



DESIGN GUIDELINES FOR OUTDOOR ACTIVITY SPACE OF RESIDENTIAL AREA FOR ELDERLY, BASED ON BEHAVIORAL CHARACTERISTICS

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ABSTRACT

The outdoor activity space of residential area is one of the most important activity places for the elderly, which should provide the suitable places for the old people's behaviors such as fitness, social intercourse and recreation. Taking the outdoor activity space for the elderly in residential areas of Jaipur as the research object, this paper refines the outdoor space design strategies of residential area which can meet the needs of the elderly and provides related theories on the basis of analyzing the behavioral characteristics and requirements of elderly people and investigating the present situation of outdoor spaces in residential areas.

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INTRODUCTION

The situation of aging has been increasingly grim since India entered the aging society at the end of the last century. The main plights faced by the elderly are the increase of the old age people, disabled elders and empty-nest elderly, as well as the lack of long-term care and spiritual care. In India, the residential outdoor activity space has an extraordinary significance for the elderly, who provides the important material basis for the various forms of activities of the elderly who are home-based cared, and it is the main space for the them to participate in outdoor communication, exercise, and positively spend their sunset life. Therefore, this paper takes Jaipur city as an example to carry out an investigation and analyzes and sums up the behavior characteristics and demand of the elderly in the outdoor activity space of residential district, and refines the design strategy on this basis, in order to provide a certain theory basis to adapt the planning and design of outdoor space of residential district for the elderly.

Analysis of Behavior Characteristics and Demands of the Elderly in the Outdoor Activity

Space of residential district

The primary reasons for using outdoor spaces are for social interaction and being near the activity of others. The occurrence of human behavior often comes from the reaction to the outside world or the response to some stimuluses. The human behavior and the environment effect on each other,

shape each other and they are inseparable [1]. As an important carrier of resident activities, residential outdoor activity space essentially belongs to human nature place, and its design must embody the "people-oriented" core. The human behavior and the environment effect on each other, shape each other and they are inseparable[1].

After the arrival of aging society, the residential outdoor activities space should timely adjust to adapt to changes of the population structure according to the behavior characteristics and demands of the elderly. *Therefore, the full understanding of the behavior characteristics and demands of the elderly is an important basis for the design to improve residential outdoor activity space.*

Analysis of Behavior Characteristics and Design Points of The elderly

The decrease of the physical power of the elderly results in the weakness of the ability of travel. Compared with other city public space, the residential outdoor activities space is more important for the elderly. Although the behavior customs are different for the crowd with different age, gender, education, and experience, but they totally present the similar characteristics of clustering, regional fixity and seasonal climate [2]. Therefore, the design of residential outdoor activity space of the elderly should specifically divide the activity content of the crowd, which should have the static and dynamic zones that do not interfere with each other. Besides, the changes of the seasons and climate should be considered, and the necessary sunshine area, shady site and the transitional space of shelter from the rain and wind, so as

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to avoid the obstacle of outdoor activities of the elderly caused by the weather should be an important factor while designing such spaces.

Analysis of the Behavioral Demand of the Elderly and the Corresponding Functional space

The body aging cannot only lead to the weakness of the active ability, but also can change the behavior demand of the elderly. The behavior demand of the elderly in the residential outdoor activity can be divided into four categories according to the quantity of the behavioral agent, which are individual activity demand, group activity demand, community activity demand, and grandchildren taking demand. Therefore, the design should set the corresponding functional space according to the different activity demands. For example, the individual activities usually are sitting, walking, and meditation; hence, setting the certain quantity of walking and rest space is necessary. And the group activities should consider the distinction and connection between the different activity groups, the groups with the similar contents should be arranged nearby, on the contrary, they should maintain an appropriate distance. Group activity space should select the open space, and should be configured with rich and healthy and safe plants, and appropriately adopted the strong contrast color to create an active and lively atmosphere. As for the special demand of taking grand children, we can combine the activity spaces of children and elderly to comprehensively plan and design, and the security of the space is the most important factor. According to the elderly’s behavior demands of the outdoor activities, this paper divides the outdoor space into rest, walking, transition, communication, fitness, gardening and children’s play space according to the functions. Moreover, the corresponding space function categories of the elderly’s behavior of individual demands is summarized through the observation and record.

residents to actively participate, including activity space and gardening space.

RESEARCH METHOD

In order to make the study more representative and objectivity, the author selects 3 residential districts with different age and scale in Jaipur to carry out the investigation. The author adopts the method of visiting observation combined with self-made questionnaire, and understands the basic situation, the participation situation of the outdoor activity and the obstacle factors of the investigated people through the on-the-spot investigation and the random interview and investigation for the elderly in the residential district. The questionnaires randomly visit 389 elderlies and the relevant statistical data and the results will be presented in the following content.

Observation records and Site analysis

Residential Colonies by Private developers

As large-scale residential colonies, they have all categories of internal space, but these different spaces are connected through steps to solve the elevation difference, and the ramps are less. There is lack of separation of people and vehicles; hence, it is difficult to ensure the security of the elderly in the outdoor activities. Generally, a central plaza acts as the core element and there are children’s playgrounds on the edge. However, there is lack of the adequate quantity of the comfortable seats, especially in the children’s play ground, the site is simple and without the site and facilities for the elderly who take care of the children to have a rest. In order to ensure the security of the children, the elderly only can stand on the side for a long time and cannot rest.

Table 1 Behavior based on individual demand and corresponding space type

Behavior demand type	objective	Behavior	Space function type
Individual activity demand	Passive contact	Observing people, object and nature	Rest space
	Explore	Observe different things and unintentional discovery. Seek or avoid the sun.	Walking space Rest space
	Comfort	Look for comfortable seats. Get a sense of security.	Transitional Space Rest Space
Group activity demand	Active Contact	Direct Contact with people Social interaction	Communication space Fitness space
		Exercise and walk Participate in a Dynamic crowd.	Garden space Communication Space Garden
Community Activity Demand	Relax	Integrate into a pleasant and relaxing atmosphere	Space Rest Space
Grandchildren Activity Demand	Take care of child	Observation and care Interaction with other children also.	Kids play area.

Investigation on the Activity Situation of the Elderly in the Residential Outdoor Space

RESEARCH OBJECTS AND METHODS

Definition of outdoor space in Residential district

Residential outdoor space is the space form in the residential district enclosed by building, road, vegetation and structures, which is only open for the internal residential district and is divided into two categories of active space and passive space [4]. The former refers to the residential district including residence, transport and fire-fighting and other basic function spaces, and the latter is the space category that can attract

Park and open spaces of residential colonies developed by government bodies.

Most of the elderly like to gather here, or take their children to play here. The elderly who fit here mostly are the healthy younger elderly, they take this site as the public space where they can chat, relax, fit, and communicate, breaking the original single fitness function. On the other hand, this is also due to the lack of the various activity spaces corresponding to the demand in the residential district, and there are many aspects needing to reconstruct and improve. Moreover, the combination of fitness site and parking area is a flaw, almost no old people uses it. Thus, the location, accessibility, and the

ground situation of the activity site is necessary to attract adequate crowd.

Analysis of Questionnaire data

Basic Situation of the Interviewed Old People

According to the results of the survey, there are almost the female old people in the respondents, and different age stages present the different sex proportion.

In the younger elderly, males are more than females, while it is quite contrary in the elder old people, and the female widows are more than male in the marriage situation.

It can be known through the analysis that female old people need to bear the family work more than male old people in the younger age stage, and they spend more time in bearing the housework and taking care of the younger generation substituting for their sons and daughters, therefore, the time and opportunity to go out are objectively reduced. The male old people in this age stage are generally healthy, thus, they are often come out to participate the exercise, entertainment and social communication activities.

This situation will present the opposite state in the elder stage, it is mainly due to the liberation of the female old people from the family work; on the other hand, it is also because the average lifetime of male is lower than female's lifetime. The overall number of the female old people will be larger than the male old people in the elder stage, therefore, the number of the female old people participating in the outdoor activity is significantly more than the male old people.

The health condition of the elderly is gradually declining with the growth of the age, and their disease resistant ability also weakens. *In the elderly who participate the outdoor activities, most of them say they have the self-care ability, but generally need the tools, and the number of the elderly who totally rely on others is less.*

Activity Participation Situation of the Elderly in the Outdoor Space

Survey shows that the most of the elderly are more interested in participating in outdoor activities, which the demand for sports activities is highest, and they are most interested in it. And then it is the social communication, intelligence, delight and learning activities. That is to say, the main purpose of the elderly to participate in the outdoor activities is to exercise to be healthy. The outdoor activity space should provide the proper site and facilities to meet their demand.

In the mode of activity, a mild and slow walking form is the most welcomed outdoor activity of the elderly, followed by Party chat and chess. The female old people are more inclined to yoga, walk or chat. The number of the elderly who like running and playing ball games is least, and most of them are the younger old people. Obviously, the aging of body and brain causes most of the elderly more value the health and steady when they choose the outdoor activities.

Besides, the places of the elderly's outdoor activities mainly centralize in the space between buildings, garden and the edge area of the road. The square is too large and too open, thus, most of the elderly are not willing to use it except the collective activities. Because the entrance has a large stream of people and there is lack of the rest equipment, it is not the main activity area for the elderly. The fit site is difficult to

attract the elderly to use it if there is lack of the interesting space and scenery on the surrounding.

Obstacle Factors Influencing the Participation of Older People In Outdoor activities

In the investigation, it is evident that the factors affecting the elderly to participate in outdoor activities are:

- A. The lack of safe and smooth pedestrian road, less private space, difficulty and inconveniently arrived path, and less and improper setting seating areas.
- B. Level differences and lack of ramps with proper slopes.
- C. In particular, the security of the walking path, lack of the separation of people and vehicles, due to which, most of physical declined older people are difficult to walk and interact.

Analysis of Key Points of Outdoor Activity Space Design for the Elderly in Residential areas

Outdoor space design should provide more convenient and support for the elderly on the basis of meeting the elderly's diverse behavior demand, improve the overall quality of the residential outdoor space, and increase the elderly's communication and activity rate in the residential outdoor space, so as to strengthen the physique and enrich the spiritual life. Through the research of the above behavior features and demands as well as the activities situation, the author summarizes and analyzes the key points of the outdoor activity space design for the elderly in residential areas.

Provide Diverse Functionalspace

Most elderly people carry out the all kinds of fitness, communication and entertainment activities in outdoor space every day, to delay the aging, exercise thinking and relax. According to the survey results of the elderly's outdoor activities situation, the outdoor activity space can be divided into four categories of walking space, communication space, fitness space, and garden space according to different spatial features, and each space is equipped with the appropriate facilities according to different spatial features. Because of the physical recession of the elderly, the edge of each space should be arranged with adequate comfortable seats in the proper position, so as to encourage more elderly people selectively participate in the different functional spaces. Providing diverse functional spaces in the outdoor space is conducive to helping the elderly to choose according to personal physical conditions and hobbies, to strengthen the positivity of the elderly to participate in outdoor activities. In addition, the spaces with different functions should be different, and the spaces with the same function can be connected. The hearing of the elderly is generally poor, and noisy activity space is very unfavorable for them to participate in group communication. Therefore, it is necessary to divide the static and dynamic spaces, which can make the elderly who participate in the same activity can gather together to form a lively atmosphere, meanwhile, it can avoid the interference between the groups of different activities, to maximum use the outdoor activity space.

Minimize the Elevation Difference, The Path Should Be Safe, Simple And Easy To reach

The rich functional space can meet the elderly people's more activity demands, but to attract more users, the accessibility between different regions is the main problem. Therefore, the

design should pay attention to minimize the elevation difference of different activity areas, reduce the surface fluctuation, and set the reasonable stairs on the ramps, moreover, the areas with large elevation difference should be equipped with handrails and rest platform to help the elderly with weak action capability to reduce the physical consumption. Of course, only providing the appropriate functional spaces cannot fundamentally improve the elderly participation rate, it also needs to ensure the high accessibility of all kinds of outdoor spaces, and the path should be safety and easy to remember. Security is the most basic and most important demand for elderly people, and the reason why they are not willing to participate in outdoor activities is due to the lack of security, we can set up the simple and structured road in the outdoor to help the elderly with declined physical power, memory and vision to safely travel. Besides the guidance role in a certain extent, these roads also can help the space orientation in the outdoor, so as to help the elderly to travel and return as well as find the suitable functional space activities.

Provide Interactive Spaces with Greenery and Surrounded By Other Activities for Theelderly

For the elderly spending their sunset life in the residential district, the crowd around them are diverse. Providing the proper interaction space is conducive to increasing the opportunity of the elderly to meet and communicate with other people, so as to enhance the sense of ownership of the residential areas and reduce loneliness. This requires the specific design to keep a certain permeability in the space needing separation, use the plants and other soft materials as a separate, and control the height and density. Besides, the elderly activity space can be particularly combined with the children ' s playground, and set the rest site between them, which not only ensure the elderly with grandson can take care their grandchildren at any time, but also the part of the elderly who is resting can enjoy the "scene".

Improve the Safety of the Fitness Equipment and the Surrounding Environment

Nowadays people pay more attention to health Problems and the fitness space set for the elderly not only attracts the elderly people's attention, but also has a certain attraction to other people. But the number of people using this space is too large, the large frequency usage and error use will cause some damage on the equipment, so that the originally safe equipment will have problems in the usage for months and years, and sometimes the problems cannot be found, which will further cause the safety hazard or even dangerous accidents. Therefore, the internal management of residential areas should regularly carry out the reasonable maintenance and repair and timely replace the equipment, to ensure the safety of the site.

For the elderly, the outdoor activity space is full of unpredictable dangers and challenges, the supporting environment and facilities should be provided for the elderly according to the characteristics of the elderly's weak physically power, to help the elderly who are disabled and other crowd to normally participate in the outdoor activity. The common auxiliary facilities of the residential areas include Residential area of common auxiliary facilities include seat, ramp, handrails and blind path and other facilities, and they can be set singly and combined.

CONCLUSIONS

With the gradually accelerating aging process in India, the important role of residential outdoor activity space for the elderly will become more prominent. Combine with outdoor activities situation from the behavioral characteristics and demands of the elderly, reasonably improve the unfavorable situation of residential outdoor space, and explore suitable residential outdoor activity space of the elderly in India, which has a significant meaning for the elderly to positively spend their sunset life and establishing the harmonious sharing social environment.

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