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Research on management information system of rhythmic gymnastics training based on modern information technology

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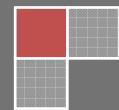
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ABSTRACT

The development of information has played a tremendous role in promoting the development of different fields, and the management means and management method have been further optimized. From the angle of the development, management of rhythmic gymnastics training also has made some breakthroughs, making a closer contact with information technology. The construction of the training management information system is a concrete researching process aiming at this direction. First, combine with the theoretical basis for exploring the specific process, clarifying and perfecting the concept of management information to get the final objective of continuously enforcing the system function. Second, investigate and analyze the management information system of rhythmic gymnastics training, including the system data sources and the construction of data logic model of the system, to guarantee the effectiveness of system data analysis. On this basis, make the specific design of information management system of the rhythmic gymnastics training. Starting from the design of the system structure and system platform, analyze the relationships between the existing system structures. And choose the effective network platform to provide a solid foundation for the effective construction of management information system of artistic gymnastics training. Finally, effectively research and analyze the database to effectively guarantee the analyzing results of the system data. This is the main idea of the whole research process, which reflects the research goal and research content.

KEYWORDS

Information technology; Rhythmic gymnastics; Management information system;
Research on construction.



INSTRUCTION

From the point of view of development, the information management system can improve the pertinence and effectiveness of the management process in each domain. Management process of rhythmic gymnastics training has the characteristics which are different from that of other fields, so the necessity of constructing this training management information system is more prominent. The research process is carried out from the four parts: the theory basis of management information system of rhythmic gymnastics training, research and analysis of management information system of artistic gymnastics training, design of information management system of rhythmic gymnastics training, and the design of database, which can embody the scientific quality and rationality of the study.

THE THEORY BASIS OF MANAGEMENT INFORMATION SYSTEM OF RHYTHMIC GYMNASTICS TRAINING

The constructing thought and process of management information system of rhythmic gymnastics training should be designed combining with the related theory. Migrate and study the theories of the fields such as management and information technology, and according to the basic characteristics and the unique characteristic of the rhythmic gymnastics training, form a set of construction theories specialized for constructing the management information system of rhythmic gymnastics training.

The concept of management information

For one nation, the development of competitive sports has strong economic, social and political significance and the rapid development of competitive sports has positive effects on these three aspects. However in the category of rhythmic gymnastics training, the concept of the information management can be effective migrated. In another word, the management information system is able to generate tremendous effect on rhythmic gymnastics, and has a far-reaching influence on the training effect which can enhance the rhythmic gymnastics training results^[1]. In the training process of rhythmic gymnastics, a large amount of data will be produced which needed to be effective recorded and sorted out. And in this process, many methods need to be used to make effective treatment of the different types of data, showing the training effect clearly in the form of data and providing important basis for deciding the training direction. In the course of rhythmic gymnastics training, athletes' basic data, specific training plans, the achievements and injuries and diseases can be specifically treated by management information system, which standardized reflects the physiological indexes and the training intensity of athletes. And after effectively process these data and the, the corresponding management information of training activity can be generated.

In the of management of rhythmic gymnastics training, the data of each management level and different management roles need to be treated with different extent, such as coaches, training management mechanism, the superior doctor etc.. The management function of these management roles are not the same, then the management class is in a different level. But all of them will get involved with the corresponding management information and influence the different management information. And the grass-roots management information will be a judging basis for upper management to make the decisions, while decision of the upper management can guide the training effect of the grass-roots management. Therefore, the management information of different classes can be mutual used, forming a complete information management chain which is the recursive definition of the management information of rhythmic gymnastics training. And the details are shown in Figure 1.

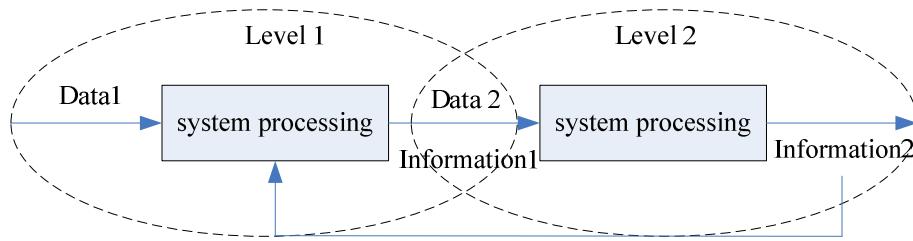


Figure 1 : Recursive definition of training management information

The concept of management system

The so-called system is effective combination of the units which can interact to each other, and make unification according to the special functions and goals of the units. And the internal factors can form a relatively stable structure and management order which can form the effective management of each elements in the system to achieve the continuous optimization of various structure, and make the relationship among the structures coordinately develop, making continuous breakthrough of system^[2].

In the process of constructing the information management system, the main construction thought lies in three parts. The first part is to fully clarify the object of management which is often referred as the management object. The second part

is to have strong pertinence for the management subject which is often mentioned as the manager. And the third part is to make effective construction of the mechanism between the first two parts. Managers effectively issue the management command through the management information system, and the management objects effectively work according to the management command and at the same time feedback their working information and results to the managers through the information transmission process. However in this management process, usually some external environment and the corresponding factors will influence the corresponding management information as shown in Figure 2.

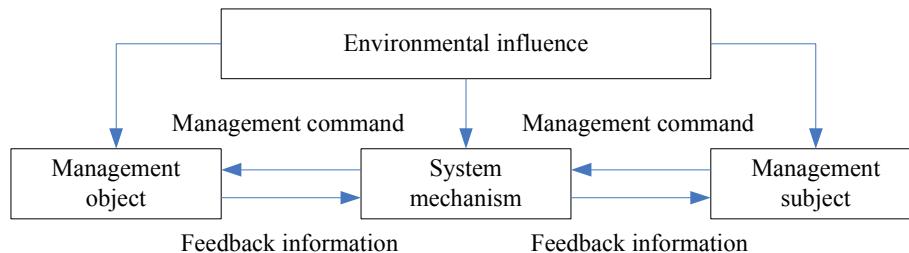


Figure 2 : The composition of the management system

The function of the management information system

The key to improve and change the function lies on the application and updating of modern technology and equipment, making improvement of the function of data collection, input, storage, processing and maintenance, and finally reaching the final goal of forming high effective management of the rhythmic gymnastics training. During the research and development of the function of the management system, effective integration of the auxiliary management and control process of decision supporting provides the management system of integration function. Yet in the application of information management system in different fields, constructing structure as well as the construction model has some differences, and the main reason is that the characteristics of different fields are different to some extent^[3]. And according to this fact, the construction of management information system should make active research and development combining with the characteristics existing in different areas, so as to achieve the maximization of its service function. There are some differences between the rhythmic gymnastics training and other fields. It has higher requirements for the information measurement and management of athletes' physical quality and the each physical function, which can provide an objective basis for the coaches to make effective training plan. And on the aspect, other industry management information system can not used in the rhythmic gymnastics training. In the process of designing the system function, first a special design of the management information model should be made. And through its application for a long period of time, the function can be continuous optimized, and the main direction of the optimization is still in the information collection, input, storage and processing and maintenance, but fully embodying the specialty of rhythmic gymnastics training.

INVESTIGATION AND ANALYSES OF THE MANAGEMENT INFORMATION SYSTEM OF RHYTHMIC GYMNASTICS TRAINING

The analysis process is an important assurance of the system construction, as well as the basic condition of the system construction. And, the constructions of each information system are starting from the analysis as of the system, and there is no exception for management information system of rhythmic gymnastics training. And the specific process of analyzing the system is a specific investigation of the athletes and coaches and to effectively understand the relative roles. And effectively explore the applicable range and the function requirement of the system, clarifying the purposes of the data flow and the corresponding system, so a specific and scientific design scheme can be concluded. Logical investigation of system data is to analyze the data source and whereabouts, so that the data model can be effectively constructed.

Data sources

In the construction of rhythmic gymnastics training system, its main source of information is specifically provided by every role in the management process, and at the same times it also from the relevant training management information generating in the interaction between each links. The construction process of the management information system mainly sorts and makes statistic of the relatively important information data. And the main statistical methods is to make detailed statistics and references of a large number of literature, and determine information data combining with the corresponding event process^[4]. These sources of information include athletes' stage test data and training plan, and basic personal information and so on. The source and destination of the data and division of system roles are shown TABLE 1.

Logic model of system data

In the construction process of the system, the logic of the data can be displayed visually in the form of the data flow diagram. The data flow diagram mainly can clearly show the data treatment process and data flow, so that every data nodes can form a unified entity together, and show the internal relation mechanisms of each main body in the system.

TABLE 1 : Sources and destinations of the information data

	Basic information of the users	Sports team establishment	Training plan	Training summary	Stage test plan
Chief coach	√o	√o	√o	√o	√o
Coaches	√o	o	√o	√o	o
Athletes	√o	o	o	√o	o
Research group	√o	o	o	o	
Managers	o	o	o	o	o
	Stage test results	Competition plan	Competition results	Data index of scientific research	
Chief coach	√o	√o	√o	o	
Coaches	√o	o	√o	o	
Athletes		o	o		
Research group	o			√o	
Managers	o	√o	√o	o	

From the point of view of the management process, the divisions of system data can be carried out combining Figure 3, during which each node data will be stored while receiving corresponding processing. In this way, the data storage figure can be omitted. The flow graph of system data is shown as Figure 3.

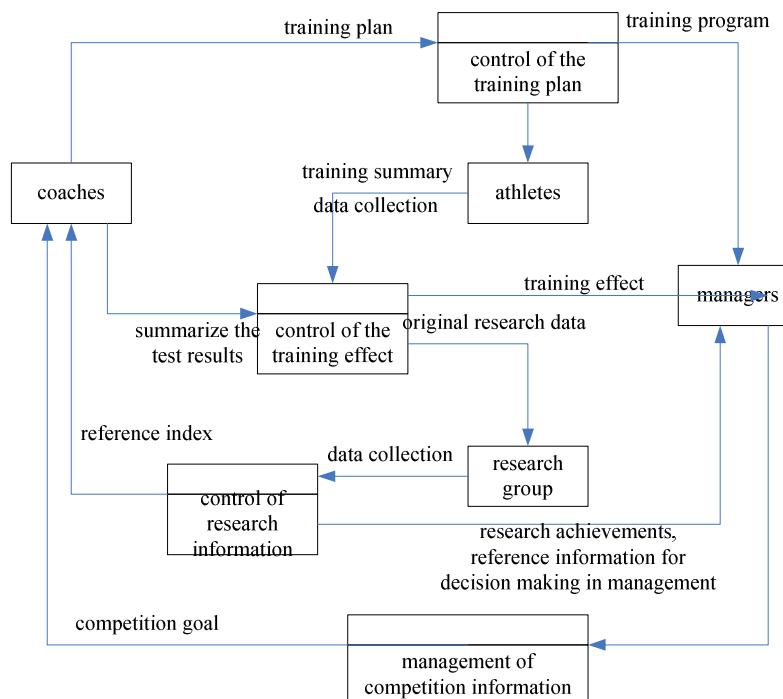


Figure 3 : The flow graph of system data

DESIGN OF THE INFORMATION MANAGEMENT SYSTEM OF RHYTHMIC GYMNASTICS TRAINING

The design of rhythmic gymnastics training system mainly includes the specific objectives of the design, the system structure, the construction of the corresponding network platform, the database design, functional design and design of system basic interface, and some other aspects. And the specific design scheme should be the specific standard of the development and the detection of the system.

The design of the system structure

Through the large number of demanding analysis and the verification and accumulation of corresponding theories, the construction of management information system of rhythmic gymnastics training is divided into six important modules. These six modules are respectively management module of the users, management module of specific training plan,

management module of real-time training results, management module of competition information, management module of project research and management module of the training team^[5]. The specific module architecture is shown in Figure 4.

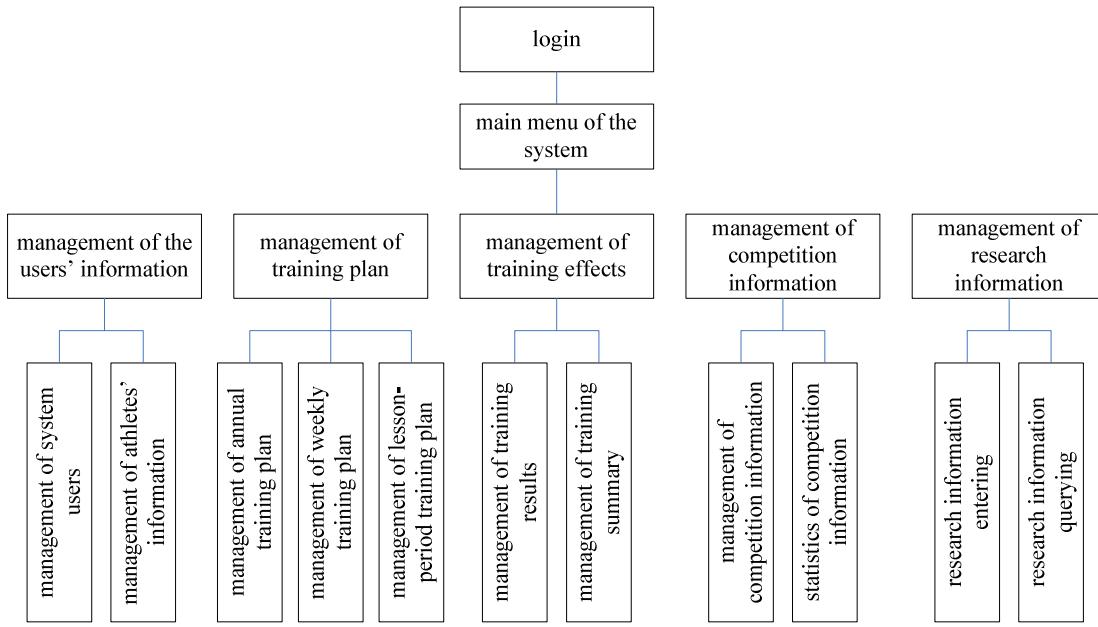


Figure 4 : Framework of the management information system of rhythmic gymnastics training

Design of the system platform

This construction process of the management information system is a comprehensive management system facing with multi users. And it makes higher requirements for the managing quality and real-time performance of each link, so the constructing process should take the network information system as the basis constructing platform. Method for constructing network platform is to use the distributed processing and centralized management system, and its corresponding part is client / server architecture. And, the storage form of this system software is stored in the server and the corresponding client^[6]. And for the customer, the function of the system is mainly reflected in the database and data query. After different users enter into the interface, these two functions can be displayed. As the function of server, it is mainly manifested in the storage of large amounts of data and sharing of the management data. The intrinsic connections existing between these two can described as response and request. The feedback of management information can effectively made according to the network data processing results, and the concrete structure figure is shown in Figure 5.

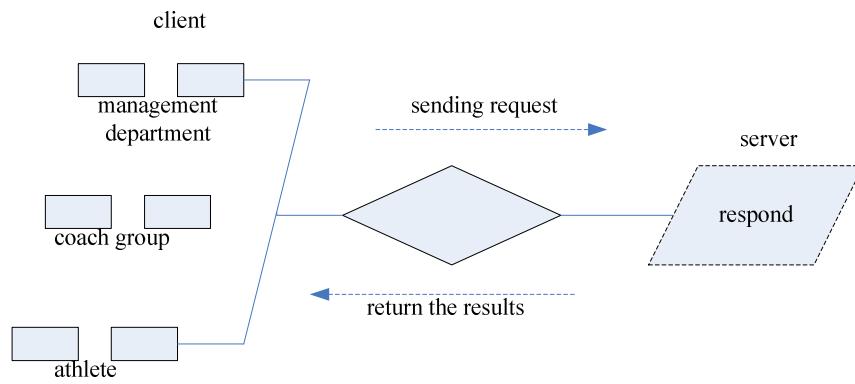


Figure 5 : Diagrammatic sketch of C/S platform

DESIGN OF THE DATABASE

The main elements of this management system are composed of users' interface and the corresponding background database. And users' interface is composed of service interface and the corresponding navigation interface, and the background database is the specific process of collection, collation and analysis of the data. In the running process of the whole system, the large amount of data needs to be timely and effective consolidation and analyzed, and the background database needs to make effective storage and system analysis of these data, so that the data can effectively reflect the specific

situation of rhythmic gymnastics training. From this aspect, the importance of the rationality of database design for management information system can be reflected.

During designing the database of management information system of rhythmic gymnastics training, take the relationship model of database of Microsoft server as the basis to establish the relatively database model. The so-called relationship database is a kind of database which makes effective organization of the data list and the recorded text information in the form of data. And the stored procedure is stored in the form of a table, and the existing relationship among these tables will be effectively analyzed^[7]. In this process, the fundamental premise is to carry out the investigation and the analysis of the system demand, which can clear the main demand direction of different roles for system information data. And according to the overall results of the investigation of the corresponding system data logic, make analysis and design of the concept construction of the database of management information system of the rhythmic gymnastics and the relevant logic analysis. In the structured query language, build a corresponding database of RG training management information system.

CONCLUSION

The above content is the related research and discussion on construction of management information system of rhythmic gymnastics training based on modern information technology. The research focuses on the theoretical basis and the design of management information system of rhythmic gymnastics. At the same time, the discussion on the design concepts of the database and corresponding design thought provide a strong theoretical basis and model basis for the construction of the system. And it is expected that this research can produce positive effect and impact on the further study and discussion.

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