Clarivate
Web of Science
Zoological Record:

## Pakistan Journal of Life and Social Sciences

www.pjlss.edu.pk



E-ISSN: 2221-7630;P-ISSN: 1727-4915

https://doi.org/10.57239/PJLSS-2024-22.2.00200

#### RESEARCH ARTICLE

# Analysis of the Influence of the Fancy Skipping Rope on Primary School Students' Physical Health

Zongliang Dong\*

Department of Education, International College, Krirk University, Bangkok, Thailand

| ARTICLE INFO            | ABSTRACT   |
|-------------------------|--|
| Received: May 19, 2024  | The fancy skipping project has the "advantages" of physical fitness, such as strong heart fitness, breaking the traditional boring mode of skipping rope   |
| Accepted: Aug 23, 2024  | at the same time with a new and unique face in the national school to carry  |
|                         | out the heat, deeply loved by the majority of teenagers. There are many kinds of skipping methods and various contents, so this paper tries to   |
| Keywords                | study the effect of skipping on the physical health of 8-9 year-old pupils   |
| Fancy skipping rope     | through experiments on the basis of previous research results. On the one hand, to enhance the physical health of primary school students to provide   |
| Physical health         | a theoretical theory, so that the fancy skipping program can better serve  |
| Primary school students | the school sports to lay a theoretical foundation. On the other hand, it provides reference for the teaching practice of different jumping methods in the future. By using the method of literature, experiment and method of literature, experiment and |
| *Corresponding Author:  | mathematical statistics, this paper selects three natural class students in Grade 3 of Baoshan Experimental Primary School as the experimental   |
| 13759552168@163.com     | objects, and makes statistical analysis on the data of various physical health indicators of students before and after the experiment.   |

#### **INTRODUCTION**

The new curriculum reform requires PE teachers to renew their educational ideas and behaviors and improve their own quality and skills. Based on the actual situation of students, we should formulate diversified teaching objectives, enrich teaching content and forms, improve students' initiative in sports learning, pay attention to individual differences, and carry out targeted classroom teaching. In addition, has a strong historical and cultural heritage, simple equipment requirements, low economic cost is not subject to the venue, compared with other sports safety is higher, suitable for different genders and all ages to participate. With dynamic and trendy music as the background, the traditional way of skipping rope is perfectly combined with modern elements such as skills, street dance, martial arts, etc., making the fancy skipping rope more enjoyable to watch, improving students' interest in learning, and increasing the exercise intensity. To sum up, the introduction of fancy skipping rope in primary school PE classroom teaching conforms to the requirements of the new PE curriculum reform and can carry forward China's excellent traditional culture, improve the safety of classroom teaching, and alleviate the problem of school sports venue tension. Students can not only learn motor skills and exercise their bodies, but also develop the ability to think independently and work in a team.

#### LITERATURE REVIEW

Jumping rope originated in ancient China, in the early 17th century, when the Dutch fleet passed through China, saw the scene of Chinese children playing jumping rope, felt very interesting, and the

crew began to imitate. After that, the Dutch fleet spread jumping rope overseas to all parts of the world. Among them, jumping rope is a folk traditional sport in most countries and regions of Asia and Europe, and its level is generally high. In addition, there are many foreign studies on the influence of skipping rope on physical function. Before 2010, studies on fancy skipping rope mainly appeared in the form of sports intervention, proposing the advantages of fancy skipping rope training and its influence on students' physical form and physical health. Sun-Kyoung Lee pointed out that for children with attention deficit hyperactivity disorder, skipping exercise has a positive effect on cardiovascular function, which is reflected in increased cardiorespiratory function [1]. Rowley encouraged children to actively participate in skipping exercises and explained the impact of skipping on students' physical health based on the multi-dimensional function of skipping rope [2]. Tanikawa and Hidenori concluded in a 2014 experimental study that female and male athletes exhibit significantly different knee biomechanics during fancy skipping [3]. John Baker conducted exercise intervention on 92 male students in the United States, compared their participation in jogging and fancy skipping exercises for up to 6 weeks, and found that both activities had significant effects on cardiopulmonary function [4]. Makacuk and Huubert put forward that skipping rope is often used in the warm-up of athletes in field and track events [5]. Skipping rope can reduce muscle viscosity to achieve the effect of warm-up and improve jumping power, which is conducive to the improvement of competition performance.

As for the research on fancy skipping in primary schools, Takacs designed a 15-week experimental intervention of "fancy skipping class practice" without affecting the main teaching content of the school [6]. The experimental class was taught according to the program of "fancy skipping class practice", while the comparison class was taught in regular physical education. Finally, the experiment shows that the fancy skipping rope can effectively improve the physical health level of primary school students and puts forward the suggestion that the content of fancy skipping rope can be added to the physical education syllabus of primary school. Jin concluded through research that 12-week skipping can improve the physical fitness of primary school students, which is mainly reflected in the aspects of body composition, bone density, function, strength, and speed quality [7]. In terms of fat loss, the effect of fat loss on girls is more obvious.

#### Terms' definition

#### **Physical Health**

Scholars in different countries and regions have different expressions of "physical fitness", which is translated as "physical fitness" in the United Kingdom, the Germans call it "working ability", the Japanese call it "physical strength", and the Taiwan region of China calls it "physical fitness" [8]. In the early 1980s, Chinese sports scholars defined physique as: the quality of the human body, which is a comprehensive and relatively stable feature of the human body's morphological structure, physiological function, and psychological factors based on heredity and acquisition, and its category includes 5 aspects, as shown in Table 1.

**Table 1 Physical categories** 

| Scope                               | Content   |
|-------------------------------------|---|
| The developmental level of the body | Physique, body type, posture, nutrition, body composition, etc.             |
| Physiological function level        | The level of body metabolism and the effectiveness of various organ systems |

| Physical fitness and athletic ability level | Speed, strength, endurance agility, coordination, flexibility, and ability to walk, run, jump, climb, etc. |
|---|--|
| The level of psychological development      | Proprioceptive ability, personality, will, emotion, etc.   |
| Adaptability                                | The ability to adapt to the internal and external environment and resist disease.                          |

The broad sense of "health" includes a healthy body, a sound mind, and good social adaptability, all of which are indispensable. The narrow sense of "health" refers to physical health. The two concepts of physique and health measure the physical condition of the human body from different aspects and categories [9]. Compared with physical fitness, the concept of health is broader and more abstract. Physique is the premise and basis of health, through various ways to enhance the physique, its purpose is to improve health.

#### Fancy skipping rope

The definition of the word "pattern" in the Modern Chinese Dictionary generally refers to all styles or types [10]. In the process of development, jumping rope continues to integrate different elements and produce a variety of novel "jumping methods" [11]. Skipping Rope, is a perfect combination of speed and pattern of modern emerging sports, the international known as "Rope Skipping", and the domestic known as skipping rope or fancy skipping [12]. In "Fancy Skipping Rope", the interpretation of fancy skipping rope is that based on an ordinary skipping rope, it integrates martial arts, gymnastics, and other sports and artistic forms such as dance and music into one body, and perfectly expresses it in the form of performance, entertainment, and competition [13].

#### Study on the value and characteristics of skipping rope

Compared with other sports, there are no special requirements for venues and equipment during the implementation of fancy rope skipping [14]. Whether indoors or outdoors, you can practice on flat ground. The economic cost of skipping rope is low, only a rope can be practiced, easy to carry, and exercise intensity and amount of exercise can be self-regulated, flexible, and free [15]. As a new sport, through the flexible curriculum arrangement, skipping rope can change the traditional physical education boring, single mode [16]. Therefore, the school can carry out the unique pattern skipping movement according to the realistic conditions, as shown in Figure 1.

Fancy skipping is often presented in the public eye as a performance event. From individuals to multiple people, through different ways [17]. The combination and arrangement of skipping movements of different difficulty, combining the elements of different sports such as skills, street dance, martial arts, gymnastics, and so on, with fashionable and dynamic music, the original single and boring skipping movement in a new way to show everyone[18-19]. The difficulty, strength, sensitivity, speed, and other characteristics displayed in the performance process as well as the ability of innovation and teamwork make the audience bright, which can bring people a strong visual enjoyment, and the artistic performance is highly enjoyable [20]. Many experts and scholars have studied whether skipping can promote people's health through experiments, and the results show that skipping is an aerobic exercise with high exercise value[21]. Regular practice of fancy skipping can enhance the human heart and lung function, and effectively develop endurance quality: it can promote the development of human bones and enhance muscle strength [22]; it can strengthen the stimulation of the nervous system while improving the body's coordination ability. Skipping has strong fitness, in the brain, a strong heart, weight loss effect is excellent [23-24].

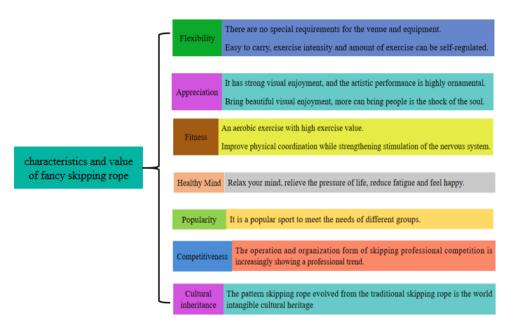


Figure 1 Characteristics and Value of Rope Skipping (Image source: Self-drawn)

#### Research objects and methods

#### Research object

A whole of 77 students from grades three to four in Baoshan Experimental Primary School of Yunnan Province have been chosen by using handy sampling as experimental lookup objects and randomly divided into 1 scan crew and 1 manipulate team by using category unit, of which 37 had been in the experimental crew (18 males and 19 females), with a common age of 9 years old, and 40 had been in the manipulate team (20 males and 20 females), with an average age of 9 years old. This research about takes the impact of fancy skipping on bodily coordination potential and bodily getting to know activity of 3-4 grade students as the lookup object and explores the intervention impact of bodily coordination potential and bodily getting to know activity of scholars via a 12-week experimental application of fancy skipping exercise.

#### **Research Methods**

#### Literature method

Through CNKI, EBSCO, and other databases, the National Library searched and collected a lot of literature on teaching fancy skipping rope, school physical education, physical education, and health courses, physical education teaching content, motor skills formation, children and adolescents physiology, psychological theories, etc., to provide necessary theoretical references for this study[25]. Among them, there are 98 pieces of literature related to the value, course, teaching content, and development status of fancy skipping. 82 literatures on teaching content and PE teaching content; there are 23 literature related to PE and health curriculum standards, 15 articles related to pedagogy, physiology, and psychology, more than 10 monographs and textbooks, and 53 foreign literature. In addition, I also consulted a large number of relevant national government agencies, school education, sports administration official websites related to this paper, policy documents, and other materials [26]. To understand and master the current situation of relevant theoretical research and development, according to the research needs of the fancy skipping project, the retrieved data are classified and studied, and the research results of scholars are summarized to lay the theoretical foundation for this research.

#### **Expert Interview Method**

This study constructs the content system of fancy skipping teaching in school physical education during the nine-year compulsory education period as a whole. The expert interviews in the early stage mainly focus on pedagogy theory, curriculum teaching theory, fancy skipping teachers, fancy skipping coaches, referees, fancy skipping club managers, and experts from the National Skipping Promotion Committee, etc [27]. See Table 2 for details. Through face-to-face interviews, telephone interviews, network communications, and other forms to obtain experts' opinions on the construction of the nine-year compulsory education stage of the fancy jump rope teaching content system, the interview content mainly includes the nine-year compulsory education stage of secondary and primary school physical education final fancy jump rope teaching content system, focusing on the development of students' athletic ability at each level 28-29]. The information obtained from the interviews of experts has expanded the research ideas on this subject and provided a very valuable reference for later research.

Table 2 List of experts interviewed

| Number | Name           | Work Unit  | Number |                  | Work Unit   |
|--------|----------------|--|--------|------------------|---|
| 1      | Chen<br>Jiuhui | National Rope<br>Skipping Committee<br>Promotion committee | 11     | Xiao Yu          | Donghui Garden Primary<br>School, Guangdong Province                            |
| 2      | Cai<br>Yinmin  | National Rope<br>Skipping Committee<br>Promotion committee | 12     | Teacher<br>Li    | Star City Experiment Second<br>Primary School, Changsha<br>City, Hunan Province |
| 3      | Li<br>Haihua   | Education Department of Yunnan Province                    | 13     | Teacher<br>Zhang | Shinan Experimental<br>Primary School, Qingdao City,<br>Shandong Province       |
| 4      | Yu<br>Hongyin  | Education Department of Yunnan Province                    | 14     | Teacher<br>Liu   | Huming Primary School,<br>Xiamen City, Fujian Province                          |
| 5      | Che<br>Dongbin | Yunnan Student Sports<br>Association                       | 15     | Teacher<br>Ma    | Shijiazhuang Binhu primary<br>School, Hebei province                            |
| 6      | Wu<br>Yinzhi   | Kunming Jumping<br>Rope Association                        | 16     | Teacher<br>Liu   | Jinglan Primary School,<br>Liuzhou City, Guangxi<br>Province                    |
| 7      | Zhoumin        | Kunming University   | 17     | Teacher<br>Chen  | Chongqing Longtan Junior<br>High School   |
| 8      | Mr. Zhao       | Liaoning Jinzhou<br>clown rope skipping<br>training base   | 18     | Teacher<br>Zhan  | Sichuan Province Leshan City<br>Jade Experimental School                        |
| 9      | Teacher<br>Li  | Shanghai Jump rope   | 19     | Teacher<br>Zhou  | Weifang New era school  |
| 10     | Xu Fan         | Jump rope founder  | 20     | Teacher<br>Zhang | Changchun Nanhu<br>Experimental Middle School,<br>Jilin Province                |

#### **Mathematical statistics**

Statistical software spss22.0 was used to make a statistical analysis of the questionnaire data collected by the current investigation [30]. By using the meta-decision analysis software yaahp12.0 of the analytic hierarchy process, the weights of each index in the teaching content of fancy skipping rope in primary schools were statistically analyzed [31].

#### Read relevan literature and collect The present situation of the Effect of synchronized skipping rope The influence of skipping rope on development of synchronized on physical health of students in skipping rope and its application in primary school students. different stages. physical education classroom Experimental design The selection of various indexes in Selection of experimental subjects 800 m Experimental group (male) Collect data 50 meters Control group (male) Experimental group (female) Pretest Post-test Comparative analysis Overall conclusion

#### Research framework as shown in Figure 2)

Figure 2 Research framework flow chart (Image source: Self-drawn)

#### **RESULTS AND ANALYSIS**

### Physical test results and analysis of primary school students before the experiment Body shape results and analysis before the experiment

BMI index is the standard to detect human health and obesity and is one of the significant implication of national measurement. BIM refers to the proportion of human body weight and height, the calculation formula is the square of weight (kg) rather than height (cm), BMI index reflects a person's body shape to a certain extent [32].

| Item | Gender | Experimental group $(x \pm s)$ | Control group( $\overline{X} \pm S$ ) | t     | p     |
|------|--------|--------------------------------|---------------------------------------|-------|-------|
| BMI  | Male   | 19.27 ± 2.67                   | $18.26 \pm 2.48$                      | 1.521 | 0.134 |
| BMI  | Female | 18.56 ± 1.85                   | 18.50 ± 1.90                          | 0.123 | 0.902 |

Table 3 BMI test results before the experiment

According to Table 3, there used to be no great distinction in BMI between the experimental crew (male) and the manipulate crew (male) earlier than the scan (P=0.134, P>0.05), which met the requirements of the experiment. According to the physical health standards of primary school students, the BMI assessment grade of boys in Grade 3 is divided into four categories: BMI<15.6 is low body weight physique, 15.7-22.5 is normal health physique, 22.6-25.2 is overweight physique, and BMI>25.3 is obese physique. The common BIM index of the experimental team used to be 19.27, and that of the manipulate team used to be 18.26, each inside the ordinary and wholesome range. According to Table 4, there was once no substantial distinction in BMI between the experimental crew (female) and the manage team (female) earlier than the scan (P=0.902, P>0.05), which met the necessities of the experiment. According to the physical health standards of school students, the BMI

assessment grade of girls in Grade 3 is divided into four categories: BMI<15.2 is low body weight physique, 15.3~22.2 is normal health physique, 22.3~24.8 is overweight physique, 24.9 is obese physique. The common BIM index of the experimental team was once 18.53, and that of the manipulate crew was once 18.55, each inside the everyday and healthful range.

#### Endurance quality results and analysis before the experiment

Table 4 Analysis of differences in physical coordination ability

| Item          | Experimental group $(x \pm s)$ | Control group $(x \pm s)$ | t      | p     |
|---------------|--------------------------------|---------------------------|--------|-------|
| Sandbag       | 9.54 ± 3.57                    | $10.05 \pm 3.41$          | -0.640 | 0.524 |
| Jumping mat   | 15.03 ± 1.77                   | 15.10 ± 2.09              | -0.165 | 0.870 |
| Two-hand clap | 12.72 ± 2.22                   | 12.28 ± 2.89              | 0.735  | 0.465 |
| Quadrant jump | $20.41 \pm 5.67$               | 19.13 ± 5.42              | 1.018  | 0.312 |
| Kangaroo jump | 6.30 ± 1.56                    | 6.74 ± 1.67               | -1.195 | 0.236 |
| Beanbag       | 25.27 ± 4.18                   | 23.68 ± 6.89              | 1.239  | 0.220 |

As can be seen from Table 4, before the experiment, there was no statistical difference between the experimental group and the control group in the test results of sandbag throwing, jumping mat, two-hand beating, quadrant jumping, kangaroo jumping, and body coordination ability of sandbag receiving (P>0.05), and the achievement effect size of each index was at a low level, ensuring the scientific and rational experiment.

#### Response quality results and analysis before the experiment

Table 5 Test on 50 meters before the experiment,

| Item | Gender | Experimental group $(x \pm s)$ | Control group( $^{X} \pm ^{S}$ ) | t      | p     |
|------|--------|--------------------------------|----------------------------------|--------|-------|
| 50m  | Male   | $8.09 \pm 0.55$                | 8.13 ± 0.53                      | -0.300 | 0.765 |
| 50m  | Female | 241.73 ± 15.42                 | 8.617 ± 0.31                     | 0.579  | 0.565 |

According to Table 5, there was no significant difference between the experimental group (male) and the control group (male) in the first 50 meters of the experiment (P=0.765, P>0.05), which met the experimental requirements. According to the physical health standards of school students, the 50 meters of boys in the second grade are divided into four categories: boys:50 meters of  $\leq$ 7.7 is excellent, 7.9 $\sim$ 7.71 is good, 9.9 $\sim$ 7.91 is pass, and >9.9 is failing. The average score of 50 meters in the experimental group was 8.09, and that in the control group was 8.13. The average score of both groups was within the passing range. As shown in Table 6, there was no significant difference in the scores of 50 meters before the experiment between the experimental group (female) and the control group (female) (P=0.565, P>0.05), which met the experimental requirements. According to the physical health standards of school students, the 50 meters of girls in primary school is divided into four categories, girls:50 meters of  $\leq$ 8.2 is excellent, 8.8 $\sim$ 8.21 is good, 10.8 $\sim$ 8.81 is pass, >10.8 is fail. The average score of 50 meters in the experimental group was 8.66 and 8.61 in the control group, and the average score of both groups was in a good range.

## Comparative analysis of physical test results of primary school students before and after the experiment

#### Comparative analysis of body shape results before and after the experiment

| Table 6 BMI test results before and after the experiment |
|--|
|--|

| Item                       | Before test( $^{\mathcal{X}} \pm ^{S}$ ) | After test( $^{x} \pm ^{s}$ ) | t      | р     |
|----------------------------|--|-------------------------------|--------|-------|
| Experimental group(Male)   | $19.27 \pm 2.67$                         | 18.99 ± 1.97                  | 2.090  | 0.045 |
| Control group(Male)        | $18.26 \pm 2.67$                         | $18.31 \pm 2.22$              | -0.696 | 0.492 |
| Experimental group(Female) | 18.56 ± 1.85                             | $18.46 \pm 1.63$              | 1.266  | 0.216 |
| Control group(Female)      | 18.50 ± 1.90                             | $18.50 \pm 1.74$              | -0.021 | 0.984 |

According to Table 6, in the BMI check of male students, the indexes measured earlier than and after the scan in the experimental crew confirmed enormous variations (P=0.045, P>0.05), whilst the indexes measured earlier than and after the test in the manage team confirmed no considerable variations (P=0.492, P>0.05). The common rating of the experimental crew was once 19.27 earlier than the scan and 18.99 after the experiment, which used to be 0.28 decrease than that earlier than the experiment. The manage team was once 18.26 earlier than the test and 18.31 after the experiment, which expanded through 0.05 in contrast with that earlier than the experiment.

According to Table 6, in the BMI check of woman students, there used to be no large distinction between the warning signs measured earlier than and after the test in the experimental crew (P=0.216, P>0.05). There was once no massive distinction between the two businesses earlier than and after the scan (P=0.984, P>0.05). The common rating of the experimental team used to be 18.56 earlier than the scan and 18.46 after the experiment, which was once 0.1 decrease than that earlier than the experiment; The manage team used to be 18.50 earlier than and 18.50 after the experiment, and there used to be no alternate earlier than and after the experiment.

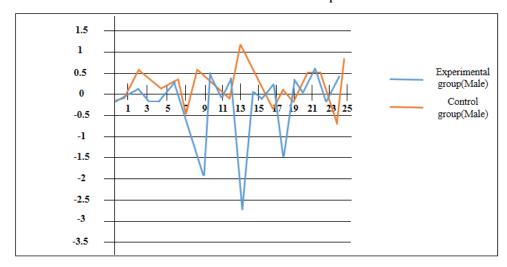


Figure 3 BMI change in male students (Image source: Self-drawn)

According to the evaluation of records between the two corporations in Table 8, it can be viewed that the adjustments in BMI of male students in the two businesses have sizeable variations (P=0.036, P>0.05). By evaluating the common values of the two groups, it can be determined that the exchange in BMI in the experimental crew is negative, whilst that in the manipulate crew is positive. This suggests that the BMI of male students in the experimental team decreased, whilst that of the manipulate crew increased. It can additionally be considered from Figure three that the trade curve of male students in the experimental team is notably decrease than that of the manipulate group, so

the minimize in BMI in the experimental crew is higher than that in the manage group. Therefore, fancy-skipping educating is greater tremendous than events bodily schooling in stopping immoderate weight increase of male students.

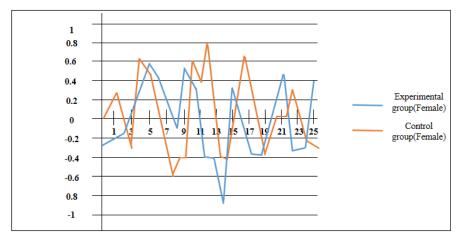


Figure 4 BMI change in female students (Image source: Self-drawn)

Table 7 Comparison of changes between experimental group (female) and control group (female)

| Item | Female experimental group $(x \pm s)$ | Female control group( $^{x} \pm ^{s}$ ) | t      | p     |
|------|---------------------------------------|---|--------|-------|
| BMI  | $-0.094 \pm 0.407$                    | $0.001 \pm 0.411$                       | -0.929 | 0.361 |

According to the assessment of facts between the two companies in Table 7, there was once no huge distinction in the alternate in BMI between the two businesses of women (P=0.361P>0.05). From the common of the two corporations of data, the experimental crew confirmed a declining state, the trade of the experimental team was once -0.094, and the exchange of the manage crew used to be 0.001. In primary school, ladies will steadily entire bodily development, cease developing in height, enter the stage of weight gain, and progressively greater physique fats charge than boys. For ladies who carried out the weight achieve stage, the proper quantity of bodily workout can efficaciously attain the impact of fats reduction; for women who are gaining weight, the proper quantity of bodily workout can manage immoderate weight boom and preserve a wholesome and appropriate physique posture. As can be considered from Figure 4, there is no apparent distinction between the two trade curves, so there is no good sized distinction between the have an effect on of skipping rope educating and traditional bodily training on the alternate charge of BMI of girls.

## $\label{lem:comparative} \textbf{Comparative analysis of endurance quality results before and after the experiment}$

Table 8 Endurance test results before and after the experiment

| Item          | Experimental group $(X \pm S)$ | Control group $(x \pm s)$ | t      | p     |
|---------------|--------------------------------|---------------------------|--------|-------|
| Sandbag       | $9.70 \pm 2.60$                | $10.00 \pm 3.56$          | -0.421 | 0.675 |
| Jumping mat   | $20.19 \pm 2.62$               | $15.22 \pm 1.53$          | 10.044 | 0.000 |
| Two-hand clap | $10.72 \pm 2.73$               | $12.15 \pm 2.27$          | -2.505 | 0.014 |
| Quadrant jump | $16.13 \pm 6.75$               | $19.86 \pm 5.43$          | -2.678 | 0.009 |
| Kangaroo jump | $5.31 \pm 0.81$                | $6.48 \pm 1.42$           | -4.394 | 0.000 |
| Beanbag       | $26.59 \pm 2.19$               | $24.38 \pm 5.68$          | 2.294  | 0.026 |

As can be seen from Table 8, the t test of independent samples was used to study the differences between the experimental group and the control group in terms of body coordination ability indexes of beanbag throwing, jumping mat, two-handed slap, quadrant jump, kangaroo jump, and beanbag

catching after the experiment. Samples in different groups showed consistency in beanbag throwing without difference. However, there are differences in jumping mat, two-handed clap, quadrant jump, kangaroo jump and sandbag. Specific analysis showed that after the experiment, the experimental group and the control group showed 0.01 level significance for the jump pad (t=10.044, P=0.000), and the specific comparison difference showed that the average value of the experimental group (20.19) was significantly higher than that of the control group (15.22). There was a 0.05 level significance for two-handed beating (t=-2.505, P=0.014).

#### Comparative analysis of response quality results

| Table 9 Test results of 50 meter | before and after | the experiment |
|----------------------------------|------------------|----------------|
|----------------------------------|------------------|----------------|

| Group                      | Before test( $^{x} \pm ^{s}$ ) | After test( $^{X} \pm ^{S}$ ) | t     | p     |
|----------------------------|--------------------------------|-------------------------------|-------|-------|
| Experimental group(Male)   | $8.09 \pm 0.55$                | $7.94 \pm 0.47$               | 6.678 | 0.000 |
| Control group(Male)        | $8.13 \pm 0.53$                | $8.09 \pm 0.48$               | 2.429 | 0.022 |
| Experimental group(Female) | $8.66 \pm 0.33$                | $8.60 \pm 0.3$                | 5.479 | 0.000 |
| Control group(Female)      | $8.61 \pm 0.31$                | $8.61 \pm 0.31$               | 2.099 | 0.045 |

According to Table 9, it can be located that in the men's 50-meter test, the experimental team has a big distinction in the ratings earlier than and after the scan (P=0.000\*\*, P>0.01), whilst the manage crew has a sizeable distinction in the rankings earlier than and after the scan (P=0.022, P>0.05). After the experiment, it used to be 7.94, which diminished with the aid of 0.15 in contrast with earlier than the experiment; in the manipulate group, it used to be 8.13 earlier than the scan and 8.09 after the experiment, which expanded through 0.4 in contrast with earlier than the experiment.

According to Table 9, it can be located that in the women's 50-meter test, the experimental team has a tremendous distinction in the ratings earlier than and after the scan ( $P=0.000^{**}$ , P>0.01), whilst the manage team has a full-size distinction in the rankings earlier than and after the scan (P=0.045, P>0.05). After the experiment, the cost used to be 8.60, which diminished through 0.06 in contrast with earlier than the experiment. The manage crew used to be 8.61 earlier than the test and 8.59 after the experiment, which lowered with the aid of 0.02 in contrast with earlier than the experiment.

To sum up, both the experimental group (male and female) and the control group (male and female) showed significant improvement in 50-meter scores in the response quality test. The 50-meter run mainly tests the students' reaction quality, including the reaction speed to signals, and the ability to change quickly (squat start). In the fancy skipping movement, there are higher requirements for the practitioner's reaction speed and the ability to quickly change the action, including the cooperation between the skipping rope and the shaking rope in the multi-person skipping rope, the timing of entering the skipping rope and the strength of the shaking rope should be quickly made according to the situation on the field. In the conventional teaching of the control group, the most helpful practice method for 50 meters is to run back. In 12 weeks, the control group had 3 lessons of running back and forth. After touching the ground in the practice, the students in the control group quickly changed their direction and quickly started to run, which could train their ability of fast change of movement. In the teaching of fancy skipping rope, there is a high consistency requirement for the cooperation between people and rope and the cooperation between people, which can not only improve the ability of students to change quickly, but also train students to react quickly to external signals.

#### **CONCLUSION AND SUGGESTION**

#### Conclusion

The use of fancy skipping rope teaching and training in physical education can deliver a beneficial impact on the physical fitness of primary school students. Compared with conventional physical

education, fancy skipping rope has a more significant effect on the improvement of students' speed, strength, endurance, and agility quality. Help students to improve their physical fitness. After 12 weeks of teaching experiment, the experimental group of students carried out a questionnaire survey of physical education learning self-evaluation, the use of fancy skipping rope teaching, and training in physical education, students have significantly improved in physical education self-evaluation. It shows that the fancy skipping rope can effectively improve the pupils' attitude toward learning, the expression of affection, and the spirit of cooperation, and can reflect the application value of the fancy skipping rope in the physical education classroom.

#### Suggestion

Skipping can stimulate students' interest in learning, with a positive impact on the physical quality of primary school students, and cultivate students' goodwill quality. It is suggested to add fancy skipping rope in PE teaching, enrich the content of classroom teaching, improve the quality of PE classroom teaching, grasp the critical period of the development of students' physical quality, improve the trend of the decline of teenagers' physical health, and promote the overall healthy development of students. The school should pay attention to fancy rope skipping, organize various forms of fancy rope skipping competitions in the school regularly, set up a fancy rope skipping school-based class, organize and establish a fancy rope skipping training team, and create a fancy rope skipping special class break. It not only has far-reaching significance for the healthy development of students, but also can carry forward the traditional sports culture, promote the exchange of sports culture, and promote the modern development of fancy skipping.

#### REFERENCES

- Lee, S. K., Lee, C. M., & Park, J. H. (2015). Effects of combined exercise on physical fitness and neurotransmitters in children with ADHD: a pilot randomized controlled study. *Journal of physical therapy science*, 27(9), 2915-2919.
- Rowley, S. J., Sellers, R. M., Chavous, T. M., & Smith, M. A. (1998). The relationship between racial identity and self-esteem in African American college and high school students. *Journal of personality and social psychology*, 74(3), 715.
- Tanikawa, H., Harato, K., Suda, Y., Toyama, Y., Matsumoto, H., Kiriyama, Y., & Nagura, T. (2014). Female recreational athletes demonstrate different knee biomechanics from male counterparts during jumping rope and turning activities. *Journal of Orthopaedic Science*, 19(1), 104-111.
- Baker, J. A. (1968). Comparison of rope skipping and jogging as methods of improving cardiovascular efficiency of college men. *Research Quarterly. American Association for Health, Physical Education and Recreation*, 39(2), 240-243.
- Makaruk, H. (2013). Acute effects of rope jumping warm-up on power and jumping ability in track and field athletes. *Polish Journal of Sport and Tourism*, *20*(3), 200-204.
- Takacs, J., Krowchuk, N. M., Garland, S. J., Carpenter, M. G., & Hunt, M. A. (2017). Dynamic balance training improves physical function in individuals with knee osteoarthritis: a pilot randomized controlled trial. *Archives of physical medicine and rehabilitation*, *98*(8), 1586-1593
- In, T., Jin, Y., Jung, K., & Cho, H. Y. (2017). Treadmill training with Thera-Band improves motor function, gait and balance in stroke patients. *NeuroRehabilitation*, 40(1), 109-114.
- Hao, M., Han, W., & Yamauchi, T. (2019). Short-term and long-term effects of a combined intervention of rope skipping and nutrition education for overweight children in Northeast China. *Asia Pacific Journal of Public Health*, *31*(4), 348-358.
- Dimarucot, H. C., & Soriano, G. P. (2020). Effectiveness of the multistage jumping rope program in enhancing the physical fitness levels among university students. *International Journal of Human Movement and Sports Sciences*, 8(5), 235-239.

- Ha, A. S., Lonsdale, C., Ng, J. Y., & Lubans, D. R. (2014). A school-based rope skipping intervention for adolescents in Hong Kong: protocol of a matched-pair cluster randomized controlled trial. *BMC public health*, 14(1), 1-8.
- Stambekova, Z., Izmagambetova, R., Kinzhibayeva, F., Baigutov, K., Kudabaeva, K., & Abisheva, O. (2023). Development of Innovative Activities of Future Design Specialists Based on Student-Centred Learning. *Pakistan Journal of Life & Social Sciences, 21*(2).
- Ham, O. K., Sung, K. M., Lee, B. G., Choi, H. W., & Im, E. O. (2016). Transtheoretical model based exercise counseling combined with music skipping rope exercise on childhood obesity. *Asian nursing research*, 10(2), 116-122.
- Harrell, J. S., McMurray, R. G., Baggett, C. D., Pennell, M. L., Pearce, P. F., & Bangdiwala, S. I. (2005). Energy costs of physical activities in children and adolescents. *Medicine & Science in Sports & Exercise*, 37(2), 329-336.
- Ahmed, Z., Javaid, M. A., Muzaffar, M., Fatima, N., Hussain, T., & Attock, S. (2015). Comparing the level of political awareness among the students of social and natural sciences: A case study of public sector universities in Pakistan. *Pakistan Journal of Life and Social Science*, 13(2), 64-67.
- Eime, R. M., Young, J. A., Harvey, J. T., Charity, M. J., & Payne, W. R. (2013). A systematic review of the psychological and social benefits of participation in sport for children and adolescents: informing development of a conceptual model of health through sport. *International journal of behavioral nutrition and physical activity, 10*(1), 1-21.
- Haskell, W. L. (1996). Physical activity, sport, and health: toward the next century. *Research Quarterly for Exercise and Sport, 67*(sup3), S-37.
- Sebbens, J., Hassmén, P., Crisp, D., & Wensley, K. (2016). Mental health in sport (MHS): improving the early intervention knowledge and confidence of elite sport staff. *Frontiers in psychology*, 7, 911.
- Donohue, B., Gavrilova, Y., Galante, M., Gavrilova, E., Loughran, T., Scott, J., ... & Allen, D. N. (2018). Controlled evaluation of an optimization approach to mental health and sport performance. *Journal of Clinical Sport Psychology*, *12*(2), 234-267.
- Waddington, I. (2000). Sport and health: A sociological perspective. *Handbook of sports studies*, 408-421
- Anwar, S., Nasreen, S., Batool, Z., & Husain, Z. (2013). Maternal education and child nutritional status in Bangladesh: Evidence from demographic and health survey data. *Pakistan Journal of Life and Social Sciences*, 11(1), 77-84.
- Donaldson, A., & Finch, C. F. (2012). Sport as a setting for promoting health. *British journal of sports medicine*, 46(1), 4-5.
- Edwards, M. B., & Rowe, K. (2019). Managing sport for health: An introduction to the special issue. *Sport Management Review*, 22(1), 1-4.
- Dudley, D., Cairney, J., Wainwright, N., Kriellaars, D., & Mitchell, D. (2017). Critical considerations for physical literacy policy in public health, recreation, sport, and education agencies. *Quest*, 69(4), 436-452.
- Sheehan, R. B., Herring, M. P., & Campbell, M. J. (2018). Associations between motivation and mental health in sport: A test of the hierarchical model of intrinsic and extrinsic motivation. *Frontiers in psychology*, *9*, 707.
- Gavrilova, Y., Donohue, B., & Galante, M. (2017). Mental health and sport performance programming in athletes who present without pathology: A case examination supporting optimization. *Clinical Case Studies*, 16(3), 234-253.
- Finch, C., & Cassell, E. (2006). The public health impact of injury during sport and active recreation. *Journal of Science and Medicine in Sport*, 9(6), 490-497.
- Donohue, B., Chow, G. M., Pitts, M., Loughran, T., Schubert, K. N., Gavrilova, Y., & Allen, D. N. (2015). Piloting a family-supported approach to concurrently optimize mental health and sport performance in athletes. *Clinical Case Studies*, *14*(3), 159-177.

- Berg, B. K., Warner, S., & Das, B. M. (2015). What about sport? A public health perspective on leisure-time physical activity. *Sport Management Review*, *18*(1), 20-31.
- Fullerton, D. S. (2011). A collaborative approach to college and university student health and wellness. *New Directions for Higher Education*, 153(2), 61-69.
- Boyes, R., O'Sullivan, D. E., Linden, B., McIsaac, M., & Pickett, W. (2017). Gender-specific associations between involvement in team sport culture and canadian adolescents' substance-use behavior. *SSM-population health*, *3*, 663-673.
- Roncone, J. (2019). Healthy Campus Wellness Initiative: Bridging the Gap between Healthy Campus 2020. *AURCO Journal*, *25*, 160-176.
- Karakitsiou, D. E., Markou, A., Kyriakou, P., Pieri, M., Abuaita, M., Bourousis, E., ... & Dimoliatis, I. D. K. (2012). The good student is more than a listener–The 12+ 1 roles of the medical student. *Medical teacher*, 34(1), e1-e8.