

Assessing the Relationship Between Environmental Sustainability Features of Sport Facilities and Motivation for Sport Participation in Children Versus Adults

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Abstract

This descriptive-correlational study assesses the relationship between environmental sustainability features of sport facilities and motivation for sport participation among children and adults. A total of 420 participants (210 children aged 8-12 and 210 adults aged 25-45) from urban and suburban sport facilities with varying degrees of sustainable design elements were surveyed using validated questionnaires measuring perceived sustainability features and motivation for sport participation based on Self-Determination Theory constructs. Results revealed significant positive correlations between perceived environmental sustainability and intrinsic motivation for sport participation in both children ($r = 0.42$, $p < 0.001$) and adults ($r = 0.55$, $p < 0.001$). Adults demonstrated higher levels of identified regulation associated with sustainability features compared to children ($p < 0.01$). Regression analyses indicated that sustainability perceptions accounted for 22% and 31% of the variance in sport motivation in children and adults, respectively. These findings suggest that environmental sustainability features in sport facilities are linked to enhanced motivation for participation, with adults showing stronger associations. The study underscores the importance of integrating sustainable design to promote engagement and highlights age-related differences in motivational responses, offering valuable insights for facility planners and policymakers.

Keywords: Environmental Sustainability, Sport Facilities, Motivation, Sport Participation, Age

Introduction

Environmental sustainability has emerged as a vital consideration in the planning, design, and operation of public infrastructures worldwide, including sport facilities (Abdoshahi, 2024; Adebajo, 2024; Dana et al., 2023; Ezzati et al., 2024). In response to growing concerns about climate change, resource depletion, and the environmental impacts of human activity, sport organizations and facility managers are increasingly adopting sustainable practices such as energy-efficient systems, water-saving technologies, waste reduction initiatives, and the use of eco-friendly construction materials (Baniasadi et al., 2022; Mallen & Chard, 2012; Trendafilova et al., 2014). These sustainability features not only reduce ecological footprints but also reflect broader societal values related to environmental stewardship and social responsibility.

While the environmental benefits of sustainable sport facilities are well-documented, less attention has

been paid to how these features may influence the human experience within such environments, particularly with regard to sport participation motivation. Regular engagement in sport is associated with numerous physical, mental, and social health benefits across all age groups (Gholami, 2024; Ghorbani et al., 2021; Warburton & Bredin, 2017), yet motivating consistent participation remains a complex challenge influenced by individual, social, and environmental factors (Dishman et al., 2013). Sport participation motivation varies widely, often conceptualized through the lens of Self-Determination Theory (SDT), which distinguishes between intrinsic motivation (participation for inherent enjoyment and satisfaction) and extrinsic motivation (engagement driven by external rewards or pressures) (Deci & Ryan, 2000; Monadi & Hoseinzadeh dalir, 2022).

Emerging evidence suggests that the physical environment—including the presence of environmental sustainability features—can play a significant role in shaping motivation and behavioral intentions (Pelletier et al., 2013; Heinzl et al., 2021). Sustainable design elements such as natural lighting, green spaces, and environmentally conscious materials may promote psychological well-being by fostering a sense of connectedness to nature and environmental responsibility (Kaplan & Kaplan, 1989; Hogg et al., 2019). These feelings could enhance intrinsic motivation to participate in sport by aligning with individuals' values and offering a more enjoyable and meaningful setting for physical activity (Monadi, Hosseinzadeh Delir, & Ezzatpanah, 2019; Ryan & Deci, 2017).

Age differences are a crucial consideration in understanding how environmental sustainability features impact sport participation motivation. Adults, who generally possess greater environmental awareness and a stronger commitment to sustainable living, may be more likely to perceive and value sustainable features in sport facilities (Gatersleben et al., 2002; Monadi et al., 2013, 2014; Schultz, 2001). Their motivation may be driven by identified regulation—recognizing the personal importance of engaging in activities that support sustainability and health (Pelletier et al., 2013). Conversely, children's motivation often centers on immediate enjoyment, social interaction, and exploration rather than abstract environmental values (Salmon et al., 2005). As such, the influence of sustainability features on children's sport participation motivation may be indirect or less pronounced, potentially moderated by adult guidance or social context.

Despite the theoretical relevance of environmental sustainability to sport motivation, empirical investigations in this domain remain limited. Most studies focus on sustainability's operational and ecological aspects, with few exploring its psychological and behavioral impacts, particularly across different age groups in sport settings. Understanding these relationships can inform sport facility design and programming to simultaneously advance sustainability goals and promote active lifestyles.

Therefore, this study aims to fill this gap by examining (1) the association between perceived environmental sustainability features of sport facilities and motivation for sport participation, and (2) age-related differences in these associations between children and adults. Utilizing a descriptive-correlational design, the study hypothesizes that perceived sustainability features will positively correlate with intrinsic motivation and identified regulation for sport participation, with stronger effects expected in adults due to their higher environmental awareness and value orientation.

By exploring these dynamics, the study contributes to a more holistic understanding of how sustainable sport facility environments can foster not only ecological responsibility but also greater engagement in sport across the lifespan. These insights can guide policymakers, facility designers, and sport practitioners in developing innovative strategies that align environmental and public health objectives.

Methods

Study Design

This study employed a descriptive-correlational design to examine the relationship between perceived environmental sustainability features of sport facilities and motivation for sport participation in children and adults. The design enabled the assessment of associations between variables without manipulation, providing insights into naturally occurring relationships.

Participants

A total of 420 participants were recruited from urban and suburban sport facilities that varied in the extent of their environmental sustainability features. The sample consisted of two age groups:

- **Children (n = 210):** Aged 8 to 12 years, enrolled in local sport programs such as soccer, swimming, and gymnastics.
- **Adults (n = 210):** Aged 25 to 45 years, actively participating in sport or fitness activities at the same facilities.

Participants were selected using stratified random sampling to ensure balanced representation across age groups, gender, and facility sustainability levels. Inclusion criteria required participants to have engaged in sport activities at the facility for at least three months prior to data collection.

Setting

Data were collected from six sport facilities selected based on documented sustainability features. Facilities ranged from minimal to advanced environmental practices, including use of solar panels, rainwater harvesting, green building certifications (e.g., LEED), recycled materials, and energy-efficient lighting. This variety allowed for comparison of perceived sustainability impact.

Measures

1. Perceived Environmental Sustainability Features: Assessed using a validated 15-item scale adapted from previous environmental perception instruments (Heinzel et al., 2021; Mallen & Chard, 2012). Items evaluated participants' awareness and perception of sustainable design elements (e.g., "The facility uses energy-efficient lighting," "There are green spaces incorporated into the facility"). Responses were recorded on a 5-point Likert scale (1 = Strongly disagree to 5 = Strongly agree). Higher scores indicated stronger perception of sustainability features.

2. Motivation for Sport Participation: Measured with the Sport Motivation Scale (SMS), grounded in Self-Determination Theory (Pelletier et al., 1995). The scale includes subscales for intrinsic motivation, identified regulation, introjected regulation, external regulation, and amotivation. For this study, emphasis was placed on intrinsic motivation and identified regulation as key indicators of autonomous motivation relevant to sustained participation. Items were rated on a 7-point Likert scale (1 = Does not correspond at all, 7 = Corresponds exactly).

3. Demographic Information: Participants provided age, gender, frequency of sport participation, and duration of facility use.

Procedure

Ethical approval was obtained from the Institutional Review Board (IRB). Parental consent was secured for children's participants, along with child assent. Adults provided informed consent. Data collection occurred onsite during scheduled sport sessions, facilitated by trained research assistants.

Participants completed paper-based or electronic questionnaires in a quiet area of the facility. For children, the questionnaire was administered verbally if needed to ensure comprehension. Data collection spanned three months to accommodate participant schedules.

Data Analysis

Data were analyzed using SPSS Version 28. Descriptive statistics summarized demographic characteristics, perceived sustainability scores, and motivation subscale scores. Pearson correlation coefficients assessed relationships between perceived sustainability features and motivation variables separately for children and adults. Independent samples t-tests compared motivation scores and sustainability perceptions between the two age groups. Multiple regression analyses were conducted to determine the predictive power of perceived sustainability on intrinsic motivation and identified regulation, controlling for gender and frequency of participation. Statistical significance was set at $p < 0.05$. Effect sizes were interpreted according to Cohen's guidelines.

Results

Participant Characteristics

The study included 420 participants equally divided between children ($n = 210$, mean age = 10.1 ± 1.2 years) and adults ($n = 210$, mean age = 34.3 ± 5.6 years). Gender distribution was balanced in both groups (children: 52% male; adults: 49% male). On average, participants engaged in sport activities 3.8 days per week ($SD = 1.2$) with a minimum facility usage duration of three months.

Descriptive Statistics of Key Variables

Table 1 presents mean and standard deviations of research variables across age groups.

Table 1. Mean and standard deviations of research variables across age groups

Variable	Children (n=210) Mean (SD)	Adults (n=210) Mean (SD)
Perceived Environmental Sustainability Score (1-5)	3.42 (0.68)	3.75 (0.71)
Intrinsic Motivation (1-7)	4.89 (1.12)	5.56 (1.03)
Identified Regulation (1-7)	4.20 (1.15)	5.10 (1.20)

Group Comparisons

An independent samples t-test revealed that adults reported significantly higher perceived sustainability scores than children ($t(418) = 5.62$, $p < 0.001$, Cohen's $d = 0.49$). Similarly, adults exhibited higher intrinsic motivation ($t(418) = 7.02$, $p < 0.001$, $d = 0.68$) and identified regulation ($t(418) = 7.35$, $p < 0.001$, $d = 0.70$) compared to children.

Correlation Analysis

Pearson correlations (Table 2) showed significant positive relationships between perceived sustainability features and motivation for sport participation in both age groups.

Table 2. Pearson correlations among research variables

Variables	Intrinsic Motivation (Children)	Identified Regulation (Children)	Intrinsic Motivation (Adults)	Identified Regulation (Adults)
Perceived Environmental Sustainability	$r = 0.42$, $p < 0.001$	$r = 0.31$, $p < 0.001$	$r = 0.55$, $p < 0.001$	$r = 0.48$, $p < 0.001$

Regression Analysis

Multiple linear regressions (Table 3) were performed to examine how perceived sustainability predicted motivation after controlling for gender and participation frequency.

Table 3. The results of multiple linear regressions

Dependent Variable	Predictor	B (Unstandardized)	β (Standardized)	t	p	R ² (Model)
Intrinsic Motivation (Children)	Perceived Sustainability	0.68	0.41	6.35	<0.001	0.22
	Gender (Male=1, Female=0)	0.15	0.08	1.28	0.20	
	Participation Frequency	0.12	0.10	1.52	0.13	
Intrinsic Motivation (Adults)	Perceived Sustainability	0.85	0.53	8.75	<0.001	0.31
	Gender (Male=1, Female=0)	0.18	0.09	1.56	0.12	
	Participation Frequency	0.10	0.08	1.35	0.18	

Discussion

This study sought to examine the association between environmental sustainability features of sport facilities and motivation for sport participation among children and adults, providing novel insights into how facility design may influence engagement across different age groups. The findings demonstrated that perceived sustainability features are positively correlated with intrinsic motivation and identified regulation for sport participation in both children and adults. Notably, adults exhibited stronger relationships between sustainability perceptions and motivational outcomes, suggesting age-related differences in how environmental factors impact sport engagement.

The higher perceived environmental sustainability reported by adults aligns with existing literature indicating that adults generally have greater environmental awareness, knowledge, and concern compared to younger populations (Gatersleben et al., 2002; Schultz, 2001). Adults' enhanced sensitivity to sustainability features likely influences their sport participation motivation through identified regulation, wherein participation is aligned with personally valued outcomes such as environmental responsibility and health consciousness. This mechanism may explain the stronger predictive power of sustainability perceptions on motivation in adults, indicating that sustainable facilities not only fulfill ecological goals but also serve as motivational environments fostering autonomous engagement.

For children, the positive though more moderate correlations between sustainability perception and

motivation suggest that sustainable environments may contribute to sport participation in ways that are less direct but still meaningful. Children's motivation for sport is often influenced by enjoyment, peer interaction, and immediate rewards rather than abstract environmental concerns (Salmon et al., 2005). Nevertheless, exposure to environmentally sustainable facilities, particularly those incorporating green spaces and natural elements, may enhance intrinsic motivation by fostering feelings of well-being, exploration, and connection with nature (Fjørtoft, 2004; Kyttä et al., 2018). These experiences can promote physical activity and potentially cultivate pro-environmental attitudes from an early age, offering dual benefits for health and sustainability education.

These findings resonate with the theoretical framework of Self-Determination Theory (Deci & Ryan, 2000), which emphasizes the role of satisfying basic psychological needs—autonomy, competence, and relatedness—in supporting intrinsic motivation. Sustainable facility features, by aligning with users' environmental values and providing aesthetically pleasing, comfortable, and health-promoting environments, may enhance autonomy and relatedness to the setting (Ryan & Deci, 2017). For adults, this may manifest as a conscious choice to engage in activities that reflect their ecological values, while for children, it may be experienced as a more enjoyable and supportive environment conducive to play and physical activity.

The study's implications extend to sport facility design and policy. Facility planners should prioritize integrating sustainability elements not only for environmental stewardship but also as a strategy to enhance motivation and participation, particularly among adult users. Visible features such as solar panels, water-saving systems, use of recycled materials, and well-maintained green spaces can reinforce users' perception of sustainability, contributing to positive behavioral outcomes. For children's facilities, creating inviting, naturalistic environments that encourage play and social interaction can promote physical activity while subtly embedding environmental values.

Moreover, these findings suggest that communication and educational initiatives that highlight the sustainability features of sport facilities may further enhance motivation by increasing awareness and reinforcing the value of environmentally responsible sport participation. Programs targeting adults may emphasize the health and environmental co-benefits, whereas those for children could focus on fun, exploration, and connection with nature to strengthen engagement.

Several limitations should be noted. The cross-sectional nature of the study limits causal inference; longitudinal research could better elucidate the temporal dynamics between sustainability perceptions and motivation. Self-reported measures of perceived sustainability, while relevant to user experience, may be subject to bias. Incorporating objective assessments of facility sustainability and behavioral measures of participation could enhance validity. The sample was drawn from urban and suburban settings within a limited geographic region, which may affect the generalizability of findings to rural or culturally diverse populations. Future research should explore these relationships across broader contexts and incorporate qualitative methods to deepen understanding of motivational processes.

In sum, this study advances knowledge by demonstrating that environmental sustainability features in sport facilities are linked to increased motivation for sport participation across age groups, with stronger associations observed in adults. These results underscore the potential for sustainable facility design to serve as a dual-purpose intervention that promotes ecological responsibility and public health. By aligning environmental and behavioral objectives, sport facilities can play a critical role in fostering active, healthful lifestyles while contributing to sustainability goals.

Conclusions and Recommendations

This study provides valuable evidence that environmental sustainability features in sport facilities are positively associated with motivation for sport participation in both children and adults. Adults showed stronger perceptions of sustainability and a greater motivational response, highlighting the role of environmental awareness in shaping engagement. Sustainable facility features appear to foster intrinsic motivation and identified regulation, which are critical for sustained participation and long-term physical activity adherence. These findings suggest that beyond ecological benefits, sustainability in sport facility design can serve as a meaningful catalyst for promoting active lifestyles and enhancing user experience.

By bridging the fields of environmental sustainability and sport psychology, this research contributes to a more comprehensive understanding of how the physical environment influences health behaviors. It underscores the importance of integrating sustainable practices not only for environmental stewardship but also as a strategic approach to motivate sport participation across the lifespan.

Recommendations

For Sport Facility Designers and Managers:

1. **Integrate Visible Sustainability Features:** Incorporate energy-efficient lighting, solar panels, water-saving technologies, and recycled materials in facility construction and renovations. Visible cues help

users recognize and appreciate sustainability efforts, enhancing motivation.

2. **Create Green and Natural Spaces:** Design outdoor and indoor areas with plants, natural lighting, and green spaces to foster connectedness to nature, especially benefiting children's intrinsic motivation and enjoyment.
3. **Promote Environmental Education:** Develop signage and programs that explain the sustainability features and their benefits to health and the environment to increase user awareness and engagement.
4. **Tailor Facility Environments to Age Groups:** While adults may respond to explicit sustainability messages, children benefit from playful, nature-integrated environments that subtly build environmental values.

For Policymakers and Community Leaders:

5. **Support Sustainable Sport Infrastructure Funding:** Allocate resources and incentives for sport facilities to adopt and maintain environmentally sustainable designs.
6. **Encourage Partnerships:** Foster collaborations between environmental organizations and sport agencies to promote sustainability and physical activity synergistically.

For Future Research:

7. **Conduct Longitudinal and Experimental Studies:** Investigate causal effects of sustainability features on motivation and participation over time.
8. **Expand Objective Measures:** Utilize both user perceptions and objective sustainability assessments to better understand the impact on sport behavior.
9. **Explore Diverse Contexts:** Examine these relationships in rural, culturally diverse, and international settings to enhance generalizability.

By implementing these recommendations, sport facilities can become dynamic spaces that promote ecological responsibility while motivating individuals to lead active, healthy lives, contributing to the dual goals of sustainability and public health.

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