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Retraction

Retracted: Obstacles and Regulation Deconstruction of Athletes' Psychological Training Based on Machine Learning Algorithm in Physical Education Teaching

International Transactions on Electrical Energy Systems

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1].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. Jiang, "Obstacles and Regulation Deconstruction of Athletes' Psychological Training Based on Machine Learning Algorithm in Physical Education Teaching," *International Transactions on Electrical Energy Systems*, vol. 2022, Article ID 9970811, 10 pages, 2022.

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Research Article

Obstacles and Regulation Deconstruction of Athletes' Psychological Training Based on Machine Learning Algorithm in Physical Education Teaching

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In sports, players had differences in psychological training principles, sports characteristics, and personal athletic ability due to differences in sports plans. At the same time, the winning and losing rules of various competitions would also limit the psychological training and tactical ability of players. The current problem with mental training for athletes was that it is impossible to accurately understand the mentality of athletes and make a reasonable adjustment plan. Therefore, this paper adopted a machine learning algorithm and used the methods of psychological testing and questionnaire research to carry out extensive research on the training and regulation of remote sports psychology. The possible psychological barriers and adjustment methods of athletes are supplemented, focusing on the comparison of four aspects: psychological endurance before training, control accuracy, anxiety score before psychological training, and the effects of before and after adjustment. And after in-depth research on the problem of athletes' psychological training, the conclusion showed that the psychological tolerance value of athletes has increased by 18.9%, the accuracy of control of athletes' psychological problems had increased by 13%, the psychological anxiety of students had also been alleviated and improved, and the overall score had increased by 12.5%. A more systematic mental training program for athletes was introduced in order to provide a basis for improving the effectiveness of mental training for athletes.

1. Introduction

With the development of sports, people gradually realize that in competition, a good mentality plays an important role, especially at critical moments. In the early stage of the development of competitive sports, coaches focused on the development of techniques and tactics, but they did not have much application in the mental training of athletes. This situation causes coaches to start to pay attention after the athletes themselves experience failures, which are equally important as techniques and tactics. Physical, technical, and tactical training is the external manifestation of the body, while mental training is a spiritual exercise. We must use both hands together, without distraction, and people must cultivate both inside and outside.

In recent years, China has paid more attention to the psychological training and psychological counseling of athletes and achieved some results. Through appropriate psychological counseling and training for athletes, people can strengthen their inner self and improve sports performance. Psychological training is to carry out targeted and effective training for athletes to ensure that the technical and tactical levels of athletes in the game are improved to the greatest extent. Mental training is shown in Figure 1. However, there are still certain obstacles to the psychological training of Chinese athletes, so it is particularly necessary to find a suitable psychological training strategy.

In this paper, based on the machine learning algorithm, the factors of athletes' psychological training and other aspects are compared, mainly in the athletes' psychological tolerance, regulation accuracy, anxiety scores before and after training, and regulation results. The results show that athletes based on machine learning have improved psychological tolerance, improved regulation accuracy, lowered

FIGURE 1: Mental training.

anxiety scores, and increased their average performance by 1 point. It also shows that under the machine learning algorithm, it is more helpful for athletes to obtain good results, and it is also of great help to coaches' teaching.

2. Related Work

Physical education has always been the focus of research in sports institutions. In physical education, Anthony Watt Arto Grstén studied the complete sequence of the motivational hierarchy model for physical education (PE), which included motivational climate, basic psychological needs, intrinsic motivation, and associations with situational enjoyment, knowledge, performance, and overall moderate to vigorous physical activity (MVPA). Gender differences and associations with body mass index (BMI) were also analyzed. The results showed that the task participation atmosphere of girls' physical education class was related to physical ability and intrinsic motivation, while the atmosphere and ability of participating in the task were related to autonomy, and the overall MVPA was related to the overall MVPA through autonomy and intrinsic motivation [1]. Conceptual Physical Education (CPE) courses are widely used in higher education settings to promote healthy lifestyles. Liu J examined the effect of CPE courses on health-related fitness (HRF) levels of college freshmen. It used a pre-test and post-test study design. The results found that the students' aerobic capacity, upper body muscle strength and endurance, abdominal muscle strength and endurance significantly improved, and body fat percentage decreased. No significant increase in flexibility was found in the total sample [2]. Escrivaboulley G investigated the effects of a Self-Determination Theory-based Teacher Professional Development (TPD) program to increase the needs-supported motivational approach of primary school teachers to improve students' physical activity during physical education. Results showed that teachers in the treatment condition increased support for students' psychological needs for most of the school year but decreased slightly in the fourth wave of measurements [3]. The purpose of Papastergiou M was to assess the impact of integrating tablets and mobile applications for fitness development into physical education classes in primary schools. Effects on the intrinsic motivation of students in physical education classes in schools that do not implement a "one tablet per child" policy. The lab lessons proved equally motivating for boys and girls, as well as for the 5th and 6th graders. During the lab class, students particularly appreciated the physical usefulness of the activity, some features of the app used, and group training. Freeing physical education teachers from the responsibility of repeating demonstration exercises allows more time to provide individualized feedback to students [4]. Physical education plays an important role in athlete training, but training at the athlete's psychological level is also very important.

The psychological training of athletes, some scholars have also conducted research on it. One area for future research could be the mental health training currently offered to educators, and Moon J examined how their specific training needs can be met. An important strategy to reduce disparities in mental health care by geographic region may be a statewide move to increase the number of mental health professionals in rural areas. Differences in the levels of mental health problems expressed by teachers and administrators may indicate the need for school-wide initiatives to promote mental health across staff [5]. Practical skills are very important to physicians, but for many practical skills, the optimal form of teaching is unclear. Surgical education and training can be likened to high-performance sports, as complex movements and differentiated coordination must be perfectly integrated into both disciplines. Therefore, Germanyuk Adui analyzed and compared the effectiveness of mental training and the traditional "see one, do one" method. Finally, it was concluded that the combination of the two is the optimal method [6]. Children's Advocacy Centers (CACs') are uniquely positioned to serve as family navigators, connecting children affected by abuse with appropriate EBP. Possible research is the development, implementation, and evaluation of web-based counseling training for victim advocates to enhance early engagement services (E3 training). Taylor EK would test the impact of E3 training on key change mechanisms (e. g., knowledge, skills) to increase screening rates, referral rates, and access to EBP services to judge the feasibility of implementing the training [7]. Although scholars have conducted research on the mental training of athletes, they have not combined it with machine learning algorithms. In this regard, it studied the

obstacles and regulation of athletes' psychological training based on machine learning algorithms.

3. Athlete Mental Training

3.1. Trends in the Development of Mental Training for Athletes. Athletes' psychological quality, like their technical and tactical abilities, can only be improved through training [8]. After entering the 21st century, countries around the world have begun to pay attention to the cultivation of high-level athletes' psychological quality, increased investment in sports science, and also regarded psychological training as an important subject. American psychologists emphasize systematic and professional psychological training, and each training must be formulated with a detailed and reasonable plan. Among them, the detection of psychological, physical, and physiological indicators is the most common. As shown in Figure 2, in addition, in Germany, Australia, Russia, and other countries, there are also a large number of sports psychology professionals serving various competitions and Olympic Games. For example, Australia once hired many well-known foreign sports psychologists to provide guidance for the 27th Olympic Games. They provide psychological counseling on a regular and fixed-point basis to help athletes play a better role in the competition. In recent years, there have been in-depth discussions on psychological training internationally, and there are two ways to measure the psychological training effect on high-level athletes. One is the measurement of physiological indicators, and the other is the detection of the release properties of brain cells, by measuring physiological indicators, such as by detecting changes in urine epinephrine and norepinephrine. Measure the mental activity of athletes through the skin temperature, heart rate, etc. The second type of method is to test the process and results of psychological changes by detecting the release characteristics of the brain cells, including thinking, jumping, stopping, etc. [9]. For example, many psychologists combine thinking ability and adjustment training to stabilize the emotions of high-level players and keep them calm.

China's psychological training for athletes has entered a new stage of development, but the means and measures to adjust it have not attracted enough attention [10]. Lack of corresponding equipment and training methods, and as an important base for cultivating high-level athletes, many outstanding athletes have emerged in Chinese universities. At the same time, the university has a large number of highly educated, high-quality scientific research workers. Therefore, the psychological training of high-level athletes should be given sufficient attention and its development should be promoted to a certain extent.

3.2. Meaning of Sports Training and Physical Education. Sports training, as the name suggests, refers to the purpose of physical training in physical education, in which athletes conduct a targeted physical exercise through certain guidance and learning during a certain exercise process [11]. In a word, physical exercise is a specific practical activity, it is a practical activity for a certain physical activity, and on this
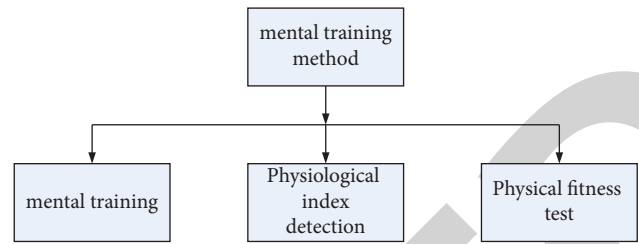

Figure 2: Mental training methods.

basis, scientific guidance, and teaching are carried out to improve its sports technology and level. Physical education is an effective means to train students to improve the quality of physical education. Physical education should give full play to the individuality and ability of athletes, meet the training needs and physical qualities of athletes, and use of various scientific teaching methods and means to formulate scientific and reasonable physical exercise plans for athletes. Sports training should comprehensively consider the athletes' psychological, physical, physical, and other factors. Ensure that the sports training of athletes is within the acceptable range, and at the same time ensure that the intensity of training can comprehensively improve the sports ability of athletes. During the training period, teachers should provide timely guidance, teach students according to their aptitude, and carry out different training plans for different students to ensure that each student can improve their physical quality through exercise.

Physical education mainly introduces the teaching of physical theory knowledge and technology, and analyzes its characteristics [12], as shown in Figure 3. In physical education, teachers should formulate teaching goals that are compatible with other subjects, and formulate teaching plans and courses according to the content of the courses. In teaching, instilling and explaining theoretical knowledge to athletes is conducive to students' understanding and mastery of movement techniques and lays a good foundation for improving their motor skills. Physical education is a systematic, holistic, and teaching, and its essence is an education and teaching that emphasizes "teaching" and "learning." In the teaching process, teachers would comprehensively and systematically carry out the teaching of physical health knowledge and basic physical skills, which is essentially a kind of education and teaching, focusing on "teaching" and "learning" between students. In the teaching process, teachers would comprehensively and systematically teach physical health knowledge and basic physical skills, so that students can absorb them proficiently, and transform them into their own sports skills and knowledge, so as to improve their sports quality and level. Physical education can be carried out from two levels of theoretical knowledge and technology, and the physical education can effectively promote students' physical fitness and quality.

3.3. Types of Obstacles in Mental Training. The mental state of athletes is moderate stress, concentrated attention, strong desire to play, natural movement coordination, and
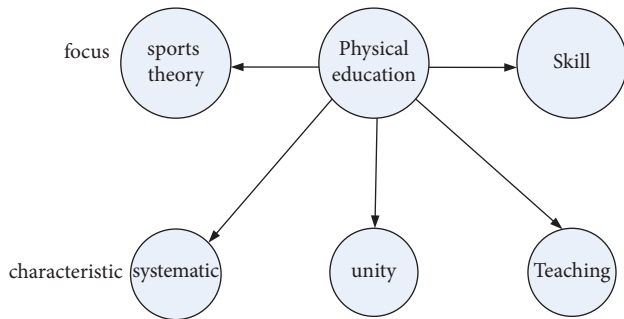
Figure 3: Emphasis and characteristics of physical education teaching.

Figure 4: Barriers to mental training.

psychological relaxation [13]. In normal mental training, athletes can easily do this, but over time, most athletes would still experience fluctuations in mood. As people can see from this, there are some obstacles to mental training. In this paper, from different angles, the teaching effect of high-level athletes in different schools is analyzed horizontally and summarized, as shown in Figure 4.

(i) Athletes often experience psychological saturation disorder during psychological training [14]. Psychological saturation disorder is a situation in which the athlete's own inner game is too many times, and the inner part is tired. At present, the psychological training of Chinese sports athletes has entered a new stage of development. Some university teachers who have realized the importance of psychological training have embarked on another path, that is, a large number of psychological training. Let them have a war-weary mentality to their own psychology, which would produce a sense of fatigue in the game, that is, psychological saturation, which would affect their competitive level. In addition, due to inappropriate mental training methods, it would also cause various obstacles.

(ii) Affective dysregulation due to personal reasons [15]. In the explanation of emotional disorders caused by personal reasons, the reasons for emotional disorders include both physical and spiritual reasons. In psychological training, if college physical education teachers do not pay attention to these psychological factors, it is easy to cause emotional problems for athletes. Congenital factors are relatively stable, and acquired factors can gradually change. However, acquired factors can be gradually changed, and the trend of this change can be good or bad. If it is not suitable, there would be emotional problems such as trance, inability to concentrate, and disgust.

(iii) The psychological reaction in physical education is a special behavior, therefore, the psychological training in physical education cannot be carried out blindly; otherwise, it would lead to emotional problems for students [16]. In competitive activities, taking badminton as an example, the characteristics of athletes' psychological reactions are mainly
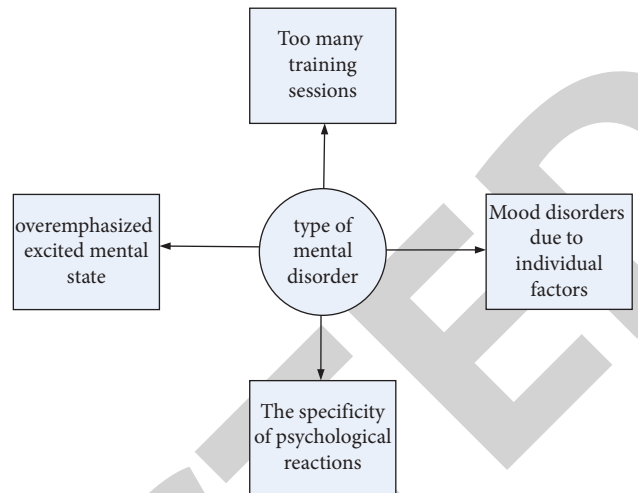
singles and doubles. Single-player matches have high demands on players' self-psychological control, while two-on-one matches require both sides to complement each other psychologically. In singles, if there is no correct psychological training, it may cause emotional obstacles such as tension and excitement in the singles and also cause psychological contradictions in the competition.

(iv) In the mental training of athletes, if the coach pays too much attention to the athlete's excitement, aggressive mental illness is likely to occur [17]. This mental illness is an over-aggression, and over-aggression tends to result in a lot of turnovers, making it difficult to win in the end. Secondly, offensive mental illness refers to when the athlete fails to achieve the expected goal, would produce unsatisfactory emotions, which would lead to self-disadvantage. After the game, the emotions of athletes can be vented on the coaches, spectators, and game equipment, thus affecting their game and life.

3.4. Regulation of Mental Disorders in Athletes. When the coaches carry out technical training, they should consciously combine a large amount of psychological training content with the training content, so that they realize that while regulating their technical movements, they gradually establish their own good psychological mode and thinking mode [18]. In the usual training, coaches can carry out mental exercise from the following aspects. As shown in Figure 5.

First, according to the psychological characteristics of the players, they can carry out targeted and breakthrough mentality training [19]. There are three ways, mainly deep breathing, biofeedback, and self-psychological comfort. First of all, players who are too anxious and lack self-confidence before the competition can be released through physical exercises such as yoga, long-distance running, and deep breathing. Only in this way, the player's body can be fully relaxed, and the player's mental tension can be relieved.
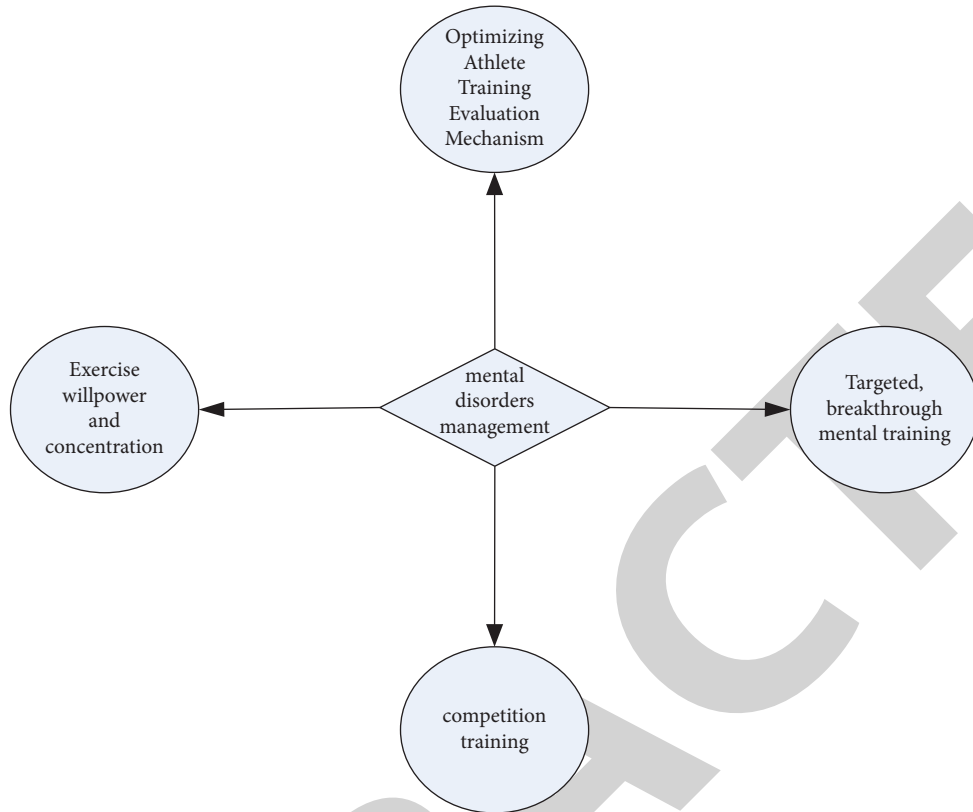
Figure 5: Methods of regulating mental disorders.

Secondly, for the proud athletes before the game, it can also be adjusted by means of biofeedback. The so-called biofeedback technology uses instruments to amplify various psychological information of athletes, and then analyzes the mentality of athletes intuitively, and then adjusts them by corresponding psychological awareness activities to achieve the purpose of adjusting mentality. By using biofeedback technology, it can help players make more rational psychological analyses in the competition, so as to correctly evaluate their own sports skills and reasonably analyze the opponent's ability, so as to achieve the best state of mind, body, and athletic ability. Finally, for the players who are too depressed before the game, they can use the method of self-psychological adjustment for training. The self-adjustment training method refers to persuading and comforting oneself through language and thinking before the competition, so that one can calmly deal with the competition. For example, self-suggestions such as saying "deep breath," "relax, relax," "I can do it" to motivate themselves before the game. Let themselves change their negative emotions about the game, and turn anxiety, worry, and fear into confidence and determination, so that people can perform better on the field.

Second, the competition training method is adopted, and the players are gradually adapted to the competitive psychology through daily simulated competitions [20]. The so-called competition training is to allow athletes to restore the scene of the competition as much as possible in their usual training. At the same time, it can also provide players with some situations they may encounter during training, so that

they can adapt to this situation as soon as possible. Moreover, it is necessary for athletes to maintain a good attitude in the game and eliminate the impact of negative emotions on them, so as to achieve the best results. For example, through language description, figure display, and other methods to conduct simulation competitions, or train in the form of scene simulation, so that athletes can experience the competitive scene in the language, figure, and virtual environment. In order to carry out the best psychological adjustment in the game, in order to make psychological adjustments in the event of various problems, and emergencies encountered in the game. With this mentality adjustment, even in the real arena, people can calmly deal with any unexpected situation.

Third, by training athletes' willpower and concentration, the negative emotions that athletes generate during competition can be improved. On the one hand, strong willpower enables athletes to overcome various obstacles and difficulties on the field. In the training process, if the athletes make mistakes continuously, the coach cannot use words to attack them. They should always encourage them, correct their mistakes, let them improve, and constantly improve them would, so that they are not afraid of failure, and the more they fight, the braver they are. In the actual game, if the player's score is lower than the opponent's score, then the coach should help them stabilize their mentality during training and make them believe that as long as they work hard, they would definitely achieve good results. Concentration training, on the other hand, allows players to learn

how to control their consciousness, focus all their energy on a specific object, and keep them from outside, or their own emotions in the long term. When athletes are nervous, unconfident, and anxious and have other bad mental states during the competition, their attention would be affected by this negative emotion, which would affect their performance. Therefore, in the usual training, the coach should let the athletes shift their attention from distracted emotions to some positive attitudes. For example, when athletes feel pressure, they should be reminded of their mood when they achieved good results in the competition, so as to eliminate negative emotions and adjust their mentality in time. At the same time, train the players to focus on one thing to ensure their mental concentration is high to ensure their true level on the field.

Fourth, the training evaluation mechanism for athletes has been optimized. A reasonable training evaluation mechanism can effectively prevent the precompetition tension caused by the athletes paying too much attention to the results of the competition. In order to prevent the players from fluctuating too much before the game, the coaches can communicate with the educational affairs department according to the characteristics of different training programs, and formulate a more humanized assessment mechanism to ensure the fairness of the game. In order to change the mentality of athletes and promote them to establish a correct concept of competition, it provides an effective reference for the best effect of psychological training.

3.5. Machine Learning Algorithms. The achievements of the players are inseparably related to the players' physical quality, teaching and training ability, technology, equipment ability, government policies, and industry development status [21]. The score of an athlete, the current state, and other information all have an inevitable connection. Suppose that in a certain period, the athlete's performance changes as $\{X(t_z), \quad z = 1, 2, \ldots, n\}$ means that the same information is received. It can be analyzed using the principle of chaos, resulting in the following changes in information:

$$X(t) = [x(t), x(z + \partial), \ldots, x(z + (m-1)\partial)]. \quad (1)$$

Among them, ∂ and m represent the delay and embedding dimension between the athlete data, and the embedding dimension reflects the relationship between the current data of multiple data points. Through the two methods of C-C and CAO, the sports performance ∂ and m of the athlete were obtained respectively, which reflected the hidden characteristics of the data displayed by the athlete in the game.

C-C algorithm. Assume that the data points of the athlete are

$$X(i) = [x(t), x(i + \partial), \ldots, x(i + (m-1)\partial)], \\ X(z) = [x(z), x(z + \partial), \ldots, x(z + (m-1)\partial)]. \quad (2)$$

Calculate the distance between two data points by the following formula :

$$L_{iz} = X(i) - X(z). \quad (3)$$

Taking the radius value as L, in the value range of the boundary, it can be obtained by calculating the proportion of the data through the operation method of mathematical integration.

$$C(m, N, L, \partial) = \frac{4}{M(M-1)} \sum_{1 \le i \le z \le M} H(L - L_{iz}). \quad (4)$$

In the aforementioned formula, N represents the total amount of all data, and $H(.)$ is a calculation function, which can be expressed as

$$H(x) = \begin{cases} 0, & x \le 0, \\ 1, & x > 0. \end{cases} \quad (5)$$

The obtained data can be sorted and classified into t categories, which are obtained as follows:

$$G(m, L, \partial) = \frac{1}{t} \sum_{L}^{1} \left[\left(C_1(m, L, \partial) - C_L(m, L, \partial)^M \right) \right]. \quad (6)$$

The difference between the maximum number of data and the minimum number of data is

$$\Delta G(M, t) = \max \left[G(m, L_j, \partial) \right] - \min \left[G(m, L_j, \partial) \right]. \quad (7)$$

Let m of the athlete's performance be $1 \sim k$, then we can get

$$\Delta \overline{G}(t) = \frac{1}{4} \sum_{m=1}^{k} \Delta G(m, t). \quad (8)$$

When the result of the above formula is the smallest, it can be used as the actual value for calculating the athlete's performance.

CAO algorithm. When the data information of the athletes is obtained, sorting is performed. Assuming that the vector in i is $(X_i(m + 1))$, and the adjacent vector is $X_{n(i,m)}(m + 1)$, there are as follows:

$$\propto (i, m) = \sum_{i}^{m} \left| \left| X_i(m + 1) - X_{n(i,m)}(m + 1) \right|^2 \right|. \quad (9)$$

When the minimum value is obtained from the following formula, it can be used as the best score value, and the slight change at this time is the smallest. It can be expressed as

$$E(m) = \frac{1}{N - m \, \partial} \sum_{i=1}^{N-m \, \partial} \propto (i, m). \quad (10)$$

BP neural network is a typical machine learning algorithm, and its learning process is from the input layer to the hidden layer, then through the hidden layer to the output layer, and estimates the error of the output layer. If the error does not meet the expected conditions, it is fed back to the hidden layer through the output layer, and then fed back to the input layer through the hidden layer. That is, an error reverse transmission stage is entered, and so on until the
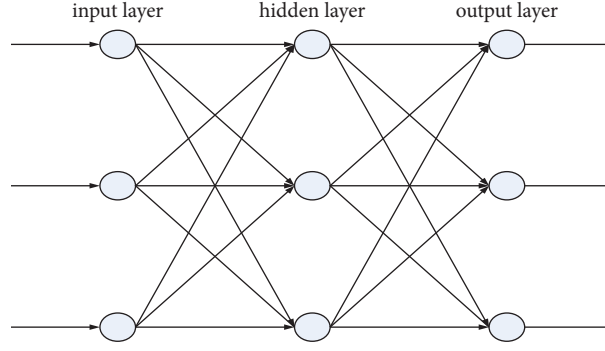
Figure 6: Network structure.

predetermined demand is met. Its structure is shown in Figure 6.

In this paper, the input is denoted by X, the output of the hidden layer is y, and o is the output layer. D is the expected output, V represents the connection of the first two layers, and W represents the connection of the last two layers. By establishing a calculation method through the connection between the two, the value of k at a certain node can be obtained.

$$O_k = \int \left(\sum_{j=0}^{m} W_{jk} y_j \right). \tag{11}$$

Calculate the output value of a node in the hidden layer through the calculation of a node and its relationship.

$$y_j = \int \left(\sum_{j=0}^{n} V_{ij} x_i \right). \tag{12}$$

Among them, j represents the number of neurons at a node. The error between the expected value and the actual value is

$$E = \frac{1}{2} \sum_{K=1}^{P} (D_k - O_k)^2. \tag{13}$$

The actual error can be calculated as

$$E = \frac{1}{2} \sum_{K=1}^{P} \left(D_k - \int \left(\sum_{j=0}^{m} (W_j k_{jy}) \right) \right)^2. \tag{14}$$

Similarly, the prediction error can be obtained.

$$E = \frac{1}{2} \sum_{K=1}^{P} \left[D_k - \int \left(\sum_{j=0}^{m} W_{jk} \int \left(\sum_{j=0}^{m} V_{ij} x_i \right) \right) \right]. \tag{15}$$

Through the change of its connection relationship W_{jk} and V_{ij}, the data with the error within a reasonable range is always found, as follows:

$$\begin{cases} \Delta W_{jk} = \dfrac{-\sigma \ \partial E}{\partial W_{jk}}, \\\\ \Delta V_{ij} = \dfrac{-\sigma \ \partial E}{\partial V_{ij}}. \end{cases} \tag{16}$$

Among them, σ is the learning speed. When establishing an athlete's performance model, the initial connection weight of the BP neural network must be determined first, and its connection relationship is calculated. This gives a contestant's score.

4. Deconstruction of Athletes before and after Psychological Training

The study selected 200 athletes in one area, divided them into two groups equally, and conducted three surveys to ensure the accuracy of the data and the consistency of gender. Three types of sports, skill performance, skill confrontation, and physical fitness were selected and compared with the mentality of athletes before and after training. Athletes were surveyed by questionnaire method. The research contents include psychological tolerance before and after training, adjustment accuracy, anxiety scores before and after psychological training, and scores before and after adjustment.

The psychological tolerance before and after training would directly affect the state of the athlete in the competition, thereby affecting the performance. The higher the psychological tolerance, the more reasonable it is for athletes. The psychological endurance of the athletes in this paper is between 0 and 100. The comparison figures of the endurance before and after training are shown in Figure 7.

It can be seen from the two sets of data graphs that the psychological tolerance value of athletes before training was around 74, but after passing the machine learning algorithm, the tolerance value increased to 88. It has increased by 18.9% on the original basis, which also shows that training based on machine learning algorithms can help athletes better relieve psychological problems.

By regulating the athlete, it can better help the athlete to relax, reduce stress, and achieve better results. If people do not have a clear grasp of the mental problems of athletes, it would be difficult to really help the students. Figure 8 shows the accuracy of athlete problem regulation based on machine learning algorithms and coaching experience.

Through the comparison of the two sets of data, it can be found that the accuracy of judging the psychological problems of athletes through coaching experience is only approximate, and the accuracy is only 62%. The accuracy of the athlete problem through the machine learning algorithm reached 75%, a relative increase of 13%. It also shows that
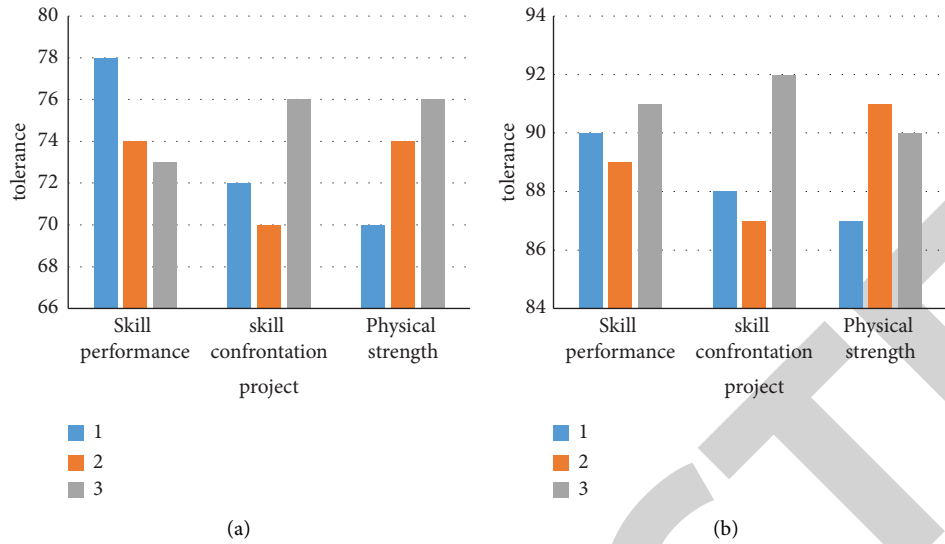
Figure 7: Tolerance comparison. (a) Before training. (b) After machine learning algorithm training.
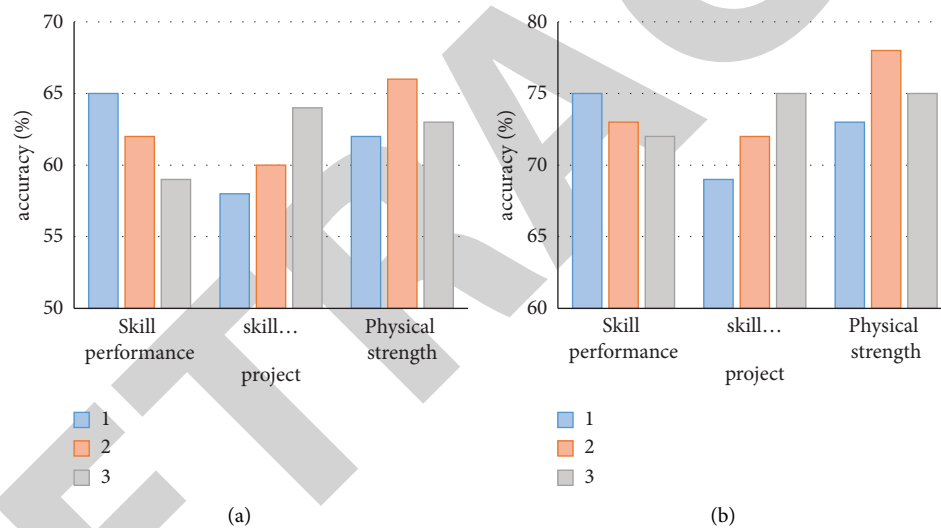

Figure 8: Accuracy comparison. (a) Coaching Experience. (b) Machine Learning Algorithms.

under the machine learning algorithm, it is possible to better understand the problems existing in athletes, and help athletes improve their overall state and performance.

The psychological anxiety score is mainly based on the scores of the athletes before the competition, and the comprehensive score of the data obtained through the questionnaire. This paper mainly compares the comprehensive scores in four aspects of athletes' self-cognition, precompetition emotions, failure anxiety, and physical quality anxiety. The higher the score, the worse the training effect of the athlete. Figure 9 shows the comparison between the psychological training of the trainer and the psychological training of the machine learning algorithm.

From the comparison figure of the two sets of data, it can be found that in these four items, the scores of athletes trained through machine learning have been

reduced, and the overall score has been reduced by 24.3%. It also shows that the training after machine learning can indeed alleviate and improve the psychological anxiety of students.

Through all the above comparisons, in fact, it is mainly for athletes to achieve better results. The comparison of the average performance of the athletes before the regulation is shown in Figure 10.

Through these two sets of data, it can be found that in these four sports, the average performance of the athletes before the regulation is about 8 points. However, after the regulation, the athlete's score was around 9 points, an increase of 1 point, and the overall score increased by 12.5%. It also shows that under the machine learning algorithm, the regulation would improve the overall level of athletes and help sports competition.
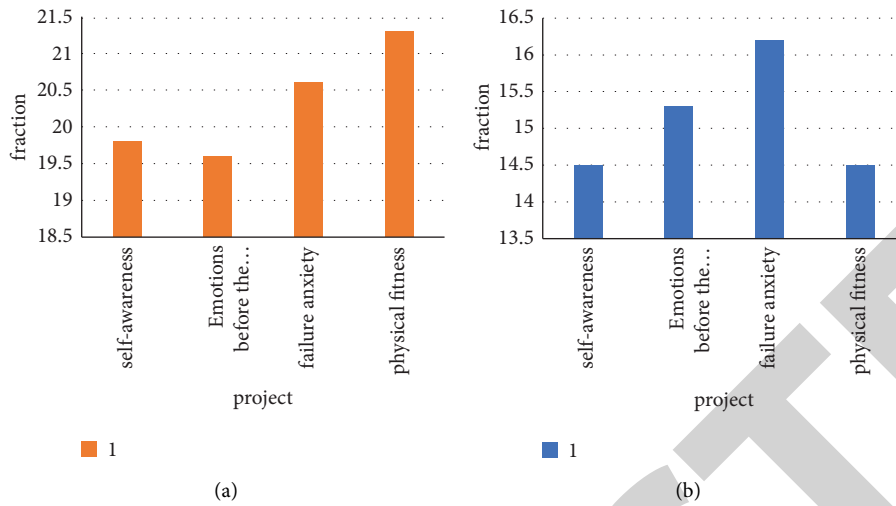
FIGURE 9: Comparison of psychological anxiety scores. (a) Coach. (b) Machine Learning Algorithms.
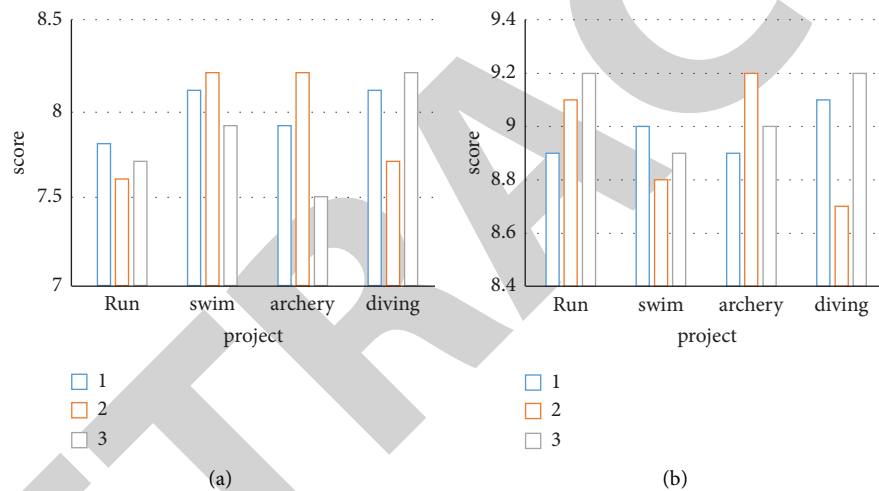

FIGURE 10: Comparison of performance before and after regulation. (a) Before regulation. (b) After regulation.

5. Conclusions

For the training methods to improve the ability of mental athletes and improve the teaching level of mental sports, this paper would expound the psychological difficulties that mental athletes may encounter. It also supplemented the current development status of psychological movement, and the problems of psychological choice that may be encountered, and supplemented the psychological sports training and sports education. By analyzing the types of obstacles in athletes' mental training, a machine learning algorithm was introduced to analyze them, and the control methods were explained. Athletes' conditions were compared and analyzed through machine learning algorithms. The results showed that under the machine learning algorithm, the athletes' own psychological endurance was enhanced, the accuracy of the coach's control of the athletes' psychological problems was also improved, the anxiety score was also reduced, and the overall performance of the athletes increased by 12.5%. It also showed that in the case of machine learning algorithm analysis, it was more helpful for physical education and

psychological training. The shortcomings of the paper were that the optimization algorithm was not used to analyze it, and the comparison items may not be enough, and due to time reasons, the overall data had not been investigated and analyzed many times. Aiming at the obstacles and regulation problems of athletes' psychological training, there would definitely be better regulation methods in the future to help athletes achieve better results. In physical education, it would be more integrated with technology to achieve more scientific teaching.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare that they have no conflicts of interest. The author(s) declare(s) that there are no conflicts of interest regarding the publication of this paper.

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