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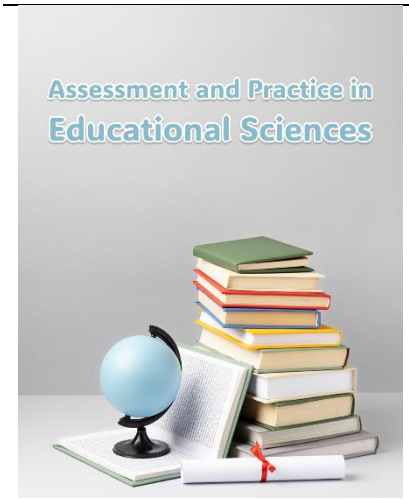

Identification of Ecological Factors Influencing Students' Leisure Time

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ABSTRACT

Sport and the environment are closely interconnected. Sport is regarded as a tool for achieving the principles of sustainable development. The more ecologically optimal and standardized the urban sport spaces are, the more citizens' physical and mental health will be ensured without concern. The aim of the present study was to identify the ecological factors influencing students' leisure time. In terms of purpose, the study is applied research, and methodologically, it is a qualitative inquiry conducted using Glaser's unstructured grounded theory approach. The statistical population consisted of faculty members who were experts in the field of students' leisure time. In this study, the views of 14 experts were collected through purposive sampling via semi-structured interviews until theoretical saturation was achieved. The reliability of the interviews, using the intra-subject agreement method, was obtained as 0.75. For data analysis, the constant comparative method was applied through three stages of open, axial, and selective coding using MAXQDA software (version 2018). In the open-coding stage, 109 codes were extracted, and in the axial-coding stage, 9 categories were obtained. Ultimately, seven factors—(infrastructural facilities, environmental, social factors, cultural development, sport-environment services, aesthetic aspects, and accessibility)—were identified as key ecological factors. Therefore, authorities must pay special attention to their critical responsibility, which is to implement optimal planning aligned with the interests of the younger generation while preserving societal values.

Keywords: Ecology, Leisure Time, Students

Introduction

The relationship between ecological conditions and students' leisure-time behavior has gained increasing attention in recent years, particularly as scholars emphasize the multilevel, interdependent environmental, interpersonal, and personal determinants of physical activity and leisure engagement (1, 2). Growing evidence underscores that leisure-time behavior cannot be understood solely through individual motivation, but must be interpreted within broader social-ecological systems that encompass infrastructural, environmental, cultural, health-related, and behavioral components influencing youth and adult populations alike (3, 4). Research across various communities and educational settings further shows that ecological determinants—including environmental quality, access to facilities, cultural norms, health literacy, and organizational health—

shape not only participation in leisure activities but also overall well-being and psychosocial functioning (5-7). Considering the increasing complexity of students' academic lives and mental health challenges, understanding these ecological factors has become a critical priority in educational management and public health (8-10).

Leisure time represents a central dimension of students' lives, connecting physical activity, psychological restoration, social relationships, and overall life satisfaction. In modern educational and urban contexts, leisure opportunities are influenced by numerous ecological layers—ranging from infrastructural availability and environmental quality to cultural expectations and organizational support systems. Studies show that universities and urban communities play a critical role in shaping students' leisure environments, as these settings provide both direct and indirect opportunities for physical activity, recreation, and health-promoting behaviors (11, 12). For student populations, these ecological factors can either facilitate or constrain meaningful leisure-time engagement, influencing their physical health, psychological resilience, and social integration.

Ecological perspectives have emerged as particularly influential frameworks for understanding leisure-time behavior. Within the ecological model, physical activity, active leisure, and recreational engagement are conceptualized as outcomes of interactions between individual characteristics, environmental conditions, social networks, institutional structures, and broader cultural systems (1). Studies of physical activity among adolescents and young adults indicate that high-quality environmental conditions—such as green spaces, clean air, safe facilities, and accessible urban sports infrastructure—significantly influence participation levels and motivation (2, 3). For example, when environmental contexts are conducive to activity, youth demonstrate higher physical activity participation, improved emotional regulation, and enhanced social interactions, all of which contribute to balanced leisure experiences.

Additionally, ecological determinants transcend the physical environment, extending into social and interpersonal realms that shape perceptions, motivations, and behaviors. Supportive social relationships, encouragement from peers and instructors, and the presence of community networks are identified as strong motivators for regular engagement in leisure-time physical activity (13, 14). Furthermore, studies reveal that after life disruptions or trauma, individuals rely heavily on adaptative strategies, self-motivation, and social support systems to re-engage in physical activity—a finding highly relevant to student populations navigating stress, academic pressures, or socioeconomic hardships (12, 13).

Recent investigations highlight the importance of campus organizational health and institutional structures as major ecological contributors to leisure quality and participation. Universities that cultivate organizational well-being through effective management, supportive climates, and accessible facilities foster environments where students can engage meaningfully in leisure, reduce stress, and maintain healthy lifestyles (5). Such institutional conditions not only promote leisure-time physical activity but also strengthen students' psychological well-being and resilience.

Moreover, physical health, mental health, and ecological leisure conditions are deeply interconnected. For instance, sedentary leisure time has been linked with elevated risks of anxiety, depression, and reduced well-being among adolescents and young adults (15). Conversely, physical leisure-time activities—particularly those involving structured or semi-structured exercise—support better mental health, enhanced mood, and improved cognitive functioning. This relationship is crucial, given recent global concerns about rising inactivity levels, excessive screen time, and sedentary lifestyles among students.

In addition, broader health sciences literature suggests that ecological stressors—such as environmental pollution, unsafe urban design, inadequate lighting, or low-quality recreational spaces—negatively impact physical activity engagement and psychological health, especially in younger populations (7, 11). Student populations are particularly vulnerable to these ecological stressors due to their dependence on institutional and urban infrastructures, limited personal resources, and heightened academic demands.

Cultural and behavioral dimensions also constitute essential ecological determinants of leisure-time involvement. Studies from diverse cultural contexts have documented the importance of values, social norms, and collective expectations in shaping activity behavior, leisure preferences, and perceptions of healthy lifestyles (7, 10). Culture influences not only the type of activities chosen by students but also their willingness to participate in group-based or individual activities, their perceptions of safety, and their attitudes toward recreational engagement.

Furthermore, literature from sports management and health sciences emphasizes the significance of health and safety systems within sport and educational environments, noting that these systems determine both the quality and accessibility of leisure activities available to young people (6, 11). Students who perceive their recreational settings as safe, well-equipped, and environmentally friendly are more likely to participate actively in physical and recreational activities. Conversely, students who encounter ecological barriers—unsafe spaces, inadequate maintenance, limited equipment, environmental degradation—report lower participation and decreased motivation.

Health-related behavioral research also highlights the complex interplay between biological and psychological factors that influence leisure-time choices. For example, research examining hormonal and physiological responses to exercise shows that physical activity plays a crucial role in regulating stress responses and overall hormonal balance (16). While such physiological evidence emphasizes the importance of physical activity for student well-being, environmental and contextual constraints often hinder students' access to these benefits.

On a broader societal level, ecological perspectives extend to public health, demonstrating how disparities in environmental resources, recreational access, and socioeconomic conditions contribute to unequal leisure-time opportunities. Studies show that marginalized or economically disadvantaged populations experience greater ecological barriers, reducing their participation in health-promoting activities (12, 14). This is particularly relevant for university students from varied backgrounds, who depend heavily on the quality of campus and community environments for their leisure engagement.

In addition to physical and psychological factors, recent evidence suggests that emerging health behaviors—such as electronic cigarette usage among youth—may interact with ecological contexts and influence broader lifestyle patterns, including leisure-time behavior (4, 9). These behavioral trends underscore the need for holistic research approaches that incorporate health risk factors within ecological analyses of student lifestyles.

The literature also highlights the positive outcomes associated with structured and gamified physical activities, which enhance students' leisure quality by increasing engagement, motivation, and enjoyment (17). Such approaches demonstrate the utility of integrating educational, recreational, and technological components within ecological frameworks to promote balanced leisure opportunities.

Moreover, empirical studies from global and Iranian contexts consistently indicate that ecological determinants must be treated not as isolated variables but as interdependent components that shape the overall quality, accessibility, and effectiveness of student leisure environments. These determinants include infrastructure, environmental conditions, cultural factors, social elements, organizational health, health and safety systems, psychological well-being, and public health trends (8, 14, 18). These findings align with social-ecological theory, which positions individual behavior within multi-level systems influenced by policies, institutions, physical environments, and cultural patterns.

Given the complexity and multifaceted nature of these determinants, researchers emphasize the importance of comprehensive ecological studies that identify and categorize the critical factors influencing students' leisure-time activities (1, 3). Despite the growing body of work on ecological influences in various populations, there remains a need for targeted qualitative investigations that explore the ecological determinants of leisure specifically within student populations—

particularly within the context of developing countries and culturally diverse educational environments. Therefore, the aim of the present study is to identify the ecological factors influencing students' leisure time.

Methods and Materials

The present study, in terms of the research model and underlying philosophical orientation, was interpretive, and in terms of the nature of the research, exploratory–applied, and in terms of method, qualitative. To analyze the conducted interviews, Glaser's unstructured approach was used through MAXQDA software (version 2018), and the method of data collection was interviewing.

In this qualitative study, considering the research purpose, the statistical population consisted of experts, including professors, researchers, managers, and informed and active individuals in all organizations responsible for sports and leisure, including the Ministry of Sport and Youth and the Federation of Public Sports.

The interviewees met at least one of the two criteria of research experience in the field of the study topic or relevant managerial background. The interviews lasted, on average, between thirty minutes to one hour, and the interviewees' voices were recorded and immediately transcribed after the end of each interview. The views of 14 experts were collected using purposive sampling through semi-structured interviews until theoretical saturation was reached, after which the participants expressed their opinions and perspectives regarding the interview questions. Sampling continued until data saturation occurred.

A PhD student in sport management was asked to participate as a research assistant in the coding section of the present study. Three interviews were selected, and the results of the coding by both individuals are reported in the table. Additionally, the percentage of intra-topic reliability was calculated using the formula below, resulting in an intra-topic agreement of 0.75.

To analyze the conducted interviews, Glaser's unstructured method was used through MAXQDA software (version 2018). This method consists of three stages. Based on the grounded theory approach, the three main steps of coding include: open coding, axial coding, and selective coding.

The first stage involves open coding. In open coding, the analysis process identifies concepts and uncovers their properties and dimensions in the data. In this stage, the grounded theorist forms the initial categories of information regarding the phenomenon under study by segmenting the data. In other words, to extract data from the conducted interviews, after transcription into text, open coding is performed as the coding of key concepts, and through analyzing the interview texts, the initial open codes are generated.

Findings and Results

In this study, 115 initial open codes were obtained from the conducted interviews, and after summarizing similar codes, the number of final open codes was reduced to 85 (Table 1).

Table 1. Final Open Codes

Final Open Codes	Final Open Codes	Final Open Codes
Formulating environmental guidelines	Urban form and structure	Sport counseling
Sport spaces	Plants and flowers	Improving the quality of facilities
Structured preventive package	Designing sport spaces	Maintenance of equipment
Incentive packages	Providing hygienic services	Sports equipment
Planning	Medical services	Possibility of individual and group exercise
Green sport	Large parks	Access to required technologies
Awareness-raising	Variety of goods and services	Distribution of facilities across the city
Sport ecology	Observing safety	Access to communication resources
Culture	Investment	Access conditions to welfare facilities
Sustainable sport ecological development	Green infrastructure	Access route to sport spaces
Institutionalization	Attention to global dimensions	Geographical location of sport spaces

Ethical commitment	Physical activity
Ecosystem development	Modern facilities and equipment
Maintenance mindset	Activities of prominent figures
Diverse and attractive spaces	Environmental protection
Urban furniture	Use of specialists

In the second stage, axial coding was performed. Axial coding is the process of relating categories and linking them at the level of properties and dimensions. It is called axial because the coding takes place around a central category. In this stage, the categories, properties, and dimensions resulting from open coding are organized and placed in their appropriate positions to develop increasing knowledge about the relationships. In other words, axial coding results in the creation of categories and subcategories. At this stage, all final open codes were re-examined and compared with the research literature (Table 2).

Table 2. Axial Categories

Axial Categories	Axial Categories
Infrastructural Facilities	Environmental
Social Factors	Cultural Development
Sport-Environment Services	Aesthetic
Accessibility	Bio-Pattern
Welfare Facilities	Public Participation

Selective coding is the process of selecting the core category, systematically relating it to other categories, validating those relationships, and completing categories requiring further refinement and development. Selective coding, based on the results of open and axial coding, is the main stage of theorizing. In this stage, the core category is systematically connected to other categories, the relationships are presented in the form of a narrative, and categories needing improvement are refined (Table 3). In the present study, the results were presented as shown in Model 1.

Table 3. Final Axes

Final Axes	Final Axes
Infrastructural Facilities	Environmental
Social Factors	Cultural Development
Sport-Environment Services	Aesthetic
Accessibility	

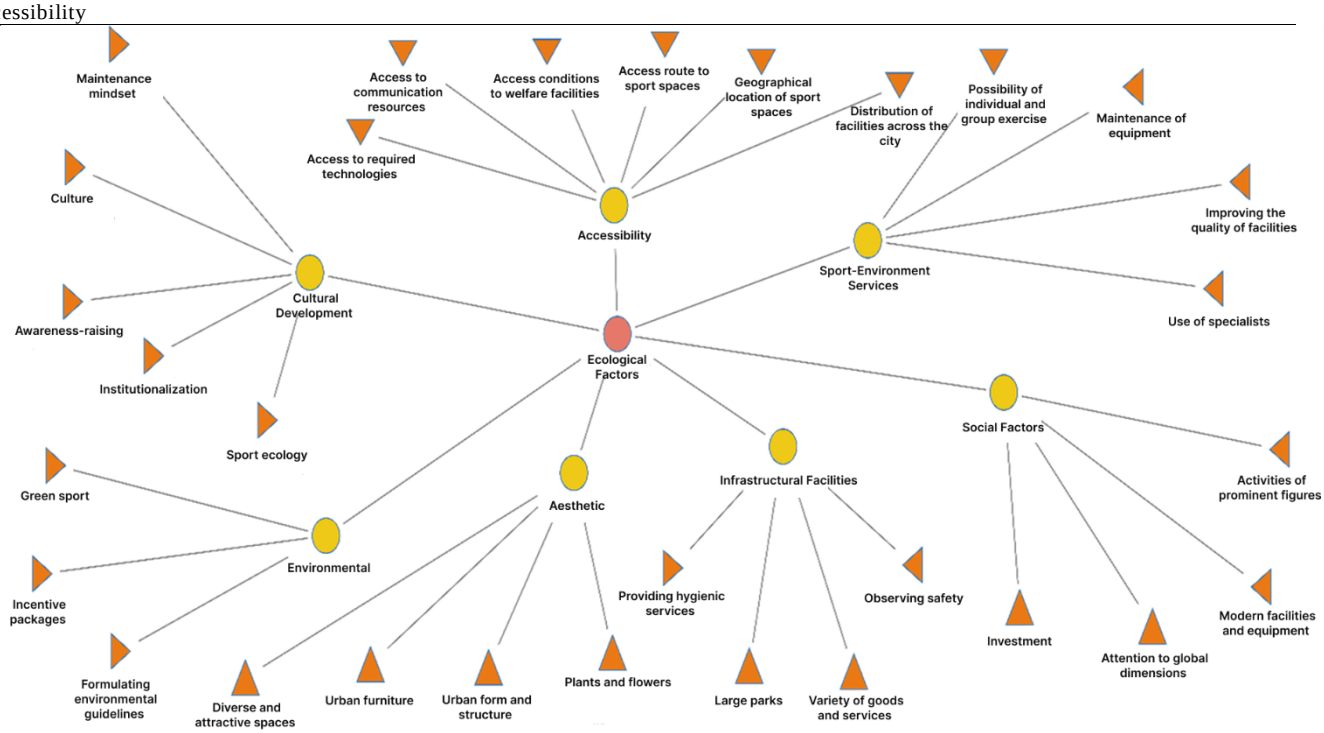

Figure 1. Research Model

Discussion and Conclusion

The purpose of this study was to identify the ecological factors influencing students' leisure time using a grounded theory approach. The findings revealed seven major ecological dimensions—infrastructural facilities, environmental factors, social factors, cultural development, sport-environment services, aesthetic conditions, and accessibility—that collectively shape the leisure experiences of students. These results are consistent with a growing body of literature emphasizing that leisure-time behavior is a multidimensional phenomenon shaped not only by individual attitudes and motivations but by broader ecological conditions spanning structural, environmental, interpersonal, and cultural layers (1, 2). The identification of these ecological categories reinforces the ecological model's assumption that human behavior emerges from the interaction of multiple system-level influences, underscoring the need for integrated approaches to leisure-time planning and management.

The first major finding of this study concerns the role of infrastructural facilities, which emerged as one of the most consistent ecological determinants reported by experts. Students' access to high-quality sport spaces, updated equipment, and safe recreational environments significantly affects their leisure participation. This aligns with previous research showing that physical infrastructure remains one of the strongest predictors of physical activity and leisure engagement across different populations (3, 11). The presence of well-maintained and properly equipped sport facilities not only encourages participation but also reduces barriers related to safety, convenience, and perceived environmental quality. Similarly, studies on organizational and educational environments highlight that investment in infrastructure is central to maintaining health and safety standards in student activity settings (6). The results of the current study reaffirm these conclusions and highlight the importance of infrastructural development as a basic ecological requirement for effective student leisure-time engagement.

The second key dimension identified was the environmental factor, reflecting elements such as greenery, environmental safety, clean air, and ecological sustainability. Interviewees emphasized that students are more likely to engage in leisure activities in environments perceived as aesthetically pleasing, safe, and environmentally friendly. These findings are in harmony with international research emphasizing the importance of environmental quality—especially natural elements such as parks and green spaces—in promoting participation in physical activity and leisure (2, 3). In addition, urban ecology studies have long suggested that environmental degradation, unsafe spaces, and poor environmental maintenance discourage outdoor leisure activities and increase sedentary behavior among youth. The present study reinforces this ecological perspective by illustrating how environmental sustainability and greenery influence not only students' physical behaviors but also their psychological motivation to engage in leisure activities.

A third major category emerging from the findings was social factors, including peer interactions, community engagement, social support, and group-based activity culture. Experts repeatedly noted that students are more willing to participate in leisure-time activities when they feel socially supported and when peer networks encourage participation. This aligns with studies highlighting interpersonal influences as core components of ecological models of physical activity, particularly among young adults (13, 14). Peer motivation, family behaviors, and institutional encouragement play critical roles in shaping daily activity choices. The literature similarly suggests that social relationships serve as essential motivators for leisure-time involvement and mediate the effects of environmental conditions on behavioral outcomes. The consistency between the present findings and previous studies underscores the inseparability of social support networks from students' leisure behaviors.

The fourth factor, cultural development, reflects norms, values, beliefs, and the cultural meaning assigned to leisure and physical activity. The participants emphasized that cultural attitudes toward leisure strongly influence student behavior, particularly in collectivist societies where shared values shape leisure preferences. Previous studies have documented that cultural norms and beliefs significantly influence participation in physical activity and leisure-time behaviors (7, 10). The

present findings show that when cultural values support active living and healthy leisure, students are more willing to engage in sport and recreation. Conversely, if the culture surrounding leisure devalues physical or recreational activity, participation declines. These findings reinforce the need for cultural interventions that promote the social value of active leisure among students.

The fifth category, sport-environment services, encompassed services such as hygiene, medical assistance, maintenance, and professional guidance. The experts consistently emphasized that students will only engage in leisure activities if they perceive that service conditions are safe, professional, and supportive. This is consistent with health and safety literature showing that service quality and management systems directly affect participation in sport and recreational settings (6, 11). Moreover, studies suggest that students' sense of safety and security within sport environments determines their willingness to engage in physical activity (12). The current study supports this by showing that quality services in sport environments create ecological conditions conducive to leisure participation.

Another significant category was aesthetic conditions—including attractiveness, diversity of spaces, and pleasant design. Researchers have found that aesthetic qualities such as landscape design, cleanliness, artistic elements, and the visual appeal of facilities significantly influence leisure-time behavior, as these features enhance students' emotional connection to a space (3). In ecological models, perceived environmental aesthetics are recognized as predictors of physical activity, especially among youth and in urbanized academic contexts. The current findings reinforce this connection, suggesting that aesthetic appeal plays a powerful role in students' leisure preferences.

The final ecological factor identified was accessibility, including proximity, transportation, and ease of reaching recreational spaces. Accessibility is one of the most widely documented predictors of leisure participation, and previous research demonstrates that students who have easy access to recreational facilities or outdoor spaces engage in significantly more physical activity than those facing distance-related barriers (14, 15). Additionally, organizational health studies indicate that accessibility is essential for effective management of student services and activities (5). The present findings strongly support this body of literature, showing that accessibility remains a critical determinant of students' leisure-time engagement.

Taken together, the findings of this study align closely with ecological frameworks in the physical activity and leisure sciences literature. The multi-layered nature of the seven identified factors reflects the ecological model's assumption that behavior is shaped by interactions among individual, interpersonal, environmental, organizational, and cultural systems. These results reinforce insights from studies that highlight the interconnectedness of environmental, personal, and interpersonal determinants in explaining student leisure-time choices (1, 2). The alignment of the present findings with these earlier studies strengthens the ecological understanding of student leisure and underscores the need for integrated interventions.

Furthermore, the findings connect with broader public health research showing that ecological influences such as environmental conditions, accessibility, and cultural norms directly impact mental health outcomes and psychological distress (8, 9). These connections suggest that improving ecological conditions may not only promote active leisure but also support psychological well-being and reduce sedentary or unhealthy behaviors. Finally, the findings align with evidence showing that structured physical activity, recreational programming, and supportive institutional contexts can enhance leisure quality and contribute to improved mental and emotional health among students (17, 18).

Overall, the present study provides comprehensive insights into the ecological determinants of student leisure-time engagement. By identifying seven interconnected ecological categories, the study expands current understanding and emphasizes the importance of addressing infrastructural, environmental, social, cultural, service-based, aesthetic, and accessibility factors in leisure planning.

This qualitative study, while rich in depth, was limited by the sample size and the use of purposive sampling, which restricts generalizability to broader student populations. The findings are based on expert perspectives rather than direct student experiences, which may limit the scope of insights into students' subjective leisure-time behaviors. Additionally, ecological factors were identified based on interview analysis rather than quantitative measurement, meaning the relative weight or predictive strength of each factor could not be determined. Contextual characteristics of the institutions and regions represented by the experts may also differ from those in other educational environments, which could influence the applicability of the identified factors.

Future studies should incorporate mixed-methods and large-scale quantitative designs to examine the causal and predictive relationships among the ecological factors identified. Researchers could explore how students from different socioeconomic, cultural, and geographic backgrounds experience ecological influences on leisure time. Experimental and longitudinal studies would help evaluate the effectiveness of interventions designed to improve specific ecological conditions such as infrastructure, accessibility, or cultural norms. Future work should also include participatory approaches that engage students directly in identifying barriers, designing interventions, and shaping leisure environments. Comparative studies across universities, regions, or countries may further reveal contextual variations in ecological determinants.

Universities, policymakers, and urban planners should prioritize the development and maintenance of recreational infrastructure that is safe, modern, and accessible to all students. Administrators should invest in environmental enhancement strategies such as landscaping, green spaces, and aesthetic improvements to encourage active leisure engagement. Culturally tailored programs and awareness initiatives can promote positive attitudes toward healthy leisure behaviors. Institutions should also strengthen sport-environment services, including professional support, hygiene, and equipment maintenance, to increase student confidence and participation. Improving accessibility through transportation planning, location-based facility distribution, and inclusive design can significantly expand leisure opportunities for students.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adhered in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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