

Comparative Study on Physical Fitness Level of Female College Students in Guizhou and Taiwan

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ABSTRACT. *Objective: By comparing the differences in physical fitness between female college students in Guizhou and Taiwan, the differences in physical examination programs between college students in Taiwan and Guizhou and whether there are differences in physical health of college students across the Taiwan Strait under different management systems, teaching models and lifestyles, Is there any place worth learning. Method: Randomly sample female students from a university in Taiwan and female students from a certain area in Guizhou for physical fitness measurement SPSS26.0 software was used for descriptive analysis and independent sample test deal with. Result: (1) The height and weight of Guizhou female college students are lower than those of female college students in Taiwan. (2) The female college students in Taiwan who sit forward and bend forward are higher than the female college students in Guizhou. The sit-ups and long jumps of female college students in Guizhou are significantly higher than those in Taiwan. (3) BMI is in the normal range of WHO and Asia. Conclusion: (1) In the level of economic development, the height and weight of Taiwanese female college students in economically developed areas and the flexion of sitting position are better than those of Guizhou female college students in economically underdeveloped areas. (2) Guizhou female college students are significantly better than Taiwanese female college students in explosive force and endurance of lower limbs.*

KEYWORDS: Guizhou female college students, Taiwan female college students, physical fitness

1. Introduction

After the Ninth General Election in 2018, on the basis of the "92 Consensus" on both sides of the Taiwan Straits, the exchanges between Taiwan and the mainland have been strengthened and deepened. A large portion of Taiwan residents moved from the mainland to develop. The customs and habits of the mainland have been exchanged and integrated with the compatriots on both sides of the strait. Being strong in juveniles is strong in nations, and the physical fitness of contemporary college students is the content that the current society must pay attention to. Under the different management systems, teaching models and lifestyles of college students in Taiwan and Guizhou, are there differences in the physical fitness of college students across the Taiwan Strait? What is worth learning from each other? It is the subject of research needs of the sports industry in Guizhou and Taiwan. This article intends to compare the results of a number of comparable project tests on the physical health (fitness) of college students in Guizhou and Taiwan, to understand the differences in physical health (fitness) of college students across the Taiwan Straits.

2. Research objects and research methods

2.1 Research object

Randomly selected 5,969 female college students in a certain area of Guizhou; 1,539 female college students in a certain area of Taiwan were studied. In 2018, a comparative analysis of the physical health test results of female college students in a certain area of Guizhou Province and the physical health data of female college students in a certain area of Taiwan was conducted.

2.2 Research methods

2.2.1 Document Method

Check the literature to understand the physical fitness status and test items of college students in Taiwan, and find similarities and differences with the physical health measurement in the mainland.

2.2.2 Experimental method

To test the physical fitness indexes of female college students in a certain area of Guizhou, choose height, weight, forward flexion, standing long jump, one-minute sit-ups, BMI. At the same time, take the opportunity of studying and communicating in Taiwan to participate in the fitness test of female college students in a certain area of Taiwan to obtain experimental data.

2.2.3 Mathematical Statistics

Use excel to establish a database and screen and analyze the data. The statistical results are expressed in $X \pm S$. SPSS26.0 is used to conduct independent sample T test on the measured data of students in Taiwan and Guizhou. The significance level is $P < 0.05$, and the very significant level is $P < 0.01$.

3. Explanation of physical fitness

According to the definition of the World Health Organization: physical fitness is the ability to be energetic and perform daily tasks in an alert state, without feeling excessively tired, and still have the ability to enjoy leisure life and cope with unexpected situations[1]. Scholars from various regions have put forward many opinions on the definition of physical health, and there are different interpretations based on the different policies in each region. The Germans call it "Physical aptitude" and the French call it "Physical aptitude"[2], Japanese called "physical strength"[3], Physical Fitness in Taiwan [4], in mainland China, it is customary to call it "physical health".

3.1 Differences in definitions and policies between Guizhou and Taiwan

3.1.1 Definition and Policy of Physical Health in Mainland China

The National Student Physical Health Standard (Revised in 2014) refers to the latest revised National Student Physical Health Standard published by the Ministry of Education on July 18, 2014. Students are only eligible to participate in merit evaluation and awards if their physical fitness scores are good or better.

The connotation of "National Student Physical Health Standard" is the evaluation standard for measuring the physical health status and exercise effect of students. It is the basic requirement of the state for the physical health of students of different ages and the individual evaluation standard for the physical health of students. The concept of health includes physical health, mental health and social adaptation. "National Student Physical Health Standard" covers the physical health of students closely related to school physical education. In order to define its connotation and avoid confusion with the three-dimensional concept of health, "physique" is used as the attributive of "health" to show its connotation.

3.1.2 China National Physical Health Test Project

Table 1 List of physical fitness test items for Taiwan students

junior high school		Sit forward, throw a solid ball, sit ups (female)
High school	Height, weight, vital capacity index	1000M running (male), 800M (female), boarding test

University grades		50M running, standing long jump, vital capacity, height and weight, 1000M running (male), 800M (female)
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3.1.3 Definition and policies of physical health in Taiwan, China

Taiwan's concept of physique originated in the United States, and it is called physical fitness, which is defined as the body's comprehensive ability to adapt to life, movement, and the environment. People with better physical fitness have better vitality and adaptability in daily life or work, engaging in physical activities or sports, and are less prone to fatigue or feelings of incompetence. The physical education community in Taiwan believes that physical fitness includes two types of physical fitness and physical fitness. The physical fitness testing of Taiwan students is mainly based on healthy physical fitness.

The Taiwan region of China calls physical fitness "physical fitness". According to the definition of the education department in Taiwan, China, physical health can be regarded as: the comprehensive ability to adapt to life, movement and environment (for example; temperature, climate change or virus and other factors).

People with good "physical fitness" have better vitality and adaptability in daily life or work, engaging in physical activities or sports, and will not easily produce feelings of fatigue or powerlessness. In a civilized society with scientific and technological progress, opportunities for human physical activity are decreasing, nutrient intake is increasing, work and life pressures and leisure time are relatively increased, and everyone feels the importance of good physical fitness and regular exercise. (Taiwan Education Department, 2013).

3.1.4 Physical fitness test project in Taiwan, China

Table 2 List of physical fitness test items for Taiwan students

	Body composition	Cardiopulmonary endurance	Muscle endurance	Softness	explosive force
Student fitness test	BMI	Male 1600M, Elementary school boys and girls Health 800M	Sit-ups	Sitting forward	Standing long jump

4. Comparative analysis of the physical fitness of female college students in Guizhou and the fitness test of college students in Taiwan

There are some differences between the physical examination programs in the mainland and those in Taiwan, and in some respects. The cardiopulmonary endurance test in the mainland area is 800M for girls and 1600M for boys; the strength and quality are based on 1min sit-ups for girls and pull-ups for boys. There are many reasons for incomparability. For the rigor and comparability of the experiment, the height of the girls on both sides of the strait; weight; forward bending of the sitting position; standing long jump; 1min sit-ups; horizontal comparison of these BMI comparable items.

4.1 Results of horizontal comparison of physical fitness test data of female college students in Guizhou with physical fitness test data of college students in Taiwan

Its physique is the quality of the body, which is static, and physical fitness is the body's ability to adapt and is dynamic. Physique and physical fitness are the relationship between materials and functions. Materials determine the function to a certain extent; physical fitness refers to the body's ability to adapt to factors such as life, sports and the environment. Health refers to the physical, mental and social integrity. The relationship between health and physical fitness is the relationship between state and ability, and ability is determined by state. The "physical health" of the motherland's mainland and the "physical fitness" of Taiwan have a great connection, and there are certain differences.

The physical health monitoring of college students in Guizhou and Taiwan is difficult to compare directly in terms of project settings, measurement methods, and target requirements. But there are still many comparable projects, methods, and results. This article intends to discuss the setting of Guizhou college students' physical health items, the differences in evaluation methods and standards, and several comparable items.

It can be seen from table 3 that through independent sample t test for the fitness of college girls in a university in Taiwan and a university in Guizhou, it can be seen that the height of female college students in Taiwan is very significantly higher than that of female college students in Guizhou, where $P=0.00$. It can be seen from the comparison of body shape that the height advantage of female college students in Taiwan is better than that of female college students in Guizhou.

The weight of female college students in Taiwan is significantly higher than that of female college students in Guizhou, $P=0.00$. It can be seen that the weight of female college students in Taiwan is higher than that of female college students in Guizhou.

In the comparison of physical fitness, the seated flexion of female college students in Taiwan is significantly higher than that of female college students in Guizhou, where $P=0.00$. It can be known that the flexibility qualities of female college students in Taiwan are superior to Guizhou.

In the comparison of the explosive power of the lower limbs, the standing long jump ability of Guizhou female college students is very significantly higher than that of female college students in Taiwan, where $P=0.00$. It can be concluded that, in terms of physical fitness, the lower limbs are explosive, and the female college students in Guizhou outperform those in Taiwan.

In the sit-ups, the number of sit-ups in Guizhou female college students is very significantly higher than that in Taiwan. Where $P=0.00$. From this, it can be concluded from the comparison of muscular endurance that the female endurance of Guizhou female college students is better than that of female college students in Taiwan.

There is no significant difference in BMI. $P=0.89$.

Table 3 Results of physical fitness test for female college students in Taiwan, Guizhou

project	area	$\bar{x}\pm s$	T	P
Height (cm)	Guizhou	155.6 \pm 5.3	-27.2	.00
	Taiwan	160.0 \pm 5.8		
Weight (kg)	Guizhou	50.6 \pm 6.7	-13.5	.00
	Taiwan	53.5 \pm 10.3**		
Forward flexion (cm)	Guizhou	15.2 \pm 6.0	-72.8	.00
	Taiwan	32.2 \pm 11.2**		
Long jump (cm)	Guizhou	171.0 \pm 15.0**	38.6	.00
	Taiwan	144.2 \pm 40.4		
Sit-ups	Guizhou	35.6 \pm 7.4**	18.2	.00
	Taiwan	30.9 \pm 9.8		
BMI	Guizhou	20.9 \pm 2.5	-0.2	.89
	Taiwan	21.0 \pm 3.9		

Note: **means $P<0.01$

5. Discussion

Female college students in Guizhou generally live in the sub-plateau area, so the comparison of lower limb strength is higher than some areas of the mainland, including Liu Jingmin, etc [4]. In a 2019 study on the characteristics of the physical health of female college students in Capital University, they found that the physical fitness of Capital Women's University is loyal to the lower limbs, explosive neutral jump, and the strength endurance sit-ups are significantly lower than those of female students in Guizhou.

Luo Dongmei et al[5]. According to the comparison of urban and rural students in 2019, the height of students in economically underdeveloped areas is significantly lower than that of students in economically developed areas, suggesting that the physical fitness of students in economically developed areas is slightly higher than that in economically underdeveloped areas.

Comparing the physical data of female college students in Guizhou and Taiwan, it is found that the height and weight of female college students in Guizhou are lower than those of female college students in Taiwan. Among the flexible qualities, the test scores of female college students in Taiwan are higher than those of female college students in Guizhou. Muscle endurance and lower extremity explosive force in Guizhou female college students are significantly higher than those in Taiwan. There is no obvious difference in the comparison of BMI, which is between the normal range of WHO standards and Asian standards between 18.5-25 and 18.5-23.

6. Conclusion

(1) In the level of economic development, the height and weight of Taiwanese female college students in economically developed areas and the forward flexion of sitting position are better than those of Guizhou female college students in economically underdeveloped areas.

(2) Guizhou female college students are significantly better than Taiwanese college girls in lower limb explosiveness and muscle endurance.

(3) There is no obvious difference in the comparison of BMI. The BMI of female college students in Guizhou and Taiwan is within the normal range of WHO and Asia.

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