

# RESEARCH ON THE APPLICATION OF MANAGEMENT MODEL BASED ON THE HEALTH AND SPORTS OF COLLEGE STUDENTS

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## ABSTRACT

In order to get a good understanding of the situation of health, sports consciousness and practice, a study on the management of physical exercise is conducted based on the different genders, grades and majors. The related data is obtained through the sampling survey. By using the theories and methods of parameter estimation, hypothesis testing, variance analysis and regression analysis and combining with excel statistical software, a statistical analysis are conducted based on the data of this specific problem. According to the present situation of the college students' physical exercise, the analysis on the influence and factors of the decrease of students' physique is carried out. The new management way, the method and the suggestions are promoted to provide the theory reference for the possibility to improve the enthusiasm to participate in sports of college students.

**Keywords:** *College Students, Physical Exercise, Management Model, Statistical Analysis*

## 1. INTRODUCTION

With the development of technology and the advent of information age, the usage of computer becomes higher and higher in the college students' lives and studies [1-3]. Computer grade examination has adopted as one of the assessment standard, hence students have to spend part of the time on computer learning, besides students usually spend time on online chat, games, etc., thus college students have more chances to use computers[4-7].

If students spend so much time on video games, Internet, TV watching and so on, then their physical health will decline [8-9].

Researches have shown that 16% of the boys spend more than 4 h (reasonable time should be no more than 4 h, with a 15 min rest of the every hour) in front of the computer on learning and entertainment (games) [6-8]. They haven't realized that the VDT will damage their health. The investigation shows that, 42% of the college students will spend 2-4 hours on computer everyday, the time spend on computer of sophomore is longer than that of freshman, and the difference is significant ( $t P < 0.05$ ). This result may be related to the schools' regulations that the freshmen are not allowed to carry computers to school thus the computer using time and frequency are limited[10-15].

### 1.1. The Analysis on the Proportion of the Number of College Students Who Spend More Than 4 Hours on Internet

The moment estimator of the students who spend more than 4 hours on Internet:  $X$  is the college students' online situation,  $X_1, \dots, X_n$  is the sample of  $X \sim B(1, p)$ ,  $X_1, \dots, X_n$  are the observed values.

$$\because X \sim B(1, p)$$

$$\therefore E(X) = p$$

According to the moment method, using the sample moment  $\bar{X}$  to replace the ensemble moment  $E(X)$ , then  $\bar{X} = p$ .

Then the weight value of the moment is:

$$p = \bar{x} = \frac{n1}{n}$$

Based on the date above the weight value of the students who spend more than 4 hours on Internet is 23/100.



**1.2. The Association Analysis on the Relationship of the Genders, Grades and Majors of College Students upon the Computer Capacity and Using Hours**

① The association analysis on the relationship between genders and the computer using hours.

Based on the obtained data above the assumptions are formed:

H0: means gender is not related to computer using time;

H1: means gender is related to computer using time.

If H0 is valid, then

$$\chi^2 = \frac{n(n_{11}n_{22} - n_{12}n_{21})^2}{n_1 \cdot n_2 \cdot n \cdot n}$$

Using the significance level  $\alpha = 0.05$  to check the distributing table, the critical value  $X_{20.05(1)} = 3.81$  is gained. The observed value is  $X^2 = 6.02 > 3.81$ , thus the hypothesis H0 is invalid which means that gender is related to the using time of computer. The computer using time of male students is longer than female students.

② The association analysis on the relationship between grade and computer using time (freshmen and the sophomore).

Based on the obtained data above the assumptions are formed:

H0: means grade is not related to computer using time;

H1: means grade is related to computer using time.

If H0 is valid, then

$$\chi^2 = \frac{n(n_{11}n_{22} - n_{12}n_{21})^2}{n_1 \cdot n_2 \cdot n \cdot n}$$

Using the significance level  $\alpha = 0.05$  to check the distributing table, the critical value  $X_{20.05(1)}$

$= 3.81$  is gained. The observed value is  $X^2 = 4.103 > 3.81$ , thus the hypothesis H0 is invalid which means that grade is related to the using time of computer. Freshmen are not allowed to take computers to school, but when they bring computers to school when they become sophomore.

Overall, we should see all kinds of behaviors which are harm for our health: bad way of work and rest, unhealthy eating way, smoking, drinking, the rising rate of myopia, the lack of exercise, psychological disorder, all kinds of disease of heart head blood-vessel, etc., all of these are seriously threaded to the college students' physical and mental health. We should pay attention to the health strengthen education, carry out the measures to help the students to build up good health behaviors, guide them to develop and set up a healthy, happy way of life. Nowadays health becomes the first need for more and more Chinese. Health is the primary condition for people to survive, adapt to the economic highly developed society. Physical exercise can make up for the modern college students' way of life to get ride of the negative effect of the human body health, physical exercise can adjust students' daily life, improve students' diet, work and rest. However, 100 investigated college students, less than half of them do physical exercise in their spare time [16-19].

**2. THE PURPOSE OF PHYSICAL EXERCISE AND HEALTH CONSCIOUSNESS**

From Table 1, it can be seen that students who do sports for body fitness is more than who do sports for entertainment, sports examination, self-demonstration and collective honor. The fact shows that: the main purpose for independent college students doing sports is body demand but boot the spirit demand not to the needs of the spirit. For most of the university students, health consciousness still stays in the body need level, but a higher level of spiritual needs [9].

Table 1: The purpose of physical exercise for college students

| purpose | entertainment | sports examination | body fitness | self demonstration | collective honor |
|---------|---------------|--------------------|--------------|--------------------|------------------|
| number  | 11            | 8                  | 64           | 12                 | 5                |
| %       | 11            | 8                  | 64           | 12                 | 5                |



**3. TIME FOR PHYSICAL EXERCISE**

PE classes are not included in the time of physical exercise for college students. The time of physical exercise is the guarantee for the results of college students' physical exercise. The results of the survey show that the time for college students to do physical exercise is commonly less, 47% of

them never do physical exercise, 36% of them participate in exercise 1-3 times every week, 20% of them do physical exercise more than 4 times every week, besides the difference between male students and female students is great, the times for female students to do physical exercise is less than that of male students. Details are seen in Table 2 and Table 3.

Table 2: The overall details students to participate in sports

| grade         | Times for physical exercise (PE classes are not included) |        |                    |        |             |        |
|---------------|---|--------|--------------------|--------|-------------|--------|
|               | More than 4 times per week                                |        | 1~3 times per week |        | no exercise |        |
|               | male  | female | male               | female | male        | female |
| freshman      | 4   | 2      | 3                  | 2      | 2           | 4      |
| sophomore     | 5   | 2      | 8                  | 6      | 2           | 8      |
| junior        | 3   | 1      | 4                  | 2      | 5           | 9      |
| senior        | 1   | 1      | 6                  | 2      | 7           | 4      |
| post graduate | 1   | 0      | 2                  | 1      | 1           | 2      |
| total number  | 14  | 6      | 23                 | 13     | 17          | 27     |

Table 3: time for physical exercise of college students per week (PE classes are not included)

| gender | time for physical exercise (PE classes are not included) |           |                  |             |
|--------|--|-----------|------------------|-------------|
|        | at least 30 min  | 0.5-1hour | more than 1 hour | no exercise |
| male   | 15   | 11        | 7                | 13          |
| female | 4  | 9         | 3                | 38          |

The significance analysis of the investigated data is shown in Table 4 (based on Table 2).

Table 4: The significance analysis of the investigated data

| Item           | Participant | Not participant | Total number |
|----------------|-------------|-----------------|--------------|
| Male student   | 37          | 17              | 54           |
| Female student | 19          | 27              | 46           |
| Total number   | 56          | 44              | 100          |

①The moment estimation of the sports participant situation of college students per week:

$X$  is the details of students spend on internet,  $X_1, \dots, X_n$  are the samples of  $X \sim B(1, p)$ ,  $X_1, \dots, X_n$  are the observed values.

$$\therefore X \sim B(1, p)$$

$$\therefore E(X) = p$$

According to the moment method, using the sample moment  $\bar{X}$  to replace the ensemble moment  $E(X)$ , then  $\bar{X} = p$ , the estimator of the

$$p = \bar{x} = \frac{\sum x_i}{n}$$

Based on the above data: moment estimator of the proportion of the students who do physical exercise every day is 56/100. Nearly half of the students participate in sports every week.

②The sports attitude, exercise consciousness and initiative ness of each college student is different, but how about the relationship between gender and physical exercise?

According to the specific problem, the hypotheses are promoted:

H0: means gender is not related to physical exercise; H1: means gender is related to physical exercise. If H0 is valid, then

$$\chi^2 = \frac{n(n_{11}n_{22} - n_{12}n_{21})^2}{n_1 \cdot n_2 \cdot n_{\cdot 1} \cdot n_{\cdot 2}}$$

Using the significance level  $\alpha = 0.05$  to check the distributing table, the critical value  $X_{20.05} (1) = 3.81$  is gained. The observed value is  $X^2 = 4.103 > 3.81$ , thus the hypothesis H0 is invalid; which means that gender is related to physical exercise.

③Based on the correlation of genders and the participant in sports, the analysis on the situation of the proportions of male students and female students is conducted.

Assume that the probability for the male students to do physical exercise is  $p^1$ , the probability for the female students to do physical exercise is  $p^2$

The hypothesis is as follows:

H0:  $p^1 = p^2$ ; H1:  $p^1 \neq p^2$

If H0 is valid, the test statistic

$$U = \frac{\bar{x} - \bar{y}}{\sqrt{\frac{\varpi(1-\varpi)}{n_1} + \frac{\varpi(1-\varpi)}{n_2}}}$$

Then

$$w = \frac{n \hat{p}_1 + n \hat{p}_2}{n_1 + n_2}$$

The significant value  $\alpha = 0.05$ , the critical value  $U_{0.025} = 1.96$ , the rejection region

$$W = \{|u| > 1.96\}.$$

$$\therefore u = 3.72$$

Then the original hypothesis H0 is invalid, which means the proportions of the male and female students who participate in physical exercise are different. The proportion of the male students who participant in physical exercise in higher than of female students, the situation od male students is better than the female students and the difference id significant ( $P < 0.01$ ). This probably because the boys like sports more. In addition, it is also related to female students' physiological and psychological characteristics, such as the change of the physiological period, girls are shy, lack of self-confidence, afraid of dirty, etc., all these factors are directly affect the female students' exercise consciousness, ability to exercise and exercise behavior. Therefore, female students' sports consciousness is needed to improve.

④The significance analysis of the grade factor:

According to Table 3, the exercise times of different grades are different. The freshmen and sophomore students shows an ascendant trend, sophomore students reach the highest point of the exercise times, the number of junior, senior students who take part in physical exercise is significantly reduced, and the proportion of decline. The difference between the freshman and junior is significant ( $p < 0.05$ ). The reasons are: in our college, students' physical education classes are set up in two years, junior and senior students don't have physical education classes. The fact those times for junior and senior students to participate in physical exercise is obviously decreased shows that with the rise of grade and the deeper under standing the higher enthusiasm did not reflected. The health consciousness does not increase along with the extension of the PE classes; it is a pity in the whole college education system.

Hence, the following suggestions are made: strengthening the reform of the curriculum mode, implement 1 hour exercise everyday activities through extending the course, fixing the elective credits, establishing a variety of spontaneous or organized fitness club and so on the different forms, extending the sports in the whole university period, carrying out the sports education in the whole university period.

#### 4. CONCLUSION

In short, it is a complicated engineering system and a long-term and arduous task to improve college students' physical health, improve their

physical and psychological quality, reduce the body disease and mental disease; it requires the collaborative efforts of schools, families, and university students. We should not only conducted a positive publicity both in school and the whole society to cultivate create a good external conditions for the physical and mental health of college students, but also correctly guide students to participate in sports and strengthen the cultivation of characteristic. Only with a healthy body and mind can they devoted themselves into the study and life. Thus, college students can lay a good foundation to become the talented people for the society in the future.

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