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Article

Construction of measurement index system of basketball players' specific physical fitness training based on AI intelligence and neural network

Xiaoning Yang

Department of Military Physical Education, Inner Mongolia Technical College of Construction, Hohhot 010070, Inner Mongolia, China;
18747973938@163.com

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Abstract: The development of modern basketball has improved the ability of basketball to compete, and the competition is becoming increasingly intense. Both in attack and defense, they are more active and fiercer. Therefore, higher requirements have been put forward for the physical fitness of basketball players. If good physical fitness cannot be guaranteed, the development of various sports skills will become very difficult. In the actual training of basketball, the specialized physical training of basketball players has received widespread attention and is regarded as the main purpose and way to develop basketball. The status and role of specialized physical training for basketball players in physical education are receiving increasing attention, and specialized physical training has also attracted the attention of coaches. It is necessary to use a sports measurement index system as an objective basis for the testing and evaluation of athletes' specialized physical training. It is particularly important to improve the training level and establish a scientific and reasonable comprehensive quality evaluation index system for basketball players. Based on neural networks, this article constructs a specialized physical training index system for basketball players and studies the measurement of specialized physical training for basketball players. The experimental data was collected from 100 outstanding basketball players and analyzed using a neural network model. Based on a combination of agility, strength, and endurance tests, the model successfully predicted a 6.68% improvement in performance for special physical training. The method used in this article employs advanced machine learning techniques, and the results demonstrate the potential of neural networks in sports science research.

Keywords: measurement index system; special physical training; basketball player; neural networks

1. Introduction

With the rapid improvement of the level of basketball games, especially in recent years, the competition has become increasingly fierce. In order to obtain better results, the technical level requirements of athletes are also getting higher and higher. The formulation and implementation of training plans, methods and means by coaches should also be determined based on the professional training ability of athletes. Due to the rapid development of basketball, the faster the development speed, the greater the demand for its professional physical fitness, so it would be very practical and scientific to accurately grasp the structural characteristics of athletes' physical fitness training and conduct scientific research.

The measurement index system refers to the specific measurement methods and specified indicators when measuring the performance and quality of different objects or life, and is widely used in many fields. Liu and Wang has established a set of measurement index systems for women's sports and body shape, and conducted two

rounds of expert interviews for Level 1 and Level 2 indicators, respectively. As a result, a female sports lifestyle index system with 11 1-level indexes and 32 2-level indexes has been formed [1]. Ning and Zhan has explored the sports training, sports biomechanics, physiology and psychology measurement research of the physical fitness measurement index system of naval aircraft pilots, and established the physical fitness measurement index system of aircraft pilots [2]. Revel and Arnesano has adopted AHP (Analytical Hierarchy Process) to determine the indicator system. The variance decision-making method determines the index weight, and establishes the urban-rural integrated public sports service measurement index system [3]. Xia has accurately and objectively established the physical fitness testing indicators for young children based on the advantages and disadvantages of different physical fitness testing indicators for young children in China and other countries, combined with experts' overall summary of physical fitness testing indicators for young children, providing a theoretical basis for the physical fitness testing system for young children [4]. Connolly et al. has built a comprehensive and scientific pen measurement index system on the basis of research, testing and statistical analysis, with students at all levels as the main subjects. The general feasibility of the system and the evaluation criteria of the weighted average are also involved [5]. Liang et al. has investigated the police's physical fitness index system, and tried to use methods such as literature review, expert interviews, questionnaires, exercise measurement and logical analysis, combined with expert interviews and survey results, to construct a more satisfactory evaluation system. Then, a systematic analysis of sports indicators at all levels has been carried out, hoping to bring new ideas to the police physical fitness evaluation system and provide a scientific reference for police physical fitness training and evaluation [6]. Vanderstukken et al. has explored a logical approach to measuring metrics at the level of sports information networks. In addition, combining the main content of sports information network standardization and sports information exchange standard, the measurement index system of sports information network is more systematically summarized [7]. Although there are many application fields of the measurement index system, there is still a lack of practice in application.

At present, there are many studies on special physical training. Otkydach and Korchagin has discussed the hot issue of improving the special physical training of students in higher military education institutions through military application of sports means. In the training process of higher military educational institutions, the task of forming officers' psychological and physical preparation in the training process is solved with the help of a series of specialized training disciplines, among which special physical training is the leading factor [8]. Khatsaiuk et al. has studied models of the readiness of future officers for specialized physical training in higher military academies and analyzed the results of the implementation of teaching experiments. In parallel with the teaching experiments, modern technical training means and functional complexes have been used, which improved the specific physical preparation level of the representatives of the experimental group [9]. Aabuwarda has studied young basketball enthusiasts—CUBA (China University Basketball League) professional players and CUBA sunshine amateur basketball players as samples. According to the previous research results, the sample has been investigated and analyzed, and the current situation and blind spots of young amateur basketball players

engaged in basketball training and special physical training have been pointed out [10]. The relevance of Kolesnichenko et al.'s study is due to the specific physical training of employees of the internal services, who must understand combat skills and have the necessary level of specific physical training [11]. Based on the training objectives of the Maritime Academy and the tasks of active crew members, as well as relevant information on crew and overseas naval training, Qin et al. has proposed that the special physical training for students of the Maritime Academy should be divided into three aspects: seasickness prevention, occupational balance and professional physical fitness. The physical education class of the Maritime College should effectively improve the students' special physical fitness through classroom teaching and extracurricular training [12]. Wood and Swain has investigated the supply and demand of special education physical education teachers in seven physical education colleges and analyzed the training programs of special education professionals. It is found that there is a serious shortage of physical education teachers in special physical training schools, and the degree of professionalism in pre-service education is not enough. In addition, professional training after employment is insufficient [13]. Vatansever and Gezen has analyzed the requirements of special physical training in competitive aerobics and designed an experimental comparison method. Therefore, two semesters of training effects and the impact of specific physical training on the physical fitness of competitive aerobics athletes have been evaluated [14]. Although there are many studies on special physical training, there are still shortcomings in actual training.

Through the special physical training of basketball players, targeted training can be carried out for the athlete's weakness in sports, so as to improve the athlete's weakness. At the same time, the athlete's skills and abilities can be further improved. In general, scientific, comprehensive and systematic basketball-specific physical training can directly promote the improvement of athletes' physical fitness, skills and tactical coordination flexibility. In addition, it can effectively improve the training and competition level of athletes and maintain the stability of the competition level, thereby helping to ensure the victory of the competition and promoting the improvement of the level of competitive basketball. To truly realize the strategy of strengthening the country through sports, the positive influence of basketball in the society would be expanded, and the value of basketball education would be brought into full play.

This article chooses a neural network model to construct effective measurement indicators for the physical training of basketball players. Neural networks are applied to the measurement of physical fitness indicators for basketball players due to their powerful nonlinear fitting ability and ability to handle complex data relationships.

2. Conventional structural model of basketball players' special physical training

A model is a representation of the study of a system, process, thing or concept, or an enlarged or reduced sample based on an experiment, drawing, usually used as a mold for display, experimentation, or casting. The structural model of basketball players' special physical training is screened, summarized and mathematically described by the structural factors that reflect their athletic qualities. It can not only

reflect the professionalization and efficient physical training of basketball, but also can carry out continuous optimization and construction to formulate training indicators for athletes, thus providing an intuitive reference. The improvement of the scientific selection of talents is of great significance in theory and practice. The structural model of basketball players' special physical training is shown in **Figure 1**.

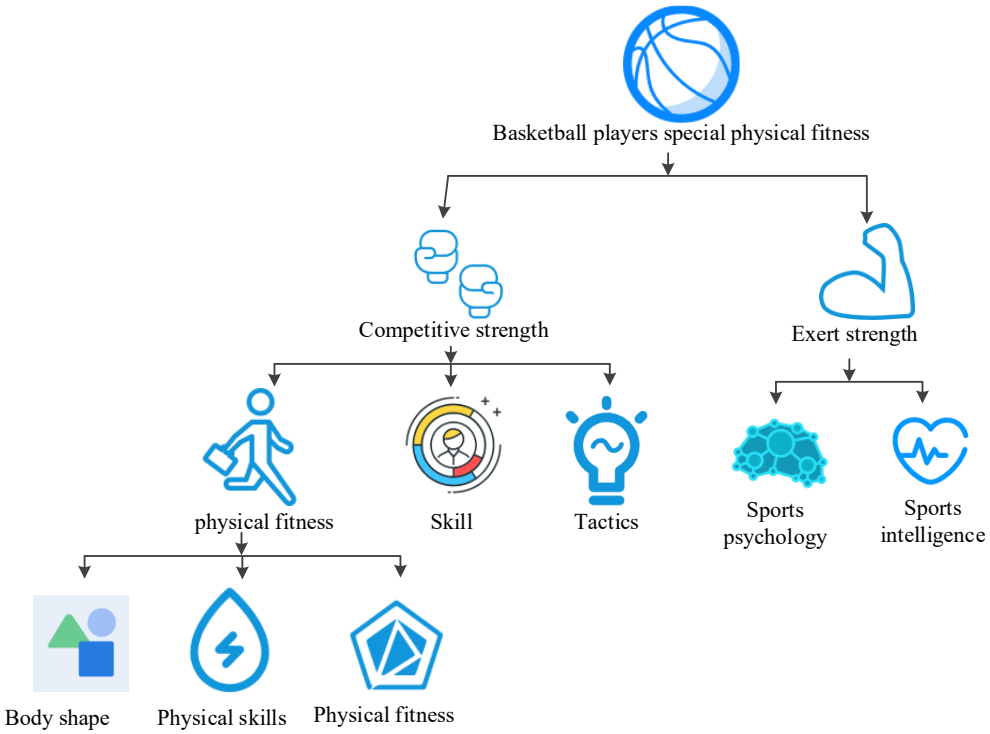

Figure 1. Analysis of the constituent elements of basketball players' specialized competitive ability.

Everything is related and not fixed, which also reflects the dialectical philosophical view that nothing in the world is eternal, and the same is true for the special physical training of basketball players. Due to the limitations of science and technology, coupled with the rapid development of basketball, the structural model of the specific physical training measurement indicators for basketball players would also be adjusted in time.

3. Construction of measurement index system for basketball players' special physical training

3.1. Body shape indicators

Body shape refers to the basic characteristics of the human body, including the shape, structure, size, physique, and posture of organs. These are the effects of athlete's physical development and training on the human body, thus reflecting the athlete's competitive ability, growth and function in a sense [15].

Basketball is a dominant type of technique and technique, which determines the morphological characteristics of players as tall, broad shoulders, broad chest, and long Achilles tendon. According to the material selection method in "Scientific Selection of Athletes", height, weight, upper limb length, hand length, shoulder width, body fat

composition, chest circumference, heel bond length, Quetole index and skinfold thickness were determined as parameters for selecting body shape, as shown in **Figure 2**.

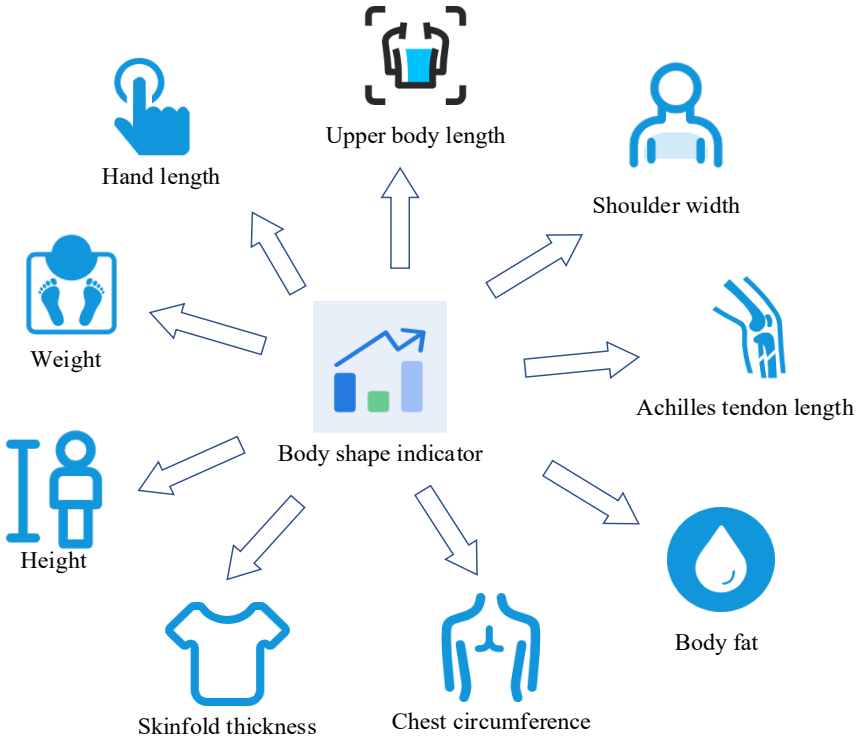

Figure 2. Schematic diagram of the relationship between body shape indicators and human characteristics.

Basketball is a sport that requires a high level of competition for athletes' physical fitness and functional status. The development of basketball plays a pivotal role in the physical and functional status of the human body. Good sports quality is a requirement for improving the training ability of athletes. The physical and functional status of the human body has a significant effect on the outcome of sports competitions. To improve the quality of modern basketball, it is necessary to select materials reasonably, so it is very necessary to select materials scientifically. Many young elite athletes are unable to improve their game because of their physical size and functional status. Because basketball has a high demand for the physical condition of athletes, it is particularly necessary to discuss the changing laws of human body shape and function.

3.2. Basketball technical ability indicators

Basketball skills refer to the ability to master and use professional skills. It is a technical combination to win the game and an important part of the competitive ability. Especially in basketball, it pays more attention to the skillful and rational use of technology. On the premise of mutual understanding, athletes can maximize their own skills and maximize their advantages. According to the characteristics of sports, the skill indicators are determined as movement, shooting, rebounding, dribbling, assists, passing and receiving, stealing, blocking, breakthrough, basic coordination, defense,

and fast break [16]. The basketball technical ability index is shown in **Figure 3**.

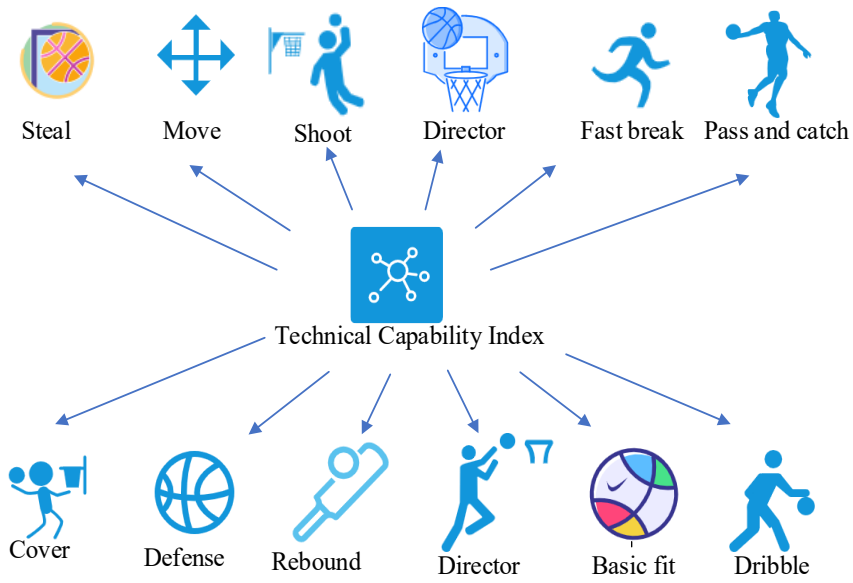

Figure 3. Basketball player technical ability evaluation model diagram.

Basketball is a sport with special charm, and its charm is increasingly favored by sports fans. It has been a hundred years since the birth of basketball, and basketball is gradually moving towards a new era and a new stage. Basketball technology is an important subject in the development of basketball. In the early days of basketball, it was just a simple pass, dribble, and shot. Now, these techniques have developed to a point where they are more refined and more suitable for various techniques. In today's basketball game, what is compared is the training level of the players and the tactical deployment of the coaches, as well as the on-the-spot awareness and reflection of the players and coaches on the field of play. To sum up, the most important thing is that the competition is comparing the basic skills of the athletes. From a leisure and healthy sports activity to today's professional basketball project, for sports players, it is necessary to have a good foundation to cope with various events. The use and guidance of the coach on the field are the key to determining the outcome, but whether it is offense or defense, without a certain foundation, it is impossible to fully display the coach's tactical ideas. From a very ordinary dribble, to a precise run, to a precise pass, until the ball hits the rim, each part is separated and has a different technique. If a team is like a machine, then the machine is composed of one component, and the lack of any one component would make the entire machine unable to operate. The basic skills and technical ability of basketball are the foundation of basketball.

3.3. Tactical capability indicators

Basketball tactics refer to various offensive and defensive means used by athletes in basketball, and are an effective means for athletes to exert their personal skills and coordination on the court. The goal of tactics is to make full use of the skills and expertise of native players, limit the opponent, strive for the initiative, and win the game. According to the actual characteristics of basketball sports and the principle of winning, the tactical indicators are set as tactical knowledge, tactical awareness,

tactical form, tactical action, tactical concept, and tactical guiding ideology. The tactical ability indicators are shown in **Figure 4**.

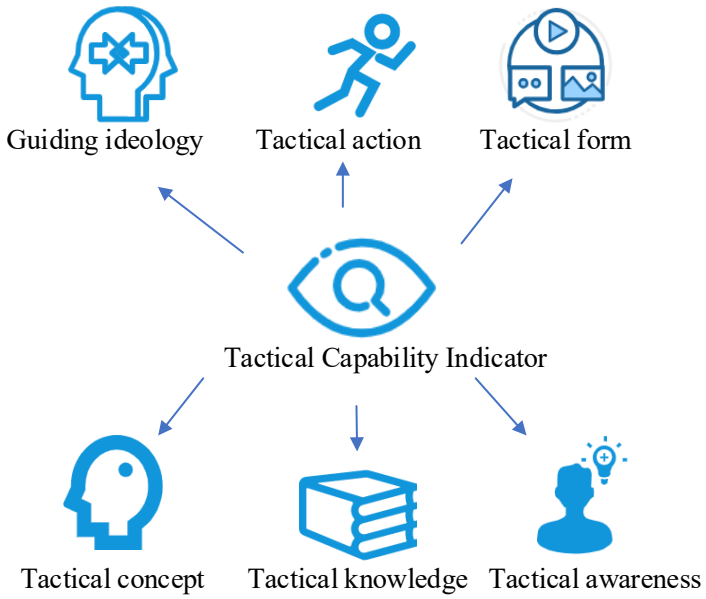

Figure 4. Basketball tactical ability indicators.

In basketball, tactics and strategies are important factors that determine the outcome. Strategy usually refers to the overall judgment in the game, while tactics are the offense and defense in the game. Although both are about the theory and practice of competition, their research fields and contents are different. In the whole competition, the strategy is the most important and must be subject to the strategic goal, and the achievement of the strategic goal depends on the success of the strategic task. Basketball tactics are performed directly by the players during the game. The higher a player's tactical literacy, the greater the chance of his strategy being implemented. Tactical awareness refers to the player's cognition of the law of their tactical use in basketball. This cognition is gradually accumulated and enriched by players in actual basketball training, and they can consciously and actively guide themselves according to their own offense and defense as well as being autonomous or cooperative in accordance with their own strategic goals. The strategic awareness of basketball is closely related to the action. Consciousness governs action, and action responds to consciousness. Basketball consciousness has the functions of orientation, selection, feedback, and domination, so it can reflect the player's control of the action and the entire process of the action.

The implementation of basketball technology is not only restricted by a certain tactical awareness, but also needs to be rationally used between players. Basketball technology relies on technical content. Without technology, there is no tactics, and technology is the embodiment of the tactical level. Therefore, athletes must continuously improve, perfect and update their techniques in order to ensure that their tactics are implemented. Moreover, it has been continuously promoted and developed and innovated in actual operation.

4. Algorithm of neural network in constructing the measurement index system of basketball players' special physical training

The network model is the most commonly used feedforward neural network model in multi-layer neural networks, which can store a large number of mapping relationships between input and output neural network models [17]. The core of this method is to adjust the weighting coefficients of the network by means of backward transfer, so as to minimize the sum of squares of the average deviation of the network.

The sigmoid activation function is usually used in the neural network, and the input and output equation is:

$$net = a_1 w_1 + a_2 w_2 + \ldots a_n w_n \tag{1}$$

$$y = f(net) = \frac{1}{1+\varepsilon^{-net}} \tag{2}$$

The implementation of the neural network is mainly completed through 8 steps:

Step 1: Neural network initialization. It is randomly assigned to the weight value in the network structure, and the assignment interval is [−1, 1]. The error analysis function ε is set. The calculation accuracy μ in the network structure training and the maximum number of learning times Y in the network training are given.

Step 2: Analyze the sample input data, and randomly select the g-th sample and its corresponding output expected value. The selected g-th sample data and output expectations are shown in the following equation:

$$a(g) = [a_1(g), a_2(g), \ldots, a_n(g)] \tag{3}$$

$$q_o(g) = [q_1(g), q_2(g), \ldots, q_n(g)] \tag{4}$$

In Equation (4), q_o is the expected output vector.

Step 3: Calculate the input amount of a single hidden level unit neuron. The equation is:

$$hi_h(g) = \sum_{i=1}^{n} w_{ih}\, x_i(g) - b_n \tag{5}$$

$$ho_h(g) = f[hi_h(g)] \tag{6}$$

$$yi_o(g) = \sum_{h=1}^{p} w_{ho}\, ho(g) - b_o \tag{7}$$

$$yo_h(g) = f[yi_o(g)] \tag{8}$$

In the equation, hi is the input vector of the hidden layer. ho is the hidden layer output vector. yi is the input vector of the output layer. yo is the output vector of the output layer.

Step 4: Use the error function between the real output in the neural network and the real input to take the partial derivative $\beta_o(g)$ of the neurons in the output layer. The error function equation is:

$$\varepsilon = \frac{1}{2}\sum_{o=1}^{r}[d_o(g) - yo_o(g)]^2 \tag{9}$$

Step 5: Correct the connection weight value based on the $\beta_o(g)$ of the neural unit in the output layer and the output of the hidden neural unit in the neural network. The error weight and weight update equation are as follows:

$$\Delta w_{ho}(g) = -\alpha\frac{\partial \varepsilon}{\partial w_{ho}} = \alpha\beta_o(g)ho_h(g) \tag{10}$$

$$w_{ho}^{N+1} = w_{ho}^{N} + \eta\beta_o(g)ho_h(g) \tag{11}$$

Step 6: The $\beta_h(g)$ of the hidden layer neuron and the input of the input layer neuron correct the connection weight value. The update equation is:

$$\Delta w_{ho}(g) = -\alpha \frac{\partial \varepsilon}{\partial w_{ho}(g)} \frac{\partial hi_h(g)}{\partial w_{ih}} = \beta_h(g) a_i(g) \tag{12}$$

Step 7: Use the output neurons to correct the connection weights. Its equation is:

$$w_{ho}^{N+1} = w_{ih}^{N} + \eta \beta_h(g) a_i(g) \tag{13}$$

Step 8: Compare the calculated network error with the preset value. If the error reaches the preset precision value or the number of learning times reaches the maximum, the weight update would be stopped. Otherwise, the next learning sampling and the corresponding expected output would be selected, and return to Step 3 to continue learning.

The multi-layer neural network model is referred to as generalized regression neural network for short, and the generalized regression neural network model is essentially a radial basis network. On this basis, the core function is introduced, and the probability density function estimation method in the principle of probability and statistics is used to estimate the value of the variable.

The generalized regression neural network mainly adopts the method of regression analysis. First, the probability density equation of the independent variable and the dependent variable is assumed, and the predicted mean value of the dependent variable is calculated according to the actual value of the independent variable. The calculation equation is:

$$\hat{Y} = E[b|a] = \frac{\int_{-\infty}^{+\infty} b f(a,b) db}{\int_{-\infty}^{+\infty} f(a,b) db} \tag{14}$$

In the equation, a is the actual observed value of the independent variable. $f(a,b)$ can be estimated based on the known variables x, y and finally the probability density equation. The calculation equation is:

$$f(a,b) = \frac{1}{(2\varphi)^{(m+1)/2} \sigma^{m+1} n} \cdot \sum_{i=1}^{n} exp\left[-\frac{(a-a_i)^T (a-a_i)}{2\sigma^2}\right] \cdot exp\left[-\frac{(b-b_i)^2}{2\sigma^2}\right] \tag{15}$$

The a, b in the above equation is the known variable value actually measured, and σ is the smoothing factor. The sample data matrix is $m \times n$.

The sample data passes the input value to the fully connected schema layer through the input layer. The input sample is:

$$A = [a_1, a_2, \ldots, a_n] \tag{16}$$

In the pattern layer, the number of neurons is the same as the number of the input layer, and the operation is performed by the data of the input layer. In the pattern layer, the data obtained by different input units are different [18]. The calculation equation is:

$$p_i = \exp\left[-\frac{(a-a_i)^T (a-a_i)}{2\sigma^2}\right] \tag{17}$$

In the equation, p_i is the output of the i—the neural unit of the pattern layer.

Different accumulation methods can be used in the accumulation layer. The first one adopts the direct accumulation method of the output of the mode layer, and the other adopts the weighted summation method [19]. The two cumulative calculation equations are:

$$S_X = \sum_{i=1}^{n} p_i \tag{18}$$

$$S_{Yj} = \sum_{i=1}^{n} b_{ij} p_i, j = 1,2,\ldots,k \tag{19}$$

The output value in the output layer is the ratio of the direct accumulation result

to the weighted accumulation result [20]. The calculation equation is:

$$b_j = \frac{S_{Yj}}{S_X}, j = 1,2,\ldots,k \tag{20}$$

The neural network architecture used in this article consists of three layers: an input layer, two hidden layers, and an output layer. Each layer contains a certain number of neurons. The input layer corresponds to the feature dimension of the input data; The hidden layer is used to extract advanced features of data; The output layer corresponds to the output of the measurement index system.

During the model training process, a learning rate of 0.001, a batch size of 32, and 100 iterations were selected. The selection of these hyperparameters is based on multiple experiments and performance evaluations, aiming to balance the training speed and generalization ability of the model. In addition, we also used L2 regularization technique to prevent overfitting, with a regularization coefficient of 0.01.

To ensure the reliability of the model, a hyperparameter sensitivity analysis is conducted on the model parameters. In addition, test the impact of different input data on model performance. The results show that the model exhibits good stability under a certain range of hyperparameter changes.

5. Investigation on special physical training of basketball players based on neural network

Based on the neural network, investigations have been carried out on five aspects of athletes' gender, training content, strength training, speed quality, and comprehensive evaluation in the special physical training of basketball players from 2017 to 2020.

This study selected 100 basketball players from a certain school as research subjects. The data is obtained through professional physical training tests, which are conducted in the school gymnasium. All participants signed informed consent forms before the test.

In the process of using artificial intelligence and neural networks to construct a measurement index system for basketball players' physical training, ethical issues were fully considered. Especially during the data collection phase, strict adherence to privacy protection principles ensures that the personal information of all participants is properly protected. In addition, a comprehensive evaluation of the model was conducted to avoid potential biases affecting the results.

5.1. Gender of the athlete

There is a big difference in the preferences of men and women in playing basketball. Whether liking to play basketball is affected by gender was investigated, from the gender ratio of basketball players. The specific results are shown in **Figure 5**.

In **Figure 5**, the ratio of male and female basketball players is obviously inconsistent. Among basketball players, the proportion of boys is relatively large, and the proportion of girls is relatively small. Boys tend to be more inclined to basketball due to their advantages in hobbies, physical strength and strength.

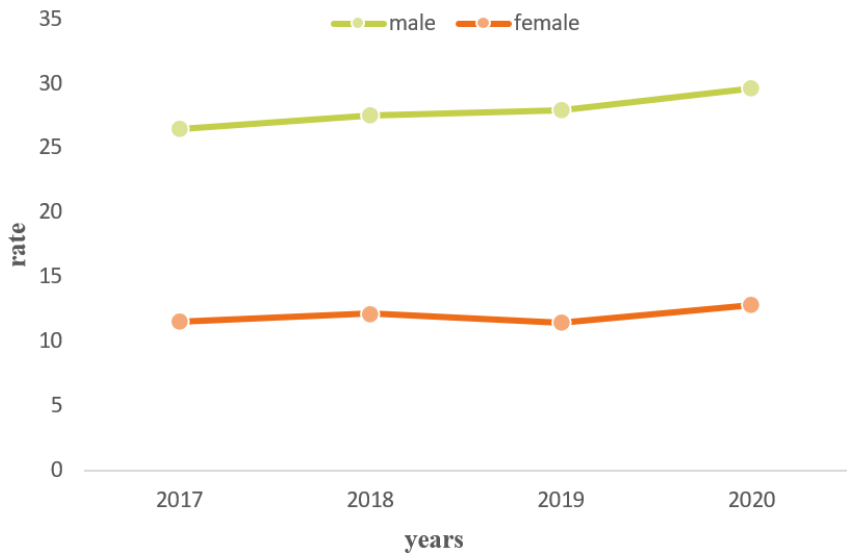

Figure 5. Gender distribution of basketball players.

5.2. Training content

The special physical training content of basketball players is analyzed from six aspects: strength quality, speed quality, endurance quality, flexibility quality, sensitivity quality and coordination quality. The specific results are shown in **Figure 6**.

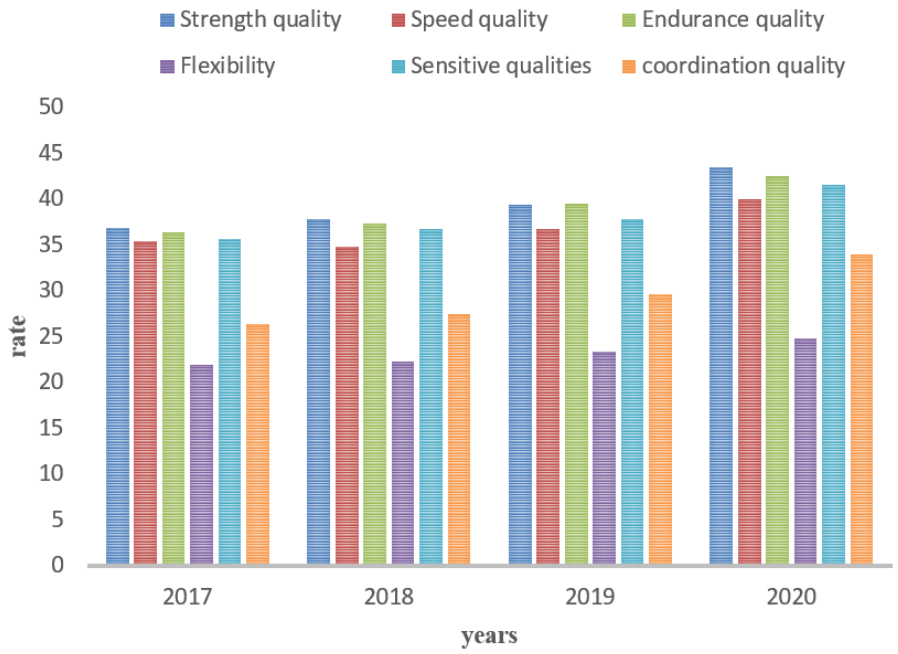

Figure 6. Special physical training content for basketball players.

From the bar chart in **Figure 6,** it can be seen that from 2017 to 2020, basketball players have relatively high strength, endurance, speed, and agility, while the ratio of flexibility and coordination is relatively low. In sports, the flexibility of basketball players is very demanding. When playing basketball, a lot of movements are required, and flexibility is required, so it is necessary to strengthen the flexibility of basketball training.

5.3. Strength training situation

The strength quality of basketball players' special physical exercise is an important guarantee for the athletes to complete the development of movement techniques and other qualities. The development of young basketball players' strength quality can be divided into maximum strength, speed strength, strength endurance and so on. According to the characteristics of basketball, it is proposed that three aspects of coordinated development should be paid attention to when cultivating the strength and quality of basketball players. The survey results are shown in **Figure 7**.

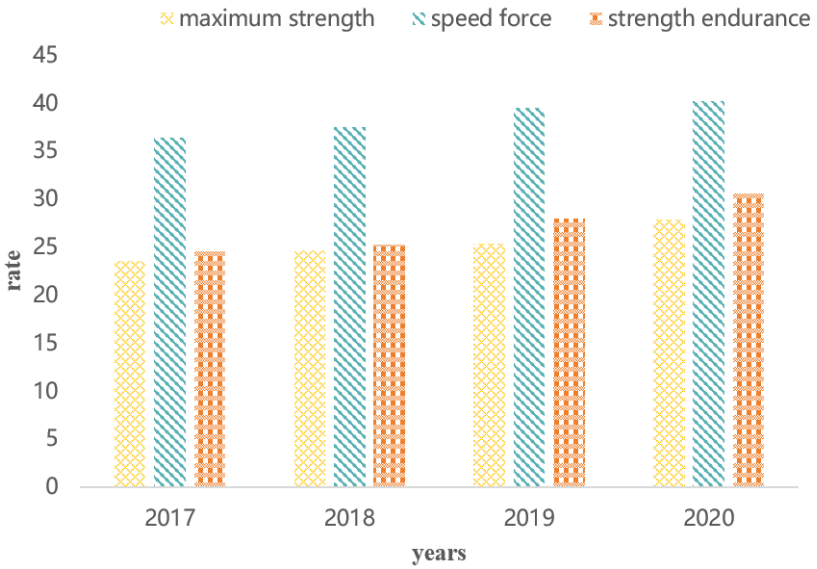

Figure 7. Strength training of basketball players.

It can be seen from the bar chart in **Figure 7** that basketball players mainly focus on speed strength training, followed by strength endurance training, and the last is maximum strength training. Among them, the maximum strength in 2017 was 23.58%, and in 2020, it was 27.86%; in 2017, the speed strength was 36.45%, and in 2020, it was 40.19%; in 2017, the strength endurance was 24.59%, and in 2020, it was 30.61%. As the years change, strength training for basketball players also continues to improve.

5.4. Speed quality

Speed quality refers to a person doing a series of movements in a small period of time. Speed quality can be divided into three forms: reaction speed, action speed and displacement speed according to its characteristics. The reaction speed is the time from receiving different stimuli from the outside world to the start; the action refers to the technical movement performed by the athlete on the basketball court; the displacement speed refers to the athlete's maximum movement distance in a specific time period. The speed quality of basketball players in special physical training is shown in **Figure 8**.

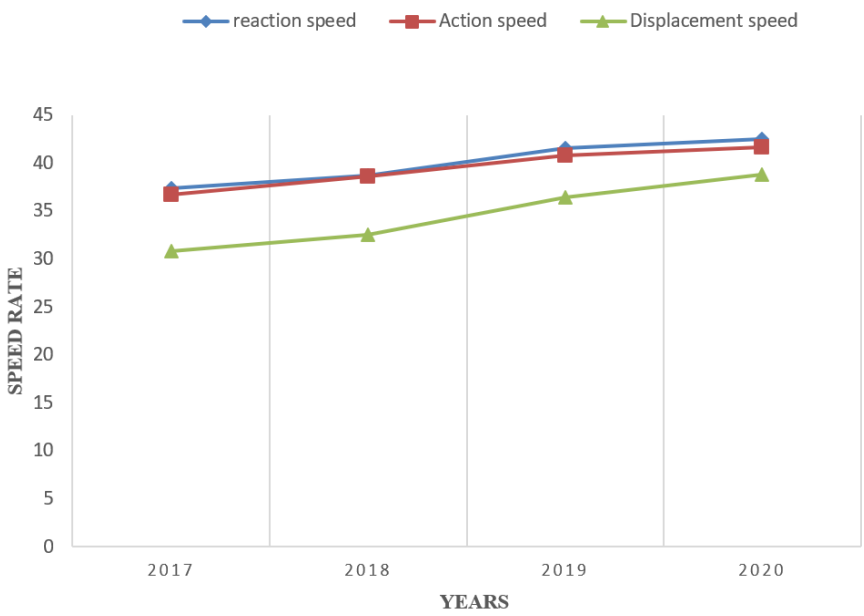

Figure 8. Speed quality.

In **Figure 8**, the reaction speed, action speed, and displacement speed of basketball players are increasing year by year. Among them, the reaction speed and action speed are relatively high, while the displacement speed is relatively low.

5.5. Comprehensive evaluation

The index system of the physical fitness test for the special training of basketball players is comprehensively evaluated and analyzed from the strength training situation, speed quality, and special physical fitness training performance. The results are shown in **Table 1**.

Table 1. Comprehensive evaluation of the physical fitness test index system for basketball players' special training.

	2017	2018	2019	2020
Strength training situation	32.65%	36.85%	39.47%	40.12%
Speed quality	30.58%	35.46%	37.67%	38.96%
Special physical training results	29.73%	31.52%	33.74%	36.41%

Among the indicators of basketball players' special training physical fitness test, the strength training, speed quality and special physical training performance of basketball players are all increasing. Among them, the performance of special physical training was 29.73% in 2017 and 36.41% in 2020. The performance of special physical training increased by 6.68% from 2017 to 2020.

Through the prediction of the model and the combination of agility, strength, and endurance tests, it was found that the special physical training performance of basketball players significantly improved by 6.68%. This improvement is consistent with the observed trend of performance data collected from participants.

To evaluate the accuracy and reliability of the model, a 5-fold cross validation technique was used. The results showed that the average accuracy of the model was

0.9, with a standard deviation of 0.86.

In the error analysis, it was found that the model of the basketball player physical training measurement system had deviations between the predicted values and the actual values in certain specific situations. Through residual analysis, some outliers were identified, which are due to athletes exhibiting abnormal fluctuations during the training process due to various reasons such as injuries, fatigue, and mental state.

6. Conclusion

This article demonstrates the potential of neural networks in predicting improvements in basketball player performance. The model in this article has greater advantages than traditional models, including its ability to identify complex patterns in data and make high-precision predictions. In addition, compared with previous research, this article has added relevant studies on the application of machine learning in sports science. However, in future research, large and diverse datasets are still needed to ensure the robustness and generalizability of the model.

Due to the focus of this study on constructing a measurement index system, detailed descriptive statistical analysis of the sample data was not conducted. However, descriptive statistical analysis is of great significance for a comprehensive understanding of data characteristics, and future research will consider supplementing this section.

Through the construction of the measurement index system of basketball players' special physical training, the special physical training of basketball players has been analyzed, so as to better understand and master the relevant knowledge for the teachers of basketball sports. The physical education theory system of sports has been further improved, so that the training and teaching of basketball can be more targeted, and the physical fitness performance of sports training can be improved more quickly. By establishing a scientific evaluation system and a scientific athlete selection mechanism, a solid foundation has been laid for the sustainable development of basketball.

Ethical approval: Not applicable.

Conflict of interest: The author declares no conflict of interest.

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