



Study Demand Mining Method of College Students' Physical Health Preservation Based on Cognitive Model

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Abstract. In the context of national fitness, contemporary college students physical and mental health of the community focus. In order to solve the problem of low accuracy in the process of learning demand mining, a new learning demand mining method based on cognitive model is designed. Optimizing the structure of PE health preserving curriculum and revealing the laws and rules of scientific PE essence. Health curriculum association model was constructed to classify emotional states and identify the characteristics of individual learning needs of college students. In this paper, we introduce the concept of association rules and use cognitive model to set up the learning needs mining model. The results show that the average accuracy of the proposed method is 74.082%, 64.348% and 65.798%, respectively, which proves that the proposed method is more effective than the other two methods.

Keywords: Cognitive model · College students · Physical education · Learning needs · Mining methods · Physical education

1 Introduction

Based on the guiding ideology of “health first”, the reform of physical education in colleges and universities is to re-examine the training objectives of college students' physical education, reform the curriculum system centered on competitive sports in the past, and establish a physical education and health curriculum system with “health first” as the primary objective to promote students' all-round physical and mental development. Through the study of PE health course, it can improve the physical and mental health of college students effectively and make every index tend to normal value. The experimental data prove that the mood index of college students develops well after studying the traditional PE health course for eight weeks. Lifelong physical education is the sports thought of the new century, not only in the society, but also in the school, which is the theoretical basis of school physical education concept renewal and reform. Physical education has more advantages than other sports courses in regulating the indicators of anger, depression, mood, and terror.

Nowadays, it is very important to find a way to regulate the health of college students in the age when the health of college students is not optimistic. The profound philosophy and rich training methods of traditional P. E. health preserving suit the physical and mental characteristics of college students. The systematic education of health preserving will promote students to know the origin of health preserving, enhance the awareness of health preserving and explore the training methods suitable for themselves. Sports health preserving is a science with the theme of life, concentrating on the excellent traditional culture of five thousand years. It is a reasonable narration of the way, the aim and the developing course of sports health preserving. It can help college students to develop their skills, expand new fitness space, build strong body, cultivate good psychological quality, and lay a foundation for lifelong sports. The organic combination of traditional Chinese physical education and modern physical education in colleges and universities can enrich the content of physical education in colleges and universities, and actively carry out students' thought of "lifelong physical education", so as to let students understand that physical education is not only physical education, but also to improve students' physical quality and sports ability, and to cultivate students' comprehensive quality and ability. Sports health from its origin, based on the idea of harmony between man and nature, pay attention to the continuation of life, through the scientific way of sports health to prolong life. Sports health from its development, is to maintain the body as the core, so as to achieve physical and mental balance, so that the quality of life can be effectively improved.

2 Learning Demand Mining Method for College Students' Physical Education Health Preservation Based on Cognitive Model

2.1 Optimizing the Structure of Sports Regimen Curriculum

As a brand-new subject in today's society, the definition of sports health preserving can be understood as: sports health preserving is a traditional life science, concentrating on the excellent traditional culture, using the traditional items to exercise the body scientifically, so as to achieve the balance state of physiology and psychology of the body and improve the quality of life. Sports health preservation is a life science, and its aim, means and developing process are all around the center of human life. Looking from the origin, it first take the noble person rebirth as the thought premise, pays great attention lengthens person's life, take the pursue longevity as the goal. From the development point of view, has always been around the maintenance of the body, improve the quality of life, the pursuit of psychological and physiological balance of this line. Taking the traditional culture of Chinese nation as the guiding ideology, the paper defines the sport keeping in good health as a reasonable exercise to achieve the balance of human body. So far, the development of physical education has been the treasure of the Chinese people's practice from generation to generation. It contains the excellent traditional culture of China and has a unique way of exercising. As a new subject, the academic community has not yet reached a consensus on the basic concepts, research objects, research methods and the scope of research, content and other aspects. The concept of Chinese traditional sports health preserving can be understood as follows: Traditional life science with

Chinese characteristics is a special health preserving system based on Chinese traditional philosophy, focusing on maintaining the body, improving the quality of life and pursuing the balance of psychology and physiology in the process of social practice. The main ways to optimize the structure of PE regimen courses are shown in Fig. 1:

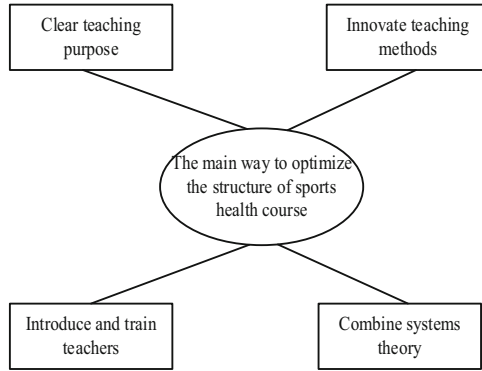


Fig. 1. Diagram of main ways to optimize the structure of PE regimen curriculum

As can be seen from Fig. 1, the main ways to optimize the structure of PE regimen curriculum are: clear teaching objectives, innovative teaching methods, introduction and training of teachers and the principle of system theory. The curriculum of keeping in good health is the core and foundation of the learning demand of keeping in good health. It can show the requirements of teaching, and it is also the main part of teaching plan [1]. Therefore, in order to improve the quality of teaching, so that college students understand our traditional health culture, we must take the curriculum construction as a breakthrough. Traditional physical education relies on the ability of human body to regulate and strengthen the functions of various parts of human body through posture adjustment, breathing exercise and the use of ideas, so as to induce and inspire the internal potential of human body and play the role of preventing diseases, curing diseases, promoting intelligence and prolonging life. It belongs to the field of human science. The traditional Chinese physical education theory holds that the essence, qi and spirit are the three treasures of human beings, and the essence is the material basis of human body and the root of life. Qi is the physiological function of human body and the power of life. On the basis of the essence and qi, the spirit, consciousness, movement and other life activities are dominated by the phenomenon called “God”. In the process of PE health preserving teaching, we should not only teach the action of PE health preserving, but also explore a new way on the basis of the original teaching aim. Action does not mean keeping in good health. If it is taught to students mechanically, it is not the completion of the teaching task. Only in this way can students be attracted to learn more about it and not appreciate the inner culture of it.

Spirit, Qi and God are interacted and cause and effect each other, running through all the process of life activities. Full of vigor, the body’s function is exuberant and harmonious. Full of vigor, the normal activities of all functions are destroyed. In today’s colorful world, students are facing a lot of negative effects. The influence of network and

other modern media on students not only makes the young minds of college students become impetuous. In teaching, we should explore new teaching methods constantly according to students' physical and mental characteristics, and fully mobilize students' enthusiasm. We must not adopt the old teaching methods. The final result of this kind of teaching method is that students are more and more bored with sports keeping in good health. Sports keeping in good health is different from other sports in that there is no antagonism or stimulation. Therefore, it is difficult to tap students' learning demand for sports keeping in good health. It is not successful to let students study sports keeping in good health only by "compulsory courses" [2, 3]. Nowadays, many college students are smoking, drinking, playing cards and other phenomena seriously affect their sleep. In physical education, if we can arrange some knowledge of self-cultivation and mental health, we can guide students to establish a correct sense of health, cultivate students' good living habits, and use correct body-building methods to recuperate themselves, so that students can carry forward the traditional sports health culture. Therefore, in the process of physical education teaching, we must continue to innovate in the means.

At the same time, we should fully mobilize the enthusiasm of students and teachers in the classroom, better participation in the classroom, so as to improve the quality of teaching, but also conducive to students' physical goals. The characteristics of Chinese traditional health preserving science are: combining movement with static state, adjusting the whole balance of human body. Its emphasis lies in the whole regulation of the living body and the exploitation of the brain potentiality, and its methods of external movement and internal quiescence and seeking quiescence in movement really reveal the law and law of scientific sports essence, which is a supplement to modern sports methods. The curriculum system of PE health preserving is not a fixed way, nor a single activity of one of the elements, but a dynamic system containing many elements. In this dynamic system, every element of PE health preserving curriculum system is an integral movement of PE health preserving curriculum system. College students are facing increasingly fierce employment pressure and competitive environment. Many College students have different degrees of psychological diseases. Traditional health education can play a certain role in college students' interest in health care knowledge and fitness means. Using the point of view of system theory, the system of sports health care curriculum can be divided into two elements: substantial and non-substantial. These two elements are composed of many concrete elements, which are combined in a unique way to form a unified whole, developing continuously and being relatively independent.

2.2 Establishment of a Health Curriculum Association Model

The health problems we face today are very different from those we faced in the past. In the past, it is generally believed that people's health refers to the physical discomfort, or there is no disease, that is, the so-called "no disease, no injury, no disability is health." This view is based on a purely biological understanding of health issues. In fact, this is one-sided. Because human beings are both biological and social. The regulation of emotion, the regulation of human physiological function and the direct regulation of mental health by sports health preserving is a unified and inseparable organic whole. They influence, promote and restrict each other. Among them, the regulation of emotion by PE health practice is a part of the regulation of mental health, and the regulation of

PE health practice on human physiological function is closely related to the regulation of mental health. Man is not only a biological man, but also a social man. Man, as an extremely complicated and advanced living body, has not only physiological activities, but also psychological activities and adaptation to society, life events, and moral and ethical understanding and compliance. According to the speed, intensity, tension and sustainability of the occurrence, emotions can be divided into mood, passion and stress of the three states. The state of mind is a relatively weak, calm, lasting and emotional state of rendering. Passion is a strong, transient, explosive emotional state: stress is a state of high tension caused by an unexpected emergency. The emotional state of college students has obvious characteristics of richness, instability, impulsiveness, periodicity, externality and violent fluctuation. Scientific practice has shown that physiological activities and psychological activities are not only equally important to health, but also closely related to each other. It should be noted that physical health is the basis of mental health, and mental health is a necessary condition for physical health. Everyone's physical and mental health is the guarantee of social health. The regulation of mood by sports health preserving is mainly realized by the regulation of mood. But it can not be denied that the practice of physical fitness for passion and stress also has a regulatory role. That is, in the face of major events will not occur in the scope of cognitive activities narrowed, rational analysis capacity is limited, weakened self-control, which makes people's behavior out of control, making some reckless behavior or action. Health is defined by the United Nations World Health Organization as not only being free from disease and infirmity, but also being in perfect physical, mental and social condition. That is, health is three-dimensional, including physical health, mental health and social adaptation to the perfect state. In the process of the development of later studies can, but also put forward that human health should include moral health. A large number of studies have proved that physical exercise can help improve people's intelligence. When the level of intelligence has been improved, in the face of emergencies will show a quick-witted, timely action, out of the woods. Instead of being dumbfounded, fussy, or in trouble. In terms of mental health, good mood can not only make college students full of hope and confidence in themselves, but also make them willing to act, quick-minded and eager to learn. Therefore, the sense of health, including physical health, mental health, good social adaptation and moral health of the four aspects. It is impossible to eradicate disease completely, especially in today's society, because the process of life itself constantly changes the environment. Health consists of a relative state of adaptation to the environment. Concentration, open-mindedness, creativity and good interpersonal relationship. The harm of bad mood to college students' mental health is mainly reflected in two aspects: excessive emotional reaction and lasting emotional reaction. Excessive emotional response refers to sudden and strong emotion can inhibit the high-level mental activity of the cerebral cortex, disturb the balance of excitement and inhibition of the cerebral cortex, narrow the range of consciousness, lower judgment, loss of reason and self-control. Lasting emotional reaction means that some students are not good at positive adjustment and elimination of negative emotion after causing such negative emotions as worry, sadness, fear and anger, thus falling into a negative emotional state for a long time, being unable to extricate themselves, feeling pessimistic and painful, and seriously affecting their life and study. Because people are constantly changing the environment, so

people continue to be in a bad state of adaptation to the environment. Thus, the search for health is a continuous and adaptive process, not a static state that is always attainable or maintained. In other words, health means adapting to a constantly changing biological and social environment. Relaxation of intense energy through physical activity. Bad emotions can often accumulate into a huge mental and physical energy. This energy if there is no normal channel to dredge, it will be in different forms of externalization, as some physical and psychological symptoms. Sports health is aerobic exercise from the point of view of physical exercise intensity, exercise intensity moderate. Moderate intensity of movement of the limbs with the meridians in the “Qi” movement, so that this energy can be guided, but also be released. Regulate by breathing. This requires that we continue to care for and nurture life. Uses the effective sports keeping fit method to satisfy the people to the healthy yearning. People’s health level is affected by the intersection and interpenetration of congenital genetic factors and acquired factors. Heredity is the precondition of physical development and change, and it has great influence on people’s health in the future. On this basis, the postnatal factors affecting health status are derived, as shown in Fig. 2:

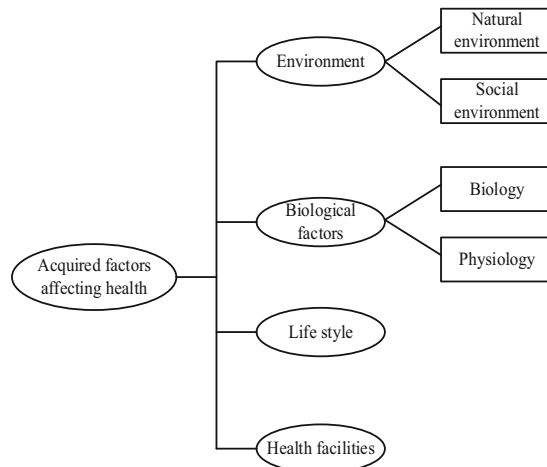


Fig. 2. Acquired factors affecting health

As can be seen from Fig. 2, the acquired factors can be grouped into four categories: the environment (including the natural and social environment), the biological factors (including the biological and physiological factors of the body), the way of life and the health facilities. For individuals, the establishment of a good lifestyle is a positive initiative to improve their health, because the environment, health care facilities and so on to a large extent depends on the level of social development. One of the characteristics of sports health preserving is the regulation of “breath”. When people with tension, restlessness, anger and other adverse emotions, to follow the rhythm of Kung Fu practice for regular breathing, can significantly alleviate the adverse effects. Sports regimen is a kind of slow, gentle, both movement and static movement. Most of the exercises of keeping in good health in physical education are embodied in stillness and stillness. In

the modern fast-paced life, “quiet and natural” is precisely a unique way to vent bad emotions.

Living standards and quality of life is the way of life in both quantity and quality of reflection. The standard of living focuses on the quantity of life style, which mainly refers to the amount of material wealth possessed by people for consumption. Indicators of living standards, such as the amount of housing area and other means of subsistence owned by each person, can be directly quantified in the form of money or in kind. To “clean and elegant” mind to calm the chest of unhappiness, so as to solve the problem of bad moods in the practice of sports health, often meditates in a beautiful environment, surrounded by some beautiful things. In this process of meditation, one’s mind is highly focused, distractions are thrown out, and the negative emotions are ruled out. Quality of life focuses on the quality of life, it refers to a certain social system, people’s life to ensure personal health, freedom and all-round development of the degree. The main indicators are: people’s health and life expectancy, education, spiritual life needs to meet the degree of free development and creativity to achieve the degree of people.

2.3 Identify the Characteristics of Individual Learning Needs of College Students

Through the further analysis of instructional interaction, it is found that the important factors affecting web-based learning—learners’ instructional interaction behavior—can be expressed directly or indirectly through interactive information. Therefore, those concrete operations that can be observed and recorded are of great value for analyzing learners’ online learning behaviors. In the whole function of the curriculum system of keeping in good health, the so-called non-substantial factors play an important role in improving and restraining it. The important influence factor of the learning demand of sports health preserving is the entity factor, which restricts the system of sports health preserving curriculum [4, 5]. The multi-element and complexity of the system of PE health preserving course system plays a decisive role in the practicality, comprehensiveness, complexity, controllability and intersection of the system. If we generalize the three forms of information interaction according to the subject-object relationship in teaching activities, the information interaction can be divided into two basic types: human-human interaction and human-content interaction.

The acquisition of knowledge information refers to the learner’s online learning behavior aimed at acquiring the target knowledge, which is the interaction of “person” and “content” in the process of information interaction. It is very important for college students to improve their mental health. Physical exercise and mental cultivation are closely combined in the practice of traditional sports, and run through daily life effectively. The acquisition of knowledge information is the most important behavior in e-learning, and the acquisition of knowledge information takes up more than half of the time of all e-learning activities. On the basis of the above, the concept of association rules is introduced to solve this problem by using different minimum support and minimum confidence for different classes. We only need the user to specify a total minimum support, and then distribute it to each class according to the class distribution data as follows:

$$\min D = \frac{|\varepsilon - 1|^2}{D} \times \varepsilon \quad (1)$$

In formula 1, D represents the number of instances in the training data, and ε represents the number of all instances in the training data. Using this formula gives a higher minimum support for frequent (negative) classes and a lower minimum support for rare (positive) classes. This will ensure that enough positive class rules are produced, without producing too many meaningless negative class rules. Information retrieval is one of the important means to acquire knowledge and information. Browsing knowledge information to obtain the most important behavior, whether traditional books or new digital resources, learners need to transfer it to their brain through browsing behavior for knowledge concept interaction and internalization. Therefore, we assume the following overall score function, which is a weighted average that considers the above information (support information in the weights). The following formula indicates the score of the data given one data:

$$L = \frac{\gamma^2}{|H_\alpha + E_{\alpha-1}|^2} \quad (2)$$

In formula (2), γ represents the set of positive class items covering the data instance, H represents the set of negative class items covering the data instance, E represents the confidence of the positive class rule, and α represents the confidence of the conversion of the negative class rule to the positive class rule. Therefore, it is of great significance to adopt a complete learning demand mining model of PE health preserving, and then to improve the teaching objectives, teaching tasks, teaching content and so on. Browsing behavior in the process of online learning includes browsing web pages, browsing digital teaching resources, viewing learning records and viewing communication or email information. Learners download files in various formats for browsing or collecting purposes, and review, archive, and collect resources. These downloaded files include text, videos, and pictures. Through these ways to achieve the mental health of college students to play a beneficial role in physical and mental health in colleges and universities, the implementation of traditional sports can not only enhance the students' interest in sports learning, exercise the body, but also strengthen the development of mental health to make full and rational use of the point of view of system theory, the teaching and learning of sports health preservation as a whole, scientific management of it, and try to maintain the link between sports health preservation teaching and learning as a whole. The expression of knowledge and information refers to learners' expressing their cognitive content in words, language or other ways for the purpose of searching, communicating or recording. The Internet as a central information system, but also to provide people with a platform for self-expression and information exchange.

2.4 Cognitive Model Setting Learning Needs Mining Model

The cognitive model contains not only the information about the learner, but also all the learning behaviors of the learner in the network learning process, including the reference to the data contained in each learning behavior, the sum of browsing time and the sum of visits. Learning needs mining model should be comprehensive, which is the comprehensiveness of students' and society's needs and the comprehensiveness of knowledge, and at the same time teaching students in accordance with their aptitude and

roundness [6, 7]. When constructing the curriculum system of keeping in good health of physical education, we must fully consider the factors inside the system, that is, whether the teaching content can meet the needs of students, whether the teaching task can be completed smoothly, whether the teaching stage can be carried out reasonably, whether the teaching objects can meet the requirements of students.

There are many ways of information retrieval, such as directory browsing, keyword searching and so on, but today's information searchers are almost all using the keyword way. Therefore, the information retrieval in this paper refers to the knowledge information retrieval using Google, Baidu, CNKI and other Internet search engines, or the search function built into the network teaching system. The contents of sports health preservation should not only provide gradually complicated technical movements and expand the breadth of skill operation, but also increase the depth of analysis. After the calculation of formulae (1) and (2), the following issues are those for which weights need to be resolved, including negative and positive category weights. After a lot of experiments, it is found that the combination of the two is ideal. The weight formula for the active category is as follows:

$$W_P = \frac{\phi \times u}{G_P} \quad (3)$$

In formula (3), ϕ represents the number of rules in the positive category, u the number of rules in the negative category, G the number of rules in the positive category, and P the number of positive category items. When setting up the pattern of learning needs mining, we should consider the combination of vertical and horizontal and the matching degree between students. Although information retrieval is an important means of knowledge information acquisition, in the process of information retrieval, learners first organize and express the self-cognition and target knowledge as keywords, and then search and browse the knowledge information according to them. Therefore, information retrieval behavior presents the processing and expression of knowledge by learners, which belongs to the part of expression of knowledge information. The information retrieval behavior includes two modes, namely, the query based retrieval behavior and the browse based retrieval behavior. The combination of vertical and horizontal learning needs of PE regimen course means that the teaching contents are arranged in parallel with the PE regimen learning categories and then classified learning. According to the law of students' development, we can arrange the study contents in different periods and stages scientifically and rationally, so as to form a scientific and complete course system. The former refers to the learners have a very clear understanding of the content to be searched on the basis of, to sum up the nature of the problem or keywords, retrieval is to determine access to information. The latter mainly refers to the learners' unclear understanding of the contents to be searched, and the need to grasp the essence of the contents to be searched by browsing the relevant information. On the basis of formula (3), the negative category weights are derived:

$$W_Q = \frac{u}{\phi} \times \sqrt[2]{|G_Q|} \quad (4)$$

In formula (4), Q represents a negative set of class items. In the teaching of keeping in good health, the "choice" teaching mode can best embody the people-oriented

teaching concept. It can fully mobilize the students' enthusiasm and make the students and teachers participate in the class actively. In the process of teaching organization, the teacher chooses the existing sports health project, the students have the choice to carry on the sports health study. According to the differences in writing environment and storage format, the behavior of electronic notes is further divided into: through the built-in module of electronic notes in the network teaching system or personal blog, Google Docs, Douban and other Internet sites, record the learning experience online, and write book reviews and papers. Learners write note files locally on their computers and store them on the Internet through the online teaching system and online document storage and parsing services. The electronic note is a kind of record, review, review, induction and arrangement of the learner's knowledge.

In the cognitive model, the acquisition of knowledge information (browsing, downloading and collecting) is the way for learners to acquire knowledge information. Only when the acquired information is internalized by learners, can it be used for learning needs mining. Therefore, before constructing the learner's knowledge model, it is necessary to judge and identify this part of the data of knowledge acquisition behavior. In addition to the traditional text form of expression, electronic notes can also be learners of voice recording, personal video and other forms. Make use of the internet or network teaching system, such as community, forum and chat room to express their own views and opinions to other individuals or the outside world, exchange and transfer their learning experience. Information release behavior, on the one hand, is learners' need for self-expression, on the other hand, is the need to explain the results of personal cognition or a value concept, expecting others to respond and communicate. This teaching mode can fully consider the interests of different students, suit the characteristics of the whole students, help to develop students' cognitive ability and practical skills, and fully guide students to participate in the classroom, thus is conducive to the realization of the demand mining of sports health.

3 Application Analysis

3.1 Test Readiness

Based on cognitive model and J2EE technology, metadata is stored in HashMap, and then the information of teaching resources is transferred to XML file by XML technology. The GUI interface of the SAS Enterprise Miner is data flow driven and easy to understand and use. It allows an analyst to build a model by constructing a visual data flow graph that connects the data nodes with the processing nodes using links. It is used to implement Web Service interface and provide personalized learning requirement mining service for various network teaching systems. In addition, this interface allows processing nodes to be inserted directly into the data stream. SAS Enterprise Miner is running on the client/server. In client/server mode, the server can be configured as a data server, a computing server, or a combination of both. XML data is transmitted to the server back-end for the analysis of learners' learning style, the intelligent mining of personalized learning needs and other subsequent processing. SAS Enterprise Miner performs data access, manipulation, and preprocessing. The data interface runs through the SAS dataset. Data can also access RDBMS and PC-formatted ACCESS through

standard SAS data programs. Support for Oracle, Informix, Sybase, and DB2 RDBMS is achieved through ACCESS. The data transmission module adopts Java Socket technology and multi-thread mechanism. Conduct application testing under the conditions of the above test preparation.

3.2 Analysis of Test Results

Choose the learning needs mining method based on neural network, the learning needs mining method based on ant colony algorithm, and the students' learning needs mining method in this paper. Under the condition of different similarity of resources, the accuracy of three kinds of learning needs mining methods for college students' sports health preservation is tested. The experimental results are shown in Tables 1, 2 and 3.

Table 1. Course similarity 0.2 mining method accuracy (%)

Number of experiments	A method of mining the learning needs of college students in health preserving based on neural network	Study demand mining method of college students' sports health preservation based on ant colony algorithm	The method of mining the learning needs of college students in keeping in good health
1	78.465	74.255	86.345
2	74.611	73.109	87.494
3	72.106	73.484	83.408
4	71.334	72.645	86.515
5	70.589	73.008	83.499
6	72.485	75.619	82.616
7	74.694	76.334	83.155
8	74.351	78.948	84.009
9	73.648	79.152	83.466
10	72.157	75.008	85.212

It can be seen from Table 1 that the average accuracy rate of the method in this paper is 84.572%, and the average accuracy rate of the neural network-based method for mining the learning needs of college students' health science is 73.444%. The average accuracy of the mining method of college students' sports health protection needs based on ant colony algorithm is 75.156%.

It can be seen from Table 1 that the average accuracy rate of the method in this paper is 73.674%, and the average accuracy rate of the neural network-based method for mining the learning needs of college students' health science is 64.419%. The average accuracy of the mining method of college students' sports health protection needs based on ant colony algorithm is 66.441%.

Table 2. Course similarity 0.4 mining method accuracy (%)

Number of experiments	A method of mining the learning needs of college students in health preserving based on neural network	Study demand mining method of college students' sports health preservation based on ant colony algorithm	The method of mining the learning needs of college students in keeping in good health
1	65.324	65.348	72.466
2	64.578	66.312	73.221
3	63.156	66.911	74.168
4	65.005	65.337	76.416
5	64.387	66.915	73.499
6	65.125	67.206	72.505
7	66.337	66.339	73.887
8	62.014	65.481	74.515
9	63.287	68.242	73.649
10	64.978	66.317	72.416

Table 3. Course similarity 0.8 mining method accuracy (%)

Number of experiments	A method of mining the learning needs of college students in health preserving based on neural network	Study demand mining method of college students' sports health preservation based on ant colony algorithm	The Method of Mining the Learning Needs of College Students in Keeping in Good Health
1	55.616	53.784	63.495
2	54.468	52.911	64.552
3	53.797	54.109	65.797
4	54.117	56.443	66.319
5	55.006	55.978	65.748
6	56.978	55.922	62.008
7	54.446	56.466	63.745
8	55.464	57.147	62.818
9	56.122	58.009	63.007
10	55.797	57.212	62.499

As can be seen from Table 1, the average accuracy rate of the method in this paper is 63.999%, and the average accuracy rate of the neural network-based method for mining the learning needs of college students' health science is 55.181%. The average accuracy

of the mining method of college students' sports health protection needs based on ant colony algorithm is 55.798%. Because the method in this paper optimizes the structure of the physical education course and builds a health course association model. And classify the emotional state of college students to identify the characteristics of individual learning needs of college students. In this paper, the concept of association rules is introduced, and the cognitive model is used to establish a learning demand mining model, thereby improving the accuracy of learning demand mining.

4 Conclusion

By constructing a good cognitive model, we can excavate learners' personalized learning needs of sports health preservation, and lay a foundation for the follow-up personalized recommendation service. For college students, it is helpful to improve their awareness of the importance of physical education to promote their active participation in scientific, healthy and effective sports. At the same time, it can effectively reduce the construction cost and manual participation of personalized network teaching, improve personalized service effect, and expand in new disciplines. Because of the limited capacity, we should carry out a deeper discussion in the application field in the future.

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