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Impact of Aerobic Dance Program on Fitness (Endurance, Strength, Flexibility) of College Students

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Abstract

Background and Aim: Health fitness is a mandatory annual test for Chinese college students. The researcher conducted a health fitness test for students in the Guangdong Province Vocational College of Foreign Languages and Arts and found that the students' health fitness scores, such as endurance, strength, and flexibility, declined. Following interviews, it was found that most students lacked awareness of the importance of daily physical exercise, which contributed to a decline in their health-related fitness scores. This paper aims to assess the impact of an aerobics after-school training program on improving the health-related fitness of university students by constructing a 12-week aerobics dance training program. It also encourages students to actively participate in extracurricular physical activity to promote the improvement of health-related physical fitness.

Materials and Methods: This study conducted a 12-week intervention program for aerobics dance after school on 28 college students from the Huadu Campus of Guangdong Vocational College of Foreign Languages and Arts, employing a comprehensive literature review, interview method, experimental method, and T-test data analysis. The subjects of the study were students of the class of 2023; the total number of students in this grade was 780, among whom the physical fitness scores failed to reach 70. Through purposive sampling and calculations using G-Power software to determine the sample size, 28 students (14 of each gender) were selected with an age distribution between 18 and 20 years old. During the course of the study, the students participated in a 12-week aerobics dance training program, three times a week, with each session lasting one hour. Tests included an endurance test (800-metre run for girls and 1000-metre run for boys), a strength test (sit-ups for girls and pull-ups for boys), and a flexibility test (seated forward bends). By comparing the subjects' endurance, strength, and flexibility test results in the first and twelfth weeks of the experiment, this study aimed to assess the effectiveness of aerobic dance exercises in enhancing the physical health of college students.

Results: The 12-week aerobics dance after-school training was shown to improve college students' health-related physical performance. In this paper, the statistical comparison of the pre-test and post-test of the experiment using the T-test showed significant differences. Among them was endurance: boys improved by 0.41 seconds in 1000 m and girls improved by 0.44 seconds in 800 m, $P < .001$. Strength: boys improved by an average of 3.70 in pull-ups and girls improved by 6.50 in sit-ups, $P < .001$. Flexibility: boys and girls improved by 5.65 cm in seated forward bend, $P < .001$. These findings suggest that an aerobics dance after-school training program can promote healthy fitness performance in students.

Conclusion: (1) The effects of cardiorespiratory endurance were significantly greater in college students after a 12-week aerobics after-school exercise intervention. (2) There was a significant increase in muscular strength among college students after a 12-week aerobics after-school exercise intervention. (3) There was a significant increase in the flexibility of college students after a 12-week aerobics after-school exercise intervention.

Keywords: Aerobic Dance; Physical Fitness; College Students; Exercise Program

Introduction

In recent years, there has been growing concern about the health and fitness levels of university students. Modern lifestyles are characterized by prolonged periods of sedentariness and academic stress, which significantly reduce physical activity among young people. Reduced activity levels have been linked to a range of health problems, including reduced physical fitness and an increased incidence of lifestyle-related health problems. Information from the Department of Physical Education, Health and Arts Education, Ministry of Education, China. (2021). Since 1985, a national study on students' physical fitness and health has been conducted every five years. It shows pressing problems in students 'physical fitness and health, such as the prevalence of low vision and high rates of myopia, increased levels of overweight and obesity, decreased grip strength, and an overall decline in college students' physical fitness. In 2019,

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the results of the 8th National Student Physical Fitness and Health Survey showed a decline in college students' physical fitness (Department of Physical Education, Health and Art Education, Ministry of Education, China, 2021). These trends highlight the urgent need for effective interventions to address the decline in college students' physical fitness.

State Council of the Central Committee of the Communist Party of China (2019). The promulgation of the Opinions on Deepening the Reform of Education and Teaching to Comprehensively Improve the Quality of Compulsory Education proposes to strengthen physical exercise and to strictly implement the standards for students' physical fitness and health qualification. Except for students who are exempted from physical education, graduation certificates shall not be issued to those who do not meet the standard of passing physical fitness. It shows that the state attaches great importance to students' physical health, and physical health is an important foundation for cultivating healthy nationals. This study was conducted to improve college students' health and fitness by developing a 12-week after-school exercise program for aerobics and dance.

In this study, for the interview survey of 780 students in the class of 2023 in the Huadu Campus of Guangdong Vocational College of Foreign Languages and Arts, 76% of the students did not exercise after class. Physical fitness data showed that students' scores in cardiorespiratory endurance, muscular strength, and flexibility were unsatisfactory. More than 70 students were failing, so 28 students were selected from the failing students for after-school aerobics and dance workouts. Students in the area generally have average physical fitness, with significant deficiencies in muscular strength and cardiorespiratory endurance. A study of the potential impact of an organized aerobic dance program on improving fitness levels, particularly in the areas of endurance, strength, flexibility, and body composition, is important for improving the physical health of local students.

Xu (2013). Related Physical Fitness includes cardiorespiratory endurance, muscular strength, muscular endurance, flexibility, and body composition. Aerobic dance programmers are known for their combination of rhythmic movement, cardiovascular conditioning, and whole-body involvement and are therefore effective in improving physical fitness. Ghaffari et al. (2019) conducted a 12-week aerobic dance intervention and found that participants showed significant improvements in cardiovascular endurance, muscular strength, and body composition. The present study focused on experimenting with the following health fitness components:(1) Cardiorespiratory endurance: It is the ability of a person to sustain physical activity. Endurance is a core component of physical fitness and responds particularly well to aerobic dance because of its emphasis on cardiovascular function. A study by Kim and Lee (2020) showed that regular participation in aerobic dance improves oxygen uptake, endurance, and overall aerobic performance in college students. This paper refers to the improvement of students ‘cardiorespiratory endurance through an aerobics dance after-school training program, with a test of 1000m (male)/800m (female), to compare the students’ test results before and after the experiment. (2) Muscle strength is the force produced by the muscles when they contract. According to Santos and Monteiro (2018), repetitive and varied movements in aerobic dance, including weight-bearing and bodyweight exercises, help to improve muscle tone and functional strength, especially in the lower body. This paper refers to the improvement of muscular strength and muscular endurance in students through an aerobics dance after-school training program. The test program was pull-ups (boys)/sit-ups (girls) to compare the test results of students before and after the experiment. (3) Flexibility: It refers to the range of motion of human joints as well as the elasticity and extensibility of joint ligaments, tendons, muscles, skin, and other motor tissues, i.e., the range of motion of joints and joint systems. Flexibility is another important fitness component involved in aerobic dance. Aerobic dance often involves dynamic stretching and movements that require a wide range of motion, which improves joint mobility and muscle elasticity. Lee et al. (2020) noted that after an 8-week aerobic dance program, participants showed significant increases in flexibility, emphasizing the potential of aerobic dance to enhance physical function and reduce the risk of injury. The potential of aerobic dance to enhance physical function and reduce the risk of injury is a key component of aerobic dance, as well as a key component of fitness. This paper refers to the improvement of students ‘flexibility through an aerobic dance after-school training program, where the test was seated forward bends, comparing students’ test results before and after the experiment.

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This study is an innovative approach in the field of education and health by designing an aerobics dance after-school exercise program based on the physical and mental health characteristics of university students. The benefits of aerobic dance exercise are that it can improve cardiorespiratory function and increase endurance and flexibility. Aerobic dance is effective in improving cardiorespiratory fitness and increasing maximal oxygen uptake through sustained aerobic exercise, thus improving endurance levels. For college students, it can help them maintain abundant physical strength during long hours of study and life. Aerobic dance movements contain many muscle movements, which can effectively exercise the muscles of the whole body and improve muscle strength and endurance. For sedentary college students, it can effectively prevent muscle atrophy and improve body posture. Aerobic dance movements require a high degree of flexibility of body flexibility, and through long-term practice, it can significantly improve the flexibility of the body and reduce the risk of sports injuries.

The main focus of this study was to improve students 'cardiorespiratory endurance, muscular strength, and flexibility by designing an aerobics dance after-school exercise program in response to the decline in college students' physical fitness. A t-test was used to statistically compare the pre-test and post-test of the experiment, and the results showed significant differences. There was a significant difference in cardiorespiratory endurance, $P < .001$, among college students after the 12-week aerobics after-school exercise intervention. Male students improved by 0.41 seconds in 1000 meters, and female students improved by 0.44 seconds in 800 meters. In terms of muscular strength, $P < .001$ indicated a significant improvement as well, with an average improvement of 3.7 pull-ups for male students and 6.5 sit-ups for female students. In terms of flexibility, $P < .001$, there was a significant difference, with boys and girls improving their seated forward bends by 5.65 cm on average. The above results indicate that an after-school aerobics dance training program can promote students' health and fitness performance. This study is beneficial to both university students and the education sector, providing scientific teaching programs for the education sector. It also provides training methods for university students to develop a good physical exercise lifestyle and a positive, optimistic, and upward outlook on life, learning, and exercise, thus helping them to establish a sense of lifelong physical fitness and promote physical health. It can also promote and popularize aerobics and dance sports, help college students choose a reasonable way of exercise for fitness activities to provide some practical reference, but also to provide a certain theoretical basis for scientific exercise, cultivate students' good physical exercise habits, and promote the development of lifelong sports.

Research Objective

1. To assess the effects of a 12-week aerobics dance training program on cardiorespiratory endurance, muscular strength, and flexibility in university students.
2. To compare whether there have been changes before and after the experiment.
3. To develop tools for this research.

Research Hypotheses

H1: A 12-week aerobic dance program will significantly improve cardiovascular endurance in college students, as measured by pre-and post-test running performance (e.g., 800m and 1000m times).

H2: A 12-week aerobic dance program will lead to significant increases in muscular strength, as demonstrated by improvements in pull-up and sit-up performance from pre- to post-tests.

H3: A 12-week aerobic dance program will result in significant enhancements in flexibility, as indicated by better performance in the sitting forward bend test after the intervention.

H4: A 12-week aerobic dance program will produce statistically significant differences between pre- and post-test scores across all fitness parameters (cardiovascular endurance, muscular strength, and flexibility) in college students aged 18-20.

Conceptual Framework

The paper titled "Impact of aerobics dance program on fitness (endurance, strength, flexibility) of college students" was designed as follows:

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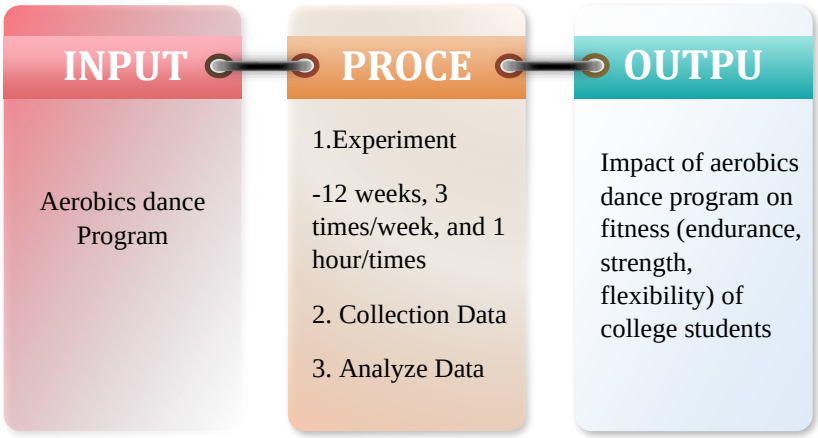

Figure 1 Conceptual Framework

Methodology

1. Population and sample group: The students of the class of 2023 in the Huadu Campus of Guangdong Vocational College of Foreign Languages and Arts were taken as the research subjects, with a total of 780 students in 14 classes. Among the 70 people who failed in health fitness, the sample size was calculated using G*Power 3.1 to a total of 28 people (14 boys and 14 girls), aged 18-20 years old. Purposive sampling was used.

2. Research tools: Aerobics dance after-school training program/duration 12 weeks, 3 days a week, daily training from 17:00 to 18:00.

3. Creating and finding quality tools: A 12-week aerobics dance after-school training program was developed to improve students' endurance, strength, and flexibility. The training content uses Chinese popular aerobics routines as well as basic aerobics movements for exercise. The health fitness scoring standard was adopted from the 2014 revised edition of the Chinese students' physical fitness standard.

4. Data collection: Excel was used to create a data collection form to record participant demographic information, physical fitness measurements, and post-intervention measurements. The data collection tool was a physical fitness tester, and students were tested on seated forward bends, 800 m (female)/1000 m (male) stopwatch timing, bar pull-ups (male), and sit-ups (female) using the Hengkang measuring device.

5. Data analysis: one set of t-tests.

6. Statistics used in data analysis:

(1) Descriptive statistics: calculation of mean, median, and standard deviation.

(2) t-test to compare measurements before and after the intervention. Effect sizes were calculated at the significant difference level of .05.

7. Reliability and validity: Before the experiment, the researchers selected 3, 9, and 30 students for the pre-experiment and tried out the aerobics dance training program first to test the reliability and implementation process of the aerobics dance training program. In the pre-test conducted by 3, 9, and 30 students, their cardiorespiratory endurance, strength, and flexibility were significantly improved. This proved that the aerobics dance training program was reliable and that the testing process went very well. According to the IOC calculation formula, all the experimental data values of the pre-experiment were within the range of 0.915±0.055. This indicates that the aerobics dance training program in this study is valid and can be included in the research experiment. Alpha coefficient values range from 0 to 1, with higher values indicating better internal consistency. An alpha coefficient greater than 0.7 or more is usually considered to indicate good internal consistency.

Experiment:

This study evaluated the effects of a 12-week aerobics dance after-school exercise program on students' health and fitness. Students' endurance, strength, and flexibility were measured during the first and 12th weeks of the program. Health testing included assessments of cardiorespiratory endurance,

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muscular strength, muscular endurance, and flexibility based on the National Student Fitness Standards. Endurance: 800m(F)/1000m(M), Strength: Sit-up (F) /Push-up(M), Flexibility: Sitting forward bend.

This 12-week program is designed to improve college students' endurance, strength, and flexibility through structured aerobic dance sessions. Each session is 60 minutes long and is conducted 3 times a week. Each session includes a warm-up, main workout, and cool-down, with progressive intensity to ensure gradual fitness improvement. The training plan is as follows:

Table 1 Aerobics Dance Program

Week	Focus	Warm-up (10 min)	Main Workout (45 min)	Cool-down (5 min)
1-2	Introduction and Adaptation	Light cardio (marching, jogging in place), dynamic stretching (arm swings, leg swings, trunk twists)	Basic aerobic dance steps (grapevine, side steps, V-step), low-impact routines with simple choreography, Level 1 of Chinese Mass Aerobics (combination 1)	Static stretching (hamstring stretch, calf stretch, shoulder stretch), slow breathing
3-4	Cardiorespiratory Endurance	Dynamic stretches, brisk walking, high knees	Moderate-intensity aerobic routines with longer sequences (e.g., mambo, cha-cha), Level 1 of Chinese Mass Aerobics (combination 2)	Static stretches focusing on legs and back (seated forward bend, quad stretch)
5-6	Muscular Strength and Endurance	Warm-up jog, dynamic stretches, basic squat and lunge movements	Strength-focused dance moves (e.g., dance squats, arm swings with light weights, "power dance" moves), high-intensity action (e.g., Lunge Jump, Flick Kick Jump), Level 1 of Chinese Mass Aerobics (combination 3)	Slow, deep stretches for muscles worked (hip flexor stretch, seated twist)
7-8	Flexibility and Balance	Yoga-inspired warm-up moves (cat-cow, sun salutation variations)	Dance routines incorporating stretches and balance challenges (e.g., slow kicks, extended arm movements), high-intensity action (e.g., Split Jump), Level 1 of Chinese Mass Aerobics (combination 4)	Relaxation through yoga poses (child's pose, downward dog), full-body static stretches
9-10	High-Intensity Aerobic Dance Intervals	High-energy warm-up (jumping jacks, side shuffles, arm circles)	Interval-style dance: alternating high-intensity moves (e.g., fast-paced kicks, hops) with low-intensity steps (e.g., sways), Level 1 of Chinese Mass Aerobics (1-4)	Light stretching, focusing on calming the heart rate (side bends, neck rolls)
11-12	Integrated Fitness	Progressive warm-up with all components (dynamic stretches, light cardio)	Complex aerobic routines combining strength, endurance, and flexibility, Level 1 of Chinese Mass Aerobics (1-4)	Full-body stretches, emphasizing flexibility and muscle recovery

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The research process was as follows:

Step 1: Review literature and research

Step 2: Collect ideas and consult data to develop a conceptual framework

Step 3: Develop a conceptual framework

Step 4: Constructing research tools

1) Interview form: interview survey of students and teachers before the experiment.

2) Experimental record sheet: Collect the pre-test and post-test data of college students' physical fitness.

3) Design of aerobics dance exercise program: Conduct a single-group experiment and develop a training program for 1-12 weeks.

Scoring criteria: refer to the revised National Student Physical Fitness Standard in 2014.

4) IOC expert evaluation form: 5 experts evaluate the feasibility and reliability of the aerobics training program on improving students' health and fitness.

Step 5 Validate the quality of the composite test: test with 3 and 9 students. Composite test procedure and quality. Finally, 30 more students were selected to test the reliability of the experiment.

Step 6 Collecting data

Step 7 Analyze and interpret the data

Step 8 Conclusion and writing the final report

Additional Considerations

1. Intensity and Duration: The intensity and duration of the aerobics dance program influence its impact on fitness components. Higher-intensity workouts generally yield greater improvements in endurance and strength.

2. Individual Differences: Fitness gains vary among individuals due to factors such as age, gender, initial fitness level, and genetic predisposition.

3. Complementary Exercises: Incorporating strength training and flexibility exercises can enhance the overall fitness benefits of aerobic dance.

4. Enjoyment and Adherence: The enjoyment of the program is crucial for long-term adherence, which is essential for sustained fitness improvements.

5. Progression: Gradually increasing the challenge of the aerobics dance routines is necessary to continue making progress.

6. Safety: Take care to warm up well before exercise, be safe during exercise, and relax after exercise.

7. Preventing sports injuries: You must stop immediately if you become unwell.

Results

1. Symbols used in data analysis

- PT (Pre-test): Refers to the initial measurement of the student's physical fitness levels before the commencement of the aerobic exercise dance program.

- FT (Final Test): Indicates the measurement of the student's physical fitness levels after the completion of the 12-week aerobic exercise dance program.

- T-test: A statistical method used to determine if there is a significant difference between the pre- and post-intervention means of a sample.

- P-value: The probability of obtaining test results at least as extreme as the results observed, under the assumption that the null hypothesis is correct. A p-value of less than 0.05 indicates a significant difference in the results.

2. Research results

The purpose of this study was to investigate the effects of a 12-week aerobic exercise dance program on college students' cardiorespiratory endurance, muscle strength, and flexibility. The following conclusions were drawn from a 12-week aerobic exercise dance intervention for the class of 2023 at Huadu Campus of Guangdong Vocational College of Foreign Languages and Arts, and comparative analyses of physical fitness indicators before and after the intervention:

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Table 2 Descriptive statistics results

Descriptives

	N	Mean	Median	SD	SE
800m	14	4.54	4.30	0.80	0.21
800m (FT)	14	4.10	4.00	0.44	0.12
1000m	14	4.71	4.50	0.54	0.14
1000m (FT)	14	4.29	4.15	0.41	0.11
Sitting forward bend	28	10.47	10.60	8.02	1.52
Sitting forward bend (FT)	28	16.12	15.55	6.79	1.28
Sit-ups	14	31.64	30.50	6.85	1.83
Sit-ups (FT)	14	38.14	37.00	7.35	1.96
Pull-ups	14	7.07	6.00	3.93	1.05
Pull-ups (FT)	14	10.79	10.50	3.64	0.97

The number of students in this study was 28, the test events for girls were 800m and sit-ups, and for boys were 1000m and pull-ups; The common items to be tested were seated forward bends. According to descriptive statistics, it can be found that there is a difference between pre- and post-intervention of aerobics dance training programs on students. The above results proved that the aerobics dance exercise program was effective in improving the cardiorespiratory endurance, flexibility, muscular endurance, and strength aspects of the study participants.

Table 3 T-Test results

Paired Samples T-Test

			statistic	df	p	Mean difference	SE difference		Effect Size
800m	800m (FT)	Student's t	4.46	13.00	< .001	0.44	0.10	Cohen's d	1.19
1000m	1000m (FT)	Student's t	9.26	13.00	< .001	0.41	0.04	Cohen's d	2.47
Sitting forward bend	Sitting forward bend (FT)	Student's t	10.05	27.00	< .001	5.65	0.56	Cohen's d	1.90
Sit-ups	Sit-ups (FT)	Student's t	7.27	13.00	< .001	6.50	0.89	Cohen's d	1.94
Pull-ups	Pull-ups (FT)	Student's t	10.48	13.00	< .001	3.71	0.35	Cohen's d	2.80

Note. H_a $\mu_{Measure\ 1 - Measure\ 2} \neq 0$

Endurance：

800m

T-statistic: 4.46, indicates the degree of difference between the post-training performance and the pre-training performance. P-value: < .001, indicates the statistical significance of the results, with less than .001 indicating that the difference is highly significant. Mean difference: 0.44, indicating that the mean performance improved by 0.44 minutes after training compared to pre-training. It indicates that aerobics dance after-school exercise training intervention improves cardiorespiratory endurance in female college students.

1000m

T-statistic: 9.26, again indicating the degree of difference between post-training scores and pre-training scores. P-value: < .001, indicating a highly significant difference. Mean difference: 0.41, indicating

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that mean scores improved by 0.41 minutes after training as compared to pre-training. The results show that aerobics dance after-school exercise training intervention improves cardiorespiratory endurance in male university students.

Strength：

Sit-ups

T-statistic: 7.27, indicates the degree of difference between post-training performance and pre-training performance. P-value: < .001, indicates a highly significant difference. Mean difference: 6.50, indicating that the mean post-training performance improved by 6.50 sit-ups compared to the pre-training performance. The results show that aerobics dance after-school exercise training intervention improves muscular endurance in female college students.

Pull-ups

T-statistic: 10.48, indicates the degree of difference between post-training performance and pre-training performance. P-value: < .001, indicates a highly significant difference. Mean difference: 3.71, indicating that the average post-training performance improved by 3.71 pull-ups compared to the pre-training performance. The results show that aerobics dance after-school exercise training intervention improves muscle strength in male college students.

Flexibility： Sitting Forward Bend

T-statistic: 10.05, indicates the degree of difference between post-training scores and pre-training scores. P-value: < .001, indicating that the difference is highly significant. Mean difference: 5.55, indicating that the average post-training scores improved by 5.55 cm compared to the pre-training scores. The results show that aerobics dance after-school exercise training intervention improves flexibility in college students.

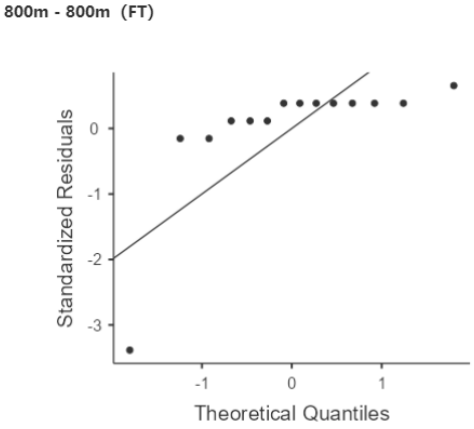

Figure 2 800m running result

The data points of this graph basically fall near a straight line, which indicates that the cardiorespiratory endurance of the 14 girls improved. The residuals of the pre-test and post-test variables for the 800m are relatively close to a normal distribution, indicating that the Aerobics Dance Training Program showed a significant increase in the performance of the students between the pre-test and the post-test.

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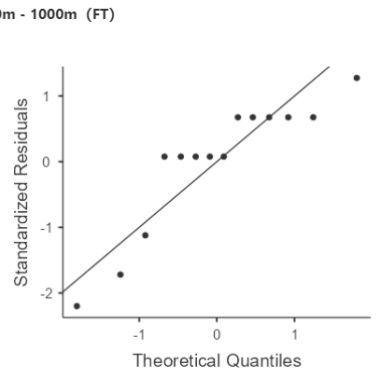

Figure 3 1000m running result

The data points of this graph basically fall near a straight line, which indicates an improvement in the cardiorespiratory endurance of the 14 male students. The residuals of the pre-test and post-test variables of 1000m are relatively close to a normal distribution, indicating that the Aerobics Dance Training Program showed a significant improvement in the performance of the students in the pre-test and post-test.

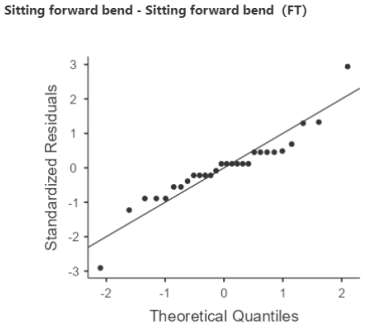

Figure 4 Seated forward bends result.

The data points of this graph basically fall near a straight line, which indicates that the flexibility of the 28 students has improved. The residuals of the pre-test and post-test variables for seated forward bends are relatively close to a normal distribution, indicating that the Aerobics Dance Training Program showed a significant improvement in the performance of the students between the pre-test and post-test.

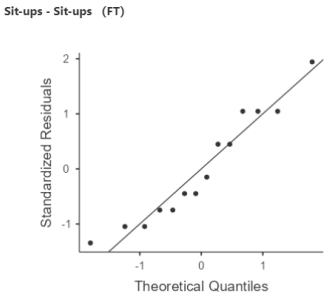

Figure 5 Sit-up result

The data points on this graph basically fall near a straight line, which indicates that the 14 female students' muscular endurance improved. The residuals of the pre-test and post-test variables for sit-ups are relatively close to a normal distribution, indicating that the Aerobics Dance Training Program showed a significant improvement in the performance of the students between the pre-test and post-test.

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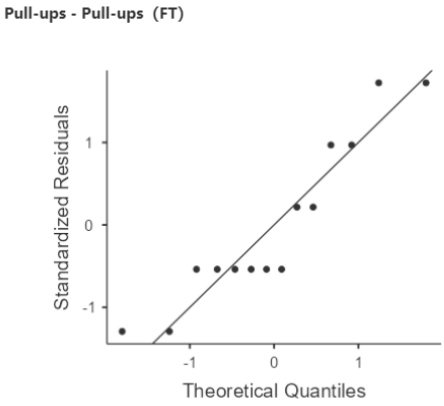

Figure 6 Pull-ups result

The data points on this graph basically fall near a straight line, which indicates that the 14 male students improved their muscle strength. The residuals for the pre-test and post-test variables for pull-ups are relatively close to a normal distribution, indicating that the Aerobics Dance Training Program showed a significant improvement in the students' performance between the pre-test and post-test.

3. Research results

The aerobic dance intervention significantly enhanced students' cardiorespiratory endurance (800m and 1000m), flexibility (sitting forward bend), muscular endurance (sit-ups), and upper body strength (pull-ups). Effect sizes across all tests were large to very large, indicating that the program had a substantial impact on fitness improvements.

Summary

1. In terms of cardiorespiratory endurance, the experimental results show that after 12 weeks of aerobic dance training, the subjects' maximum oxygen uptake increased significantly, by 0.41 seconds for men in the 1000 meters and by 0.44 seconds for women in the 800 meters. It shows that aerobic exercise dance, has a significant effect on improving the cardiorespiratory endurance of college students.

2. Muscle strength: The experimental results showed that after 12 weeks of aerobic dance training, the subjects' pull-ups improved by 3.70 and sit-ups by 6.50 on average. Muscle strength and endurance increased significantly, indicating that aerobic exercise dance, has a significant effect on improving the muscle strength of college students.

3. Flexibility: The experimental results showed that after 12 weeks of aerobic dance training, the subjects' seated forward bending improved by 5.65 cm, indicating that aerobic dance has a significant effect on improving the flexibility of college students.

4. Comparative results between pre-test and post-test: 28 subjects were satisfied with the aerobic exercise dance program and found it interesting and effective. They generally reported improved physical fitness, more energy, and a more positive mental state. There was a significant improvement in endurance, strength, and flexibility of the subjects in the first and twelfth weeks, with a p-value of less than .05.

5. Experts' assessment of the aerobics dance training program: Experts believe that the program is reasonably designed and operable and that it has positive significance for the improvement of college students' health.

6. Other influencing factors: dietary habits, work and rest time, psychological conditions, and physical differences will affect the experimental results of this study. Students should be reminded to pay attention to good habits in their daily lives, which are more conducive to health.

The results of this study showed that a 12-week aerobic exercise dance program had a significant effect on the cardiorespiratory endurance, muscle strength, and flexibility of university students. This

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suggests that aerobic exercise dance, is an effective form of exercise that can help college students improve their physical fitness and quality of life.

Discussion

1. Summary of Results: The 12-week aerobic dance program significantly enhanced the physical fitness of college students aged 18‑20. Notable improvements were made in cardiorespiratory endurance, muscular strength, and flexibility. The program's effectiveness aligns with the hypothesis that aerobic dance is a beneficial intervention for young adults' physical fitness. The study's findings are supported by previous research, indicating the positive impact of dance on cardiovascular health and muscle strength and flexibility.

2. Discussion of Results: Cardiorespiratory endurance can be linked to the sustained aerobic activity inherent in aerobic dance, which is known to elevate heart rate and enhance cardiorespiratory fitness. This is corroborated by Rasmus, K. H., et al (2024) research, which highlights dance's positive effects on cardiovascular health. Muscular strength and flexibility improvements are a result of the diverse and dynamic movements in dance, which engage multiple muscle groups and facilitate muscle stretching and flexibility, as supported by Kishon, L., & Hilla, S. B.'s (2023) findings. Moreover, the study revealed that aerobic dance had a positive effect on mental health, with the social, enjoyable, and stress-relieving aspects of dance contributing to mood improvement, anxiety reduction, and self-esteem enhancement. These psychological benefits, in conjunction with the physical improvements, lead to an overall enhancement in the participants' quality of life, as suggested by Suhaya et al (2024).

3. Suggestions: While the aerobic dance program has proven to be effective, it is important to consider other influencing factors such as dietary habits, sleep patterns, psychological conditions, and individual physical differences when assessing the overall impact on health. To maximize the benefits of such programs, a comprehensive approach to health promotion is necessary. This includes encouraging students to adopt balanced lifestyles that complement structured exercise routines. Additionally, further research could explore the integration of innovative dance movements into traditional fitness programs and their potential to enhance other educational and training aspects. It is also recommended that future studies investigate the long-term effects of aerobic dance on physical and mental health, as well as its potential as a sustainable intervention for a broader population.

Recommendation

1. Suggestions in this research:

Integration into Campus Life: Universities should incorporate aerobic dance into their campus culture, either through the curriculum or as extracurricular activities, to foster a regular engagement in physical activity among students.

Personalized Approach: The research suggests that personalized training plans are essential. Fitness instructors should offer individualized guidance to cater to the diverse needs and fitness levels of students, thereby helping them reach their fitness objectives.

Enhancing Program Adherence: To promote ongoing participation, the research recommends the implementation of strategies that encourage long-term commitment to aerobic dance. This could include diversifying dance styles, fostering a positive learning atmosphere, and offering rewards for consistent involvement.

Partnerships with Health Experts: The study highlights the benefit of collaboration between universities and health professionals to create holistic fitness programs. These programs could integrate nutritional advice, stress management techniques, and mental health support tailored to students' requirements.

2. Suggestions for next research:

Longitudinal Studies: Future research should conduct longitudinal studies to assess the sustained impact of aerobic dance on health indicators over an extended period, providing a more comprehensive understanding of its long-term benefits.

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Broader Demographics: Subsequent studies could expand their focus to include a more diverse range of participants, exploring the effects of aerobic dance across different age groups, genders, and fitness levels.

Health Outcomes: It would be beneficial to investigate the impact of aerobic dance on a broader spectrum of health outcomes, such as cardiovascular health, metabolic rates, and mental well-being.

Interdisciplinary Approaches: Future research could adopt an interdisciplinary approach, incorporating insights from fields like psychology, nutrition, and sports science to gain a more rounded perspective on the benefits of aerobic dance.

Implementation Strategies: Research could also focus on developing and testing strategies for the effective implementation of aerobic dance programs in various educational and community settings.

Technological Integration: With the advancement of technology, future studies might explore the role of digital platforms and fitness applications in enhancing aerobic dance programs and tracking progress.

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