

## Retraction

# Retracted: Evaluation of Physical Education Teaching Effect Based on Big Data

### Mathematical Problems in Engineering

Received 26 September 2023; Accepted 26 September 2023; Published 27 September 2023

Copyright © 2023 Mathematical Problems in Engineering. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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] X. Shu, Q. Wang, H. Tang, and Y. Ge, "Evaluation of Physical Education Teaching Effect Based on Big Data," *Mathematical Problems in Engineering*, vol. 2022, Article ID 7329334, 9 pages, 2022.

## Research Article

# Evaluation of Physical Education Teaching Effect Based on Big Data

Xinyun Shu <sup>1</sup>, Qian Wang,<sup>1</sup> Hui Tang,<sup>1</sup> and Yinfeng Ge<sup>2</sup>

<sup>1</sup>College of Physical Education, Hunan University of Science and Technology, Xiangtan, Hunan, China

<sup>2</sup>School of Foreign Languages, Guangdong Polytechnic College, Guangzhou, China

Correspondence should be addressed to Xinyun Shu; shuxinyun@hbut.edu.cn

Received 19 August 2022; Revised 3 September 2022; Accepted 7 September 2022; Published 11 October 2022

Academic Editor: Lianhui Li

Copyright © 2022 Xinyun Shu et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

In order to provide a new vision and a broad idea for the evaluation of physical education in colleges and universities, a physical education teaching effect evaluation system based on big data is proposed. This study uses the method of a questionnaire survey to understand the problems encountered in the current sports evaluation of a college in China and to determine the evaluation index and its weight coefficient of college sports. The foundation of big data applications is mainly used for the establishment of college sports evaluation. The results showed that 50 percent of physical education teachers and 44.2 percent of students thought physical education examination was unnecessary, while only 16.67 percent of physical education teachers and 24.2 percent of students thought it was necessary. However, 90 percent of physical education teachers and 90.4 percent of students think school physical education evaluation is very important. At the same time, 63.33% of P.E. teachers think that the evaluation of the college P.E. curriculum is not enough and there is no responsibility. At present, there are many problems in the evaluation of physical education courses in colleges and universities, such as the curriculum, model, and scale being simple and unclear, the process is not scientific, there being no good model, and the guarantee mechanism is not good. It is concluded that the current evaluation of physical education in colleges and universities in this province has many problems, such as single subject and model, simple and fuzzy index, unscientific method, lack of individuality in the standard, imperfect guarantee mechanism, and imperfect feedback mechanism.

## 1. Introduction

Evaluation is an important intervention method to carry out a teaching activity and an important factor influencing educational development and reform. Scientific and effective evaluation of classroom teaching is the basic guarantee of cultivating sports talents with moral education. In early 2020, COVID-19 occurred in Wuhan City, Hubei Province, and many other places. This serious public health security crisis quickly spread to the whole country, causing a serious crisis in the health of the general public. In order to overcome the crisis and hold the teaching time, the Ministry of Education has requested to delay the opening of schools in all primary and secondary schools in China and take various precautions. In this case, online learning effectively integrates physical education in schools while being alone to

support teaching students at home. With the development of science and technology, network education has become an important part of a college education. For network education to develop rapidly in the new era, appropriate educational measures should influence the development and guidance of education. After “Internet Plus,” the evaluation of physical training in public universities still faces new challenges. How to perfect the network education mode and improve the value of network physical education is an urgent problem to be solved. Therefore, the development of online education in colleges and universities ensures the quality and content of education, breaks down the process and content, and satisfies students and teachers to use advanced skills and technologies. As the curriculum is constantly being updated, the evaluation content of the physical education courses should be kept up to date. At the same time, with the

deepening of education, some of the problems of existing education are gradually revealed. It is an important tool for measuring the progress and overall results of the training and is a good evaluation of the training [1]. It can not only show the physical education teachers' advantages and disadvantages in teaching but also identify the students' learning shortcomings. It is of great help to improve the teaching level of physical education teachers in colleges and universities and improve the academic performance of students [2]. However, in many colleges and universities, public PE classes are evaluated based on daily test scores. Not only does this not provide good advice for research, but also hinders research. Figure 1 is a summary of the research evaluation based on big data analytics.

Promote the sports community set up community classes to promote the better development of the sports community. Network courses and network courses make the content of college physical education rich and diverse. Formulate new measures to provide ideas for the reform of physical education. It provides a clear understanding of teaching and public education. It plays an important role in the training of school teachers and students. He supervised the work of the teachers and the success of the students. To be successful in physical education in colleges and universities, we must evaluate teaching skills, and encourage teaching quality and excellent teachers. Therefore, assessment is very important for course adherence and learning outcomes [3]. Effectively carry out content evaluation as teaching guidance. Take the evaluation content of development as the work of the instructor. The educational research has enriched and expanded the theory of public sports in Chinese universities and the new information and development have provided new ideas to improve the quality of teaching in Chinese universities.

## 2. Literature Review

Lv and Li believed that the evaluation content of classroom teaching effect included four parts: exercise load, psychological load, mastering the three bases, and ideological education, with corresponding weights of 0.3, 0.3, 0.3, and 0.1, respectively. Among them, the subindexes of exercise load were the average heart rate of the whole class and the practice density of the whole class, and the subindexes of mental load were students' attention, classroom emotion, and practice consciousness [4]. Khan et al. The development of students' intellectual skills, theoretical accumulator, and physical fitness are considered important points that show the effectiveness of physical education. He believes that the traditional methods of measuring the effectiveness of physical education based on the knowledge of teachers are not objective and quantitative and are not suitable for evaluating the effectiveness of studying the body [5]. Duan et al. in order to determine the quality of physical education evaluation from two factors, such as the influence of physical education teachers in the classroom and the learning of students, used two methods of evaluation general assessment of SPA. The content of the student's physical education assessment includes knowledge of physical education,

sports, sports, sports, various skills, and so on [6]. Lee and Park constructed the evaluation index system of physical education teaching effect in middle schools from three types of middle schools with different regional characteristics: urban, town, and rural middle schools. The subordinate indicators of student performance included the students' learning ability, self-expression, sports knowledge and skills of application ability, learning effects (gains in knowledge and skills, physical fitness, emotional attitudes, and values), evaluation ability, protection and help, learning time, cooperation spirit, learning mood and goal achievement [7]. Li et al. Using the Delphi method, an evaluation was made to evaluate the quality of physical education in colleges and universities, and then, using the analytic hierarchy process (AHP) and the standard fuzzy math, a value is assigned to each parameter and an evaluation model is determined. A quantitative tool for evaluating physical performance [8]. Zhao and Zhao The evaluation of the quality of the physical education of colleges and universities in Guangxi Province was used from the perspective of teaching activities, and the weight of each index was given, and the rating scale is determined with a total of 100 points. Then, the effectiveness of physical education was evaluated by measuring four levels [9]. Wang et al. believed the first level index of the evaluation index system included theoretical knowledge of sports, sports skills, physical constitution, physical and mental experience, and sports participation. The theoretical knowledge of physical education included three secondary indicators: physiological and biochemical knowledge, technical key knowledge, and fitness knowledge. Motor skills included two secondary indicators: individual and team motor skills. The physical constitution includes three secondary indicators: body shape, basic physical quality, and functional level. The secondary indicators of psychosomatic experience included active intelligence and psychological and physical experience. Sports participation included three second-level indicators: the enthusiasm for activity participation, the degree of activity participation, and the creativity of activity participation [10]. Tarraga-Minguez et al. thought from the angle of students, believing that the evaluation index system should include the sports participation (strength, density, and strength index), students' psychological (self-esteem, self-confidence, the spirit of competition, and regulation of emotions), social (mutual cooperation and respect, love), motor skills (students progress degree), and students' learning interest [11]. Chen et al. investigated high school physical education teachers through questionnaire surveys and interviews and found that there were problems in sports participation, sports skills, mental health, social adaptation, and other aspects. The evaluation methods are teacher evaluation and self-evaluation, lacking the link of mutual evaluation among students, and the evaluation subject is not comprehensive [12]. In the process of PE teaching in the network environment, students complete the content they are good at in free space, and upload their homework in the form of a video report according to the standard requirements put forward by the teacher. Students can choose to submit the video content that they are most satisfied with among the multiple

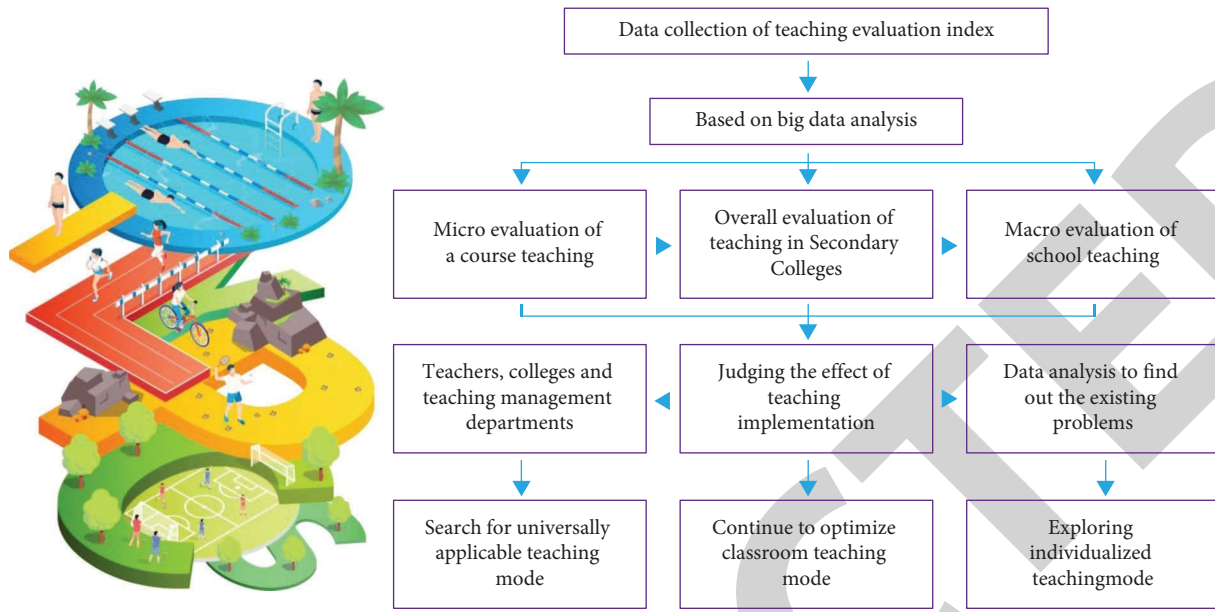


FIGURE 1: Research on the teaching evaluation system based on big data analysis.

recorded videos. Through online comments, teachers repeatedly play and watch students submit assignments, it allows students to evaluate their learning more objectively and effectively, provide feedback and exchange in time, build relationships between teachers and students, and improve student autonomy.

### 3. Research Methods

3.1. *The Development Trend from the Traditional PE Teaching Evaluation to Internet + PE Teaching Evaluation.* With the rapid development of the Internet and information technology, the concept of modern information development has penetrated deeply into people’s minds, has had a great impact on pre-physical education assessment standards, and has encouraged changes in assessment materials. Physical activity in the data-rich world, physical education evaluation data, together with smart data and the latest technology, are gradually removing the limitations of time and space, creating opportunities for face-to-face teaching between teachers and students, and creating evaluations (see Table 1) [13]. Assessment in physical education differs from other subjects in that it has a positive effect on physical education. Therefore, the evaluation of physical education in the environment of “Internet + education” should not only be used for the application of other subjects, but also identify and distinguish the contrary, pay attention to the person’s characteristics of physical development, and understand its characteristics. Strengthen the relationship between physical participation, the characteristics of their studies, and “Internet + education.”

In the process of PE teaching in the network environment, students complete the content they are good at in free space, and upload their homework in the form of a video report according to the standard requirements put forward by the teacher. Students can choose to submit the video content that they are most satisfied with among the multiple

recorded videos. Through online comments, teachers repeatedly play and watch students submit assignments, it allows students to evaluate their learning more objectively and effectively, provide feedback and exchange in time, build relationships between teachers and students, and improve student autonomy [14].

3.2. *Exploration of the Evaluation Form of “Internet + Physical Education”.* “Internet Plus” will support sports reform measures. Internet technology is the driving force that pushes human progress to a new level. In terms of educational evaluation, “Internet Plus” will promote new evaluations in terms of evaluation tools and evaluations. The combination of online assessment and physical assessment is a new direction of assessment research and development. In “Internet Plus,” this will ensure the effectiveness of training and promote objective and fair evaluation [15]. At the same time, “Internet + Sports evaluation” lists many teaching methods, and the defects of the evaluation methods have been reformed.

The new theory of the development of modern information technology combines physical learning and measurement techniques, especially physical learning and data analysis techniques technology will play a greater role. Internet + sports assessment has broken the traditional sports assessment method and provided a new way for physical education teaching. He knows the latest fitness tools and uses all modern science and technology to help teach physical education. Internet + physical examination, with its new basis and research, has promoted the development of previous physical examination methods, making physical examination play an important role in product evaluation.

Understanding the knowledge processes of sports, such as teacher-student interaction, based on information from the use of sports can facilitate online learning, which enables the rapid and easy development of information security measures.

TABLE 1: The traditional physical education evaluation combined with the “Internet +” characteristic attribute table.

No.	Type	Characteristics
1	Evaluation content	Students can use online resources to participate in PE teaching evaluation, which strengthens the quality of teachers' and students' PE teaching evaluation.
2	Evaluation means	The evaluation method is more flexible and diversified, and the evaluation effect is greatly improved.
3	Evaluation method	The continuous development of the school network innovation information technology helps physical education assessment to support various improvements and improvements, and enable teachers and students to nice physical examinations.

3.3. *Research Objects.* In the framework of the big data application, the evaluation of the physics class of the country is taken as a research object, and the evaluation of the course of the school organization text is created by the rules.

3.3.1. *Current Situation Questionnaire.* The present situation of physical health evaluation of physical education teachers and students in 5 colleges and universities was studied and evaluated based on the content of physical education assessment in college. Six physical education teachers were selected from each school, and more than 60 teachers were examined by the teacher survey. Since there are no junior or senior students, 200 and 100 students are selected from each school, including the number of male and female students and the ratio of male and female students. First-year students are not aware of the special conditions of physical education, so only second-year students are trained.

The content and returns of the status questionnaire are shown in Table 2.

(1) *Validity Test.* As part of the research, 20 experts in physical education were asked to verify the validity of the questionnaire. Table 3 shows that 70% of experts believe that the question is appropriate, and 30% believe that it is necessary. Therefore, the questionnaire on the current problem is generally accepted by experts and has good use.

(2) *Reliability Test.* Test-retest reliability is used to assess the overall reliability of the questionnaire. 5 teacher and 10 student records were distributed 15 days apart. From SPSS's “Kappa” coefficient of consistency, once the coefficient of the questionnaire is 0.864 [16].

Kappa coefficient is calculated by the following Formula (1).

$$K = \frac{P_o - P_e}{1 - P_e}. \quad (1)$$

In Formula (1),  $P_o = \sum A_{ii}/N$ ,  $P_e = \sum a_i b_i$ ,  $a_i = A_i/N$ ,  $b_i = B_i/N$ .  $P_o$  and  $P_e$  are the observed concordance rate and the expected concordance rate of the two test results respectively.  $P_o - P_e$  is the actual consistency rate.  $1 - P_e$  is the undesired consistency rate.  $A_{ii}$  is the actual value on the main diagonal in the  $C \times C$  contingency table.  $A_i$  and  $B_i$  are the marginal values of the  $i$ th row and the  $i$ th column respectively.  $a_i$  and  $b_i$  are the marginal frequencies in the  $i$ th row and the  $i$ th column, respectively. Since the expected consistency rate is the expected consistency under the assumption that the two tests are independent, it is calculated according to the multiplication theorem of probability.

3.3.2. *Index Questionnaire and Index Weight Advisory Table.* The body weight measurement scale and body weight scale of colleges and universities were determined by comparing with 22 physical education experts.

(1) *Content Design.* Based on the current state of physical examination in college, interviews with experts, related documents, evaluation statements, and serious questions for teachers the flesh, and the students are put together [17]. In the physical education principal evaluation form, there are 3 indicators at the first level and 14 indicators at the second level.

(2) *Distribution and Collection.* In the research, two rounds of questionnaires are distributed, and the distribution and recovery of questionnaires are shown in Table 4.

(3) *Questionnaire Operation Procedure.* First, the evaluation index table of the first round is distributed, and data statistical analysis is carried out after the collection. According to the suggestions of experts, indicators that needed to be added or deleted are counted, and a new evaluation index table is formed for the second distribution [18].

Second, the second round of consultation forms is issued and collected. The results show that the opinions of all the experts are consistent.

## 4. Result Analysis

4.1. *Analysis of the Current Situation of Physical Education Evaluation in Colleges and Universities.* In general, 50% of physical education teachers and 44.2% of students think the current physical examination is not necessary, only 16.67% of physical education teachers and 24.2% of students think it is necessary, but 90% of physical education teachers think skin is necessary. 90.4 percent thought that school physical examination was very important. This paper investigates physical education teachers and students in a college in Shanxi Province.

### 4.1.1. Analysis of the Current Situation of Physical Education Teachers' Teaching Evaluation

(1) *Evaluation Subject and Mode.* In Tables 5 and 6 below, the assessment content is mainly the assessment of students and tutors, and the type of assessment is mainly the assessment of cadres and students.

TABLE 2: Distribution and recovery statistics of questionnaire survey.

	Distribution (copy)	Recovery (copy)	Valid (copy)	Recovery rate (%)	Valid rate (%)
Physical education teachers	60	60	60	100	100
Students	1000	1000	1000	100	100

TABLE 3: Statistical table of the validity of the status quo questionnaire (N = 10).

The questionnaire items	Reasonable	Basically reasonable	Unreasonable
Number of expert questionnaires	14	6	0
Proportion	71%	29%	0

TABLE 4: Statistical Table of distribution and recovery (N = 22).

The questionnaire items	Number of the distributed questionnaires	Number of the collected questionnaires	The recovery rate (%)	Number of valid questionnaires	Valid rate (%)
The first round	22	22	100	22	100
The second round	22	22	90.92	22	100

TABLE 5: Evaluation subjects (N = 30).

Evaluation subjects	The personnel in charge	Fellow teachers	Students	The teacher	Unknown
The number	30	10	36	2	4
The proportion	50%	16.67%	60%	3.33%	6.67%

TABLE 6: Evaluation model (N = 30).

Evaluation model	The superior evaluate the subordinate	Peer evaluation	Students evaluation	Self-evaluation	Unknown
Number	30	14	34	6	2
Proportion	50%	23.33%	56.67%	10%	3.33%

TABLE 7: Evaluation content.

Evaluation content	Number of teachers (N = 60)	Ratio (%)	Number of students (N = 1000)	Ratio(N = 60)
The teacher's attitude towards teaching	28	46.67	884	88.40
The teaching methods of teachers	26	43.33	788	78.80
The teaching effect of teachers	26	43.33	556	55.60
Teacher's motor skill ability	14	23.33	702	70.20
The creative ability of teachers	20	33.33	370	37
Teachers' scientific research ability	18	30	72	7.20
The moral level of teachers	26	43.33	382	38.20
The classroom atmosphere	2	3.33	50	5
The level of student involvement	2	3.33	22	2.20
Unknown	4	6.67	10	1

(2) *Evaluation Content.* As can be seen from Table 7, in the evaluation of physical education teachers, teachers' attitude, teaching, motor skills, ethics, and leadership are often remunerated, while physical education teachers' ability, teaching and research ability are negligible, student participation, and classroom atmosphere [19, 20].

(3) *Feedback.* A questionnaire survey was conducted among 60 physical education teachers and repeated voting was conducted according to the results. From the content of the

discussion (as shown in Table 8), 53.33% of the P.E. teachers did not know the specific content of the discussion, so more than half of the P.E. teachers did not know the concept of evaluation and feedback. With regard to meeting times (as shown in Table 9), meeting times are usually at the beginning of a new period and sometime later (semester). Therefore, the lack of timely feedback is the reason why most PE teachers do not listen to feedback. In terms of feedback methods, the most common feedback methods are personal discussion, whiteboard and written feedback, and feedback strategies such as normal and closed feedback network. In

TABLE 8: Feedback content ( $N=60$ ).

Feedback content	The grades of the classes taught	Strengths and weaknesses demonstrated during the work	Suggestions for improvement	Expectations and encouragement	Unknown
Number	10	12	10	4	32
Proportion	16.67%	20%	16.67%	6.67%	53.33%

TABLE 9: Feedback timing ( $N=60$ ).

Feedback timing	Direct feedback after evaluation	Feedback after some time	Feedback in the new term	Unknown
Number	0	24	34	2
Proportion	0	40%	56.67%	3.33%

TABLE 10: Feedback mode ( $N=60$ ).

Feedback mode	Online feedback	Written feedback	Feedback in private	The bulletin board	Unknown
Number	6	14	34	18	2
Proportion	10%	23.33%	56.67%	30%	3.33%

TABLE 11: Evaluation subjects ( $N=60$ ).

Evaluation subjects	School related leaders	Physical education teachers	Students themselves	Classmates	Unknown
Number	0	50	6	0	10
Proportion	0	83.33%	10%	0	16.67%

TABLE 12: Evaluation mode ( $N=60$ ).

Evaluation mode	The superior evaluate the subordinate	The student's evaluation	Self-evaluation	Unknown
Number	52	0	6	8
Proportion	86.67%	0	10%	13.33%

order to enable physical education teachers to prioritize the benefits of psychological counseling, it should be more open (see Table 10).

#### 4.1.2. Analysis of the Current Situation of Students' Physical Education Evaluation

(1) *Evaluation Subject and Mode.* Tables 11 and 12 show that physical education teachers are the most important evaluation, and the highest evaluation is the most important type of evaluation, and the students' respect for self is ignored. Therefore, when evaluating the physical education of students, the problems of classmates and self-esteem are ignored.

(2) *Evaluation Content.* As can be seen from Table 13, the content of students' physical education evaluation mainly focuses on sports knowledge, sports skills, academic skills, physical education, and other aspects, while ignoring the evaluation of students' new ability, interest in sports, mental health, and other aspects. As a result, the content of the evaluation focuses too much on the specific content and ignores the differences between students.

(3) *Evaluation Methods.* In terms of assessment methods (as shown in Table 14 and Figure 2), summative assessment is specifically introduced, ignoring individual progress of

education at all levels. Second, quantitative assessment is emphasized, while qualitative assessment is ignored, which lacks the flexibility and strength of evaluation and does not support the development of students.

(4) *Feedback.* According to the research results, 5 colleges and universities voted on the evaluation results after evaluating the physical education teaching of students. From the input content (Table 15), the main content is student sports. Physical education scores include physical fitness tests, emotional intelligence, and skills, games, and performance in regular classes. As a result, the content of feedback is inconsistent and it is difficult for students to see their strengths and weaknesses in the feedback (as shown in Table 16). The results of students' evaluation of physical education teaching in 5 schools mainly come from network feedback.

To sum up, the evaluation of college physical education courses usually involves the following questions. First, the meaning of evaluation is the same as the type of evaluation. The key point of physical education teacher effectiveness evaluation is staff evaluation and student evaluation. The assessment model is still based on top-level assessment and ignores the opportunity for students to self-assess. Second, the evaluation content is simple and vague. First, the evaluation of all schools, including different majors, is the same, regardless of the characteristics of different activities, majors, and classes. Second, there

TABLE 13: Evaluation content (N = 60).

Evaluation content	The number of teachers	Proportion (%)
Physical quality	22	36.67
Motor skills	36	60
Sports participation	12	20
Classroom performance	32	53.33
Theoretical knowledge of physical education	38	63.33
Mental health level	4	6.67
Interest in sport	4	6.67
The innovation ability	2	3.33
Learning attitude	14	23.33
Unknown	4	6.67

TABLE 14: Evaluation methods (N = 60).

Evaluation results	Diagnostic evaluation	Formative evaluation	Summative evaluation	Quantitative evaluation	Qualitative evaluation	Unknown
Number	2	8	44	40	10	8
Proportion	3.33%	13.33%	73.33%	66.67%	16.67%	13.33%

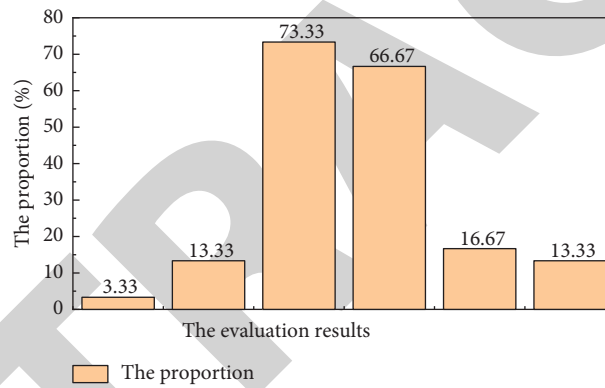


FIGURE 2: The proportion of evaluation methods.

TABLE 15: Feedback content.

Feedback content	Number of teachers (N = 60)	Ratio (%)	Number of students (N = 1000)	Ratio (%)
Sports scores	50	83.30	918	91.80
Advantages and disadvantages of learning	8	13.33	86	8.60
Suggestions for improvement in the new term	4	6.67	42	4.20
Expectations and encouragement	4	6.67	38	3.80
Unknown	10	16.67	82	8.20

TABLE 16: Feedback timing.

Feedback timing	Number of teachers (N = 60)	Ratio (%)	Number of students (N = 1000)	Ratio (%)
Feedback to the students directly after the evaluation	4	6.67	38	3.80
Feedback to students over time	22	36.67	312	31.20
Feedback to students at the beginning of the new term	24	40	584	58.40
Unknown	10	16.67	66	6.60

are no appropriate indicators for all parts of the physical activity process. Evaluation is often presented as a first-stage evaluation, ignoring individual progress at all levels of education. Second, the emphasis on quantitative

evaluation, neglects qualitative evaluation. Finally, the safety mechanism is not perfect, the investment mechanism is not perfect. Football evaluations and career counseling do not do it all.



#### 4.2. Characteristics and Principles of the Construction of the Physical Education Evaluation System in Colleges and Universities under the Background of Big Data Application

4.2.1. *Characteristics of College Physical Education Evaluation System Construction.* Starting from the main purpose of using big data, the following characteristics of college sports evaluation are summarized.

First, the different measures are based on experience and evidence. In traditional sports evaluation, the evaluation of students is usually based on the student's athletic performance, while the coach's evaluation is based on personal opinion, so it is more effective than objective evaluation. Physical education teachers and students can collect sports content from big data and evaluate it accordingly to have a better understanding and accuracy of sports.

Second, the evaluation method is holistic rather than quantitative. At present, physical education examination in colleges and universities is very important, but it does not affect the physical quality of students and professionals at all levels. The evaluation combines the evaluation process with the evaluation process and introduces the evaluation process that balances the result and the process.

The third is the content of the evaluation, from single evaluation to multiple evaluations. The difference between the measurement points is the difference between the measurement points. For example, when assessing physical education instruction to students, it is important not only to measure strength, motor knowledge, and physical ability but also to learn behaviors, skills, and movements.

Fourth is the evaluation tool from product evaluation to intelligent evaluation. Manual testing is time-consuming and error-prone. Intelligent assessment is simple, fast, and accurate. Therefore, the tools of college sports measurement should be changed from data collection, statistics, and analysis to writing, doing more, and reviewing more.

Fifth, the evaluation suggested from closed to open. The data collected from big data are processed and analyzed, and the results are presented to physical education teachers and students, which can help teachers and students clearly understand the work and monitoring usage in physical education classrooms.

#### 4.2.2. Principles for Constructing the Evaluation System of Physical Education in Colleges and Universities

(1) *Research and Objective Details.* Based on the size and characteristics of The Times newspaper, based on policies and practices, research evaluation and goals for higher education and school bodies are created. For example, when selecting measurement methods, research should be carried out according to the collected data and appropriate methods should be selected, so as to ensure the effectiveness of science and the purpose of the technological process.

(2) *The Principle of Success and Perfection.* In other words, the establishment of a college physical education evaluation system, the selection of evaluation system should be multifaceted, can not be repeated, must have a design, must have universality, and must be able to reflect all the systems of the body.

(3) *The Principle of Rationality and the Principle of Judicial Rationality.* Validity refers to the effectiveness and efficiency of PE assessment, and validity refers to the verification of the accuracy and effectiveness of the assessment criteria.

## 5. Conclusion

The sources of college sports evaluation include physical education teachers, students, peers, athletes, and other big data sources. The sports coaches were evaluated by self-evaluation, student evaluation, peer evaluation, and staff evaluation. The process of "individual assessment, group assessment, and teacher assessment" was introduced to the students. The evaluation scale includes the physical education teacher evaluation scale and student evaluation scale. This study discusses the model of health physical examination in colleges and universities to provide a reference for the reform of health physical examination in colleges and universities, but it is still in short supply. Due to the limitation of performance, it is not enough to only select sports indicators in big data. Therefore, the conclusion of this paper may have some limitations and deficiencies. And the empirical research is not carried out, it still needs further investigation and study in the future. It is suggested that physical education should be summarized, supplemented, and perfected in the future.

## Data Availability

The dataset can be accessed upon request.

## Conflicts of Interest

The authors declare that they have no conflicts of interest.

## Acknowledgments

This study was supported by The Research Project of Teaching Reform in Hunan Province: Dilemma and Breakthrough: Research on the Improvement of Normal University Students' Training Based on the Core Accomplishment of Physical Education Teachers (Scientific Research Fund of Hunan Education Commission, No. 495); Hunan University of Science and Technology 2022 College Student Research Innovation Plan: Research on the Difficulties and Strategies of School Physical Education under the Background of "Sports-Education Integration"(University-Level General Project, No. 111).

## References

- [1] H. Xiao, S. Ali, Z. Zhang, M. S. Sarfraz, F. Zhang, and M. Faisal, "Big data, extracting insights, comprehension, and analytics in cardiology: an overview," *Journal of Healthcare Engineering*, vol. 2021, no. 7541, pp. 1–14, 2021.
- [2] P. Ni, B. Liu, and G. He, "An online optimization strategy for a fluid catalytic cracking process using a case-based reasoning method based on big data technology," *RSC Advances*, vol. 11, no. 46, pp. 28557–28564, 2021.
- [3] I. Awajan, M. Mohamad, and A. Al-Quran, "Sentiment analysis technique and neutrosophic set theory for mining and ranking big data from online reviews," *IEEE Access*, vol. 9, no. 99, pp. 47338–47353, 2021.
- [4] X. Lv and M. Li, "Application and research of the intelligent management system based on internet of things technology in the era of big data," *Mobile Information Systems*, vol. 2021, no. 16, 6 pages, Article ID 6515792, 2021.
- [5] B. Khan, R. Naseem, M. A. Shah et al., "Software defect prediction for healthcare big data: an empirical evaluation of machine learning techniques," *Journal of Healthcare Engineering*, vol. 2021, no. 2, 16 pages, Article ID 8899263, 2021.
- [6] Q. Duan, L. Kan, and S. B. Tsai, "Analysis on forestry economic growth index based on internet big data," *Mathematical Problems in Engineering*, vol. 2021, no. 4, 11 pages, Article ID 2286629, 2021.
- [7] K. M. Lee and C. W. Park, "A pmu big data based new systematic phenomenon identification of res using deep neural network," *The Transactions of the Korean Institute of Electrical Engineers*, vol. 70, no. 1, pp. 45–50, 2021.
- [8] H. Li, H. Zhang, and Y. Zhao, "Design of computer-aided teaching network management system for college physical education," *Computer-Aided Design and Applications*, vol. 18, no. S4, pp. 152–162, 2021.
- [9] L. Zhao and Y. Zhao, "The construction of the fusion and symbiosis path of infant sports development based on intelligent environment," *Mathematical Problems in Engineering*, vol. 2021, no. 3, 9 pages, Article ID 4942560, 2021.
- [10] H. Wang, N. Wang, M. J. Li, S. Mi, and Y. Y. Shi, "Student physical health information management model under big data environment," *Scientific Programming*, vol. 2021, no. 1, 10 pages, Article ID 5795884, 2021.
- [11] R. Tarraga-Minguez, C. Suarez-Guerrero, and P. Sanz-Cervera, "Digital teaching competence evaluation of pre-service teachers in Spain: a review study," *IEEE Revista Iberoamericana de Tecnologías del Aprendizaje*, vol. 16, no. 1, pp. 70–76, 2021.
- [12] Y. Chen, Z. Wang, Q. Ma, and K. Liang, "Reliability evaluation and failure behavior modeling of ims considering functional and physical isolation effects," *IEEE*, vol. 24, no. 6, pp. 2441–2452, 2019.
- [13] Y. Zheng, Z. Yan, K. Chen, J. Sun, Y. Xu, and Y. Liu, "Vulnerability assessment of deep reinforcement learning models for power system topology optimization," *IEEE Transactions on Smart Grid*, vol. 12, no. 4, pp. 3613–3623, 2021.
- [14] C. Li, J. Zeng, X. Jin, and W. Chu, "Quality index evaluation model of mpp sold under the e-commerce platform," *Mathematical Problems in Engineering*, vol. 2021, no. 12, 9 pages, Article ID 5589839, 2021.
- [15] F. E. Gunawan, T. H. Nhan, M. Asrol, Y. Kanto, and I. Kamil, "A new damage index for structural health monitoring: a comparison of time and frequency domains," *Procedia Computer Science*, vol. 179, no. 5, pp. 930–935, 2021.
- [16] X. Ren, C. Li, X. Ma et al., "Design of multi-information fusion based intelligent electrical fire detection system for green buildings," *Sustainability*, vol. 13, no. 6, p. 3405, 2021.
- [17] J. Jayakumar, B. Nagaraj, S. Chacko, and P. Ajay, "Conceptual implementation of artificial intelligent based E-mobility controller in smart city environment," *Wireless Communications and Mobile Computing*, vol. 2021, Article ID 5325116, 8 pages, 2021.
- [18] X. Liu, Y.-X. Su, S.-L. Dong, W.-Y. Deng, and B.-T. Zhao, "Experimental study on the selective catalytic reduction of NO with C<sub>3</sub>H<sub>6</sub> over Co/Fe/Al<sub>2</sub>O<sub>3</sub>/cordierite catalysts," *Ranliao Huaxue Xuebao/Journal of Fuel Chemistry and Technology*, vol. 46, no. 6, pp. 743–753, 2018.
- [19] R. Huang and X. Yang, "The application of TiO<sub>2</sub> and noble metal nanomaterials in tele materials," *Journal of Ceramic Processing Research*, vol. 23, no. 2, pp. 213–220, 2022.
- [20] Q. Zhang, "Relay vibration protection simulation experimental platform based on signal reconstruction of MATLAB software," *Nonlinear Engineering*, vol. 10, no. 1, pp. 461–468, 2021.