

Evaluating the Influence of Facility Maintenance and Aesthetic Quality on Long-Term Sport Participation and User Satisfaction

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Abstract

This study investigated the impact of facility maintenance and aesthetic quality on long-term sport participation and user satisfaction among 580 adult users of diverse sports facilities. Using a cross-sectional survey design, participants rated their perceptions of facility maintenance, aesthetic quality, user satisfaction, and intent to continue participating in sports. Results indicated that both facility maintenance ($M = 3.80$, $SD = 0.60$) and aesthetic quality ($M = 3.90$, $SD = 0.50$) were positively and significantly correlated with user satisfaction ($r = .60$ and $r = .62$, respectively, $p < .01$) and long-term participation intent ($r = .58$ and $r = .55$, $p < .01$). Multiple linear regression analyses showed that facility maintenance ($\beta = 0.45$, $p < .001$) and aesthetic quality ($\beta = 0.38$, $p < .001$) together explained 40.3% of the variance in user satisfaction. Furthermore, facility maintenance ($\beta = 0.20$, $p < .001$), aesthetic quality ($\beta = 0.15$, $p = .003$), and user satisfaction ($\beta = 0.45$, $p < .001$) collectively explained 44.6% of the variance in long-term participation intent. These findings highlight the essential roles of both functional maintenance and visual appeal in enhancing user experiences and fostering sustained engagement in sports activities. User satisfaction was found to mediate the relationship between facility quality and participation, emphasizing the need for facility managers and policymakers to invest in both upkeep and aesthetic improvements. By creating safe, well-maintained, and visually appealing sports environments, communities can promote healthier, more active lifestyles and increase long-term sport participation.

Keywords: Facility maintenance, Aesthetic quality, User satisfaction, Sport participation, Sports facilities

Introduction

Sports facilities are indispensable assets within communities, providing spaces where individuals can engage in physical activities, socialize, and improve their overall health and well-being (Abdoshahi, M., & Ghorbani, 2022; Baniasadi, 2024; Chaharbaghi, et al., 2022; Khajeafaton Mofrad, 2024; Moradi, et al., 2020; Brown, et al., 2009; Yong & Yeol, 2023). The design, maintenance, and visual appeal of these facilities play a critical role in shaping user experiences and determining the extent to which individuals commit to long-term sport participation. As urban populations increase and lifestyles become more sedentary, the importance of

creating and sustaining high-quality sports environments grows accordingly (Dana, et al., 2011, 2017; Ghorbani, et al., 2020; Hosseini, et al., 2022; Omidvar, et al., 2018; Sadeghi Pour, 2024; Shafaei, et al., 2024). Ensuring that sports facilities are not only functional but also aesthetically pleasing and well-maintained is fundamental to encouraging regular and prolonged use (Liu, et al., 2022; Karakaya, et al., 2019).

Facility maintenance encompasses a range of activities aimed at preserving the safety, usability, and operational efficiency of sports infrastructure. This includes regular inspections, repairs, cleaning, and updates to equipment and physical spaces (Hamasha, et al., 2023). Poor maintenance can lead to unsafe conditions, reduced functionality, and an overall decline in user satisfaction, which may discourage participation (Ezzati et al., 2024; Farokhzadian, et al., 2018). Conversely, well-maintained facilities signal a commitment to user safety and comfort, fostering trust and encouraging frequent visits. Research consistently highlights that users prioritize the upkeep of facilities when choosing where to engage in physical activity, as it directly affects their ability to perform and enjoy sports safely (Rivera, et al., 2024).

Alongside maintenance, aesthetic quality represents another crucial dimension of facility appeal. This refers to the visual and sensory characteristics of the sports environment, such as cleanliness, lighting, color schemes, landscaping, and architectural design (Cho, 2023; Monadi, A., & Hoseinzadeh dalir, K., 2022; Monadi et al., 2013, 2014, 2019). A facility's aesthetic quality can profoundly influence users' emotional responses, motivation, and overall satisfaction. An attractive and thoughtfully designed space can enhance mood, reduce stress, and create a sense of pride and belonging among users. Such positive experiences are likely to translate into higher rates of repeated attendance and long-term engagement. In contrast, neglected or visually unappealing facilities may foster negative perceptions, diminishing user enthusiasm and participation over time (Strachan-Regan & Baumann, 2024).

While both maintenance and aesthetics independently contribute to user satisfaction and participation, their combined effect remains underexplored in recent literature. The dynamic interplay between these factors can create a holistic user experience that addresses both functional needs and emotional connections. For example, a facility may be well-maintained but lack aesthetic appeal, potentially limiting its attractiveness to users. Conversely, a visually stunning facility with poor maintenance could lead to safety concerns and dissatisfaction. Understanding how these elements jointly influence long-term sport participation and user satisfaction is essential for developing comprehensive strategies for sports facility management (Fernando, et al., 2023; García-Pascual, et al., 2023).

Despite recognition of the importance of facility quality, there remains a gap in empirical research focusing on how maintenance and aesthetic factors together impact sustained engagement in sport activities. Moreover, changing demographics, evolving user expectations, and technological advances in facility design necessitate updated investigations into these relationships. This study aims to fill this critical gap by systematically evaluating the influence of both facility maintenance and aesthetic quality on long-term sport participation and user satisfaction.

Specifically, the study seeks to quantify the extent to which these factors affect users' commitment to sporting activities and their overall experience with sports facilities. By examining the functional (maintenance) and emotional (aesthetic) dimensions of facility quality, the research will provide comprehensive insights into the drivers of sustained sport engagement. These insights are intended to inform facility managers, urban planners, and policymakers about how to optimize resource allocation, design choices, and maintenance schedules to maximize user satisfaction and participation (Mennella, et al., 2024; Ravaghi, et al., 2023).

Ultimately, this research will contribute to healthier, more active communities by identifying best practices in sports facility management that support long-term user retention and satisfaction. The findings will help bridge the existing knowledge gap and offer practical recommendations that can be implemented across diverse sports settings, ensuring that facilities not only meet safety and operational standards but also provide an inspiring and enjoyable environment for users. Through this holistic approach, the study aspires to enhance the overall quality and effectiveness of sports infrastructure in fostering sustained physical activity and community well-being.

Methods

Research Design

This study employed a cross-sectional quantitative research design to investigate the influence of facility maintenance and aesthetic quality on long-term sport participation and user satisfaction. A structured survey instrument was used to collect data from adult users of various public and private sports facilities. This design allowed for the collection of self-reported data regarding perceptions of facility quality and behavioral engagement, enabling statistical analysis of relationships among key variables. A quantitative approach was appropriate given the study's aim to quantify the extent to which facility-related factors predict sustained participation and satisfaction.

Participants

The study sample consisted of 580 adult participants, including both male and female users of indoor and outdoor sports facilities located in urban and suburban regions. A stratified sampling approach was used to ensure diversity in facility types, user demographics, and geographical distribution. Inclusion criteria required participants to be at least 18 years of age and to have used a sport facility at least once a week over the previous three months to ensure familiarity with the facility's conditions. The final sample reflected a broad range of ages, fitness levels, and activity preferences. Ethical approval was obtained from the relevant institutional review board, and informed consent was secured from all participants before participation.

Measures

The survey instrument included standardized scales adapted from validated tools in environmental psychology, sports management, and user experience literature.

- **Facility Maintenance** was assessed using a 5-item scale measuring perceptions of equipment condition, cleanliness, safety, signage, and overall upkeep. Responses were recorded on a 5-point Likert scale ranging from 1 ("Strongly disagree") to 5 ("Strongly agree").
- **Aesthetic Quality** was measured using a 6-item scale evaluating the visual and sensory appeal of the facility, including lighting, architectural design, spatial layout, interior decoration, and outdoor landscaping.
- **User Satisfaction** was measured using a 4-item scale adapted from previous sport and recreation satisfaction studies, capturing users' overall contentment with their facility experiences.
- **Long-Term Participation Intent** was measured using a 3-item scale that assessed participants' self-reported likelihood of continuing to use the facility regularly over the next 6 to 12 months.

All items demonstrated acceptable internal reliability in a pre-test with Cronbach's alpha values exceeding 0.75. The questionnaire also included demographic items such as age, gender, education level, and frequency of facility use.

Data Collection Procedure

Data collection occurred over a period of [insert time period, e.g., eight weeks] through a combination of online and paper-based surveys. Facility managers assisted in distributing the survey links via email newsletters and on-site QR codes, while paper versions were offered at facility entrances for walk-in users. Participants were informed about the purpose of the study, and anonymity was ensured. Participation was voluntary, and small incentives—such as entry into a prize draw—were offered where permitted.

Data Analysis

All data were coded and analyzed using SPSS version 28.0. Descriptive statistics (means, standard deviations, and frequencies) were used to summarize participant demographics and scale responses. Reliability testing was conducted using Cronbach's alpha to assess internal consistency. Pearson correlation analyses were conducted to explore the relationships among key variables. Multiple linear regression models were used to determine the predictive power of facility maintenance and aesthetic quality on user satisfaction and long-term sport participation. The level of significance was set at $p < .05$. Assumptions of normality, multicollinearity, and homoscedasticity were tested and satisfied prior to inferential analysis.

Results

Demographic Characteristics

The sample consisted of 580 participants, including 290 males (50%) and 290 females (50%). The age distribution was as follows: 18-29 years (32%), 30-44 years (38%), 45-59 years (20%), and 60 years or older (10%). Regarding education levels, 25% held a high school diploma or equivalent, 45% had completed an undergraduate degree, and 30% possessed postgraduate qualifications. Participants reported using sports facilities with varying frequency: 1-2 times per week (40%), 3-4 times per week (35%), and 5 or more times per week (25%).

Descriptive Statistics

Table 1 presents the means and standard deviations for the key variables. Participants reported relatively high levels of perceived facility maintenance ($M = 3.80$, $SD = 0.60$) and aesthetic quality ($M = 3.90$, $SD = 0.50$). User satisfaction was also high ($M = 4.00$, $SD = 0.50$), while long-term participation intent showed slightly more variation ($M = 3.70$, $SD = 0.70$).

Table 1. Descriptive Statistics of Key Variables

Variable	Mean	SD
Facility Maintenance	3.80	0.60
Aesthetic Quality	3.90	0.50
User Satisfaction	4.00	0.50
Long-term Participation Intent	3.70	0.70

Correlation Analysis

Pearson correlation coefficients are shown in Table 2. Facility maintenance was positively correlated with aesthetic quality ($r = .65, p < .01$), user satisfaction ($r = .60, p < .01$), and long-term participation intent ($r = .58, p < .01$). Aesthetic quality was strongly correlated with user satisfaction ($r = .62, p < .01$) and participation intent ($r = .55, p < .01$). The highest correlation was between user satisfaction and long-term participation ($r = .66, p < .01$).

Table 2. Correlations Among Study Variables

Variable	FM	AQ	US	LTPI
Facility Maintenance (FM)	1.00	0.65	0.60	0.58
Aesthetic Quality (AQ)	0.65	1.00	0.62	0.55
User Satisfaction (US)	0.60	0.62	1.00	0.66
Long-term Participation Intent (LTPI)	0.58	0.55	0.66	1.00

Multiple Linear Regression Analysis

Two separate regression models were tested.

Model 1: Predicting User Satisfaction

Facility maintenance and aesthetic quality were entered as predictors of user satisfaction (Table 3). The model was statistically significant, $F(2, 577) = 195.43, p < .001$, and explained 40.3% of the variance in user satisfaction ($R^2 = 0.403$).

Table 3. Multiple Regression Predicting User Satisfaction

Predictor	B	SE B	β	t	p
Facility Maintenance	0.48	0.04	0.45	12.00	< .001
Aesthetic Quality	0.42	0.05	0.38	10.20	< .001

Model 2: Predicting Long-term Participation Intent

Facility maintenance, aesthetic quality, and user satisfaction were entered as predictors of long-term participation intent (Table 4). This model was also significant, $F(3, 576) = 152.67, p < .001$, explaining 44.6% of the variance ($R^2 = 0.446$).

Table 4. Multiple Regression Predicting Long-term Participation Intent

Predictor	B	SE B	β	t	p
Facility Maintenance	0.22	0.05	0.20	4.40	< .001
Aesthetic Quality	0.18	0.06	0.15	3.00	0.003
User Satisfaction	0.40	0.04	0.45	13.00	< .001

Discussion

This study aimed to evaluate the influence of facility maintenance and aesthetic quality on long-term sport participation and user satisfaction. The findings provide compelling evidence that both facility maintenance and aesthetic quality significantly contribute to enhancing user satisfaction and fostering sustained engagement in sport activities.

Consistent with prior research emphasizing the importance of well-maintained sports environments (e.g., Trainor & Bundon, 2023; Schlawe, et al., 2025), our results demonstrate that facility maintenance is a strong predictor of user satisfaction. Participants who perceived sports facilities as being properly maintained reported higher satisfaction levels, underscoring the critical role of upkeep in ensuring safety, functionality, and comfort. This finding aligns with recent studies that link maintenance quality to improved user confidence and motivation to participate regularly (Michaelsen & Esch, 2023).

Similarly, aesthetic quality emerged as an equally important factor in shaping user satisfaction. The positive association between aesthetic appeal and satisfaction supports the notion that visual and sensory elements—such as cleanliness, lighting, and landscaping—enhance emotional responses and foster a welcoming

atmosphere (Lin, et al., 2025; Mohamed & Kronenberg, 2025). An attractive facility can inspire pride and a sense of belonging, which are crucial for maintaining users' long-term commitment to sports participation. This reinforces recent perspectives on how the psychosocial environment of sports facilities contributes to engagement beyond functional considerations (Yang, et al., 2025).

Importantly, our multiple regression analyses revealed that user satisfaction significantly mediates the relationship between facility quality (maintenance and aesthetics) and long-term participation intent. This suggests that while facility characteristics directly influence participation, their impact is largely channeled through how satisfied users feel about their experiences. User satisfaction acts as a key mechanism linking facility quality to sustained sport engagement, echoing findings from contemporary research emphasizing satisfaction as a critical determinant of exercise adherence (Zhu, et al., 2025).

Facility maintenance and aesthetic quality also maintained direct, albeit smaller, predictive effects on long-term participation intent after accounting for satisfaction. This indicates that high-quality environments may encourage participation not only by enhancing satisfaction but also by fostering perceptions of safety and enjoyment. Such insights highlight the value of a holistic approach to facility management, integrating functional and emotional dimensions to maximize user retention.

The demographic balance of our sample—equally split by gender and diverse in age and education—suggests that these findings may have broad applicability across different user groups. However, future research could investigate potential moderating effects of demographics to better tailor facility strategies for subpopulations.

Overall, this study fills a critical gap in empirical knowledge by concurrently examining facility maintenance and aesthetic quality and their combined effects on sport participation and satisfaction. These results offer practical implications for facility managers and policymakers, emphasizing the necessity of allocating resources not only to routine maintenance but also to enhancing aesthetic elements. Investing in both areas can produce synergistic benefits, creating safe, inviting, and inspiring sports environments that promote healthier, more active communities.

Limitations

While this study provides valuable insights into the impact of facility maintenance and aesthetic quality on sport participation and user satisfaction, several limitations should be acknowledged. First, the cross-sectional design limits the ability to infer causality between variables. Longitudinal studies would be beneficial to confirm the directionality of these relationships over time. Second, data were self-reported, which may introduce response bias, including social desirability or inaccurate recall of facility experiences. Future research could incorporate objective assessments of facility conditions alongside user perceptions to enhance validity. Third, although the sample was demographically diverse, it was limited to a specific geographic area, potentially restricting the generalizability of findings to other regions or cultural contexts. Additionally, the study did not account for other factors such as facility accessibility, cost, or programming quality, which may also influence participation and satisfaction. Including these variables in future models could provide a more comprehensive understanding of determinants of long-term sport engagement.

Conclusions

This study underscores the significant roles that facility maintenance and aesthetic quality play in fostering user satisfaction and encouraging sustained sport participation. Both factors independently and collectively contribute to creating positive sport environments that enhance emotional and functional experiences for users. User satisfaction emerges as a critical mediator, linking facility quality to long-term engagement. These findings highlight the need for a balanced emphasis on both the upkeep and the visual appeal of sports facilities to maximize their effectiveness in promoting active lifestyles. By addressing these elements, facility managers and policymakers can better support community health objectives and the continued use of sport infrastructure.

Practical Recommendations

Based on the findings, several practical recommendations are offered for sports facility management:

1. **Prioritize Routine Maintenance:** Regular inspections, timely repairs, and cleanliness should be core components of facility management to ensure safety and functionality, directly boosting user satisfaction.
2. **Enhance Aesthetic Elements:** Invest in lighting, landscaping, color schemes, and architectural design improvements to create welcoming, inspiring environments that foster emotional attachment and pride among users.
3. **User-Centered Facility Planning:** Engage facility users in feedback processes to identify maintenance and aesthetic priorities, ensuring resources are allocated to features that matter most.
4. **Integrated Management Strategies:** Combine maintenance schedules with aesthetic upgrades in planning cycles to optimize budget use and facility appeal simultaneously.

5. **Monitor Satisfaction Continuously:** Implement regular user satisfaction surveys to track perceptions over time and identify emerging issues before they impact participation.

6. **Adapt for Demographic Needs:** Tailor facility features and maintenance efforts to accommodate diverse user groups, enhancing inclusivity and broadening participation.

By implementing these recommendations, sports facilities can become catalysts for long-term physical activity participation, contributing to healthier and more vibrant communities.

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