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Retraction

Retracted: Smart Service System for Youth Health and National Traditional Sports Based on Big Data

Wireless Communications and Mobile Computing

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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. Feng, B. Ren, and L. Wang, "Smart Service System for Youth Health and National Traditional Sports Based on Big Data," *Wireless Communications and Mobile Computing*, vol. 2022, Article ID 4094412, 12 pages, 2022.

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Research Article

Smart Service System for Youth Health and National Traditional Sports Based on Big Data

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The physical health of adolescents is directly related to the rise and fall of the country, the hope of the nation, and their own healthy growth. It is a focal issue that the country, society, schools, and families have always paid close attention to. Based on big data, this paper explores the intelligent service system of youth health and national traditional sports. The national traditional sports culture is based on the national traditional sports as the carrier to reflect the sum of the educational wisdom and sports connection and practical ability of all ethnic groups. This article first introduces health big data and the traditional sports culture of the nation. And a health status evaluation model based on multivariate Gaussian distribution is proposed, which adopts Gaussian distribution theory. Based on the multivariate Gaussian distribution model, the probability distribution of physiological big data features is calculated, and then according to the probability of feature points. It constructs a health status assessment model by dividing characteristic probability intervals. Finally, the influence of traditional sports on the physical and mental health of college students is analyzed and studied. The experimental results show that college students must insist on traditional sports more than 2 times a week, preferably no less than 1 hour a day, which has a significant effect on improving the mental health of college students.

1. Introduction

National traditional sports activities can not only promote the participation of exercisers in physical activities and changes in psychological functions, but also have the value and efficacy of physical and mental integration. There is a close relationship between the individual mental health of ethnic groups and the traditional ethnic sports and cultural activities. Adolescence plays an important role in the whole Chinese national constitution. At this stage, students have to go through such periods, the maturity period of physical and mental growth and development, the stereotyped period of mental formation, the formation period of behavior habits, and the critical period of mastering basic scientific knowledge. Young students are also the most important group in China's national fitness group. This age group is particularly important for building a harmonious society. However, in order to improve their quality level, it is also necessary to go through the joint efforts of colleges and universities, family education institutions, and the whole society.

Sports have positive and irreplaceable significance for enhancing physical fitness and improving psychological quality of young people. Scientific research has confirmed that regular physical activity has a very significant effect on enhancing physical fitness and improving mental development level. Based on big data, this paper explores the intelligent service system of youth health and national traditional sports. It provides theoretical and practical references for better developing sports and improving youth physique. At the same time, the development of national traditional sports is conducive to strengthening national unity and is of great significance to properly handling the relations between nationalities and the stability of the frontier.

National traditional sports is an indispensable activity in festivals of all ethnic groups. At this time, all ethnic groups will gather together and use sports as a medium to carry out cultural exchanges and promote feelings.

The innovations of this paper are mainly reflected in the following: It introduced health big data and the traditional sports culture of the nation. The real data of tens of thousands of cases is stored in the health big data system, which is mined by using big data analysis. It can find the link between disease and the environment and can reduce the incidence of disease by improving specific environmental factors. Then, the health status evaluation model based on multivariate Gaussian distribution is introduced. It also conducts analysis and research on the physical and psychological effects of sports on Chinese college students.

2. Related Work

According to the research progress at home and abroad, different scholars also have a certain degree of cooperative research on big data and adolescent health and national traditional sports. Suleiman explores how some rapid advances in developmental neuroscience can be used to improve adolescent health. He also briefly outlines several key areas of scientific progress related to these issues. He then focuses on two examples of important health problems that increase dramatically during adolescence: sleep problems and affective disturbances [1]. The safety of national traditional sports equipment is one of the basic conditions for the development of national traditional sports. On this basis, Liu proposed a fault detection technology for traditional national sports equipment based on optical microscopic imaging technology. The detection results show that the proposed method can effectively detect different types of fault information. To achieve the expected fault detection target, the average energy consumption of the detection process is about 0.47 J/s. It is lower than the other two technologies, and the fault detection performance is good [2]. Xu examines privacy issues related to data mining from a broader perspective and examines different approaches that can ensure sophisticated data. He also recognizes four distinct types of clients that are required in data mining applications. It is classified into data information providers, data information collectors, data information mining machines, and decision-makers [3]. Zhang provides a patient-centric cyber-physical system for integrated medical applications and business based on cloud and big data mining technology, called Health-CPS. The results of this study demonstrate that cloud and big data technologies can be used to improve the performance of healthcare systems. Thus, humans can enjoy various smart healthcare applications and services [4]. Cai first provides a functional framework. It is used to identify the acquisition, management, processing, and mining areas of IoT big data. He also defines and describes several related technical modules according to their main features and functions. Then, the current research in IoT applications is analyzed. Furthermore, he identified challenges and opportunities related to IoT big data research [5]. Guenther still has a limited understanding of how organizations translate their potential into actual social and economic value. He conducted an in-depth systematic review of the IS literature on the topic and identified six debates. These debates are critical to how organizations can realize value from big data at different levels of analysis [6]. However, scholars have not explored the intelligent service system of youth health and national traditional sports based on big data, but only explored its significance unilaterally.

3. A Smart Service System for Youth Health and National Traditional Sports Based on Big Data

3.1. Health Big Data. Health big data is a new term that has emerged with the digital wave and information modernization in recent years and refers to the collection of health data that cannot be captured, managed, and processed with conventional software tools within an affordable time frame. It is a massive, high-growth, and diversified information asset that requires new processing modes to have stronger decision-making power, insight discovery, and process optimization capabilities. In today's electronic information network era, more business organizations are facing the problem of information "explosion." These data come from various sources. For example, enterprise business process, business transaction, social network, and WEB server are both structured information and unstructured information. Moreover, since all kinds of e-commerce applications are becoming more and more data-intensive. It is mainly oriented to WEB business and to multichannel especially mobile device collection. Therefore, processing such a large amount of data and obtaining meaningful information is a very challenging task [7]. There are two ways to organize health big data: electronic health records and electronic medical records. In the future, there will be more ways for us to use, and more independent institutions and companies will join the industry of health big data.

The medical field has always been at the forefront of scientific and technological development and further developed and expanded with the wide application of computers, from the digital processing system of X-ray images in the 1980s and 1990s, to the medical network system, auxiliary diagnosis system, and medical expert system widely used by major hospitals in the world. With the emergence of the Internet of Things, its various technologies are more adapted to the needs of the medical system. It adds a new vitality to the development of medical science and technology [8]. For example, the currently applied hospital information management system (HIS) links the information of various departments in the hospital together. It can not only use the same information management center, but also share the resources of the information system. Figure 1 shows the hospital HIS system. Health big data has the characteristics of huge volume, variety, authenticity of data, fast processing speed, and long-term persistence of data.

However, with the development of the times, the shortcomings of the HIS system also began to appear. Most of them are doctor-centered and cannot serve patients well.

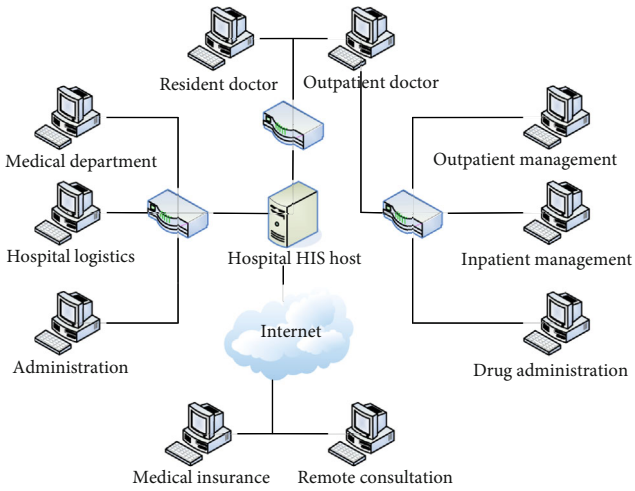

Figure 1: Hospital HIS system.

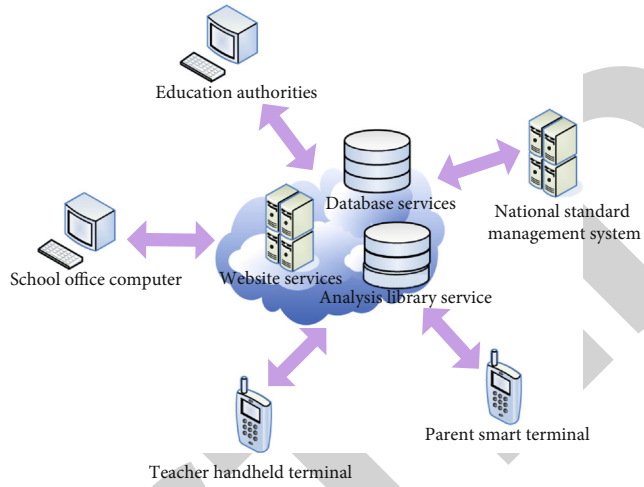

Figure 2: Health management system.

At the same time, communication between different doctors also faces certain obstacles. The modern hospital system is increasingly developing towards serving the patient as the center. The new generation of electronic medical records (EMR) has also begun to gain more widespread use [9]. Figure 2 shows the health management system.

The real data of thousands of patients is stored in the health big data system, such as the patient's electronic medical history and some basic information, including age, address, and genetic medical history. Medical scientific research institutions can also find the family inheritance of a specific disease through data mining and analysis of the big data system through these large amounts of case information. In this way, we can more deeply analyze the association between its genetic factors and environmental gene changes and find effective ways to reduce the incidence of such diseases. Big data analysis and mining can also be used to find the regional characteristics of specific diseases. It can then understand where a particular condition is particularly prone to occur. It further analyzes the natural environment conditions of the place. Once the link between disease and the natural environment has been found, it is possible to reduce the incidence of disease by improving specific natural environment conditions [10]. The significance of health big data lies not in these huge information, but in the professional processing and reuse of these health data. The integration and reuse of health big data has positive significance for physical condition monitoring, disease prevention, and health trend analysis.

At the same time, health big data outlines an idealized state. Human health data is continuously collected by "wearable devices" or other terminals and is automatically transmitted to the cloud for data analysis and processing. The cloud database regularly sends the results to professionals, who give diagnosis or rehabilitation suggestions. Because this model can enable people with health needs to obtain health management services without leaving their homes, thereby truly reducing the manpower and material costs of medical services, and this model has become possible, and it is more professional and in place. The development of big medical and big health is inseparable from the support of big data. In the future, after the development of tens of thousands of businesses in the whole industry of health big data, all kinds of smart medical devices need to be linked to the data cloud. According to the status quo, the industry of health big data will develop in at least the following aspects in the future: big data of medical equipment, home-based physical examination, digital human and digital human family, health big data storage of human life, and combination of genes and data.

3.2. National Traditional Sports Culture. As an important part of national culture, national traditional sports is a kind of traditional culture with independent cultural form, development history of independent existence, and national character with prominent and rich cultural connotation. The traditional sports of the Chinese nation is an external manifestation of the civilization of the Chinese nation. It is one of the important carriers of the national essence. Mining and integrating the traditional national sports culture resources is bound to further promote the prosperity and prosperity of the national culture. The Chinese national traditional sports culture is the main part of the Chinese nation. It emphasizes the educational purpose of self-cultivation and integration of body and mind. In the promotion of traditional Chinese sports culture, it can achieve unique results that other ethnic traditional cultural education cannot achieve. It is more easily accepted by people and attracts people of different ages, genders, and personalities. It can also break down the barriers between various cultures [11]. At present, China has achieved good results in modern competitive sports. Under the national system, traditional national sports are marginalized. In the context of building the country's soft power, the country needs to establish and improve the institutional system to ensure the development of national traditional sports culture.

Chinese traditional sports, first seen in the late Qing Dynasty at the beginning of the 20th century, said when educating young children in a comprehensive manner: keeping the health of the body and developing the base for sports.

In this way, physical education processes such as body maintenance, training, and training are carried out. The traditional national sports culture attaches great importance to people's physical and mental cultivation. It pays attention to the unity of man and nature and the harmony of body and mind. This is very different from the concept of Western sports. It is necessary to inherit the excellent traditional sports spirit of the Chinese nation and maintain the core spiritual value of it, not only the inheritance of technology, but also the promotion of China's fine national traditions and the essence of national culture [12]. National traditional sports and national traditional festivals are inseparable, and activities of national traditional sports events can be seen in almost all traditional national festivals. It is also a manifestation of the traditional national culture. With the help of the platform of traditional festivals, the traditional national sports culture can be effectively promoted and publicized.

The inheritance of national traditional sports culture must enter the school, must pay attention to the resource development of national traditional sports curriculum, and actively carry out traditional sports activities. At the same time, it is necessary to carry out appropriate transformation of traditional sports, and not only pay attention to technical teaching and ignore cultural inheritance. Today's society is an information society, and the speed of information dissemination is very fast, and the circulation of market funds has been created as a carrier. The propaganda of national traditional sports should grasp the characteristics of this era, and the inheritance of national traditional sports culture must rely on the power of the media [13]. This can attract social attention, improve people's sense of identity with traditional national sports and stimulate the desire to protect and rescue the traditional national sports culture.

3.3. Health Status Assessment Model Based on Multivariate Gaussian Distribution

3.3.1. Univariate Gaussian Distribution. The Gaussian distribution is a probability distribution that is very important in mathematics, physics, and engineering and has a significant impact on many aspects of statistics. Gaussian distribution is also known as normal distribution. It is a probability distribution of continuous random variables [14]. The main feature of the Gaussian distribution is to estimate the frequency distribution. As long as a variable that obeys the normal distribution knows its mean and standard deviation, the frequency ratio within any range of values can be estimated according to the formula, and the reference value range can be formulated. The Gaussian distribution curve is bell-shaped, low at both ends, high in the middle, and symmetrical to the left and right. Because the curve is bell-shaped, people often call it a bell-shaped curve. If the random variable a conforms to the Gaussian distribution $a \sim K(t, \varphi^2)$, its corresponding probability density function can be expressed as

$$L\left(a, t, \varphi^2\right) = \frac{1}{\sqrt{2\pi\varphi}} \exp - \frac{(a-t)^2}{2\varphi^2}. \tag{1}$$

Among them, the existing data can be used to calculate t and φ^2 in the probability density function as follows:

$$t = \frac{1}{h}\sum_{n=1}^{h} a^{(n)}, \tag{2}$$

$$\frac{1}{h}\sum_{n=1}^{h} a^{(n)}\left(a^{(n)} - t\right)^2. \tag{3}$$

When there is a corresponding probability rule in the t-dimensional random vector, the random vector is said to satisfy the multi-dimensional normal layout. The multinormal distribution also has nice properties [15]. For example, the boundary distribution of multiple normal distributions is still normal distribution, but the random vector obtained after free linear transformation is still multidimensional normal distribution, especially that its linear transformation form is still a univariate normal distribution.

The multivariate Gaussian distribution is actually developed on the univariate Gaussian distribution and is a generalization based on the univariate Gaussian distribution. It has many excellent features. It is precisely by using these characteristics that a health status assessment model can be constructed. The multivariate Gaussian distribution model will be described in detail below.

3.3.2. Binary Gaussian Distribution. A random variable distribution that satisfies the following probability density distribution is called a two-dimensional normal distribution:

$$g(a, b) = \left(2\pi\varphi_1\varphi_2\sqrt{1-\tau^2}\right)^{-1} \exp \cdot \left[-\frac{1}{2(1-\tau^2)}\left(\frac{(a-t_1)^2}{\varphi_1^2} - \frac{2\tau(a-t_1)(b-t_2)}{\varphi_1\varphi_2} + \frac{(b-t_2)^2}{\varphi_2^2}\right)\right]. \tag{4}$$

Among them, t_1,t_2, φ_1,φ_2,$\tau$are constants, and we call (A_1, A_2) obeying the parameter t_1,t_2, φ_1,φ_2,τtwo-dimensional normal distribution, and this distribution is often recorded as $K(t_1, t_2, \varphi_1^2, \varphi_2^2, \tau)$. The image of this function in three-dimensional space is like an elliptically cut bell upside down on the Oa_1a_2 plane, with its center at point (t_1, t).

After the function is proved to be a probability density function, it should conform to the basic characteristics of the probability density function. One is greater than zero, and the other is that the integral over the whole space is equal to 1. The first point is obvious, and the proof of condition (2) is given below.

It transforms the above formula:

$$\begin{aligned} t &= \frac{1}{\sqrt{1-\tau^2}}\left(\frac{a_1 - t_1}{\varphi_1}\right), \\ s &= \frac{1}{\sqrt{1-\tau^2}}\left(\frac{a_2 - t_2}{\varphi_2}\right), \end{aligned} \tag{5}$$

get

$$\int_{-\infty}^{+\infty}\int_{-\infty}^{+\infty} g(a,b)\mathrm{dadb} = \frac{1}{2\pi}\sqrt{1-\tau^2}\int_{-\infty}^{+\infty}\int_{-\infty}^{+\infty} \exp -\frac{1}{2}\left(t^2 - 2\tau ts + s^2\right)\mathrm{dtds}. \tag{6}$$

It then does variable substitution:

$$r_1 = t - \tau s, r_2 = \sqrt{1-\tau^2}s, \tag{7}$$

because

$$t^2 - 2\tau ts + s^2 = (t-\tau s)^2 + \left(1-\tau^2\right)s^2 = r_1^2 + r_1^2, \tag{8}$$

get

$$\begin{aligned}\int_{-\infty}^{+\infty}\int_{-\infty}^{+\infty} g(a,b)\mathrm{dadb} &= \frac{1}{2\pi}\frac{\sqrt{1-\tau^2}}{\sqrt{1-\tau^2}}\int_{-\infty}^{+\infty}\int_{-\infty}^{+\infty}\exp \\ &\cdot\left[-\frac{1}{2}\left(r_1^2 + r_1^2\right)\right]\mathrm{dr_1 dr_2} \\ &= \frac{1}{2\pi}\int_0^{\infty}\exp\left(-\frac{1}{2}r_1^2\right)\mathrm{dr_1}\int_0^{\infty}\exp \\ &\cdot\left(-\frac{1}{2}r_2^2\right)\mathrm{dr_2} = \frac{1}{2\pi}\sqrt{2\pi}\sqrt{2\pi} = 1.\end{aligned} \tag{9}$$

Therefore, the integral of the binary Gaussian distribution function in all spaces is 1.

The boundary layout of both variables of the 2D normal layout is the basic form of the 1D normal layout: : g(a = (1 $/\sqrt{2\pi}\varphi$) exp − (($a-t)^2/2\varphi^2$)), −∞<t_1<+∞ neither depend on parameter τ. That is, different τ in t_1,t_2,φ_1,φ_2 correspond to different two-dimensional normal distributions, but their marginal distributions are the same [16]. This fact shows that the joint distribution of random variables A and B cannot be determined from the marginal distributions of A and B alone, but can be determined by adding the parameter of the degree of binding.

It proves that $g_A(a) = \int_{-\infty}^{\infty} g(a,b)\mathrm{db}$ is a one-dimensional normal distribution because

$$\frac{(a-t_1)^2}{\varphi_1^2} - \frac{2\tau(a-t_1)(b-t_2)}{\varphi_1\varphi_2} = \left(\frac{b-t_2}{\varphi_2} - \tau\frac{a-t_1}{\varphi_1}\right) - \tau^2\frac{(a-t_1)^2}{\varphi_1^2}, \tag{10}$$

so

$$\mathrm{ag_A}(a) = \frac{1}{\left(2\pi\varphi_1\varphi_2\sqrt{1-\tau^2}\right)}e^{(a-t_1)^2/2\varphi_1^2}\int_{-\infty}^{\infty}\frac{b-t_2/\varphi_2 - \tau a - t_1/\varphi_1}{2(1-\tau^2)}\mathrm{dba}. \tag{11}$$

Making

$$r = \frac{1}{\left(\sqrt{1-\tau^2}\right)}\left(\frac{b-t_2}{\varphi_2} - \tau\frac{a-t_1}{\varphi_1}\right). \tag{12}$$

Then, there are

$$g_A(a) = \frac{1}{2\pi\varphi_1}e^{(a-t_1)^2/2\varphi_1^2}\int_{-\infty}^{\infty}e^{-(a-t_1)^2/2\varphi_1^2}\mathrm{dba}. \tag{13}$$

Then, there are

$$g_A(a) = \frac{1}{2\pi\varphi_1}e^{(a-t_1)^2/2\varphi_1^2}, -\infty < a < +\infty. \tag{14}$$

Similarly,

$$g_A(a) = \frac{1}{2\pi\varphi_1}e^{(b-t_2)^2/2\varphi_2^2}, -\infty < b < +\infty. \tag{15}$$

Therefore, the binary Gaussian distribution is a generalization of the univariate Gaussian distribution. Here, the boundary layout of the two variables of the two-dimensional normal layout is the basic form of the one-dimensional normal layout.

If the two-dimensional continuous random variable is in the form of a vector, and the vector $A = \begin{pmatrix} a \\ b \end{pmatrix}$ conforms to the Gaussian distribution $A \sim K(t, \Sigma)$, then its corresponding probability density function can be expressed as

$$L(A) = \frac{1}{2\pi\|\Sigma\|^{1/2}}\exp\left(-\frac{1}{2}(A-t)^R\Sigma^{-1}(A-t)\right), \tag{16}$$

in

$$t = \begin{pmatrix} t_a \\ t_b \end{pmatrix}, \Sigma = \begin{pmatrix} \varphi_a^2 & \varphi_{ab} \\ \varphi_{ab} & \varphi_b^2 \end{pmatrix}. \tag{17}$$

Σ is a symmetric non-negative matrix. The probability density function $L(A)$ also satisfies two basic properties. One is greater than zero, and the other is that the integral over the whole space is equal to 1.

3.3.3. Multivariate Gaussian Distribution. The multivariate normal distribution is also called the multivariate Gaussian distribution. The multivariate Gaussian model is an extension of the multivariate Gaussian probability density function. The multivariate normal distribution is also known as the multivariate Gaussian distribution. It is a generalization of the unidimensional normal distribution to multidimensional. It is closely related to the matrix normal distribution. In order to obtain the l(a) of the feature in the multivariate Gaussian distribution model, the covariance matrix Σ of the feature needs to be constructed. The specific calculation method is described as follows. Before this, it first calculates

the mean t of all features and then calculates the covariance matrix Σ of the features:

$$t = \frac{1}{h}\sum_{n=1}^{h} a^{(n)},$$
$$\Sigma = \frac{1}{h}\sum_{n=1}^{h}\left(a^{(n)} - t\right)\left(a^{(n)} - t\right)^{R} = \frac{1}{h}(A - t)^{R}(A - t). \quad (18)$$

Finally, the probability value l(a) of the multivariate Gaussian distribution is calculated:

$$l(a) = \frac{1}{(2\pi)^{n/2}|\Sigma|^{n/2}} \exp\left(-\frac{1}{2}(a - t)^{R}\right)\Sigma^{-1}(a - t), \quad (19)$$

where t is a vector. Each unit is the mean of a row of data in the original matrix, with a covariance of Σ of cov (A). According to the above algorithm, the multivariate Gaussian probability value of each feature can be obtained [17]. Figure 3 shows the process based on Gaussian distribution.

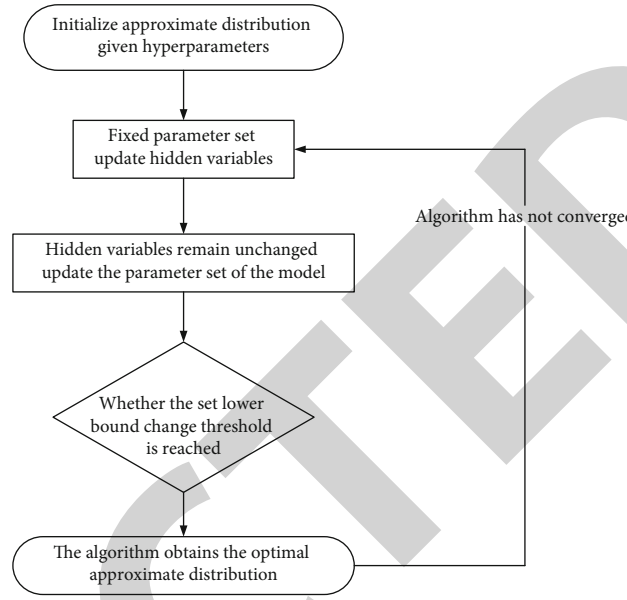

Figure 3: Process based on Gaussian distribution

3.3.4. Health Status Assessment Model. Using the Gaussian distribution theory, the probability distribution of physiological big data features was calculated based on the multivariate Gaussian distribution model. Then, according to the size of the feature point probability, the health status assessment model is constructed by dividing the feature probability interval. The following will introduce the specific theory and how to design the health status assessment model.

In the univariate Gaussian model, the method of calculating the probability corresponding to each feature is adopted, and then all the probability values are multiplied together to obtain l(a) [18]. Usually, the multivariate Gaussian distribution model will try to find the difference between two features at the same time. Therefore, a relatively large decision boundary may be found, resulting in the model not fitting the feature distribution well. In view of this, a multivariate Gaussian distribution model is used to fit the characteristic distribution of high-dimensional physiological big data.

In general, the algorithm process can be divided into the following three steps:

(1) Model establishment. It selects the appropriate Gaussian model according to the actual application situation, and then establishes the Gaussian probability distribution function [19]

(2) Model training. It inputs the feature data learned by the network into the network, calculates the parameters related to the Gaussian probability distribution function, and obtains a probability model. Based on the probability distribution of the original input data, a health status assessment model is established in the form of divided intervals

(3) Model prediction and it gives the prediction result. For new data, it calculates its probability distribution according to the trained network model. Then, by dividing the probability interval, it finds out the health state level to which the feature point belongs [20, 21]

4. The Experimental Results of the Research on the Intelligent Service System of the Youth Health of the Big Data and the Traditional National Sports

4.1. Objects and Methods. National traditional sports are recreational activities created by various ethnic groups in labor practice and in line with their own physical activity methods. The national traditional sports culture is based on the national traditional sports as the carrier to reflect the sum of the educational wisdom and sports connection and practical ability of all ethnic groups. This article uses traditional national sports, such as Taijiquan, Health Qigong, and Wushu, to carry out physical training for students [22, 23].

The first-year boys who participated in the school's traditional sports club competition in the traditional sports campus were selected as the experimental group, and the experimental group consisted of 30 students. Carry out traditional physical activities 4–5 times a week for no less than 1 hour each time.

In control group one, the first-year boys who participated in traditional physical education courses in the campus without traditional sports were selected as the control group, and there were 30 students in this group. Students in this group participate in traditional physical education classes twice a week for 1.5 hours each.

In control group two, the first-year boys in the traditional sports school district who did not participate in any traditional sports club activities were selected as the control group 2, and there were 30 students in this group.

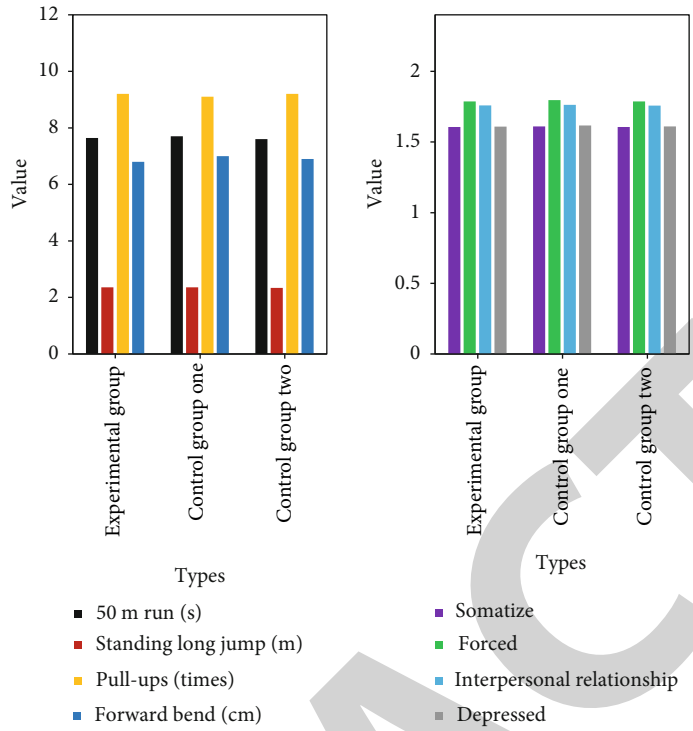

Figure 4: Comparison of physical quality and the average value of mental health indicators in each group before the experiment.

Participate in traditional physical education classes twice a week, 1.5 hours each time, but never participate in extracurricular traditional physical education activities.

Physical fitness is carried out in accordance with the physical test standards for college students. It is divided into 50-meter running, standing long jump, pull-up and standing forward flexion, and other state-regulated physical fitness test indicators [24, 25].

4.2. Comparison of the Physical and Psychological Qualities of the Three Groups of Students before the Experiment. First, a one-way ANOVA test was performed on the physical fitness indicators of the three groups of data. The test results showed no significant difference. It shows that the average physical quality of the students in each group is basically the same before the experiment. Figure 4 shows the comparison between the physical quality and the average value of mental health indicators in each group before the experiment. Table 1 is the variance analysis table of the average value of physical quality and mental health indicators in each group before the experiment.

The F test is an overall test. When ANOVA is used to identify significant differences among multiple means, it does not mean that all groups are significantly different. It only means that one or more of the pairs are significantly different from the mean. Therefore, it is necessary to carry out multiple comparisons between the means of some groups. However, if there are no significant differences as a whole, multiple comparisons between group means are no longer necessary. However, there is no significant difference in the F analysis results of each index. Therefore, multiple comparisons between group means are no longer performed.

When the students first entered the school, the school carried out the "Symptom Self-Assessment Scale (SCL-90)" test for the students. It first extracted the scales filled in by the three groups of students and performed a one-way variance test on each index of the three groups of data. The test results showed no significant difference. This shows that the average value of each index of mental health of students in each group is basically the same before the experiment. Similar to the F analysis results of the average physical fitness of each group before the experiment, no significant difference was found in the F analysis of the above indicators. Therefore, multiple comparisons between group means are no longer performed.

The following conclusions can be drawn from the above F analysis results. Before the start of the experiment, the number of students in the experimental group, the control group, and the control group were equal. However, there was no significant difference in the average values of the indicators of physical quality and mental health of the students in each group. This shows that the grouping is balanced. The balance of the groups shows that there is little difference in the physical quality and mental health of non-sports college students when they enter the school. In addition, the sample size of each group was more than 30 (belonging to a large sample). This essentially eliminates group differences that may arise from individual differences. This essentially rules out interference with experimental effects due to grouping. It provides a powerful precondition for the analysis of the experimental effect after the experiment.

Table 1: Analysis of variance table of the average value of physical quality and mental health indicators in each group before the experiment.

Physical fitness				Psychological health			
Indicator name	$F0.05$ critical value	F calculated value	P value	Indicator name	$F0.05$ critical value	F calculated value	P value
50 m run (s)	3.102	0.0035	P >0.05	Somatize	3.102	0.0012	$P > 0.05$
Standing long jump (m)	3.102	0.0032	$P > 0.05$	Forced	3.102	0.003	$P > 0.05$
Pull-ups (times)	3.102	0.0016	$P > 0.05$	Interpersonal relationship	3.102	0.0012	$P > 0.05$
Forward bend (cm)	3.102	0.029	$P > 0.05$	Depressed	3.102	0.003	$P > 0.05$

4.3. Comparison of Physical Quality and Mental Health of Students in each Group before and after the Experiment. After half a year of traditional physical education and extracurricular activities in traditional sports clubs, we measured the physical fitness and mental health of students in each group again. The measurement results show that the physical fitness indicators and mental health test indicators of the students in each group have more or less improved. We first carried out the T test before and after the experiment on the indicators of physical quality and mental health of the students in each group.

4.3.1. Comparison of the Physical Quality and Mental Health of the Two Groups of Students before and after the Experiment. For the control group two, first-grade boys who participated in sports schools but did not participate in other sports club activities were selected. This group of students never participates in any sports club activities except for the traditional physical education teaching class twice a day. Figure 5 shows the average comparison of the physical quality and mental health of the two groups of students before and after the experiment. Table 2 is the T-test table of the average value of each index of physical fitness and mental health before and after the experiment of the two groups of students.

It can be seen that the average value of each index of physical quality of the students in this group has improved. However, the improvement is not large, and only the difference of the average value of standing long jump results before and after the experiment has significant significance. This shows that only two traditional physical education classes per week can promote the development of college students' leg ability and general endurance level.

And the average value of each test index of mental health of the students in this group has improved. But the increase is very small. And there was no significant difference in the mean value of each index before and after the experiment.

4.3.2. Comparison of the Physical Quality and Mental Health of the Control Group of Students before and after the Experiment. In the control group, all first-grade boys who have not received physical education schooling were selected. In addition to two traditional physical education classes per day, this group of students engages in irregular or occasional extracurricular physical activity. Figure 6 shows the average comparison of the physical quality and

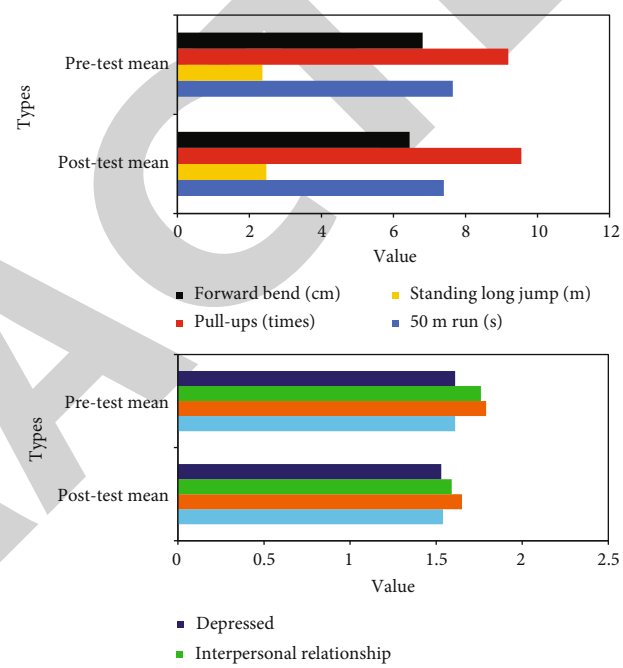

Figure 5: Comparison of the average value of each index of physical fitness and mental health before and after the experiment of the two groups of students.

mental health of the control group of students before and after the experiment. Table 3 is a T-test table of the average value of each index of physical fitness and mental health of a group of students before and after the experiment.

It can be seen that the average value of each index of physical quality of the students in this group has improved. The range of improvement was slightly increased compared with the control group two. Moreover, except for the difference in the mean value of standing long jump performance before and after the experiment, there is a significant difference. Compared with the two control groups, the difference of the mean values before and after the experiment of the 50-meter race was also significant. This shows that in addition to the traditional physical education courses twice a week, occasionally carrying out a little extracurricular sports activities has a considerable effect on cultivating the speed quality, leg ability, and general endurance level of college students.

Table 2: The T-test table of the average value of each index of physical fitness and mental health of the two groups of students before and after the experiment.

Physical fitness				Psychological health			
Indicator name	t0.05	t	P	Indicator name	t0.05	t	P
50 m run (s)	1.9999	1.9093	$P > 0.05$	Somatize	1.9999	1.8932	$P > 0.05$
Standing long jump (m)	1.9999	2.5692	$P < 0.05$	Forced	1.9999	0.9878	$P > 0.05$
Pull-ups (times)	1.9999	0.2988	$P > 0.05$	Interpersonal relationship	1.9999	1.5598	$P > 0.05$
Forward bend (cm)	1.9999	0.2598	$P > 0.05$	Depressed	1.9999	0.6929	$P > 0.05$

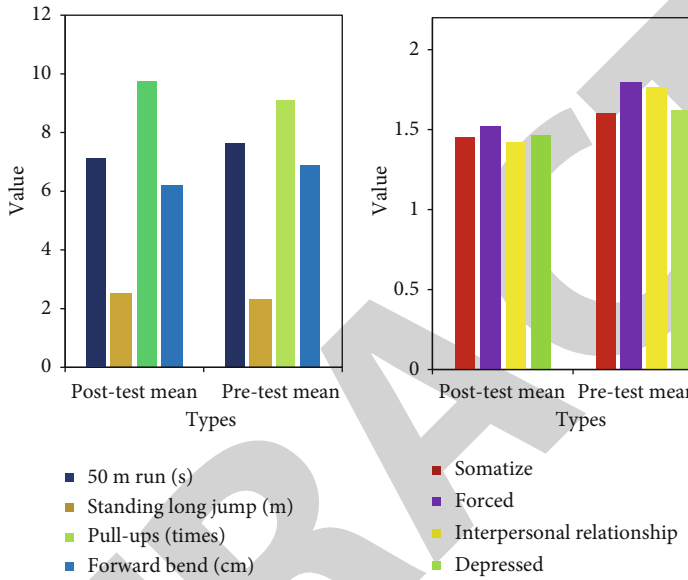

Figure 6: Comparison of the average value of each index of physical fitness and mental health of the control group of students before and after the experiment.

Table 3: T-test table of the average value of each index of physical fitness and mental health of a group of students before and after the experiment.

Physical fitness				Psychological health			
Indicator name	t0.05	t	P	Indicator name	t0.05	t	P
50 m run (s)	2.0001	3.9786	$P < 0.05$	Somatize	2.0001	1.9601	$P > 0.05$
Standing long jump (m)	2.0001	4.4701	$P < 0.05$	Forced	2.0001	2.0001	$P > 0.05$
Pull-ups (times)	2.0001	0.5802	$P > 0.05$	Interpersonal relationship	2.0001	3.0987	$P < 0.05$
Forward bend (cm)	2.0001	0.4796	$P > 0.05$	Depressed	2.0001	1.4069	$P > 0.05$

And the average value of each test index of mental health of the students in this group has improved. The rate of improvement was slightly greater than that of the two control groups. Among the average values of various indicators before and after the experiment, the differences in the average values of most indicators were not significant. Only the difference in the mean values of interpersonal factors before and after the experiment was significant. This may be related to the fact that some students must communicate and negotiate with their classmates in order to sometimes participate in extracurricular sports activities.

4.3.3. Comparison of the Physical Quality and Mental Health of the Students in the Experimental Group before and after the Experiment. The experimental group selected first-year boys from the sports campus. In addition to traditional physical education classes twice a week, this group of students regularly participates in traditional sports club activities 2-3 times a week and participates in traditional sports for more than 1 hour almost every day. Figure 7 shows the average comparison of the physical quality and mental health of the students in the experimental group before and after the experiment.

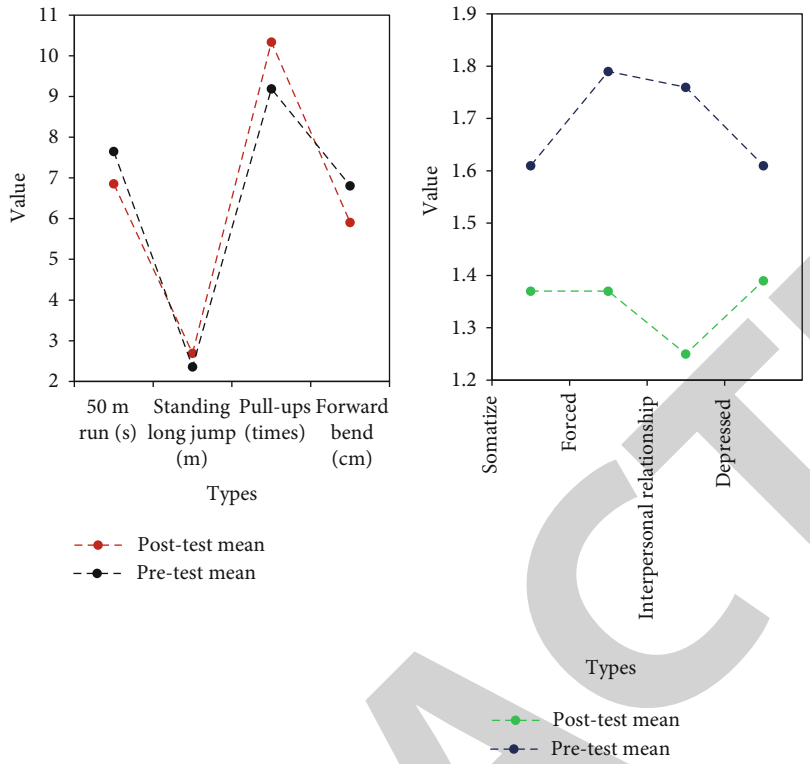

Figure 7: Comparison of the average value of each index of physical fitness and mental health of the students in the experimental group before and after the experiment.

It can be seen that the average value of each index of physical quality of the students in this group has improved. Compared with the control group 2 and the control group, the increase range was increased. Moreover, as in the control group, the difference in mean values before and after the experiment of 50-meter running and standing long jump was significant. This shows that maintaining traditional sports habits for more than one hour a day has a great effect on cultivating young college students' sports speed literacy, leg ability, and basic exercise endurance technical level.

And the average value of each test index of mental health of the students in this group has improved. The increase range was greater than that of the control group two and the control group. Among the average values of various indicators before and after the experiment, the differences in the average values of somatization factors, obsessive-compulsive disorder factors, interpersonal relationship factors, and depression factors are all significant.

4.4. Comparison of the Physical Quality and Mental Health of the Three Groups of Students after the Experiment. Through the longitudinal comparison of each index before and after the experiment in each group, we can see that each test index of each group has improved more or less before and after the experiment. It is just that the magnitude of improvement is different, and the significance of the difference before and after the experiment is different. To understand which group has a more significant experimental effect, we need to make a horizontal comparison of the means between the groups based on the final test results.

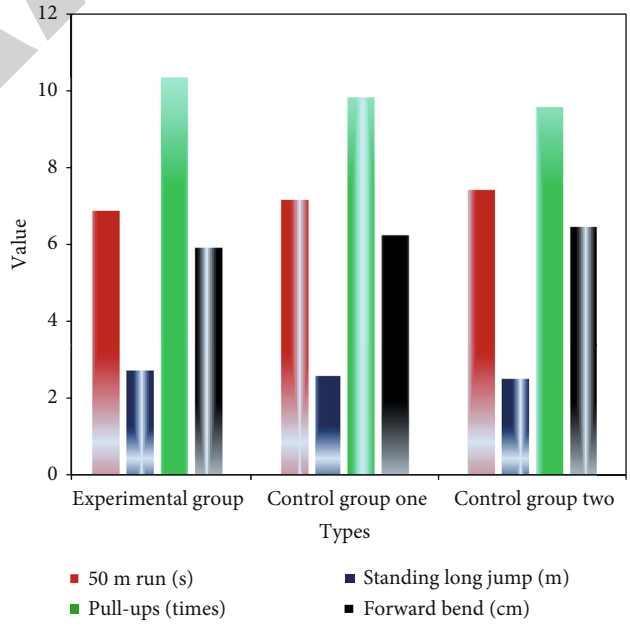

Figure 8: Comparison of the average physical fitness of each group after the experiment.

The comparative analysis of the average physical fitness of each group after the experiment is shown in Figure 8.

As can be seen from the figure, the analysis results of the 50-meter run and standing long jump showed significant significance among the groups as a whole. This shows that as long as there are no less than 2 traditional physical

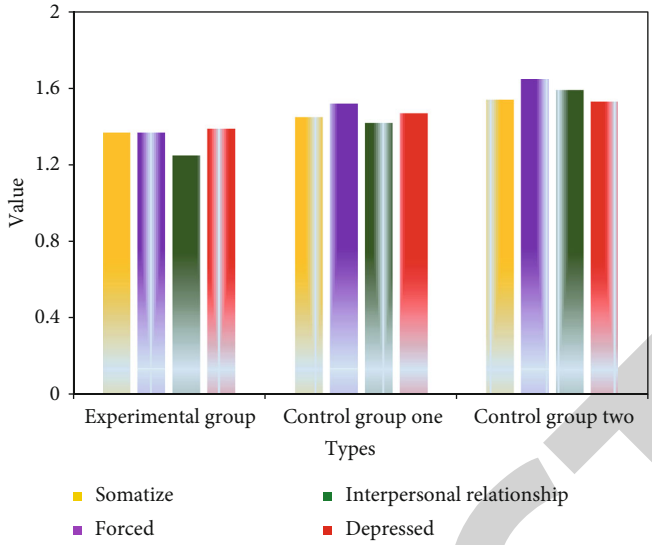

Figure 9: Comparison of the mean values of mental health test indicators in each group after the experiment.

activities per week, the general endurance level can be more or less improved. Occasional participation in extracurricular activities was not significantly different from participating in traditional physical education classes twice a week for improving general endurance levels. And traditional sports activities of no less than 1 hour a day can more obviously improve the general endurance level of college students.

After the experiment, the comparative analysis of the average values of the physical health test indicators in each group is shown in Figure 9. As can be seen from the figure, as a whole among the groups, only the analysis results between the mean values of the interpersonal factors showed significant significance. This shows that only the experimental group (participate in traditional sports leisure activities frequently) has a significant effect on improving the interpersonal factors of college students. This is also explained from another perspective: Since traditional sports are group sports, participants must deal with interpersonal relationships. On the contrary, in the process of often considering how to deal with interpersonal relationships, the interpersonal relationship factor of college students is also improved.

5. Discussion

Sports have a wide range of functions. But chasing its roots, its most essential function is still to keep fit, that is, to promote physical health and ensure mental health. The ultimate goal of people participating in sports is to promote health. Facts have proved that through scientifically sound physical exercise, it can increase bone density and increase muscle strength and volume. In this process, it not only creates a strong body shape for people, but also achieves a beautiful visual effect. It also promotes the physical development of adolescents, enhances the body's resistance to disease, and slows down the aging speed of the human body, and this is functional health. At the same time, by participating in sports activities, people's mind is exercised. And all sports activities have a certain degree of competition, there are winners and losers. Since then, people will not only enjoy the joy of success in participating in sports activities, but also bear the pressure of failure. Participating in physical activity therefore enhances a person's ability to resist stress, which is in terms of mental health. Furthermore, participating in sports activities can improve people's team awareness, expand the circle of friends' communication, and improve people's communication skills. This is part of the social function of sport and also constitutes a part of health.

6. Conclusions

To sum up, as long as college students continue to participate in sports, they can not only strengthen their bodies and improve their mental health, but also improve their health. In particular, the practical results of maintaining traditional sports activities of no less than one hour a day have proved that long-term and regular leisure activities such as traditional sports have a huge effect on cultivating college students' physical fitness and improving their mental health. College students have long insisted on traditional sports activities for no less than one hour a day. It can effectively improve the sports speed literacy, leg ability, and basic tolerance level of college students. At the same time, it also has a significant curative effect on improving the mental health of college students including the main technical indicators such as physicalization factor, social compulsion factor, interpersonal relationship factor, and depression factor.

Data Availability

No data were used to support this study.

Conflicts of Interest

There is no potential conflict of interest in this study.

Acknowledgments

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