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ORIGINAL

ATHLETE-FOCUSED STUDENT PHYSIQUE TEST AND EVALUATION SYSTEM UTILIZING BODY TEST BIG DATA: ENHANCING PERFORMANCE AND HEALTH MONITORING

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ABSTRACT

In response to the growing concern over the physical health of student athletes in the digital age, this study proposes an athlete-focused student physique test and evaluation system utilizing body test big data. The system is designed to optimize both hardware configuration and software functionality to enhance the accuracy and efficiency of physical fitness assessments. The system's software is divided into server-side and client-side components. The server-side, built on a J2EE framework, utilizes Apache and Tomcat 6.0 servers for deployment, with data management supported by a MySQL database system. The client-side features modules for physique testing and evaluation, allowing for the integration of athletes' basic physical attributes to provide tailored assessments. The system leverages API programming to interact with the server-side database, facilitating real-time access to body test big data for comprehensive fitness evaluations. Additionally, the inclusion of a specialized physique test module enhances the system's ability to monitor and assess the physical fitness of student athletes, providing actionable insights to improve their health and performance. Experimental results demonstrate that the athlete-focused student physique test and evaluation system based on body test big data is highly practical and effective in real-world applications. The system not only meets the research requirements but also offers significant potential for improving the monitoring and enhancement of athletic performance and physical health in educational settings.

KEYWORDS: Body measurement big data; Physical fitness test; Physical fitness assessment

1. INTRODUCTION

In the digital age, where data-driven decision-making has become the cornerstone of advancements across various sectors, the importance of maintaining and enhancing physical health, particularly among young athletes, has gained substantial attention. For student athletes, physical fitness is not only a measure of overall health but also a critical determinant of their performance in competitive sports and their ability to recover from injuries. Educational institutions, recognizing the dual importance of academic and athletic excellence, are increasingly focused on developing systems that can accurately assess and monitor the physical fitness of their students. This growing emphasis has led to the integration of advanced technologies and big data analytics into the realm of sports science, giving rise to sophisticated physique test and evaluation systems tailored specifically for athletes. Traditional physical fitness assessments, while foundational, often lack the precision and depth required to fully capture the intricacies of an athlete's physical condition. These conventional methods may rely on periodic testing that offers only a snapshot of an athlete’s fitness at a given moment, failing to account for the dynamic changes that occur as a result of training, competition, and recovery. Furthermore, traditional assessments may not adequately address the specific needs of athletes, such as the need to monitor muscle strength, cardiovascular endurance, flexibility, and recovery times with a high degree of accuracy and consistency (Yu et al., 2021). The advent of big data in sports science offers a transformative approach to addressing these limitations. Big data enables the continuous collection and analysis of vast amounts of physiological and performance-related data, providing a more holistic and nuanced understanding of an athlete’s physical state. For student athletes, this means that every aspect of their physical fitness—from daily fluctuations in performance metrics to long-term trends in health and wellness—can be monitored and analyzed in real-time. Such continuous monitoring allows for more informed and timely interventions, whether it be adjusting training loads, identifying early signs of injury, or optimizing recovery protocols. This study introduces an innovative athlete-focused student physique test and evaluation system that leverages body test big data to enhance the accuracy, relevance, and timeliness of physical assessments. The system’s design is rooted in the need to optimize both hardware and software configurations to handle the complexities of modern athletic environments. The system is architected with a dual-component software structure, comprising server-side and client-side functionalities. The server-side, utilizing a robust J2EE framework along with Apache and Tomcat servers, is responsible for managing the extensive data infrastructure. This includes handling the storage, processing, and retrieval of large datasets, which are stored securely in a MySQL database system. This

server-side architecture ensures that the system is scalable, secure, and capable of managing the large volumes of data generated by continuous monitoring. On the client side, the system is equipped with advanced modules specifically designed for the testing and evaluation of athlete physiques. These modules enable the detailed collection and analysis of data related to an athlete's physical attributes, including but not limited to body composition, muscle strength, cardiovascular health, flexibility, and endurance (Hernández et al., 2021). By integrating these modules with the server-side database through API programming, the system facilitates real-time data interaction, allowing athletes, coaches, and healthcare professionals to access and analyze data instantly. This capability is particularly beneficial in a sports environment, where quick decision-making can significantly impact an athlete's training and performance outcomes. The use of body test big data within this system allows for a more comprehensive evaluation of an athlete's physical fitness. By analyzing data over time, the system can identify trends, monitor progress, and predict potential health risks before they manifest as injuries or performance declines. For example, continuous monitoring of heart rate variability (HRV) can provide insights into an athlete's recovery status, helping to optimize rest periods and reduce the risk of overtraining. Similarly, tracking changes in muscle mass and composition can inform adjustments in strength training regimens, ensuring that athletes maintain optimal levels of power and endurance. The introduction of this athlete-focused physique test and evaluation system into educational settings represents a significant advancement in the integration of technology and sports science. Educational institutions are increasingly recognizing the need to support their student athletes with tools that not only assess physical fitness but also provide actionable insights that can enhance athletic performance and overall health (Dinkeloo, Grier, Brooks, & Jones, 2020). The system's practical application has been rigorously tested, demonstrating high utility in real-world settings. It has shown to be particularly effective in providing tailored feedback that can help athletes make informed decisions about their training, diet, and recovery strategies. Moreover, the system's ability to integrate with existing health management frameworks within educational institutions makes it a versatile tool for comprehensive athlete care. By providing a centralized platform for monitoring and evaluating physical fitness, the system facilitates a collaborative approach to athlete health, involving coaches, athletic trainers, healthcare providers, and the athletes themselves. This collaborative model not only enhances the effectiveness of interventions but also empowers athletes to take an active role in managing their health and performance. In the athlete-focused student physique test and evaluation system based on body test big data represents a cutting-edge approach to health monitoring in sports. By leveraging advanced data analytics and real-time monitoring capabilities, this system offers a powerful tool for enhancing the physical fitness and performance of student athletes. As educational institutions continue to

prioritize the well-being of their students, the integration of such technologies will play a crucial role in supporting the next generation of athletes in achieving their full potential, both on and off the field.

2. Student physical fitness test and evaluation system

2.1 Hardware configuration of student physical fitness test and evaluation system

Combined with the characteristics of body test big data, the development of physical fitness test is divided into two parts: server and client. Through the functional interface of the client and with the help of 3G / 4G and other networks, access to the system is realized. Its overall architecture is shown in the figure (Yamada et al., 2021).Through the body test big data based on the body test big data system or the mobile tablet device terminal, the relevant operations such as input, test and evaluation of personal physical fitness test information are realized. Through the login box, after entering the relevant user name and password, the user can verify the user's identity through communication with the server, and enter the relevant functional interfaces, such as physical fitness evaluation and result query (Beckner et al., 2021). Based on this, the overall architecture of the physical fitness test system is optimized and designed, as shown in Figure 1:

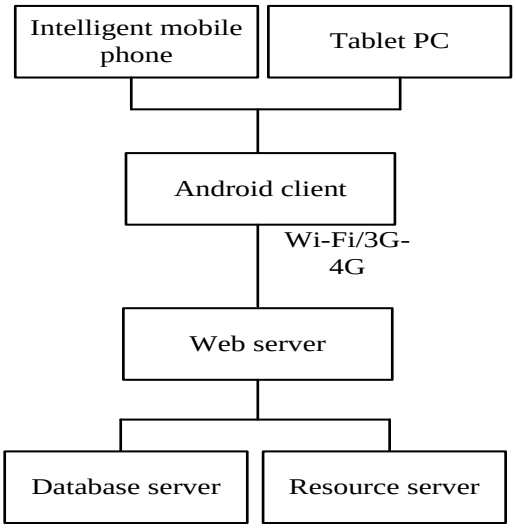

Figure 1: Overall architecture design of physical fitness test system

In the server-side development of the system, including database server and resource server (Latorre Román et al., 2020). The data server is used to provide the storage of students' basic physical fitness test information and personal information, while the resource server mainly provides the system with relevant resources including video, animation and so on. System architecture is the key to whether the system is good or not (Segura-Jiménez et al., 2020). By analyzing the system architecture, developers can clarify the system

functions and quickly enter the development role, so that the development of the system can proceed smoothly (Pahl, Wehrle, Kneis, Gollhofer, & Bertz, 2020). The architecture of the system is shown in Figure 2 below.

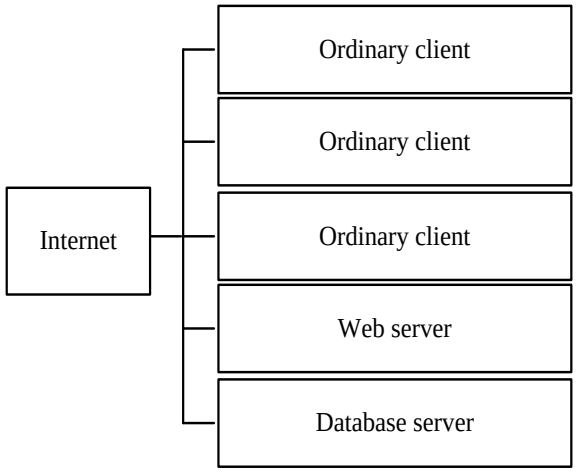

Figure 2: The system architecture

Hardware equipment server: CPU quad core and above, memory 8GB and above, hard disk 500GB and above Operating system Linux 7 5. Database: SQL server 206; Auxiliary software: fine port 8.0, Navicat125. Programming language: TSQL, JavaScript. The development of the system is based on the practical needs of school teaching and adopts the BS architecture based on the form of body test big data (Concha-Cisternas et al., 2020). B / S architecture unifies the client, and the server becomes the main part of the system function. The three-tier structure of B / S mode is presentation layer, thing logic layer and data processing layer. The management system designed with B / S architecture greatly facilitates the operation of users (Gómez-Bruton et al., 2021). Users can log in to the system through web pages without installing any software, which makes the system design and development and later maintenance and management relatively simple. A good system architecture determines the service cycle and extensive use of the system, and the determination of the system structure affects the whole process of system development (Martins et al., 2020).

2.2 Software function of student physical fitness test and evaluation system

Combined with the use analysis of the system test system, the application group of the system is divided into two parts: administrators and students. The server side is mainly responsible for data maintenance, physique test data analysis, personal basic information management and so on (Canepa, Pedullà, Bisio, Ruggeri, & Bove, 2020). The server-side component plays a crucial role in the functioning of the physical health assessment system, providing essential functionalities for data management, analysis, and user

management. At the same time, for the development of the server side, the system adopts the MVC architecture in the J2EE framework, and the front desk adopts HTML5 + CSS3 technology, which is conducive to the development, maintenance and deployment of follow-up body test big data applications (Koevoets et al., 2021). The physical health data analysis and processing system is based on the needs of all aspects in the body test process, such as the incoming and importing of body test data, the storage, comparison and processing of body test data and student information. The statistical processing and scoring functions are designed and the corresponding data processing and analysis system is developed (Navaneethan et al., 2021). More importantly, these functions are realized. The overall function of the adolescent physical health data analysis and processing system is shown in Figure 3:

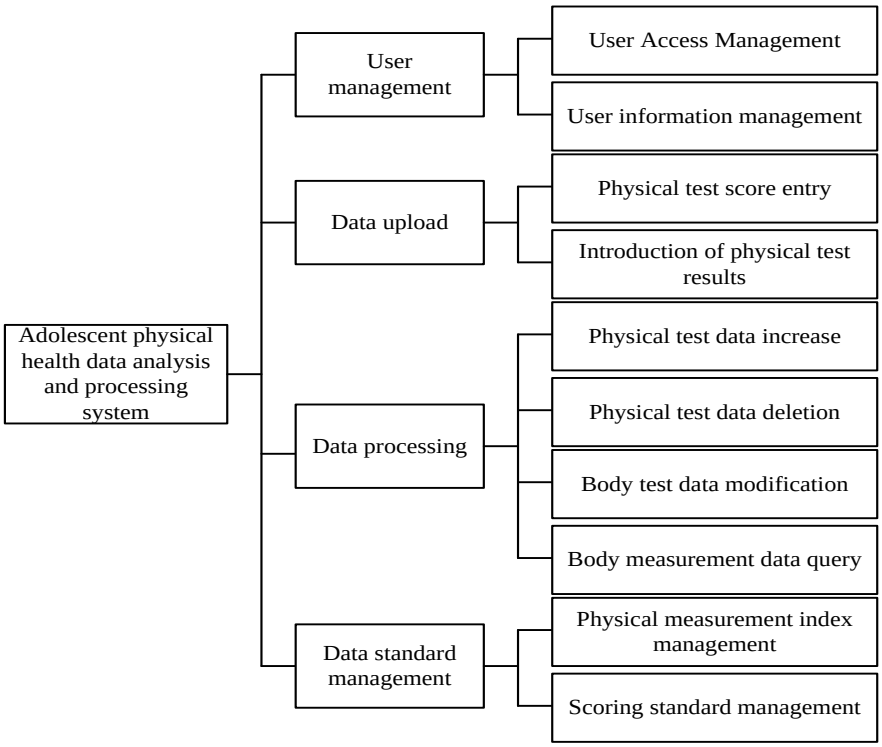

Figure 3: Software function module of physical fitness data analysis and processing system

Through the analysis of the characteristics of physical fitness test users, the client users of the system are mainly students. Therefore, its specific functions include user registration, user login, video viewing and downloading, physical fitness test data entry, physical fitness test evaluation and query, information exchange and other functions (Roberts, Smalley, & Ahrendt, 2021). Screening and filtering the data. Due to the influence of sensor input and test subjectivity, the data will inevitably produce errors and errors, forming "dirty" data, which will affect the analysis results, Therefore, these data must be sorted and analyzed "Cleaning". Carry out intelligent mining of physical fitness test data, study the correlation and common characteristics between physical health data and fitness behavior, and establish an automatic risk early warning

mechanism and decision optimization mechanism of physical fitness test data based on research theories such as random decision-making (Mora‐Gonzalez et al., 2020). By constructing an interactive mechanism with sociology and economics, excavate the value of physical fitness test, explain its internal mechanism, find its universality, and provide theoretical basis for serving large-scale physical fitness test population. Theory and data support. Based on this, the research path of fitness test software is optimized, as shown in Figure 4:

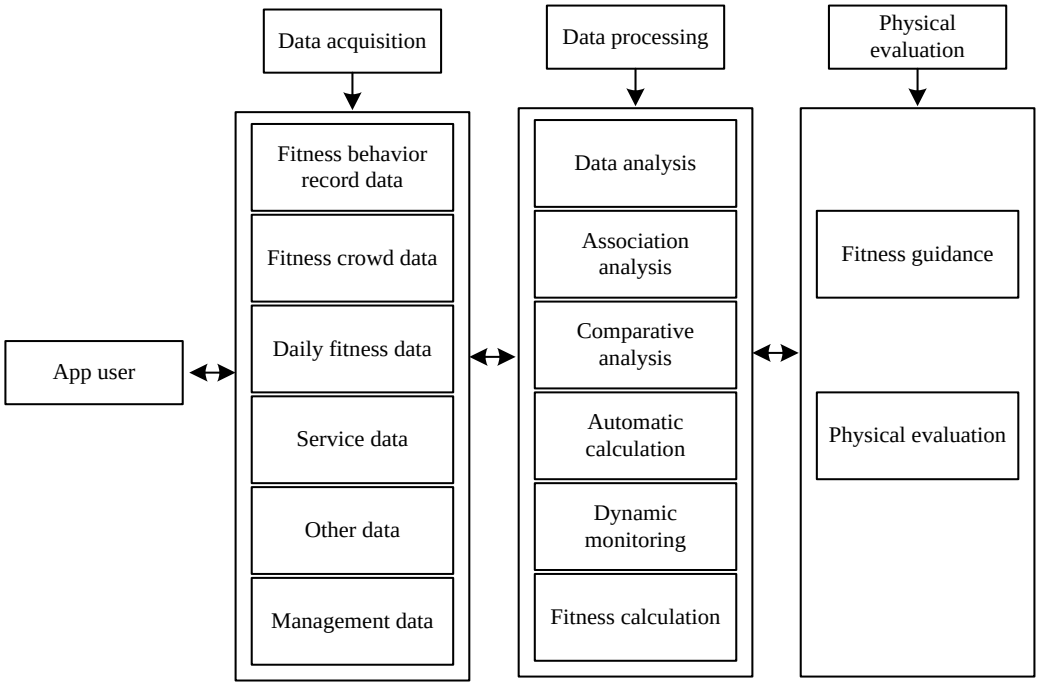

Figure 4: The research path of fitness test software

The traditional national physical fitness test requires a large number of manual participation, which is time-consuming, laborious and expensive. It usually requires a number of staff to guide and assist on site in order to complete the physical fitness test. After the test, the test data needs to be entered manually to obtain the test data(García-Hermoso et al., 2022). In the process of grass-roots sports work, the lack of staff is a normal phenomenon, and the professional guidance personnel are almost blank, which cannot provide effective evaluation and guidance in time. The traditional physical fitness test basically depends on administrative organization and orders, and is mostly realized in a sports mode. The residents' fitness data cannot get effective feedback, and the value recognition of the national physical fitness test is low. Some research shows that the timely feedback of physical exercise itself can make people get better results in physical exercise (Wilkinson & Lichtwark, 2021). In the design of physical fitness test management system, any user must verify his identity when entering the system to ensure the security of the internal information of the management system. The user enters the login interface, enters the legal user name and password to log in to the home page

of the system, and then can carry out corresponding operations according to the needs. Without downloading any software, users can access the system through the web page. The login personnel of the system include administrators, teachers, students and other identities (Hernandez, Dadkhah, Babakeshizadeh, & Kulić, 2021). Among them, the administrator has the highest authority, which can manage the whole system, maintain basic data and other operations. The teacher user can enter sports scores, export in batch, query, change and other basic operations. Student users only have the authority to query the physical fitness test results and related courses. The system flow chart provides a medium for analysis and design personnel and system administrators to communicate with each other (Tanaka & Shimamoto, 2021). Through the system flow chart, we can analyze the rationality of function design, fully understand the business process errors, and find no reference source., It provides a basis for further analysis for development and design (Obayashi et al., 2021). Figure 5 shows the flow chart of physical test score management system.

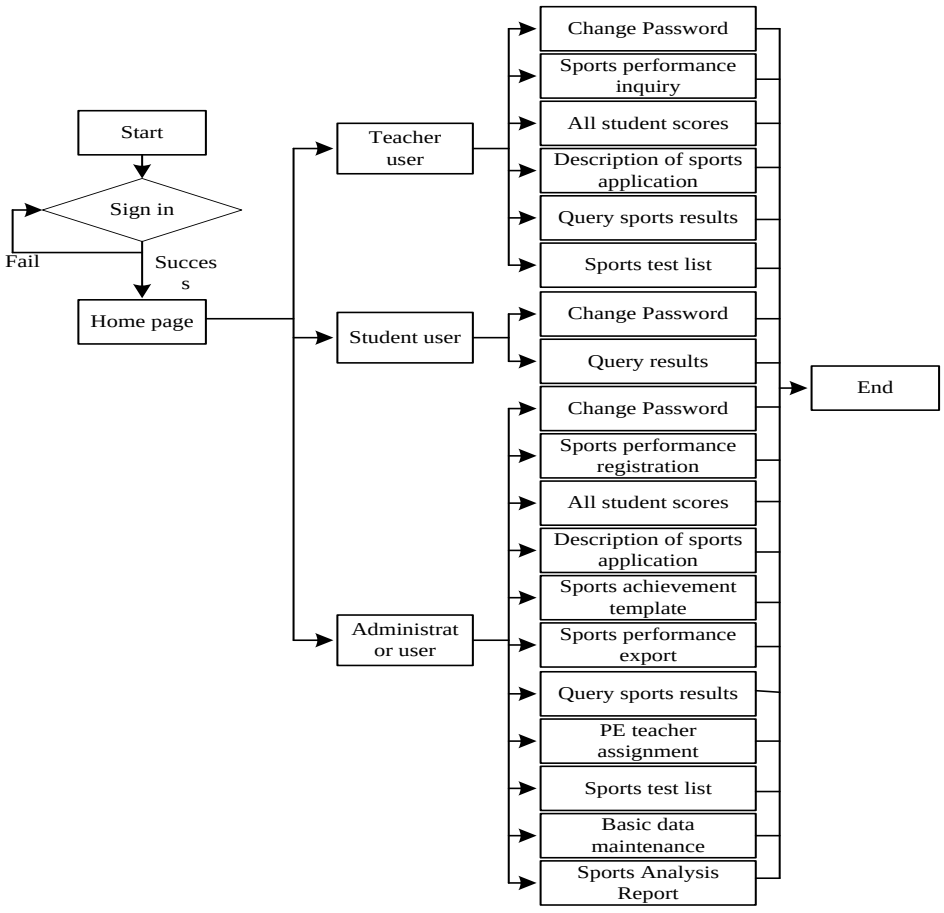

Figure 5: Flow chart of physical test score management system

The user must input the user name and password according to the dialog box prompt of the login interface, and click the login button after typing (Lee et al., 2020). The system will verify whether the login name is correct according to

the user information stored in the database. The system can log in only when the user name and password are accurate at the same time, and operate according to the requirements.

2.3 Realization of students' physical fitness test and evaluation

On the basis of expert interview and literature reading, according to the basic composition requirements of analytic hierarchy process and combined with the internal and external factors of SWOT in situation analysis method, this paper constructs a hierarchical structure model of marketization of College Students' physical health management service (Arlegui, Smallcombe, Fournet, Tolfrey, & Havenith, 2021). Among them, the marketization of College Students' physical health management service at the highest level a is the target layer, that is, the predetermined goal to solve the problem. B1-B4, that is, the four factors of advantage, disadvantage, opportunity and threat, is the criterion layer affecting the goal. C1 ~ C12, that is, comprehensive monitoring, objective data, lifelong service, high initial cost, low popularity, few professionals, constant decline of students' physique, national policy support, huge market power, laws and regulations to be formulated (Knybel et al., 2021). The 12 Factors of market access to be established and university cooperation to be coordinated are the measures to solve the decision-making problems. Based on the study of relevant literature, the experts in the fields of sports, public management and enterprise management were interviewed and investigated to analyze the important factors such as advantages, disadvantages, opportunities and threats of the marketization of College Students' physical health management services (Wan, Köhn, Kröll, & Berzigotti, 2021). Through the pairwise comparison of different factors at all levels, the experts checked according to the scale 1-9, and used expert choice11 5 the software arranges the matrix and analyzes and tests, so as to make expert group decision analysis, put forward the strategy to solve the marketization problem of College Students' physical health management service, and construct the hierarchical structure model of students' physical health, as shown in Figure 6:

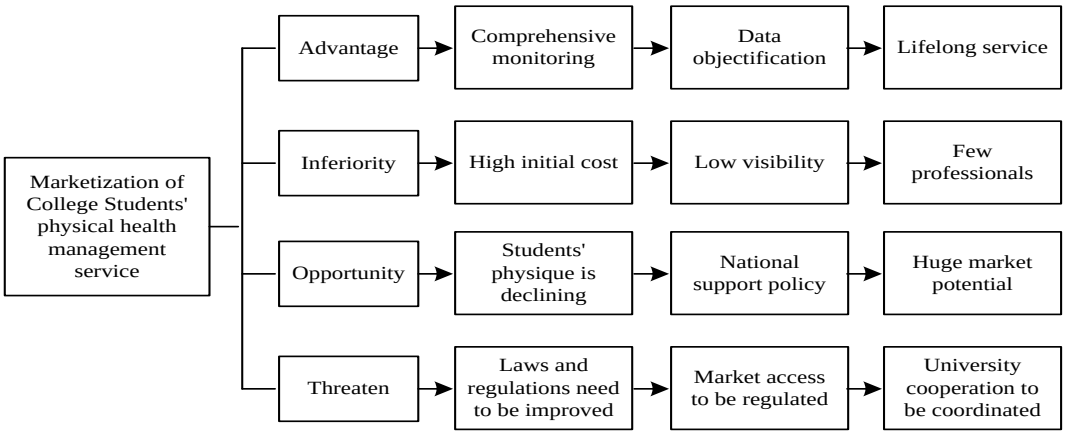

Figure 6: Hierarchical structure model of students' physical health

The establishment of teacher user module is to facilitate the management of teachers' unified input or export of students' physical test scores. It is divided into sports score registration, all student scores, sports filling instructions, query sports test list and other operations. After logging into the system, the teacher user can export and print the queried information, which is convenient for the administrator to manage the physical test results of the class. As shown in Table 1:

Table 1: Function table of teacher user module

FUNCTION NAME	FUNCTION DESCRIPTION
CHANGE PASSWORD	Password can be changed
DESCRIPTION OF SPORTS APPLICATION	Provide instructions and standards for teachers and users to fill in various sports scores
SPORTS PERFORMANCE REGISTRATION	Teacher users can register student scores of all grades and classes
ALL STUDENT SCORES	Teacher users can query all students' sports scores
SPORTS TEST LIST	Users can query the list of students to be tested
QUERY SPORTS RESULTS	Teacher users can query students' scores in the system

The physical test export template module has seven sub functional modules, including class basic information template module, environmental test information template module, physical test score export template module, student basic information template module, Zhejiang student source information table module, Zhejiang test free student information module and export template module according to grade. After logging into the system, the administrator can filter and view various types of information templates according to needs, and can export, print or send the required files in the form of e-mail, which greatly improves the statistical management of physical education teaching. The module diagram of physical examination export template is shown in Figure 7:

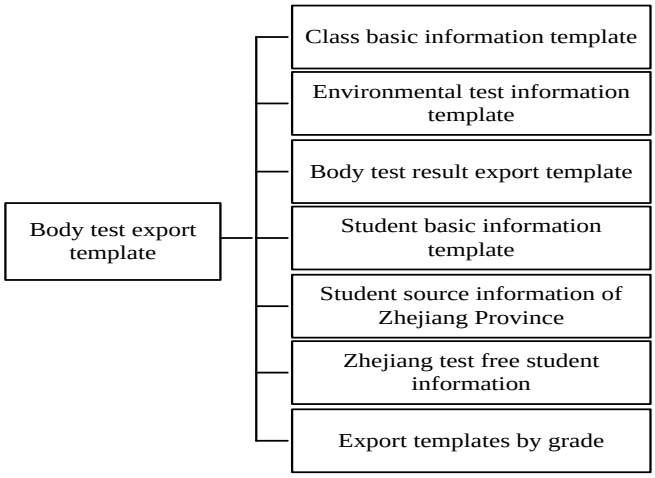

Figure 7: Body measurement data export template module diagram

Take the elements determined by SWOT as the factors of analytic hierarchy process for general ranking, and conduct quantitative analysis combined with internal factor evaluation matrix and external factor evaluation matrix, so as to achieve the evaluation method 4 of accurate positioning of SWOT. This analysis is helpful to make scientific decisions on the research on the marketization of College Students' physical health management services. This study uses the expert survey method to conduct two rounds of correspondence survey on 13 experts and professors engaged in the fields of physical education and management, that is, to build a model, assign weight, judge and score, and take the summarized experts' experience and judgment data as the basis of AHP-SWOT analysis, the expert choice 11.5 software is used for data processing and statistics. The experts compare the factors in the market-oriented hierarchical structure model of College Students' physical health management service, tick the more important factors, and the obtained data are imported into expert choice 1 5 analysis software. The total weight and consistency test of decision analysis of various factors are shown in Table 2:

Table 2: Weight and consistency test of influencing factors of SWOT body test data

SWOT	WEIGHT OF EACH GROUP	SWOT ELEMENTS	CR	WEIGHT OF EACH ELEMENT IN THE GROUP	TOTAL WEIGHT OF ELEMENTS
ADVANTAGE	0.198	Comprehensive monitoring	0.00	0.311	0.062
		Data objectification		0.151	0.028
		Lifelong service		0.518	0.108
INFERIORITY	0.082	High initial cost	0.03	0.209	0.018
		Low visibility		0.635	0.052
		Few professionals		0.159	0.015
OPPORTUNITY	0.503	Students' physique is declining	0.00	0.318	0.158
		National support policy		0.533	0.268
		Huge market potential		0.153	0.077
THREATEN	0.221	Laws and regulations need to be improved	0.00	0.612	0.133
		Market access to be regulated		0.248	0.056
		University cooperation to be coordinated		0.151	0.035

According to the scoring table of students' physical health standard (Trial Scheme), the score result is *GCI* and the score of grip strength body mass index is W_0. The calculation method is:

$$GCTW = 100\left(GCIW_0 / 20\right) \quad (1)$$

If the subject is a single student, accumulate their usual grip strength and body mass index test samples under the same test conditions. Assuming n samples are accumulated, it is recorded as GCI, I = 1- *n*; Under the same test conditions, the test samples of grip strength and body mass index are obtained. Assuming that *m* samples are accumulated, they are recorded as $\mu_{\mathrm{CciW}}^{\mathrm{cmm}}$, I = l-*m*. First, the rank sum test method is used to test W_j^{Tes}, Whether W_i^{cmo} come from the same population, if the rank sum test fails. The credibility index of body mass index test results is the physical quantity describing the degree of consistency between the grip strength body mass index test results and the objective truth value. This physical quantity is dimensionless. In the study, in order to directly understand the result value, the dynamic variation range is normalized, and the rank sum test passes, indicating that they come from the same population. Note

$$\mu_{\mathrm{CciW}}^{\mathrm{cmm}} = \frac{1}{n}\sum_{i=1}^{n} GCIW_i^{\mathrm{cmo}} \text{-} GCTW \quad (2)$$

$$\mu_{\mathrm{GCrW}}^{\mathrm{Tes}} = \frac{1}{m}\sum_{i=1}^{\mathrm{m}} GCIW_j^{\mathrm{Tes}} \quad (3)$$

In the independence test of credibility evaluation, population (x is the total number of test results that meet the requirements of sample size. Index x is generally selected as the level of external conditions. For example, the conditional independence of the credibility of height standard weight test results under the condition that the weight scale has different accuracy. p_i, p_j can be selected as the level of 0.5kg, 0.25kg, 0.1kg, etc. in the general test, index y can divide the credibility into four grades, 00.25, 0.26-0.50, 0.51-0.75 and 0.75-1. The hypothesis of independence test by:

$$H_0 : p_{xy} = p_{\mathrm{i}}\mu_{\mathrm{GCrW}}^{\mathrm{Tes}} \text{-} p_j \mu_{\mathrm{CciW}}^{\mathrm{cmm}} \quad (4)$$

Where p_{xy} is the edge probability functions of X and y, respectively. In other cases, the sample size of the population (x) can be deduced similarly. M is the number of tests in which the index x is in I and the credibility result is J. select the test statistics.

$$\chi^2 = \sum_{i=1}^{4}\sum_{j=1}^{4} \frac{\left(m_{ij} - m_i \hat{p}_{i\cdot} \cdot \hat{p}_{\cdot j}\right)^2}{m\hat{p}_k \cdot \hat{p}_{\cdot j}} \quad (5)$$

Where:

$$\hat{p}_k = \sum_{j=1}^{4} m_{ij} / m \quad (6)$$

$$\hat{p}_{\cdot j} = \sum_{i=1}^{4} m_{ij} / m \quad (7)$$

Are the maximum likelihood estimates of P and P when h is established. Since the requirements of sample size are met in the test, it is approximately:

$$L = \chi^2 \left(\hat{p}_k - 1 \right) \left(\hat{p}_{\cdot j} - 1 \right) \quad (8)$$

In order to better realize the security of the system, the implementation process of the login interface is shown in the figure 8 below:

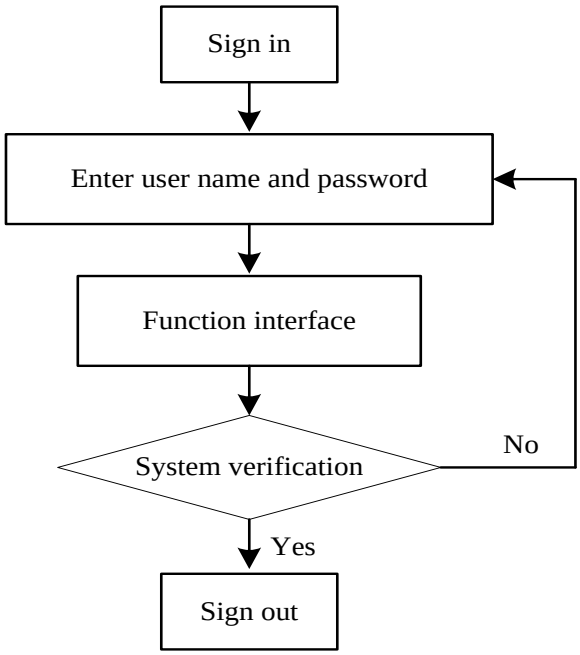

Figure 8: The system login interface flow

When the information system is developed, tested, implemented and delivered to all kinds of users, it has entered the daily operation and maintenance stage of the system. The whole system operation period is the system maintenance period. During the operation of the system, the insufficient system functions caused by environmental changes or the functional requirements that cannot be found or solved in the development process may occur. When this happens, the system needs to be modified immediately Maintenance or local adjustment. The quality of maintenance work can directly

affect the life cycle of the system. System maintenance mainly includes three aspects: data maintenance, program maintenance and function cone protection: in the system operation stage, data maintenance will encounter a certain logical combination of unused input data or a certain combination of judgment conditions, resulting in the failure of the system to work normally, which may not be completely eliminated in the test and trial operation stage of the system. In addition, the data storage medium or data version may also need to be upgraded during use. These maintenances must formulate strict maintenance documents and make changes in time; Program maintenance according to the business process operating system, if the program is found to have errors or contents inconsistent with business logic in the operation records, the old code shall be modified or a new code system shall be established. In the operation stage of function maintenance system, check whether the functions and business specifications realized by the system meet the requirements of users, modify or expand new functions to make it adapt to the environmental requirements.

3. Analysis of experimental results

In order to ensure the quality and reliability of the data analysis and processing system for teenagers' physical health, the system needs to be tested after the system is completed. The test is completed by determining the test scope (content), test method, test environment and auxiliary tools, and test completion criteria. The purpose of the test is to ensure that the system test activities are carried out according to the previously determined plan, Verify whether the system software does not meet or contradict the system requirements, whether it meets the real needs of users, find out the possible defects and errors in the development and design of the system, and establish a perfect system test defect record tracking after the test, so as to ensure that the software system test activities and results can be notified and improved in time.

For the development of server-side and client-side, this paper uses eclipse 3 Version 6, Java SDK version 1.6 is selected for installation, and body test big data SDK version adopts body test big data -sdkn06- windows. The application server on the server side is built in the way of Apache + tomcat, in which the application server is Apache, and Apache Tomcat6 is directly installed on the JSP / servlet container 0, MySQL management system is selected for the database. For better convenience in eclipse 3 6 to develop Android applications in the development tool, install the general ADT plug-in supporting the development of body measurement big data, so as to realize the debugging and operation of applications through the plug-in. Compared with the traditional physical fitness test mode, it has significantly changed in terms of operation convenience and digitization. The test contents of the physical fitness test mode

are shown in Table 3.

Table 3: The student body test content

TEST ITEMS	TEST METHOD	CHECK OUT PARAMETERS	EVALUATION METHOD	ASSISTANCE
HEIGHT	automatic	CM	automatic	no
WEIGHT	automatic	KG	automatic	no
GRIP	automatic	KG	automatic	no
VITAL CAPACITY	automatic	ML	automatic	yes
STABILITY	automatic	S	automatic	no
VERTICAL JUMP	automatic	CM	automatic	no
ABDOMINAL CURL	automatic	individual	automatic	no
STEP EXPERIMENT	automatic	branch	automatic	yes
BODY COMPOSITION	automatic	Muscle, fat, etc	automatic	no

In this process, the user first enters the user name and password to log in to the main interface of the system. The back end compares the entered user name and password with the data entered in the database. Only when the user name and password match at the same time can the user pass the authentication and log in successfully. If the user name is wrong or the password is incorrect, there will be a corresponding error prompt on the front port that the user cannot log in to the system. See table 4 for the test diagram of user login module.

Table 4: Test contents of user login module

MODULE NAME	LOGIN MODULE
TEST CONTENT	Verify that the user login interface is displayed normally and the user login function is normal
TEST METHOD	Open the web page, enter the system web site, enter the login page, enter the user name and password, and click the login key
EXPECTED RESULTS	Enter the correct user name and password and log in successfully; Enter the wrong user name and password, login failed
ACTUAL RESULTS	The actual results are consistent with the expected results

In order to ensure the safe and stable operation of the system, the user has the function authority to change the password. When changing the password, the user needs to enter the original password for verification, and the new password needs to be entered twice. Only after all information is verified successfully can the password be changed successfully. Otherwise, an error message will appear. See table5 for test contents of password change

module.

Table 5: Test contents of password change module

MODULE NAME	CHANGE PASSWORD MODULE
TEST CONTENT	Verify that the user's password change interface is displayed normally and the password change function is normal
TEST METHOD	Enter the password change function interface to view the page display; Enter the original password, new password and click Submit
EXPECTED RESULTS	Enter the correct original password, new password and change password successfully; Incorrect password entered. The two entries are inconsistent. Failed to change the password
ACTUAL RESULTS	The actual results are consistent with the expected results

Administrator user and teacher user have the authority to manage and call students' physical fitness test scores, enter the system login interface, and enter the account name and password to log in to the system. After logging in successfully, you can manage and improve the data of students' physical test scores, including the entry, modification, deletion and query of physical test scores. The functional test of this module is also designed from these four opposite sides to verify that the functions of each branch of the score management module are normal. See the test table 6 of score management module for details.

Table 6: Test contents of score login module

MODULE NAME	SCORE ENTRY MODULE
TEST CONTENT	Verify that the score registration interface is displayed normally and the input function is normal
TEST METHOD	Enter the student achievement registration page of the system and view the page display; Enter the score data in the normal range and view the page display
EXPECTED RESULTS	When the correct score data is entered, the data can be updated after the submission is successful; Input wrong score data, submission failed
ACTUAL RESULTS	The actual results are consistent with the expected results

The system is gradually put into various fields of life and work, and users have higher and higher requirements for the performance of the software. If the quality of the management system fails to meet the requirements, the system maintenance cost will increase, the use cost will also increase, and other risk responsibilities will increase. The application effects of this system and traditional system are further compared and recorded. The specific test results

are as follows figure 9:

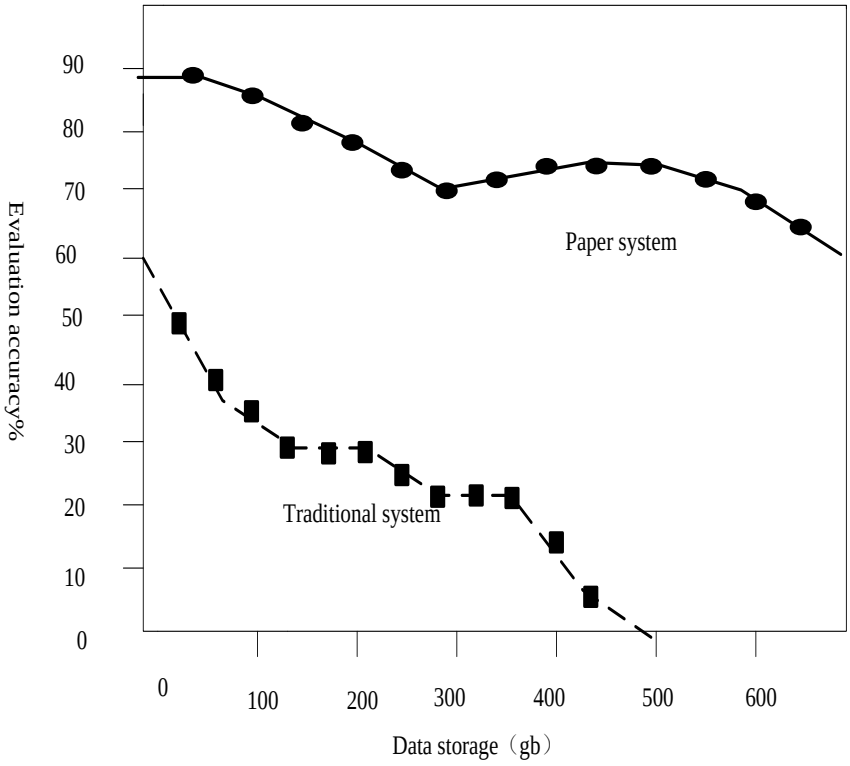

Figure 9: Comparison test results of system operation efficiency

Based on the analysis of the above comparative test results, it is not difficult to find that, compared with the traditional system, in the same environment, the physical fitness test and evaluation system in this paper has significantly higher evaluation accuracy in the process of practical application, and the overall data processing capacity is significantly higher, which can better manage the sea volume side data effectively and fully meet the research requirements.

4. Conclusions

The physical fitness test equipment, testers and systems are information zed and linked through intelligent terminal devices such as physical test big data, which can realize the real-time collection and upload of physical test data, analyze and calculate at the levels of intelligent physical test big data client, expert system and background management system, and put forward the national physical fitness test mode based on physical test big data and other technologies. The practical research and application of fitness mode has extended the fitness industry chain and promoted the deep-seated transformation of national fitness in science and technology and life to a certain extent. It has good social and economic effects and the feasibility of application and promotion.

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