

Analysis of Physical Fitness Test Results of Male Students in Yunnan Small Mountain Agricultural University

Xiang Zeng, Jun Wang and Jing Yang*

College of Physical Education, Yunnan Agricultural University, Kunming 650201, Yunnan, China

*corresponding author

Keywords: Yunnan Agricultural University; Mountainous Area; Boys of Minority Nationalities; Physical Health Test Results

Abstract: The research on students' physique is inevitable, which is related to the development of a country. At present, there is less research on the physique of minority male college students in our country. We need to continue to increase the research on the physique of minority students, so as to provide an effective basis for schools in minority areas to carry out corresponding courses and training, and promote the new process of the research on the physique of minority in our country. Jingpo, Achang and Bulang Ethnic groups are mainly distributed in the border areas of China and Myanmar in the West and southwest of Yunnan Province, with an average altitude of about 1500 meters and a subtropical mountain climate. In order to further understand the physical health status and changes of Jingpo, Bulang and Achang, this paper uses the methods of literature review, comparative analysis, logical analysis and mathematical statistics to analyze the physical health test results of 276 Jingpo, Bulang and Achang male students in Yunnan Agricultural University from 2016 to 2019 by SPSS and excel. The purpose of this study is to provide the basis for the research on the physique of male minority college students in China.

According to the main data of the sixth national census of Yunnan Province in 2010, the population of ethnic minorities is 15.337 million, accounting for 33.37% of the total population. Yunnan is the province with the largest number of ethnic groups and unique ethnic groups in China. There are 25 ethnic minorities in Yunnan, which belong to the local unique: Bai, Hani, Dai, Lisu, Lahu, WA, Naxi, Jingpo, Bulang, Achang, Pumi, Nu, Jinuo, De'ang and Dulong [1]. Based on the analysis of geographical location, climate, altitude and other factors, this paper selects Jingpo, Bulang and Achang as the research objects. The quality of College Students' physique plays an important role in the process of China's modernization and the prosperity of the country. The quality of teenagers' physical health is closely related to the strength of the country and the rise and fall of the nation [2].

1 Research Objects and Methods

1.1 Research Object

This paper takes the undergraduate students of Jingpo, Bulang and Achang nationalities in Yunnan Agricultural University as the research objects.

Table 1. Annual population of Jingpo, Bulang and Achang

Year \ Nationality	Jingpo	Bulang	Achang
2016	14	35	28
2017	17	34	19
2018	21	28	18
2019	23	20	19

1.2 Research Methods

1.2.1 Literature Method

With the keywords of "college students", "physical health", "mountain areas", "ethnic minorities", "Jingpo", "Bulang" and "Achang" as the key words, through CNKI, XUEXITONG, famous thesis stations, campus library and E-reading room, we can access the master's degree, academic journals and conference materials related to this research, so as to provide theoretical basis and reference for the paper [3].

1.2.2 Mathematical Statistics

Using the data collected from the physical health test of Undergraduates in Yunnan Agricultural University, using Excel and SPSS 19.0 software, the physical health test data of Jingpo, Bulang and Achang students in Yunnan Agricultural University in 2016-2019 academic year were collected, summarized, analyzed and sorted out from eight items: BIM, vital capacity, sitting forward bending, standing long jump, pull-up, 50m and 1000m.

1.2.3 Logical Analysis

Based on the data of each year of 2015-2016, this paper analyzes the reasons for the problems of students' Physique of eight ethnic groups in Yunnan Province [4].

2 Comparative Analysis of Physical Health Test Results of Jingpo, Bulang and Achang Boys in Yunnan Agricultural University from 2016 to 2019

2.1 Analysis of Physical Health Test Results of Jingpo, Bulang and Achang Boys in 2016 Academic Year

There are eight items in the physical health test: height, weight, vital capacity, standing long jump, sitting forward, 50m, pull-up and 1000m.

The following results can be obtained from table 1: (1) the vital capacity (P value) of Blang nationality and Achang Nationality is $0.014 < 0.05$, which indicates that there is a significant difference in the vital capacity test between Blang nationality and Achang Nationality, that is, Achang Nationality is better than Jingpo nationality, Jingpo nationality is better than Blang nationality. (2) The results show that there is a significant difference in standing long jump test between Bulang and Achang, that is, Achang and Jingpo are better than Bulang. (3) The results showed that there was a significant difference between Jingpo and Bulang in the test of sitting body flexion ($P = 0.015 < 0.05$), that is, Jingpo was better than Achang and Achang was better than Bulang.

The reasons for this phenomenon may be: (1) Achang students insist on physical exercise for a long time, and the chest bone and ventilator are improved. (2) The strength of Bulang students is weaker than that of Jingpo and Achang, and the coordination of upper and lower limbs is uneven. (3) In the static state, the activities of trunk, waist, hip and other joints of Bulang Nationality Students are small, and the extensiveness, elasticity and softness of body joints, ligaments and muscles are poor. There was no significant difference in height, weight, sitting forward, 50m, pull-up and 1000m items ($P > 0.05$) in the physical health test of boys in 2016 academic year, indicating that the level was similar [5].

2.2 Analysis of Physical Health Test Results of Jingpo, Bulang and Achang Boys in 2017 Academic Year

It can be seen from table 2 that (1) Jingpo and Bulang standing long jump (P value) = $0.026 < 0.05$, Bulang and Achang (P value) = $0.022 < 0.05$, indicating that there are significant differences in standing long jump test between Jingpo and Bulang, Bulang and Achang; that is, Jingpo is better than Achang, Achang is better than Bulang. (2) The difference between Jingpo and Bulang in 1000 meters ($P = 0.025 < 0.05$) indicates that there is a significant difference between Jingpo and Bulang in 1000 meters, that is, Jingpo is better than Achang, Achang is better than Bulang [6].

This phenomenon may be due to (1) the non-standard jumping ability, fast jumping ability and

action of Bulang Nationality Students. (2) The number of male students of Bulang Nationality who smoke is higher than that of students of Achang and Jingpo nationalities. The toxin in cigarette paralyzes the central nervous system, reduces the function of cerebral cortex, and can't direct the swing of two legs to increase the frequency, which leads to the decline of running performance.

There was no significant difference in height, weight, 50m, standing long jump, sitting forward, pull-up items of boys' physical health test in 2017 academic year ($P > 0.05$).

Table 2. Comparison of physical health test results of male students in Yunnan Agricultural University in 2017 academic year

Subject	Nationality(Mean±SD)		T	P
Tall	Jingpo(168±9.5)	Bulang(167±7.5)	2.342	0.697
	Jingpo	Achang(171±6.7)	2.632	0.401
	Bulang	Achang	2.259	0.169
Weight	Jingpo(63±8.7)	Bulang(65±13.9)	3.736	0.544
	Jingpo	Achang(68±12.8)	4.199	0.177
	Bulang	Achang	3.603	0.343
vital capacity	Jingpo(3969±514)	Bulang(3963±784)	221.211	0.979
	Jingpo	Achang(4038±836)	248.62	0.781
	Bulang	Achang	213.308	0.725
50 meters	Jingpo(7.1±0.64)	Bulang(7.2±0.47)	0.1689	0.677
	Jingpo	Achang(7.1±0.65)	0.1898	0.979
	Bulang	Achangh	0.1628	0.688
Standing long jump	Jingpo(233.7±13.4)	Bulang(220±19.9)	6.017	0.026
	Jingpo	Achang(233.7±25.1)	6.763	0.997
	Bulang	Achang	5.802	0.022
Sitting forward	Jingpo(13.5±5.3)	Bulang(13.3±6.1)	1.712	0.909
	Jingpo	Achang(12.8±5.3)	1.9242	0.705
	Bulang	Achang	1.6509	0.747
1000meters	Jingpo(3.6±0.39)	Bualng(3.9±0.57)	0.15503	0.025
	Jingpo	Achang(3.7±0.51)	0.17424	0.33
	Bulang	Achang	0.14949	0.224
Pull up	Jingpo(12±5.8)	Bulang(9.9±7.3)	1.861	0.228
	Jingpo	Achang(9.4±.2)	2.092	0.192
	Bulang	Achang	1.795	0.785

*. The significance level of mean difference was 0.05.

2.3 Analysis of Physical Health Test Results of Jingpo, Bulang and Achang Boys in 2018 Academic Year

It can be seen from table 3 that Jingpo and Bulang nationalities are 1000 meters (P value) = $0.001 < 0.01$, Bulang and Achang NATIONALITIES (P value) = $0.009 < 0.01$, indicating that Jingpo, Bulang and Achang nationalities have very significant differences in 1000 meter test; that is, Jingpo is better than Achang, Achang is better than Bulang.

Through the interview, we know that the number of male students of Bulang Nationality smoking is higher than that of students of Achang and Jingpo nationalities. The toxin in cigarette paralyzes the central nervous system, reduces the function of cerebral cortex, and cannot direct the swing of two legs to increase the frequency, which leads to the decline of running performance [7].

There was no significant difference in height, weight, vital capacity, 50m, standing long jump, sitting forward bending and pull-up items of boys' physical health test in 2018 academic year ($P > 0.05$).

Table 3. Comparison of physical health test results of male students in Yunnan Agricultural University in 2018 academic year

Subject	Nationality(Mean±SD)		T	P
Tall	Jingpo(168±6.7)	Bulang(168±8)	2.111	0.684
	Jingpo	Achang(171±6.9)	2.349	0.125
	Bulang	Achang	2.209	0.211
Weight	Jingpo(63±11.2)	Bulang(66±14.4)	3.745	0.438
	Jingpo	Achang(67±12.4)	4.167	0.32
	Bulang	Achang	3.92	0.751
Vital Capacity	Jingpo(3787±605)	Bulang(4085±794.3)	214.361	0.17
	Jingpo	Achang(4066±801.9)	238.518	0.246
	Bulang	Achang	224.336	0.934
50meters	Jingpo(7±0.64)	Bulang(7.1±0.44)	0.1484	0.593
	Jingpo	Achang(7±0.44)	0.1651	0.962
	Bulang	Achang	0.1553	0.645
Standing long jump	Jingpo(244.6±23.4)	Bulang(226±17.7)	6.464	0.736
	Jingpo	Achang(237.3±27.1)	7.192	0.712
	Bulang	Achang	6.764	0.944
Sitting forward	Jingpo(14.3±6.4)	Bulang(13.3±5.8)	1.6821	0.581
	Jingpo	Achang(13.2±5)	1.8717	0.58
	Bulang	Achang	1.7604	0.95
1000 meters	Jingpo(3.6±0.46)	Bulang(4±0.42)	0.12379	0.001
	Jingpo	Achang(3.7±0.38)	0.13775	0.582
	Bulang	Achang	0.12956	0.009
Pull up	Jingpo(13±5.6)	Bulang(9.8±8.6)	2.041	0.089
	Jingpo	Achang(9.6±5.6)	2.271	0.107
	Bulang	Achang	2.136	0.929

*. The significance level of mean difference was 0.05.

2.4 Analysis of Physical Health Test Results of Jingpo, Bulang and Achang Boys in 2019 Academic Year

It can be seen from the 4 tables that the pull-up test of Jingpo and Achang NATIONALITIES (P value) = 0.043 < 0.05, which shows that there is a significant difference between Jingpo and buachang nationalities, that is, Jingpo is better than Bulang, Bulang is better than Achang.

This phenomenon may be due to the lack of back, shoulder, arm muscle exercise and weak upper limb strength of Achang students [8].

There was no significant difference in height, weight, vital capacity, 50 meters, standing long jump, sitting forward and 1000 meters between boys in the 2019 academic year, indicating that the level was similar.

Table 4. Comparison of physical health test results of boys in Yunnan Agricultural University in 2019 academic year

Subject	Nationality(Mean±SD)		T	P
Tall	Jingpo(170±6.9)	Bulang(170±7.9)	2.251	0.719
	Jingpo	Achang(172±7.1)	2.282	0.322
	Bulang	Achang	2.359	0.536

	Jingpo(63±8.1)	Bulang(63.7±10)	3.073	0.821
Weight	Jingpo	Achang(67.3±11)	3.116	0.166
	Bulang	Achang	3.219	0.259
	Jingpo(3783±657)	Bulang(3393±1116)	241.444	0.112
Vital capacity	Jingpo	Achang(3798±448)	244.819	0.951
	Bulang	Achang	252.989	0.115
	Jingpo(7.1±0.49)	Bulang(7.3±0.33)	0.1439	0.108
50meters	Jingpo	Achang(7.3±0.55)	0.146	0.123
	Bulang	Achang	0.1508	0.964
	Jingpo(231±20)	Bulang(219±22.4)	6.668	0.062
Standing long jump	Jingpo	Achang(227.8±22.4)	6.762	0.576
	Bulang	Achang	6.987	0.208
	Jingpo(14.9±5.9)	Bulang(11.7±7.3)	1.8856	0.095
Sitting forward	Jingpo	Achang(12.5±4.9)	1.9119	0.217
	Bulang	Achang	1.9758	0.68
	Jingpo(4±0.57)	Bulang(4.3±0.5)	0.16709	0.109
1000meters	Jingpo	Achang(4.1±0.56)	0.16943	0.429
	Bulang	Achang	0.17508	0.436
	Jingpo(10±5.5)	Bulang(9.1±7.9)	1.9	0.394
Pull up	Jingpo	Achang(6.7±4.6)	1.926	0.043
	Bulang	Achang	1.99	0.24

*. The significance level of mean difference was 0.05.

2.5 Change Trend of the General Evaluation Results of Physical Health Test of Jingpo, Bulang and Achang Boys in Yunnan Agricultural University from 2016 to 2019

There are four grades in physical health test: outstanding, fine, pass and fail, that is, the pass rate is the sum of excellent rate, good rate and pass rate. As can be seen from Figure 1, in the 2016-2019 school year physical health test, the overall performance of Jingpo students is higher than that of Bulang and Achang students.

Through comparison, it is found that the qualified rate of Achang students in 2016 academic year is higher than that of Jingpo and Bulang students; the qualified rate of Jingpo students in 2017 academic year is the best among the three nationalities in four years, as high as 100%; the excellent rate of the three nationalities in 2018 academic year is 0%; the failure rate of Achang students in 2019 academic year is as high as 26.3%; the excellent rate of Achang students in four years is 0%.

3. Conclusion and Suggestion

3.1 Conclusion

3.1.1 In 2016-2019 academic year, Jingpo is better than Bulang, and Bulang is better than Achang.

3.1.2 Jingpo students are better than Bulang and Achang students in lower limb strength, core strength and endurance.

3.1.3 The cardiopulmonary function of Achang students is better than that of Bulang and Jingpo students.

3.1.4 The waist and abdomen strength of Bulang students is better than that of Jingpo and Achang students.

3.1.5 The passing rate of Bulang and Achang students in 2017-2019 academic year shows a downward trend, while Jingpo students show an upward trend.

3.2 Suggestion

3.2.1 Strengthen the physical health test of minority students.

3.2.2 Strengthen the guidance of students' after-school exercise, let students understand the importance of physical exercise to health, strengthen the motivation of students' active exercise, form lasting exercise, improve physique.

3.2.3 To improve the physical health performance level of Jingpo, Achang and Bulang students, to strengthen the exercise intensity of Achang and Bulang students within the appropriate range, focusing on strengthening the exercise of lower limb strength, core strength, softness and endurance strength; to strengthen the exercise of core strength, lower limb strength and cardiopulmonary function of Achang and Bulang students; to strengthen the strength training of Jingpo.

3.2.4 Therefore, it is necessary to carry out scientific exercises to reduce the lack of national fitness.

Acknowledgements

Fund Project: general project of National Social Science Foundation of China "Research on the development of sports culture space of ethnic festivals in Southwest China" (19bty038)

References

- [1] Main data bulletin of the sixth national census of Yunnan Province in 2016,2016
- [2] Xiangcheng, Q. (2017). Research on the data of physical health test in China University of mining and technology, Master's thesis of China University of mining and technology.
- [3] Ruiguang, J. (2015). New Curriculum: Research status and future prospects of minority students' physique, [J], 2015, 000(005):P.22-.
- [4] Yang, A.& Hongyuan, G.(2017), Health Vocational Education: Investigation and Analysis on the physical health status of Tibetan, Hui and Dongxiang college students and Han college students in Gansu Province, [J], 2017,35(06):98-99.
- [5] Chun, Z.& Chang, G.(2020), Modern Communication: The content and significance of College Students' physical health test, [J], 2020(03):155+154.
- [6] Jinxia, C.& Quiyue, T.(2019), Journal of Xichang University(Natural Science Edition): Analysis of College Students' physical health test results -- Taking Wuyi University as an example, [J], 2019,33(04):84-88.
- [7]Yuke, Q.(2020), Comparative study on physical health of Tibetan and Han students in Northwest University for Nationalities, [D], NORTHWEST UNIVERSITY FOR NATIONALITIES.
- [8] Tianxue, L.& Guozhong, L.(2020), Physical condition of middle school students of four ethnic minorities in Yunnan Province, [J], 2020,41(04):558-562.