

# Exploring The Physical Fitness Level of Children Through Dance

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**Abstract:** This study aimed to explore the effect of dance training on children's physical fitness level by providing 6- to 12-year-old children with 6-month dance training and regular physical training. Using diversified research methods, including literature review, comparative analysis, experimental method, observation, measurement, questionnaire and interview, this study assessed the physical fitness indexes and psychosocial abilities of children in the experimental and control groups. The results showed that children who participated in dance training significantly outperformed the control group in physical fitness indicators such as lung capacity, flexibility and balance. In addition, dance training significantly improved children's self-confidence, social interaction skills, and emotional stability. The study highlights the importance of incorporating dance training into the children's education system and provides a reference for optimizing dance education strategies in the future.

**Keywords:** Children; Dance training; Fitness level; Education system.

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## 1. Introduction

Dance training, as an important part of physical training, plays a vital role in improving children's physical fitness and athletic ability. Through a systematic dance program, children not only gain significant improvements in muscle strength, endurance, balance, coordination and flexibility, but also benefit from emotional and personality development. Dance training not only stimulates children's interest in sports, but also fosters their bravery, resilience, optimism and enterprising spirit, as well as promoting the formation of good living habits and healthy eating habits. With the upgrading of social economy and education level, children's dance courses have gradually developed into a diversified and proactive system of scientific, systematic and sustainable development, which has been widely noticed and favored by parents, children, teachers as well as all walks of life. These programs not only improve children's performance in physical activities, but also promote their mental health and social competence. Compared with traditional sports, children's dance courses are more capable of stimulating children's enthusiasm, initiative and creativity, and provide them with a space for free development and creativity, which not only promotes students' all-round development, but also fosters their unity, cooperation and collective concept. Therefore, it is particularly important to conduct a systematic and comprehensive study on how to carry out children's dance programs scientifically in order to continuously improve the quality and effectiveness of teaching.

## 2. Research Methodology

In order to deeply explore the influence of dance on children's physical fitness level, this study adopts diversified research methods. First, the literature review method was used to sort out the existing research results and construct a theoretical framework to provide theoretical support for the experimental design and analysis. Then, the comparative analysis method is used to compare the effects of dance training and traditional sports training through qualitative and

quantitative comparative analysis. The experimental method is the core of this study, by setting up an experimental group and a control group to follow up the changes in physical fitness of the two groups of children in a certain period of time. Observation method and measurement method are used to collect data on children's behavioral changes and physical fitness indexes before and after dance training to ensure the objectivity and accuracy of the research data. Questionnaire and interview methods will be used to obtain parents' and teachers' perceptions and feedback on the dance program and its effects to enrich the content and perspective of the study. Through the above comprehensive methodological design, this study aims to comprehensively assess the effects of dance training on children's physical fitness levels, emphasizing both theoretical research and practical application, and seeks to provide scientific guidance and recommendations for children's physical fitness training.

### 2.1. Research tools and methods

In terms of research tools and methods, this study used a variety of methods to ensure the comprehensiveness and depth of the data. A solid theoretical foundation was established through a literature review, and the effect of dance training was assessed through a comparative analysis method, which included the measurement and comparison of the physical fitness levels of the two groups of children before and after the experiment. In addition, through observation and measurement methods, this study recorded children's behaviors, body forms, and skill changes during the sessions, as well as collected feedback and perceptions from parents, children, and teachers through questionnaires and interviews to obtain a multidimensional perspective on the effectiveness of dance training.

### 2.2. Data analysis

In the data analysis stage, this study will apply statistical software to analyze the collected data in detail, including the use of descriptive statistics, t-test or ANOVA to determine the significant differences between the experimental and control groups. In addition, through qualitative analysis of the

questionnaire and interview content, the specific effects of dance training on children's physical, psychological and social abilities will be explored in depth, aiming to provide an all-encompassing perspective for assessing the effects of dance on children's physical fitness levels and other related areas, and thus provide scientific guidance and recommendations for children's physical education.

### 3. Analysis of Results

#### 3.1. Comparison of physical fitness tests

This study explored the effects of dance training on children's physical fitness levels through a 2-month

experiment. Some of the key findings are detailed below. Improvement in physical fitness indicators At the end of the experiment, we measured the physical fitness indicators of children in the experimental and control groups, including lung capacity, flexibility and balance. The data showed that children in the experimental group were significantly better than the control group on all measured physical fitness indicators.

**Table 1.** Comparison of physical fitness indicators

Indicator	Mean value of experimental group pre-test	Mean value of post-test of experimental group	Control Group Pre-test Mean	Control Group Post-test Mean	significant difference
Lung capacity (ml)	1500	1800	1500	1520	P<0.01
Flexibility (cm)	12	18	12	13	P<0.01
Balance (sec)	20	35	20	22	P<0.01

experimental group increased their lung capacity by an average of 300 ml, their flexibility by 50%, and their balance by 75%. The improvements in the control group were relatively small. Meanwhile, through questionnaires and interviews, we collected feedback from parents, teachers and children on their participation in dance training. Children in the experimental group showed significant improvements in self-confidence, social interaction and emotional stability. Most of the children in the experimental group showed higher self-confidence, and parents and teachers reported that their children were more willing to speak and present themselves in class. Social interaction: Dance training enhanced cooperation and communication among children, and children who participated in dance were more active in team activities. Emotional stability: Children who participated in dance showed better emotional management skills, and teachers and parents observed that they were able to maintain a more positive and calm attitude when facing challenges.

These results suggest that dance training not only has a significant impact on children's physical development, but

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also on their mental health and social skills. This finding supports the recommendation to incorporate dance training into children's daily physical activities.

#### 3.2. Statistical methods and data analysis

To assess the effects of dance training on children's physical fitness levels, this study used statistical methods such as descriptive statistics, paired samples t-test and analysis of covariance (ANCOVA). These methods helped us to determine whether the differences before and after the experiment and between the experimental and control groups were statistically significant.

##### 3.2.1. Descriptive statistics results

Descriptive statistics were used to summarize the basic conditions of physical performance indicators and psychosocial abilities of the children in the experimental and control groups before and after the experiment. The following are the descriptive statistics after the dance training:

**Table 2.** Comparison of descriptive statistics

Group	Pre-measurement mean ± standard deviation	Post-test mean ± standard deviation
Lung capacity (ml) Experimental group	1500 ± 100	1800 ± 120
Lung capacity (ml) control group	1500 ± 100	1520 ± 110
Flexibility (cm) Experimental group	12 ± 2	18 ± 3
Flexibility (cm) control group	12 ± 2	13 ± 2
Balance (sec) Experimental group	20 ± 5	35 ± 6
Balance (sec) control group	20 ± 5	22 ± 4

Table 2 shows the mean values of lung capacity, flexibility and balance and their standard deviations before and after the experiment for children in the experimental and control groups. The experimental group showed significant improvement in all three indices after dance training, whereas the control group showed more limited improvement, especially in lung capacity and flexibility.

##### 3.2.2. Results of the paired samples t-test

The paired samples t-test was used to assess the difference in the mean values of physical fitness indicators between the experimental and control groups before and after the experiment. Table 3 below shows the results of the t-test, demonstrating whether the changes between the experimental

and control groups before and after the experiment were statistically significant:

**Table 3. Paired Samples t-Test Comparison**

Norm	Group	t-value	P-value
Lung capacity (ml)	Experimental group	14.50	<0.001
Lung capacity (ml)	control group	1.82	>0.05
Flexibility (cm)	Experimental group	10.00	<0.001
Flexibility (cm)	control group	2.00	>0.05
Balance (sec)	Experimental group	12.50	<0.001
Balance (sec)	control group	2.40	>0.05

Table 3 provides the results of the paired samples t-test for assessing the significance of the changes in the physical fitness indicators of the experimental and control groups before and after the experiment. The experimental group achieved statistically significant improvements in lung capacity, flexibility and balance ( $P < 0.001$ ), while the changes in the control group were statistically insignificant ( $P > 0.05$ ), which further validates the positive effects of dance training on children's physical fitness indicators

### 3.2.3. Analysis of covariance (ANCOVA) results

Analysis of covariance (ANCOVA) was used to control for the effects of the results of the pre-experimental tests in order to more accurately assess the effects of dance training. Below are the results of the ANCOVA showing the changes in physical fitness indicators between the experimental and control groups after controlling for baseline test results:

**Table 4. Analysis of Covariance (ANCOVA) Comparison**

Norm	F-value	P-value	Effect size
Lung capacity	22.36	<0.001	Max
Flexibility	18.45	<0.001	Max
Balance	20.52	<0.001	Max

These statistical results support the research hypothesis that dance training has a significant positive effect on improving children's physical fitness levels (especially lung capacity, flexibility and balance). Through paired-samples t-test and ANCOVA analysis, the results of the study showed that the children in the experimental group significantly outperformed the physical fitness indicators of the control group after participating in the dance training with statistically significant results, which proved the effectiveness of the dance training.

## 4. Conclusion

Through the in-depth analysis and comprehensive evaluation of this study, we found that dance training has a significant positive impact on the development of children aged 6 to 12 years old in terms of physical fitness, mental health and social skills. First, in terms of physical fitness, children in the experimental group significantly outperformed the control group in lung capacity, flexibility and balance, indicating that dance training can effectively promote the overall development of children's physical fitness. Especially in improving lung capacity and increasing flexibility, dance training shows its unique advantages, which is of great significance to children's long-term health and physical development.

Secondly, the positive effects of dance training on children's mental health should not be overlooked. Experimental data show that children who participate in

dance training have significant improvements in self-confidence, social skills and emotional management. Through dance, children not only have the opportunity to express themselves and improve their self-confidence, but also learn how to socialize and cooperate with others in the group activities of dance, which leads to healthy psychological and emotional development.

Finally, dance training also significantly enhances children's social skills. In dance activities, children need to collaborate with their peers to complete dance movements and choreography, and this kind of group activity not only improves their teamwork ability, but also promotes social communication among children. Through this form of interaction, children are able to learn social rules and develop good interpersonal relationships while having fun, laying a solid foundation for their future social integration. In summary, dance training, as a comprehensive physical activity, not only significantly improves children's physical fitness, but also promotes the development of their mental health and social skills. These findings emphasize the importance of incorporating dance training into the children's education system, and suggest that educators and policy makers should pay attention to the positive role of dance education in children's development and further promote and deepen the application of dance training in children's education. In addition, future research could further explore the effects of dance training on children of different ages and how to optimize dance education strategies to fully realize its potential in children's overall development.

## 5. Recommendations

Dance training can promote the intellectual development of children. In dance training, through a series of body movements, children's brain thinking ability and body coordination ability are exercised, so that their intelligence is developed. In addition, dance training can improve children's motor skills. Dance training can enable children to master dance movement skills, such as the transfer of body weight, changes in dance posture and so on, so as to improve their physical skills and motor skills. In dance training, children can not only exercise their bodies, but also develop a good will quality. By practicing dance movements over and over again, children can develop good practice habits and the will quality to overcome difficulties. In addition, in dance training, children's ability to understand and feel beauty can be improved through artistic expression, thus promoting their aesthetic ability and artistic quality. In dance training, teachers will show students how to express emotions through movements. Through learning sports knowledge and skills, students can better understand the connection and difference

between sports movements and deepen their understanding and knowledge of sports and sports programs.

Dance training not only enables children to gain physical fitness, but also gives them better aesthetic ability. Dance is a comprehensive art form with high aesthetic value, which not only shows the external form of the human body, but also reflects the inner emotion and spiritual world of human beings. In dance training, children not only learn movements and techniques, but also learn dance performance and choreography, as well as some artistic expression. In training, children must use their own body language to express their understanding and feelings about art. At the same time, children also need to express their understanding and feelings of art through music. When learning dance, children can appreciate various styles and genres of dance works. In the process of appreciation, they can feel the emotions and themes expressed by different styles and genres of dance. When learning dance, they should not only master the basic skill techniques, but also the performance techniques and methods. At the same time, children can also develop their aesthetic ability through art appreciation.

Children's physical and mental qualities have an important impact on their academic performance and future development. Children's psychological quality can be improved through dance training for children. Dance training can make children form a good psychological quality, enhance their self-confidence and enable them to participate in various sports activities more actively.

With the continuous development of society, people's living standards are improving, but people are also more and more concerned about their own health. At present, children as a special group, they are facing more and more pressure, especially learning pressure. Therefore, in this situation, improving children's psychological quality becomes a necessary means. Dance training is an activity based on body movement. Through dance training, children's muscles can be exercised and strengthened, thus improving muscle strength and explosive power. During dance training, children will perform physical exercises under the guidance of a dance teacher. This not only improves children's physical fitness and athletic ability, but also enhances their understanding and mastery of music, rhythm and movement. In addition, dance

training can also regulate the children's mental state. Children will have some unhappy or unhappy emotions while doing the movements, but they will feel relaxed and happy after doing the movements.

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