Risk Management of Community Sports Based on AI Technology

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Abstract. With the progress of the times, China's economy, politics and culture are developing rapidly. Today's sports life is rich and colorful. People gradually realize that sports activities play a positive role in people's health. Therefore, with the development of mass sports healthy lifestyle and AI technology, sports community risk management has become increasingly important. The purpose of this paper is to study the risk management of sports community based on AI technology. This paper uses the related technologies of emergency virtual scene construction, including three-dimensional terrain visualization technology based on Terra Vista and global mapper software, and static object simulation modeling technology based on creator software. This paper puts forward the method of list sort, risk matrix, Pareto analysis and mathematical statistics. This paper discusses and deeply analyzes the related concepts of risk management in sports community and puts forward solutions. Finally, it adopts a variety of forms of expression, and presents its trend chart intuitively to users. The experimental study shows that human and site factors account for about 20% of the risk factors, and social factors account for the least, accounting for 6.56%. The severity index of self action completion and management efficiency reached 4.62 and 4.84 respectively. The maximum probability index of the impact of management efficiency on the occurrence of accidents reached 4.57.

Keywords: AI Technology, Sports Community, Risk Management, Emergencies

1. Introduction

With the rapid development of national fitness cause in China, sports community, as a place for various gatherings and large-scale activities, has dense personnel and complex environment. It is easy to have all kinds of sudden crisis events that affect the normal operation and bring serious negative effects. The occurrence of these events has caused different degrees of harm to the relevant communities and specific parties. The essence of risk management theory is to minimize the risk loss by establishing risk management system, which has strong guiding significance for practical work. On this basis, this paper combines the management of the community with the theory of risk management, and puts forward suggestions to strengthen the risk management and prevention of sports community operation. The risk management of sports community has become increasingly prominent [1-3].
In the research of sports community risk management based on AI technology, many scholars have carried out research on it and achieved good results. For example, Sutton I proposed the discipline of risk management science. Risk management as a systematic science was produced in European countries in the 20th century, especially in the United States during this period. In the 1930s, risk management has not yet formed a systematic theoretical system, the main germination and development period are in the insurance sector, rarely involved in other industries, development has limitations. Kananen I et al. Used FDS, 3DMAX, VRML, Java and other tools to reproduce the process of community fire occurrence, spread and emergency response. For the reproduction of community fire, the dynamic development process of fire demonstrated by smokeview is transformed into the form of pictures by using FDS image capture function, and the captured pictures are transformed into animation by using animation software platypus animator, namely *. Jif form. This technology can reproduce the smoke spreading effect dynamically and scientifically [4-6].

In this paper, through the literature collection to understand the development of risk management and sports risk management at home and abroad, comparative analysis of the domestic and foreign community sports facilities safety and service system, and then through the questionnaire survey and collection, interviews with experts and survey objects and other methods, to understand the current situation of China's community sports development, community sports facilities safety services, etc., to find out the community. This paper puts forward reasonable and scientific suggestions for the improvement of the deficiencies and risk problems in these survey results, aiming at preventing and reducing the risk accidents in community sports activities and minimizing the losses [7].

2. Risk Management of Sports Community Based on AI Technology

2.1. Design of Risk Management Mode Based on AI
(1) Establish a comprehensive risk management factor
With the advent of data age, risk management + technology is the next outlet for the rapid development of trust industry. It is an important part of risk management planning to comprehensively launch the intelligent risk control project and further consolidate the risk management ability, which brings infinite possibilities for the company in the future. In order to meet the requirements of future risk management and take preventive measures as soon as possible, the managers and executors of sports institutions need to re-examine the risk characteristics of community sports in complex environment, combine traditional and emerging measurement methods, adopt new technologies and strengthen risk prevention mechanism, so as to meet the requirements of future risk management, take preventive measures as soon as possible, and reduce the risk cost of expected and unexpected losses.

(2) AI model implementation process
Risk factors are designed and sorted out. Risk control lines summarize business experience, sort out and abstract risk factors, and determine the processing rules and cross checking relationship of each factor. Determine the source of risk factor data, explore the source of factor data, and check the availability and availability of data. Data cleaning processing, data collection, denoising, complement and processing integration. Factor analysis and sample labeling, design new derived factors and improve the model for business scenarios. Label samples for model training and optimization. Modeling and iteration, respectively try machine learning algorithm, this iteration, parameter optimization. Model application scheme, clear model output, develop business application process. Sample accumulation, continuous model interaction and optimization [8].

2.2. Management Factor Risk Handling Strategy
(1) Risk management strategies of community management factors
The task of community management of participating in sports activities is to create a healthy, comfortable and safe environment for sports activities. For bodybuilders, the community environment is a "big family" environment. Therefore, the prevention of risks in community sports management should be implemented in place. Community management should strengthen the education of
scientific exercise, safety protection and other knowledge, enhance the awareness of sports safety of bodybuilders; reasonably plan the distribution structure of sports venues and equipment, stipulate the exercise time and site utilization to prevent some unnecessary conflicts and disputes; the community management affairs also include the employment and management system of coaches, and the evaluation results also show that the management system is not It is necessary to select coaches and social sports instructors strictly to ensure scientific and safe exercise [9].

(2) Coach management risk management strategy

For the scientificity and safety of the participants, the professionalism of the coaches is directly related to it. Therefore, coaches should strengthen the training of professional skills and safety knowledge to improve their professional quality; at the same time, effective management and supervision should be taken to ensure the quality of their work and service. Through the investigation and on-the-spot interview, it is found that the body builders lack the guidance of professional coaches, most of them don't know the correct participation process of sports activities, and the safety awareness in exercise is relatively weak. Therefore, in the aspect of coach management, the relevant national and local management departments should pay more attention to increase the encouragement of coaches and social sports instructors to input into the community So that the fitness group can exercise more safely and scientifically [10].

2.3. Risk Treatment Strategies and Methods

(1) Pareto analysis

The main function of Pareto analysis is that it can sort the importance of all the relevant factors in a certain thing in primary and secondary order, and determine a few of the main factors that play a key role and most of the factors with less influence by descending order. Through the use of Pareto analysis method to sort out the data, we can more intuitively and truly determine the main risk factors that affect the participation in community sports activities, and provide theoretical basis for the formulation of risk response measures for participating in community sports activities.

(2) Extended model of Simulation Organization

The extended model of simulation organization based on structure meaning focuses on the representation of organization structure in simulation. The traditional organization model can be described using graph theory.

Organization structure

\[ \text{org-str} = \text{set-of-AgentM}, \text{set-of-Socialtie} \]

(1)

The social relationship in the organizational structure is defined as set_Of_ The set of binary relations on agentmis.

\[ \text{SocialTie} \in \text{set-of-AgentM} \times \text{set-of-AgentM} \]

(2)

Extended model of simulation organization based on structural meaning

\[ M_{\text{sim-ext-orgstr}} = \text{TB, Env}_{\text{ta}}, \text{GS}_{\text{M}}, \text{Agent}_{\text{M-ORGEXT,ta}}, \text{Init}_{\text{M}}, \text{Cond}_{\text{M}} \]

(3)

As the attribute definition of agent, social ties contains the list of "neighbor" agents and the data structure described by the corresponding association patterns, that is, social ties is equal to list neighbours and social tiepattern.

3. Experimental Research on Risk Management of Sports Community Based on AI Technology

3.1. Test Purpose
This paper is mainly to guide and create a good atmosphere to participate in sports activities, so that we can exercise more safely and scientifically. This paper puts forward corresponding countermeasures and suggestions for the development of community sports safety construction, which is conducive to the improvement and development of community sports construction, and has certain research value for optimizing the national community sports safety construction.

3.2. Test Process
This paper first uses the Pareto analysis method to get the main risk factors (type a factors): iiiia1 personal factor; B1 site factor; B2 equipment factor; A3 community management personnel factor; C1 community management factor. A1 includes 16 factors such as "poor self-protection ability" and "lack of sports attempt and safety knowledge"; B1 includes 3 factors such as "untimely site maintenance"; B2 includes 5 factors such as "improper equipment maintenance management"; A3 includes 5 factors such as "managers' inaction" and "managers do not understand the work content"; C1 includes six factors, such as "the implementation of community safety publicity is not in place", "the regular inspection of sports venues and equipment is not standardized and timely". Then the specific application of AI technology is investigated and analyzed, and suggestions are provided.

3.3. Experimental Data Sources
(1) Data collection. According to the analysis object and content, the specific risk factors of people, coaches, management and environment involved in community sports activities were determined, and the relevant data were collected by issuing questionnaires to the selected population.

(2) Data processing. Data processing refers to the processing and sorting of the collected survey data. The content of data processing mainly includes the calculation of the corresponding value of each risk factor, the descending order of the numerical value, the sum of all the values, the calculation of the percentage of each value in the total value, and the calculation of the cumulative percentage.

(3) Establish Pareto analysis table. According to the classification standard of Pareto analysis, all risk factors in community sports activities are classified into a table, and Pareto analysis chart is drawn.

4. Experimental Sports Community Risk Management Based on AI Technology

4.1. Types of Community Sports Risk Based on AI Technology
Through the statistical processing of risk factors data of fitness people participating in community sports activities, using Pareto analysis method, the risk assessment results of fitness people participating in community sports activities are obtained. The specific situation is shown in Table 1.

| Factor categories         | frequency | percentage |
|---------------------------|-----------|------------|
| Personal factors          | 48        | 20.84      |
| Site factors              | 47        | 20.66      |
| Equipment factor          | 34        | 14.8       |
| Factors of community managers | 31       | 13.63      |
| Factors of social environment | 15      | 6.56       |
Figure 1. Statistical table of risk factors of participating in community sports activities

The above analysis mainly uses the Pareto analysis method to rank the overall risk factors of participating in community sports activities, which is conducive to distinguish the primary and secondary contradictions and formulate more reasonable coping strategies for risk factors. In addition to the Pareto method, the list sorting method and risk matrix diagram method are used to intuitively study and analyze the specific risk items of each risk factor. According to figure 2, we can find that the personal and site factors account for about 20% of the risk factors respectively, and the social factors account for the least, accounting for 6.56%.

4.2. Risk Prevention Methods of Community Sports Based on AI Technology

For many risks, we can avoid them through some preventive measures, environmental factors can be protected by improving equipment, venues and professional coaches, and their own factors can be prevented in some simple and effective ways. The results are shown in Table 2.

Table 2. Preventive measures

| Preventive measure                      | Probability mean | Mean severity |
|-----------------------------------------|------------------|--------------|
| Dress correctly                         | 1.39             | 1.37         |
| Attention is focused during exercise    | 1.84             | 3.32         |
| Exercise as required                    | 2.15             | 3.96         |
| Technical action specification          | 4.13             | 4.62         |
| High efficiency of management           | 4.57             | 4.38         |
According to the results of Figure 2, the data results of the evaluation of the human factors of fitness people participating in community sports activities can make the mean value of the probability and the mean value of the severity of each risk form a two-dimensional value, and then locate in the risk matrix, so as to draw the human factors of community sports, the coach factors and the community administrator factors, and then according to the drawn risk matrix, analyze all kinds of risk factors Classification of risk factors. The results show that the efficiency of managers determines the quality of risk prevention. The severity index of self action completion and management efficiency reached 4.62 and 4.84 respectively. The maximum probability index of the impact of management efficiency on the occurrence of accidents reached 4.57.

5. Conclusions
This paper discusses the application of virtual reality technology in emergency management system, and studies the technology of building emergency management system. According to the risk matrix diagram, the priority of risk factors of fitness participants in community sports shows that the evaluation results mainly focus on the high priority and preparation area, and improve the overall quality of managers. We find that risk prevention and control are the main factors, while risk transfer and risk avoidance are taken into account. We should constantly enhance the awareness of safety, risk protection and risk transfer in physical exercise. While learning the knowledge of safety prevention, we should transfer the loss by insurance. We should follow the principle of capacity and learn to protect ourselves.

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