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Research on Public Space Landscape Design Based on the Concept of Healthy Cities

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Abstract: The healthy cities concept offers valuable core values for public space landscape design. This study investigates the conceptual relationship between the healthy cities concept and public space landscapes, highlighting the functional positioning of landscapes as health carriers and capacity to promote physical, psychological, and social health. The study points out that current practices generally suffer from key issues such as weak ecological dimensions, insufficient behavioral support, lack of social cohesion stimulation, and inadequate inclusivity. Based on this, four core strategies are proposed: creating an ecologically healing environment, building a whole-age health behavior support system, strengthening social integration space design, and optimizing inclusive multi-sensory experiences. Landscape design needs to undergo a profound transformation from single greening to multi-dimensional health promotion, providing a practical path for creating a more resilient and vibrant healthy living environment.

1. Introduction

Health issues are becoming increasingly severe in urban areas. As part of the urban spatial structure, public spaces have a significant impact on the physical and mental health of urban residents and their connections to society. A healthy city goes beyond the scope of healthcare and public health system interventions, requiring the integration of health concepts into all public policies and practices. In the context of public spaces, landscape design bears the important responsibility of implementing the vision of a healthy city. Landscape design is not merely about visual aesthetics; it is also a potential vehicle for promoting health, as it can support physical activity, alleviate psychological stress, enhance social belonging, and provide ecological services. Understanding the potential of landscape design in connecting people with the natural environment, supporting healthy behaviors, promoting social connections, and ensuring that public spaces are accessible to diverse groups is an urgent practical need in building healthy cities.

2. The Core Connection between the Healthy City Concept and Public Space Landscape Design

2.1. The Essence of the Healthy City Concept and Its Landscape Carriers

The concept of healthy cities aims to comprehensively enhance residents' physical and mental well-being and social connectivity within urban environments, viewing health as a core value of urban development rather than a singular medical goal. This concept permeates the entire process of urban planning, construction, and management, striving to create an overall environment that supports active lifestyles, reduces disease risks, and enhances social inclusivity. Public space landscapes play a crucial role as material carriers for realizing this concept, and their design quality directly affects urban residents' daily opportunities to engage with nature, participate in physical activities, and engage in social interactions. High-quality landscape environments provide citizens with places to escape the hustle and bustle and rejuvenate, with greenway networks, community parks, and street green spaces collectively forming the spatial foundation for residents' daily health activities. These tangible green infrastructures are the physical ties that transform the concept of healthy cities from an abstract idea into a concrete living experience. They are closely intertwined spatially, jointly shaping residents' environmental exposure patterns and the foundation of social cohesion.

2.2. The Health Promotion Mechanisms of Public Space Landscape Design

The health-promoting mechanism of public space landscapes is reflected in their natural process of shaping daily environmental experiences and guiding the occurrence of beneficial behaviors. The core component of the natural environmental contact mechanism is the release of fresh air and pleasant scents from abundant vegetation, the soothing visual fatigue brought by diverse colors and forms, and the tranquil atmosphere created by the sound of birds chirping and water flowing. These elements collectively act on people's senses, subtly harmonizing emotions and reducing mental burden. Carefully designed activity spaces provide convenient places for residents' daily exercise and leisure. The clear and accessible pedestrian network encourages people to choose walking or cycling, and venues with different functions meet the practical needs of people of different ages to stretch their muscles or relax their minds, thereby integrating physical activity into the rhythm of daily life. The spatial layout and facility arrangement further catalyze encounters and interactions among community members. Comfortable benches, shared activity areas, and attractive nodes naturally gather people, promoting neighborhood exchanges, dialogues, and mutual assistance relationships. The creation of a social atmosphere consolidates individuals' sense of community belonging and social support network. Landscape design integrates these environmental characteristics and behavioral guidance to build an invisible network that supports physical and mental health [1].

2.3. The Impact of Multi-Sensory Experiences on Health

Multi-sensory experience design focuses on how the landscape environment simultaneously engages multiple sensory channels such as vision, hearing, smell, touch, and even taste, collectively influencing the physical and mental state of users. The naturally emitted plant fragrances or the earthy scent after rain transmit information through the olfactory system, directly linking to the regions of the brain that regulate emotions and memory, helping people relax their tense nerves. The sound of gurgling water, rustling leaves in the wind, or crisp bird songs create a unique auditory background, effectively shielding from urban noise interference and providing the brain

with the serene space needed to regain focus. The tactile differences in paving materials or plant leaves, temperature changes brought about by sunlight, and visual pleasures provided by expansive views, these richly intertwined sensory signals continuously nourish the human perception system. The landscape environment carefully integrates these diverse sensory stimuli to create a comprehensive immersive experience, which can effectively alleviate daily accumulated psychological stress, enhance emotional vitality, and subtly promote physical recovery and comfort.

2.4. Weaknesses in the Ecological Health Dimension

The greening structure in urban public spaces often presents a simplified and fragmented state, with limited plant species struggling to form a stable and complex ecosystem, thus severely restricting biodiversity. Many landscape designs overly emphasize ornamental plants and artificial decorative elements, neglecting the cultivation and exertion of key ecological functions such as air purification, microclimate regulation, and soil nourishment by vegetation. Scattered green spaces operate independently, lacking effective ecological corridor connections, which obstructs the natural processes of wildlife migration paths and plant pollen dissemination. This fragmented state weakens the overall ability of green spaces to regulate the environment, alleviate the urban heat island effect, and provide residents with a genuine natural experience, rendering the ecological service value thin and limited. The healing natural qualities that the landscape environment should possess are replaced by cold decorative effects, and the deep connection between humans and nature is cut off by hard paving and monotonous hedges.

2.5. Insufficient Behavioral Support Design

The spatial layout of public spaces often fails to effectively stimulate or facilitate residents' daily health-promoting activities. Many venues lack a clear, coherent, and attractive network of walking or cycling paths, hindering people's natural inclination to choose active travel. There is a significant disconnect between facility configuration and the actual needs of different age groups or activity types. Fun venues suitable for children to play and explore, flexible spaces for teenagers to play ball games, age-appropriate equipment for the elderly to engage in gentle exercise, and comfortable areas for family rest and gatherings are often insufficiently provided or poorly designed. The characteristics of the venues themselves lack sufficient charm to guide people to stay and engage in activities. Flat and monotonous trails, insufficiently shaded resting spots, open lawns lacking interactive elements, and poorly lit evening environments collectively reduce the actual frequency and duration of space use, making it easy for residents' spontaneous exercise or social plans to be stalled. The design fails to fully understand and respond to the naturally occurring health behavior patterns of different groups in public spaces and the environmental support conditions they require .

2.6. Lack of Social Cohesion Stimulation

The physical form of spatial layout often inadvertently hinders natural contact and interaction opportunities between different groups. When functional zoning is overly rigid or venues are isolated from each other, it becomes difficult to foster a place atmosphere that encourages spontaneous gathering and communication among community members. The arrangement of facilities fails to effectively create an intimate environment that promotes neighborliness, mutual assistance, and sharing. The seating arrangement is not conducive to conversation, and there is a lack of community gardens, shared tool stations, or flexible and multi-purpose activity platforms that can stimulate common participation and collaboration. The environmental atmosphere itself lacks sufficient comfort and attraction to guide people to stay longer. Poor shading, lack of shelter,

absence of landscape focal points that stimulate conversation, or insufficient lighting at night make it difficult for the space to become a community living room where residents are willing to go and meet each other, build trust, and enjoy their daily lives.

2.7. Inadequate Inclusion of Special Populations

Design considerations often fail to fully understand and respond to the specific needs and potential difficulties of the elderly, children, people with disabilities, or sensory impaired groups when using the environment in public spaces. Physical attributes of pathways, such as width, slope, or ground material, may hinder the smooth passage of wheelchairs or increase the risk of falls for people with mobility impairments, limiting the opportunities for these groups to freely explore and enjoy the space. Facility details lack adaptability considerations for users with different abilities. Facilities suitable for children to safely climb and explore, such as height and protective measures, seats suitable for the elderly to comfortably rest, with height and support for getting up, tactile guidance signs for the visually impaired to safely navigate, or information assistance means for the hearing impaired, are often absent or rudimentary. The types and intensity of sensory stimuli provided by the environment fail to fully consider the sensitivity of autistic children to excessive stimulation or the dependence of cognitively declining elderly on clear guidance. The richness of spatial experience fails to effectively translate into true friendliness and accessibility for diverse groups.

3. Core Strategies for Landscape Design under the Healthy City Concept

3.1. Creation of Ecological Healing Environments

The concept of a healthy city requires that public space landscape design serves as an effective medium for residents' physical and mental recovery, with creating an ecological environment with substantial healing functions as its core task. Designers should deeply understand the positive impact of natural elements on human senses and mental health, and translate this understanding into specific spatial shaping strategies. The specific implementation process requires careful selection and combination of native plants with clear healing characteristics, such as giving priority to coniferous tree species that naturally release phytoncides, flowering shrub species that emit pleasant fragrances, and foliage plant varieties that provide a soft visual texture, ensuring that the plant community is both adapted to local climatic conditions and can continuously provide natural factors beneficial to health. Space organization must focus on creating a multi-layered and immersive green experience environment, meticulously planning winding shaded walkways to guide people into nature, cleverly setting up concealed understory resting spaces for users to stay and relax, and carefully arranging vegetation layers at human scale, so that the foliage is within a comfortable visual range or within reach, effectively shortening the physical and psychological distance between people and nature. Environmental builders should also not ignore the regulating effects of sound atmosphere and microclimate, using water features to produce gentle flowing water sounds to mitigate urban noise interference, and forming effective shading areas and wind-sheltered spaces through the reasonable arrangement of trees and shrubs, jointly creating a locally comfortable and serene environment. As shown in Figure 1, the MAHA apartment forest area project in the core area of Beijing provides a practical reference for solving the problem of landscape desolation during the severe cold season in the north. Facing the challenge of green deficiency during the long winter, the project team focused on selecting cold-resistant native evergreen plant species and strategically placed them in the core courtyard areas where residents have frequent daily activities, along the main pedestrian pathways, and in key locations within sight of low-rise residents， as shown in

Figure 2. This targeted layout effectively maintained the visual greenness and vitality of key activity spaces during the severe cold period. Such practices confirm that based on scientific plant selection and refined spatial design strategies, even under harsh climatic conditions, urban core areas can still create green spaces that provide continuous healing support, integrating the power of natural recovery into the daily scenes of urban life [2].

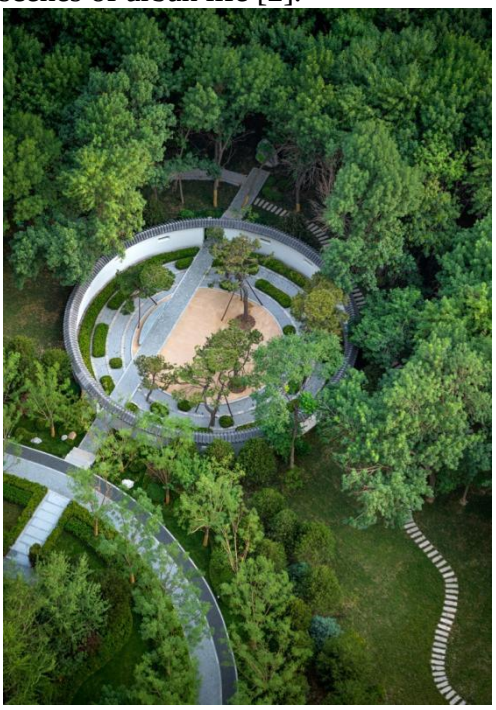

Figure 1 Real-life image of the forest area of MAHA Residences Beijing

Figure 2 Scene image of the apartment forest area

3.2. A Comprehensive System Supporting Healthy Behaviors for All Ages

Constructing a public space landscape that promotes health for all ages means transcending a singular functional perspective. Designers must meticulously craft a physical environmental framework that simultaneously stimulates children's vitality, facilitates daily exercise for adults, and supports soothing activities for the elderly. Planners need to deeply match the unique activity needs

of different age groups with spatial potential, striving to create diverse and inclusive opportunities for healthy behaviors within limited spaces. At the operational level, the design team is required to clearly delineate and differentially shape exclusive activity areas. For example, an independent venue rich in natural exploration appeal should be set up for children's safe play, equipped with sensory and motor-stimulating facilities such as sand pits, low climbing frames, and small slides. The ground must be made of cushioning materials and have clear visual boundaries. As shown in Figure 3, the example of an activity venue embodies this design approach of stimulating children's active exploration through natural elements; meanwhile, it provides a fitness path or small ball sports field with moderate challenges for teenagers and adults. In adjacent areas, quiet and comfortable resting spots and gentle circular walking paths should be arranged for the elderly. The seating design should be ergonomic and facilitate social interaction. The key challenge lies in how to make these functional zones transition naturally rather than being rigidly divided. Designers should cleverly utilize green belts, microtopography changes, or artistic pavements as flexible dividers, and set up a barrier-free access network connecting various zones, ensuring that an elderly person with grandchildren can easily move from the children's play area to the nearby bench resting area. Space creators also need to pay special attention to the accessibility and all-weather convenience of facilities, including sufficient natural lighting conditions, nighttime safety lighting systems, and shelter facilities for rainy and snowy weather, so that the occurrence of healthy behaviors is not overly restricted by time and weather. This integrated layout demonstrates that through refined functional configuration and spatial coupling design, urban public spaces can fully become vibrant containers that carry intergenerational communication and meet diverse health needs.

Figure 3 Children's activity area

3.3. Design of Socially Inclusive Spaces

The planning and design actively break down the physical barriers of social isolation among crowds, with a multi-directional pedestrian network that brings together daily commuters and leisure walkers for natural interaction. The tiered layout of rest modules provides a composite choice for solo seating and group conversations. The facility configuration focuses on the functional complexity of shared spaces, with height-graduated bleachers and seats accommodating both standing spectators and wheelchair users for shared cultural and recreational activities. The

skid-resistant outdoor tables are used for alternating activities such as chess and tea drinking by residents and painting by children. The spatial treatment retains a visually transparent shaded belt to promote mutual observation and contact among people of different ages. Weather-resistant materials create barrier-free pathways connecting the community center and sports venues, shortening the distance for intergenerational interaction. Indigenous trees that are easy to grow create an intimate and shaded environment to reduce the pressure of strangers coexisting, and alternating enclosed and open green areas provide flexible spaces for impromptu conversations and quiet solitude [3]. The lighting plan balances site illumination and the enhancement of an interactive atmosphere, with color temperature adjustable courtyard lights supporting the scene transition between festival activities and daily evening talks. Under-seat floor lamps are added to supplement foot lighting and reduce safety hazards during nighttime group activities. The green plant boundary adopts a semi-transparent line treatment to maintain the convenience of guardians caring for young children, and combined flower boxes separate the acoustic impact of large activity areas without blocking visual connections, promoting symbiotic community activities.

3.4. Optimization of Inclusive Multi-Sensory Experiences

The spatial design emphasizes equal experience for people with different perceptual abilities. The variation in ground materials retains the tactile information of rough stone slabs, suggesting the direction of tactile paths for the blind. The varying shades of textures help blind cane users naturally judge the boundary attributes between rest areas and footpaths. As shown in Figure 4, the courtyard of Yangzhou Hotel Indigo integrates environmental elements with a distinct herb garden, where the natural aroma of mint and rosemary emitted by flowers and leaves marks the direction and guides visually impaired individuals. Woody plants with a long flowering period emit a stable aroma to compensate for the lack of seasonal scents. A water flow device is set up at the gentle slope to create an audible clear background sound to mask traffic noise, and a low-level but non-sharp-edged dwarf wall waterfall produces continuous water sound to assist hearing-impaired individuals in perceiving directional changes. The cobblestone massage path is set aside from the main pathway and is treated with anti-slip measures to avoid accidents. Wind chimes are placed at the top of the slope to create sound gradient changes using different wind strengths, enhancing spatial cognition. The signage system overlays braille nameplates and high-contrast color blocks to meet dual recognition needs. Night lighting controls low-intensity warm light to avoid glare and facilitate activities for light-sensitive individuals. Touchable three-dimensional location schematics are installed on the side of benches to assist individuals with cognitive impairments in establishing spatial memory. The color scheme features a large area of soft leaf green as the base to reduce fatigue from prolonged gaze. In key areas, a small amount of bright yellow is used to attract the attention of individuals with limited attention span, highlighting changes in steps. Flowering plants surround important nodes, utilizing natural color differences in petals to reinforce visual anchors for low vision individuals. Buffer spaces for electric wheelchair turning and reversing are reserved in the gaps of the green belt. The design of landscape seats features ergonomic armrest angles to support individuals with limited mobility in getting up independently [4].

Figure 4 Landscape Design of Yangzhou Hotel Indigo

4. Conclusion

The notion of a healthy city has dramatically changed the value avenues and practice of public space landscape design. Investigations have identified the multifaceted pathways of landscape as a vehicle for health promotion and systematically put forward strategic avenues such as eco-healing, behavior support across the lifespan, social connectedness, and inclusive multi-sense experiences to tackle the central issues of inadequate ecological healing, behavioral capacity, social cohesion, and inclusivity. New public space landscape design must move beyond formal beauty to value the promotion of physical and mental health of residents and social capital of community at its core. The landscape designer considers what it means to weave ecological wisdom, behavioral science, and socio-cultural insight. When creating a supportive environment, they hope to make public space a fruitful source of empowerment for health, connection, and urban resilience that enhances our collective ability to embrace health equity and better urban futures.

References

[1] Jin H. Influence of Urban Street Greening Design under the Concept of Green Healthy Cities: A Case Study of Hefei City[J].Journal of Landscape Research, 2023, 15(4):12-14.

[2] Ma J, Qu B. Estimating the predictability of physical activities in urban parks based on landscape morphology—empirical analysis based on 10 urban parks in Nanjing, China[J].Landscape Research, 2025, 50(1):39-57.

[3] Yating L, Linyan F, Jie Z. Research and practice of restorative landscape design under the direction of healthy city[J].SHS Web of Conferences, 2023, 174(000):4.

[4] CHEN, Keshi, XU, et al. Design Strategies of Urban Cluster Based on the Concept of Green Transportation[J].Journal of Landscape Research, 2018, v.10(03):64-68+75.