

## Retraction

# Retracted: Effects of Sports Drinks on Weight Loss Control and Lipid Metabolism in Overweight Students

### Journal of Food Quality

Received 29 August 2023; Accepted 29 August 2023; Published 30 August 2023

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

### References

- [1] Q. Yu, L. Shan, L. Du, and J. Zang, "Effects of Sports Drinks on Weight Loss Control and Lipid Metabolism in Overweight Students," *Journal of Food Quality*, vol. 2022, Article ID 2183088, 8 pages, 2022.

## Research Article

# Effects of Sports Drinks on Weight Loss Control and Lipid Metabolism in Overweight Students

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Received 4 June 2022; Revised 6 July 2022; Accepted 14 July 2022; Published 5 August 2022

Academic Editor: Rijwan Khan

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In order to explore how sports drinks can achieve weight loss control and lipid metabolism in college students, the author proposes an experiment based on weight loss control and lipid metabolism in college students. This experiment recommends key technical problems and solutions based on information represented by college students' weight loss control, a study exploring how sports drinks can achieve weight loss control in college students. Research has shown that Jupu sports drink is more suitable than 87% of sports drinks on the market for college students to lose weight. Sports drinks have a positive effect on maintaining a high blood sugar level during exercise and have a certain antifatigue effect in mass fitness. Jupu sports drink not only has the effect of other sports drinks but also has a certain effect on weight loss control.

## 1. Introduction

Today, we have entered the 21st century, and the 21st century is a century of rapid technological advancement and rapid social development [1]. The level of science and technology and social productivity is constantly improving, the degree of mechanization, automation, and informatization is getting higher and higher, and people's production methods and lifestyles have undergone tremendous changes [2]. These changes both bring benefits to human beings and also have some negative effects, that is, on the one hand, social progress and scientific and technological development have brought more convenience to human beings. Human beings have saved a lot of manual labor and improved productivity. On the other hand, due to the gradual replacement of human physical labor by technological devices, the contact between human beings and nature is becoming less and less, and the opportunities for physical activities that human beings perform are greatly reduced. But behind this is the mental tension caused by increasingly fierce social competition and huge social pressure. In addition, with the development of social transportation and communication networks, people's walking opportunities have been greatly reduced, coupled with the improvement of food structure, resulting in

people's lack of exercise, excess nutrition, and irregular lifestyles. Everyone suffers from both physical and psychological pressures, and these are the main factors that affect the physical and mental health of human beings. Among them, obesity has become one of the important diseases endangering human health due to its increasing trend year by year [3].

Obesity not only affects body shape and appearance but also hinders physical health. Obesity can induce many chronic diseases, and overweight or obesity can easily induce cardiovascular-related diseases and metabolic dysfunction syndrome; it will increase the incidence of diabetes, coronary heart disease, hypertension, hyperlipidemia, sleep apnea syndrome, and cancer. Overweight people are at least 20 percent more likely to develop high blood pressure than normal-weight people, while obese people are more than three times more likely to develop high blood pressure. There are also research studies showing that the probability of coronary heart disease and ischemic stroke in overweight or obese people is much higher than that in normal people [4]. In recent years, people have to pay attention to obesity. Due to the high pathogenic factors and high-risk consequences of obesity, the number of obese people in the world is exploding at an alarming rate, the number of deaths due to

obesity has reached 300,000 every year, obesity has become the primary health problem in the world, and it has become a preventable cause of death in the high-risk type [5]. Obesity will not immediately endanger people's lives like cancer or some acute diseases, but its long-term impact on health cannot be underestimated. Obesity can be said to be the "root of all evil." Being overweight or obese will cause many changes in metabolism in the human body, endocrine disorders, and metabolic system syndrome. The pressure of excess fat in the body on the blood vessels and heart also increases the load on these organs, which can easily lead to atherosclerosis and high blood pressure, which can lead to serious consequences and even coronary heart disease and stroke. Obesity can cause colon cancer, mainly because people who are overweight or obese like to be fat, the intake of fat is relatively high, and it is easy to exceed the standard. The intake of dietary cellulose is relatively small, which leads to obstacles in the process of *in vivo* ginseng, which is involved in the process of fat conversion in the human body, excessive bile secretion. Bile acids combined with steroids can produce carcinogens in the colon, causing cancer.

Based on scientific research, sports drinks are formulated for the consumption of muscle glycogen, the decrease in blood sugar, the energy consumption caused by loss of electrolytes, the change in the internal environment, and the decline of cell function during exercise. There are relatively many studies on the development trend, nutritional composition of sports drinks, and the impact of sports drinks on athletes' athletic ability in various countries [6]. Studies by Kalman, Kumar, and others show that sports drinks have a positive effect on improving athletes' ability to exercise and help to improve the body's cardiopulmonary function and prevent various diseases; Studies by Zhao Lixia, Wei Bing, and others in China show that sports drinks can improve the functional state of exercisers, maintain and promote body fluid balance during exercise, and accelerate the elimination of blood lactic acid after exercise, which is beneficial to the recovery of exercise fatigue and the enhancement of the body's antifatigue ability [7]. Energy drink digestion is shown in Figure 1.

## 2. Literature Review

Lee, et al. said that, in 1948, the World Health Organization defined obesity as a disease and added it to the International Classification of Diseases [8]. In 1985, the National Institutes of Health of the United States defined obesity as an energy balance disorder caused by the body's energy intake being greater than its energy consumption, and the excess energy stored in the form of fat has reached a level that is harmful to health. Saini et al. defined obesity as a state in which the body's fat composition, especially visceral fat, exceeds the norm [9]. Fat is more stored in the abdominal wall, the abdominal cavity is called central obesity, and there is no endocrine disease or obesity caused by other special causes is simple obesity. Soria et al. stated that more than 95% of obese patients are simple obese, and children and adolescents are generally simple obese [10]. To sum up, it can be considered that obesity refers to a state in which long-term

energy intake is greater than consumption, resulting in the body's fat composition exceeding the normal standard. It is not only a disorder of energy metabolism but also a risk factor for diseases such as diabetes, hypertension, and various cancers. Williams believes that the global standard for determining obesity is body mass index [11]. Body mass index is defined as follows:  $BMI = \text{weight (kg)} \div \text{height (m)}^2$ .

Rathnayake et al. said that, in China, school health education for students began around the early 1980s; however, the traditional educational concept has not played a good guiding role in the improvement of students' physical health. The concept of emphasizing grades and neglecting sports has always existed in schools and parents, resulting in a low influence of health education in Chinese schools [12]. At the beginning of the 21st century, countries around the world began to generally recognize the importance of student health education and with the widespread implementation of student sunshine sports. Patte began to conduct in-depth research on students' physical health behavior and obtained certain experience and theoretical results [13]. The World Health Organization defines health as "health is not just the absence of disease and infirmity, but the perfect state of physical, mental, and social resilience." Healthy behaviors refer to various targeted physical activities that individuals perform to enhance physical fitness and promote health, not only can it continuously enhance physical fitness, maintain good physical and mental health, and prevent diseases caused by various behavioral and psychological factors, but it can also help people develop good health habits." Yoon considers it to be the behavior of human individuals or groups related to health and disease. Also, health-related behaviors can be divided into two categories: health-promoting behaviors and health-harming behaviors according to the impact of behaviors on their own and others' health [14].

The research content of health behavior is relatively extensive, and different scholars have different research objectives and research objects on the content of health behavior. The "21st Century Healthy Lifestyle Exhibition" puts forward six requirements for a healthy lifestyle. The first requirement is to arrange a reasonable meal, the second requirement is to adhere to moderate exercise, the third requirement is to maintain a peaceful mind, the fourth requirement is to change bad behaviors, the fifth requirement consciously protects the environment, and the sixth requirement is to learn health knowledge. Awasthi and others believe that health should include physical health, as well as psychological health, and social adaptation [15].

## 3. Methods

*3.1. Obesity Discrimination Method.* The Weber–Fechner law time self-similarity and the sigma algorithm were introduced to reanalyze the detection rate of the survey report. The so-called Weber–Fechner law, that is, the objective parameter  $X$  and its subjective parameter  $S$  satisfy the logarithmic relationship (both  $c$  and  $a$  are constants):

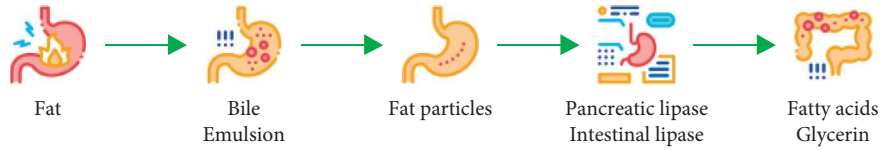


FIGURE 1: Functional drink digestion.

$$S = c \log_a X. \quad (1)$$

The golden section constant  $r@$  is selected as the base  $\alpha$  (logarithm to base  $r$ ,  $l_t$ ) of the logarithm in formula (1), to obtain the golden logarithm as follows:

$$l_t x = \log_r x = \frac{\lg x}{\lg r}, \quad (2)$$

$$\tau \approx 0.618. \quad (3)$$

Based on formula (2), a new natural constant  $\alpha$  is found to remain unchanged after the golden logarithm is calculated, that is,  $\alpha$  is a self-similar constant. Its formula is

$$l_x(1, 2) = \log_r(x_2/x_1). \quad (4)$$

The absolute value of the logarithm of the process is called the quantitative difference (OD) of the start and end parameters.

To characterize the subjective difference  $\Delta S$  between two objective parameters, the Weber–Fechner law can be used to quantitatively characterize the actual value of the difference:

$$\Delta S = S_2 - S_1. \quad (5)$$

It can be seen from (5) that, comparing the difference between the two subjective parameters  $S$  and  $S_i$ , it corresponds to the calculation of the ratio between the objective parameters  $X$  and  $X_i$ , rather than the subtraction of the two objective parameters [16]. Therefore, formula (4) is introduced to quantitatively calculate the difference between the two objective parameters. After calculating the QD value, quantitatively determine whether there is a difference in the process between the two parameters by the size of the Weber threshold. If it is less than the Weber threshold  $\alpha$ , there is no difference or there is a constant, and if it is greater than the Weber threshold  $\alpha$ , there is a difference. Although there is a difference when it is greater than the Weber threshold  $\alpha$ , whether there is a significant or very significant difference, it also depends on the other two functional thresholds  $\beta$  and  $\gamma$  of the QD in the functional dose curve  $o$  to accurately define [17].

Based on the conserved quantity principle proposed in Noether's law, the biological conservation law was discovered, and the functional conservation quantity based on QD was further deduced, which included the consistency of conservation and the continuity of conservation. When applied to the analysis of data sets, if a set of data consists of  $n$  parameters sorted from large to small to form  $\{a\}$ , their average value can be calculated, which is represented by  $\bar{a}$ . Conservative consistency is satisfied if the QD of each parameter and  $\bar{a}$  is less than the

largest  $\beta$  of the various parameters  $\beta$ , and the average of all QDs is less than the smallest  $\beta$  of the various parameters  $\beta$ . Conserved continuity is satisfied if the QDs of two consecutive parameters are smaller than the larger of the two parameters  $\beta$ , and the average of all QDs is smaller than the smallest  $\beta$  of the respective parameters  $\beta$ . Its formula is

$$|l(a_i, \bar{a})| < \beta_{\max}, \quad (6)$$

$$|l(a_i, \bar{a})| < \beta_{\min}, \quad (7)$$

$$|l(a_i, a_{i+1})| < \beta_{\max(i, i+1)}, \quad (8)$$

$$|l(a_i, a_{i+1})| < \beta_{\min}. \quad (9)$$

For two sets of parameters  $\{Y_i\}$  and  $\{X_i\}$ ,  $a_i = Y_i/X_i$ . It can be concluded that  $\{a\}$  satisfies conservation, and then a first-order self-similar algorithm is obtained:

$$\frac{Y}{X} = \tau^{\Delta S/c}. \quad (10)$$

To sum up, according to the Weber–Fechner law  $S$ , it is calculated that the difference is a constant, which satisfies FOSSA, and the ratio is a constant, which satisfies HOSSA. As long as any calculation result satisfies FOSSA or HOSSA, the ratio of subjective parameters after the logarithm of the objective parameters representing the parameter space is less than the Weber threshold  $\alpha$  [18]. Whether it is FOSSA or HOSSA, the first principle of the calculation formula is derived from the Weber–Fechner law, and the first principle of judging the conservation of its ratio is derived from the self-similarity principle of fractal physics. On this basis, it is found that temporal self-similarity can accurately and quantitatively evaluate a person's health status. In other words, temporal self-similarity can accurately and quantitatively determine whether the SSE between data sets satisfies conservation or a constant relationship.

**3.2. Three Stages of Sports Drink Development.** At present, sports drinks can be roughly divided into three categories according to the efficacy of their ingredients:

The first-generation sports drink contains three components: water, sugar, and electrolytes, represented by pulsation, activation, and screaming.

The second generation of sports drinks, in addition to containing water, carbohydrates, and electrolytes, also add other nutrients, such as vitamins, amino acids, or some other functional ingredients. Commercially available sports drinks are represented by Red Bull and Nichika.

The third-generation sports drink, which adds functional plant extracts to the second-generation sports drink, is a natural product-added sports drink. At present, the third-generation sports drink is still in its infancy, and it is still in the early stage of development. The use of natural product active ingredients in third generation sports drinks includes beet juice, thorn grape, longan juice, mung bean, black rice skin, medlar, and mountain rhodiola. Natural fruits and vegetables are also added, such as beet juice. Beet is an important sugar crop, rich in betaine and has antioxidant effect. To design a sports drink based on beet juice, the formula is Beet juice 2.8%, CMC-NA 0.1%, salt 0.1%, citric acid 0.07%, sugar 3.46%, glucose 0.87%, B-cyclodextrin 0.15%, ascorbic acid 0.07%. "Jiang Hui" uses Lai grapes as raw materials, and through orthogonal optimization experiments, the formula of thorn grape functional sports drinks is determined as purified water, 60%; thorn grape juice, 40%; sodium chloride, 70 mg/L; magnesium sulfate, 60 mg/L; vitamin C, 100 mg/L; vitamin B, 3 mg/L; vitamin B, 2 mg/L; vitamin B, 20 mg/L; vitamin Br, 23  $\mu$ g/L; inositol, 50 mg/L; taurine, 100 mg/L; lysine, 50 mg/L; procyanidins, 3500 mg/L; and resveratrol, 20 mg/L [19]. By establishing a mouse exhaustion model, the efficacy of the beverage was verified, and the results showed that lai grape sports functional drink has the functions of enhancing physical function, relieving fatigue, improving exercise ability and antiaging, and compounding the basic requirements of functional sports drink.

*3.3. Research on the Effect of Jupu Sports Drink Combined with Exercise on Weight Control, Fat Loss, and Lipid Metabolism in Overweight Students.* A total of 36 overweight boys from the Department of Sports Health Science of a sports college were selected, aged 19–21 years old, with an average age of 20.1 years. The diagnostic criteria refer to the BMI index, which is a number obtained by dividing the weight in kilograms by the square of the height in meters, and is currently a commonly used measure internationally, a standard of human obesity and health level [20]. The details are shown in Table 1.

The pure Pu'erh compound sports drink group (group A) took Pu'erh compound sports drink once a day, 400 ml at a time. The subjects in the simple aerobic exercise group (group B) took a bottle of 400 ml 1.5 hours before each exercise (you can drink it naturally within 1 hour), which contained a placebo with the same content except that Pu'erh tea extract was not added, the appearance, color, and taste of the beverage are similar to those of Jupu beverage. In the pu'er compound sports drink combined with aerobic exercise group (group C), subjects took a bottle of 400ml pu'er compound sports drink 1.5 hours before each exercise (you can drink it naturally within 1 hour) and take it for 6 consecutive weeks; during the experiment, the subjects and the staff who mainly participated in the experiment did not know the difference between the intervention beverages; the double-blind method was adopted, and the blind was released after the experiment was completed. During the intervention period, Pu'er compound sports drink and placebo

were distributed 1.5 hours before each exercise, and the subjects' physical response and exercise status after taking it were recorded [21]. During the experiment, the subjects maintained normal eating habits, avoided overeating, had regular work and rest, and did not take other weight loss drugs.

**Aerobic exercise program:** The subjects in simple aerobic exercise group (B) and Pu'er compound sports drink combined with aerobic exercise group (C) did jogging in the track field at 17:00, 5 times a week, for 60 minutes each time. According to the experimental study on the effect of moderate and low intensity aerobic exercise combined with diet control on morphological blood lipids and lipoprotein enzymes of obese adolescents, the exercise intensity was determined according to the basic conditions of obese adolescents such as health examination. Heart rate control at 60% to 80% is of maximum heart rate (control at 120 to 160 beats per minute). In addition, the heart rate immediately after training, heart rate 3 minutes after training, and morning pulse of the next day were recorded for each subject 5 days per week for 6 weeks to monitor the training load [22].

Experiment fixed stevioside 0.25%, citric acid 0.22%, citrus flavor 0.3% vitamin C 0.02.0.1%, 0.25%, 0.4%, 0.55%, and 0.7 of extract of orange prune were added, respectively. The effect of different amount of citrus extract on the sensory quality of beverage were investigated. Taking sensory scores as indicators, according to the obtained data, a graph of the relationship between the addition amount of Jupu extract and the sensory score of beverage flavor was drawn, to determine the appropriate additional amount of Jupu extract. Table 2 shows the sensory evaluation of the additional amount of the extract. Figure 2 shows the effect of the additional amount of Jupu extract on the sensory quality of beverages.

It can be seen from the results in Figure 2 that when the addition amount of citrus extract was 0.25%, the beverage had the best color and taste; then, the addition of stevioside, citric acid, and citrus flavor was further investigated when the additional amount of citrus extract was 0.25%.

As can be seen from Table 3, after drinking Jupu sports drink and exercising, the body weight, body fat percentage, fat mass, and BMI of the three groups decreased, and all indicators of the aerobic exercise group (group B) were significantly decreased ( $p < 0.05$ ); the body weight, body fat percentage, fat mass, and BMI of the Jupu sports drink combined with aerobic exercise group (group C) were significantly decreased compared with those before the experiment ( $p < 0.01$ ). There is a very significant statistical significance. In the sports drink-only group (group A), although there were also changes in body weight and body mass index, it was not statistically significant. The comparison of body weight, body fat percentage, fat mass, and BMI of each group before and after the experiment is shown in Table 3.

Table 4 shows the comparison of the number of four abnormal cases of blood lipids in each group before and after the experiment.

TABLE 1: Basic information of each group in the experiment.

Group	Number of people	Age (years)	Height (cm)	Weight (kg)	BMI (kg/m <sup>2</sup> )
Simple Jupu sports drink group (group A)	12	20.27 ± 0.53	177.33 ± 5.82	86.60 ± 14.51	28.38 ± 4.29
Simple aerobic exercise group (B)	12	20.00 ± 0.49	177.40 ± 2.79	86.19 ± 11.15	27.44 ± 3.94
Jupu sports drink combined with aerobic exercise group (group C)	12	19.98 ± 0.53	175.17 ± 6.24	83.39 ± 12.28	26.92 ± 2.09

TABLE 2: Sensory evaluation of the addition amount of Jupu extract.

Addition of citrus extract (%)	Sensory evaluation
0.1	Lighter in color, pale amber in color, the aroma of tangerine pucha is looming
0.25	Bright, lustrous, amber in color, with a suitable taste, with the aroma of Pu'er tea and a touch of dried tangerine peel
0.4	Dark brown, slightly tea-flavored
0.55	Dark brown, opaque, strong tea and dried tangerine peel, a little bitter, with a little precipitation
0.7	Darker color, dark brown, bitter taste, too sour, with precipitation

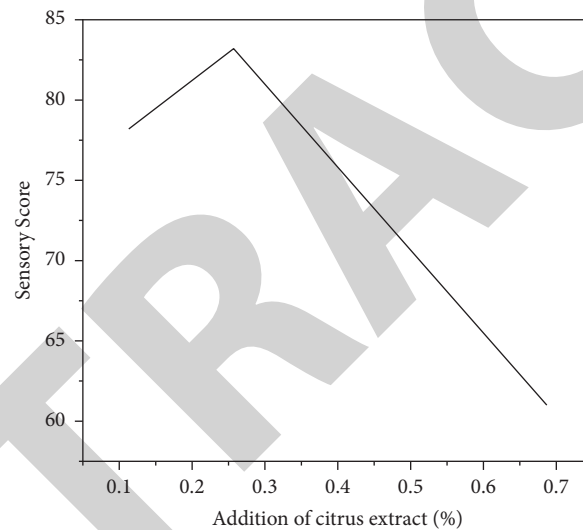


FIGURE 2: The effect of the additional amount of Jupu extract on the sensory quality of beverages.

TABLE 3: Comparison of body weight, body fat percentage, fat mass, and BMI in each group before and after the experiment.

Group		Weight (kg)	Body fat percentage, %	Fat mass (kg)	BMI (kg/m <sup>2</sup> )
Group A	Before experiment	86.60 ± 14.21	24.10 ± 7.57	21.24 ± 9.77	28.22 ± 4.31
	After experiment	85.51 ± 14.42	22.93 ± 7.01	19.97 ± 8.76	27.80 ± 3.95
Group B	Before experiment	86.19 ± 11.15	26.34 ± 5.84	23.39 ± 8.80	27.44 ± 3.94
	After experiment	84.46 ± 10.49	25.62 ± 5.15	22.53 ± 8.58	27.04 ± 3.88
Group C	Before experiment	83.39 ± 12.28	23.27 ± 6.32	19.88 ± 7.63	26.92 ± 2.09
	After experiment	80.16 ± 12.38	21.38 ± 5.73	17.76 ± 7.01	26.05 ± 2.11

In Table 4, from the abnormal number of each index in each group, the number of abnormal triglycerides in the sports drink group (group A) decreased from 3 to 2, the number of abnormal low-density lipoproteins decreased from 1 to 0, the aerobic exercise group (group B) had abnormal triglycerides, the number of cases decreased from 3 to 1, and the number of abnormal low-density lipoproteins remained unchanged. In the sports drink, combined with the aerobic exercise group (group C), the number of abnormal triglycerides (TG) decreased from 4 to 1, and the number of

low-density lipoprotein abnormalities was 2 and returned to normal after 6 weeks of experiment [23].

Therefore, it can be seen that simple aerobic exercise can improve the content of triglyceride, total cholesterol, high-density lipoprotein, and low-density lipoprotein in the blood and play a role in regulating blood lipids. Drinking Jupu sports drink alone for six weeks can also reduce blood triglyceride and low-density lipoprotein levels. Drinking Jupu sports drink combined with aerobic exercise can play a good role in regulating blood lipids, improve the content of

TABLE 4: Comparison of the number of abnormal blood lipids in each group before and after the experiment.

Group		Abnormal triglycerides	Abnormal total cholesterol	High-density lipoprotein abnormalities	Abnormal low-density lipoprotein
Group A	Before experiment	3	0	0	1
	After experiment	2	0	0	0
Group B	Before experiment	3	0	0	2
	After experiment	4	0	0	2
Group C	Before experiment	4	0	0	2
	After experiment	1	0	0	0

triglyceride and total cholesterol in the blood, and reduce the level of low-density lipoprotein. Therefore, it can be proved that Jupu sports drink has the effect of reducing lipid and improving lipid metabolism.

#### 4. Results and Analysis

By comparing the dietary patterns of different types of boys in different colleges and universities, it is found that the proportion of “timely quantitative” undergraduate obese boys is 2.6 percentage points lower than that of higher vocational colleges. The proportion of “indefinite timing” is 1.0 percentage points higher than that of higher vocational colleges. The proportion of “irregular time and fixed amount” is 2.7 percentage points higher than that of higher vocational colleges. It can be seen that, in terms of dietary rules, the performance of boys in undergraduate schools is worse than that in higher vocational colleges, and the phenomenon of dietary irregularities is more prominent in undergraduate boys [21].

Through the return visit of some respondents, it is found that the reasons for the irregular diet of obese male college students are the following two aspects:

On the one hand, obese male college students do not pay attention to dietary laws. As independent individuals, college students live in school without the constraints of their parents and their behavior and habits become free and casual. It is not surprising to stay up all night, “eat when you are hungry, and not eat when you are not hungry” is also the living state of many college students [24]. For breakfast, students generally say “no class in the morning, no breakfast if I cannot get up in the morning,” and some students do not have the habit of eating breakfast at all. And, some studies have shown that, about 40% of college students hold an indifferent attitude towards their daily dietary patterns.

On the other hand, there is a lot of academic pressure, many club activities, and a tense life rhythm, which leads to an irregular diet. Today’s society is becoming more and more complex, and the rich and colorful community life is undoubtedly a huge attraction for young college students, so it also takes up a lot of college students’ spare time [25]. Many times, I neglect to eat because I am busy with various clubs and student work. The college stage is the best time to consolidate body nutrition. Skipping breakfast and eating irregularly will increase the chances of stomach disease, cardiovascular disease, anemia, and other diseases. College students should develop good eating habits, eat regularly, and eat healthily.

Eating supper at night is a “compulsory course” for many college students. It is found that the reasons for the current obese male college students to eat before going to bed lie in the following two aspects: on the one hand, the diet is irregular, and dinner is not eaten until before going to bed. Some college students have no time during the day but have a free meal at night [26]. Some college students even concentrate on their three meals a day in the evening, eating high calories and a large amount of food. On the other hand, it is easy to get hungry if you work overtime at night with heavy learning tasks or many extracurricular activities. However, the human metabolic law is generally the fastest in the morning, gradually slowing down in the afternoon, and the lowest in the evening. Eating supper before going to bed not only increases the burden on the stomach and affects the quality of sleep but also easily accumulates energy and leads to obesity in college students. Therefore, if obese students do not control their bad habit of snacking before going to bed, they will increase their obesity in the long run. And, if normal weight students do not realize the potential harm of this bad habit, then their weight will be too obese. It is found that the reason why male college students have the habit of eating snacks lies in the following two aspects: on the one hand, the irregular diet or unreasonable diet structure of college students causes college students to feel hungry during the nonmeal time and can only eat snacks at this time to relieve hunger. On the other hand, the snacks that college students eat are often influenced by their moods. Snack not only when you are in a good mood but also when you are in a bad mood or stressed. In the return visit, some students said that when they were in a bad mood, they would choose to eat snacks to resolve their inner bad emotions [27].

#### 5. Conclusion

When college students participate in fitness exercises, if they lose sweat, they can drink sports drinks. They should follow the principle of a small amount of time to avoid excessive fluctuation of ion concentration in the body. The supplement time should be selected within 5 minutes before exercise or during exercise, and it is not advisable to supplement sugar-sweetened beverages 20–60 minutes before exercise, to prevent hypoglycemia during exercise due to insulin response. After exercising, college students sweat a lot and are physically tired, they can drink sports drinks immediately, and if they are within 2 hours after exercise, the glycogen synthesis rate will be faster during this period.

Regular low-intensity long-term exercise intervention for more than four weeks can effectively improve blood lipid levels. During long-term and small-intensity exercise, fat becomes the main energy substance, providing the energy required for exercise, thereby reducing the volume and number of fat cells in the body. This provides a theoretical basis for exercise and weight loss, the oxidation and decomposition of a large number of fatty acids in the body requires sufficient oxygen and the participation of various enzymes, this is also the principle that aerobic exercise can lose weight, this experiment once again proved the effectiveness of aerobic exercise for weight loss, after six weeks of experimentation, the simple aerobic exercise group (group B) had better body weight, body fat percentage, fat mass, body mass index BMI has a decreasing trend, and it is significant ( $p < 0.05$ ).

### Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

### Conflicts of Interest

The authors declare that they have no conflicts of interest.

### Acknowledgments

This work was supported by the Basic Scientific Research Operating Expenses of Institutions of Higher Learning in Heilongjiang Province and that will be paid for a scientific research project in 2019—“Research on the Modernization of Governance System and Capacity of Local Universities” (135409239), the Research Project of Basic Scientific Research Business Fee of Heilongjiang Provincial Higher Education Institutions “Innovation Research on Diversified Supply Path and Strategy of Public Service of Ice and Snow Sports Tourism in Heilongjiang province” (135409337), and the Qiqihar Philosophy Social Science Research Planning General Project “Qiqihar City Ice Sports Tourism Public Service Supply Model Innovation Research” (project no.: QSX2021-20YB).

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