ANOVA on College Students' Physical Fitness

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Abstract. Through a sampling survey of the results of the physical fitness test of the students of Guilin Institute of Aerospace Industry in 2018, using the analysis of variance research method, the five variable indicators of the physical fitness of the surveyed students were analyzed, and the changes in the physical fitness of the students during the three years of university were studied. The test results show that during college, the physical fitness of students has been increasing year by year, but the growth rate has been declining, and the difference in physical fitness is mainly due to the changes in their own high body mass index and vital capacity body mass index, and the endurance quality of students has not improved much. The analysis results show that the improvement of college students' physical fitness can be regarded as a recovery from poor physical fitness in high school. Therefore, there is still greater potential and room for improving the physical fitness of college students.

Keywords: college students, physical fitness, difference, ANOVA

1. Introduction

As a group representing the future of the country, college students have long been concerned about their health. Scholars such as Luo Xu[1] and other scholars pointed out that in recent years, the results of student physical fitness tests show that the physical fitness of college students is declining and has an accelerated decline; scholar Huang Yong[2] analyzed the physical fitness of a sample of college students for four years. The difference analysis of individual test indicators shows that different BMI levels have different effects on the improvement of students' physical fitness. The article takes the analysis of the overall difference in physical fitness between different grades of college students as the starting point, finds out the main factors that cause the significant differences in physical fitness between grades, and gives the trend of physical fitness changes during college, in order to further improve physical education and improve the physical fitness of college students for reference.

2. Research objects and methods

2.1. Research objects

Taking the students of the Guilin Institute of Aerospace Engineering in 2018 as the research object, using the stratified random sampling method, 300 students were selected, 150 men and women each. Male and female students are divided into three groups, each with 50 students.

2.2. Selection of research indicators

According to the requirements of the National Student Physical Fitness and Health Standards for college students and combined with the actual situation of Guihang physical measurement indicators, select height, weight, vital capacity, 50-meter run, 1000-meter run (male), 800-meter run (female), pull-ups (Male) and one-minute sit-ups (female) were used as research indicators.

3. Difference Analysis

Based on the basic principle of multivariate variance, first make a descriptive analysis of the obtained data. The analysis shows that there are big differences in vital capacity and body mass index between boys and girls in different groups; in D50 meters, there is little difference between boys and girls in different groups; the average values of various test indicators between the groups are generally increasing (boys D1000 Exceptions for grades).

Second, preprocess the data. It includes four aspects: correlation test between variables, normality test of variables, homogeneity test of variance and homogeneity test of covariance matrix. Through testing, we can see that the correlation between variables meets the conditions of multivariate analysis of variance; all variable indicators meet normality; each variable indicator of college boys and girls meets the assumption of homogeneity of variance; the covariance matrix of college boys and girls There is no significant difference between the two, and there is no violation of the hypothesis. Multivariate analysis of variance can be performed.
Third, use SPSS20.0 software to perform multivariate analysis of variance. The analysis results show that in the linear combination of five variable indicators such as height and body mass index, there are significant differences between college boys and college girls in different grades.

4. Conclusion

The physical fitness of males and females during the university period is developing in a good direction; at the same time, the growth rate of the average physical fitness indicators of freshmen and sophomores is significantly greater than that of sophomores and juniors. This result shows that the physical fitness of the students in the first two years of college improved rapidly, and the physical fitness of the following year showed a slow improvement.

The main indicators that cause the difference in physical fitness between different grades of the boys group are vital capacity and body mass index, height and body mass index, and D50 meter run; Sit-ups for minutes. On the whole, vital capacity and body mass index, height and body mass index are common indicators that cause differences in physical fitness among college students. This is closely related to the weight recovery of students during college and the number of college physical activities (heavy learning tasks in high school, high pressure, and poor execution of physical education classes). In addition, the most important evaluation index in the "National Student Physical Health Standard" is the male 1,000-meter run, Female 800-meter running (this time, D1000-meter running and D800-meter running) is not a weight indicator that causes significant differences in physical fitness of students between different grades. This test result reflects to a certain extent that the improvement of students' physical fitness is only a recovery from poor physical fitness at the high school stage. The physical fitness of college students has much room for improvement.

References