

# Research on the Artificial Intelligence Attribution Analysis and the Reasons for Decline of Physical Fitness of College Students in the Tropical Area under the Background of "Sunshine Sports"

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**Abstract.** In 2010, the research team conducted a survey on the physical quality of 1600 college students in Hainan Province, and analyzed the changes in the physical quality of college students in Hainan from 2000 to 2010, and learned about the impact of sunshine sports on the physical quality of college students in Hainan Province. Based on this, a targeted intervention was proposed, which can provide reference for the sports workers and decision-makers in Hainan Province and improve the physical quality of students.

"Sunshine Sports" is an important part of school sports. It is an important measure to enhance students' physical fitness, mental health, and overall development of school sports. Physical fitness is a comprehensive reflection of the functions of various organ systems in the muscle work. It is potentially manifested in people's lives, learning and labor, which is more prominent in physical exercise. Therefore, the study on the effectiveness of sunshine sports on the improvement of college students' physique health level has important practical significance for improving the physique health level of college students and cultivating more outstanding talents and the realization of "Chinese dream" for the socialist modernization of the motherland.

## 1 Research objects and methods

### 1.1 Research objects

Select Hainan Province students' physical fitness research points 1600 students aged 19~22 of Hainan Normal University, 100 males, males, urban women and females in each age group.

### 1.2 Research methods

**Investigation method:** According to the requirements of the "National Student Physical Health Survey and Research Rules", organize professionals to measure the 50 m running, standing long jump, grip strength, sitting body flexion and endurance quality of each subject and other 5 physical qualities.

**Mathematical statistics method:** statistical analysis of the data obtained by the survey using software such as SPSS18.0 and Excel 2003, which are widely used in the international social science statistical software.

## 2 Research results and analysis

### 2.1 Comparison of urban and rural areas and age differences of Hainan college students in 2010

#### 2.1.1 Speed quality

**Table 1.** Comparison of 50-meter running results of urban and rural college students in Hainan Province in 2010.

(sex)	(age)	(town)			(rural)			P
		(Number of samples)	(Average)	(Standard deviation)	(Number of samples)	(Average)	(Standard deviation)	
(male)	19	100	8.13	0.73	100	8.20	0.74	>0.05
	20	100	8.39	0.72	100	7.81	0.8	>0.05
	21	100	9.09	0.68	100	7.65	1	<0.05
	22	100	7.54	0.9	100	7.40	0.9	>0.05

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	19~22	400	8.29	0.76	400	7.77	0.86	<0.01
(female)	19	100	9.27	1.4	100	10.42	1.9	<0.01
	20	100	9.68	1.3	100	9.63	1.2	>0.05
	21	100	9.30	0.6	100	9.28	1	>0.05
	22	100	10.47	1.1	100	9.47	0.8	<0.01
	19~22	400	9.68	1.1	400	9.70	1.23	>0.05

It can be seen from Table 1 that the average value of 50m running in rural boys is less than the mean of urban boys. After U test, the difference of 21 years old is significant ( $P<0.05$ ), and the difference of other age groups is not significant ( $P<0.05$ ). The average value of urban girls and rural girls is 50 meters, the difference of 19 years old

was significant ( $P<0.05$ ), the difference of 22 years old was highly significant ( $P>0.01$ ), and the difference of other age groups was not significant ( $P>0.05$ ).

### 2.1.2 Strength quality

**Table 2.** Comparison of strengths of urban and rural college students in Hainan Province in 2010.

(index)	(sex)	(age)	(urban)			(rural)			P
			(sample)	(average)	(Standard deviation)	(sample)	(average)	(Standard deviation)	
(Standing long jump)	(male)	19	100	227.31	20.2	100	229.99	20.5	>0.05
		20	100	225.83	24.9	100	221.4	31.8	>0.05
		21	100	218.94	29	100	226.12	16.9	<0.05
		22	100	222.72	23.8	100	230.3	16.6	<0.01
		19~22	400	223.7	24.5	400	226.95	21.5	<0.05
	(female)	19	100	170.94	15.6	100	171.09	15.9	<0.05
		20	100	170.41	19.9	100	170.78	14.9	>0.05
		21	100	169.98	12.7	100	171.98	15.6	>0.05
		22	100	170.44	20.4	100	171.28	16.5	>0.05
		19~22	400	169.23	17.2	400	171.15	15.7	>0.05
(Grip)	(male)	19	100	46.06	6.4	100	40.22	8.2	<0.01
		20	100	44.61	8	100	43.22	7.3	>0.05
		21	100	43.94	7.4	100	43.16	8.4	>0.05
		22	100	45.85	7	100	44.95	6.2	>0.05
		19~22	400	45.12	7.2	400	42.89	7.6	<0.01
	(female)	19	100	26.23	4.4	100	27.67	5.7	<0.05
		20	100	26.82	7.1	100	26.29	6.7	>0.05
		21	100	25.93	5	100	26.42	5.9	>0.05
		22	100	25.92	7.5	100	27.95	8.8	>0.05
		19~22	400	26.22	6	400	27.08	6.8	>0.05

It can be seen from Table 2. In terms of standing long jump indicators, the average value of urban boys is smaller than that of rural boys, and the performance of males is better than that of urban males. After U test, the difference of 21 years old is significant ( $P<0.05$ ). 22 years old was highly significant ( $P<0.01$ ), and the difference between the 19 and 20 age groups was not

significant ( $P>0.05$ ). As far as the grip index is concerned, the average value of urban boys is higher than that of rural boys. According to U test, the difference of 19 years old is highly significant ( $P<0.01$ ), and the urban-rural difference of 20-22 years is not significant ( $P>0.05$ ).

### 2.1.3 Endurance quality

**Table 3.** Comparison of 1000m/800m results of urban and rural college students in Hainan Province.

sex	age	urban			rural			P
		sample	average	Standard deviation	sample	average	Standard deviation	
male	19	100	251.48	29.1	100	250.26	28.5	>0.05
	20	100	247.51	29.8	100	250.42	26	>0.05
	21	100	279.78	30	100	259.88	38.4	<0.01
	22	100	261.19	35.2	100	254.75	30.5	>0.05

	19~22	400	259.99	31.1	400	253.83	30.9	<0.01
female	19	100	226.79	52.8	100	245.34	22.2	<0.01
	20	100	251.86	22.3	100	248.43	23.5	>0.05
	21	100	252.47	26.8	100	246.60	26	>0.05
	22	100	251.34	23.1	100	248.54	23.3	>0.05
	19~22	400	245.62	31.3	400	247.23	23.8	>0.05

It can be seen from Table 3 that the average value of urban male students running 1000 meters is higher than that of rural male students. The results of rural male students are better than urban male students. According to the U test, except for the urban-rural difference of 20 years old, the difference between urban and rural areas is highly significant ( $P < 0.01$ ). The age group was not significant ( $P > 0.05$ ). The average value of urban girls'

800-meter running is lower than that of rural boys. Urban girls' cities are better than rural girls. According to U-test, except for the 19-year-old urban-rural difference ( $P < 0.01$ ), the other age groups are not significant ( $P > 0.05$ ).

### 2.1.4 Flexibility

**Table 4.** Comparison of the positional flexion index of urban and rural college students in Hainan Province.

sex	age	urban			rural			P
		sample	average	Standard deviation	sample	average	Standard deviation	
male	19	100	14.56	6.6	100	14.67	6.4	>0.05
	20	100	11.67	6	100	12.27	6.2	>0.05
	21	100	16.65	6.3	100	14.68	6.6	<0.05
	22	100	12.23	8	100	13.75	5.5	>0.05
	19~22	400	13.78	6.7	100	13.85	6.2	>0.05
female	19	100	17.28	5.9	100	18.67	5.5	>0.05
	20	100	15.89	5.6	100	16.19	5.6	>0.05
	21	100	15.21	5.8	100	16.43	4.9	>0.05
	22	100	17.66	5.2	100	16.36	5.6	>0.05
	19~22	400	16.83	5.6	100	16.93	5.4	>0.05

As shown in Table 4, the average value of urban boys is lower than that of rural boys. According to the U test, except for the difference between urban and rural areas of 21 years old, the difference between urban and rural areas is highly significant ( $P < 0.01$ ), and the urban-rural differences of other age groups are not significant ( $P > 0.05$ ). The average value of rural girls is higher than that

of urban girls. According to the U test, the differences between the 19-22 age groups are not significant ( $P > 0.05$ ).

### 2.2 Comparative analysis of the physical quality indicators of college students in Hainan Province and similar indicators in 2005 and 2000

**Table 5** Comparison of the Physical Fitness of College Students in Hainan Province from 2000 to 2010.

sex	type	2000 mean	2005 mean	2010 mean	d1	U1	d2	U2
male	50metre	7.17	7.59	8.03	0.42	16.52**	0.44	17.83**
	Standing long jump	251.53	225.1	225.33	-26.43	19.12**	0.23	0.17
	Grip	38.3	40.44	44.05	2.14	5.83**	3.51	10.38**
	1000/800metre	224	250.53	256.91	26.53	16.47**	6.38	4.02**
	Sitting body flexion	13.3	14.53	13.82	1.23	4.35**	-0.71	2.14*
female	50metre	8.58	9.7	9.69	1.12	30.67**	0.01	0.28
	Standing long jump	191.13	165.34	170.19	-25.79	26.18**	4.85	5.54**
	Grip	24.77	24.78	26.65	0.01	0.04	1.87	6.75**
	1000/800metre	223.12	258.35	246.43	35.23	20.98**	-11.92	7.84**
	Sitting body flexion	15.4	16.6	16.88	1.2	4.87**	0.28	1.03

Note:\*\* refers to  $P < 0.01$ ; \*refers to  $P < 0.05$ ; D1 is the difference between 2005 and 2000; d2 is the difference between 2010 and 2005

Through the development trend of Hainan college students' physical fitness from 2000 to 2010, it can be seen that the male students' 50-meter performance has decreased year by year, male and female college students have set a long-term decline in the first five years. The annual increase, and the increase of female students is more obvious; the male and female grip strength indicators are increasing year by year, the male students' 1000 meters index is decreasing year by year, but the decline in the next five years is lower than the previous five years, girls The 800-meter indicator rose five years after the decline in the previous five years; the male seated flexion index fell five years after the five-year increase, and the female student increased year by year, but the increase in the next five years was significantly less than the previous five years.

### **3 Intervention strategies and conclusions**

#### **3.1 Intervention strategy**

**3.1.1** In implementing the spirit of the document, all colleges and universities should seek truth from facts and adapt to local conditions. According to the actual situation faced in their own school sports work, they should do a good job in physical education classroom teaching. At the same time, we will actively promote extracurricular sports activities for students, and regularly carry out sports and sports activities such as sports festivals and sports games.

**3.1.2** "School sports work should take "National Hundreds of Million Students Sunshine Sports" as a breakthrough in the development and innovation of school sports work and the support of students' physical fitness test, and actively promote students through the Sunshine Sports series activities. "Sports is happiness, life is sports" awareness. Let students enjoy the sports

activities that can bring happiness in life and actively participate in physical exercise, so that the call of "exercising one hour a day, healthy work for fifty years, and a happy life for a lifetime" becomes a kind of student learning life. Health awareness guide.

**3.1.3** The teaching content of college physical education curriculum should meet the diversified needs of students, and actively promote the "three independent" teaching forms of students' self-selected curriculum content, teaching teachers and teaching time. Encourage students to participate in physical exercise, develop a good attitude of physical exercise and consciously participate in physical exercise, and establish a "health first" lifelong sports concept.

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