Park fitness facility design study

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Abstract

With the rapid evolution of the society, people bear an increasing double pressure in the busy work and life, so the importance of healthy life is becoming more and more prominent. In this context, park fitness facilities have become a popular choice for outdoor fitness with their convenience. However, at present, the fitness facilities in the park have not fully meet the fitness needs of the general public. Given this situation, it is particularly important to explore the design study of park fitness facilities. This paper presents a new idea for the design of fitness facilities in urban parks based on ergonomic theory. First of all, we will sort out the relevant concepts of park fitness facilities, and have a deep understanding of the research status, content and importance of fitness facilities in urban parks. Next, we will combine the qualitative and quantitative survey methods to conduct a comprehensive and in-depth investigation and analysis of the fitness facilities in the park, in order to clarify the problems existing in the current fitness equipment and fitness environment. On this basis, we will clarify the design content and method, apply the ergonomic theory to the design of park fitness facilities, analyze the influence of people, objects and environment on the design, and put forward design strategies to alleviate the contradiction between fitness demand and facility supply.

Keywords

Fitness facilities; park; ergonomics.

1. Introduction

1.1. Research background and significance

1.1.1. Research Background

In recent years, the acceleration of health awareness and life pace makes people more and more eager for physical exercise and leisure fitness. Park, as a green space for urban life, not only beautifies the environment, but also becomes an important place for citizens to exercise. However, the perfection of the fitness facilities in the park directly affects the fitness experience of the citizens. With the acceleration of urbanization, how to reasonably plan fitness facilities in the limited space to meet the needs of different groups of people has become a challenge. At the same time, the public requirements for the functionality, comfort and safety of the facilities are increasingly improved, requiring designers to take into account the coordination between the facilities and the environment in the design. With the promotion of the healthy China strategy, as the important part of national fitness, the design of park fitness facilities has attracted much attention. How to improve the use efficiency through scientific design and promote the public to participate in physical exercise has become the focus of current research.

1.1.2. Study Significance

With people's attention to healthy life, the need for fitness is increasingly diversified. However, at present, the fitness facilities in the park are still unable to fully meet the fitness needs of the public, and various problems and challenges emerge in an endless stream. These problems not

only limit the public's enthusiasm to participate in physical exercise, but also aggravate the imbalance and insufficiency between the fitness demand and the supply of facilities, forming a distinct contradiction. Therefore, it is very important to explore the design study of park fitness facilities.

Although some progress has been made in the research of park fitness facilities at home and abroad, most studies have not been able to comprehensively and systematically examine its design, which has some limitations. Therefore, this paper aims to summarize and analyze the relevant theories and experiences at home and abroad, so as to explore the design strategies of park fitness facilities that are more in line with China's national conditions, so as to provide useful guidance for improving and optimizing the park fitness facilities. This study not only has theoretical value for the design of the fitness facilities in parks in China, but also has great significance in improving the overall quality of the parks and meeting people's fitness needs. As an indispensable part of the park, the design quality of fitness facilities is directly related to the overall quality of the park and the fitness satisfaction of the citizens. Through the specific case study of Chengdu People's Park, we can not only deeply understand the problems existing in the fitness facilities in the park, and put forward the design and improvement plan accordingly, but also provide valuable reference experience for other parks, and promote the general improvement of the fitness facilities in the park.

1.2. Literature review

1.2.1. Status of foreign studies

In 1986, the first International Conference on Health Promotion, held in Ottawa marked the rise of health campaigns worldwide. Since 2001, the United States has attached great importance to the construction of public sports facilities, and has established the standards for public fitness facilities through legislation, and set up special funds to gradually build special fitness facilities in many communities. In 2013, data released by the German Olympic Sports Federation showed that Germany has more than 200,000 fitness facilities, extensive and large number. The construction of these foreign fitness facilities is mainly led by the government, through the formulation of policies, investment funds, overall planning, and the coordination of the design department, the implementation department and experts.

Foreign scholars have made in-depth research on human behavior and ideas in urban outdoor space. American scholar Albert JR in its 1981 avisualapproachtoparkdesignThe book points out that the design of parks should be people-oriented, fully considering the law and structure of human behavior.Marcus C. C in Peopleplaces: design guidelines for urban open space in 1997In the book, the planning and design of urban outdoor public space such as squares, parks, campuses and residential areas are discussed by analyzing the behaviors of users and combining with specific cases. In addition, the OutdoorFitnessEquipment in Urban ParksThe book describes in detail the functions, benefits and suggestions for improvement of fitness facilities in urban parks.

1.2.2. Status of domestic research

In China, many scholars have paid great attention to the overall planning and management of fitness facilities in urban parks. For example, Zhang Xinming's team from the Tianjin Product Quality Supervision and Testing Technology Research InstituteThe current situation of the standard of outdoor fitness facilities is discussed deeply, and the current standard of general safety requirements for outdoor fitness equipment is analyzed in detail. Sun Chenglin et alAccording to the current situation of public sports facilities in different regions of China, some suggestions on setting the site type, standard and coverage rate are put forward. Liu linxingThe management strategy of "multiple plans in one" is put forward, which emphasizes the coordinated operation of the government, the society and the market to solve the management problems of grass-roots sports organizations. And Zhou LifengWith the help of the Internet of

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Things and big data technology, the construction of sports equipment daily use management system, fault repair mechanism, cloud data and management platform, user APP and other software systems, is proposed to promote the rapid development of the sports industry.

In the design of fitness facilities, Luo JiaoIt advocates the application of the concept of "sharing economy" to the national fitness, and promotes the development of the "shared sports" mode. Li Chen et alBased on the layout of fitness facilities in Shanghai, we found a close connection between the urban population density and the spatial layout of public fitness facilities.

Ma Guangtao and MAO Chen in the article "Analysis of the Design Principles of Outdoor Fitness Equipment", Based on the users of outdoor fitness facilities and their characteristics, the design principles, such as safety, versatility, comfort, unity and maintenance, are elaborated in detail. Dong Ya and Yuan RuiboIn particular, the intelligent transformation scheme of outdoor fitness facilities is designed for the elderly group, such as the introduction of constant temperature system, gravity induction device and timing device. Li Shuyan and others designed protective devices for the walking machine and added fluorescent warning stripes to ensure the safety of using it at night.

It can be seen from the above studies that despite the development of park fitness facilities in China, there are still many deficiencies and the whole is still in the exploratory stage. Compared with foreign countries, the problem of fitness facilities in Chinese parks is often ignored, which to some extent limits the enthusiasm of the public to participate in physical exercise. Therefore, in the process of promoting the development of public sports services, we need to actively learn from the advanced experience of foreign countries to accelerate the development process of park fitness facilities in China.

1.3. **Study Methods**

Literature research method. In order to deeply understand the design theory and practice of park fitness facilities, we extensively use books, electronic databases and other resources to conduct targeted search and collation of relevant studies of experts and scholars at home and abroad. Through the careful combing and analysis of relevant monographs, articles and patents, we have obtained rich academic views and unique perspectives, and these insights provide valuable inspiration for us to explore the design theory and methods of park fitness facilities in line with China's national conditions.

survey method. In order to obtain real, first-hand information on park fitness facilities, we used a variety of survey methods. Through the questionnaire survey, we collected a lot of feedback about the use of park fitness facilities; the observation rules enable us to intuitively understand the performance of fitness facilities in actual use; and the user interview rules enable us to deeply understand the real needs and feelings of users. These survey methods provide us with the most direct and comprehensive information, help us to identify the advantages and existing problems of fitness facilities, and lay a solid foundation for further design and research.

Individual case analysis method. In theoretical research and project practice, we pay special attention to combining theory with practice. Through the individual case analysis of the fitness facilities in specific urban parks, we conducted in-depth investigation and research based on the actual situation. This approach not only enables us to better understand the practical application of theoretical knowledge, but also to provide more concrete and practical guidance for our design work.

2. Related concepts and theoretical basis

2.1. Related concepts

2.1.1. Park

Park, as an important part of the urban green space system, is an open public space, aiming to provide citizens with various services such as leisure, entertainment, sports and cultural exchange. With the rapid development of urbanization today, parks are not only an important symbol of urban greening, but also an indispensable part of citizens' life.

From a functional point of view, the main function of the park is to provide public space and green space resources, and to provide a place for citizens to get close to nature and enjoy leisure and sports. The park has a variety of facilities, including footpaths, squares, lawns, flower beds, water bodies, etc. These facilities together constitute a comfortable and pleasant environment to meet the diverse needs of the citizens.

2.1.2. Fitness facilities

The introduction of the term fitness facility is designed to make up for the limitations of terms such as fitness equipment, sports equipment and training equipment. At present, there is no exact unified definition of fitness facilities, but it literally refers to all kinds of facilities and related equipment set up to meet the fitness needs. Standard "public sports facilities" clear, outdoor fitness facilities refer to the outdoor equipment, for people to carry out fitness activities. The Shanghai Municipal Measures for the Management of Sports Facilities further subdivide sports facilities into public, school and business categories, which cover buildings, activity venues and related equipment. In particular, the fitness facilities in urban parks discussed in this paper are an important form of public sports facilities.

In a broad sense, fitness facilities include not only fitness equipment, but also cover fitness venues and their ancillary facilities. No product can exist independently from the existing environment. Therefore, this paper considers the fitness equipment, and also considers the fitness venue and its affiliated facilities in the context of the park environment.

2.2. Theoretical basis

2.2.1. Ergonomic theory

Ergonomics (Ergonomics, Human Factors), as a comprehensive interdisciplinary subject, integrates anatomy, physiology and psychology, its core is to study the interaction between man, machine and the environment. In a broad sense, ergonomics constructs a system model of "human-machine-environment".

During the design process, ergonomics provides the data of the human body structure and functional dimensions, sets parameters and requirements for the display device and the shape and color of the control device, and also provides guidance for the comfort and safety of the environment. People, things, and the environment are interwoven and inseparable in this system. Therefore, in a "human-machine-environment" system, any one element is crucial, and their interaction determines the overall effectiveness of the system. This requires us to fully consider the mutual influence and relationship between man-machine, man-environment and machine-environment in the design.

2.2.2. Humanized design theory

As early as in ancient Rome, the concept of "man is the measure of all things" has been formed, which is the early exploration of the value of human nature. In the later Renaissance period, the philosophy of "people-oriented" once again emphasized the core position of human nature in the society and culture. Humanized design, as a design philosophy, unlike functionalism, transcends the boundaries of race and gender and focuses on human behavior and emotions. Given that the park is a leisure space shared by urban residents, the related design should

naturally adhere to the concept of humanized design. Humanized design emphasizes that in the design process, people's physical and psychological needs should be deeply considered to ensure that the design can meet people's behavior habits and thinking mode to the maximum extent. In the product design, this concept is embodied in the product shape, color and material selection. Similarly, in the design of the park fitness facilities, we also need to consider the humanized factors of its shape, color and materials.

2.2.3. Lerarchy of needs theory

In 1943, Maslow put forward the famous hierarchy of needs theory, which divided people's needs into five levels from basic to ideal: physiological needs, safety needs, social needs, respect needs and self-actualization needs. The first four needs are the basis for survival, while self-realization needs, although not necessary for survival, are crucial for individuals to adapt to society. Individuals pursue higher needs only after lower levels are met.

Therefore, in the design of park fitness facilities, we should first meet people's physiological needs and provide a comfortable environment; second, ensure the safety of fitness equipment and park environment, to meet the safety needs; again, meet people's social needs through perfect ancillary facilities. Only in this way can individual respect needs and self-actualization needs be realized in the park.

3. Park fitness facilities

3.1. Design objectives

1. Comfort design

Comfort means the carefree and comfortable feeling that the individual experiences in a specific environment, which covers the multiple dimensions of physiology, psychology, and environment. In the design of public space facilities, we should fully consider the needs of most people, and implement the universal design concept. For example, in parks, the needs of different ages can be met by establishing diversified fitness facilities. The color and material selection of fitness equipment should comprehensively balance the overall beauty and functional practicality to optimize the user's comfortable experience. In addition, additional supporting facilities, such as toilets and shopping points, can significantly improve the comfort of the park. At the same time, regular maintenance of fitness facilities is as critical to ensure their durability and continuous comfort to the user.

2. Safety guarantee

Safety is an important prerequisite for ensuring that individuals are protected from harm, threat or insecurity in the environment. For the park fitness facilities, the first thing is to ensure that the fitness equipment meets the national standards, and its basic safety requirements, installation and acceptance management should strictly follow the national, industrial and local standards. In addition, we should make full use of the safety tips on the product marks to improve the safety of use. Considering the high proportion of elderly people in the park gym, it is particularly important to add medical facilities such as AED (automatic external defibrillators) and first aid kits. These measures can provide timely medical assistance in emergency situations and ensure the safety of bodybuilders.

3. Improve the high efficiency

High performance refers to the ability to perform the same or more tasks in the same or less time, while ensuring consistency or optimization of effects. In the design of the park fitness facilities, we can improve the efficiency by optimizing the design of the fitness equipment and the layout of the park environment. Reasonable equipment design can ensure that the best exercise results, and a good environment layout can help improve the fitness experience. In addition, by strengthening intelligent management, such as installing cameras for real-time

monitoring, we can ensure the efficiency of operation and maintenance of the park, so as to further improve the use experience of builders. At the same time, provide clear and easy to understand the use instructions and signs of fitness equipment, help bodybuilders to correctly operate the equipment, to achieve efficient fitness.

3.2. Design factors of park fitness facilities

3.2.1. Fitness person -- human factors

In fitness activities, in order to ensure that people have enough exercise space, the design of fitness facilities must be closely fit to the functional size of the human body, and its scale should be matched with the actual size of the population. Since the city park fitness facilities are designed to serve the general public, they should be designed to meet the needs of the majority of people.

Fitness facilities are used in various positions, including standing, sitting and standing, etc., and the space size required for each posture is different. Therefore, in the design of the product logo, the visual characteristics of the human eye, such as visual distance, visual field, should be fully considered to ensure the visibility and readability of the logo.

3.2.2. Factors of fitness equipment -- objects

The shape, color, material and size and other factors of fitness equipment should meet the needs of human physiology and psychology, to ensure the balance between beauty and practicality.

As an important mark of fitness equipment, the product mark should be firmly fixed on the equipment, with a prominent position and a durable material. The contents of the logo shall include key information such as product name, model, manufacturer information, supervision telephone, installation date, implementation standard number, service life, safety warning, movement function description, maximum load and upper limit of the number of users.

From a visual point of view, the shape, color and materials of fitness equipment should convey the impression of safety and reliability. Equipment should be strong and durable, to avoid the appearance of sharp edges and corners, in line with the basic principle of formal beauty. In terms of color selection, the environmental tone of the urban park should be combined, and the thick and stable color should be adopted to enhance the sense of security of users.

3.2.3. Environmental factors of the Park

In the selection of materials, priority should be given to flame retardant materials, rotating equipment should avoid using plastic materials, and the holding position should be designed with non-skid texture. In addition, the ground pavement is also a part in the design of fitness facilities. At present, the ground pavement under many park fitness facilities is mostly made of hard materials, such as cement, which cannot meet the needs of fitness activities, and may cause safety risks. Therefore, it is recommended to use materials with buffering properties, such as plastics, to improve ground safety.

Natural environmental factors such as sunlight, wind and rain, and water flow should also be considered in the design process. The materials of the fitness facilities should have heat resistance and corrosion resistance to ensure that they can be used safely in various climatic conditions. At the same time, in order to improve the user experience, shade and shelter should be set around the fitness facilities to avoid the impact of sun and strong wind. Appropriate water landscape setting can also increase the pleasure of fitness and improve the overall comfort.

Finally, improving ancillary facilities is equally important to enhance the fitness experience. According to the "Park Design Code" (GB51192-2016) and the actual needs of people, the necessary ancillary facilities include rest seats, parking places, signs, garbage bins, garden lights

and toilets, etc. The reasonable allocation of these facilities will create a more convenient and comfortable fitness environment for users.

3.3. Design strategy of park fitness facilities

Combined with the above contents, the design strategy of park fitness facilities is put forward: design easy to understand fitness equipment product logo, promote multi-functional modular fitness equipment, plan the layout of fitness facilities according to local conditions, and build a complete and safe city park.

3.3.1. Design easy to understand fitness equipment product logo

The product logo on the fitness equipment is the primary information source for users to contact the fitness facilities. Under the premise of following the standards, we should ensure that the design of the logo is intuitive and easy to understand, so that users can quickly understand the use and function of the equipment, so as to improve the efficiency of fitness activities. The interface design should consider the body size parameters, such as height and eye height, to ensure the readability and use of information. The material of the logo should be durable and reliable, the position is obvious, do not affect the appearance of the equipment, while improving the overall safety.

3.3.2. Promote multi-functional and modular fitness equipment

In view of the current shortage of park fitness facilities, single category, we recommend the introduction of multi-functional, modular fitness equipment. Through the combination of different functional modules, this equipment can meet the fitness needs of different groups of people and effectively solve the number of equipment caused by the size of the site. At the same time, the modular design is convenient for maintenance and replacement, improving the practicality and economy of the equipment.

3.3.3. Planning the layout of fitness facilities according to local conditions

The motor function of the human body, like people's cognitive ability, requires a process of gradual adaptation. Usually, we start with simple movements and gradually increase the difficulty and exercise volume to adapt to the development of the body. If you choose too many or too complex exercises in the initial stage, it may lead to muscle tension, cramps and other discomfort, because the muscles have not yet adapted to the corresponding force mode. Therefore, when planning the layout of fitness facilities in the park, people's exercise habits should be fully considered, preparatory activity areas should be reserved, and people should be guided to participate in exercise step by step.

In view of the park fitness equipment for the general public, its intensity design is mostly concentrated in the middle and low levels, and is affected by the user's exercise time, so there is not a fixed intensity standard.

At present, the construction of urban parks is mostly adapted to local conditions, and fitness facilities are combined with park green space. Some are included into the planning at the beginning of the design, while others are added later in response to the national call to promote fitness behavior. According to the theory of urban recreation, the fitness facility area can be divided into three types: block, ribbon and dot.

1. Block area:

This area is relatively concentrated, the site is complete, common in large parks such as comprehensive parks, sports parks, etc. Its advantage lies in the large area, concentrated, easy to carry out diversified fitness activities. When planning, areas can be divided according to the fitness function or intensity, and distinguished by the ground color or logo. At the same time, the distance between the fitness equipment should be greater than the free space size of the user.

2. Ribbon area:

Ribbon areas are usually built according to the terrain, common in parks along the river and coastal areas. The layout of fitness equipment in this area is limited by the terrain and shows a linear distribution. This layout is conducive to guide users from low intensity to high intensity scientific fitness process. At both ends of the linear layout can be installed, interspersed with different functions and intensity of equipment.

3. Dotate area:

Point-shaped areas are relatively scattered in space, and are common in small areas such as community parks. In such areas, representative and basic fitness equipment should be selected to ensure that the number is small but the functions vary.

When planning the fitness facility area, it is also necessary to consider the coordination with the park green space environment, and keep an appropriate distance with other areas to avoid mutual influence. At the same time, advocate the use of non-hardening sports ground, lay the plastic material with good friction and elasticity, ensure the safety of movement already, increase visual aesthetic feeling again.

3.3.4. Build urban parks with complete and safe facilities

As an important place for citizens 'leisure and entertainment, its perfect facilities are the basic guarantee to meet people's diversified needs and realize the functions of the park. According to the "Park Design Code" and the fitness needs of the public, the park should reasonably set up the necessary ancillary facilities, and consider to add other facilities according to the size of the park.

At present, although the public service facilities in the park are rich and diverse, people's safety needs are often ignored, which is an urgent need to be strengthened. Therefore, we specifically recommend adding the following safety facilities in the park:

1. Add cameras to achieve all-round monitoring. In view of the publicity and openness of the park, the installation of cameras can monitor the situation in the park in real time, effectively curb the uncivilized behaviors such as small advertisements and wall graffiti, and ensure the safety of bodybuilders to make the park management more efficient and orderly.

2. Equipped with medical equipment to ensure emergency treatment. According to the preliminary survey, the elderly have become the main users of the park fitness facilities. In view of the fragility of the elderly, necessary medical equipment, such as AED automatic external defibrillator and first aid kit, so as to provide timely assistance in emergency cases and ensure the life safety of bodybuilders.

In order to ensure the safety and reliability of the park fitness facilities, we suggest establishing and improving the facility management and maintenance system, and carrying out periodic inspection to ensure that the facilities are always in good condition. At the same time, the relevant units should strictly follow the standards of facilities management, timely maintenance and replacement of damaged fitness facilities, to provide a safe and comfortable fitness environment for the public.

4. Design examples of fitness facilities in the People's Park

4.1. Current situation of fitness facilities in the People's Park

The current fitness facilities in people's Park cover a variety of options, a total of 18 types, 32 equipment. Among them, there are 4 devices for upper limb exercise, 7,17, focusing on other parts of the body.

However, these fitness facilities have exposed the following problems during their actual use: 1, the use mode is not standard: some builders fail to use the equipment correctly, such as the waist walk or waist back extension for leg pressure, the walker posture is not correct standing.

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What is more worrying is that some equipment that is not suitable for juvenile use is still used by minors, with potential safety risks.

2, insufficient maintenance and management: the equipment is generally rusty phenomenon, some of the equipment is seriously damaged, affecting the normal use. At the same time, the ground cleaning work is not in place, there are advertising leaflets personnel interference.

3. Unbalanced functional configuration: In terms of quantity, the lower limb exercise equipment is significantly more abundant, which is unbalanced with the number of other functional equipment. In addition, the park lacks fitness facilities, designed specifically for minors.

4. Poor ground conditions: all fitness equipment are installed on the hard ground, some roads are paved with cement, become muddy after rain, children are easy to fall down when playing here.

5. Imperfect supporting facilities: the number of leisure seats in the park is insufficient, resulting in the occupation of some fitness equipment as seats, and even some people bring their own seats into the park. In addition, there is a lack of necessary security facilities.

Design of fitness facilities in the People's Park 4.2.

4.2.1. Mark design of fitness equipment products

In the design of fitness equipment product logo, scientific expression of information is very important. The design process first focuses on the sorting of information levels. By collecting and sorting out the information needed to be conveyed by the product, the information is effectively graded according to their importance and frequency of use. Then, with the skills of visual communication and design, we will present the information in an artistic and visual form.

For the information content of the fitness equipment product logo, we can clearly distinguish it into the core information and the basic information. Both types of information are indispensable to users, but the core information is more prominent in visual performance because it is directly related to the main functions and uses of the product. In terms of information elements, they mainly include text elements, graphic elements and color elements. The design of these elements should be closely related to human cognitive habits, so as to convey the information content more effectively.

The design and completed fitness equipment product logo consists of four parts. First, the clear labeling of the product name and its execution standard; second, the visual display of the exercise function and exercise method; followed by the detailed exercise function description, the exercise method description, and necessary warning content; finally, the name, detailed address, installation date, service life, maximum load, maximum number of users and supervision telephone.

The size of the logo is carefully set to be 240mm long and 150mm wide, which is close to the golden ratio, which not only has an aesthetic harmony, but also ensures the clear display of information. The outer frame of the logo adopts the rounded round chamfering design, which soft lines make people have a sense of intimacy and enhance the overall affinity of the product.

4.2.2. Design design of fitness equipment

For the styling design of fitness equipment, we will carefully adjust and optimize the previously designed product logo. Considering that the line of sight is usually horizontal, the current curved signs around the main column of fitness equipment lead to visual deformation of information and reduce readability. Therefore, we plan to change the surface logo to the flat form to ensure that the information on the product logo is more clear and readable.

In Scheme 1, we propose the design of using a single column bearing the main column. The main column is simple in shape and is in harmony with other supporting parts of the fitness equipment. The structural strength is strengthened at both the top and the bottom of the column. The product logo will be directly fixed on the main column, each main column can be

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placed on both sides of the logo according to the specific form of fitness equipment, convenient for fitness people from all angles to view.

Scheme two, we choose the design of double column bearing. The two columns are connected by a plate surface, which is both stable and practical. The upper and lower panels can be used to connect different types of fitness equipment, improving the compatibility of the equipment. The product logo will be placed on the board. Due to the large space on the board, the logo can be enlarged and displayed, and both sides can be placed, so that the gym can easily view the information in the process of use.

According to the number of fitness functions carried by the main column, we divide the fitness equipment into two categories: single (double) combined fitness equipment and combined fitness equipment. The single (double) combined fitness equipment has a single fitness function, which can be used by one or more people at the same time according to the actual situation; while the combined fitness equipment integrates two fitness functions, sharing the same main column, effectively saving space. This modular design is not only practical and economical, but also can quickly replace the fitness equipment and product logo when the fitness equipment needs to be repaired or replaced, which greatly reduces the maintenance time and cost and brings more convenient use experience for builders.

4.2.3. Layout planning of fitness facilities

When planning the fitness facilities in the People's Park, in view of its ribbon area characteristics, we will use a linear layout to put the fitness equipment. At both ends of the linear layout, we will set up low-intensity fitness equipment to gradually guide the user into the exercise state. In the middle of the linear layout, equipment with different fitness intensity and functions will be arranged to meet the needs of different people. At the same time, the ground will be laid with plastic materials, to provide a cushion effect, to ensure the safety of users.

In order to enrich children's activity experience, we will also create special children's activity facilities. The facilities will be designed to take into account the psychological characteristics of minors, focusing on games, focusing on aerobic and flexible exercise, supplemented by a moderate amount of strength exercise.

4.2.4. Planning of fitness ancillary facilities

In order to make the People's Park a well-equipped and safe city park, we will also strengthen the construction of its safety facilities. Specifically, we will take the following measures:

1. Add a camera system to realize real-time monitoring of the park. This not only helps managers to find problems in time, but also ensures the safety of bodybuilders. The camera will be cleverly set on the original garden lights, to avoid too many poles to affect the sense of space in the park.

2. Add additional medical equipment. Given that the elderly use fitness facilities in the park for a long time and the risk of disease onset increases with age, we will add medical equipment such as AED and first aid kits in crowded areas such as entertainment areas for the elderly. This will ensure that patients can receive timely assistance in emergency situations.

5. Summary, and outlook

With people's increasing attention to healthy life, park fitness facilities have become the first choice for people's fitness. Therefore, we will use ergonomics and related theories to comprehensively optimize the fitness facilities and environment in the park, aiming to improve the quality of the fitness facilities in the park and improve people's fitness satisfaction. From the discovery, analysis to the solution of problems, we are committed to improving the fitness facilities in the park to bring better fitness experience to the citizens.

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References

- [1] Island constitutional husband, Zhang Luzeng. The WHO Ottawa Charter on "Health Promotion" [J]. Health Education in China, 1990, (05): 35-37
- [2] VMICHAEL.New perspectives in sport for all–Sustainable facilities and public spaces as key success factors.proceedings of the 15th IOC World Conference On Sport For All [C].US:IEEE, 2013.
- [3] (Us) by Albert J. Ratlich, Wang Qiushi, translated by Gao Feng. Mass behavior and park design [M]. Beijing: China State Construction Industry Press, 1990.
- [4] Cooper Marcus Clare, Carolyn Francis.People places: design guidlines for urban open space [M].US: John Wiley & Sons, 1997.
- [5] Copeland Jennifer L, Currie Cheryl, Walker Ali, Mason Erin, Willoughby Taura, Amson Ashley.Outdoor Fitness Equipment in Urban Parks: Public Use, Perceived Benefit and Suggested Enhancements [M].US: Alberta Centre for Child, Family and Community Research, 2016.
- [6] Furber Susan, Pomroy Hayden, Grego Samantha, Tavener Smith Karen.People's experiences of using outdoor gym equipment in parks [J].Health promotion journal of Australia, 2014, 25(3): 211.
- [7] Thompson Catharine Ward.Activity, exercise and the planning and design of outdoor spaces [J].Journal of Environmental Psychology, 2013, (34): 79-96.
- [8] Zhang Xinming, Zhang Lihua, Sun Yundong. The standard status and prospect of outdoor fitness equipment [J]. Standardization in China, 2019, (08): 234-235.
- [9] Sun Chenglin, Gao Jian, Yang Yuan. Research on the Construction Standard of Basic Public Sports Facilities in China during the 13th Five-Year Plan period [J]. Journal of Chengdu Institute of Physical Education, 2017,43 (05): 20-26.
- [10] Liu linxing. Status and countermeasures of public fitness in Yellow River Delta [J]. Journal of Binzhou University, 2018,34 (03): 61-65.
- [11] Li-feng zhou. Application management of national outdoor fitness equipment based on the big data of the Internet of Things [J]. Journal of Shazhou Vocational Engineering College, 2019,22 (01): 16-20.
- [12] Luo Jiao. Research on national fitness development under the "sharing economy" boom [J]. Rural Economy and Science and Technology, 2018,29 (12): 262.
- [13] Li Chen, Dai Lei, Lin Shuwei, Lu Meilin, Li Xinyi. So otemporal differences in the layout of public sports facilities in Shanghai [J]. Journal of Shanghai University of Engineering Technology, 2019,33 (01): 72-79.
- [14] Ma Guangtao, Mao Chen. Analysis of the design principles of outdoor fitness equipment [J]. Science and Technology Economic Guide, 2014, (9): 37-38.
- [15] Dong Ya, Yuan Ruibo. Thoughts on the fitness facilities of the elderly in public places in the context of smart city [J]. Architecture and Culture, 2019, (09): 115-117.
- [16] Li Shuyan, Yan Bo, Ma Biao. Design of outdoor spacewalk [J]. Drama House, 2019, (27): 232-234.
- [17] Li Liudong, Tian Lin, Du Haonan, Liu Bo, Wang Jiahong. Experience and enlightenment of public sports Service construction in the United States, Germany and Great Britain [J]. Journal of Tianjin Institute of Physical Education, 2019, (06): 466-473 + 485.