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Research Article

Bocce Training Based on Computer Technology Has an Effect on Physical Education in Colleges and Universities

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Computer technology refers to the technical methods and technical means used in the computer field, which have the function of data storage, modification, and calculation of related logic and data. Physical education in colleges and universities has various levels and complex contents. From the perspective of bocce training in college physical education, this paper proposes a research direction for bocce training based on computer technology for the development of college physical education. First, a brief introduction to bocce is given, and then the traditional training methods of bocce are explained. It mainly includes technical training, physical fitness training, and psychological quality training. Then, the computer-assisted teaching is explained. Finally, the computer-assisted teaching and the traditional mode of teaching are contrasted. The experimental results show that the overall performance of students' technical training, physical fitness training, and psychological training assisted by computer technology is 3.53% higher than that of students under traditional teaching. This shows that bocce training based on computer technology is more conducive to improving the level of sports training of students, thereby improving the quality of physical education.

1. Introduction

With the development and progress of the times, the continuous maturity and perfection of computer technology has allowed it to penetrate into the development of various fields. For example, medicine, finance, and communication industries have all integrated with each other and achieved further development. It also affects the development of the current teaching field and the reform of teaching methods subtly. Nowadays, computer technology has begun to be used in many teaching practices, which to some extent also means that education and teaching have begun to develop in the direction of intelligence. The rapid update and real-time communication of scientific knowledge related to education and teaching are also inseparable from the support and guarantee of computer technology. Computer technology will also promote the rapid development of education and teaching informatization. The integration of computer technology and education and teaching has become the general trend of current education and teaching development. And, how to use advanced computer technology to improve teaching efficiency, increase teaching methods, reduce teaching costs, improve the current management of college education and teaching, and cultivate modern high-quality talents for the society, so as to achieve the sustainable development of teaching, has become the focus of many educators.

In the context of the rapid development of science and technology, the study of the integration and development of computer and education will enable people to have a deeper understanding of educational activities in the new era of intelligence [1]. Under the traditional model, the main channel for students to acquire knowledge is through teachers' teaching methods. However, in the computer age, students will inevitably need to re-examine the ways of acquiring knowledge in order to adapt to social changes, so as to optimize the educational process [2]. This helps to change the phenomena of mechanization and

nondifferentiation in the traditional classroom so that the development of teaching will shift to the direction of intelligence, precision, and individualization. Bocce has always been agile, fast, skilled, and fierce. This requires strict daily training. Therefore, we need to use diversified methods and combine the characteristics of the times to continuously cultivate and improve students' training thinking and improve their training level.

Based on computer technology, this article puts forward a new research direction of bocce sports teaching auxiliary training in colleges and universities and discusses the new generation of teaching concepts in the new era. This provides new ideas for the research in the field of bocce teaching and has practical and practical significance in terms of physical education teaching methods and techniques.

2. Related Work

In recent years, many scholars have carried out research on the combination of computer technology and teaching. Zhang S. integrates computer technology into college English teaching. Based on the concept of ecological teaching, the article re-evaluates the adaptability and teaching effect of various teaching units such as MOOC, microcourse, multimedia, and network platform and analyzes the parameters of computer technology in the theoretical model. He uses computer-assisted technology as a theoretical evaluation model of the college English teaching ecological framework and ecological teaching effect and uses the ecological teaching concept to create a good learning environment for students and cultivate students' intercultural communication skills and professional English ability [3]. Tan et al. analyzed the dance information teaching model framework based on Kinect somatosensory computer technology. He believes that the problem with dance teaching is not only the difficulty of the movements but also the limited training environment and the lack of on-site guidance from teachers. So he used computer technology to design a dance auxiliary training system, input dance movements into the system, and analyze, evaluate, and correct the trainer's movements. Finally, it is verified through experiments that the trainer can effectively improve the dance level according to the simulation system, and the system meets the requirements of auxiliary training [4]. Lv J. has carried out research on the Japanese multimedia teaching model based on the computer platform. He introduced the connotation and function of Japanese teaching under computer technology by analyzing the multimedia teaching model of the Japanese classroom. Finally, the teaching results are analyzed and discussed, and the results show that the teaching mode based on computer technology has more advantages than the traditional Japanese teaching mode [5]. Jing C. believes that today's basic music teaching methods are too simple and relatively backward, unable to attract students' attention. He took music teaching as the research object, put computer-assisted technology into practical teaching work, and carried out comparative experiments. Finally, the experimental results show that the computer-assisted music teaching model makes up for the single teaching model of exam-oriented education and makes the music teaching classroom more vigorous and vigorous. At the same time, it also greatly stimulated the enthusiasm and interest of students in learning music and improved the enthusiasm of students in learning music and the teaching level of the school [6]. Weiwei Z. proposed an interactive model for the design process of the ideological and political course teaching system based on the computer network. He participated in all stages of the teaching system design and finally completed the system development together with the project team members. It uses advanced information system development technology and information network platforms to explore the informatization pattern of ideological and political work. And, through the use of computer technology to achieve online learning and communication, it breaks the limitations of time and region and finally verified the effectiveness of computer technology in improving ideological and political education through experiments [7]. Ran M. analyzed the construction and optimization of a multi-English teaching model based on computer cloud technology. After logging in to the interactive English teaching platform, students can browse course content, watch videos, and complete interactive exercises. With the help of modern information equipment, students can complete their own learning tasks independently. English teaching is no longer confined to traditional classroom teaching. The multiple interactive education model has fully stimulated students' interest in learning and provided a good teaching platform for teachers and students. This makes up for the shortcomings of traditional classroom education to a large extent and provides a three-dimensional teaching platform for college English teaching [8]. In summary, after recent years of exploration, the integration of computer technology and teaching has been deeply studied by many scholars, but there are not many studies on bocce training on college physical education. Therefore, in order to promote the in-depth development of teaching, it is urgent to study the practice of bocce training based on computer technology on college physical education.

3. Bocce Training Based on Computer Technology

3.1. Introduction to Bocce. Bocce is a sport in which athletes from both sides throw the ball with their hands on a prescribed field for confrontation. According to research, the earliest birthplace of bocce is ancient Egypt. Five thousand years ago, it was only regarded as a simple and entertaining casual game, which was extremely popular among ordinary people. Until the ancient Greek period, it was used as a sport for many farmers to strengthen their bodies. Following the changes in society and the progress of the times, this sport was widely circulated and once became a popular entertainment method [9]. In the second half of the nineteenth century, accompanied by a large number of immigrants from Europe, the sport of bocce got a deeper development, and the sport began to be accepted by people all over the world. The earliest bocce was just a stone ball that was ground into a smooth shape. Because the shape and quality

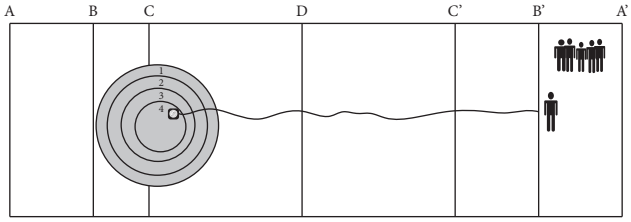

Figure 1: Bocce training chart.

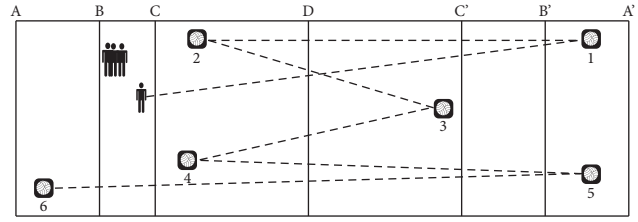

Figure 2: Bocce training chart.

of this stone ball are difficult to be unified, people later used olive wood as the raw material to make it into a wooden ball with a better feel. But now many countries have stricter specifications for bocce. They replaced the wood with metal or synthetic plastics, and as a result, the size and quality of the throwing balls had a more uniform standard. At the same time, the training methods of this sport have also undergone great changes, and various styles of play have begun to appear, and corresponding rules have been set for the evaluation of different items.

3.2. The Traditional Training Method of Bocce. All training methods and tactics serve the training mission [10]. The selection and use of bocce skills and tactical training methods must be combined with reality, that is to say, certain training methods must be selected or created to complete certain training tasks. These methods have a clear purpose and are scientific in order to achieve good results. Common bocce training methods generally include technical training, physical fitness training, and psychological training [11].

3.2.1. Technical Training. The three techniques of bocce mainly include relying on the ball, rolling, and throwing. For single technique training, one training is divided into three stages, and training is carried out one technique by technique. The order is by ball, rolling, and tossing and distribute training according to a certain proportion of the time. Ball training refers to drawing concentric circles with unequal radii in the effective area of the field and marking the number of points scored in each range [12]. Place the small ball at the center of the circle, and the athletes roll the same number of balls in turn and calculate the scores, as shown in Figure 1.

The ball is first placed at a certain point in the effective area of the court, and the ball's position is continuously changed. The athletes each roll to four consecutive balls in turn, and the ball farthest from the ball is the effective ball, the effective ball needs to be as close as possible to the small ball. Then, the athletes each roll two balls in turn, one ball closer to the small ball is the effective ball, and the effective ball should be as close to the small ball as possible [13].

Then, draw a number of circles with a diameter of 50 cm and a distance of 5 to 20 meters on the field and mark the sequence number. Athletes roll the ball into each lap in turn according to the sequence number. After a lap, the ball can be rolled continuously. It is required to roll the ball into the last lap in the least number of times, as shown in Figure 2.

After the athletes are ready to roll against the ball, close their eyes, and roll the ball to the range delineated near the *D* line, the far end C line, the B line, and the A line according to the coach's command. The error is required to be minimized. When performing the above exercises, athletes' movements are required to be coordinated and natural. Through these exercises, it can become familiar with the ball to enhance the feel and improve the adjustment ability of rolling at different distances [14].

Rolling training refers to athletes imitating hitting movements with their bare hands. The entire batting practice includes run-up, support, arm swing, and full action practice. The athlete needs to roll the targets at different points in the effective area in turn until they hit all the targets, as shown in Figure 3, and from this to calculate the hit rate of the entire shot.

Tossing training requires athletes to have coordinated movements, which are natural and reasonable and are the same as the practice methods of rolling techniques. For throwing training and throwing the ball after the *C* line, first, draw a straight line from a certain point on the field line to the far end line along the swing direction of the athlete, and then the athlete throws the ball in turn. The thrown ball needs to fall on the drawn line as much as possible, as shown in Figure 4.

For the practice of tossing a fixed target from several different points on the field line, if it wants to increase or decrease the athlete's angle of the shot, it needs the coach to stand in a proper position on the field with a bamboo pole in hand. This requires the athlete to throw the ball over or under the pole to hit a fixed target [15]. Place the two balls at a distance of 12 cm between the front and rear in the effective area. Use the method of increasing the angle of shot to hit the ball in front, and use the method of lowering the angle of shot to hit the two balls at the same time.

3.2.2. Physical Fitness Training. With the increasing level of bocce ball, physical fitness training becomes more and more important. Physical fitness training must be carried out in each training session, and each time accounts for about half of the training time. Generally, it focuses on the development of upper and lower limb strength, waist, abdominal, and back muscle strength, and wrist and finger strength. The main methods to develop strength quality are bench press, weight-bearing jump, weight-bearing half-squat jump, sit-ups, reverse grip ball throw, finger-ups, arm weights, and forearm forward lifts.

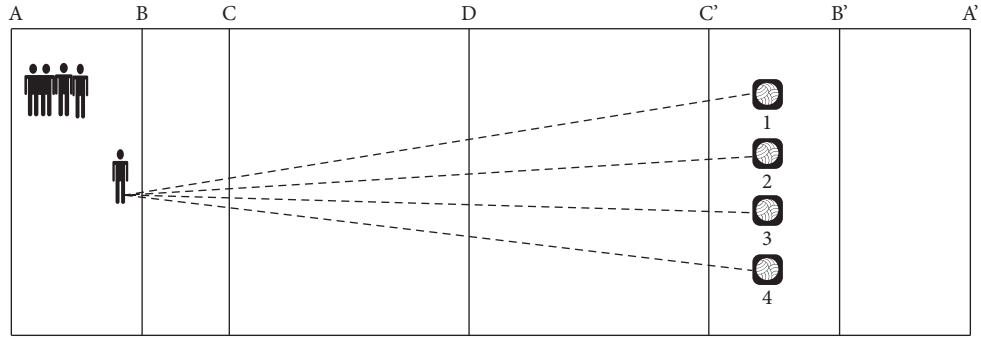

Figure 3: Rolling training chart.

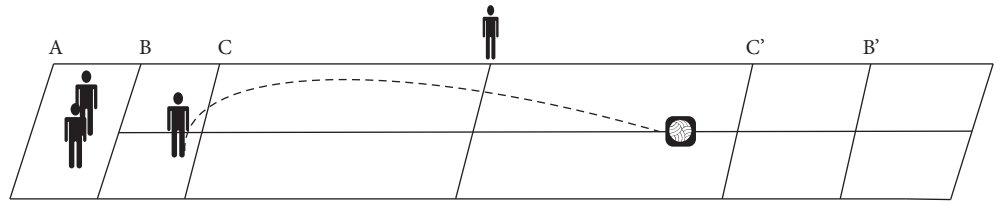

Figure 4: Tossing training chart.

Table 1: Common mental training methods.

Appellation	Main content
Representation training	Through multiple action representations, improve the athlete's representation and memory abilities
Blind training	No specific goals are set, athletes train on their own
Forecast practice	Set specific goals and athletes train according to the goals
Psychological adjustment training method	Improve athletes' ability to concentrate by adjusting their mentality

3.2.3. Mental Quality Training. Although the bocce game is not as intense as other ball games, there is no physical contact between the players, and the pace is not so fast. But for the throwing of every technical action, the requirements are very subtle, strict, and precise [16]. This requires athletes to have good psychological qualities (spatiotemporal sensation, muscle control, attention control, elimination of interference, etc.). Therefore, psychological training is an indispensable training method for bocce. The psychological training often used in bocce sports includes representation training, blind training, forecasting training, and psychological adjustment training, as shown in Table 1.

3.3. Bocce Computer-Assisted Training. Computer technology has powerful data storage capabilities. If computer technology is applied to the management of students' daily training bowls, it will inevitably affect the flow of sports training [17]. This paper proposes a computer-aided training process based on the traditional training process, as shown in Figure 5.

In physical education, it can store different types and meanings of data information and flexibly add new data items according to the individual differences (character traits, training style, strengths, etc.) of each student and the training methods of the teacher. And, it analyzes these data

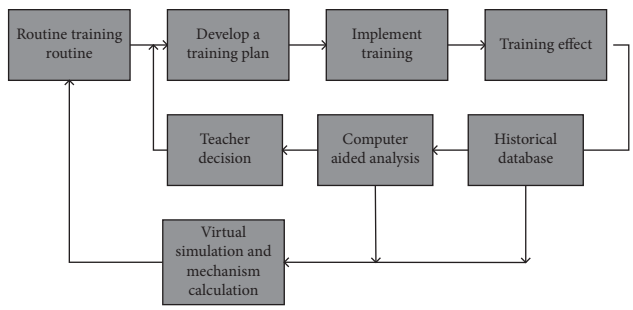

Figure 5: Computer-aided training process.

and develops training plans for different student groups. It summarizes the laws of sports training and verifies the experience [18]. As a software platform to assist teaching and training, it can integrate the methods of physiological and biochemical indicator analysis and training content in the books into the software, helping teachers learn professional knowledge in daily training management [19, 20]. It can also rely on its powerful computing capabilities to simulate complex events in reality through calculations based on some basic laws of physics. This surpasses the constraints of hardware conditions in previous training and also surpasses the difficulty of theoretical derivation. With its support, events that are difficult to achieve in

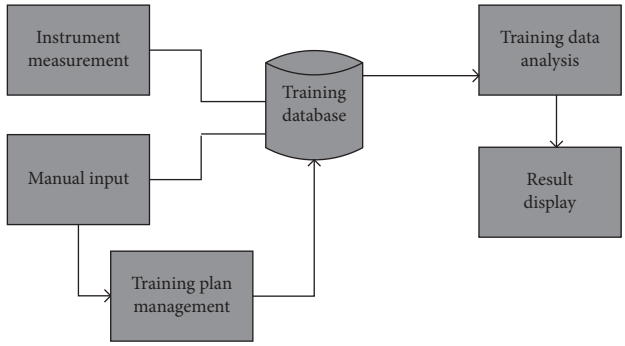

Figure 6: Computer-aided training structure diagram.

reality can be simulated in the computer to obtain results, thereby greatly reducing teaching costs, shortening training time, and quickly breaking through training bottlenecks, so that students' training results can jump out of the local maximum limit [21].

3.4. Computer Technology-Assisted Training System Structure. The structure of the computer-aided training system is composed of storage, analysis, display, and simulation. Its structure is shown in Figure 6.

The data input by the system includes training scores, data recorded by the instrument, and biochemical indicators. The input method is multichannel, which can be manually entered or automatically entered into the database through the network. The system output is mainly based on charts. In addition, the system can be divided into three parts structurally: the first part is the training management subsystem with the database as the core, including data entry and display, training plan management, and is mainly responsible for daily training information management. The second part is an auxiliary decision-making subsystem with the analysis of physiological and biochemical indicators as the core, helping teachers to supervise students' status and decision-making training content. The third part is a subsystem with simulation as the core to help teachers improve training elements [22]. The training management subsystem is the core of the whole system, which mainly corresponds to the historical database, the auxiliary decision-making subsystem corresponds to the inner loop feedback loop, and the simulation subsystem corresponds to the outer loop.

It can be seen from Figure 5 that the inner loop of the computer-aided training process retains the negative feedback loop of the traditional training mode. It uses the BP intelligent algorithm to ensure that it still has the robustness and anti-interference advantages of the traditional training mode.

BP algorithm is one of the most commonly used and effective learning methods. The input is divided into n layers, and the n layers correspond to the dimensions of the sample vector. The specific content of each layer in the input is opposite to the sample vector, which N_j represents the first data in the hidden layer. In this way, the output of the first hidden layer can be expressed as follows [23]:

$$Y_j^1 = \frac{1}{1 - \left(\sum_{j=1}^{n} X_i \cdot w_{ji}^1\right)}, \quad j = 1, L, N_1. \tag{1}$$

The outputs of the other hidden layers are

$$Y_j^k = \frac{1}{1 - \left(\sum_{j=1}^{N_{k-1}} Y_i^{k-1} \cdot w_{ji}^k\right)}, \quad k = 2, \Lambda, k; \; j = 1, \Lambda, N_k. \tag{2}$$

If the problem has m desired outputs, the output layer should have m nodes, and the outputs are as follows [24]:

$$Z_j^1 = \frac{1}{1 - \left(\sum_{i=1}^{N_k} Y_i^k \cdot w_{ji}^0\right)}, \quad j = 1, L, m, \tag{3}$$

where w_{ij} represents the weight relationship between the jth node in a layer and the ith node in the previous layer. This weight value is obtained through prior training, and this training method is called the BP training method. Initialize the weights($\omega_{ij}^h, \omega_{ki}^o$) and bias($\theta_j^h, \theta_k^o$), add the input variable $X_p = [x_{p1}, x_{p2}, \ldots\ldots x_{pq}]$ to the input unit, and calculate the net input to the hidden layer.

$$\text{net}_{pj}^h = \sum_{i=1}^{q} \omega_{ji}^h x_{pi} + \theta_j^h. \tag{4}$$

The output value is calculated from the sigmoid function defined by the hidden layer [25].

$$f_j^h\left(\text{net}_{pj}^h\right) = \left(1 + e^{-\text{net}_{pj}^h}\right)^{-1}. \tag{5}$$

The output value is as follows [26]:

$$c_{pj} = f_j^h\left(\text{net}_{pj}^h\right). \tag{6}$$

Then, go to the output layer and calculate the net input value of each unit of the output layer.

$$\text{net}_{pk}^o = \sum_{j=1}^{K} \omega_{kj}^o c_{pj} + \theta_k^o. \tag{7}$$

Computing the output, using the same S-function as above, gives the output:

$$O_{pk} = f_k^o\left(\text{net}_{pk}^o\right). \tag{8}$$

Compute the error term for the output cell.

$$\delta_{pk}^o = \left(d_{pk} - o_{pk}\right) \frac{\partial f_k^o\left(\text{net}_{pk}^o\right)}{\partial\left(\text{net}_{pk}^o\right)}. \tag{9}$$

Compute the error term for the hidden unit.

$$\delta_{pj}^h = \frac{\partial f_j^h\left(\text{net}_{pj}^h\right)}{\partial\left(\text{net}_{pj}^h\right)} \sum_k \delta_{pk}^o \omega_{kj}^o. \tag{10}$$

Update the weights of the $(n+1)$ th iteration of the output layer; Ω is a bias value.

$$\omega_{kj}^o(n+1) = \omega_{kj}^o(n) + \alpha \cdot \omega_{kj}^o(n-1) + \eta \delta_{pk}^o c_{pj} + \Omega. \tag{11}$$

Update the weights of the $(n+1)$ th iteration of the hidden layer.

$$\omega_{ji}^{h}(n+1) = \omega_{ji}^{h}(n) + \alpha \cdot \omega_{ji}^{h}(n-1) + \eta\delta_{pj}^{h}x_i + \Omega. \quad (12)$$

The system performs fuzzy reasoning according to the extracted rules. In a given rule, there will be multiple preconditions. The evaluation of fuzzy rules in this paper is expressed as the following formulas:

$$u_{A\bigcup B}(x) = \max\left[u_A(x), u_B(x)\right], \quad (13)$$

$$u_{A\cap B}(x) = \min\left[u_A(x), u_B(x)\right]. \quad (14)$$

In formulas (13) and (14), $u_{A\bigcup B}(x)$ represents a rule, $u_A(x)$ and $u_B(x)$ are "OR" operations, and $u_{A\cap B}(x)$ represents an "AND" operation between the two.

According to the fuzzy judgment, in order to reduce the computational complexity of the system and improve the execution speed of the system, the system adopts the defuzzification operation.

$$F(x) = \frac{\sum_{x=a}^{b} k_i x}{\sum_{x=a}^{b} k_i}. \quad (15)$$

In the actual process of the system operation, a large amount of operating data and many new faults will be generated, which requires the system itself to have a strong learning ability and rule sorting ability. It is difficult to improve the accuracy and learning ability of diagnosis by simply relying on neural network for diagnosis. In this paper, the neural network expert system is used for diagnosis, and the knowledge base of the fault diagnosis system is supplemented to increase the learning ability of the system and the accuracy of diagnosis.

The rules of the neural network expert system are based on the traditional neural network rules, and a certain factor is added, that is, the value of CF, which is represented by cf in the formula. Its determination formula is expressed as follows:

$$cf = \frac{MB(H,E) - M\Delta(H,E)}{1 - \min\left[MB(H,E), M\Delta(H,E)\right]},$$

$$MB(H,E) = \begin{cases} 1, & \text{if } P(H) = 1, \\ \dfrac{\max\left[P(H|E), P(H)\right] - P(H)}{\max\left[1,0\right] - P(H)}, & \text{otherwise}, \end{cases}$$

$$MB(H,E) = \begin{cases} 1, & \text{if } P(H) = 0, \\ \dfrac{\min\left[P(H|E), P(H)\right] - P(H)}{\min\left[1,0\right] - P(H)}, & \text{otherwise}. \end{cases} \quad (16)$$

where $P(E)$ is the prior probability. In neural network expert systems, $P(E)$ is usually 1, and $P(H)$ is the expert probability when hypothesis H is true.

The system uses the optimization theory to select the most effective solution among the various solutions, discusses the characteristics of the best choice for decision-making problems, and constructs a calculation method to find the best solution.

The general form of the optimization problem is as follows [27]:

$$\begin{cases} \min & f(x), \\ \text{s.t.} & x \in X. \end{cases} \quad (17)$$

Here, $X \in R^n$ is the decision variable, $f(x)$ is the objective function, and $X \in R^n$ is the constraint set of the feasible region. If the set is reduced to $X = R^n$, the optimization problem is called an unconstrained optimization problem [28].

$$\min_{\infty \in R^n} f(x). \quad (18)$$

Constrained optimization problems are usually written as follows [29]:

$$\begin{cases} \min & f(x), \\ \text{s.t.} & c_i(x) = 0, \quad i \in E, \\ & c_i(x) \geq 0, \quad i \in I. \end{cases} \quad (19)$$

Here, E and I are the index sets of equality constraints, respectively. Inequality constraint $c_i(x)$ is the constraint function. When there is at least one nonlinear function in the objective function and constraint function, the problem is called nonlinear programming [30].

If the system optimization enters the local maximum value, it will change the initial value with a certain probability to reoptimize. In simulation training based on optimization theory, local maxima is a metaphor for the stagnant training level of students. Simulation technology can help students to simulate motion results under a new training element. It solves the problem of local maxima at a small cost. Computer-aided training integrates sports scientific research projects scattered in various fields in the past and comprehensively applies it to sports training. This not only promotes the original research in various directions but also improves the training level.

4. Comparative Experiment between Computer Technology-Assisted Training and Traditional Training Mode

In this experiment, students from one or two classes of freshmen are used as the experimental objects. The sample size is 90 people, including 45 in class A and 45 in class B. A uses computer technology to assist training, B uses traditional training mode, and all students have never formally learned bocce.

4.1. Pre-Experimental Student Situation Test. In order to improve the accuracy of this experiment and reduce the error, a statistical survey was carried out on the physical shape and physical quality of the students in the control class and the experimental class who participated in the experiment before the start of the experiment. The statistical results are shown in Tables 2 to 5.

It can be seen from Tables 2 and 3 that Class A and Class B each have 27 boys and 18 girls. In terms of age, the age P

Table 2: Statistical table of differences in the basic physical condition of boys.

Inspection index	Boys in experimental class (27)	Control class boys (27)	T value	P value
Age	18 ± 0.574	18.33 ± 0.379	−0.277	0.749
Height (cm)	171.74 ± 7.324	172.11 ± 6.443	0.531	0.51
Weight (kg)	67 ± 5.639	65.3 ± 5.796	1.656	0.096

Table 3: Statistical table of differences in the basic physical condition of girls.

Inspection index	Boys in experimental class (18)	Control class boys (18)	T value	P value
Age	18.56 ± 0.412	18.71 ± 0.715	0.79	0.404
Height (cm)	158.64 ± 5.419	159.13 ± 5.116	−0.576	0.514
Weight (kg)	52 ± 3.144	52.773.613	−0.254	0.847

Table 4: Statistical table of differences in physical fitness of boys.

Inspection index	Boys in experimental class (27)	Control class boys (27)	T value	P value
Bench press (kg)	30 ± 0.166	29 ± 0.275	−0.277	0.362
Weight-bearing jump (kg)	15 ± 1.347	15 ± 2.396	0.71	0.097
Weight-bearing half-squat jump (kg)	13 ± 0.639	15 ± 0.712	1.33	0.831
Sit-ups	80.163 ± 6.515	76.55 ± 7.21	0.514	0.691
Reverse grip ball throw	30.22 ± 1.77	34.17 ± 3.214	2.357	0.112
Finger ups	11 ± 3.11	9 ± 1.474	1.672	0.34
Arm weights (kg)	20 ± 0.146	22.144 ± 0.551	0.556	0.527
Forearm forward lift (cm)	30 ± 6.44	33.247 ± 5.211	0.814	0.974

Table 5: Statistical table of differences in physical fitness of girls.

Inspection index	Boys in experimental class (27)	Control class boys (27)	T value	P value
Bench press (kg)	17 ± 0.327	15 ± 1.56	−0.91	0.774
Weight-bearing jump (kg)	5 ± 0.217	5.22 ± 0.612	0.191	0.312
Weight-bearing half-squat jump (kg)	7 ± 0.155	7 ± 0.349	0.146	0.923
Sit-ups	49.741 ± 5.37	52.165 ± 4.221	0.736	0.148
Reverse grip ball throw	17.19 ± 2.14	16.32 ± 1.442	0.227	0.387
Finger ups	1 ± 0.214	0 ± 1.054	1.322	0.961
Arm weights (kg)	9.21 ± 1.411	11 ± 1.244	−0.224	0.741
Forearm forward lift (cm)	37.31 ± 7.14	35.32 ± 3.647	0.822	0.943

value of boys in classes A and B is 0.749, which is greater than 0.05, and the difference is not significant. Therefore, there is no significant difference in the age of boys in the two classes. The age P value of girls in classes A and B is 0.404, which is also greater than 0.05, and the difference is not significant. Therefore, it is considered that there is no significant difference in the age of girls in the two classes. In terms of height, the height P value of boys in classes A and B is 0.51, which is greater than 0.05, and the difference is not significant. Therefore, it is considered that there is no significant difference in the height of boys in the two classes. The height P value of girls in classes A and B is 0.514, which is greater than 0.05, and the difference is not significant. Therefore, it is considered that there is no significant difference in the height of girls in the two classes. In terms of body weight, the weight P value of the boys in classes A and B is 0.096, which is greater than 0.05, and the difference is not significant. Therefore, it is considered that there is no significant difference in the weight of the two boys. The weight P value of girls in classes A and B is 0.847, which is greater than 0.05, and the difference is not significant. Therefore, it is considered that there is no significant difference in the weight of girls in the two classes. Through the above data analysis, it is believed that there is no significant difference in the basic physical conditions of the students in classes A and B.

As shown in Tables 4 and 5, in the bench press, weight-bearing take-off, weight-bearing half-squat jump, sit-up, reverse grip ball throwing, finger push-up, arm weight bearing, and forearm forward lift, these 8 physical fitness items test, the P values of the test data for boys in classes A and B were both greater than 0.05. This shows that the physical quality of boys in the two classes is not significantly different. Similarly, the P values of the eight physical fitness items of the girls in classes A and B are all greater than 0.05, indicating that the physical quality of the girls in the two classes is not significantly different.

4.2. Comparative Experiment after Teaching. This paper uses computer technology-assisted teaching and traditional teaching mode to carry out bocce teaching training for

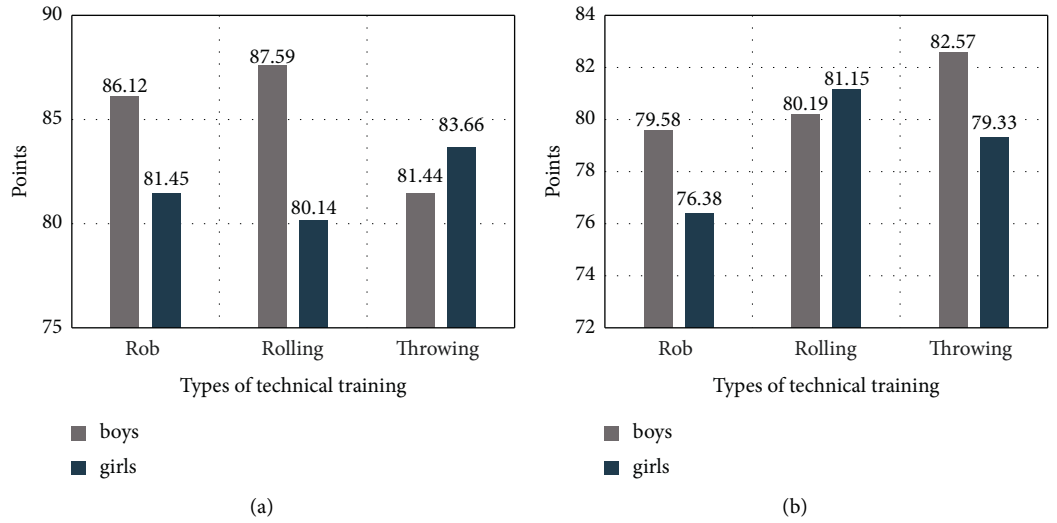

Figure 7: Statistics of bocce technical training results.

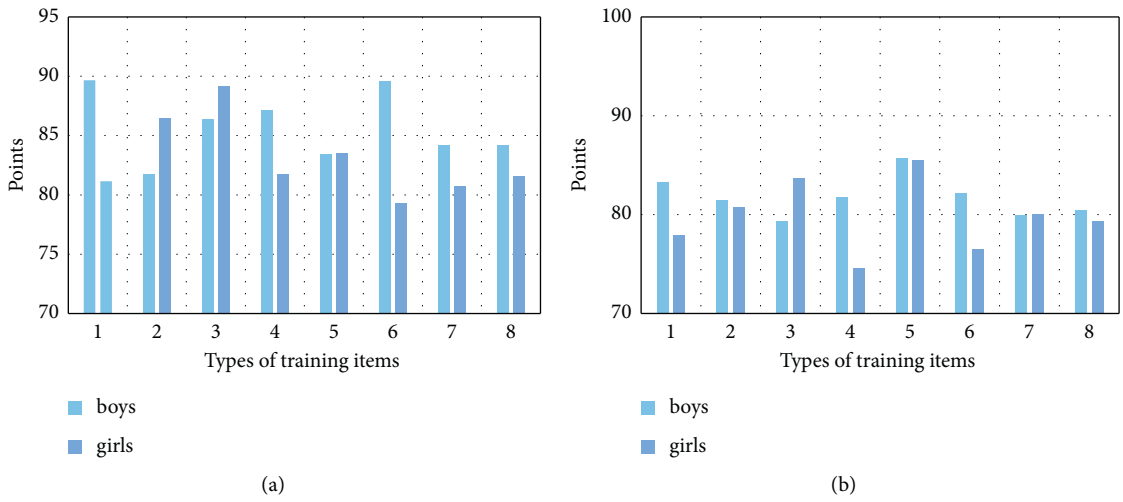

Figure 8: Statistics of physical fitness training for bocce.

students in classes A and B. The training content includes technical training, physical fitness training, and psychological training.

4.2.1. Technical Training. The technical training assesses students' proficiency in bocce skills. The assessment content mainly includes training on ball skills, rolling skills, and throwing skills. The statistical results of the assessment are shown in Figure 7.

Figure 7(a) shows the technical training results of male and female students under computer technology-assisted teaching.

Figure 7(b) shows the technical training results of male and female students under the traditional teaching mode.

As can be seen from Figure 7, the overall average of boys' technical training scores under computer technology-assisted teaching is 85.05 points, and the overall average of girls' technical training scores is 81.75 points; under the traditional teaching mode, the overall average of boys' technical training scores is 80.78 points, and the overall average of girls' technical training scores is 78.95 points.

4.2.2. Physical Fitness Training. The physical fitness assessment mainly includes 8 major items: bench press, weight-bearing take-off, weight-bearing half-squat jump, sit-up, reverse grip ball throw, finger push-up, arm weight bearing, and forearm forward lift. The statistical results of the assessment results and the comparison before and after the experiment are shown in Figures 8 and 9.

Figure 8(a) shows the physical fitness training results of male and female students under computer technology-assisted teaching.

Figure 8(b) shows the physical fitness training results of male and female students under the traditional teaching mode.

As can be seen from Figure 8, the overall average of boys' physical fitness training scores under computer technology-

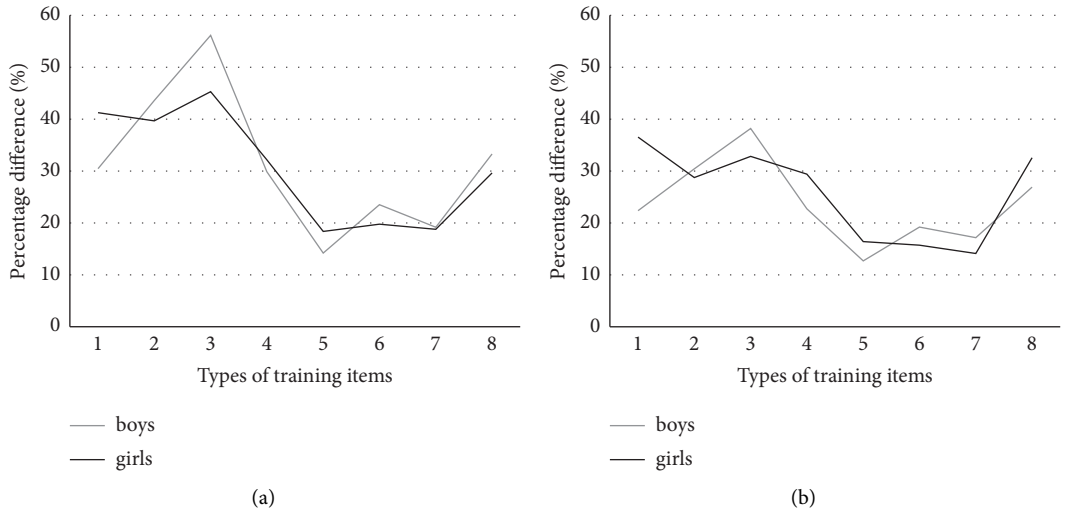

Figure 9: Comparison of physical fitness after the experiment.

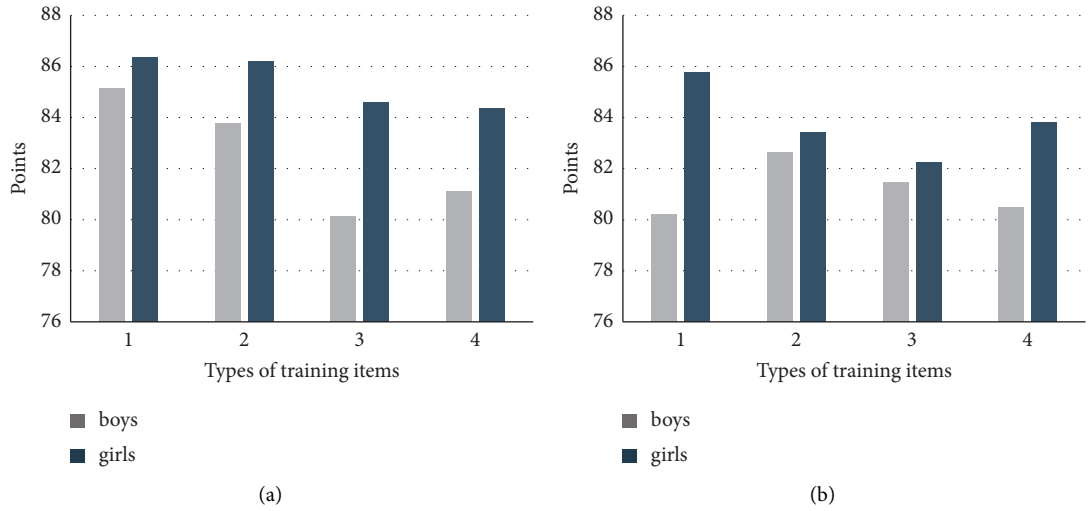

Figure 10: Statistic results of psychological training for bocce.

assisted teaching is 85.80 points, and the overall average of girls' physical fitness training scores is 82.96 points; under the traditional teaching mode, the overall average of boys' physical fitness training scores is 81.77 points, and the overall average of girls' physical fitness training scores is 79.81 points.

Figure 9(a) is a comparison of physical fitness training performance differences between male and female students before and after training under computer-assisted teaching.

Figure 9(b) is a comparison of physical fitness training performance differences between male and female students before and after training under the traditional teaching mode.

It can be seen from Figure 9 that the physical fitness assessment performance of the boys in class A after the computer technology-assisted teaching training was improved by 31.27% compared with that before the training, and the physical fitness assessment performance of the girls in class A was overall increased by 30.60% compared with before the training; the physical fitness test scores of the boys in class B after the traditional teaching training were improved by 23.71% compared with those before the training, and the physical fitness test scores of the girls in class B were increased by 25.78% compared with those before the training.

4.2.3. Mental Quality Training. The assessment contents of psychological quality training are spatial and temporal perception ability, muscle control ability, attention control ability, and interference elimination ability. The statistical results of the assessment results are shown in Figure 10.

Figure 10(a) shows the psychological quality training results of male and female students under computer technology-assisted teaching.

Figure 10(b) shows the psychological quality training results of male and female students under the traditional teaching mode.

It can be seen from Figure 10 that the overall average score of boys' psychological quality training under computer technology-assisted teaching is 82.55 points, and the overall mean of girls' psychological quality training scores is 85.38 points; under the traditional teaching mode, the overall average score of boys' psychological quality training is 81.19 points, and the overall mean of girls' psychological quality training scores is 83.82 points.

5. Discussion

Through the comparative experimental data between computer technology-assisted teaching and traditional teaching, the following conclusions can be drawn:

(1) At the level of technical training, the overall mean of boys' training performance under computer technology-assisted teaching is 4.27 points higher than the overall mean of boys' training results under the traditional teaching mode. The overall mean of girls' training performance is 2.80 points higher than the overall mean of girls' training results under the traditional teaching mode.

(2) In terms of physical quality training, the overall average of boys' training performance under computer-assisted teaching is 4.03 points higher than that of boys under traditional teaching mode. The overall mean of girls' training performance is 3.15 points higher than the overall mean of girls' training results under the traditional teaching mode. And in terms of the difference between the scores before and after training, the students of Class A who have undergone computer technology-assisted training have made more progress.

(3) In terms of psychological quality training, the overall mean of boys' training performance under computer-assisted teaching is 1.36 points higher than that of boys under traditional teaching mode. The overall mean of girls' training performance is 2.06 points higher than the overall mean of girls' training results under the traditional teaching mode.

The whole comparative experimental data shows that under the condition of keeping the same experimental conditions for students in classes A and B, after different modes of teaching and training, both in the mastery of bocce skills and in the physical and mental quality of students, they are all A. Class students performed better. It shows that bocce training based on computer technology can effectively improve the training level of students, thereby promoting the further development of efficient physical education.

6. Conclusion

The continuous update and development of information technology has promoted the process of education modernization, and a new round of reform has begun to appear in education and teaching. Computer technology is widely used in all walks of life and exerts its greatest value. Combining it with the education industry is not only conducive to its own diversified development, but also to the education industry to improve the level of intelligent teaching and enrich teaching methods and means. Bocce training is flexible and strict, and if it only relies on the traditional model for teaching, then the teaching workload of teachers will be relatively large, and the teaching burden will be relatively heavy. The training and teaching of bocce sports based on computer technology can not only improve students' sports training level but also improve their physical and mental health. For teachers, the personalized teaching developed by computer technology for students can effectively reduce the teaching burden of teachers, improve teaching efficiency, and realize the development of physical education informatization. It is believed that with the continuous maturity and improvement of computer technology, physical education teaching in colleges and universities can be further optimized.

Although this paper uses computer technology to carry out a profound study on bocce training in college physical education, there are still many deficiencies. The depth and breadth of this research is not enough. In the process of this research, the selection and acquisition of experimental data were carried out under absolutely ideal conditions, the completeness and validity were not enough, and some interference factors involved in the teaching process were not considered. The actual daily training of students is also restricted by many factors. My academic level research is also limited, and the research on physical education teaching in colleges and universities is still in the preliminary stage. In future work, we will study appropriate teaching methods and means from more perspectives based on the existing technology and level and continuously improve the teaching quality.

Data Availability

The data used to support this study are included in the paper.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this article.

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