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Retraction

Retracted: Quality Evaluation Method of College Sports Long Jump Training Course Based on Genetic Algorithm

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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] B. Han, Z. Wang, and Z. Zhao, "Quality Evaluation Method of College Sports Long Jump Training Course Based on Genetic Algorithm," *Mobile Information Systems*, vol. 2022, Article ID 7905389, 10 pages, 2022.

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Research Article

Quality Evaluation Method of College Sports Long Jump Training Course Based on Genetic Algorithm

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In order to improve the accuracy of the quality evaluation of college sports long jump training courses, this paper studies the quality evaluation method of college sports long jump training courses based on a genetic algorithm. According to the purpose of college long jump training course evaluation, basic principles of teaching quality evaluation and classroom teaching evaluation standards constructs the establishment process of evaluation index system and calculates the weight of long jump training course quality evaluation index based on AHP method, so as to provide index basis for subsequent quality evaluation; The quality evaluation model of the long jump training course is constructed based on the genetic algorithm. Through cross operation and mutation operation based on adaptive mutation probability, the high accuracy evaluation of college sports long jump training course quality is realized. The experimental results show that the evaluation accuracy of this design method is higher than 97.21%, and the evaluation satisfaction is higher than 97.15%, which significantly improves the accuracy of the university sports long jump training courses and has practical significance in the course evaluation.

1. Introduction

Mastering the laws of motivation and behavior and consciously guiding students' behavior are the main means to regulate the communication between teachers and students and improve the relationship between teachers and students [1–3]. "Behavioral science" believes that human behavior is determined by motivation, and motivation is caused by need. To stimulate people's work motivation, we must deeply understand and study people's needs. Only by constantly meeting people's needs, we can effectively stimulate people's internal motivation and cause people's conscious behavior. This reminds us that in order to have a good long jump training course in colleges and universities, we must master the needs of students and study the laws of motivation and behavior [1, 4, 5]: do not simply cram for the completion of the syllabus and teaching materials, but prepare for lessons and people. Before class, we should not only understand the situation of students' skills and physical fitness but also understand what students think, like, and expect from the long jump class.

The rapid development of Internet information technology has an important impact on students' growth, learning, and development. Although with the gradual deepening of China's educational reform, physical education teaching has made remarkable progress [6–8]. However, because some teaching ideas can not fully meet the needs of modern physical education, the effect of physical education is poor and even can not meet the actual needs of modern physical education and talent training to some extent. Using big data analysis technology to evaluate physical training courses can not only provide a reference for modern college educators but also have certain guiding significance for the exploration of college physical education curriculum reform and development under the background of the Internet.

Based on modern Internet information technology, college students have been used to using the Internet to deal with affairs in life and study. Therefore, in the context of the

Internet, college educators should deeply realize that the traditional physical education curriculum evaluation methods can no longer meet the needs of modern physical education. Only under the guidance of relevant school physical education administrative regulations, based on the actual characteristics of students, and through the deep integration of the Internet and physical education curriculum, they can gradually explore a teaching evaluation model that can effectively attract students' attention and enhance their learning interest. Under the background of the Internet, with the help of big data technology, we can not only comprehensively analyze and summarize students' learning characteristics, learning interests, and learning needs but also effectively enrich physical education teaching content and provide more high-quality physical education teaching services for college students. Therefore, in the sports long jump training and teaching, physical educators should pay attention to the comprehensive integration of big data analysis technology and physical education curriculum evaluation indicators and then make more reasonable adjustments to the teaching plan, teaching content, and teaching objectives. In this way, we can realize the reform and development of the physical education curriculum and then provide students with more professional, rich, interesting, and practical modern physical education teaching services.

For a long time, most of the traditional teaching quality evaluations is done by five evaluation subjects: teaching experts, school leaders, teachers' peers, and students in the teaching management department of colleges and universities [9]. Through the weighted scoring of the five evaluation values, the teaching quality and teaching level of teachers in a period of time can be obtained according to the weighted result value. Although the traditional model can also evaluate the teaching quality, it is affected by subjectivity, the evaluation result is vague and one-sided, and the result of teaching quality evaluation is easy to be transferred by people's will.

With the development of computer technology and information technology, many scholars directly establish the mathematical model of the teaching evaluation system. Literature [10] puts forward the evaluation method of physical education teaching quality in application-oriented colleges and universities. According to the educational concept and talent training orientation of application-oriented colleges and universities, this paper analyzes the needs of physical quality and basic ability of motor skills, designs the evaluation system of physical education teaching quality through literature review and data analysis, and realizes the evaluation of physical education teaching quality in colleges and universities. Literature [11] takes 10 colleges and universities in Sichuan Province as the survey object, starting from the relevant theories of physical education and management and uses the methods of questionnaire, literature, and mathematical statistics to evaluate the physical education teaching and training activities in colleges and universities. The risk of physical education teaching in colleges and universities is divided into four types (26 items), teacher factors, student factors, environmental factors, and school management factors. Taking the characteristic root of the factor greater than 1 as the standard, eight factors are extracted in order to find out the main risks. To sum up, the advantages of the above-given method are that various evaluation factors are fully considered and expert experience and knowledge are reflected; the deficiency is that there is randomness and subjectivity in the evaluation process, which fails to take into account the nonlinear relationship between each evaluation index and teaching effect, so that the evaluation results have great subjectivity, resulting in the failure to truly reflect the situation of teaching quality [12–16].

Genetic algorithm is a randomized search heuristic method referring to natural heredity and natural selection in the biological world. This method has the advantages of simple and universal, parallel computing, strong global search ability, and strong robustness. Some scholars use genetic algorithm optimized neural networks to study the evaluation of water quality, soil quality, air quality, and other fields, but it is rarely applied to the field of teaching quality evaluation. This paper combines a genetic algorithm to evaluate the quality of college sports long jump training course, fully overcomes the defects of the above methods, and constructs the establishment process of an evaluation index system according to the basic principles and standards of teaching quality evaluation; the weight of evaluation index of long jump training course quality is obtained based on AHP method; this paper creatively constructs the quality evaluation model of a long jump training course based on genetic algorithm and realizes the quality evaluation of college sports long jump training course through cross operation and mutation operation based on adaptive mutation probability. The experimental results show that the design method in this paper significantly improves the accuracy of the quality evaluation of college sports long jump training courses and is a more effective evaluation method.

2. Evaluation Index System for the Quality of College Sports Long Jump Training Courses

2.1. Evaluation Index of Long Jump Training Course Quality. The physical education curriculum learning evaluation index is not only the standard to measure and evaluate the effect of physical education teaching but also the intuitive presentation of physical education teaching concept [3, 17–21]. It is mainly selected and set from the following angles. One is to measure and evaluate specific sports events, focusing on the students' mastery of skills in relevant sports events, which is mainly related to the content of physical education teaching; second, from the perspective of extracurricular exercise, focus on the evaluation of students' physical exercise habits, mainly related to extracurricular training; the third is to dynamically track the growth of students' physical and mental quality by introducing intelligent technology from the perspective of sustainable growth; fourth, starting from the situation of sports literacy, focus on the evaluation of students' sports character, collective sense of honor, and so on [22–24]. The setting of physical education curriculum learning evaluation indicators should be considered from the perspectives of theoretical basis, experience reference, basic ideas, and construction strategies.

With the deepening of people's understanding of the value of health promotion of physical education curriculum, the idea of "health first" has widely penetrated into the formulation of physical education curriculum standards and the construction of physical education teaching materials in the new century, which is the physical education curriculum at the social level [25–27]. The physical education courses and big break sports activities set up by various schools at all levels according to the curriculum plan and physical education curriculum standards belong to the physical education courses at the school level, while the physical education courses that physical education teachers really implement and students really experience in the curriculum implementation activities such as physical education teaching and big break sports activities are the physical education courses at the teaching level and experience level [3, 28–31]. School physical education curriculum inherently includes physical education and extracurricular physical activities, including explicit physical education curriculum and invisible physical education curriculum, with the dual character of subject curriculum and activity curriculum. Curriculum theory has been separated from teaching theory. Our physical education curriculum evaluation here must consider the physical education curriculum at the teaching level and experience level. At the same time, we should stand at the height of the physical education curriculum at the school level and systematically evaluate the physical activities in the school, so as to promote the discipline development thought of "health first," and reflect the positive role of physical education curriculum in school talent training. The essence of physical education curriculum refers to a curriculum in which students take the initiative to improve their health quality and sports cultural quality and gradually develop a sports lifestyle in the environment of school education. From the essential meaning of physical education curriculum, physical education curriculum reform should avoid the phenomenon of seeing "things" but not "people" and turn from strictly following the discipline characteristics of physical education to paying close attention to the theme needs of students. Physical education curriculum evaluation should follow the principle of "people-oriented" and build a scientific and reasonable new physical education curriculum quality evaluation system based on students as the main body, physical exercise as the main means, and improving health as the main goal and core [32, 33]. Delphi method is used to establish and revise the curriculum quality evaluation index system. Based on the characteristics of physical education and the guiding ideology of curriculum quality evaluation, the three-level structure is adopted, and the first-level indicators are preliminarily formulated, which should include three parts: curriculum conditions, curriculum implementation, and curriculum effect; secondly, each index will be given a score of 9, 7, 5, and 3, respectively, according to "important," "more important," "general," and "unimportant," and experts are invited to score according to the degree of importance. Statistical calculation shall be carried out after receiving the comments of experts. First, the concentration (importance) of expert opinions is calculated. According to the statistical results, those whose importance is less than 6 should be classified The three-level index items shall be screened as necessary, and the index items that can best represent the curriculum quality after repeated deliberation shall be selected, and the weight number shall be reasonably distributed, and finally the index system shall be formed.

The teaching quality evaluation index system designed in this paper should follow the following basic principles: (1) the principle of comprehensiveness. According to the training objectives of college students and from the root of quality education, the construction of the teaching quality evaluation system in this paper should follow the principle of comprehensiveness and investigate the comprehensive situation of teaching quality from multiple angles and levels. The principle of comprehensiveness is helpful to promote the all-round development of teachers' teaching level and the promotion of students' quality education; however, comprehensiveness does not include all relevant influencing factors into the teaching quality evaluation system but scientifically and reasonably screens all evaluation factors to obtain the key influencing factors affecting the evaluation of students' comprehensive quality, that is, the so-called evaluation index. (2) While ensuring the comprehensiveness of teachers' teaching quality evaluation system, the principle of directionality should have a certain directionality, that is, the principle of pertinence. The teaching quality evaluation system will cultivate students into talents with strong comprehensive quality with all-round development of morality, intelligence, physique, and beauty, so as to meet the requirements of the society for college graduates. (3) The principle of incentive and improvement. The principle of objectivity the objectivity of teaching quality evaluation results is the key to teaching quality evaluation. We should truly and comprehensively collect evaluation data, be objective and fair, seek truth from facts, and do not mix personal feelings. (5) Consistency principle. The same standard should be adopted for all the objects participating in the evaluation, and the same number and level of evaluation individuals should be determined for all the evaluation objects. (6) The principle of subjectivity in quality education in colleges and universities, students are the main body of training and development. Only when teachers' teaching behavior and the content of knowledge taught are integrated into students' cognitive structure and ability, can students' comprehensive quality be truly improved. (7) The feasibility principle, the design of evaluation indicators and the selection of methods, the way of collecting information, and the technologies and measures used in information processing should strive to be objective, comprehensive, practical, simple and easy to save human, financial, and material resources.

The research on the content of teaching quality evaluation is reflected in the establishment of a teaching quality evaluation system. Different teaching quality evaluation items are adopted according to the evaluation subject, university type, discipline, and specialty. The following describes the selection of teaching quality evaluation items from two aspects: teachers' quality focuses on their own professional quality, teaching attitude focuses on teaching preparation and management, and teaching content emphasizes the accuracy, depth, and breadth of the content prepared by teachers, and teaching methods pay attention to the mastery of basic teaching skills and the flexible application of teaching methods, and teaching effect refers to students' knowledge of theoretical knowledge, innovation ability, and problem-solving ability.

Classroom teaching evaluation criteria are formulated according to classroom teaching objectives to check the achievement of classroom teaching objectives. The action essentials of "standing long jump" are an important basis for determining the evaluation criteria: (1) slightly separate your feet, stand naturally, and tilt your upper body slightly forward. Raising both arms back, (2) swinging your arms upward. At the same time, both legs naturally do elastic flexion and extension once; (3) the two arms fall back from the front up and down and swing back, and the two legs naturally flex and stretch again; (4) swinging your arms forward. At the same time, pushing the ground hard with both feet and jump forward and up quickly; (5) when landing, your feet should land first, be light, bend your knees and cushion at the same time, and maintain balance by swinging your arms, be stable.

According to the above-given theory, the establishment process of the index system is shown in Figure 1.

As shown in Figure 1, the design of teaching content, teaching organization form, teaching objective design, and teaching method application are targeted from the perspective of the horizontal and vertical teaching process. The evaluation indexes such as teaching satisfaction are designed from the perspective of teaching effect. From the perspective of teaching evaluation, timely evaluation and application, formative evaluation application, and other content evaluation indicators are designed. Based on the process shown in Figure 1, a comprehensive quality evaluation index system of a long jump training course is established, and the index weight is calculated.

2.2. Weight Calculation of Long Jump Training Course Quality Evaluation Index Based on AHP. First, the evaluation index content system will be established initially to establish the hierarchical index system according to the target layer, criterion layer, and subcriterion layer. The evaluation index system obtained is shown in Table 1.

Next, the indexes of the first level index layer and the second level index layer are compared, respectively. This paper uses the teaching competent department and supervision experts familiar with the evaluation of classroom teaching quality to determine the score and constructs the judgment matrix A. At the same time, in order to avoid the disadvantages of evaluation distortion caused by too large or too small weight difference among subjects, compared with the 9-point scale method and the 1.354 scale method, the golden section 0.618 is selected as the analytic hierarchy process of scale to judge the assignment of elements in the matrix; then, using the MATLAB software programming, the maximum characteristic root of each judgment matrix km ax and the corresponding characteristic vector of KM ax are obtained, respectively, and the consistency test is completed.

3. Quality Evaluation Method of College Sports Long Jump Training Course Based on Genetic Algorithm

3.1. Long Jump Training Course Quality Evaluation Model Based on Genetic Algorithm. In the 1970s, a genetic algorithm was proposed. In the 1980s, the genetic algorithm became a very hot research topic because of its success in economic prediction and other application fields. A genetic algorithm is an algorithm that refers to and simulates biological genetic mechanisms and natural selection. Through "survival of the fittest," the solution of the problem can evolve in the competition, so as to obtain a satisfactory solution of the problem. The basic idea of a genetic algorithm is to simulate the evolution process of the population. This process is to exchange and recombine the organized random information of individuals. In the string structure of the previous generation, select the bits and segments with good adaptability to recombine, so as to generate a new generation of population, the population is constantly updated, and the excellence of the population is continuously enhanced to approach the global optimal solution. At present, genetic algorithm has developed into a relatively mature comprehensive algorithm, which is applied in function optimization, combinatorial optimization, automatic control, production scheduling, image processing, machine learning, and so on.

Compared with other modern optimization algorithms, the genetic algorithm has the following characteristics: (1) the direct object is not the set of parameter variables, but the intermediate medium, which is a form of a coding string of the set of parameter variables; (2) using the fitness function value, there is no need to use other additional information; (3) probability transfer rules are adopted instead of other uncertain and fuzzy rules. The advantages of genetic algorithm are as follows: (1) it has the ability of multibranch global search and is not easy to fall into local optimization; (2) fault tolerance. In the initial population of the genetic algorithm, there are some individuals who deviate greatly from the optimal solution. These individuals can be effectively eliminated after a series of operations; (3) it can carry out parallel computing and speed up the speed of obtaining the global optimal solution; (4) robustness. In noisy space, the global optimal solution can still be found with great probability and can improve the accuracy of long jump training course quality evaluation.

In the traditional genetic algorithm, the probability of mutation operation is determined according to the empirical value. When the model based on the algorithm starts running until the actual problem is solved successfully, the mutation probability is fixed. However, in the evolution of nature, the mutation probability is not fixed. Having different mutation probability in different environments is more conducive to the development of the population. Under the evolutionary rule of "natural selection and

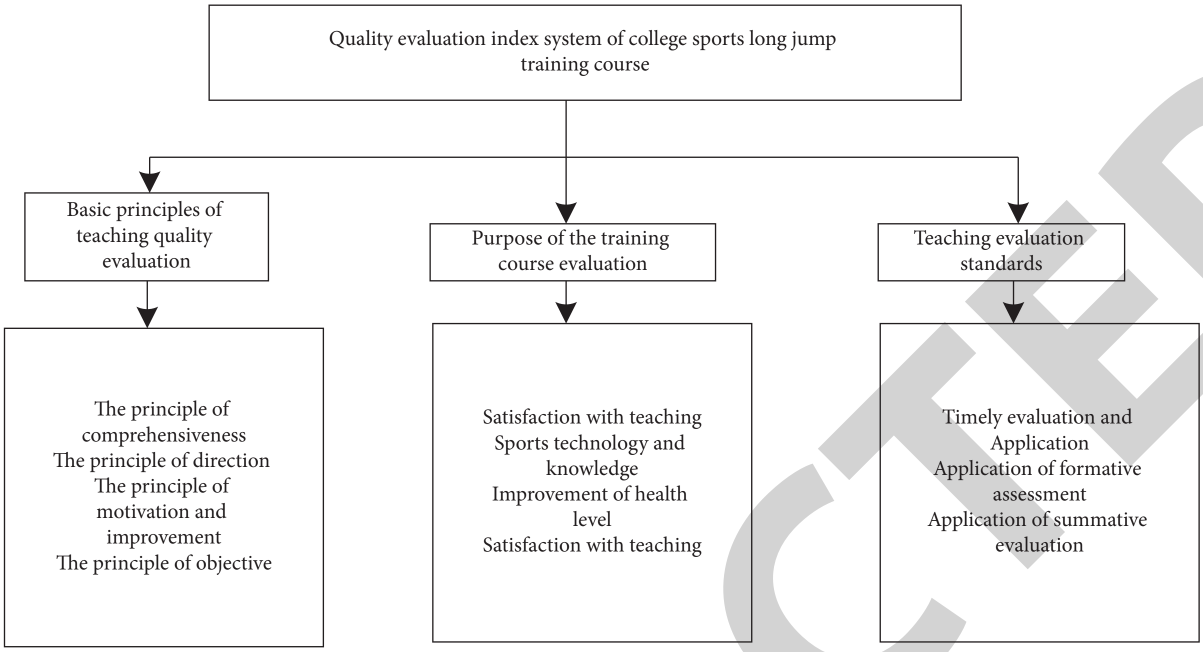

Figure 1: The construction process of the index system.

Table 1: Evaluation index system.

Level 1 indicators	Symbol	Secondary indicators	Symbol
Training preparation effect	A1	Teaching plan design level	B1
		Training equipment preparation status	B2
		Training method	B3
		Training step design	B4
Training practice effect	A2	Long jump training environment	B5
		Training schedule	B6
		Training process safety degree	B7
		Training for guidance accuracy	B8
Training and teaching guidance	A3	Training guidelines	B9
		Training guidance attitude	B10
		Training overall planning level	B11
		Training emergency ability	B12
Training teaching effect	A4	Student long jump results	B13
		Student long jump ability	B14
		Student's physical fitness level	B15
		Student's training knowledge	B16

survival of the fittest," the population can more adapt to the natural environment. This paper proposes an adaptive mutation genetic algorithm, which improves the mutation operation in the genetic algorithm. The mutation operation helps to improve the diversity of the population of the genetic algorithm. At present, the mutation probability is obtained through continuous experiments. The adaptability of every life in nature changes dynamically. In the process of finding the global optimal solution by genetic algorithm, the adaptive mutation probability should be adopted. When the population fitness value is poor, the mutation probability should be increased to improve the diversity of the population and increase the number of excellent individuals. When the fitness value is better, that is, when it is close to the global optimal solution, the mutation probability should be reduced. The calculation of adaptive mutation probability P in this paper is as follows:

$$P = \frac{(P_1 + P_2)}{2} = \frac{(P_0 - (P_0 - P_{\min})) \cdot m}{M}. \tag{1}$$

Here, M represents the maximum evolutionary algebra, m represents the current evolutionary algebra, P_1 is inversely proportional to the evolutionary algebra, P_2 is inversely proportional to the mean fitness value, P_0 is the assumed initial variation probability, and $P_{\min}$ is the minimum of the value range of variation probabilities.

In the process of solving practical problems, the genetic algorithm does not directly search for the feasible solution of mutation probability, but first encodes the individual feasible solution. The coding method greatly affects the efficiency of the genetic algorithm in searching for the global optimal solution, so it determines that the mutation probability needs to be increased. The main coding methods of the genetic algorithm include binary coding, sequence coding, real number coding, tree coding, out of order coding, large character set coding, and so on. For the more complex solution space, the real number coding method can do without decoding. Therefore, this paper uses the real number coding method to encode the feasible solution.

The determination of the initial population is the set of initial solutions. The larger the number of individuals of the initial population, the stronger the diversity of the initial population, and the greater the probability of finding the global optimal solution. However, if the initial population size is too large, it will directly lead to more calculation times of fitness function, resulting in the reduction of solution efficiency. Therefore, the initial population size cannot be too large or too small. In the application of practical problems, the scale range of the initial population is [20100]. Through continuous experiments, it is concluded that when the initial population number is 20, the error is the smallest, which is 0.2236, and the convergence time is the shortest. In this paper, the initial population is set to 20.

In fitness calculation, the search goal of the genetic algorithm is to obtain the network weight and threshold that minimizes the sum of squares of network errors in all evolutionary generations, while the genetic algorithm evolves in the direction of increasing the value of fitness function. Therefore, the fitness function is set as the reciprocal of each individual learning error. The learning error is shown in the following formula:

$$E = \frac{\sum_{k=1}^{p} \sum_{j=1}^{l} \left(y_j^k - o_j^k \right)}{2}. \quad (2)$$

Here, E is the learning error, p is the number of training samples, l is the number of output nodes, and $y_j^k - o_j^k$ is the error of the k sample relative to the j output node.

3.1.1. Cross Operation. The cross operation in genetic operation is to exchange some genes to form new individuals, so as to achieve the purpose of population renewal. In the population with a high crossover probability, the faster the new structure will be introduced. The loss speed of the obtained excellent gene structure is relatively high, and too low crossover probability will lead to a search block. Generally, the range of crossover probability is [0.6, 1.0]. There are also many ways of crossover operation, including single point crossover, two-point crossover, arithmetic crossover, uniform crossover, heuristic crossover, and so on. Uniform crossover can speed up the discovery of new better modes at the beginning of the iteration, prevent convergence to local extreme points when convergence tends, and has better recombination ability than a classical crossover, which can speed up the convergence speed of the genetic algorithm. Therefore, this paper adopts uniform crossover operation in the genetic algorithm.

3.1.2. Mutation Operation Based on Adaptive Mutation Probability. Mutation operation is when some individual genes in the population mutate with a certain probability. The model adopts the mutation operation of adaptive mutation probability. Although there will be bad individual shape to a certain extent, in general, through the genetic operation method of mutation, it will retain some favorable mutation, enhance the diversity of the population of genetic algorithm, make it jump out of the local optimization in time, search the global optimal solution, and avoid the premature phenomenon.

The optimal solution searched by the genetic algorithm is input into the BP neural network as the initial weight and threshold of the network. The data flow direction of the model is shown in Figure 2.

(1) The input of the AGA-BP algorithm model starts from the BP neural network part. According to the data collected by the questionnaire, the learning samples are determined, so as to determine the topology of the neural network, that is, the number of network layers and neurons and then obtain the initial population of the adaptive mutation genetic algorithm.

(2) Processing, the data information processing part starts from the genetic algorithm part of adaptive mutation and determines the solution that meets the stop condition, that is, the optimal weight and threshold, through coding, fitness calculation, genetic operation, and other steps. After obtaining the initial weight and threshold, BP neural network can reduce the time to find the optimal weight and threshold, so as to speed up the convergence speed of the network.

(3) When the learning error or iteration times of the sample meet the requirements, a better AGA-BP algorithm model is obtained.

In this paper, a teaching quality evaluation model is established by combining a genetic algorithm and a neural network. The adaptive mutation probability is adopted in the genetic operation process, which not only improves the convergence speed of the neural network but also reduces the complexity of the training process. The model not only gives play to the advantages of improved genetic algorithm global search and BP neural network in nonlinear mapping but also reduces the influence of nonobjective factors. The main modeling steps of the teaching quality evaluation model are as follows.

(1) By analyzing the existing problems of teaching quality evaluation, we can improve it and establish a more perfect and suitable index system. (2) Sample data of teaching quality evaluation are collected, evaluation indicators according to teachers' teaching characteristics are selected, and the collected teaching quality evaluation data are divided into training samples and test samples. (3) The parameters of the BP neural network algorithm are determined, including learning rate, number of hidden layer neuron nodes, maximum iteration times, minimum error accuracy, transfer function, and training times. (4) By inputting samples into the evaluation model, iterative training is carried out until the

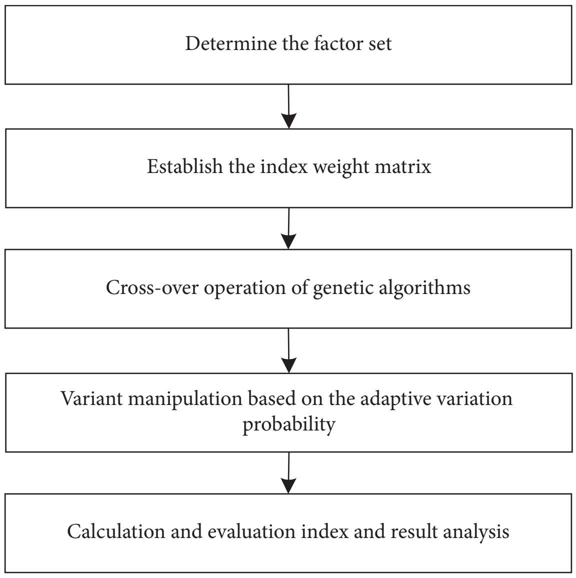

Figure 2: Establishment process of long jump training course quality evaluation model.

trigger algorithm stops. (5) The test samples of teaching quality evaluation are input to test whether the training effect of the BP neural network model optimized by an improved genetic algorithm meets the requirements. The training data is used to train the network. The sum of the absolute value of the error between the actual output and the expected output is taken as the individual fitness value. According to the inverse relationship of fitness value and learning error, the calculation formula of obtaining individual fitness value F is as follows:

$$F = \frac{1}{E}. \tag{3}$$

If the individual fitness value meets the stop requirement, proceed to the next step; otherwise, return to the previous step and train the network again, that is, return to Step (3). (6) The samples are input into the teaching quality evaluation model to obtain the teaching quality evaluation results. The sum of the training errors of the BP neural network is used as the fitness function.

3.2. Realization of Quality Evaluation of College Sports Long Jump Training Course. Based on the connotation and evaluation method of the evaluation elements in the quality evaluation table of college sports long jump training course, the evaluation elements are divided into four levels: excellent a (100-90), good B (90-75), qualified C (75-60), and unqualified D (60-0). The main steps of the evaluation are as follows:

Step 1: a curriculum evaluation team is composed of experts, teachers, and students.

Step 2: the "comprehensive scoring table" is submitted including scoring factors, rating levels, and weights of various indicators to the corresponding members of the curriculum evaluation team, and the "actual scoring registration form" is listed after examining, investigating, and observing the physical education curriculum according to the indicators in the table. That is, the specific number of "excellent," "good," "qualified," and "unqualified" of each three-level index is counted.

Step 3: the comprehensive score of each three-level index is calculated in combination with the actual weight, then the score of each evaluation unit is calculated, and finally the total score s is calculated. So as to evaluate the quality of the implementation link and the educational effect of the physical education curriculum. The evaluation results are evaluated according to four levels: excellent, good, qualified, and unqualified. Excellent: $90 \leq s < 100$; All core indicators are a, and there can be no levels C and D in all indicators; Good: $75 \leq s < 90$; there shall be no less than 4 core indicators with a, and there shall be no level D in all indicators; Acceptable: $60 \leq s < 75$; there can be no level D in the core indicators; among other indicators, there is no more than 1 level D; Unqualified: $s < 60$ or grade D in the core index.

To sum up, the research on the quality evaluation of college physical education curriculum is to objectively and accurately understand the significance and essence of the college Physical Education Curriculum in the process of cultivating professional talents. The construction of the physical education curriculum quality evaluation index system is not only an exploration of physical education curriculum quality evaluation but also can promote the quality education of physical education curriculum, which is of great significance to improve the function of physical education.

4. Experimental Test

In order to test the performance of the design method in this paper, the simulation experiment is carried out on the MATLAB platform. The sample data comes from the evaluation results of physical training classroom teaching of 75 physical education teachers in a university. According to the evaluation index system selected above, the weight of the evaluation index is obtained by questionnaire.

The questionnaire designed in this paper adopts a comprehensive form, including multiple-choice questions and open-ended questions. Because the questionnaire in this paper is a quantitative questionnaire, it is also necessary to score within the scope of the options after selecting the appropriate options. The second part is an open-ended question. From the perspective of data analysis, the content of this part is not included in the total score of the questionnaire. In the teaching quality evaluation questionnaire, the answer options of some questions involve very consistent (81-100), consistent (61-80), generally consistent (41-60), inconsistent (21-40), and very inconsistent (0-20). The subjects of the five answers questionnaire are undergraduates in a university. Taking the class as the unit, they entrust the monitor to distribute them during the recess. 1100 questionnaires were distributed, 1050 were recovered, and 1000 were effective after screening. That

Table 2: Weight value of the evaluation index.

Level 1 indicators	Weight	Secondary indicators	Weight
A1	0.7536	B1	0.2118
		B2	0.4523
		B3	0.7341
		B4	0.8572
A2	0.8239	B5	0.7235
		B6	0.8238
		B7	0.8234
		B8	0.7535
A3	0.3181	B9	0.5317
		B10	0.7836
		B11	0.7482
		B12	0.7563
A4	0.6297	B13	0.7817
		B14	0.7920
		B15	0.8416
		B16	0.8437

Table 3: Evaluation results.

Serial number	The method of this paper		literature [10] method		literature [11] method	
	Accuracy of evaluation	Satisfaction with evaluation	Accuracy of evaluation	Satisfaction with evaluation	Accuracy of evaluation	Satisfaction with evaluation
1	97.78	98.38	92.17	93.41	94.78	91.89
2	99.01	97.69	93.36	91.88	93.01	93.36
3	98.41	98.88	93.62	90.89	92.41	92.45
4	98.14	97.32	94.36	91.14	93.14	93.37
5	99.66	99.17	91.01	92.17	93.66	91.45
6	97.21	98.45	92.42	93.45	91.21	92.01
7	97.45	97.15	91.63	92.22	92.45	92.33

is, the effective data are 1000 groups. In order to ensure the high reliability and effectiveness of the teaching evaluation indicators, 100 online questionnaires are distributed for testing, and the reliability and validity of the test results are tested to test whether each index in the teaching quality evaluation index system has reliability and effectiveness at the same time. If the questionnaire meets the two standards, 1000 questionnaires will be distributed. According to the results of the questionnaire, the secondary and tertiary indicators are weighted, and the weight coefficient table is prepared, as shown in Table 2.

According to the weight results in Table 2, this paper uses this method to evaluate the quality of college sports long jump training courses and analyzes the test results.

In order to make the genetic algorithm obtain a better initial population size, according to the range of the initial population size, this paper sets the initial population size to 20, 30, and 40, respectively and carries out experiments, respectively. When the initial population size is 20, the convergence time is the shortest, 126.37 and the error is the smallest, 0.2236. Therefore, the initial population size is 20. The crossover probability is set to 0.66. For the more complex solution space, the real number coding method can be used to code the feasible solution without decoding. Therefore, this paper uses this coding method to directly take the optimal solution as the initial weight and threshold of the BP neural network. The coding string is composed of four parts: the connection weight from the input layer to the hidden layer, the connection weight from the hidden layer to the output layer, the threshold of the hidden layer, and the threshold of the output layer. The encoding length is 101.

In order to improve the accuracy, the number of layers can be increased appropriately, but with the increase of the number of layers, the network will become complex. Increasing the number of neurons in the hidden layer can also improve the error accuracy. From the perspective of structure realization, the way of adding hidden layer nodes is impler than adding more hidden layers, and its training effect is easier to observe and adjust. Therefore, this paper uses the method of adjusting the number of hidden layer nodes to change the accuracy and efficiency of the network and takes the course evaluation system of theory course as an example. In this paper, the course quality evaluation model sets the neural network as a single hidden layer, that is, a three-layer neural network. After repeated experiments, the selected BP neural network topology and parameters are as follows:

(1) The number of secondary indicators in the teaching quality evaluation system is 16, so the number of neurons in the input layer is set to 16.

(2) According to the empirical formula, when the initial number of hidden layer nodes is 6, multiple network structures are set, and the number of hidden layer

nodes of each network increases by 1. When the number of hidden layer nodes is 6, the error is the smallest. Therefore, the number of hidden layer nodes of the BP neural network is set to 6.

(3) Determination of the number of neurons in the output layer: the output target is the result of course quality evaluation, so the node of the output layer is 12.

Using the optimal evaluation model designed in this paper and the literature [10] method and literature [11] method evaluated the quality of the sports long jump training course in a university that put the questionnaire and divides the students who choose long jump courses into 7 groups for evaluation. The accuracy and satisfaction results of the evaluation are shown in Table 3.

According to the evaluation result data in Table 3, the quality evaluation method of college sports long jump training course based on the genetic algorithm designed in this paper has high evaluation accuracy and satisfaction. The evaluation accuracy of this design method is higher than 97.21%, and the evaluation satisfaction is higher than 97.15%. The evaluation accuracy of literature [10] method is lower than 94.36%, and the evaluation satisfaction is lower than 93.45%. The evaluation accuracy of literature [11] method is lower than 94.78%, and the evaluation satisfaction is lower than 93.37%. The reason for the advantage is the evaluation index weight of long jump training courses based on the AHP method, which provides an accurate and comprehensive basis for subsequent quality evaluation, quality evaluation model of long jump training courses based on a genetic algorithm, and high accuracy evaluation of college sports long jump training courses through cross operation and variation operation based on adaptive variation probability.

5. Conclusion

In view of the shortcomings of the existing quality evaluation methods of college sports long jump training courses, such as poor learning generalization ability and large prediction error, combined with the screening of important evaluation indexes by domestic scholars, this paper puts forward the quality evaluation method of college sports long jump training courses based on a genetic algorithm. According to the purpose, basic principles and evaluation criteria of college long jump training course evaluation, construct the establishment process of evaluation index system, calculate the weight of long jump training course quality evaluation index based on the AHP method, construct the quality evaluation model based on the genetic algorithm, and realize the high accuracy evaluation of college sports long jump training course quality through cross operation and variation operation. The test results show that this method greatly improves the evaluation accuracy and evaluation satisfaction and has a good application prospect in teaching management. However, there are also some deficiencies in the method of this paper, and the classification of course types is not rich enough. The future research can determine the content of the corresponding teaching quality evaluation system according to expert interviews and other ways. In addition, for the quality evaluation method of sports long jump training courses in universities, an evaluation system or software based on this method can be developed for real-time evaluation of the teaching quality of physical education teachers, which is more efficient and reliable.

Data Availability

The datasets used and/or analyzed during the current study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that there are no conflicts of interest..

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