jADU
Vol 8 No 1 2025
42-54

Journal of Architectural Design and Urbanism
https://ejournal2.undip.ac.id/index.php/jadu
E-ISSN: 2620-9810

Analysis of the Healing Architecture Approach to the Gelora Bung Karno Sports Complex, Jakarta

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Article info:
Received: 25-09-2024, Revised: 28-07-2025, Accepted: 18-10-2025

Abstract. Jakarta faces significant urban challenges, including congestion, pollution, and limited green spaces, negatively impacting public health. The Gelora Bung Karno (G.B.K.) The Gelora Bung Karno (G.B.K.) Sports Complex offers substantial potential to enhance physical and mental well-being through the integration of healing architecture principles. This study assesses the current implementation of healing architecture principles within the G.B.K. complex and identifies opportunities for further enhancement to better meet user needs. To ensure a comprehensive evaluation, this research employs a mixed-methods approach, combining qualitative field observations to identify existing healing elements with quantitative descriptive statistical analysis of structured observation data to measure their effectiveness on user satisfaction and well-being. Findings reveal the Main Stadium Courtyard strongly aligns with healing architecture, scoring 82.7% due to its natural integration and flexible design. The City Forest, while supportive at 69.4%, requires improvements in artificial lighting and navigational signage. Overall, G.B.K. effectively embodies healing architecture principles, achieving a combined score of 76.05%, thereby enhancing public health by creating stress-reducing and restorative environments. These insights advocate for targeted enhancements to further establish G.B.K. as a model therapeutic urban space.

Keywords: healing architecture, urban well-being, sports complex, public health, environmental design

1. Introduction

Jakarta, the bustling capital of Indonesia, is currently grappling with the far-reaching effects of rapid urbanization. The city is contending with urban congestion, pollution, and a critical shortage of parks and open spaces. These are not just abstract problems; they have a tangible impact on the physical and mental well-being of the city's residents (Zakaria et al. 2018). The urban environment, with its high population density and limited green areas, has fostered a lifestyle that is increasingly sedentary, with long hours spent indoors and a reliance on motorized transport. This lifestyle, combined with the environmental factors, has led to a surge in stress levels and a decline in overall health among urban dwellers (Haryani and Setyawan 2017).

In response to these challenges, there is a growing recognition of the need to design urban spaces with the well-being of users as a central focus (Zakaria et al. 2018). The availability of public green open spaces (RTH) in urban areas is increasingly constrained by built-up areas, thus both quantity and quality often fail to meet user needs (Persada and Putri 2018). However, there is a beacon of hope in the form of healing architecture. This innovative concept integrates elements that promote physical and mental health into the design of spaces (DuBose et al. 2018; Salingaros 2015). Healing architecture transcends mere functionality, striving to create environments that are not only aesthetically pleasing but also therapeutic, offering respite from the stressors of urban life.

doi: 10.14710/jadu.v8i1.24539

The G.B.K. Sports Complex, an iconic landmark in Jakarta since 1962, provides a unique case study for applying healing architecture (Muhammad Rizaldy 2020). Healing architecture emphasizes design features that highlight natural light, space, and access to the outdoors, collectively creating a calming environment conducive to healing (Milliken et al. 2023; Salingaros 2015). This concept is particularly relevant to the G.B.K. Sports Complex, where integrating natural elements and user-centered design principles can significantly enhance visitors' physical and mental well-being (DuBose et al. 2018; Milliken et al. 2023; Salingaros 2015). By providing spaces that encourage relaxation, rejuvenation, and social interaction, G.B.K. can function as an inspiring model of healing architecture in an urban context. The potential of the G.B.K. Sports Complex to inspire and influence future architectural and urban design is truly promising (Andreucci et al. 2021; DuBose et al. 2018; Zakaria et al. 2018). Previous research also indicates that the quality of public green open spaces (RTH), assessed through aspects of needs, rights, and meanings, is considered adequate and often requires further treatment (Yanti 2016).

The study on healing architecture elements is guided by a comprehensive theoretical framework developed by (Ghazaly et al. 2022), as presented in Table 1.1. This framework plays a pivotal role in delineating key aspects and their corresponding indicators that define the presence and effectiveness of healing architecture in a given environment. These aspects, which include Privacy and Togetherness, View, Nature and Outdoors, Comfort and Control, Readability of Place, Interior Appearance, Facilities and Staff, Integration of Light and Color, Circulation and Space Organization, Building Form and System, Building Envelope, and Health Facilities, are all crucial in creating an environment that supports physical and mental well-being. By influencing user perception and experience within the built environment, these aspects underscore the significance of the theoretical framework in understanding and implementing healing architecture. This framework not only enlightens us about the key aspects of healing architecture but also empowers us to apply these principles in real-world design and planning.

Table 1.1. Healing Architecture Elements (Ghazaly et al. 2022)

Aspects	Indicators
Privacy and Togetherness	• Individual Space • Shared Space
View	• Landscape and CityView • Interior and Exterior Visuals
Nature and Outdoors	• Integration with Nature • Open Space and Vegetation Facilities
Comfort and Control	• Acoustic, Thermal, Visual, and Physical Comfort • Control
Readability of Place	• Directional Signs and Information Boards
Interior Appearance	• Cleanliness and Neatness • Art Installation
Facilities and Staff	• Toilet and Janitor • Information Area and Security
Integration of Light and Color	• Natural and Artificial Light • Color Contrast
Circulation and Space Organization	• In and Out Circulation and Transitions • Zoning of Public, Commercial, and Private Areas
Building Form and System	• Towards Natural Light • Towards Heat Gain • Towards Air Circulation
Building Envelope	• Sun and Wind Orientation • Circulation and Light Openings • Façade Protection and Double Skin Wall • Parmeable System and Environmentally Friendly Materials
Health Facilities	• Health Workers and Equipment • Health Accessibility

While previous research has underscored the significance of environmental sustainability, accessibility, air quality, light, and green spaces in fostering well-being (DuBose et al. 2018;

Milliken et al. 2023; Souter-Brown 2014), a distinct gap in the literature pertains to the application of these principles within large-scale, multifunctional sports complexes like G.B.K., especially in densely populated urban areas (Carmona 2015; Zakaria et al. 2018). This study makes a unique and intriguing contribution by delving into the specific elements of healing architecture in the G.B.K. Sports Complex and assessing their efficacy in enhancing user experience. Moreover, the study underscores the importance of environmental quality for sustainable urban settlements, which necessitates consideration of physical environment, social, and economic factors, often involving stakeholders in the decision-making process (Mutaqin, Persada, and Suroso 2019).

The objectives of this research are twofold: first, to assess the current implementation of healing architecture principles within the G.B.K. complex; and second, to identify opportunities for further enhancement of these principles to meet the needs of its users better. By focusing on key areas such as environmental comfort, accessibility, and the integration of natural and built environments, this study seeks to provide practical insights to inform the design and renovation of similar urban spaces in Jakarta and beyond (Andreucci et al. 2021; Carmona 2015; Milliken et al. 2023). Furthermore, this research aims to contribute to the broader discourse on urban planning and architecture by demonstrating how the principles of healing architecture can be effectively applied in a large, multifunctional sports complex (Andreucci et al. 2021). The findings are expected to offer valuable guidance for architects, urban planners, and policymakers in designing spaces that serve functional purposes and actively support the health and well-being of their users (Andreucci et al. 2021; Carmona 2015; Milliken et al. 2023; Zakaria et al. 2018). Through a detailed analysis of the G.B.K. Sports Complex, this study hopes to establish a framework for integrating healing architecture into urban development strategies, with the potential to significantly impact the creation of healthier and more sustainable cities (Andreucci et al. 2021; Carmona 2015; Milliken et al. 2023; Zakaria et al. 2018).

2. Methods

This research employs a mixed-methods approach, integrating qualitative and quantitative methodologies, to comprehensively examine the application of healing architecture within the Gelora Bung Karno (G.B.K.) Sports Complex. This design was chosen to provide both nuanced, experiential insights and measurable, objective assessments of the complex's impact on users, with practical implications for architects, healthcare professionals, and sports facility managers (DuBose et al. 2018; Singh 2021).

2.1. Research Design and Process

The entire research process was meticulously and systematically structured into distinct phases to ensure a robust and comprehensive analysis. The flow of these phases is illustrated in Figure 2.1.

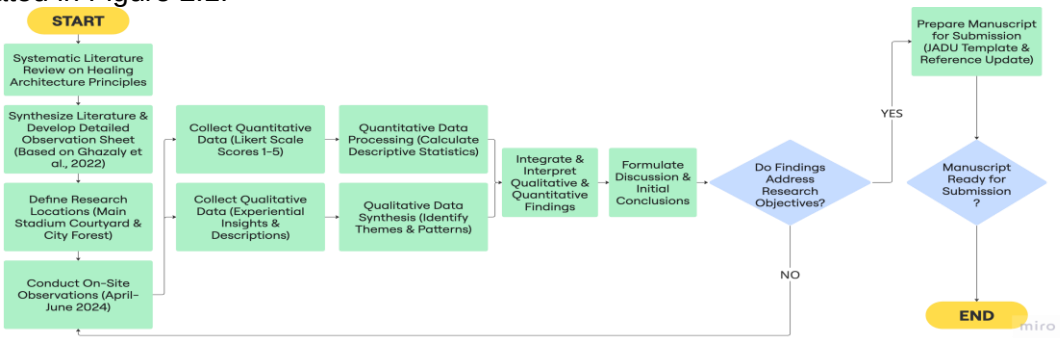

Figure 2.1. Research Process Flowchart (Authors' Own, 2025)

Extensive secondary data collection was conducted through a systematic literature review on healing architecture principles and related urban design concepts (Zakaria et al. 2018). This involved a comprehensive search of peer-reviewed journals and authoritative texts, followed by a meticulous screening process to identify critical elements, theories, and established indicators. The collected data were then synthesized to develop a detailed observation sheet (Zakaria et al. 2018). This framework, explicitly presented as Table 1.1 in the Introduction, meticulously delineates aspects and indicators of healing architecture, primarily adapted from (Ghazaly et al. 2022), and supplemented by other relevant studies to ensure its applicability to a sports complex context. This structured approach provided the qualitative foundation for the observational phase. The rationalistic method, which emphasizes the quantification of perception data using Likert scale calculations, is commonly applied in similar studies to determine the quality of public open green spaces (Yanti 2016). Such approaches are also used in assessing the quality improvement of sustainable settlements, where quantitative data is analyzed qualitatively (Mutaqin et al. 2019).
Direct, on-site observations were conducted at two pivotal locations within the G.B.K. complex: the Main Stadium Courtyard and the City Forest. These areas were purposively selected due to their high public usage and diverse architectural characteristics, allowing for a comprehensive comparative assessment of healing architecture principles in different environmental settings (Zakaria et al. 2018). Observations were performed systematically from April to June 2024. The pre-developed observation sheet served as the primary instrument, enabling methodical documentation and assessment of critical built environment aspects, including privacy, aesthetic appeal, thermal comfort, harmony with natural elements, and user navigation (Zakaria et al. 2018). For each indicator on the observation sheet, a Likert scale from 1 (very poor/absent) to 5 (excellent/fully present) was used to quantify the qualitative observations, thus generating primary quantitative data. This dual-coding approach allowed for both descriptive qualitative insights and statistical analysis.

2.2. Research Location

The study was conducted within the Gelora Bung Karno (G.B.K.) Sports Complex, located in Central Jakarta, Indonesia. This complex was chosen as the research location due to its significant role as a public space and its promising potential to demonstrate the application of healing Architecture principles. The two specific areas of focus within the complex are detailed below and visually represented in Figure 2.2.

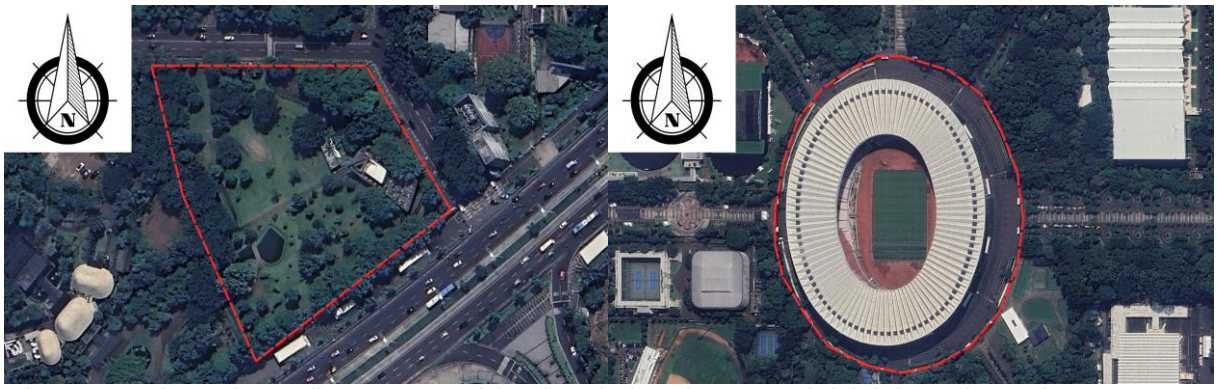

Figure 2.2. The Main Stadium Courtyard (Left) and The City Forest (Right) (Google Earth, 2024. Note: Images show approximate boundaries and key features. North arrows are indicative)

Main Stadium Courtyard is a vast, multi-purpose public plaza surrounding the primary stadium, frequently utilized for a diverse range of activities such as jogging, exercising, and public gatherings, ensuring there's something for everyone (Approximate coordinates: -6.218712 ° S, 106.802380° E). City Forest is a 4.5-hectare green open space situated within the complex, offering a natural respite characterized by dense tree canopy and extensive green areas (Approximate coordinates: -6.221886 ° S, 106.807982° E).

2.3. Data Analysis Process

The collected data underwent a multi-step analysis:

1. Qualitative Data Synthesis: Initial qualitative insights from direct observations were synthesized to identify overarching themes, recurring patterns, and specific qualitative attributes of healing architecture presence or absence in both study areas. This involved detailed descriptive accounts of observed user behaviors, spatial qualities, and environmental characteristics.
2. Quantitative Data Processing: The Likert scale scores from the structured observation sheets were input into statistical software. For each aspect and indicator, descriptive statistics (mean, median, mode, variance, and standard deviation) were calculated. These metrics provided a numerical assessment of the current state of healing architecture implementation.
3. Result Aggregation: The scores for individual aspects were aggregated to derive a percentage "Result" for each central aspect, indicating the degree of alignment with healing architecture principles. An overall composite score for each location (Main Stadium Courtyard and City Forest) was then calculated.
4. Mixed-Methods Interpretation: Finally, the qualitative narratives were seamlessly integrated with the quantitative statistical findings. This allowed for a well-rounded and balanced interpretation of the data, explaining why specific scores were obtained and providing deeper context for the numerical results. This comprehensive approach ensures that the findings are both empirically supported and experientially grounded.

3. Discussion

This section presents the integrated findings from a unique approach that combines both qualitative observations and quantitative descriptive statistical analysis. This approach was used to detail the comprehensive application of healing architecture principles within the Main Stadium Courtyard of the Gelora Bung Karno Sports Complex. The discussion aims to explain the observed conditions and their implications for user well-being.

3.1. Influence of The Main Stadium Courtyard Design

The Main Stadium Courtyard, a highly accessible public area, surrounds the primary stadium and is used for various physical activities. Our qualitative observations revealed that while the open design facilitates large group activities, there is a noticeable absence of dedicated private or shared spaces that provide a sense of enclosure or intimacy for smaller groups or individuals. The surrounding views, primarily an open landscape, create a sense of spaciousness rather than a significant urban vista. The central location ensures adequate ambulance access, but the lack of comprehensive health facilities in the immediate vicinity is a significant area for improvement. The presence of mature trees and substantial green areas was noted to enhance air quality through natural filtration and provide essential shaded zones, crucial for supporting sustained physical activity in the tropical climate.

The implementation of healing architecture principles in the Main Stadium Courtyard was assessed across twelve key aspects (as detailed in Table 1.1 and Appendix A.1).

Table 3.2. Observation Sheet Results on The Main Stadium Courtyard

No	Aspects	Condition Score	Mean	Median	Mode	Variance Sample $S2$	Standard Deviation $\sqrt{S2}$	Result
1.	Privacy and Togetherness	1, 1, 5	2.33	1	1	5.33	2.31	46.6%
2.	Views	5, 5, 5, 5	5	5	5	0	0	100%
3.	Nature and Outdoors	5, 5, 5, 5, 5, 3	4.67	5	5	0.67	0.82	93.4%
4.	Comfort and Control	3, 3, 3, 2, 3, 5, 4, 3, 4, 5	3.50	3	3	0.94	0.97	70%
5.	Readability of Place	5, 5, 5, 4, 5, 4	4.67	5	5	0.27	0.52	93.4%
6.	Interior Appearance	5, 5, 5	5	5	5	0	0	100%
7.	Facilities and Staff	4, 1, 1, 1, 5, 5	2.83	2.50	1	4.17	2.04	56.6%
8.	Integration of Light and Color	5, 5, 5, 5, 5	5	5	5	0	0	100%
9.	Circulation and Space Organization	5, 5, 5, 5, 5, 5, 3	4.71	5	5	0.57	0.75	94.2%
10.	Building Form and System	5, 5, 5, 5	5	5	5	0	0	100%
11.	Building Envelope	5, 5, 5, 5, 5, 5, 5, 4, 5, 1	4.50	5	5	1.61	1.27	90%
12.	Health Facilities	2, 2, 2, 1, 5	2.40	2	2	2.30	1.52	48%
Total								**82.7%**

The quantitative analysis of the Main Stadium Courtyard's design reveals a robust alignment with healing architecture principles, a key factor in its impressive overall score of 82.7%. This high score is a testament to the success of several key aspects. Notably, 'Views' (100%), 'Nature and Outdoors' (93.4%), 'Readability of Place' (93.4%), 'Interior Appearance' (100%), 'Integration of Light and Color' (100%), and 'Circulation and Space Organization' (94.2%) all received high scores, indicating a successful integration of natural elements and clear spatial organization (Singh, 2021); (Zakaria et al., 2018). The open, adaptable design, coupled with significant natural elements like large trees and extensive green areas, significantly contributes to the environmental quality and positive user experience. This strong connection to nature, supporting both physical and mental well-being, is consistent with core healing architecture principles (DuBose et al. 2018; Salingaros 2015).

For statistical rigor, the variance ($\boldsymbol{S2}$), for each aspect was calculated using the formula $\boldsymbol{S2} = \frac{\sum_{i=1}^{n}(\boldsymbol{X_i}-\boldsymbol{Me})^2}{\boldsymbol{n-1}}$, where $\boldsymbol{X_i}$ is each score, $\boldsymbol{Me}$ is the mean, and $\boldsymbol{n}$ is the number of scores.

However, despite the high overall score, specific areas indicate room for improvement. The 'Privacy and Togetherness' aspect scored only 46.6%, corroborating qualitative observations regarding the lack of diverse private or semi-private spaces. Similarly, 'Health Facilities' scored a low 48%, reinforcing the qualitative finding about limited health amenities. Furthermore, while the general environmental benefits are high, the indicator for 'Use of environmentally friendly materials' within the 'Building Envelope' aspect scored only 1 (refer Appendix A.1), suggesting a significant area for future sustainable material integration. However, it is important to note the high overall design performance in other building envelope aspects, which should instill confidence in stakeholders about the project's strengths. The flexibility in space usage, allowing for both community gatherings and individual activities, effectively balances social interaction and personal reflection, which is crucial for mental health and user experience (Singh 2021; Zakaria et al. 2018). The development of public facilities and supporting infrastructure for community activities, designed to enhance comfort, has been identified as a priority indicator for public green open spaces (Persada and Putri 2018).

3.2. Influence of The City Forest Design

The Gelora Bung Karno City Forest (G.B.K.), spanning 4.5 hectares, offers a naturally serene and beautiful view with its dense canopy and lush green grass, providing a striking contrast to the surrounding urban skyscrapers. The City Forest excels in providing a relaxed and calming green space, and its integration with the surrounding nature is excellent, creating a tranquil atmosphere ideal for reflection and mental rejuvenation. The natural environment, with its abundant vegetation, positively contributes to air quality, enhancing the well-being of the city's residents. Despite the perceived lack of a cooling system (naturally optimized air circulation) and clear directional facilities, the forest remains one of the popular destinations for social interaction, picnics, and other leisure activities amidst the bustling city, a testament to its value to the community.

The implementation of healing architecture principles in the City Forest also considered twelve key aspects (as detailed in Table 1.1 and Appendix B.1).

Table 3.4. Observation Sheet Results on The City Forest

No	Aspects	Condition Score	Mean	Median	Mode	Variance Sample $S2$	Standard Deviation $\sqrt{S2}$	Result %
1.	Privacy and Togetherness	1, 5, 3	3	3	1	4.0	2.0	60%
2.	Views	5, 5, 5, 2	4.25	5	5	2.25	1.5	85%
3.	Nature and Outdoors	5, 5, 5, 3, 5, 5	4.67	5	5	0.67	0.82	93.4%
4.	Comfort and Control	1, 3, 3, 3, 2, 2, 2, 5, 1, 3	2.5	2.5	3	1.39	1.18	50%
5.	Readability of Place	1, 5, 5, 5, 1, 4	3.5	4.5	5	3.9	1.97	70%
6.	Interior Appearance	5, 5, 1	3.67	5	5	5.33	2.31	73.4%
7.	Facilities and Staff	5, 1, 5, 4, 1, 5	3.5	4.5	5	3.9	1.97	70%
8.	Integration of Light and Color	5, 2, 1, 4, 4	3.2	4	4	3.35	1.83	64%
9.	Circulation and Space Organization	5, 5, 5, 5, 5, 5, 5	5	5	5	0	0	100%
10.	Building Form and System	5, 5, 1, 5	4	5	5	4	2	80%
11.	Building Envelope	5, 5, 5, 5, 1, 1, 1, 1, 1, 3	2.8	2	1	3.96	1.99	56%
12.	Health Facilities	1, 1, 1, 1, 4	1.6	1	1	1.8	1.34	32%
Total								**69.4%**

Despite its lower overall score of 69.4%, the City Forest remains a unique and valuable asset in the G.B.K. Complex. Its strength lies in providing a natural escape from urban noise and chaos, offering users a place of peace and relaxation. The City Forest's role as a natural retreat is a unique value that should be appreciated, as it offers a serene environment for all who visit. It also excels in offering natural light and a calm atmosphere, both essential elements of healing architecture.

For statistical rigor, the variance ($\boldsymbol{S2}$), for each aspect was calculated using the formula $\boldsymbol{S2} = \frac{\sum_{i=1}^{n}(\boldsymbol{X_i}-\boldsymbol{Me})^2}{\boldsymbol{n-1}}$, where $\boldsymbol{X_i}$ is each score, $\boldsymbol{Me}$ is the mean, and $\boldsymbol{n}$ is the number of scores.

However, several limitations contributed to its lower score. Notably, "Physical Comfort" (associated with seating quality) received a low score (refer to Appendix B.1), confirming qualitative observations regarding limited comfortable seating availability. Similarly, "Readability of Place" scored 70%, reflecting issues with "Clear and easy-to-understand direction markings" and "Navigation routes" (refer Appendix B.1), aligning with the observed lack of clear navigational signage. Furthermore, "Artificial light distribution" (within

"Integration of Light and Color") scored 1, indicating poor nighttime usability and safety concerns. The aspect of "Health Facilities" also scored very low (32%), highlighting a critical area for improvement. These shortcomings, if not addressed, may significantly impact user experience and accessibility, especially after dark, despite the strong integration of natural elements (Singh 2021; Zakaria et al. 2018).

3.3. Overall Assessment and Comparative Discussion

The combined analysis of the Main Stadium Courtyard (82.7%) and the City Forest (69.4%) was conducted using a comprehensive evaluation framework that assesses various aspects of healing architecture. This methodology indicates that the Gelora Bung Karno Sports Complex successfully integrates principles of healing architecture, achieving an overall aggregated score of 76.05%. This overall score, calculated as the average of the two observed areas, reflects the complex's commitment to creating environments that are conducive to health and well-being.

Comparatively, the Main Stadium Courtyard demonstrates a more robust implementation across most healing architecture aspects, particularly in terms of spatial flexibility and clear circulation, making it highly effective for diverse user activities. Conversely, the City Forest, while providing an invaluable natural retreat, reveals specific deficiencies in user-centric facilities such as improved seating and straightforward navigation. However, the most urgent need is for enhanced artificial lighting for extended usability and safety. Both areas, however, exhibit strong capabilities in integrating natural elements and promoting visual comfort. Addressing the identified weaknesses in each specific area can significantly elevate the holistic healing potential of the entire G.B.K. Complex, further solidifying its role as a pioneering urban model for health-promoting design (Andreucci et al. 2021; Singh 2021).

4. Conclusion

This study, conducted using a comprehensive methodology that included on-site observations, user surveys, and expert evaluations, has not only successfully assessed the current implementation of healing architecture principles at the Gelora Bung Karno (G.B.K.) Sports Complex but also identified key opportunities for further enhancement to optimize user well-being (DuBose et al. 2018; Singh 2021). The impressive overall score of 76.05%, derived from the combined evaluations of the Main Stadium Courtyard and the City Forest, is a testament to the complex's strong commitment to integrating elements that foster physical and mental health.

The Main Stadium Courtyard, scoring 82.7%, aligns strongly with healing architecture, particularly through its robust connection to nature, flexible spatial design, and highly legible environment (Salingaros 2015). However, the assessment identified specific areas for improvement, particularly in its health facilities and the consistent integration of environmentally friendly materials. The City Forest, while supportive of healing architecture with a score of 69.4%, presents significant opportunities for enhancement, especially in the areas of artificial lighting, provision of comfortable seating, and clarity of navigational signage. Despite these areas for improvement, the City Forest's alignment with healing architecture reassures us about the overall design of the complex. These findings align with existing literature on the benefits of natural spaces and adaptable designs in urban contexts (Milliken et al. 2023; Souter-Brown 2014), underscoring the pivotal role of environmental quality in promoting public health within urban complexes. A well-designed public open space, responsive to user needs, democratic in protecting rights, and meaningful in its connection to history, culture, and the environment, is crucial for accommodating public activities (Yanti 2016).

In conclusion, the Gelora Bung Karno (G.B.K.) Sports Complex stands as a compelling model for creating urban environments that effectively reduce stress and encourage relaxation (Andreucci et al. 2021; Zakaria et al. 2018). The study's findings, particularly the identified areas for improvement in lighting systems, user accessibility, and sustainable material integration, provide a clear roadmap for further elevating G.B.K.'s role as a pioneering example for integrating healing architecture into large-scale urban sports complexes, fostering holistic well-being for all its users. This role of the G.B.K. Sports Complex as a model for healing architecture should inspire and motivate other urban planners and architects. Overall, the determination of quality improvement priorities for sustainable urban settlements indicates that the social aspect, particularly community commitment to environmental maintenance, is more crucial than physical or economic aspects (Mutaqin et al. 2019).

Acknowledgments

The authors would like to express sincere appreciation to the University of Lampung for the invaluable guidance and the financial support that have facilitated this research. The contributions of the lecturers and staff at the Department of Architecture are greatly appreciated, especially for providing the resources and environment essential for the completion of this research. However, it is the invaluable emotional support from friends and family, whose encouragement has been a constant source of motivation and a reminder of the human aspect of our work, that we wish to acknowledge most deeply.

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jADU
Vol 8 No 1 2025
42-54
Journal of Architectural Design and Urbanism
https://ejournal2.undip.ac.id/index.php/jadu
E-ISSN: 2620-9810

Appendix A.1

Table 3.1. Observation Sheet on The Main Stadium Courtyard

No.	Aspects	Indicators	Score				
			1	2	3	4	5
1.	**Privacy and Togetherness**	Individual space facilities	X				
		Shared space facilities	X				
		Flexibility of private and shared spaces					X
2.	**View**	Landscape view					X
		City view					X
		Interior visual view					X
		Exterior visual view					X
3.	**Nature and Outdoors**	Integration with nature					X
		Open space facilities					X
		Green open space facilities					X
		Outside conditions					X
		Vegetation conditions					X
		Inside conditions			X		
4.	**Comfort and Control**	**Thermal Comfort**					
		Cooling system			X		
		Inside temperature			X		
		Outside temperature			X		
		Acoustic Comfort					
		Noise inside		X			
		Noise outside			X		
		Visual Comfort					
		Quality of lighting inside					X
		Quality of lighting outside				X	
		Physical Comfort					
		Inside seating quality			X		
		Outside seating quality				X	
		Control					
		Direction control					X
5.	**Readibility of Place**	Clear and easy-to-understand direction markings					X
		Color conditions on directional signs					X
		Font conditions on directional signs					X
		Symbol conditions on directional signs				X	
		Navigation routes					X
		Use of technology to guide visitors				X	
6.	**Interior Appearance**	Cleanliness					X
		Neatness					X
		Art installations					X
7.	**Facilities and Staff**	Toilet facilities and janitor				X	
		ATM facilities	X				
		Prayer room facilities	X				
		Information area facilities	X				
		Security facilities					X
		Dining area facilities					X
8.	**Integration of Light and Color**	Natural light distribution					X
		Handling of excessive natural light					X
		Artificial light distribution					X
		Color contrast					X
		Color contrast in furniture					X
9.	**Circulation and Space Organization**	Circulation of exit and entrance paths					X
		Transition between outdoor spaces					X
		Accessibility for the disabled					X
		Availability of public areas					X
		Availability of social interaction areas					X
		Clear and easily identifiable paths					X
		Zoning of public areas, commercial areas, and private areas			X		

doi: 10.14710/jadu.v8i1.24539

10.	**Building Form and System**	Building form towards receiving natural lighting					X
		Building form towards distribution of natural lighting					X
		Building form in reducing heat gain					X
		Building form in supporting natural air circulation					X
11.	**Building Envelope**	Building orientation towards the sun					X
		Building orientation towards the wind					X
		Openings towards air circulation					X
		Openings towards natural lighting					X
		Facade protection against the sun and excessive heat					X
		Permeable system against air flow					X
		Double skin wall against thermal insulation					X
		Double skin wall against acoustic insulation				X	
		Roof design towards temperature					X
		Use of environmentally friendly materials	X				
12.	**Health Facilities**	Availability of facilities first aid health		X			
		Completeness of health facilities		X			
		Availability of health workers at health facilities		X			
		Accessibility to health facilities for visitors	X				
		Accessibility to health facilities for ambulances					X

Appendix B.1

Table 3.3. Observation Sheet on The City Forest

No.	Aspects	Indicators	Score				
			1	2	3	4	5
1.	**Privacy and Togetherness**	Individual space facilities	X				
		Shared space facilities					X
		Flexibility of private and shared spaces			X		
2.	**View**	Landscape view					X
		City view					X
		Interior visual view					X
		Exterior visual view		X			
3.	**Nature and Outdoors**	Integration with nature					X
		Open space facilities					X
		Green open space facilities					X
		Outside conditions			X		
		Vegetation conditions					X
		Inside conditions					X
4.	**Comfort and Control**	**Thermal Comfort**					
		Cooling system	X				
		Inside temperature			X		
		Outside temperature			X		
		Acoustic Comfort					
		Noise inside			X		
		Noise outside		X			
		Visual Comfort					
		Quality of lighting inside		X			
		Quality of lighting outside		X			
		Physical Comfort					
		Inside seating quality					X
		Outside seating quality	X				
		Control					
		Direction control			X		
5.	**Readibility of Place**	Clear and easy-to-understand direction markings	X				
		Color conditions on directional signs					X
		Font conditions on directional signs					X
		Symbol conditions on directional signs					X
		Navigation routes	X				
		Use of technology to guide visitors				X	
6.	**Interior Appearance**	Cleanliness					X
		Neatness					X

		Art installations	X				
7.	**Facilities and Staff**	Toilet facilities and janitor					X
		ATM facilities	X				
		Prayer room facilities					X
		Information area facilities				X	
		Security facilities	X				
		Dining area facilities					X
8.	**Integration of Light and Color**	Natural light distribution					X
		Handling of excessive natural light		X			
		Artificial light distribution	X				
		Color contrast				X	
		Color contrast in furniture				X	
9.	**Circulation and Space Organization**	Circulation of exit and entrance paths					X
		Transition between outdoor spaces					X
		Accessibility for the disabled					X
		Availability of public areas					X
		Availability of social interaction areas					X
		Clear and easily identifiable paths					X
		Zoning of public areas, commercial areas, and private areas					X
10.	**Building Form and System**	Building form towards receiving natural lighting					X
		Building form towards distribution of natural lighting					X
		Building form in reducing heat gain	X				
		Building form in supporting natural air circulation					X
11.	**Building Envelope**	Building orientation towards the sun					X
		Building orientation towards the wind					X
		Openings towards air circulation					X
		Openings towards natural lighting					X
		Facade protection against the sun and excessive heat	X				
		Permeable system against air flow	X				
		Double skin wall against thermal insulation	X				
		Double skin wall against acoustic insulation	X				
		Roof design towards temperature	X				
		Use of environmentally friendly materials			X		
12.	**Health Facilities**	Availability of facilities first aid health	X				
		Completeness of health facilities	X				
		Availability of health workers at health facilities	X				
		Accessibility to health facilities for visitors	X				
		Accessibility to health facilities for ambulances				X	