



Original Research Article

The study of urban conditions on the sports and health of students
(case study: Payame Noor University students in Sari)

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ARTICLE INFO	Abstract
<p>Article History: Received: 2025/08/18 Revised: 2025/08/28 Accepted: 2025/11/10</p> <p>Keywords: Urban conditions sports and student health Payame Noor University Sustainable Development</p> <p>DOI: 10.82173/jlUSD.2025.1215195</p>	<p>Background and Objectives: Despite the importance of sports for maintaining student health, inadequate or unsuitable sports spaces, limited accessibility, lack of social support, and weaknesses in urban planning have led to decreased sports participation among students. The aim of the present study was to examine the relationship between urban conditions and the levels of health and physical activity among students at Payame Noor University of Sari.</p> <p>Methods: This research employed a descriptive–survey approach. The statistical population comprised 3,400 undergraduate students at Payame Noor University of Sari. According to Krejcie and Morgan’s table, 351 individuals were selected as the sample size, but to enhance reliability, data were collected from 390 participants.</p> <p>Findings: Results from the multiple regression analysis indicated that out of six urban condition components, three social support, access to urban sports facilities, and the quality and diversity of sports spaces exhibited a direct and significant relationship with students’ sports participation and health.</p> <p>Conclusion: The present study confirmed that urban infrastructure and social support are key factors in enhancing students’ physical activity and health. Easy access to sports facilities and the presence of high-quality environments increase motivation for physical activity and improve both physical and mental well-being.</p>

Running Title: study of urban conditions on the sports and health of students

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Introduction

Regular and purposeful physical activity, referred to as sports participation, is considered the most important tool for achieving sustainable and widespread social health and vitality. Sports participation means ensuring health and improving the lives of all individuals through exercising with the least costly programs (Lotfi *et al.*, 2023). Sports not only enhance individuals' socialization but also serve as a highly important source for creating motivation and mental health within society. This has led to sports being regarded as a tool for promoting culture at the societal level (Karimi *et al.*, 2021).

One of the social phenomena that has significantly grown in recent years and has had a notable impact on people's lives is sports and physical education. This topic can play an important role in reducing movement-related problems. Therefore, sports and physical activities are recognized as effective strategies with considerable potential to help achieve health, social, and economic goals, making them highly important (Abbasi *et al.*, 2021).

Regarding the importance of sports and the health resulting from it, it can be stated that sports activities and individuals' participation in them, as a social phenomenon, hold great significance and require detailed examination. One of the most important effects of this phenomenon is its role in improving community health (Motamedi *et al.*, 2019). This impact can be clearly observed in the lives of those who are actively engaged in sports. In general, sports are considered a true reflection of today's society. By strengthening sports and related activities, it can be used as an important tool for community development and promoting peace across different cultures (MafiNejad *et al.*, 2023).

In addition to being the most effective factor for physical and mental wellness in society, sports play a significant role in how people, especially adolescents and youth, spend their leisure time and in increasing the productivity of the high human potential moving towards national health policy goals. Health policymakers, like those in developed countries, should accept sports as an important factor for health promotion and a

preventive mechanism and use it to achieve health development goals. In this regard, developed countries focus most of their activities on prevention and gain the highest return on their investment (PourKhalil *et al.*, 2022).

Urban design includes urban planning, architecture, and landscape architecture, aiming to manage and optimize various aspects of urban life in a tangible way. This art involves creating and organizing cities, towns, and neighborhoods using elements such as pathways, boundaries, and points of connection. Urban designers strive to meet functional needs and create a sense of belonging among residents. Successful urban design creates spaces that are economically, socially, and environmentally appropriate and are based on mobility, activity, and responsibility.

Sports facilities are recognized as key and fundamental components of physical education and sports infrastructure and are important parts of organizational facilities for human activity. Therefore, having easy and appropriate access to these facilities is of special importance. Research has shown that the better and more convenient the access to sports spaces such as designated courts, stadiums, and parks, the higher the people's tendency to engage in physical activities (Namazi and Hosseini, 2018).

The theoretical framework of this research is based on the reciprocal influence of urban environmental factors on the sports behavior and health of students. These factors include access to sports facilities, quality of sports spaces, social support, related costs, attitudes, and environmental safety, which are considered external stimuli. Taking into account internal individual processes such as motivation, attitude, and sense of belonging, sports behaviors and responses are examined as outcomes of these interactions. The integration of these dimensions provides a comprehensive foundation for analyzing the role of urban conditions in shaping students' physical activity patterns and health (Mollanaia Jelodar, 2023).

A) Theory of Stimulus-Organism-Response:
The theory proposed by Mehrabian and Russell

in 1974 provides a framework for understanding human behaviors, particularly in environmental psychology. In this theory, stimuli are considered environmental factors that trigger an individual's emotional responses; the organism represents the internal psychological and emotional processes of individuals, and the response reflects the individual's final behavior. When faced with stimuli, people tend either toward approach behaviors such as exploration, staying, and interaction or exhibit avoidance behaviors, meaning unwillingness to engage in positive actions. This theory emphasizes the importance of environmental characteristics in evoking emotions and their role in predicting individuals' behaviors, including collective participation in sports. Accordingly, in studying the impact of urban conditions on sports and health, the SOR (Stimulus-Organism-Response) theory can be used to analyze how urban environmental stimuli affect individuals' internal processes and ultimately their sports behavior to better understand the factors influencing collective sports participation (Zhao et al., 2024). Sports activities in parks, as environmental stimuli with easy and low-cost access, create a suitable space for exercise, playing a significant role in promoting individuals' physical and mental health. These green environments, due to their natural and aesthetic qualities, evoke feelings of calmness and belonging in individuals (organism), enhancing internal processes such as stress reduction and increased motivation. As a result, these stimuli lead to positive behavioral responses manifested as active participation in sports. Moreover, the availability of free sports equipment in parks and the reduction of financial barriers increase individual motivation for exercising and boost public participation. Therefore, based on the Stimulus-Organism-Response theory, parks, as environmental stimuli, influence individuals' psychological-emotional processes and generate effective and desirable responses in sports behavior and physical health of citizens (Ghasemi Siyani et al., 2021).

B) Theory of Planned Behavior: This theory is the cognitive-social Expectancy-Value Model, which considers intention as the primary

determinant of behavior. Intention is influenced by three independent constructs: attitude, subjective norm, and perceived behavioral control. Attitude reflects an individual's positive or negative evaluation of performing a behavior. The subjective norm refers to the perceived social pressures that may cause a person to perform or avoid a particular behavior. Finally, perceived behavioral control refers to the perceived ease or difficulty of performing a specific behavior and is assumed to affect behavior both directly and indirectly. According to this theory, individuals evaluate a behavior positively and intend to perform it when they believe that important and influential people think that the behavior should be performed, and that performing the behavior is under their control (Sarzehi et al., 2016).

The Theory of Planned Behavior explains that the intention to exercise is a key factor in shaping students' sports behavior, and this intention is influenced by their positive attitude toward exercise, the perceived social approval of significant others, and their belief in their ability and control over exercising. When students believe that exercising is desirable, socially supported, and within their control, their likelihood of actively participating in sports and consequently improving their physical and mental health increases. This cognitive-social framework effectively explains the interaction of internal and environmental factors in understanding sports behavior.

Building upon the theoretical foundations outlined above, several empirical studies have likewise investigated the influence of urban conditions on physical activity and health across different student and community populations.

Lotfi et al. (2023) concluded in their research that teachers' autonomy support has a direct and positive effect on students' sports motivation and engagement in physical activities. Therefore, physical education teachers can use autonomy-supportive behaviors to motivate students in decision-making. MafiNejad et al. (2023) in their study among university professors, faculty members, and sports coaches, found that sports

education plays an important and effective role in the development of community health, and thus, health officials and stakeholders should pay attention to the development of educational sports in their macro planning. [GhanbariNejad Naseri and Kazemizadeh \(2022\)](#) in their research, concluded that a city with interconnected green spaces providing safe opportunities for residents to engage in active movement and sports, as well as for stress relief, recreation, and social contact, will have healthier citizens, reduce demand for health services, and contribute to a strong economy. Such a city is also likely more resilient against severe environmental events like heat waves and heavy rainfall. [Javanmard and Sanatkha \(2022\)](#) in their study found that economic crisis, social support, and social capital are the most important indicators and causal conditions; personal body management, cultural expectations, and sports infrastructure as intervening components; a healthy lifestyle as the most important underlying condition; and infrastructure creation, environmental safety, and officials' motivation as action-interactions in public sports. [Sheykhiani et al. \(2021\)](#) in their research among students at Fars province universities, found that participation in public sports has a significant effect on students' health. [Abbasi et al. \(2021\)](#) concluded that in order to develop health-oriented citizen sports in metropolises, the "strategies" and "outcomes" in citizen sports must be considered. [Ghara et al. \(2019\)](#), in their research, found that 46% of the total changes in public sports participation levels are related to three variables: attitude, behavioral control, and public sports. Therefore, it is recommended that sports authorities in universities take measures to strengthen attitude, subjective norms, and perceived behavioral control alongside other influential factors such as providing hardware and software infrastructures, access, financial issues, etc., to institutionalize and sustain public sports among students. [Mostashiri et al. \(2017\)](#), in their study among students in Semnan, found that the lack of suitable classes and sports facilities and perceptions of the impact of sports on health and vitality had the

highest scores. [PourRanjbar et al. \(2016\)](#), in their research among female students at Kerman University of Medical Sciences, found correlations between facilitating factors and personal, psychological, social, managerial, economic components, facilities and equipment with levels of participation in sports activities. They also found significant correlations between inhibiting factors and managerial and facilities and equipment components with levels of participation in sports activities. [Han et al. \(2025\)](#) conducted a study in China and found a positive and significant direct correlation between physical education in universities and students' mental health ($\beta = 0.622$, $p < 0.001$). Physical education also positively influenced social support ($\beta = 0.523$, $p < 0.001$) and exercise behavior ($\beta = 0.473$, $p < 0.001$). In turn, social support significantly enhanced exercise behavior ($\beta = 0.578$, $p < 0.001$) and improved mental health ($\beta = 0.277$, $p < 0.001$). Additionally, increased exercise behavior positively contributed to better mental health ($\beta = 0.357$, $p < 0.001$). [Mahani et al. \(2024\)](#) in Canada concluded that a healthy and equitable urban design requires an integrated, comprehensive, and participatory approach, highlighting the vital role of urban governance in creating environments that promote residents' wellbeing amid increasing urbanization. [Alkhawaldeh et al. \(2024\)](#) in Jordan found that students most agreed with the perceived benefit "exercise improves my body appearance," while the major perceived barrier was "insufficient places to exercise." [Zhao et al. \(2024\)](#) in China developed a theoretical framework regarding residents' attitudes toward sports activities and participation, based on a comprehensive literature review and the Stimulus-Organism-Response (SOR) theory and attitude change theory. They proposed a four-factor measurement model including Availability, Accessibility, Design, and Safety of the built urban environment, with Affordability as a mediating variable influencing residents' attitudes and behaviors toward sports participation. Their discussion focused on the framework's applicability and use in future research. [Li et al. \(2022\)](#) in a case study in

Changsha, China, found that the impact of the built environment on outdoor physical activity may not always align with other cities' results. Effective measures to promote outdoor activity included providing good arterial and secondary road networks, parks, and other facilities, offering guidance for future urban planning to improve public health. Fathi *et al.* (2020) concluded that attention to functional diversity, flexibility, spatial integration, safety, and aesthetic/visual quality of urban spaces plays an important role in improving citizens' physical health. They also observed more physical activity, including walking motivation and general health and happiness, on streets with higher spatial connectivity and syntax relative to the surrounding texture.

The city of Sari, as the capital of Mazandaran, requires better development and strengthening of sports infrastructure to provide adequate facilities for all social groups. Urban management is working to increase and improve suitable sports spaces like halls and stadiums to boost public participation in physical activities. Equitable distribution and easy access to sports facilities play a crucial role in encouraging citizens toward communal sports and improving physical and mental health. Special attention must also be paid to less developed areas and surrounding villages to ensure equal sports opportunities across the region. These actions collectively can decisively enhance the quality of life and social health of Sari's residents.

Given this context, the study aims to investigate the relationship between urban conditions and the sports and health of Payame Noor University students in Sari, specifically examining how each urban condition component relates to the students' sports participation and health outcomes. This approach aligns with the recognized importance of accessible sports facilities in promoting physical activity and overall community health.

Materials and Methods

This research is an applied, descriptive-analytical study conducted with the aim of examining the impact of urban conditions on sports and health of students (case study:

Payame Noor University students in Sari). Prior to designing the data collection tools (interviews and questionnaires), the researchers utilized over a decade of participatory observation experience. A mixed methods approach combining qualitative and quantitative techniques was used to analyze the dimensions of urban conditions. The data collection tools include a standardized questionnaire on students' sports and health, and semi-structured interviews with students to gain a deeper understanding of urban conditions. Since a complete list of students was available, a simple random sampling method was employed, selecting students from Payame Noor University of Sari as a sample from the population. According to the Krejcie and Morgan table, the sample size is 351 because the total number of students at this university is 3,400; however, to increase the reliability of the research, 390 students were randomly sampled and participated in the data collection.

Conceptual and operational definitions of variables:

A) Dependent variable: students' sports and health: To measure this variable and to cover the concept of students' sports and health, 13 questions (items) based on the Likert scale were prepared, asked of respondents, and the data were collected. The students' sports and health variable in this study includes 13 items covering:

≠ Physical health: "amount of physical activity and regular exercise, muscle strength and physical fitness, weight status, height and lean body mass, energy level and ability to perform daily activities without fatigue; and presence of pain or physical problems related to exercise";

≠ Mental health: "overall satisfaction and quality of life, levels of stress, anxiety, and depressed mood during the week, ability to cope with psychological pressures and mental calmness";

≠ Social health: "motivation and positive attitude toward exercise and maintaining health, receiving social support from family, friends, and community regarding exercise";

≠ Sport- and health-related behaviors: "motivation and positive attitude toward exercise and maintaining health, adherence to a diet related to sports health, regular use of university or city sports facilities."

b) Independent variables (urban conditions): Six components of the independent variable are: First component) Access to urban sports facilities (stadiums, green spaces, parks), Second component) Quality and diversity of

sports spaces (standard facilities, sports equipment), Third component) Social support (support from family, friends, community for sports), Fourth component) Costs related to sports (financial expenses, membership fees, equipment), Fifth component) Attitude and awareness toward sports and health (culture-building and individual motivation), and The sixth component) Safety and security of the urban environment (physical and psychological safety at sports locations and access routes).

Table 1: Reliability Report of the Research Instrument

Scale	Number of Items	Cronbach's Alpha	
Independent Variable (Urban conditions) Overall Alpha (0.87)	Access to urban sports facilities	4	0.79
	Quality and variety of sports spaces	4	0.83
	Social support and advocacy	4	0.80
	Sports-related expenses	4	0.76
	Attitude and awareness towards exercise and health	4	0.84
	Safety and security of the urban environment	4	0.78
Dependent Variable (students' sports and health)	—	13	0.87

Results and Discussion

The proposed hypotheses were tested using univariate and multivariate regression analyses, and the following results were obtained. Table 2 shows the relationship between each independent variable and the dependent variable. Considering that the measurement levels of the dependent variable (students' sports and health) and the independent variable (urban conditions and its

six components: access to urban sports facilities, quality and diversity of sports spaces, Social support and advocacy, costs related to sports, attitude and awareness toward sports and health, and safety and security of the urban environment) are interval, the parametric Pearson test was used. Subsequently, multivariate regression and path analysis were performed to examine the six research hypotheses.

Table 2. Results of Pearson Correlation Test between the Independent Variable and its six Components with the Dependent Variable

Independent Variables	Correlation Coefficient (r)	Significance (p-value)
Urban conditions	0.62**	0.000
Access to urban sports facilities	0.56**	0.000
Quality and variety of sports spaces	0.50**	0.000
Social support and advocacy	0.51**	0.000
Sports-related expenses	0.30**	0.000
Attitude and awareness towards exercise and health	0.17**	0.001
Safety and security of the urban environment	0.40**	0.000

According to the results of Table 2 and considering that the significance level of the test error at the 95% confidence level is less than 0.05, it can be stated that the main hypothesis is confirmed and there is a

significant direct relationship between urban conditions and students' sports and health, with a correlation coefficient of 0.62 between the two variables. In other words, with the improvement of urban conditions, students'

sports and health will also show an increasing trend. In the Pearson test between the six components of the independent variable (urban conditions), two components — costs related to sports and attitude and awareness toward sports and health — showed a weak direct relationship, and one component — safety and security of the urban environment

— showed a moderate direct relationship with the dependent variable (students' sports and health). However, the other three components of the independent variable (access to urban sports facilities, quality and diversity of sports spaces, and social support) had a strong and direct relationship with the dependent variable (Table 2).

Table 3: Multivariate Regression Coefficients for Independent Variables Entered into the Regression Model

Variables	Unstandardized Coefficients		Beta Coefficient	t-value	Significance Level (p)
	B	Std. Error			
(Constant)	10.126	1.797		5.634	0.000
1. Access to urban sports facilities	0.978	0.151	0.33	6.480	0.000
2. Social support and advocacy	1.041	0.125	0.34	8.335	0.000
3. Quality and variety of sports spaces	0.503	0.137	0.18	3.673	0.000

Table 3 shows the results of the stepwise multiple regression analysis for the dependent variable "students' sports and health." Among the independent variables that had a significant relationship with the dependent variable, three components entered the equation. These three independent variable components explained 44% of the variance in the dependent variable (students' sports and health).

For drawing the path analysis diagram, first a multiple regression test was conducted with the three components of the independent variable (access to urban sports facilities, social support, and quality and diversity of sports spaces) against the dependent variable (students' sports and health). The results showed that out of the six components of the independent variable, only these three components had a direct and unmediated correlation with the dependent variable: 1) Social support (with a coefficient of 0.34) 2) Access to urban sports facilities (with a coefficient of 0.33) 3) Quality and diversity of sports spaces (with a coefficient of 0.18).

In the six components of the independent variable "urban conditions," the above three components were deemed more important in the regression method and showed a direct correlation with the dependent variable "students' sports and health" without the influence of other factors. To obtain the path analysis model, each time one of the three components (access to urban sports facilities, social support, and quality and diversity of sports spaces) is placed as the dependent variable in the multivariate regression test, and the influence of other factors on them is measured. In this way, after measuring the direct effects, the indirect effects are obtained and shown by arrows pointing toward the dependent variable, and the corresponding Beta coefficients (standardized effect coefficients) for each variable are written on its arrow.

Access to urban sports facilities, quality and diversity of sports spaces, social support, costs related to sports, attitude and awareness toward sports and health, and safety and security of the urban environment.

Table 4: Statistics of Four Runs of Multiple Regression Tests Based on Which Figure 1 Was Prepared and Designed

Dependent Variable and Three Independent Components of the Study	Influential components	R	R ²	SEE	Adjusted R ²	F-test Value
students' sports and health	1. Access to urban sports facilities 2. Social support and advocacy 3. Quality and variety of sports spaces	0.67	0.45	7.330	0.44	103.090 (0.000)

Dependent Variable and Three Independent Components of the Study	Influential components	R	R ²	SEE	Adjusted R ²	F-test Value
Access to urban sports facilities	1. Quality and diversity of sports spaces 2. safety and security of the urban environment 3. costs related to sports 4. Social support and advocacy	0.71	0.51	2.306	0.50	98.797 (0.000)
Social support and advocacy	1. Access to urban sports facilities 2. Attitude and awareness toward sports and health 3. quality and diversity of sports spaces	0.43	0.19	2.888	0.18	29.422 (0.000)
Quality and variety of sports spaces	1. Access to urban sports facilities 2. Safety and security of the urban environment 3. Social support and advocacy	0.68	0.46	2.647	0.45	108.420 (0.000)

The multiple regression correlation coefficient (R) between the components of the independent variable (1. Access to urban sports facilities, 2. Social support, 3. Quality and diversity of sports spaces) and the dependent variable (students' sports and health) was obtained as 0.69. If this coefficient is squared, R² = 0.44 is obtained. This is interpreted as 44 percent of the changes in the

dependent variable are explained and accounted for by the above three components. In other words, 56 percent (0.56= 1 - 0.44) of the changes in students' sports and health are determined by other factors, which requires further investigation and research. Explaining 44 percent of the variance by these three components seems reasonable and appropriate.

Table 5: Total Effects of the six Components of the Urban conditions Variable of the research

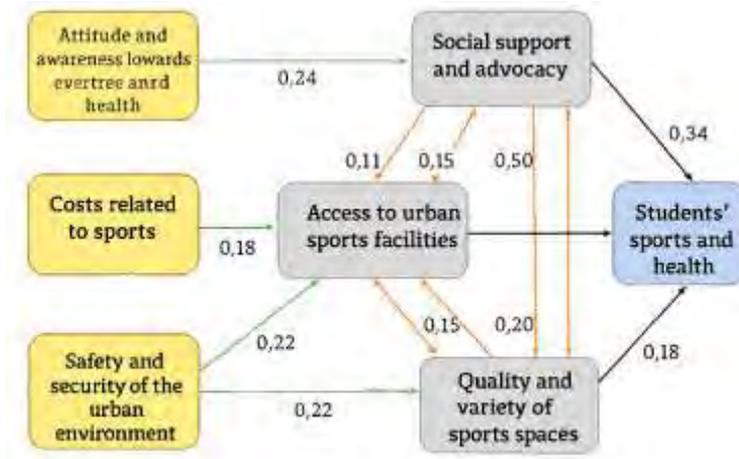
Components	Direct Effect (Unmediated)	Indirect Effect (Mediated)	Total Effect of Components
Social support and advocacy	0.34	0.10 * 0.18 = 0.02 0.11 * 0.33 = 0.04 0.11 * 0.50 * 0.18 = 0.01 0.10 * 0.44 * 0.33 = 0.01 ≡ 0.08	0.42
Access to urban sports facilities	0.33	0.20 * 0.34 = 0.07 0.50 * 0.18 = 0.09 0.50 * 0.17 * 0.43 = 0.03 ≡ 0.19	0.52
Quality and variety of sports spaces	0.18	0.17 * 0.34 = 0.06 0.44 * 0.33 = 0.14 0.44 * 0.20 * 0.34 = 0.03 0.17 * 0.20 * 0.33 = 0.01 ≡ 0.24	0.42
Safety and security of the urban environment	—	0.20 * 0.52 = 0.10 0.22 * 0.42 = 0.09 ≡ 0.19	0.24
costs related to sports	—	0.18 * 0.52 = 0.09 ≡ 0.10	0.10
Attitude and awareness towards exercise and health	—	0.24 * 0.42 = 0.18 ≡ 0.10	0.10

Table 5 shows the direct, indirect, and total effects of the independent variables in the study. The total effect is calculated as follows: the amount of direct effect is the Beta (standardized coefficient) of the independent variable on the dependent variable, which is

recorded. The amount of indirect effect is obtained by multiplying the path coefficients along the route from the independent variable to the dependent variable, and then this value is reported. The effect of the component "safety and security of the urban environment"

is calculated by multiplying its direct effect by the sum of the total coefficients of "access to urban sports facilities" and "quality and diversity of sports spaces." Finally, the total

effect of each of the six components is calculated by summing its direct and indirect effects.



Figur 1: Factors Affecting Students' sports and health (Including Path Coefficients)
Source: Research Findings, 2025

CONCOLUSION

The present study explains the urban conditions and health-related sports activities of the students at Payame Noor University, Sari. Urban conditions, as one of the key factors influencing behaviors and lifestyles of various populations, especially students, play an important role in explaining their physical and mental health status. The findings of this study show that diverse components related to the urban environment, including access to sports facilities, quality of sports spaces, and social support, are significantly associated with students' participation in physical activities and their health levels. This indicates the combined and multidimensional impact of the urban space on students' motivation and sports behavior, which can serve as guidance for policymakers and urban planners to provide more suitable frameworks for promoting the health and well-being of the university population. Additionally, understanding attitudes and economic considerations related to sports provides better grounds for formulating targeted strategies. Therefore, the present discussion, by examining various dimensions of the impact of urban conditions on students' sports and health, lays the groundwork for a deeper understanding of this relationship and offers

practical solutions to improve the quality of students' lives in the urban environment.

Based on the research background and obtained results, it was found that urban conditions and their components play a significant role in the sports activities and health of students. According to the current study's evidence, urban conditions with their various components have been able to explain 44% of the variance of the dependent variable, i.e., students' sports and health, indicating the importance and considerable impact of urban conditions as one of the effective factors in students' health and sports in modern urban life.

Furthermore, the results of this research are consistent and aligned with the findings of multiple studies, including those of Lotfi *et al.* (2023), MafiNezhad *et al.* (2023), GhanbariNejad Naseri and Kazemizadeh (2022), Javanmard and Sanatkhoah (2022), Sheikhiyani *et al.* (2021), Abbasi *et al.* (2021), Ghareh *et al.* (2019), Mostashiri *et al.* (2017), PourRanjbar *et al.* (2016), Han *et al.* (2025), Mahani *et al.* (2024), Zhao *et al.* (2024), Li *et al.* (2022), and Fathi *et al.* (2020).

Summary of the findings from these studies is as follows: Teacher autonomy support for motivating students' physical activities. Sports education as an effective factor in the

development of community health. Cities with extensive and connected green spaces providing safe opportunities for residents to engage in active movement and exercise. The important role of social support and social capital as key indicators influencing public sports and health. Personal body management and the role of sports infrastructure as intervention factors. Participation in public sports and its positive effect on individuals' health and well-being. Three variables—attitude, behavioral control, and public sports—explain half of the changes in levels of participation in public sports. Sports facilities as an influential factor on sports and health in schools. Social support, in addition to the impact of sports behavior, as an effective factor on the mental health of community members. The significance of understanding the role of urban governance in creating environments for residents' welfare. Four factors—access, accessibility, design, and safety in the urban environment—strongly shape the sports activities of community members. The importance of security and aesthetic and visual quality of urban spaces as key factors in improving citizens' physical health.

Therefore, it can be said that improving urban conditions and paying attention to these components play a key role in enhancing the level of sports participation and the physical and mental health of students, and consequently the urban society as a whole.

The findings of the present research show that among the six components of the independent variable "urban conditions," three components— "social support and advocacy," "access to urban sports facilities," and "quality and variety of sports spaces"—were considered more important in the multivariate regression method and demonstrated a direct correlation with the dependent variable "students' sports and health" without the influence of other factors. The correlation coefficient (R) of the multivariate regression between these three components and the dependent variable was obtained as 0.67.

The novel and original point of this research is that by performing multivariate regression,

the standardized beta coefficients, indicating the sequential impact of the three independent components, were obtained as follows: 1) Social support and advocacy (0.34), 2) Access to urban sports facilities (0.33), 3) Quality and variety of sports spaces (0.18).

However, with the implementation of path analysis and the determination of the direct and indirect effects of the six components of the independent variable, a significant change in the order of importance of the components was observed. Next, for each component of urban conditions in terms of their impact on students' sports and health, a more detailed analysis and explanation will be provided based on their effect rankings.

- Access to urban sports facilities (Total effect 0.52 – ranked first): This component has the highest degree of influence, indicating its fundamental role in encouraging students to actively participate in physical activities. Easy access to sports infrastructure increases motivation and opportunities for engaging in exercise and can serve as a key driver for improving the physical and mental health of the university population. In addition to its strong direct effect, the indirect effects of this factor, through enhancing related behaviors, also play a coordinating and supportive role, leading to an overall increase in sports participation.

- Social support and advocacy (Total effect 0.42 – tied for second place): Social support, including emotional, motivational, and cultural backing, provides an essential foundation for maintaining and strengthening motivation for physical activity. This component not only has a significant direct effect on sports and health by fostering self-efficacy and a sense of belonging but also plays a notable indirect role through its influence on other related factors. For this reason, despite having a higher direct effect, it ranks second due to lesser indirect effects.

- Quality and variety of sports spaces (Total effect 0.42 – tied for second place): The diversity and quality of sports facilities offer students the option to engage in physical activities that meet ideal standards. High-quality spaces increase satisfaction and promote consistent attendance in sports

activities, thereby enabling greater health benefits. The shift of this component from third to second rank highlights the importance of improving the quality of sports environments as intrinsic motivators for enhancing student health.

- Safety and security of the urban environment (Total effect 0.19 – ranked third): Feeling safe and having secure environmental conditions are essential prerequisites for active participation in sports. When the urban environment is equipped to reduce threatening risks and create a sense of calm, individuals engage more readily in physical activities with greater awareness and motivation. Although the overall effect of this component is less than the top two, it serves an important psychological and social foundation facilitating sports participation.

- Attitude and awareness toward sports and health (Total effect 0.10 – tied for fourth place): Positive recognition and constructive attitudes toward exercise and its benefits constitute the initial step in motivating physical activity. Although this factor does not have a direct effect on the dependent variable, it plays a vital role in sustaining and continuing sports behaviors by fostering healthy beliefs and knowledge. Higher levels of awareness guide behaviors toward a health-oriented lifestyle.

- Costs related to sports (Total effect 0.10 – tied for fourth place): Individuals' perceptions of financial and economic barriers related to sports are factors that indirectly influence sports participation. Significant costs can act as psychological or practical obstacles to engaging in physical activities, thereby affecting participation rates and overall health. Reducing these potential barriers leads to greater access and willingness to exercise.

Overall, this comprehensive interpretation highlights the special importance of infrastructure and social support in shaping sports behaviors and enhancing student health, while cultural, psychological, and economic factors act as strengthening and moderating supports. Paying attention to this hierarchy and order in the pattern of influence can serve as a suitable guide for policymakers

and urban planners in prioritizing interventions.

The theoretical discussion and summary of this empirical research can be presented as follows:

The Stimulus-Organism-Response (SOR) theory clarifies the importance of environmental components as psychological-emotional stimuli that shape individuals' internal processes and ultimately lead to behavioral responses. In the context of urban conditions, factors such as access to sports facilities, the quality of sports spaces, and urban environmental safety act as primary stimuli within the living environment of students. These stimuli, by providing suitable conditions, enhance students' sense of belonging and calmness and improve psychological processes such as increased motivation and stress reduction. In other words, these environmental stimuli create the foundation for forming desirable behavioral responses, namely active participation in sports activities.

On the other hand, the Theory of Planned Behavior provides a framework for students' decision-making processes by focusing on behavioral intention. According to this theory, sports behavior arises from the combination of a positive attitude toward exercise, social support and approval (subjective norm), and perceived control over performing the behavior. These three constructs serve as internal psychological and organic processes, defined within the "Organism" component of the SOR model. Students who hold constructive attitudes, feel social support, and believe in their ability to control their sports behavior show greater propensity for active participation, which in turn leads to improved physical and mental health.

The path analysis results of the study indicate that access to urban sports facilities, with the highest total effect coefficient, plays a key and central role in stimulating students' interest and participation in sports, clearly reflecting the role of environmental stimuli emphasized in the SOR theory. The components of social support and the quality and variety of sports spaces hold significant importance as well; they strengthen

behavioral responses respectively through stimulating internal organismic processes such as motivation and sense of belonging, and by providing a favorable environment. Although urban safety and security have a lesser effect compared to other components, they are recognized as a fundamental condition for confidence in engaging in sports activities; this component is attributed to the environmental stimulus characteristics within the SOR framework. Attitude and awareness toward sports and health, along with related costs, while having smaller effects, play an important role in shaping attitudes and removing economic barriers, which directly relate to the organism and perceived behavioral control constructs in the Theory of Planned Behavior.

By integrating these two theoretical frameworks, it can be understood that urban conditions, as a set of environmental stimuli, activate individuals' internal psychological-

Author Contributions

Seyed Hassan Rasouli, as the corresponding author, supervised the overall research process, guided the analysis, and finalized the manuscript. Esmail Kavianpour Sangeno conducted the main research, collected data, and performed the initial analysis. Shahram Mollania Jelodar contributed to the theoretical framework and interpretation of results. Kamran Hassanzadeh assisted in preparing figures, tables, and editing the final version of the paper.

Conflict of Interest

The author declares that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancy have been completely observed by the authors.

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emotional and cognitive processes. These internal processes, through attitude, social support, and sense of control, form behavioral intentions, which ultimately lead to sports behavior. This behavior results in improved physical and mental health of students and reflects the complex, multidimensional interaction between environmental structures and individual factors within the urban living context. therefore, the importance of urban components lies not only in providing physical opportunities for sports but also in stimulating psychological and social factors that, according to SOR and the Theory of Planned Behavior, constitute the fundamental bases of sports behavior. This integrated perspective can serve as a foundation for designing comprehensive and targeted interventions to enhance students' lifestyle and health in urban environments.

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