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Research Article

Application of Kohonen Neural Network in Sports Cluster

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People's physical fitness is directly linked to the national physique of a country. It is an important analysis indicator of the country's comprehensive national strength and economic level. Moreover, students' physical and mental health is in a stage of rapid development. Their physical health is not only directly related to their study and life at this stage but it will also have a profound impact on the physical level, health status, and work ability of adults. Starting from the cluster analysis of sports, this article explores the communication effects of sports, communication strategies, and the relationship between sports and the development of users' healthy habits by defining concepts and types and combining quantitative and qualitative analysis. Study the relationship and then analyze whether sports applications bring people the effect of promoting healthy behavior. This article retrieved documents about the application of Kohonen neural network in sports cluster analysis in domestic literature databases such as Weipu, Wanfang data, and CNKI. A total of 144 documents were retrieved from the database, and the retrieved documents were collected for sports activities. The study of class analysis can avoid human subjective factors and obtain clustering results quickly and objectively, thus providing an ideal clustering method for comprehensive evaluation of sports. The experiment proves the cluster analysis of the impact of sports on people's physical fitness, the heterogeneity test results are 0% (boys) and 3% (girls), it is believed that there is no statistical heterogeneity in the physical fitness of middle school boys in each study, and $P < 0.001$, indicating that the influence of sports on people's physical fitness is significantly different between the experimental group and the control group. This shows that the application of Kohonen neural network clustering analysis method has great practical value for comprehensively evaluating people's physical functions and physical fitness. It is an objective, reasonable, effective, and rapid quantitative evaluation method.

1. Introduction

Sports cluster analysis came into being. It improved the user experience with the help of big data, informatization, and neural network technology. At the same time, it has not only been recognized and loved by the public but it has also promoted the national sports boom and also conveyed the sports belt. There is positive energy coming. Research and analysis on the communication effects of the emerging media of sports applications and people's sports conditions are not only helpful to help people improve their physical conditions but also a positive response to national policies, and it is important for the development of sports and the participation of the people. The sports industry cluster is the product of the integration process of the global economy, which is produced and gradually deepened. It is the application and innovation of the industry cluster theory in the field of sports. As a new force in the rising sports industry, the sports industry cluster has broad development prospects and huge development space.

The application of cluster analysis in sports in foreign countries is much earlier than that in China, and the rapid development and update of Kohonen neural network technology has made the methods and types of cluster analysis greatly improved and developed. I believe that in the near future, the clustering analysis method that introduces the Kohonen neural network technology will become an efficient clustering method. Kalini explores how virtual communities have a positive impact on the development of a healthy lifestyle in reality through the characteristics of information

sharing, interaction, and common interest gathering [1]. Shadloo proposed that the factors that affect college students' physical exercise behavior mainly include sports awareness, sports knowledge and methods, exercise atmosphere and sports expertise, and sports consumption behaviors which have a clear correlation with college students' physical exercise behaviors [2]. Li started from the analysis of the existing misunderstandings in sports and the negative effects they produced and proposed the basic model and planning of sports cluster analysis [3].

The cluster analysis method originated in western countries. Compared with the western countries, the cluster analysis method started late and its development is relatively slow. With the continuous development of information and communication and the maturity of computer network technology, the use of cluster analysis methods can predict the activity space and development trends of various sports. Bodyanskiy proposes that health education for college students should focus on combining physical exercise and health and help college students develop good physical exercise habits by introducing the impact of physical exercise on human health, the principles that physical exercise should follow, and common physical fitness methods [4]. Bodyanskiy proposed that the cognition and feeling of sports behavior are related to sports behavior, sports persistence, and sports experience and can directly affect sports behavior [5]. Watanabe proposes to use sports to make people come out of busy work, improve their physical health and find a communication partner, obtain spiritual comfort, and achieve the optimization of the social support network [6].

Through the cluster analysis of sports, this article explores the ways in which sports affect people's healthy living habits, which can not only make people pay more attention to their own health but also promote people to increase their physical fitness. This paper also uses the Kohonen neural network to iteratively optimize the objective function to perform a cluster analysis of sports, avoiding many subjective factors, statistically surveying the related data of the types of sports that people participate in daily, and analyzing its relationship with people's behavior habits. The relationship between cultivation and promotion provides a fast and novel cluster analysis method for similar research in the future.

2. Application of Kohonen Neural Network in Sports Cluster

2.1. Neural Networks

2.1.1. Neural Networks. Artificial neural network is composed of a large number of neurons. Its main function is to imitate the functions of the human brain to process information. Its processing ability is very powerful, and its learning ability is also super strong, capable of processing very complex nonlinearities. Transformed into an easy-to-understand form of expression, artificial neural network can be referred to as neural network [7, 8]. By designing a comprehensive neural network evaluation model that combines BP network and self-organizing competition network, the evaluation results of 28 provinces and regions are fitted and ranked, and the development stage of regional high-tech industrial clusters can be defined.

(1) Neuron Model. Generally, the neuron of a neural network is composed of many inputs and one output. The input of the neuron is $x_1 \cdots x_n$, w_{ij} represents the weight of the j input, the threshold of the neuron is represented by θ_i, the self-information and external information of the neuron are, respectively, u_i and s_i denoted, the output is denoted by y_i, and its model can be represented by

$$\tau \frac{du_i}{dt} = -u_i(t) + \sum w_{ij} x_j(t) - \theta_i, \tag{1}$$

$$y_i = f[u_i(t)]. \tag{2}$$

The expression formula of the model is a first-order differential, so it can mimic the function of human neural network processing information well. In addition, its output can be expressed in the following three forms [9].

Linear type:

$$f(u_i) = \begin{cases} 1, & u_i \geq u_2, \\ au_i + b, & u_i \leq 0 < u_2, \\ 0, & u_i < u_1. \end{cases} \tag{3}$$

Step type:

$$f(u_i) = \begin{cases} 1, & u_i \geq 0, \\ 0, & u_i < 0. \end{cases} \tag{4}$$

Type S:

$$f(u_i) = \frac{1}{1 + \exp\left(-u_i/c\right)^2}. \tag{5}$$

Among them, a is the proportional coefficient, b is the variable value, and c is the fixed value.

(2) Types of Neural Networks. Forward network refers to the connection between layers, but there is no connection between each layer. The network is always moving forward, and the network of the last layer is not connected to the first layer network, which is the beginning and the end of the network. There is no connection between the networks, and the networks are lined up. This is the forward network feedback network. On the basis of the forward network, the last layer of the network is connected to the first layer of network; that is, the output is introduced to the first the input of the layer is on [10, 11]. If there is no feedback, the network within the layer has a one-way connection. This form is conducive to strengthening the influence within the same layer and promoting network learning. The intralayer interconnection network is also under the condition that all or not all neurons in the same layer are connected to each other under

the condition that all or not all neurons in the same layer are connected to each other. This interconnection method promotes the activity in the same layer, whether it is strong or strong or weak both are weak [12]. Existing studies have analyzed industrial clusters and their performance from different research aspects through the methods of AHP, DEA, location quotient, principal component analysis, multiple regression statistics, and summarization. The neural network method is mainly used in the theoretical stage.

2.1.2. Kohonen Neural Network Algorithm Steps. For the input vector $Y = \{y_1, y_2, \cdots, y_n\}$, if there are c fuzzy subsets forming a fuzzy c partition of the input vector Y, then the membership of these fuzzy subsets should meet the following conditions:

$$0 \le r_{ik} \le 1, \quad \sum_i r_{ik} = 1. \tag{6}$$

The objective function of cluster Y is generally expressed in the following form:

$$J(R, Z, Y) = \sum_i \sum_k (r_{ik})^{\lambda} (\|Y_k - Z_i\|)^2, \tag{7}$$

where λ is the power exponent of the membership function r, $Z = (z_1, z_2, \cdots, z_c)$ is the cluster center of a given input sample, and R is a fuzzy c partition of the input sample Y. The above formula is the core optimization goal of Kohonen neural network algorithm [13, 14].

Select a learning sample $Y = \{y_1, y_2, \cdots, y_n\}$ with correct data, where the number of samples in the learning sample is n, each sample vector is a p-dimensional vector, and the initial value $c(1 \le c \le n)$ and the feature distance used for cluster analysis are given.

Step 1. Initialize the cluster center vector $Z = (z_1, z_2, \cdots, z_c)$, each vector in this cluster center vector set is also a p-dimensional vector, and initialize the number of training $T = 0$, the maximum number of training is $T_{\max}$, and the initial weighted power exponent of the degree of membership is $K_0(K_0 > 1)$. Set the termination error of the iteration as $\varepsilon > 0$ [15, 16].

Step 2. Calculate the membership degree of each sample belonging to the $i(2 \le i \le c)$ type in the input mode and mark it as r_{ik}. The membership degree calculation function is as follows:

$$r_{ik} = \frac{1}{\sum_{j=1}^{c} \left(\|Y_k - Z_i\| / \|Y_k - Z_j\| \right)^{2/(\lambda - 1)}}. \tag{8}$$

After the membership degree r_{ij} is calculated, use this membership degree to calculate the iteratively updated learning rate a of the weight value, and the calculation learning rate a function is as follows:

$$a_{ik}(T) = r_{ik}^{\lambda}, \qquad \lambda = \frac{K_0 - T(K_0 - 1)}{T_{\max}}, \tag{9}$$

where K_0 is a normal number greater than 1, when $T = T_{\max}$, $\lambda = 1$.

Step 3. Adjust the cluster center vector, and update the vector formula according to the previous cluster center vector and the learning rate as follows:

$$Z_i(t) = Z_i(T-1) + \frac{\sum_{k=1}^{N} a_{ik}(Y_k - Z_i(T-1))}{\sum_{k=1}^{N} a_{ik}}, \quad i = 1, 2, \cdots, c. \tag{10}$$

Step 4. Calculate the energy function and the correction error of the clustering center vector Z. If formula (19) is satisfied, the algorithm stops iterating.

$$\|Z(T) - Z(T-1)\|^2 = \sum_{i=1}^{c} \|Z_i(T) - Z_i(T-1)\|^2 \le \varepsilon. \tag{11}$$

When the number of iterations is greater than the initially set maximum number of iterations $T_{\max}$, it will also cause the iteration to terminate; otherwise, it will move to the second step to continue the calculation iteration.

2.2. Metrics and Criterion Functions in Cluster

2.2.1. Measurement Methods in Cluster Analysis. In cluster analysis, we need to select appropriate indicators as the basis for clustering. Commonly used measures are similarity and dissimilarity measures, which quantitatively describe the degree of similarity or dissimilarity between two data objects or clusters. Or the greater the similarity between clusters, the smaller the dissimilarity; conversely, the smaller the similarity, the greater the dissimilarity [17, 18]. However, most existing clustering algorithms often use dissimilarity to represent the similarity measure and use it as a measure of computing data objects. We introduce the following commonly used standardization methods.

(1) Min–Max Standardization.

$$(x_{jl})' = \frac{x_{jl} - \min(x_{\cdot l})}{\max(x_{\cdot l}) - \min(x_{\cdot l})}. \tag{12}$$

Among them, x_{jl} represents the value of the j data object under the l attribute; $\max(x_{\cdot l})$ and $\min(x_{\cdot l})$, respectively, represent the maximum and minimum values of the l attribute in the data set, making $(x_{jl})' \in [0, 1]$.

(2) Z-Score Standardization.

$$\left(x_{jl}\right)' = \frac{x_{jl} - x_l}{S_j}. \tag{13}$$

Among them, x_l represents the mean $x_l = (1/n_j)\sum_{j=1}^{n_j} x_{jl}$ of the l attribute, and the standard deviation $S_j = (1/n_j)\sum_{j=1}^{n_j} (x_{jl} - x_l)^2$.

(3) Decimal Scaling Standardization. Standardization is carried out by moving the decimal point position of the attribute value. The number of decimal points moved depends on the maximum absolute value in the attribute value. The calculation method is

$$x' = \frac{x}{10^j}. \tag{14}$$

2.2.2. Criterion Function in Cluster Analysis. After determining the similarity measurement method, in order to complete the clustering, the corresponding criterion function needs to be determined. The commonly used clustering criterion function is as follows.

(1) Criterion Function. This kind of clustering criterion function is mostly used for clustering problems where data objects are densely distributed, the number of data objects is small, and there are significant differences between data objects between different classes [19, 20]. Assuming that the distance between any data object x in class c_i and class center m_i is represented by $d(x, m_i)$, the error sum of squares function is defined as follows:

$$J_c = \sum_{i=1}^{k} \sum_{x \in c_i} d(x - m_i)^2. \tag{15}$$

Among them, k is the number of clusters, c_i is the cluster set of class i, x is the data object in class c_i, and m_i is the class center in class c_i, which is generally obtained by calculating the average value of all data objects in class c_i. The calculation formula is

$$m_i = \frac{1}{n_i} \sum_{x \in c_i} x, \quad i = 1, 2, \cdots, k. \tag{16}$$

The more compact, the better the clustering effect.

(2) Weighted Average Square Distance and Criterion Function.

$$J_i = \sum_{i=1}^{k} PS_i^*. \tag{17}$$

P represents the weighted prior probability, which is calculated from the number n_i of data objects in class c_i and the total number n of all data objects in the data set. The calculation formula is as follows:

$$P = \frac{n_i}{n}. \tag{18}$$

Among them, S_i^* represents the average squared distance between data objects in the class, and its calculation formula is

$$S_i^* = \frac{2}{n_i(n_i - 1)} \sum_{x \in c_i} \sum_{x' \in c_i} x - x'^2. \tag{19}$$

(3) Interclass Distance and Criterion Function. This clustering criterion function is used to describe the degree of separation between different categories, and there are usually two definitions.

General distance between classes and function definitions:

$$J_{b1} = \sum_{i=1}^{k} (m_i - m)^T (m_i - m). \tag{20}$$

Weighted interclass distance and function definition:

$$J_{b2} = \sum_{i=1}^{k} P(m_i - m)^T (m_i - m). \tag{21}$$

Among them, m_i represents the mean vector of class c_i, m represents the mean vector of the entire data set, and P is the weighted prior probability. Construct industrial cluster organization neural network. Build an industrial cluster network architecture, and use the newff() function to establish a preliminary neural network function. The four input elements of the function are an $R \times 2$-dimensional matrix composed of the maximum and minimum values in the R -dimensional input samples, the number of network neurons in the layer, the transfer function used by each layer of network neurons, and the type of function used for training.

3. Experimental Design of Sports Cluster

3.1. Cluster Experiment Object. Retrieving literature about the application of Kohonen neural network in sports clustering analysis using Weipu, Wanfang data, CNKI, and other domestic literature databases. The search terms are Kohonen neural network, sports cluster analysis, etc. A total of 144 articles were retrieved from the database, the inclusion and exclusion criteria were strictly set, and the quality of the final included research articles was evaluated.

Inclusion criteria: the subjects are nonprofessional sports people; the literature that studies the application of Kohonen neural network in sports cluster analysis; experimental research, the number of experimental group and control group, the indicators of the experimental group and control group before and after intervention documents with clear

Table 1: Data sheet of evaluation index system for index reliability testing.

	Very clear	Clear	General	Not clear	Chaotic	Alpha
Body shape	4.37	3.42	4.21	3.01	3.24	0.8567
Body function	4.06	3.57	4.39	3.10	3.01	0.8233
Physical fitness	3.39	3.76	4.35	3.46	3.50	0.7369
Willing to participate in sports	3.84	3.37	4.08	3.14	3.44	0.7419

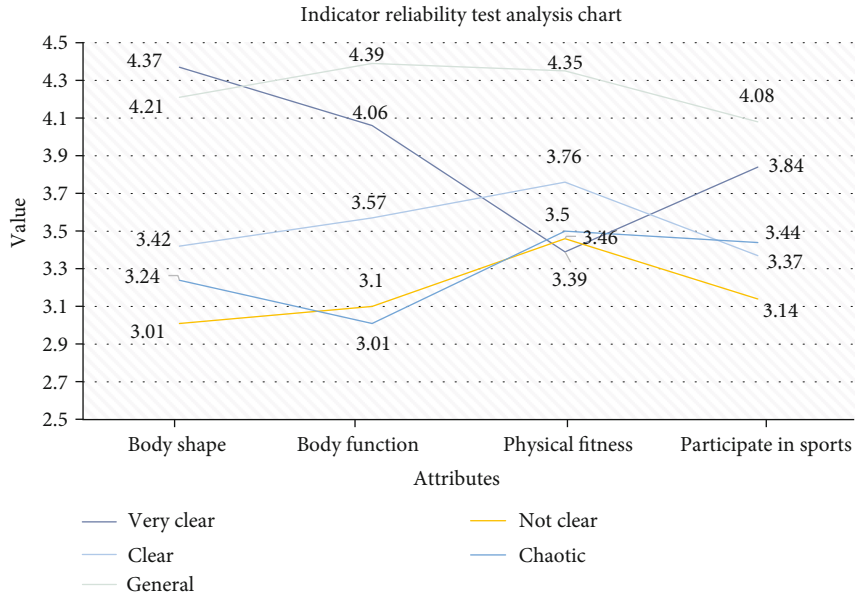

Figure 1: Indicator reliability test analysis chart.

Table 2: Statistical data table of published years of included literature.

Years	Journal literature	Degree literature	Conference documents	Patent literature
2001-2005	5	9	1	0
2006-2010	7	16	3	0
2011-2015	13	19	6	2
2016-2020	18	31	9	5

descriptions of changes; for studies of the same population by the same researcher, only the most recently published one is selected.

Exclusion criteria: the subjects are professional sports people; the study before the experiment is not comparable to the baseline of the experimental group and the control group; nonexperimental research; the number of the experimental group and the control group, the changes in the experimental group and the control group before and after the intervention are not described enough in clear documents; documents published by different authors with exactly the same content, documents published after deletion.

3.2. Learning and Training of Neural Networks. In the Kohonen neural network, the weight represents the components of each cluster center, and the number of nodes in the output layer represents the number of clusters. In the network training process, since the selection of the initial weight will not have much impact on the training result, we randomly select 5 numbers between 0 and 1 as the initial weight. There are 12 groups of network training samples, and each group of sample vectors contains 5 components (5 indicators). The training times of the selected network is 2000 times.

3.3. Statistical Data Processing Methods. SPSS 23.0 was used to process the data, and the numbers are expressed in percent (%), where K is the number of data in this experiment, the variance of all survey results, and $P < 0.05$ indicates that the difference is statistically significant. The formula for calculating reliability is shown in

$$a = \frac{k}{k-1}\left(1 - \frac{\sum \sigma_i^2}{\sigma^2}\right). \tag{22}$$

4. Experimental Sports Cluster

4.1. Evaluation Index System Based on Index Reliability Testing. A coefficient alpha of 0.8 or higher indicates that the indicator is very good, while a coefficient alpha of 0.7 or higher is also acceptable. Reliability is analyzed here for

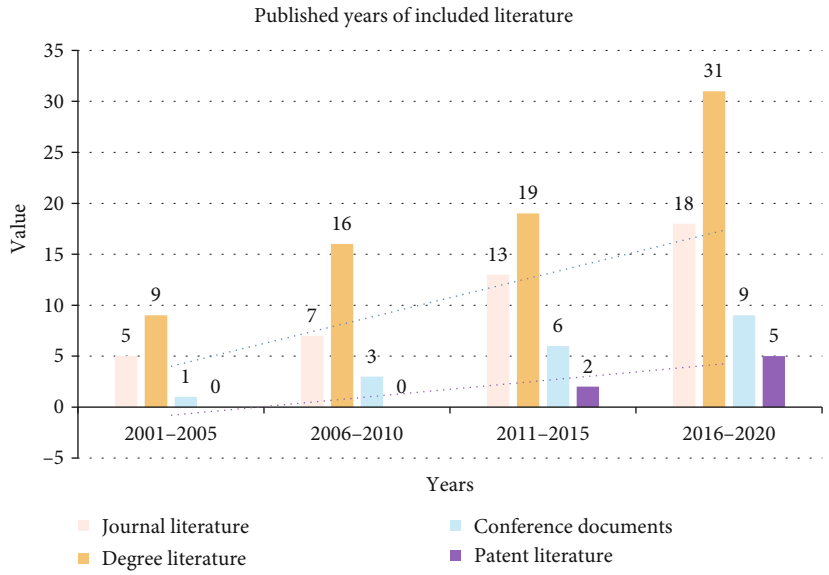

Figure 2: Statistical analysis chart of published years of included literature.

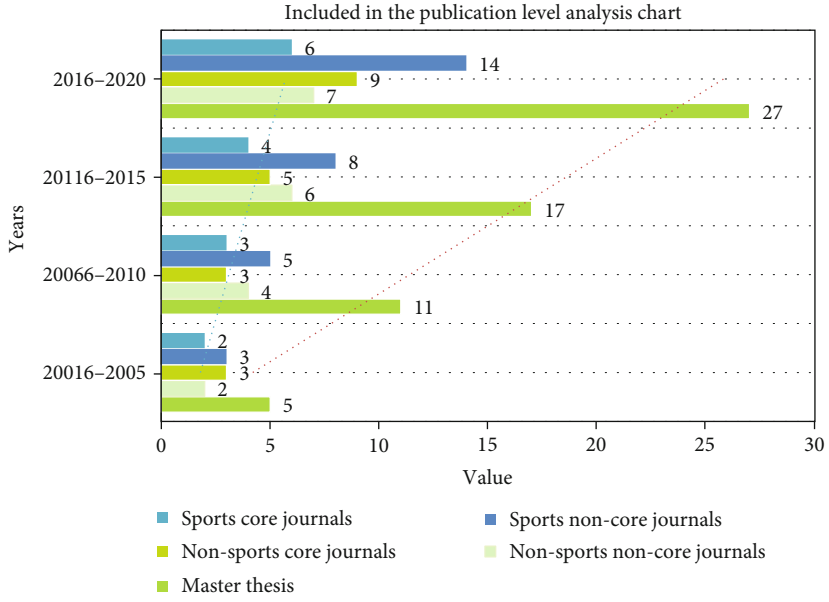

Figure 3: Included in the publication level analysis chart.

Table 3: Data table of the impact of sports on people's body shape.

Index		Publication bias	Heterogeneity	Total effect	*P*	Weight mean difference	95% confidence interval
	Height	No	19%	0.75	0.47	-0.42	0.73
Male	Weight	No	24%	0.20	0.79	0.17	0.56
	Shape	No	21%	0.66	0.47	0.25	-0.27
	Height	No	19%	1.07	0.26	-0.63	0.55
Female	Weight	No	53%	0.63	0.68	-0.41	0.53
	Shape	No	21%	0.72	0.41	0.17	-0.50

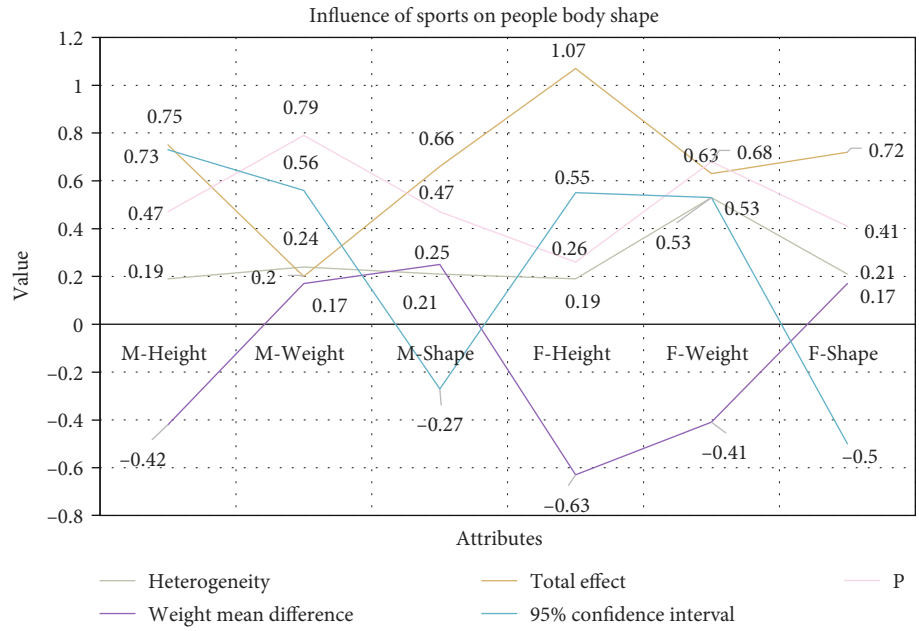

Figure 4: Analysis of the influence of sports on people's body shape.

Table 4: Data sheet on the impact of sports on people's physical function.

Index		Publication bias	Heterogeneity	Total effect	*P*	Weight mean difference	95% confidence interval
Male	Vital capacity	Yes	10%	8.62	<0.001	-23.65	-9.18
	Step test index	No	48%	4.35	<0.001	-2.73	-1.53
Female	Vital capacity	Yes	43%	6.71	<0.001	-28.76	-1.32
	Step test index	No	67%	4.39	<0.001	-5.29	-2.83

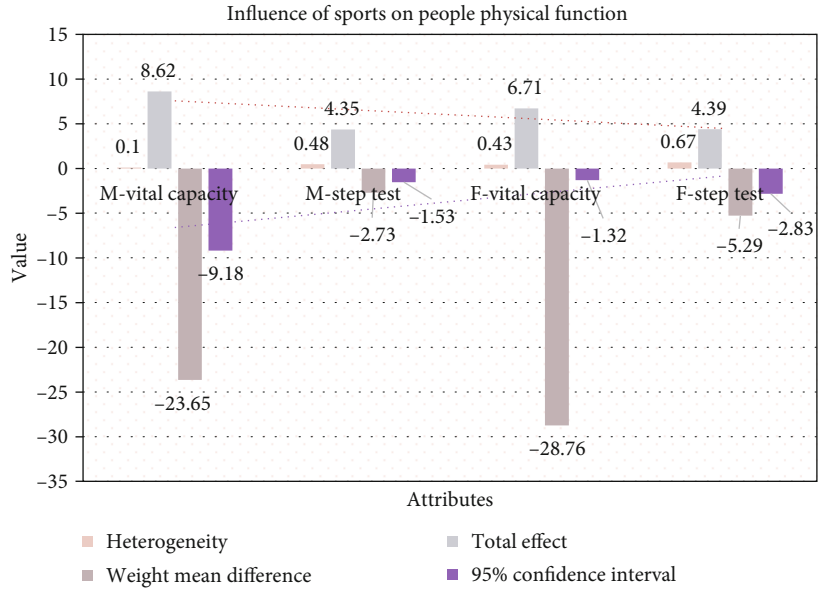

Figure 5: Analysis of the influence of sports on people's physical functions.

Table 5: Data table of the impact of sports on people's physical fitness.

Index		Publication bias	Heterogeneity	Total effect	P	Weight mean difference	95% confidence interval
Male	50 meters	No	0%	5.95	<0.001	0.49	0.62
	Endurance running	No	54%	3.16	<0.001	9.57	1.25
	Standing long jump	Yes	67%	3.22	<0.001	-0.27	-4.41
	Sitting forward bending	Yes	0%	1.73	0.11	-0.55	0.16
Female	50 meters	No	3%	2.84	<0.001	0.46	0.64
	Endurance running	No	42%	4.33	<0.001	9.65	9.19
	Standing long jump	Yes	0%	7.61	<0.001	-8.59	-7.36
	Sitting forward bending	Yes	0%	5.23	<0.001	-0.96	-0.59

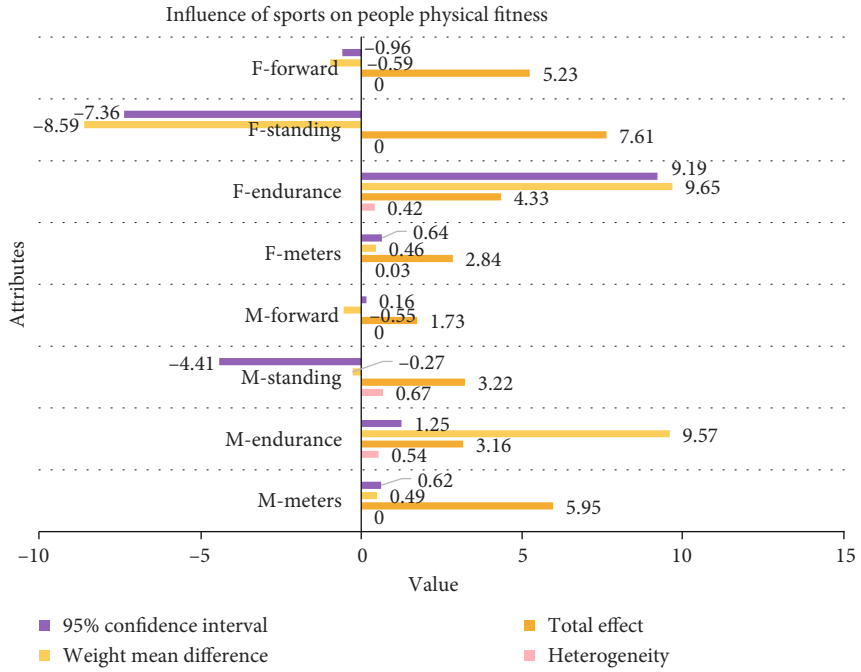

Figure 6: Analysis of the influence of sports on people's physical fitness.

Table 6: Data table of the impact of sports on people's physical fitness.

Age	Very clear	Clear	General	Not clear	Chaotic
6-12	3.37	3.58	4.19	4.06	4.48
12-18	2.92	3.61	3.93	4.18	4.22
18-30	3.21	3.81	3.95	4.43	4.30
30-50	3.33	3.45	3.73	4.41	4.44
50-65	3.58	3.51	3.62	4.48	4.34

each task type, but the reliability coefficients chosen for each task type are slightly different. The results are presented in Table 1 and Figure 1.

4.2. Publication Time and Publication of the Included Literature. The time of literature research and the level of publications can show the research status of related research fields from one aspect. Table 2 shows the publication years and publication status of the 144 research articles included in this article.

It can be seen from Figure 2 that since 2000, the literature on sports cluster analysis research has shown an increasing trend, which also reflects from the side that sports researchers are paying more and more attention to people's physical health, especially since 2016. A total of 63 research documents were included, accounting for 43.75% of the total included documents, which also shows the increase in research on physical fitness levels in recent years. Using "Internet +" new technology, through cloud computing and big data platform, develop modern medical information service industry and sports intelligence industry.

It can be seen from Figure 3 that the number of research literatures on sports and people's physical health by Chinese sports researchers has been increasing year by year, but the research quality is generally low, reflecting that sports researchers are paying more and more attention to this field, but their research capabilities need to be further improved.

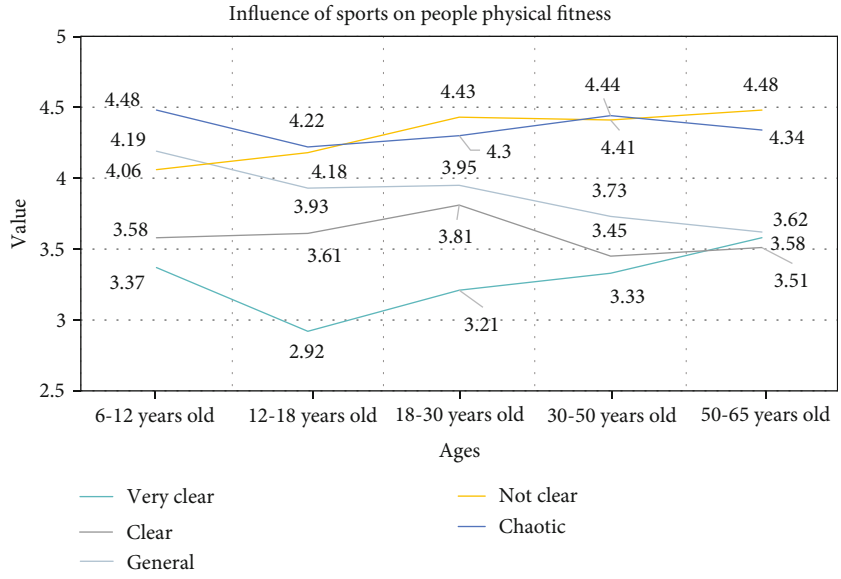

Figure 7: Analysis of the influence of sports on people's physical fitness.

4.3. Cluster Results of Test Indicators

4.3.1. The Impact of Sports on People's Body Shape. Showing body shape indicators in the form of data is a necessary method to study the law of human growth and development, physical fitness, and nutritional status. Through the cluster analysis of the included 144 research documents, the data of physical fitness index of sports are obtained. The specific results are shown in Table 3.

It can be seen from Figure 4 that the weighted average weight difference of boys is 0.20 kg, which is a positive value, indicating that the weight decreased after the experiment. Naturally, the weight is increasing, but here it decreases, indicating that physical exercise still has a certain positive effect on weight control. On the other hand, the weighted mean difference of girls' weight is -0.41 kg, which is a negative value, indicating that the weight is still increasing after the experiment. Taking into account the heterogeneity of girls' weights between studies, the result is 53% > 24%, which exceeds that of boys. There is too much heterogeneity in weight between various studies, indicating that there is obvious statistical heterogeneity, so the results may appear such deviations. The specific results are shown in Table 4.

From Figure 5, it can be seen the result of cluster analysis on the effect of sports on the vital capacity of middle school boys, the heterogeneity test result is 10%, the obtained value of the overall effect is 8.62, the weighted mean difference is -23.65, $P < 0.001$, which means that sport has an effect on the vital capacity of boys, and there is a significant statistical difference between the experimental group and the control group. In cluster analysis of the effect of sports on girls' vital capacity in gymnastics, the heterogeneity test score is 45%, the overall effect size is 6.71, and the weighted mean difference is -28.76, $P < 0.001$, indicating that the effect of sports on girls' vital capacity in the experimental group is statistically significantly different from the control group. There is also a significant statistical difference between the experimental group and the control group in the effect of sports on the human step test index.

4.3.2. The Impact of Sports on People's Physical Fitness. Physical fitness is an important aspect of evaluating the level of sports and generally includes strength, endurance, flexibility, and other qualities. In this study, four evaluation indicators, including 50-meter running, endurance running, standing long jump, and sitting forward bending, were selected as the research objects of cluster analysis. The specific results are shown in Table 5.

It can be seen from Figure 6 the cluster analysis of the impact of sports on people's physical fitness, the heterogeneity test results are 0% (boys) and 3% (girls), and it is believed that there is no statistical difference in the physical fitness of middle school boys in each study. It is qualitative and $P < 0.001$, indicating that the influence of sports on people's physical fitness is statistically different between the experimental group and the control group. There was no statistical difference between the experimental group and the control group without exercise intervention in the sitting position of boys in the seated forward bending ($P = 0.11 > 0.05$), while there was a significant statistical difference in girls ($P = 0.11 > 0.05$, $P < 0.001$). The flexibility of boys itself is worse than that of girls, and the plasticity is not as strong as that of girls. There may be no statistically different results. But generally speaking, physical exercise intervention has improved the flexibility of middle school students, but the improvement is not great.

4.3.3. The Impact of Sports on Whether People Are Willing to Participate in Sports. People's willingness to participate in sport is an important indicator of how they assess the extent to which sport will develop in the future. By testing the questionnaire using methods commonly used in sociological research, making additions and modifications based on the

test results, and conducting cluster analyses of the recorded research data, we could obtain information about whether people want to participate in sports. The specific results are listed in Table 6.

It can be seen from Figure 7 that with the promotion of sports, people are willing to take the initiative to participate in sports, which increases sports consumption in disguise and promotes the development of the sports industry. It shows that sports intervention can significantly improve people's willingness to participate in sports.

5. Conclusions

This paper uses the Kohonen neural network to study the impact of sports on students' body shape, physical function, physical fitness, and whether they are willing to participate in sports. Five indicators are selected for cluster analysis. After the intervention of sports, people's vital capacity and the step test index increased significantly and have significant statistical significance, which shows that the application of Kohonen neural network clustering analysis method has great practical value for the comprehensive evaluation of people's physical function and physical fitness. There is objective, reasonable, effective, and rapid quantitative evaluation of people's physical functions and physical fitness methods.

In recent years, the literature on physical health research has shown an increasing trend, which also reflects from the side that sports researchers are paying more and more attention to people's physical health. Traditional literature reviews will be affected by the author's different subjective views and interests. This will produce different results, and cluster analysis has certain procedures and rules to follow, which can enhance the objectivity and accuracy of the results. It can be seen from the research in this article that the application of cluster analysis to the field of sports research can not only avoid the huge projects brought about by sports tests but also expand the research sample size by comprehensively analyzing the relevant research results to obtain more accurate research. The results provide possibilities and methods.

In the domestic research literature in recent years, there are many studies on physical health, the intervention methods are not consistent, and the choice of exercise methods is various. This also has a certain impact on the research results of this article, making the research results of this article unable to meet expectations. In addition, due to issues such as search methods and database permissions, some related studies may be missed, which will affect the results of the research. However, because of the higher the quality of the cluster analysis method itself, the more uniform the literature inclusion criteria, the stronger the objectivity of the results, and the more convincing it is to solve the problem of inconsistent research results, so the conclusions obtained in this article are still objective.

Data Availability

No data were used to support this study.

Conflicts of Interest

The author declares that there are no conflicts of interest regarding the publication of this article.

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