Influence Model of Health Effect of Aerobics Exercise for College Students

Donglai Feng¹, Kaixuan Huang², Tao Lan³

¹Shijiazhuang Medical College, Qinhuangdao 050599, China
²Hebei College of Engineering, Qinhuangdao 050091, China
³Hebei Sport University, Tianjing 050041, China

Abstract

Aerobics exercise is a beautiful and healthy sport providing relaxation, fitness and health care, which should be actively promoted in the general course in colleges. However, at present, China’s education fails to conduct an effective analysis of the health effect of aerobic exercise, so the positive health effect has not been effectively extended and developed. Although the aerobics gains popularity, there is no an in-depth investigation of its effect factors. To this end, this study analyzes the levels of participation of Chinese college students in terms of the acrobatic capacity improvement. Meanwhile, the four indicators of health effect of aerobics exercise for the college students are analyzed, and the comprehensive analysis of health self-evaluation of male students and female students is carried out. The purpose is to provide theoretical reference for related research and to promote the further popularization and development of aerobics education in colleges.

Keywords: Aerobics, Health Effect, Factor Analysis, Influence Mechanism, Theoretical Model.

1. INTRODUCTION

1.1 Literature Review

Aerobics is a mass sports fitness project that has been widely carried out in China in recent years. Aerobics course in colleges is a necessary method to effectively promote students’ health (Zhang et al., 2017). Aerobics exercise calls for a high level of participation, integrating technical indicators such as music, body coordination and rhythm (Wang et al., 2016). The promotion of such sport in colleges can promote the physical and mental health of students, improving the sport effects and realizing training goals that are difficult for other sports. However, there are relatively few studies on the factors of health effect of aerobics, which makes it impossible to analyze the influencing factors of the aerobics exercise mechanism from the theoretical framework. Therefore, it is impossible to grasp the rational planning of the exercise amount and exercise mode in the process of aerobics (Zhao and Mao, 2014). To this end, the impact of health effect of aerobics for college students should be furthered studied, in order to facilitate the popularization and promotion of aerobics in colleges.

1.2 Research Purpose

A sample survey was carried out to investigate the data of two physical education colleges of Beijing Sport University and Harbin Sport University (Wang, 2014). Meanwhile, three non-sports colleges of Tianjin Foreign Studies University, Tongji University, Xi’an Jiaotong University were taken as the research objects. Through analyzing the data of college aerobics course, the physical influence of health effect of aerobics exercising for college students are analyzed (Li et al., 2013). The research indicators mainly focus on the morning pulse, vital capacity/body weight, cardiopulmonary effect index and cooper run, in order to establish the index parameters for the impact model of health effect factors of aerobics, effectively analyzing the formation conditions of related factors and the promotion and methods of aerobatics in Chinese colleges.

2. COMPARATIVE ANALYSIS OF FOUR INDICATORS OF AEROBICS HEALTH EFFECT FOR COLLEGE STUDENTS
2.1 Collection Methods of Research Data

With the data survey conducted in Beijing Sport University and Harbin Sport University, the questionnaires were handed out and the original sample data collected before the start of each semester and at the end of each semester respectively. The collected indicator data include morning pulse, vital capacity/ body weight, cardiopulmonary effect index, and cooper run (Yan et al., 2014). In order to achieve the objective data, the notice of such tests was never issued before collecting the sample data. Thus 725 students who later submitted the survey data were not prepared in advance. Therefore, it is possible to keep the authenticity of the collected information in such method. Meanwhile, three non-sports colleges of Tianjin Foreign Studies University, Tongji University, Xi’an Jiaotong University were taken as the research objects, whose data samples were collected the same way as it did in professional sports colleges. The research objects comprised of 1267 sophomore students without significant difference in body quality as the surveyed data samples. The proportions of male and female students were similar with basically same age groups. There was no significant difference, which helps the comparability between the relevant data groups (P <0.05).

2.2 Comparison Results of Four Indicators

The data collected from the above college students before and after each semester were put into SPSS 19.0 statistical software for mathematical analysis. The calculated data is written as $(X \pm s)$, taking t as testing. The difference (P <0.05) was statistically significant (Li and Zheng, 2014). The four indicators (morning pulse, vital capacity/ body weight, cardiopulmonary effect index, cooper run) are shown in Table 1.

Table 1 Comparison of The Four Indicators (Morning Pulse, Lung Capacity/Weight, Cardiopulmonary Effect Index, and Cooper Run)

<table>
<thead>
<tr>
<th></th>
<th>Male &quot;four indicators&quot; comparison results</th>
<th></th>
<th>Lung capacity/weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>time</td>
<td>Cardiac function index</td>
<td>Cooper run/m</td>
</tr>
<tr>
<td>Before the semester</td>
<td>72.32±2.36</td>
<td>5.89±2.61</td>
<td>2556.82±13.5.79</td>
</tr>
<tr>
<td>After the semester</td>
<td>69.12±2.25</td>
<td>4.38±2.58</td>
<td>2882.91±100.27</td>
</tr>
<tr>
<td>t</td>
<td>3.52</td>
<td>2.26</td>
<td>4.38</td>
</tr>
<tr>
<td>P</td>
<td>&lt;0.01</td>
<td>&lt;0.05</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Female &quot;four indicators&quot; comparison results</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>time</td>
<td>Cardiac function index</td>
<td>Cooper run/m</td>
</tr>
<tr>
<td>Before the semester</td>
<td>75.26±3.08</td>
<td>6.28±2.35</td>
<td>2252.56±182.65</td>
</tr>
<tr>
<td>After the semester</td>
<td>72.09±3.28</td>
<td>4.62±2.36</td>
<td>2336.36±150.28</td>
</tr>
<tr>
<td>t</td>
<td>1.92</td>
<td>2.35</td>
<td>2.65</td>
</tr>
<tr>
<td>P</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

3. REGRESSION ANALYSIS HEALTH EVALUATION MODEL FOR COLLEGE STUDENTS

The statistical results of the male / female experimental group in the health evaluation project are used as the regression analysis data, in order to explore the mechanism of the influence of the stratification factor on the main factor variable $U$. The range of influence factors of the categorical variables is written as $D= (d_1, d_2, d_3, d_4)$ (Xue et al., 2011). Among them, $d_1$ represents the feedback information of health self-evaluation of college students after participating in aerobics course; $d_2$ represents the psychological state adjustment of college students after participating in aerobics course; $d_3$ represents the improvement of the interpersonal skills college of college students after participating in aerobics course; $d_4$ represents the effective improvement of the aesthetic awareness of college students after participating in aerobics course. The aerobics training effectiveness equation is established as: $U=D (d_1, d_2, d_3, d_4)$

3.1 Male College Students' Health Self-evaluation Results

The analysis result of evaluation of male students’ mental and physical health produced the relevant index parameters:
The value of $D$ is 18.627, which is close to 0 as the significant result level, and the result of the equation is more credible.

The investigation indicators of college male students $d_1$ and $d_4$ were involved in the equation, indicating that students enjoyed general improvement in the evaluation of health self-evaluation with their aesthetic awareness enhanced during training (Jiang, 2010). Thus, it is believed that male college students had achieved an overall improvement in level of their health after participating in aerobics training, which was mainly reflected in health improvement and aesthetic awareness cultivation.

### 3.2 Female College Students' Health Self-evaluation Results

The analysis result of evaluation of female students’ mental and physical health produced the relevant index parameters:

$$U_{\text{girl}} = 0.312 + 0.929d_1 + 0.162d_2 + 0.192d_3$$

The value of $D$ is 85.312, which is close to 0 as the significant result level, and the result of the equation is more credible. First, $d_1$ in the equation showed that the female students enjoyed general improvement in health self-evaluation as the male students did. This result was consistent with the similar study data regarding the male and female students participating in aerobics exercise (Zhang and Xu, 2016). Second, the interventional equation $d_2$ showed that female students in colleges had effectively improved their psychological status, and self-evaluation in such aspects was better than the male students. Finally, $d_3$ in the equations showed that the female students can gain space for interpersonal communication from aerobics course, resulting in a pleasurable exercise experience.

### 4. COMPREHENSIVE ANALYSIS OF HEALTH SELF-EVALUATION RESULTS OF MALE AND FEMALE STUDENTS IN COLLEGES

#### 4.1 Physical Condition of $d_1$

$d_1$ functioned greatly in the health self-evaluation results of male and female students in colleges, which showed that all students in colleges had improved their physical conditions after participating in aerobics course, proving the universality of aerobics exercise. Such effects on health have nothing to do with gender (Peng and Liu, 2017). Therefore, aerobics is a sport subject that can be universally promoted in Chinese colleges.

#### 4.2 Psychological Adjustment of $d_2$

$d_2$ functioned greatly in the health self-evaluation results of female students in colleges, but not in the health self-evaluation results of male students in colleges. Therefore, the adjustment of the mental state of the aerobics exercise only manifested itself in the influencing factors of female students, but not in the male students. This situation may have certain correlation to better psychological quality of male students. Meanwhile, male college students are more involved in other sports in addition to aerobics. However, the weak psychological impact can be related to students’ self-negligence (Wang and Wei, 2016). Therefore, the psychological adjustment effect of aerobic exercise did not show the absolute invalid factors for male students, which could be categorized as the weak influence factors.

#### 4.3 Interpersonal Skills

$d_3$ functioned greatly in the health self-evaluation results of female students in colleges, but not in the health self-evaluation results of male students in colleges. Therefore, the aerobic exercise constituted a more prominent factor for the promotion of interpersonal skills for female students in college. This result situation was mainly related to the fact that male students did not obtain effective modes of exchange in aerobics (Ni and Guo, 2015). Female students in aerobics often could find common topics for deepening communication between each other. However, the male students did not have a high degree of subjective initiatives in the sport, which caused the
lack of enthusiasm of communication by showing a weak curve of access to interpersonal skills. Therefore, in the daily process, aerobics teachers should classify the teaching levels according to the students’ personalities, trying to evoke the enthusiasm of the male students so as to improve their sports communication. Thus the universality of the aerobics can be expanded and the male students’ personal acceptance and interpersonal skills can be effectively improved.

4.4 Aesthetic Awareness

d4 functioned greatly in the health self-evaluation results of male students in colleges, but not in the health self-evaluation results of female students in colleges. It shows that male college students obtained the aesthetic awareness in aerobics exercise, while female students in colleges did not get the same effective promotion in the aesthetic awareness (Ni and Hou, 2015). There is a certain degree of correlation to the better aesthetic awareness of female students. The male students did not obtain the same amount of aesthetic awareness exercise in other sports than the aerobics training, resulting in the better development of the aesthetic awareness potentials.

5. FRAMEWORK OF HEALTH EFFECT OF AEROBICS MODEL FOR COLLEGE STUDENTS

With the above regression analysis of college student health evaluation model, the comprehensive analysis of the health self-evaluation results of male and female students in colleges, three major health effects of aerobics exercise can be clearly identified, such as fitness effect, mental health effect, aesthetic education effect (Wang et al, 2010), which is as shown in Figure 2.

**Figure 2. Influence Model Frame Structure of Healthy Effect Factors of College Students**

First of all, fitness effect refers to that students can improve physical fitness, cardiopulmonary effect and disease resistance through aerobics exercise. Second, mental health effect refers to that the students can effectively improve self-regulation ability, develop self-confidence, and enhance the intelligence building with a sound and balanced personality and good interpersonal relationships through aerobics exercise. Finally, the effect of aesthetic education refers to that the aesthetic ability can be strengthened, the aesthetic standard be enhanced and the aesthetic awareness be cultivated through aerobics exercise.

6. CONCLUSION

In conclusion, aerobics exercise is a beautiful and healthy sport providing relaxation, fitness and health care, which should be actively promoted in the general course in colleges. In this study, it is found that the three basic influencing factors of aerobic exercise are as follows, fitness effect, mental health effect and aesthetic effect. On the one hand, the aerobics fitness effect can enhance students’ physique and improve students’ cardiopulmonary effect and disease resistance. On the other hand, the healthy effect of aerobic exercise can improve students’ ability of self-regulation and cultivate the self-confidence in learning and enhance the intelligence building, so
as to achieve the important effect of perfecting the balanced personality of students, laying the foundation for the development of students’ interpersonal relationships. In addition, the aesthetic effect of aerobic exercise can enhance students’ aesthetic ability and achieve the ultimate goal of educating students by improving aesthetic standards and cultivating aesthetic taste.

ACKNOWLEDGMENTS

The Study on ways of the Industrialization of Aerobics in Hebei Province, Influence Model of Health Effect of Aerobics Exercise for College Students (201601744).

REFERENCES

Jiang X. (2010). Aerobics teaching to promote the study of mental health education, Reform and opening, (04), 154.
Wang S.S. (2016). The college of physical education of chengdu university (chengdu university), research on the use of aerobics and rhythmic gymnastics in college team gymnastics, Contemporary education practice and teaching research, (02), 49-51.