difference. According to the analysis of independent samples t-test results, there is no significant difference between the pre-test scores of the experimental and control groups. The posttest scores of cardiorespiratory endurance, muscular strength and endurance, and flexibility were compared between the two groups. There is a significant difference. And there was no significant difference in the comparison of the two groups' scores for body composition.

Discussion

The study found that the number of students with sub-health is still relatively high. For example, have an excessive body fat percentage. Currently, college students are generally addicted to games and lack physical exercise. Effective physical exercise should be achieved by engaging in physical activities at least three times a week. Students generally do not currently achieve an effective number of workouts. The reasons for this were analyzed as being influenced by several factors. There is no exercise program, and participation in physical exercise during recreational time is more casual. Easily influenced by

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external factors. At the same time, the lack of scientific exercise methods leads to poor exercise results. Improving recreational sports participation among college students can help students develop physical fitness. Recreational sports participation is composed of participation motivation, participation behavior, participation limitation, and participation satisfaction. This study is based on students' recreational time, sports interests, sports partners, sports skills, intensity load, frequency, and other factors. A recreational sports participation model based on the FITT principle was constructed, which was found to be effective in developing students' physical fitness through experimental research. For example, physical fitness in terms of cardiorespiratory endurance, muscular strength and endurance, and flexibility was shown to improve.

Recreational sports are people making use of the free time at their disposal to independently choose their preferred sports projects and practice methods to cultivate their bodies, enjoy their minds and bodies, and self-improvement (Xi, 2004). Sport participation is influenced by motivation and purpose is a purposeful and conscious use of various means and methods to meet certain sport needs (Cao, 2009). Influenced by their own and external environment, such as their physical condition, and environmental conditions. It is important to focus on the selection and cultivation of students' exercise interests. Recreational sport participation is the behavioral intention to participate in recreational sport, based on the frequency of participation in a certain period, which is influenced by the duration of participation, willingness to participate, exercise intensity, and recommendation. The frequency of participation. The personal intention to participate in recreational activities in the future, and consequently, the most important influence on recreational participation, is recreational motivation (Jing, 2009). Based on the analysis of previous studies, A specialized exercise program using the FITT approach had a significant effect on flexibility and muscular endurance. Evaluation of the FITT principle based on exercise prescription had a significant effect on lung function, respiratory muscle strength and endurance, and cardiorespiratory fitness (Lemos, 2020). The FITT program had a significant effect on physical activity and health-related fitness. Frequency, Intensity, Time, and Type were included in the factors for constructing the recreational sports participation model (Cvejic, 2018). The experimental results for body composition showed that the experimental group's post-test scores were better than the pre-test scores, showing a significant difference. However, the comparison between the post-test scores of the control group and the post-test scores of the experimental group did not show a more substantial enhancement. Comparing the previous studies, after three months of FITT high-intensity interval training. The body fat rate was significantly reduced. This study may be insufficient exercise time. 8 weeks is significantly lower compared to the 3 months of exercise time in the previous study. Secondly. Exercise intensity is also a major influence on physical fitness(Reed, 2016). According to the research performance of each person should perform at least 150 minutes of moderate to high intensity aerobic exercise per week to achieve an effective exercise effect.

It is suggested that schools should attach importance to the development of students' participation in recreational sports. Schools should guide students to actively participate in sports activities and maintain good physical condition. Pay attention to the development and cultivation of students' sports skills. Student participation in physical activity should focus on the frequency and intensity of exercise. Physical activity of moderate intensity should be done 3-5 days a week. The recreational sports participation model was developed. When choosing exercise programs, students' interests should be fully considered. Most of the sports techniques that can be learned in current physical education classes are at a basic level. If we want to develop students' technical and tactical skills, we should hold more sports competitions and organize more sports activities in clubs. Improve students' athletic skills during competitions and activities. Promote the development of campus recreational sports culture. Enable students to have better enthusiasm for participating in sports. Recreational sport is considered to be a form of sport in which people freely seek spiritual enjoyment in a relaxed and pleasant mood, in which they have time at their disposal, are not restricted by equipment or venues, and are not confined to specific rules. Addressing factors that restrict students' participation in sports, such as issues with venue and equipment, lack of sports partners, and allowing learning to enjoy sports, is the healthy direction for the development of recreational sports.

Conclusion

This study pinpoints the research on the impact of recreational sports participation on college students' physical fitness. College students have plenty of recreational time, but the lack of rational use of recreational time to participate in physical activity limits the discovery of physical fitness. This study analyzes the relevant theories of recreational sports and sports participation, combining students' interests, exercise habits, sports experience, satisfaction, and other factors, and is based on the relevant theories of the FITT principle. A recreational sports participation model aimed at developing college students' bodies was developed. The experimental study showed that the physical fitness post-test scores of the students in the experimental group showed a better improvement compared with the pre-test scores, and significant changes occurred. Among them, the cardiorespiratory endurance post-test score (Mean=35.85, S.D.=8.64) is higher than the pre-test score (Mean=31.20, S.D.=6.33). The muscular strength and endurance there is a significant difference between the pre-test and post-test (sig.<0.05). The flexibility post-test score (Mean=13.79, S.D.=4.30) is higher than the pre-test score (Mean=11.73, S.D.=4.16), while the body composition post-test score (Mean=13.79, S.D.=4.30) is higher than the pre-test score (Mean=11.73, S.D.=4.16). The body composition post-test scores (Mean=42.75,

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S.D.=11.86) of the experimental group were higher than those of the control group (Mean=45.22, S.D.=14.75). The comparison between the post-test scores of the control group and the post-test scores of the experimental group did not show a more substantial enhancement. The reason may be due to the insufficient time for exercise intervention in the 8-week experiment. At the same time, the physical fitness of body composition was also affected by diet, sleep, living habits, and measurement errors, which may have led to a small improvement in post-test scores. Overall, the recreational sport participation model developed in this study to develop college students' physical fitness is effective.

Recommendation

1. Suggestions in this research. Ensure that students have enough recreational time. Pay focuses on the management of students and strictly follows the time, frequency, and content requirements of the model. Essential to focus on preventing sports injuries among students during physical activities. Reducing the incidence of injuries and illnesses will help maintain student participation and prevent interruptions in their engagement with the program.

2. Suggestions for next research. Control the variables, because body composition in physical fitness is influenced by factors such as diet, sleep, and rest habits. Students can be asked to fix their diet, calories, and sleep schedule. Controlling variables is more conducive to the study of recreational sport participation models. The experimental results of this study found that the magnitude of change in body composition of the students in the experimental group was not significant compared to the control group. It is recommended that future studies consider increasing the duration of the exercise period, for example, more than 10 weeks.

References

ACSM, et al. (2018). *ACSM's guidelines for exercise testing and prescription*. Lippincott Williams & Wilkins.

Cao, C. (2009). The Debate on the Relationship between Physical Recreation and Leisure Sports--Another Discussion with Researcher Ma Huidi. *Journal of Guangzhou Sports Institute.* 29(1), 40-44.

Chen, Y. (2010). On Recreational Sports and Sports and Leisure. Journal of Shanghai Institute of Physical Education. 34(1), 25-33.

Costa, et al. (2019). *CrossFit: Injury prevalence and main risk factors*. (1980-5322 (Electronic)).

Cvejić, D., & Ostojić, S.M. (2018). Effects of the FITT program on physical activity and health-related fitness in primary school-age children. *Facta Universitatis. Series in physical education and sport*. 15(3), 437-451.

Fu, X., et al. (2019). A study of the effects of dance yoga on health fitness and mental health of female college students. *Journal of Guangzhou Sports Institute*. 39(4), 5-7.

Guo, L. (2023). *A Study on the Characteristics of College Students' Recreational Sports Participation Behavior and Optimization of the Management Structure System.* Shanghai Jiao Tong University.

Hao, Q. (2019). Discursive construction and evolution of the concept of sport. *Journal of Chengdu Institute of Physical Education.* 45(5), 8-12.

Huan, Z., et al. (2024). *Discussion on the implementation path of promoting college students' physical health under the perspective of Healthy China.* Contemporary Sports Technology.

Jing, Z., et al. (2009). An Exploration of Leisure Limitation Theory's Impediments to College Students' Exercise Behavior. *Journal of Nanjing Institute of Physical Education: Social Science Edition.* 1, 6-9.

Lee, H.S., Lee, S.H., Kim, J.W., Lee, Y.S., Lee, B.C., Oh, H.J., & Kim, J.H. (2020). Development of Novel Continuous and Interval Exercise Programs by Applying the FITT-VP Principle in Dogs. *The Scientific World Journal, 4, 1-9. DOI:10.1155/2020/3029591*.

Lemos, J. R., et al. (2020). Respiratory muscle training in non-athletes and athletes with spinal cord injury: A systematic review of the effects on pulmonary function, respiratory muscle strength and endurance, and cardiorespiratory fitness based on the FITT principle of exercise prescription. Journal of Back and Musculoskeletal Rehabilitation. 33(1), 1-13. DOI:10.3233/BMR-181452

Pan, L., et al. (2019). Policy Reflection on the Reform and Development of School Sports in China in the 40 Years of Reform and Opening-Up. *Sports Science Research*. 39(5), 13-16.

Qian, Y. (2023). *A Study of Recreationsal Sports in Beijing's General Colleges and Universities Beijing Sports University*. Universities Beijing Sports University

Reed, J. L., et al. (2016). Practical approaches to prescribing physical activity and monitoring exercise intensity. *Can J Cardiol.* 32(4), 514-522.

Shaw, S. B., et al. (2015). Analysis of physiological determinants during a single bout of Crossfit. *Int. J. Perform. Analysis Sport.*15 (3), 809–815.

Wang, H., et al. (2019). A Study of Pathways to Promote Physical Activity from the Perspective of Social Ecology. *Journal of Hebei Agricultural University: Social Science Edition*. 21(2), 6-8.

Xi, Y., et al. (2004). A Test of Leisure and Recreational Sports. *China Sports Science and Technology*. 1, 53-56.

Yao, L., et al. (2011). Leisure Research from a Consumer Behavioral Perspective: A Literature Review. *Humanities and geography*. 26(6), 6-9.

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