



Selected Physical Fitness Tests for Evaluate Taekwondo in Elective Class in University

Zeng Jinxiu¹, Thawatchai Kanchanathaweekul²

^{1,2}Faculty of Sports Science and Technology, Bangkokthonburi University, Thailand

¹E-mail: 754898087@qq.com, ORCID ID: <https://orcid.org/0000-0003-3541-3502>

²E-mail: Thawatchai_kan@bkkthon.ac.th, ORCID ID: <https://orcid.org/0009-0007-1435-5143>

Received 12/05/2023

Revised 18/05/2023

Accepted 20/05/2023

Abstracts

Background and Aim: As one of the elective courses of physical education at Hanshan Normal University, taekwondo has the problem of most students' low physical fitness in the classroom teaching process. Taekwondo elective the students' need to develop physical fitness in the following aspects: strength, speed, flexibility, and endurance, and the improvement of these qualities can improve students' physical level in class. The objective of this research was: (1) to select the most appropriate physical fitness test method to evaluate the physical performance of students in the elective taekwondo course; (2) to find out the basis for the relevant standards of physical fitness tests for students in taekwondo elective courses; (3) to formulate the physical fitness assessment standards for the students in the elective courses, and assess the students' physical fitness through the physical fitness test.

Materials and Methods: This research is experimental. In this study, 141 female students will be selected to voluntarily participate in the experiment. The main test tools in this study are a set of tests in the constructed physical fitness test, including a core strength test tool, speed test tool, flexibility test tool, endurance test tool, and data analysis tool. Data analysis techniques included descriptive statistics; mean, standard deviation, and percentages. Then using comparative statistics t-test to compare the data.

Results: The results showed that (1) the taekwondo courses offered by universities have a very good impact on the physical improvement of college students; (2) the taekwondo courses offered by universities have a very important guiding value; (3) the taekwondo courses also provide the rich sports training content in the course; and (4) allow students to experience different sports knowledge and learning methods.

Conclusion: Through the design of targeted courses and the analysis of the test data before and after experiments, we can understand that the taekwondo courses offered by universities have a very good impact on the physical improvement of college students, and have a very important guiding value. It can not only bring about the shortcomings brought by regular sports, but also provide rich sports training content in the course, but also allow students to experience different sports knowledge and learning methods.

Keywords: Taekwondo Course; Physical Fitness; Elective Class

Introduction

The results of the eighth National Students 'physical health survey show that the failure rate of college students' physical health level is as high as 30%, and the indicators of their physical health show a downward trend. The "National Student Physical Health Standard" has a clear scoring standard for the physical form, physical function, and physical quality of the students in each school-age group. Under this standard, the physical health problems of college students are the most prominent, with the highest failure rate. Compared with the results of previous physical health surveys, the physical health level of college students showed a continuous downward trend, the proportion of overweight and obese students increased significantly, and the rate of poor eyesight was high (Wang, L., 2022).

As one of the elective courses of physical education at Hanshan Normal University, taekwondo has the problem of most students' low physical fitness in the classroom teaching process. After understanding, it is found that college students focus on the study of cultural quality in middle and primary schools, coupled with the need to take a variety of after-school cram schools, there is no more time to exercise and neglect the physical quality (Zheng, X., 2021). Taekwondo elective students need to develop physical fitness in the following aspects: strength, speed, flexibility, and endurance, and the improvement of these qualities can improve students' physical level in class. Under the modern sports reform, enhancing the physical fitness of college students is one of the important goals of the current college sports reform. Taekwondo as a course can play a positive effect on college students' physical fitness and can promote the development of college students' physical fitness, college students' good



physical fitness (Zheng, X., 2021). This sport itself has strong practical value, participating in taekwondo sports can better improve the participants' own physical and mental well levels, and better meet the needs of physical defense and other aspects. Taekwondo sports itself also has a distinctive style and technical charm.

The article “The Exploration of the Effect of Taekwondo Training on Personality Traits” discusses the influence of taekwondo training on the existence of personality traits. The author believes that strengthening the study of taekwondo can not only increase physical fitness but also shape the correct personality (Richard, C.B., 2002). Moreover, by elective taekwondo sports 200 students of the current fitness test results and entrance first test results, the results found that about 89.6% of the long-term practice taekwondo students after comparing the results of the physical fitness test, body flexibility, sensitivity, speed of three effects is obvious, at the same time to the students' strength and endurance also have different degrees of improvement (Fu, Y., 2019).

The course objective of this course is to understand the basic knowledge of physical education, master the basic sports skills of taekwondo, improve their physical and health, promote the lifelong traditional national culture and patriotism, cultivate the spirit of solidarity, cooperation, and hard work, and make the students qualified talents. Therefore, This study will be han shan normal college taekwondo elective class 141 students for the experimental group, by combining the national test content of college students' taekwondo class construction and test, the pretest before class, and the final test after class comparative analysis, find out the influence of course of taekwondo to students physical improvement, and according to the experimental results to improve students' physical level and improve the taekwondo course content, has certain positive significance.

Objectives

1. To select the most appropriate physical fitness test method to evaluate the physical performance of students in the elective taekwondo course.
2. To find out the basis for the relevant standards of physical fitness tests for students in taekwondo elective courses.
3. To formulate the physical fitness assessment standards for the students in the elective courses and assess the student's physical fitness through the physical fitness test.

Literature Review

This research mainly focuses on taekwondo sports, physical fitness, and college taekwondo courses. The following literature and research will be reviewed in domestic and foreign taekwondo sports and physical fitness and college taekwondo courses:

1. Studies on sports and physical fitness in taekwondo

Taekwondo is a comprehensive competitive sport, which can not only enhance students' physical quality but also exercise students' athletic spirit and will quality (Yang, Z., 2021). This sport itself has strong practical value. Participating in taekwondo sports can better improve the participants' own physical and mental well levels, and better meet the needs of physical defense and other aspects. Taekwondo sports itself also has a distinctive style and technical charm (Chen Lixing, 2016). The article “The Exploration of the Effect of Taekwondo Training on Personality Traits” discusses the influence of taekwondo training on the existence of personality traits. The author believes that strengthening the study of taekwondo can not only increase physical fitness but also shape the correct personality (Richard, C.B., 2002).

The sports characteristics of taekwondo include: first, edify sentiment: the five spirits of taekwondo are “etiquette, shame, patience, self-denial and unyielding”. Through the study of taekwondo, it can not only exercise good physical quality, but also cultivate the heart and shape the heart with truth, goodness, and beauty. Second, enhance physical fitness: the technical movements of taekwondo need to be completed with the coordination of the whole body. Learning taekwondo can exercise people's speed, strength, endurance, balance, etc. These technical movements have a certain exercise effect on the body of learners and can enhance the body. Third, improve the ability of self-





defense. Learning taekwondo, can learn sports skills to resist the outside infringement, when encountering illegal behavior can fight against it (Du, Q., 2007).

In taekwondo class, teachers usually guide students to strengthen the training of strength, speed, coordination, and other aspects, and require students to pay attention to all parts of the body exercise, to improve students' physical quality. At the same time, the skills and movements of taekwondo are mainly leg methods, which are easy and safe to learn than other sports, and the requirements for venues and equipment are not high so that students can easily participate in it (Zheng, X., 2021).

By elective taekwondo sports 200 students of the current fitness test results and entrance first test results, the results found that about 89.6% of the long-term practice taekwondo students after comparing the results of the physical fitness test, body flexibility, sensitivity, speed of three effects is obvious, at the same time to the students' strength and endurance also have different degrees of improvement (Fu, Y., 2019).

2. Studied college taekwondo courses

University sports set up the taekwondo course with a powerful education function, through taekwondo to cultivate one's morality, cultivate one's morality, perfect personality, exercise, edify sentiment, and the sports technology is simple and practical, easy to learn, easy to understand behavior and etiquette education, from the substantive sense has gone beyond the conventional competitive sports. In addition, through the effective classroom teaching of taekwondo courses, college students are encouraged to better participate in the study of taekwondo courses, improve their physical quality, feel the happiness brought by taekwondo sports, realize the function and value of taekwondo sports, and understand the essential development law of things brought about by the characteristics of taekwondo sports (Huang, P., 2019).

Under the modern sports reform, enhancing the physical fitness of college students is one of the important goals of the current college sports reform. Taekwondo as a course can play a positive effect on college students' physical fitness and can promote the development of college students' physical fitness, college students' good physical fitness, but in most colleges and universities, students of good physical bias, think the good physical quality is what athletes need to have the condition, and you don't need to. However, in daily life and study, good physical quality is the basic condition of everyone's life, and it is also one of the important factors that cannot be ignored to maintain their physical health (Zheng, X., 2021).

The "Orthodox Taekwondo Textbook" mentioned that taekwondo is a traditional sport with a strong cultural heritage, and it is deeply welcomed by the public. South Korean education departments and schools attach great importance to taekwondo, offering taekwondo courses almost all in universities, middle schools, primary schools, and preschool schools (Cui, Y., 1975).

Taekwondo courses offered in colleges and universities are of great value to students' studies and life. In a sense, it makes up for the deficiencies brought by regular sports. Rich sports training content, let students experience different sports knowledge and learning methods (Zhang, J., & Wang, M., 2022).

In October 2020, the general office of the central committee of the communist party of China, the State Council general office issued "on comprehensively strengthening and improving the new era of school sports work opinion", put forward the school sports to realize Khalid ents basic task, improve the comprehensive quality of basic engineering, can cultivate students' patriotism, collectivism, socialist spirit, and strive forward, indomitable will quality, and to sports intelligence, the unique function of sports heart. Taekwondo courses can not only realize the comprehensive education value of school physical education, but also release the unique education potential of taekwondo programs by combining its characteristics (Wu, J., Canghai, Zhao, Y., & Hao, D., 2022).

"Beijing sports university taekwondo teaching content analysis" article points out that Beijing sports university opened 16 years of taekwondo special course, not only special teaching team construction has stable development, course scale, and the course students' technical level is increasing year by year, finishing the school taekwondo special course teaching file, confirm the education teaching reform effect is remarkable (Tu, Z., 2014).





Conceptual Framework

The conceptual framework for the research is as follows:

- The independent variable is the test indicators of students in the Taekwondo elective course.
- The dependent variables are evaluation standards for the physical fitness test of students in the Taekwondo elective course.

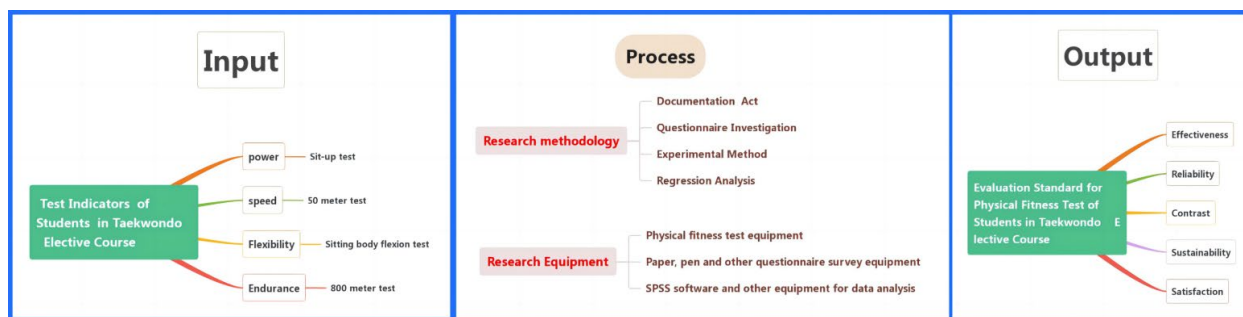


Figure 1 Conceptual Framework

Methodology

In this research, 141 female students will be selected to voluntarily participate in the experiment. The main test tools in this study are a set of tests in the constructed physical fitness test, including a core strength test tool, speed test tool, flexibility test tool, endurance test tool, and data analysis tool. Moreover, this research used expert interviews, questionnaires, and physical fitness test forms and test equipment to collect the data.

For the data collection, 5 – 8 experts were consulted through face-to-face, telephone, and e-mail interviews to confirm the reliability and validity of the test content and questionnaire. Design the teaching content and confirm the content to test the students, and then 141 students from the class were selected to participate in the course learning and testing, recording the results through the form. The test content is as follows: (1) Collect and check the test data for 800 meters, standing long jump, sitting forward flexion, and 50 meters before class; (2) Collect the questionnaire data before class (name, major, cognitive source of taekwondo, reasons for choosing the course, whether you want to improve your physical fitness level through the course, whether you are satisfied with your current physical fitness level, currently 800 m 50 m, sitting forward flexion, standing long jump result; (3) Collect and check the test data of 800 meters, standing long jump, sitting forward flexion and 50 meters after class; (4) Collect the questionnaire data after class (name, major, whether your physical fitness level has improved after learning the taekwondo course, whether you are satisfied with the taekwondo course of this semester, currently 800 meters and 50 meters, sitting forward bending, standing long jump performance, whether you want to continue to study taekwondo. In this research, data analysis techniques included descriptive statistics; mean, standard deviation, percentages, and t-tests.



Results

The researcher combined the construction and test of 141 students of the Taekwondo elective class of Hanshan Normal University, compare the pre-test before class and the final test data after class, and find out the impact of taekwondo course on the improvement of college students' physical fitness.

1. Teaching and testing content in weeks 1-8 by consulting 5-8 experts

Duration: Aug -Dec 2022, Frequency: 2 times/week

Training Aim	Week 1-2	Week 3-4	Week 5-6	Week 7-8
Strength training	Jumping steps X2 Weight high leg X1	Jumping steps X2 Weight high leg X2	Jumping steps X3 Weight high leg X2	Jumping steps X4 Weight high leg X2
Speed training	High leg Calculate the number of times in one-minute X2	High leg Calculate the number of times in one-minute X3	High leg Calculate the number of times in one-minute X4	High leg Calculate the number of times in one-minute X5
Flexibility training	Sitting forward flexion 5 min X1	Sitting forward flexion 5 min X2	Sitting forward flexion 5 min X2	Sitting forward flexion 5 min X2
Endurance training	800 X1 @30% MaxSpeed	800 X2 @50% MaxSpeed	800 X2 @70% MaxSpeed	800 X2 @90% MaxSpeed
Test	Pre-test	/	/	Post-test 8 weeks
1. standing long jump (M)				
2. 50 meters (S)				
3. sitting forward flexion (CM)				
4. 800 meters(S)				

2. Students compare the data from the pretest with the final test

In the T-test of the two paired samples, the physical test data were all female, and compared whether there was any difference before and after the experiment class, to verify the effectiveness of the experiment class. The original hypothesis: assuming that there is no significant difference, the selected test statistic T, set the significance level $\alpha = 0.05$; calculate the probability P-value.

	Paired sample statistics	Mean	Number of cases	SD.	S.E.
Paired 1	800 M 1(min)	3.9558	144	.44543	.03712
	800 M 2(min)	3.7808	144	.43011	.03584
Paired 2	Standing long jump 1(m)	1.6454	142	.15051	.01263
	Standing long jump 2(m)	1.6978	142	.15802	.01326
Paired 3	50 M1(s)	9.8078	143	.62137	.05196
	50 M2(s)	9.1652	143	.61572	.05149
Paired 4	Sitting forward flexion 1(cm)	16.567	143	5.0730	.4242
	Sitting forward flexion 2(cm)	21.1880	143	6.12443	.51215





Paired sample correlation		Number of cases	Relativity	Conspicuousness
Paired 1	800 M 1(min) & 800M 2(min)	144	.913	.000
Paired 2	Standing long jump 1(m)& Standing long jump 2(m)	142	.962	.000
Paired 3	50 M1(s)& 50 M2(s)	143	.867	.000
Paired 4	Sitting forward flexion 1(cm) & Sitting forward flexion 2(cm)	143	.919	.000

Paired sample test		Paired difference					t	df	Sig.
		Difference value with 95% confidence interval							
		Superior							
		Inferior limit		limit					
Average	SD.	SE.							
Paired 1	800 M 1(min) &800M 2(min)	.17507	.18323	.01527	.14489	.20525	11.465	143	.000
Paired 2	Standing long jump 1(m)& Standing long jump 2(m)	-.05246	.04334	.00364	-.05965	-.04527	-14.426	141	.000
Paired 3	50 M1(s)& 50 M2(s)	.64259	.31914	.02669	.58983	.69534	24.078	142	.000
Paired 4	Sitting forward flexion1(cm) & Sitting forward flexion 2(cm)	-4.62084	2.4792	.20732	-5.03068	-4.21100	-22.288	142	.000

Probability P-value = 0.000 < 0.05, namely $p < \alpha$, rejecting the null hypothesis, and students showed a significant difference before and after the experimental class.

Through the design of targeted courses and the analysis of the test data before and after experiments, we can understand that the taekwondo courses offered by universities have a very good impact on the physical improvement of college students and have a very important guiding value. It can not only bring about the shortcomings brought by regular sports but also provide rich sports training content in the course but also allow students to experience different sports knowledge and learning methods.





Discussion

After 8 weeks of taekwondo course training, participate in the experiment of 144 girls in the test strength, speed, flexibility, and endurance fitness tests showed different degrees of improvement, and the course design training content has a positive influence on the development of students' physical fitness, shows that taekwondo course can develop students' physical quality. Through the design of targeted courses and the analysis of the test data before and after experiments, we can understand that the taekwondo courses offered by universities have a very good impact on the physical improvement of college students and have a very important guiding value.

It not only brings about the shortcomings brought by regular sports, but also provides rich sports training content in the course, but also allows students to experience different sports knowledge and learning methods. According to the present situation of students' physical fitness, combined with experts designed the appropriate course training content, according to the relevant literature at home and abroad and the national physical fitness test standard content based on the project, can be seen from the course actual teaching and testing data, confirm that the course can let the students' physical fitness level. This is consistent with the research that taekwondo courses can not only realize the comprehensive education value of school physical education, but also release the unique education potential of taekwondo programs by combining its characteristics (Wu, J., Canghai, Zhao, Y., & Hao, D., 2022).

Recommendations

The sample of this study was obtained from universities in China with a sample size of 141. The larger the sample size, the higher the precision of the study. However, the inability of obtaining more samples for testing was due to artificial, economic, and time constraints, which also partly limits the accuracy of this study. Follow-up studies suggest trying to find more regional experimental individuals to participate in the experiment, to ensure that the data is more real and effective.

In the process of research, the timely adjustment of the training level of students can ensure the scientific nature and sustainability of the teaching content. In the experiment, we must ensure the personal safety of students, otherwise, it will directly affect the experimental data.

The difference in college students' physical level and the diversification of the national physical fitness test content make the design of the teaching content of taekwondo courses must be integrated into the auxiliary training of the national physical fitness test content. Since the proportion of girls in the class is more than 95%, there are individual differences among the girls. Therefore, this study only evaluated the physical fitness of the girls participating in the test in terms of strength, speed, flexibility, and endurance. If possible, follow-up studies can also assess students' psychological and social adaptability.

References

- Chen, R., (2016). Research on related factors and optimization countermeasures affecting taekwondo teaching in universities. *Physical Education*, 9 (145), 88-89.
- Cui, Y., (1975). The Orthodox Taekwondo textbook. Seoul, South Korea: Seoul Philadelphia Press.
- Du, Q., (2007). *Modern Taekwondo tutorial*. Hubei Science and Technology Press.
- Fu, Y., (2019). A. Research on the physical fitness improvement of college students in Taekwondo. *Juvenile Fitness and Mental Health*, 7 (75), 46 – 47.
- Huang, P., (2019). *Research on the current situation and development countermeasures of Taekwondo courses in Hubei Province*. Master's degree thesis of Wuhan University of Physical Education.
- Richard, C.B., (2002). The Exploration of the Effect of Taekwondo Training on Personality Traits. *The Sport Journal*, 9(6), 47-49.
- Tu, Z., (2014). *Content Analysis of Special Teaching Method of Taekwondo in Beijing Sport University*. Master's degree thesis. Beijing Sport University.
- Wang, L. . (2022). Research on the measurement analysis and improvement countermeasures of college students' physical health. *Contemporary Sports Technology (Contemporary Sports*



- Technology*), 12(21), 48-51.
- Wu, J., Canghai, Zhao, Y., & Hao, D., (2022). Be the champion of life: the excavation and penetration of ideological and political elements in taekwondo course. *Journal of Beijing Sport University*. 45(6), 60-72.
- Yang, Z., (2021). Discussion on the teaching mode of taekwondo section position system course in colleges and universities. *Contemporary Sports Technology*, (11) 20, 102-104.
- Zhang, J., & Wang, M., (2022). Analysis of Flexibility Quality in University Taekwondo Training. *Published by Francis Academic Press: Frontiers of Sports Research*, 4 (2618-1576), 20-23.
- Zheng, X., (2021). Analysis of the influence of college taekwondo courses on students' physical fitness. *Martial arts research*. 6(02), 101-103.