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Retraction

Retracted: Data Analysis and Optimization of Youth Physical Fitness Training Based on Deep Learning

Journal of Sensors

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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) Manipulated or compromised peer review

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] J. Pan, "Data Analysis and Optimization of Youth Physical Fitness Training Based on Deep Learning," *Journal of Sensors*, vol. 2022, Article ID 6778882, 9 pages, 2022.

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Research Article

Data Analysis and Optimization of Youth Physical Fitness Training Based on Deep Learning

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Adolescents are the future of national development, but according to effective surveys, it can be found that the health of the youth system in my country is in a state of decline. At present, the reasons for the decline of the youth system in our country are caused by many factors, such as poor sports awareness and too much academic stress. The main reason is lack of exercise. Based on the deep learning method, this paper analyzes the importance of physical fitness training for adolescents, and proposes to improve the service system of physical fitness training for adolescents, and promote the formation of a guarantee mechanism for physical fitness training for adolescents. The research results of the article are as follows: (1) Before receiving the training, the test results of various indicators of the experimental group and the control group were basically the same, and there was no major difference. The T test results showed that the P values of the two groups were both above 0.05. Explain that before training, the initial situation of the two groups can be regarded as the same. After receiving the special training, the general condition of the members of the conventional training group was slightly improved compared with the test before the training. Compared with the experimental group, they performed pull-ups, throwing a 2Kg medicine ball on the spot, running 30 meters, reaching a height on approach, moving half a meter, and repeating. The P values of the cross-test scores are all less than 0.05, indicating a large gap between the two. Among them, the P value of the 30-meter run is lower than 0.000, which has a very significant difference, while the P value of the fast clean and jerk 20 kg and the 60s double shake is greater than 0.05. It can be seen that there is no significant difference between the control group and the experimental group after these two assessments. The experimental results also show that the trainees who received the mode training method have been improved in various indicators of physical fitness, and the experimental results and the traditional mode training have been greatly optimized. (2) In the simulation test analysis experiment, the statistical average of exercise time is 5.784, which is the highest statistical average among the five variables, and the statistical average of physical fitness is 2.436, which is the lowest in the statistical results. There is no significant difference between the statistical average of the quality and the daily exercise situation. In the sensitivity test, the evaluation accuracy of the deep learning methods is the highest among all models. When the number of iterations reaches 50, the evaluation accuracy can reach 1. (3) After running on the test set, the article proposes that the accuracy rate of the physical training model based on the deep learning algorithm is 89.12%, and the improved accuracy rate can reach 92.46%, which is the one with the highest index value among the four models in the experiment. The AUC curve values of the article and the improved system are very stable. The AUC value before the improvement remains around 0.90, and the AUC value after the model improvement also remains at 0.97. After running on the mixed test set, the performance of the four methods has declined to a certain extent, but the performance of the model proposed in this article is still the highest among the four models, and the AUC curve values of the improved system are very stable. Yes, the AUC value has been maintained at 0.95, and the AUC value before the improvement is stable within the range of 0.90-095. The research data also show that the recognition accuracy of the physical training method of the deep learning algorithm is the highest.

1. Introduction

The development and progress of a nation depend on the physical and mental conditions of adolescents, and the physical fitness training of adolescents is an important factor affecting the healthy development of adolescents. With the support of today's highly advanced technology, the communication technology between governments is developing day by day. Sports and teaching activities have also become important conditions for the prosperity of the country. We should pay attention to sports health teaching, which not only designs the healthy growth of the youth system, but also affects the future of the nation and the development of the country. In middle and high schools with heavy academics, students should also have sufficient exercise time, and form a healthy lifestyle and cultural leisure. Literature [1] concluded that a certain amount of exercise can lead to a reduction in risk factors. Literature [2] analyzed the necessity of physical exercise in this age group of students. Reference [3] illustrates the importance of developing practical abilities in sports culture and sports. Literature [4] explains that the future life of each nation and the development of the country depend on the physical and mental conditions of the youth. Reference [5] illustrates that physical exercise and a positive attitude towards physical activity must be one of the basic areas of activity in higher education institutions. Literature [6] analyzes the use of special equipment in the current special physical training, and proposes the key elements and principles to be followed in the special physical training. Literature [7] analyzed exercise motivation and concluded that exercise can increase the motivation of students and students. Literature [8] analyzes the significance of physical training, the problems existing in physical training, and the characteristics of football. Literature [9] discusses the use of physical training as a substance abuse prevention intervention for youth in Illinois. Literature [10] conducted a historical survey of physical exercise activities in youth groups and found that there was no identifiable physical training program in early youth group activities. Literature [11], on the basis of analyzing the importance of youth physical exercise, proposed a service system to improve the quality of youth physical exercise. Literature [12] finds out the problems existing in the physical training of youth basketball players and proposes corresponding solutions through literature data, field investigation, and logical analysis. Reference [13] discusses the physical fitness training strategy of shooting athletes in the physical fitness training stage. The literature [14] promoted the change among adolescents' physical exercise and promoted the progress of physical exercise in China. Literature [15] studied whether the reaction time of intellectually disabled people could be improved through exercise program, and the experimental results showed that the reaction time of intellectually disabled youth could be improved through exercise program.

2. Analysis of Adolescent Physical Training

2.1. Analysis of the Importance of Physical Fitness Training for Adolescents. "Physical training" is a popular word in the sports industry in recent years, and it is also the research direction of many experts in the field of sports. "Physical fitness" refers to the ability of the human body to adapt to the human living environment without external force [16]. In the process of physical growth, adolescents receive a certain degree of physical training, which will achieve a multiplier effect. In the process of youth physical training, scientific training can not only make the youth's physical quality surpass that of their peers, but also prolong the physical quality of high-level youth athletes [17]. The group of teenagers mainly includes primary and secondary school students. This is the golden stage of their physical growth and development. Physical training is very important to them. Only by insisting on scientific physical training methods can the body be in the process of physical training. Physical fitness is improved.

2.2. Build a Youth Physical Fitness Training Service System. The youth physical training service system consists of 4 modules, namely, the application layer, the ability layer, the adaptation layer, and the physical layer. The application layer mainly includes four functional modules: physical fitness training, physical fitness testing, physical fitness self-checking, and physical fitness evaluation. The 4 molds are technically supported by the hybrid cloud security system and the hybrid cloud operation and maintenance system. The specific functional modules are shown in Figure 1.

2.3. Improve the Guarantee Mechanism of Physical Fitness Training for Young People. At present, there are many reasons for the decline in physical health of young people in our country, such as insufficient physical activity, more social incentives, and weakening of concept and awareness, and the biggest reason is insufficient physical training. To clarify and improve the goals and tasks of youth physical fitness training to promote physical health, based on the actual situation of youth physical fitness training, to seek the core value of the construction of the guarantee mechanism of youth physical fitness training to promote physical health service system under the constraints of different regions and resources, is the realization of youth physical fitness training. It is a strategic measure to construct the system and mechanism of physical health service so as to maximize the effect of health service. It is suggested that youth physical fitness training to promote physical health services should be listed as the local sports development strategy, and incorporated into the local national economic and social development plan, improve the coordination mechanism, clarify the responsibilities of each department, and grasp the key points, difficulties, and phased goals of the operation mechanism. Combined with the local reality, strengthen the investment and guarantee for the weak links of the youth physical fitness training to promote the physical health service system, make overall planning and coordination, and continuously improve the level of the development of the physical health service for young students.

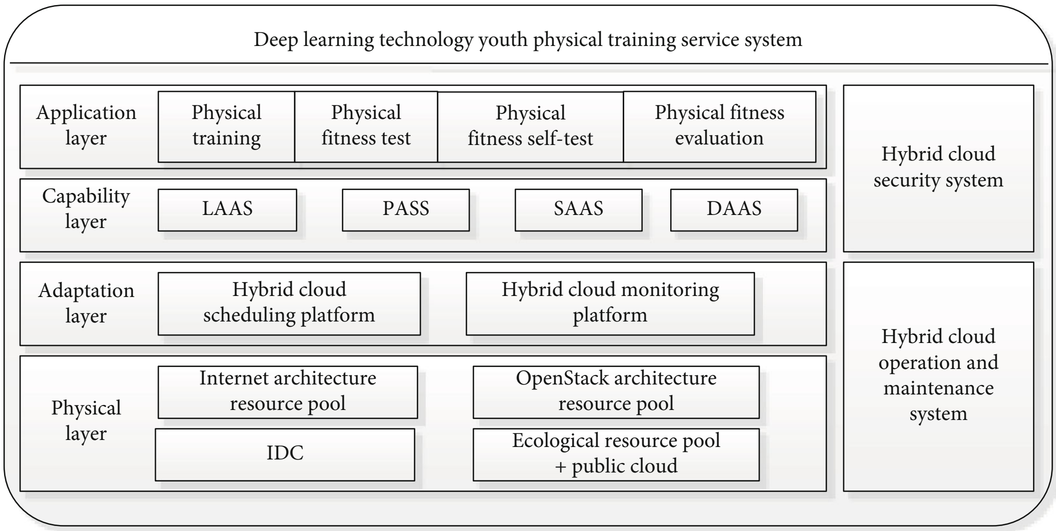

Figure 1: Adolescent physical training module diagram.

3. Construction of Youth Physical Training Model

3.1. Sampling of Sports Information for Young Athletes. The article divides the level 1 of the youth physical training effect evaluation into N levels, which are 2, namely:

$$X^{(0)} = \bigcup_{i=1}^{N} X^{(i)}. \tag{1}$$

Youth sports statistical function [18]:

$$\begin{aligned} &\min F = R^2 + A\sum_i \varepsilon_i \\ &s.t : \|\varnothing(x_i) - o\|^2 \le R^2 + \varepsilon_i \text{ and } \varepsilon_i \ge 0, i = 1, 2, \cdots \end{aligned} \tag{2}$$

$$\begin{aligned} &\max \sum_i \alpha_i K(X_i, X_i) - \sum_i \sum_j \alpha_i \alpha_j K\left(X_i, X_j\right) \\ &s.t. : \sum_i \alpha_i \le 1 \text{ and } 0 \le \alpha_i \le A, i = 1, 2, \cdots \end{aligned} \tag{3}$$

The correlation distribution of the constraint parameter sets R^N and X^N for establishing the evaluation of the effect of physical fitness training for adolescents is:

$$p\left(R^N = r_i\right) = p\left(X^N = X_i \| X_i | = | r_i |, \text{angle}(X_i)\right), \tag{4}$$

$$\{X(t_0 + i\Delta t\}, i = 0, 1, \cdots, N - 1. \tag{5}$$

Optimization set for teen training [19]:

$$X = [s_1, s_2, \cdots, s_k]_n = \left(X_n, X_{N-T}, \cdots, X_{n-(m-1)T}\right). \tag{6}$$

The expression for constructing a statistical analysis model for evaluating the effect of physical fitness training for adolescents:

$$\frac{dz(t)}{dt} = F(z), \tag{7}$$

make:

$$f(si) = (f(x_1), f(x_2, \cdots, f(x_n)). \tag{8}$$

Parametric distribution model [20]:

$$P(n_i) = \left\{p_k \middle| pr_{kj} = 1, k = 1, 2, \cdots, m\right\}. \tag{9}$$

Distribution of mechanical characteristics of adolescent physical training:

$$\lambda = \frac{1}{1 + \alpha(\partial S/\partial t)^2}, \tag{10}$$

$$\widehat{k}_\mu(t+1) = \widehat{k}_\mu(t) + Q(t+1) \times \left[\frac{\partial \widehat{F}_\mu / Mg}{\partial t} - \frac{\partial S}{\partial t} \widehat{K}_\mu(t)\right], \tag{11}$$

in:

$$Q(t+1) = P(t+1)\frac{\partial S}{\partial t}, \tag{12}$$

$$P(t+1) = \frac{1}{\lambda}\left[P(t) - \frac{P^2(t)(\partial S/\partial t)^2}{\lambda + P(t)(\partial S/\partial t)^2}\right], \tag{13}$$

$$\frac{\partial S}{\partial t} = \frac{r}{V_c}\frac{\partial \omega_w}{\partial t}. \tag{14}$$

Table 1: Basic statistics of athletes.

	Control group	Experimental group	P value	T value
Height (cm)	184.0±2.00	184±1.41	0.974	-0.150
Weight (kg)	80.10±2.61	80.10±2.17	0.965	-0.087
Age	15.6±0.51	16±0.00	0.601	-2.049

Among them, λ represents the big data ambiguity distribution factor for the evaluation of adolescent physical fitness training effect, $\widehat{F}_{\mu}$ is the characteristic distribution amount of adolescent physical fitness training effect evaluation, and ω_w is the adaptive weighting coefficient.

3.2. Training Effect Evaluation Model Optimization. Let $X^{(0)} = (X^{(0)}(1), X^{(0)}(2), \cdots, X^{(0)}(n))$ be the original data and $X^{(1)} = (X^{(1)}(1), X^{(1)}(2), \cdots, X^{(1)}(n))$ be the one-time accumulated data sequence of the $X^{(0)}$-sequence, where:

$$X^{(1)}(1) = X^{(0)}(1), \tag{15}$$

$$x^{(1)}(k) = \sum_{i=1}^{k} x^{(0)} i. \tag{16}$$

The fuzzy scheduling function to obtain the evaluation of adolescent physical training effect is:

$$X_j(t+1) = p_j(t+1) \mp \beta \times |m\text{best}(t+1) - X_j(t)| \times \ln\left(\frac{1}{u_j(t+1)}\right). \tag{17}$$

Let $Z^{(1)}$ be the mean sequence of $X^{(1)}$:

$$Z^{(1)} = \left(Z^{(2)}(1), Z^{(1)}(3), \cdots . Z^{(1)}(n)\right), \tag{18}$$

$$Z^{(1)}(K) = \frac{1}{2}\left(x^{(1)}(k) + x^{(1)}(k-1)\right). \tag{19}$$

Then, there are:

$$x^{(0)}(K) + az^{(1)}(k) = b. \tag{20}$$

Among them, a is the development coefficient, and b is the gray scale action.

Substitute the original data series $X^{(0)}$ into formula (20) to get:

$$\begin{aligned} x^{(0)}(2) + az^{(1)}(2) &= b, \\ x^{(0)}(3) + az^{(1)}(3) &= b, \\ &\cdots \\ x^{(0)}(n) + az^{(1)}(n) &= b. \end{aligned} \tag{21}$$

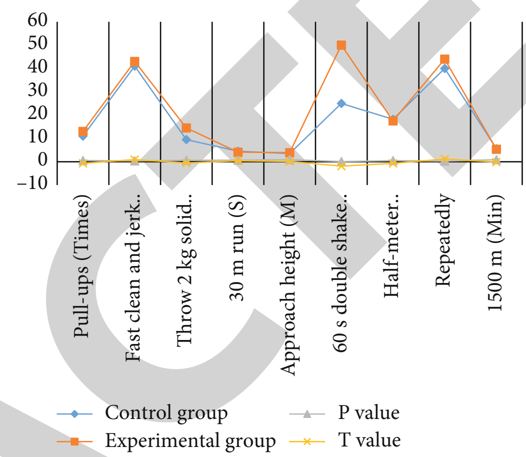

Figure 2: Statistics of physical fitness index evaluation results before training.

Formula (21) is the gray prediction GM (1,1) model, rewritten as a matrix equation of $Y = B \cdot A$, and the solution of the equation is [21]:

$$A = \begin{bmatrix} a \\ b \end{bmatrix} = \left(B^T B\right)^{-1} \cdot B^T Y. \tag{22}$$

Substitute the resulting a, b into (22) to get:

$$\widehat{x}^{(1)}(t+1) = \left[x^{(0)}(1) - \frac{b}{a}\right] \cdot \exp\,(-at) + \frac{b}{a}(t = 0, 1, 2, \cdots, n-1). \tag{23}$$

Quantitative relationships to obtain assessments of adolescent physical training effects:

$$\widehat{x}^{(0)}(i) = \widehat{x}^{(1)}(i) - \widehat{x}^{(1)}(i-1)(i = 1, 2, \cdots, n). \tag{24}$$

Define $\sigma(k)$ as the residual value [22]:

$$\sigma(k) = x^{(0)}(k) - \widehat{x}^{(0)}(k). \tag{25}$$

Definition $\varepsilon(k)$ is the residual relative difference [23]:

$$\varepsilon(K) = \frac{x^{(0)}(k) - \widehat{x}^{(0)}(k)}{x^{(0)}(k)} \times 100\%. \tag{26}$$

Table 2: Assessment results of physical fitness indicators of young athletes before training.

Test content	Control group	Experimental group	P value	T value
Pull-ups (times)	11.0	13.0	0.512	-0.673
Fast clean and jerk 20 kg (times)	41.0	43.0	0.378	0.911
Throw 2 kg solid ball (m) in place	9.5	14.5	0.611	-0.521
30 m run (s)	4.5	4.1	0.685	0.414
Approach height (m)	3.5	3.9	0.920	0.102
60s double shake (times)	25.0	50.0	0.081	-1.880
Half-meter movement (s)	18.2	17.5	0.495	-0.701
Repeatedly traverse (times)	40.0	44.0	0.262	1.168
1500 m (min)	5.59	5.35	0.887	-0.144

Table 3: Assessment results of physical fitness indicators of young athletes after training.

Test content	Control group	Experimental group	*P* value	*T* value
Pull-ups (times)	13.0	15.0	0.003	-3.578
Fast clean and jerk 20 kg (times)	42.0	44.0	0.192	-1.372
Throw 2 kg solid ball (m) in place	12.1	15.3	0.009	-3.026
30 m run (s)	4.1	3.9	0.001	5.062
Approach height (m)	3.7	4.2	0.028	-2.456
60s double shake (times)	44.0	52·.0	0.086	-1.864
Half-meter movement (s)	18.9	17.1	0.018	2.677
Repeatedly traverse (times)	42.0	46.0	0.010	-2.973
1500 m (min)	5.4	5.36	0.335	0.998

Predictive function for evaluating the effect of physical training in adolescents:

$$p_{ij}^{(k)} = \frac{n_{ij}^{(k)}}{N_i}. \quad (27)$$

4. Simulation Experiments

4.1. Data Analysis. In order to study the specific data of youth physical training, the experiment selected 60 young male athletes for physical fitness test, and divided 60 young athletes into two methods, the control group received conventional training methods, the experimental group received model training methods. The evaluation results after a longer period of physical training were compared with the evaluation results without physical training, and the differences between the two comparison experiments were analyzed. The 60 athletes selected in the experiment are basically the same in height, weight, and age, and the *P* values are all greater than 0.06, indicating that the experiment can ensure that the conditions of the two groups are basically the same, so the experiment can exclude the error caused by the body and other elements in the experimental results. The basic information of the two teams is shown in Table 1 and Figure 2:

According to the experimental results in Table 2, we can know that before the training, the test results of various indicators of the members of the experimental group and the control group are basically the same, and there is no major difference. In the pull-up test, the control group can reach 11 times a minute, the experimental group can reach 13, the fast clean and jerk control group can reach 41, the experimental group can reach 43, and the 2 kg solid ball is thrown back in place. The control group can reach 9.5 meters, and the experimental group can reach 14.5 meters. 30 meters running in the control group for 4.5 seconds, for the experimental group for 4.1 seconds, for the run-up touch control group for 3.5 meters, for the experimental group for 3.9 meters, for the 60s double-shake control group for 25 times, for the experimental group for 50 times, for the half-meter movement control group for 18.2 seconds, 17.5 seconds in the experimental group, 40 times across the control group, 44 times in the experimental group, 5.59 minutes in the control group, and 5.35 minutes in the experimental group. The experiment conducted a T test on the control group and the experimental group. The results showed that the *P* values of the evaluation results of the two groups were both above 0.05. The experimental results showed that the initial conditions of the two groups could be regarded as the same before the training.

As can be seen from Table 3 and Figure 3, by analyzing the evaluation results between the control group and the experimental group, the overall situation of the members of the conventional training group was slightly improved compared with the test before training. 30-meter run, the *P* value of the run-up touch, the half-meter movement, and the repeated crossing test results are all less than 0.05,

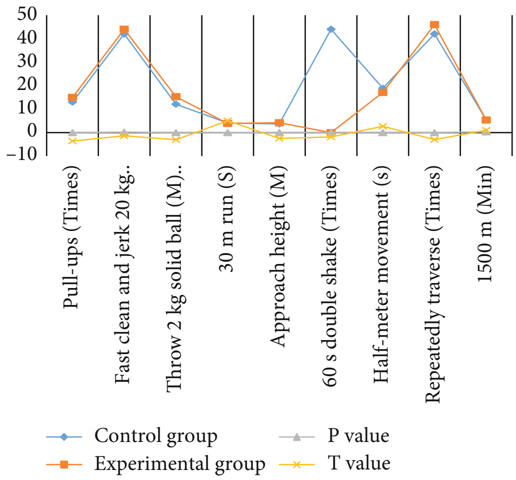

Figure 3: Statistics of physical fitness index evaluation results after training.

Table 4: Statistical analysis values of physical training effect evaluation for young athletes.

	Mean	Standard value	Minimum	Statistical mean
Exercise time	0.267	0.686	0.144	5.784
Physical fitness	0.365	0.544	0.368	2.436
Daily exercise	0.556	0.457	0.465	2.587
Training intensity	0.454	0.476	0.354	4.376
Correlation coefficient	0.425	0.546	0.424	3.655

indicating that the difference between the two is large. However, the P value of fast clean and jerk 20 kg and 60s double shake is greater than 0.05, which shows that there is no significant difference between the control group and the experimental group after these two evaluations. Combining the evaluation results of the two groups before the training, we can conclude that under the condition that the initial conditions are basically the same, and the training conditions and environment are basically the same, the trainees who have received the mode training method have obtained better physical fitness indicators. The improvement and the effect are greatly optimized compared with the mode training.

4.2. Simulation Test Analysis. In order to verify that the method proposed in the article can improve the performance of the physical training effect of young athletes, a series of statistical analysis software was used for simulation test analysis, and the data of the physical training effect of young athletes was counted. The statistical results are shown in Table 4:

According to Table 4 and Figure 4, the results of physical fitness evaluation of young athletes are analyzed. The statistical average of exercise time is 5.784, which is the highest statistical average among the five variables. The statistical average of physical fitness is 2.436, which is the highest in the statistical results. The lowest one, the statistical average of physical fitness and daily exercise situation, is not significantly different. According to the experimental results in Table 1, the statistical results of physical training parameters and physical training effect evaluation output of young athletes are calculated, and the statistical results are shown in Figure 5:

According to the experimental results in Figure 5, we can conclude that the method in this paper has higher accuracy in evaluating the training effect after youth physical training. The experiment also carried out a confidence test on the method proposed in the article, which is different from the fuzzy statistical method and the quantitative game method.

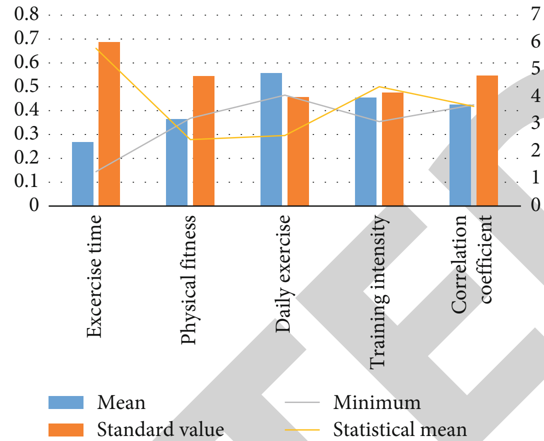

Figure 4: Statistical chart of physical training effect.

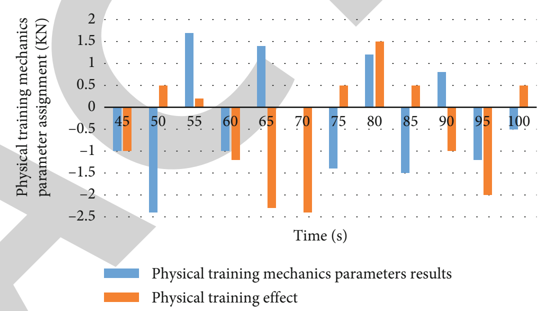

Figure 5: Statistical graph of the output of physical training effect evaluation.

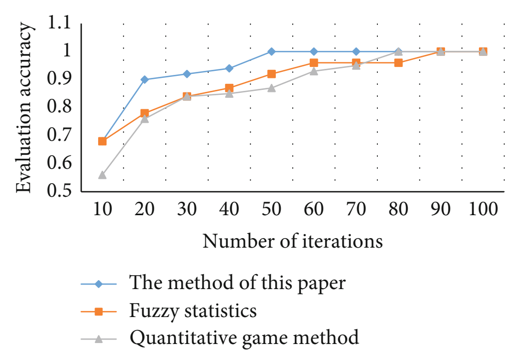

Figure 6: Evaluation accuracy comparison test.

Table 5: Evaluation criteria table.

	Metrics	Formula
Accuracy	The accuracy rate measure is the ratio of the number of passes to the total number of passes. The larger the index value, the more accurate the detection result.	$\text{Precision} = \text{hits}_u/\text{recset}_u$
Recall	The recall rate criterion refers to the ratio of the number of detections to the theoretical maximum number of hits.	$\text{Recall} = \text{hits}_u/\text{testset}_u$
F1 measure	The F1 metric can effectively balance the precision and recall by biasing towards the side with the smaller value. The larger the index value, the more accurate the test result.	$F1 = 2 \times \text{Precision} \times \text{Recall}/\text{Precision} + \text{Recall}$

Table 6: The performance of each model on the test set.

Model	Accuracy	Precision	Recall	F1 score
Deep learning physical training model	89.12%	89.56%	90.10%	90.48%
Improved fitness training model	92.46%	93.27%	93.21%	93.45%
Fuzzy statistical model	85.45%	85.43%	86.12%	86.18%
Quantitative game model	75.14%	75.24%	75.46%	75.12%

Table 7: The performance of each system on the mixed test set.

Model	Accuracy	Precision	Recall	F1 score
Deep learning physical training model	87.25%	87.12%	88.10%	88.24%
Improved fitness training model	90.12%	90.24%	90.48%	90.29%
Fuzzy statistical model	82.14%	82.47%	82.27%	82.14%
Quantitative game model	72.28%	72.45%	72.89%	73.10%

For comparison, the comparison results are shown in Figure 6:

According to the experimental data in Figure 6, we can know that the evaluation accuracy of the method in this paper is the highest among the three methods. When the number of iterations reaches 50, the evaluation accuracy can reach 1. When the number of iterations of the fuzzy statistical method is 80, the evaluation accuracy can reach 0.95. When the number of iterations of the method is 90, the evaluation accuracy can reach 1.

4.3. *Performance Test*

4.3.1. Evaluation Criteria. Shown in Table 5.

4.3.2. Specific Tests. In order to test the superiority of the performance of the physical training model based on deep learning technology proposed in the article, after the model proposed in the article is improved, the fuzzy statistical model and the quantitative game model are run on the test set and the mixed test set, respectively. The test set is used to evaluate the generalization ability of the final model, and the mixed test set tunes the model's hyperparameters and is used to make an initial evaluation of the model's ability. The experimental results were recorded to verify the advantages of the three models for adolescent physical training, and the AUC curves were drawn based on the experimental results. AUC is a model evaluation metric in the field of machine learning. The larger the AUC value of the classifier, the higher the accuracy rate. The experimental data of different models on the test set and the mixed test set are shown in Table 6 and Table 7:

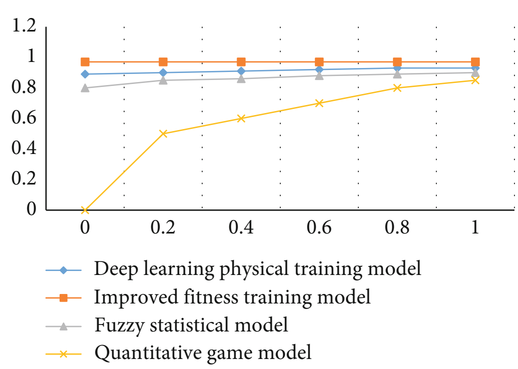

Figure 7: AUC curve on the test set.

According to the data in Table 6 and Figure 7, we can conclude that after running on the test set, the article proposes that the accuracy rate of the physical training model based on the deep learning algorithm is 89.12%, the accuracy rate can reach 89.56%, and the improved accuracy rate can reach 92.46%, and the accuracy rate can reach 93.27%, which is the one with the highest index value among the four experimental models. The accuracy rate of the quantitative game model is 75.14%, which is the lowest among the four systems, and the fuzzy statistical model is in the middle state.

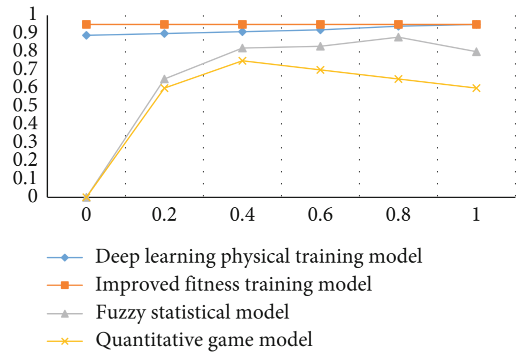

Figure 8: AUC curve on the mixed test set.

According to the AUC curves of the four algorithms, we can also see that the AUC curve values of the article and the improved system are very stable. 0.97, the AUC value of the fuzzy statistical model is low, the AUC curve of the quantitative game algorithm is more tortuous, and the AUC value is also low. The research data also show that the recognition accuracy of the physical training method of the deep learning algorithm is the highest.

According to the data in Table 7 and Figure 8, we can conclude that after running on the mixed test set, showing four models has decreased to a certain extent, but the performance of the model proposed in this article is still the highest among the four models. The accuracy of the model before improvement is 87.25%, and the accuracy of the improved model is 90.12%. According to the AUC curve diagrams of the four algorithms, we can also see that the AUC curve value of the improved system is very stable no matter in the test set or the mixed test set, stable within the range of 0.90-095. The AUC curves of the fuzzy statistical model and the quantitative game model are more tortuous, and the AUC values are also lower. The experimental results also show that the recognition accuracy of the physical training model of the deep learning algorithm is the highest.

5. Conclusion

Adolescents are the future of national development, and adolescent physical training is the most important basic condition for promoting the healthy development of the adolescent system. According to effective research, the physical quality of Chinese adolescents has continued to decline for more than 20 years, and many adolescents lack exercise. Physical fitness training for adolescents is an objective need for building a harmonious society, and is related to the strength of individuals and nations. Based on strengthening physical fitness training for adolescents, this paper studies a data analysis model of adolescent physical fitness based on deep learning algorithm. With the goal of improving the physical quality of adolescents, it will form an interactive synergy with the theoretical research on the health promotion of the adolescent system, and build a physical training method to promote the formation of the adolescent health system. In the future research work, in the growth process of young people, we should not pay attention to their achievements, but should pay attention to their physical health, physical and mental health, and realize the all-round development of young people. The government should give sufficient financial support to ensure diversified development of adolescent health.

Data Availability

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

Conflicts of Interest

The author declared that he has no conflicts of interest regarding this work.

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