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ORIGINAL ARTICLE

Designing Urban Sports Venues with a Crime Prevention Approach: A Case Study of Tehran

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Extended Abstract

Introduction

Urban sports venues, as a key component of public infrastructure, play a vital role in promoting community health and social cohesion. These spaces are the foundation for sports activities, hosting training sessions, competitions, and community-based events. Their accessibility and design influence how effectively the population, across various age groups and social strata, engages in physical activity.

However, the environments in which these facilities are situated also impact safety and public well-being. Crime remains a consistent feature of human societies, and researchers have long explored the environmental and social conditions that enable or prevent criminal behavior. Among these, the design and spatial structure of urban areas — including sports venues — are crucial factors in either deterring or facilitating crime.

Research in criminology and environmental psychology shows that the physical layout of urban spaces can influence behaviors, offering either visibility and safety or hiding places and vulnerability. Sports complexes, often accommodating large numbers of people, require careful design that accounts not only for aesthetics and usability but also for safety, surveillance, and accessibility. This study explores how urban sports facilities can be planned with a crime prevention approach, using Tehran as a case study.

Methodology

This research is applied in nature and employs a mixed exploratory method to investigate the design of urban sports venues from a crime prevention perspective. The study integrates qualitative and quantitative approaches to provide a comprehensive understanding of the issue. In the qualitative stage, a purposive sampling method was used to select experts from a wide range of disciplines, including:- Urban planning and geography (location analysis)-

Environmental engineering (sustainability)- Architecture (aesthetics, safety, and spatial design)- Sports management (economic feasibility)- Criminology and criminal law (crime prevention principles)

A total of 18 specialists participated in interviews until theoretical saturation was achieved. The insights gained were used to identify the major factors influencing crime prevention in sports venue design.

In the quantitative phase, the statistical population comprised managers of public and private sports facilities in Tehran. Based on the municipality's reports, over 2,800 active sports venues exist in the city. Using the Cochran formula, 337 managers were randomly selected as the sample.

A researcher-developed questionnaire, grounded in literature review and expert interviews, was used for data collection. The finalized instrument consisted of 96 questions grouped under 8 main factors.

- Face and content validity were confirmed by a panel of 10 experts.
- Construct validity was assessed using both exploratory and confirmatory factor analyses.

- Reliability was verified via Cronbach's alpha ($\alpha = 0.89$), using a pilot study on 30 participants.

Data analysis included:- Descriptive statistics (frequency, mean, standard deviation, min/max)- Normality testing via the Kolmogorov-Smirnov test- Exploratory and confirmatory factor analysis to validate constructs and design models- Friedman test for prioritization of influencing factors

SPSS v22 and AMOS v16 software were used for statistical calculations.

Findings

The results of the exploratory factor analysis indicated that the dataset was suitable for analysis. The Kaiser-Meyer-Olkin (KMO) index was 0.950, which is considered excellent, and Bartlett's Test of Sphericity confirmed the adequacy of the sample.

From the factor analysis, 8 key components were identified that affect the design of urban sports venues with a crime prevention approach: 1. Aesthetics 2. Economic sustainability 3. Social sustainability 4. Environmental comfort and revitalization 5. Outdoor landscaping 6. Environmental sustainability 7. Location 8. Safety

Together, these components accounted for 63.76% of the total variance, indicating a strong explanatory model.

Factor Relationships and Prioritization Using confirmatory factor analysis, all 8 components showed a significant relationship with the central concept of crime prevention in design. To test the null hypothesis — that no significant difference exists among these factors — the Friedman test was applied. Results showed statistically significant differences ($p \leq 0.01$, $\chi^2 = 364.86$).

The prioritization of factors according to participant responses was as follows: 1. Aesthetics (5.43) 2. Economic sustainability 3. Social sustainability 4. Environmental revitalization 5. Outdoor landscaping 6. Environmental sustainability 7. Location 8. Safety (3.95)

Interestingly, while aesthetics was ranked highest, safety received the lowest average rank - a finding that warrants further investigation.

Discussion and Conclusion

The study identified eight major dimensions that influence the design of urban sports venues with crime prevention in mind. Among them, aesthetic considerations were given the highest importance by stakeholders, while safety, surprisingly, was perceived as less prioritized, despite its essential role in crime

deterrence.

This reflects a broader tension in urban design between visual appeal and functional security. While aesthetics attract users and promote social cohesion, they must not come at the cost of user safety. Architects and planners need to balance these objectives through integrated design strategies.

Effective crime prevention in sports venues involves attention to spatial clarity, visibility, and circulation:- Clear sightlines should be maintained by avoiding tall shrubs, obstructive kiosks, or excessive partitions.- Lighting must be ensured 24/7 in key circulation areas: entrances, exits, hallways, stairwells, and lobbies.- Emergency exits should be well-marked and directly accessible.- Corridors should be short, straight, and visible from multiple angles.- Windows and walls must be placed strategically to eliminate blind spots and reduce hiding places.

On a broader scale, the use of natural elements such as green spaces, water features, and open plazas can enhance both the visual and psychological safety of users. However, materials, landscaping, and forms must support visibility and not impede movement or oversight.

In many developed countries, the design of public spaces - including sports venues - increasingly incorporates crime prevention through environmental design (CPTED) principles. These strategies not only reduce crime but also improve the quality and attractiveness of urban environments.

In contrast, sports facility development in Iran over the past three decades has often focused more on functionality and quantity, rather than design sophistication or safety. Many venues resemble large sheds, with minimal attention to architectural detail or user experience.

This study emphasizes the need for a comprehensive, research-based design model for sports venues in Iran. The proposed framework, grounded in interdisciplinary insights, offers valuable guidance for architects, municipal planners, investors, and policymakers. It enables them to align design efforts with safety, sustainability, and aesthetic quality.

KEY WORDS

Design of Sports Facilities, Crime Prevention, Tehran Province.

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