



## Investigating the Role of Space Factors in Promoting Vitality for Designing Sports Complex

Amir Reza Karimi Azeri <sup>a\*</sup>, Mehraneh Aladini <sup>b</sup>, Mehrdad Amirnezhad Mozhdehi <sup>c</sup>

<sup>a</sup> Assistant Professor, Department of Architecture and Art, University of Guilan, Guilan, Iran.

<sup>b</sup> M.A. student, Department of Architecture, University Campus 2, University of Guilan, Guilan, Iran.

<sup>c</sup> Lecturer, Department of Architecture and Art, University of Guilan, Guilan, Iran.

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### Abstract

The quality of urban public space has been one of the focal points of recent design research, with the efforts to create such a public space that could satisfy citizens in different terms has been proposed as one of the main strategies for the urban design projects. As one of the factors affecting the quality of public spaces and urban environments, vitality plays an important role in such settings. On the other hand, the environmental designers are always faced with different aspects of designing public spaces and the important fact is that, among the various factors influencing the vitality, which one has the most important role. In this regard, this study intends to focus on the designing of sports complex in Bandar Anzali in order to enhance the vitality. In terms of research kind, the research is a descriptive-analytical one, in terms of methodology, it uses a survey method and it is functional based on objective. According to the data, it is a quantitative research and it is a field study in terms of implementation. In this regard, among the human-based and environmental variables related to the vitality that were extracted from the documentary and desk research, five cases were selected as the basis of the research according to the prioritization of environmental psychology developed by the experts from the faculty of members from the prestigious Iranian universities. Additionally, the research tools were developed based on this prioritization. The statistical community of the present study involved two cases of the sports complexes representing Bandar Anzali. Therefore, with the determination of the community, sample size and research tools, the selected variables were tested to accept or reject the hypotheses. After analyzing the data by SPSS software, visual beauty, security, sociability, readability and user interaction and 24 hour activity were prioritized respectively. As a result, the analytical model of the research, which in fact includes the main factors affecting the vitality of sports spaces has been formulated as a public space in Anzali. Finally, the most effective spatial strategies have been presented to promote vitality and to achieve the research goals.

*Keywords:* Public Space; Sports Complex; Quality of Environment; Vitality, Environmental Psychology; Bandar Anzali.

### 1. Introduction

The space has been conceptualized as one of the fundamental concepts in architecture. Architects and world thinkers of architecture have presented a variety of conceptions about it. Some of these definitions refer to the role of humans in the perception of surrounding space, while the other ones rely on the impact the quality of space designing has on the human beings' perceptions of their the surrounding environment. What is more pertinent among scholars is the definition

\* Corresponding author: [amirreza\\_karimiazari@guilan.ac.ir](mailto:amirreza_karimiazari@guilan.ac.ir)

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provided about the space, which includes both human elements and its surroundings. One of the definitions is originated from the interaction between man and his/her surroundings or the interaction between subjectivity and objectivity. According to this definition, the human's perception of space is of great importance, which has led many prominent scholars to suggest patterns for improving the quality of architectural design in this contemporary period [1].

Public spaces are one of the main urban spheres in which civil life flows and the transcendental dimension of human relations is manifested. These spaces - with varying scales across Iran, during the Sunni period, paved the way for social solidarity, but with the transformation of the city's spatial organization in the modern era, these spaces were devastated by their social burden and nowadays no collective life could be imagined in these cities. Also, the civil life is not considered as a part of the use of a typical city anymore [2]. According to the viewpoints of Western scholars, such components as social interference, flexibility of spaces, meaningfulness of place, vitality, comfort, peace, convenience and recreation are vitally important in urban spaces [3]. According to the mentioned definitions of qualities of collective spaces, the vitality - as one of the characteristics of environmental quality- is one of those criteria influencing on the quality of urban and public spaces.

### 1.1. Problem Statement

If we consider city as a living organism, it needs vitality and happiness for survival [4]. One of the most important psychological needs of the human being is having joy, satisfaction and happiness. Like all the other creatures on the earth, the human being has its own social life. Hence, his need for happiness is imperative and is demonstrated through his need for life and conducting activity in the lively environment [5]; since the mission of art and architecture is to develop the human's biological condition by improving the quality of space; and this is realized when it is not only responsible for the functional and aesthetic aspects, but also for the psychological needs and everyday dreams of individuals, the vitality can be considered as an integral part of a desirable architecture, which seeks to convey the sense of glory to the audience of space [6]. Therefore, vitality and liveliness are the main components of a qualified city space. Psychological anxiety and stress are serious problems which human being experience in the era of technology, both of which led to a decrease in the sense of happiness for them. Also vitality and liveliness deficiency is clearly visible in our country's urban spaces, which, in consequence, can increase the violence, depression and the tendency towards unhealthy amusements by citizens [7]. Therefore using the factors that cause vitality and joy in the architecture monuments and particularly, in public spaces, provide a joyful space, which is a necessary matter. So, with considering this need, we require a place to resolve this problem; sports spaces can be influential in promoting vitality as a space where people act alone or in groups. The term "exercise" means performing regular physical training to complete physical and mental strength. According to the meaning derived out of Dr.Moien's dictionary (2002), [8], what is more important than the exercise itself, is the results and outcomes which are included in development of physical strength and mental issues. Nowadays what has challenged our modern sporting venues is the mere use of instruments capable of covering large spaces, structures that can be used as the crust of an industrial factory or even a warehouse. What gives life to the architecture of the sports spaces is the activity done within them. The stadiums, while enjoying the international and national standards provided by the relevant organizations, should enjoy an appropriate quality and quantity to make the users satisfied. On the other hand, due to the expansion of cities and the increasing population growth, our need for sports spaces has increased, but as it seems, in some cases, even by considering the large amount of capital to build such complexes, they seem to be inefficient and the existing sport complexes do not have the proper utility quantitatively and qualitatively. It appears that with applying the proper functional-physical quality components, the sports complex can play its role in promoting the components of vitality. Therefore, while possessing desirable environmental qualities, the sports complexes are better to have the vitality as one of the important components of spatial qualities and provide an appropriate place for promoting it as much as possible. The vitality includes a number of components that can be helpful for finding effective strategies if the roles of the physical components (independent) on the human-based components (dependent), most importantly- in proportion to the type of user that is in the current research called the sports complex- being prioritized and evaluated by targeting. Therefore, the main hypothesis of the research includes sub-hypotheses in order to determine the role of the most important factors regarded in depth within the theoretical framework.

### 2. Research Background

So far, many studies have been conducted on improving the quality of urban spaces as the most important venue for the social interactions and the source of the vitality and dynamism of the cities. The investigations stressed on the environmental-behavioral effects both inside and outside of Iran. In terms of the global experiences, some of the prominent scholars who have focused on the mental-spiritual impacts of urban spaces on people's behavior, as well as on environmental-behavioral influences, with their unique ideas included: Kevin Lynch, Erving Goffman, Roger Barker, Amos Rapoport, William Whyte, Habermas, Jan Gehl and Jane Jacobs. Several studies have also been conducted in Iran regarding the quality of public and communal spaces and how it is perceived together with regarding the impact of space

on human behavior. Mehdi Khak Zand and Kourosh Aghabozorgi, (2016) [3], have argued that vitality is one of the important components in urban spaces and is of great importance.

Some researchers also published articles about vitality as one of the most influential environmental qualities. Also, they considered how to create it within the open spaces of the city, with its architectural features are briefly expressed. Marand Ahmadi and Nastaran and Lida Balilan Asl, (2015) [5], studied the vitality of urban spaces and concluded that the impact of a psychological urban environment on citizens convinced them to carry out useful activities and, in consequence, it provided them with the possibility of carrying out activities in full physical and mental security. Also, with studying vitality criteria, Leila Kayini and Parisa Hashempour, (2015) [6], have concluded that vitality in space, especially in public spaces is very necessary. Public spaces are interfaces between individual and group activities. Therefore, in this research, we have tried to contribute to identify the factors influencing the livability of public spaces, creating a lively architectural space to lessen the void of these spaces. With studying the physical characteristics and their effects on vitality and livability in some of the old neighborhoods in Isfahan, Ahmad Shahinvandi et al (2015) [9], stated that vitality and livability, in terms of spirit and meaning, along with the body of the city, are closely correlated with the quality of life. Also in connection with the quality of public space, Nahide Rezaei et al (2016) [10], contended that the public spaces are the places where the individuals should hang out in and show their participation in the social life. Therefore, social life should always exist in these spaces. So vitality is essential. Hossein Hamidi and Naema Esmailzadegan, (2011) [11], have also examined the factors influencing on the performance of urban parks with stressing on performance and vitality.

According to the research, it seems that the vitality characteristic is mainly studied in open spaces and semi-urban areas and only some of its features have been considered; also some research was done on the recognition of this component and its impact on Public spaces together with regarding the interior spaces in addition to their outer spaces, such as the sports complex. Therefore, what distinguishes future research from other researches is the examination of human-based and environmental factors and prioritization of them as vitality components that can be effective inside and outside of a sports complex as a public space.

### **3. Definition of Concepts**

#### **3.1. Public Space**

Public spaces are shared by different social individuals and groups; these spaces are the places for exchanging ideas. Indeed, they serve as a space for the formation of social networks. Such spaces are an experience rather than just a space [10]. Urgent presence in the city's public environment and what is considered in urban design as the liveliness of space, due to the mere physical presence of individuals (without emphasizing the purpose of their presence or familiarity with each other), is repeatedly referred to as value; In Islamic References, this goal is not acceptable [12]. In general, creating a successful public space that can accommodate different individuals and groups requires attention to their operational and environmental characteristics. Functional specifications of the public spaces can influence on the quality and quantity of attracting people in order to reach an agreement and interaction in such spaces [10].

##### **3.1.1. Sport Spaces**

Leisure activities cover a wide range of activities such as artistic, cultural, sporting, pilgrimage, auditory, visual, recreational and entertainment, social relationships, relationships with nature, studying and computer activities, each of which needs its own platform. Recreational activities that take place outside the home are of a more collaborative nature, requiring special space and facilities. In this regard, public spaces play a major role in providing a platform for the formation and coherence of such activities [13]. Any sporting ground created for physical activity, recreation or exercise is a social and vital place that contributes to the health and well-being of the community. In order to maximize the use of these facilities, their availability is essential for all parts of the society [14]. Undoubtedly, there are several factors in the field of sport that individually challenge the behavior of an athlete or coach. One of the most important factors that can undoubtedly be considered as the most important factor of the athlete's inner part is the motivation and the motivators. Several factors are effective in motivating athletes. One of the important motivators is the desirable environmental conditions [15]. Due to the fact that the places and sports spaces are the basis for the implementation of sports activities and programs, and their quantity and quality are influential on the implementation of exercises, competitions and sports competitions and the development of sports among different classes of society, sports science experts are concerned about the predictors, type of design, the construction of places and sports spaces required by the young population of the country [16].

#### **3.2. Quality of Environment**

Environmental quality is the assessment of the environment in relation to the requirements of one or more aspects, or for the needs or demands of each human being. The environmental quality of a complex is a subject involves different perceptions, attitudes and mental values as between groups and individuals [17]. The quality of the environment is a

subset of the quality of life. The quality of life affects the quantitative and qualitative aspects and does not make sense without the quality of the environment in which we live. Therefore, it can be said that the quality of the environment is a part of the quality of life, and includes all factors which partly makes the human beings satisfied [18].

Alan Jacobs and Donald Appleyard (1987) published an article in the Journal of the American Association of Urban engineers entitled "Going Towards a Urban Designation Manifesto". They sought to promote a set of qualities that can be enlisted with the following order: 1- Vitality; 2) identity and control; 3) access to opportunities; imagination and happiness; 4) authenticity and meaning; 5) social and universal life; 6) urban self-reliance; and 7) an environment for all [19]. Therefore, given the fact that the public spaces are for the presence of the individuals and their participation in the life of their community, the social life needs to be existed in such spaces; in consequence, as one of the environmental qualities that influences public spaces, including sports complexes, the vitality has a significant role in these spaces.

### 3.2.1. Vitality

According to the definitions for the qualities of public and communal spaces, as an environmental feature, the vitality is one of the criteria affecting the environmental quality of urban and public spaces. For the term "vitality", there are various equations across the West, including Livability, Liveliness, and Vitality; except Vitality, other words are more closely related to such concepts as viability and livelihood [20]. Being alive is a quality, this quality is evident in such realities as the social relations of people in space or how everyone exercises the right to choose and collective discourse in space. Therefore, the community can be considered as one of the indicators for vitality norm in urban design [21]. According to the definitions given in relation to activity and vitality, a "lively urban space" is a space in which the presence of a significant number of individuals with their variability (in terms of age and sex) during an entire day time whose activities appear mainly in selective or social terms could be observed [4]. In fact, it is a lively atmosphere where - during an entire day time- different people come voluntarily to spend moments in space; in other words, the space should be in such a way that people come and stay [20]. A significant factor for attracting attention to a place is how the user understands the physical environmental perceptions and how decides to determine the quality and efficiency of the outlook [22]. With the studies done, it is concluded that in order to provide space for attracting people and then retain them in space, firstly, there must be attractive elements and agents, and people should not get in trouble to stay in that space while being satisfied with [4]. An experience of vitality is expressed in terms of time, space, power and intention [23]. Such criteria as body and design are the most important factors affecting the quality of urban spaces and promoting the qualitative like vitality, safety, security, diversity, sociality, permeability, readability and flexibility [9].

## 4. Research Methodology

This research was conducted with a survey method and is a descriptive one. The information obtained through field method includes images and theoretical and library scanning, based on information in library archives such as dissertations, books, and the use of authoritative online sources such as articles. First, the discovery of the problem was done through a variety of approaches. Next, based on the acceptance of the existence of a reciprocal relationship between the sports complex and the vitality, the investigation of the research data was carried out by analyzing them and examining the positive and negative points and conclusions of each of the effective factors in this field for realizing the purpose of the research, which itself is of a practical nature, for providing the appropriate guidelines for designing a sports complex in order to enhance the sense of vitality. To do so, according to the research steps listed in figure 1, information has been gathered to achieve the theoretical literature of the subject through documentary and library methods in order to meet the criteria for the vitality issue. Measuring the potential of space for vitality needs information about qualities and effective measures. At this stage, the faculty members from prestigious universities have chosen and prioritized the criteria by evaluating the opinion of four experts in the field of environmental psychology. In order to achieve the design patterns, a researcher-made closed questionnaire was provided with the statistical community through random sampling (Sample size is selected based on Morgan's table). The results were extracted and analyzed. The statistical population of this research is from Bandar Anzali. In order to do this research, two samples of sports complexes representing Bandar Anzali, which annually had the highest numbers of clients based on the statistics of the Department of Sports and Youth of the City were selected. One of them was the Ansari Sports Complex and the other one was the Seidgar Complex. The statistical community involved those clients referred to the complexes. For this process, the Cronbach alpha (Cronbach's alpha was calculated at 78%) was applied in order to determine the reliability of the questionnaire while the face validity was used for testing the validity of the questionnaire. After the community was chosen, sampling was done and data was collected. The data with its quantitative nature was automatically saved in the Excel software, next transferred to SPSS software in order to be analyzed and extracted and finally the effective solutions were formulated.

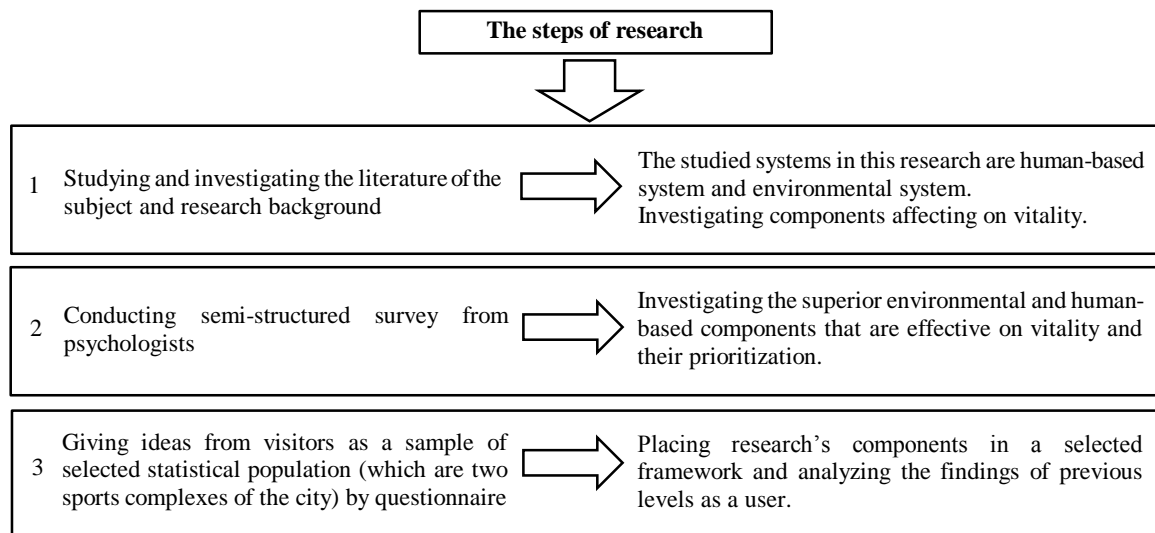


Figure 1. Steps of the research

### 5. Theoretical Framework of the Research

Considering the theoretical concepts and foundations and finding the relationship between the body of the sports complex as a public space and vitality- which is one of the components of the quality of the environment required in these spaces- the components of vitality were tabulated based on the views of theorists and experts as follows.

Table 1. Factors affecting vitality from the viewpoint of the experts

Factors influencing on vitality (variables of vitality)			Major sources
Security	flexibility	Space proportions	[6]
Comfort	Accessibility	Friendly relations	[19]
Climate comfort	Competition	Gathering of people	[24]
User-interference and 24-hour activity	Vitality and happiness	Separation of privacy	[25]
Permeability	The Power of choosing	green space	[5]
Presence/tendency	Possibility to rest	vision	[9]
Transparency	Identity	Quality of vision	[10]
Readability	Helpful density of individuals	Respect	[26]
Physical diversity	Right to choose	Light, texture, color, materials- conditioning	[27]
Profile Diversity	Institutional capacity	Social class	[21]
Visual Beauty	Creativity	Size and form	[28]
Pleasant Experience	Communication and collaboration efforts	The presence of communal spaces	[29]
More Health	Sociability	Perception	[30]
Social Interactions	The open and Semi- open space	Watching People	[31]

At this stage, a survey was conducted with four psychologists who were the leaders in the field of environmental qualities and the review was conducted through a semi-structured interview and a responder questionnaire; the influential variables of vitality were reviewed by them and their views on the subject and its different dimensions were tabulated (Table 2). Finally, with reviewing and verifying the findings of the literature, the research entered into its next stage.

**Table 2. Factors affecting vitality with its classification including the human and environmental variables**

Vitality			
Human-based Factors		Environmental Factors	
Pleasant experiences	Creativity	Security	Readability
More Healthy condition	Having the right to choose	comfort	Diversity of user
Social Interactions	Competition	Climate comfort	Visual beauty
Perception	Separation of privacy	User-interference and 24-hour activity	Flexibility
Vitality and happiness	Gathering of people	Permeability	Availability
The possibility of taking rest	Friendly Relations	Tendency and presence	useful density of people
Power to choose	Respect	Transparency	Organizational capacity
Identity	Social Class	Physical Diversity	Sociability

After summing up the expert opinion and prioritization about the physical and human-based factors affecting vitality, 5 components were selected from each of the independent and dependent variables. The systems studied in this study include human systems and environmental systems. The effective variables in the research areas, especially the environmental variables and other independent and dependent variables, were extracted from the respective research literature. In this research, for the human system, the characters related to vitality include vitality and happiness, respect, pleasant experiences, friendly relationships and social interactions while the environmental system includes, security, readability, visual beauty, user’s interference and social activity. The effectiveness of the environmental variables on human variables were investigated by the mediators (Table 3).

**Table 3. Results derived out of prioritizing the selected human and environmental factors influencing on vitality from the viewpoints of the experts and their roles in formulating the hypotheses**

Architecture	→	Psychology	The ultimate goal
Independent Variable	other Factors	Dependent Variables	
1 Security	Reducing stress	Joy and happiness	Promoting vitality
2 Readability	Availability	Respect	
3 Visual beauty	Visual perception	Pleasant Experience	
4 Users’ interference and 24-hour activities	Spatial communication	Friendly relations	
5 Sociability	taking part and association	Social Interactions	

Subsequently, considering the human and environmental factors, categorizing and prioritizing them by experts, hypotheses were analyzed as follows, and the research tools\* were presented.

- It seems that the development of safe physical spaces in the sports complex, due to its role in reduction of stress and concern, contributes to the creation of joy and happiness in order to promote vitality.
- It seems that the creation of a readable space in the sports complex- through the availability of spaces-plays a role in promoting vitality through establishing respect.
- It seems that creating attractive visual effects in the sports complex, through increasing visual perception, contributes to the creation of a pleasant experience for the promotion of vitality.
- It seems that the combination of user interference and 24 hour activity in the sports complex plays a role in creating friendly relationships through spatial communication in order to enhance vitality.
- It seems that the creation of a social atmosphere in the sports complex, due to the occurrence of participation, plays a role in the development of social interactions for promotion of vitality.

**5.1. The Conceptual Definition of Variables**

**Security:** Security is a kind of feeling peace and inner comfort, which is derived from the active components of the environment. Kevin Lynch stated that: A decent image of the environment gives to a person a sense of security. He also interpreted that having a clear picture of the environment means that one can easily identify the components of the environment and connect them in their mind in an interconnected form [32].

\* The researcher-made questionnaire of closed-response questionnaire includes 30 questions that measure the role of the physical variable related to each hypothesis on the human variable.

**Readability:** Readability is the same quality that makes the environment accessible and is active across two levels of physical form and activity patterns [33]. In practice, part of the degree of choice is offered by a place is related to its degree of readability. This implies how much people can achieve perception or understanding of that place [34]. To select multiple options for a space, simply providing it doesn't suffice: enjoyment of the required clarity and readability leads to represent the possible options to the users [21].

**Visual beauty:** The visual perception of urban environments is a product of perception and recognition, and this is what explains how the space looks attractive in our minds. As cultural ideas are constructed socially and culturally, then beauty must be at least in part more than simplicity in the minds of the observer. It is important to recognize that the general taste of the special environments is beyond the criterion of beauty. Jack Nasar recognized 5 characteristics of the lovely environments: 1. Cleanliness and good maintenance; 2. Historical authenticity; 3. Order; 4. Natural color; 5. Open and defined spaces [28].

**User Interface and 24-hour activity:** It is a lively center comprised of different spaces, with a significant numbers of people of diverse ages, sex, social and economic backgrounds, during an entire day time and early nights who gather in such public spaces and spend moments there. They will be willing to return to it again and again. [35]. Users' interference ensures that there are opportunities for constructive collisions and contacts without coordinating people (accidental) with each other. Also, it facilitates the convenience of social visits and activities. Therefore, the central area has become an important focal point for collective engagement [36].

**Socialization:** Social life and collective life are an opportunity to get rid of everyday tensions, spending leisure time, social interactions, gathering of people and groups and a place to attend, freedom of speech and expression [37].

**Joy and Happiness:** Vitality and happiness are the most important factors in human life. So, today, the quality and the status of societies determine their liveliness. The best society is the one that can determine the amount of happiness for more people [38].

**Respect:** Human relationships can be defined as a way of treating and respecting the social situations of individuals or groups that have created these situations [39].

**Pleasant Experiences:** Sustainability (the way and the extent of protection of space), personalization and visual pleasantness of the space are effective in attracting people to a campus and receiving mental comfort from the space. This is a feature that causes people to choose it for stopping, walking and experiencing the collective life [27].

**Friendly Relationships:** The social relation is the possibility that individuals will behave in a meaningful way. The social relation can be agreed upon through mutual satisfaction. Individuals need to establish a social relationship, and therefore provide opportunities for experiencing it. A social relation is made for specific purposes, or an emotion that involves friendship, kinship, and neighbourly relations, or rational seeking to maximize the chance of individuals achieving the goal [18].

**Social interactions:** Social interaction means creating a relationship between two or more people which leads to a reaction between them, and this kind of reaction is known to both parties. Therefore, meaningless relationships do not fall within this definition [37].

## 5.2. Introduction of the Studied Area

The city of Bandar Anzali has a central district, two villages (Kapurchal-Hasan Rood), a city (Bandar-Anzali) and 29 villages that are connected to the Caspian Sea from the north, to the city of Some Sara from the south, to Rasht from the east and to the city of Rezvanshahr, from the west. The city is located in the northern province of Guilan with an area of 299.318 square kilometers in the range of 49 degree and 27 minutes of east longitude to 37 degrees and 28 minutes of north longitude of the meridian [40], with an area of 49.31 square kilometers. Bandar Anzali is one of the densest cities in Iran in terms of population [41]. The city had a population of 141421 people in 2017, and within the horizon of the plan (1421), has been calculated to be as 217140 people\*. Following these calculations, the total shortage of sports centers in Bandar Anzali has been determined. Therefore, due to these shortcomings, the study of the subject in this statistical society requires a necessity. For this purpose, a case study in this study is two famous sports arenas in Bandar Anzali that have the highest number of visitors throughout the year according to the statistics of the Department of Sports and Youth of the City. One of these complexes is the Ansari Sports Complex and the other one is Seidgar Sports Complex; and the statistical community involves those referring to these complexes. In fact, the number of these referrals indicates the number of communities, which has an average of 950 people. By specifying the size of this community and keeping track of Morgan's table, the sample size included 274 people.

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\* Considering that the population was listed on the site of Iran's statistics until 2016; for calculation of population status (2016) and plot horizons (year 2042), three methods of linear growth model, type-1 and type-2 models have been used.

According to the research hypotheses, a researcher-made questionnaire was developed and was distributed to the clients of the above-mentioned statistical community. In the following, the results of this measurement are evaluated.

## 6. Research Findings

After questionnaires were collected, the data was extracted and entered into SPSS software, first the descriptive indexes of the data were estimated. The results of the questionnaire indicated that of the 274 individuals responded to the questionnaire, 170 individuals were women and 104 individuals were men. A higher percentage of them were within the age range of 21 to 40 years old, and the lowest percentages were those who were over the age of 61; the proportion of married people was higher than that single people. Also, a large proportion of respondents included students, people with governmental, free and unemployed ones in the community in terms of occupational segregation. The lower percentage was for the retirement group; in terms of education, people with a bachelor's degree had the highest proportion while people under the diploma had the smallest share.

Inferential statistics were used to test the inferential findings. In this research, the single group t parametric test was used according to the characteristics of the hypotheses and the type of data scales. To test the hypotheses, first, the average of hypothesized 15 was calculated based on the input data by SPSS. With determining other required statistical indicators, acceptance or rejection of assumptions depends on the assessment of the following three factors: the assumption that has the following three conditions is confirmed.

1. The calculated mean for the answers of the questions of each hypothesis should be more than the assumed mean\*.
2. The confidence level should be lower than 0.05 and the higher the difference, the hypothesis is more valid. If the confidence level exceeds 0.05, the hypothesis is rejected.
3. The upper and lower limits must be a positive number, and the larger the value, the value of t will be higher. If the upper and lower limits are negative, the hypothesis is rejected.

The data in Table 4 relates to the importance and priority of each of the executive actions proposed in each of the hypotheses for the subjects. Accordingly, the visual beauty variable with the mean of (23.25) and standard deviation of (4.99) was prioritized first, the security variable with mean of (23.11) and standard deviation of (4.63) was prioritized second, the social variability with the mean of (22.52) and standard deviation of (4.52) was prioritized third, the readability variable with the mean of (22.22) and standard deviations of (4.7) was prioritized fourth, and the users' interaction and 24-hour activity variable with mean of (21.62) and standard deviation of (4.81) was prioritized fifth. As a result, the hypotheses of this study were accepted.

**Table 4. The results of priority for each of the hypotheses based on their means and standard deviations**

Theories	Mean	The standard deviation	Priority
Hypothesis 1	23.11	4.63	2
Hypothesis 2	22.32	4.57	4
Hypothesis 3	23.25	4.59	1
Hypothesis 4	21.62	4.81	5
Hypothesis 5	22.52	4.52	3

With the significance of the variables was identified based on the results of the above analysis, the proposed model is presented in Figure 2.

\* Lists are ranked from one to five according to the Likert spectrum.



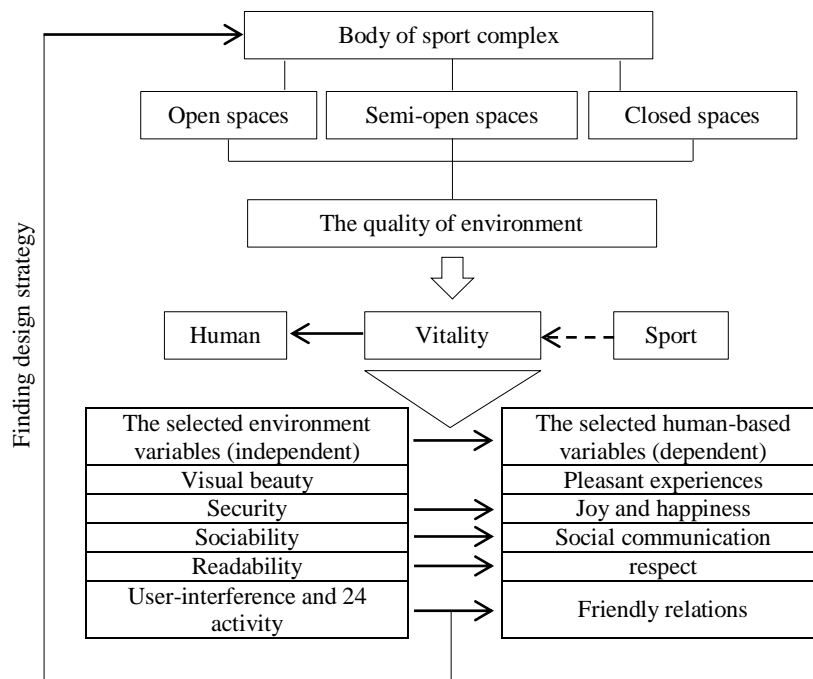


Figure 2. Proposed model

According to the proposed model of research and the final ranking of the variables, the effective strategies for designing Bandar Anzali sports complex with regard to improving the environmental performance of the environment with the vitality promotion approach are presented in Table 5 following the adoption of relevant assumptions in accordance with the results of the questionnaires. The orders of these solutions are based on the highest percentage of the items in the questionnaire.

Table 5. Designing solutions for enhancing the vitality in Bandar Anzali Sports Complex

Variable	No.	Solution
<b>Visual beauty</b> ↓ <b>Pleasant experiences</b>	1	Using natural and cheerful colors associated with exercise activities and applying contrast in lighting and color in order to increase the space detection capability.
	2	Proximity with nature and natural elements (such as water and green spaces) and creating green corridors by providing affordable access to spaces of complex.
	3	Open and defined spaces, such as making restaurant and an outdoor cafeteria in connection with both visual and functional open spaces (such as terraces associated with these users).
	4	The use of defined geometric forms, such as the use of common geometric shapes associated with the performance of space.
	5	Empowering factors that have a historical authenticity in order to learn the technology history and identity, including identification elements, such as Iranian elements, indigenous and memorials elements, and enhance them with lighting.
<b>Security</b> ↓ <b>Joy, vitality and happiness</b>	1	Applying enough natural and artificial light to provide lighting and nightlife at night by installing appropriate lights.
	2	Creating transparent clearings in some applications and enhancing the landscape with the use of large and long windows corresponding to the type of activity and visibility to the green space.
	3	Climate protection (protects pedestrians from wind, rain and sun), such as the outpost of the building to provide shelter and shading.
	4	Quick detection of components of an environment and quick communication between them, such as creating legible paths through the use of understandable geometry, material, color, and light for these paths.
	5	Visibility of public areas together with maintaining privacy through indexing these spaces using a variety of different materials, such as assigning a different ride path for cyclists.
<b>Sociability</b> ↓ <b>Social interactions</b>	1	Creating places for conversations among pedestrians, like the design of a place for sitting with flexible and proper sofa.
	2	Occurrence of collective events in open spaces with the possibility of communal activity for the audience, such as the ability to perform group sports in the area.
	3	Existence of physical and furniture functions for sitting in spaces for group activities.
	4	The ability to interact with the natural environment by creating semi-open spaces in relation to group of people and complex, such as the use of the terrace and the porch as the intermediate space.
	5	Availability of spaces with pauses, stops and focal points, both in access paths and in conjunction with the main spaces of the complex.
<b>Readability</b> ↓ <b>Respect</b>	1	Finding the easy entrance routes to different parts by indexing them with color, light and materials.
	2	Easy accessibility to spaces, by considering the flooring and motorized paths adapted to the disabled individuals

<p>User – interference 24hour activity ↓ Friendly relations</p>	3	The existence of spaces that provide people with an activity pattern, such as spontaneous and free community activities in the gathering and waiting spaces of the complex.
	4	The use of familiar and understandable physical forms along with the use of elements and sports statues associated with canvas and identity, such as the creation of a sports exhibition space centered on a myth (Sirus Ghayeghran).
	5	The transparency of the complexity is conducted through the use of transparent materials such as glass and legible forms in such a way that leads to the permeability of complexes.
	1	Enabling and turning on the set even in non-use situations with the use of collective spaces, such as cafes, sports shops and some 24-hour activities (answering to some activities at different hours of the day), and putting optical elements in the path.
	2	Allocation of common space between different spaces, such as the formation of an intermediate space between two sports spaces with the ability to distinguish access routes and the possibility of facing individuals, and the placement of playgrounds for children whose parents are engaged in sports.
	3	Avoiding any privatization in public spaces, such as using open and flexible plans in some office spaces.
	4	The use of moving furniture in the social spaces to combine some of the spaces together.
	5	The presence of adjacent spaces with a variety of applications so that the possibility of integration between different applications is created through the use of moving walls and partitions, such as the transformation of two small salons into a larger lounge.

## 7. Conclusion

Vitality is one of the main components of a qualified place. In order to promote vitality inside the designed environments, they must be able to meet the basic needs of humans. With considering two very important factors in space, namely the human being and the hierarchy of his needs and the qualities of designing a sports complex as a public space, the current research intended to address the various dimensions of vitality potential, which is one of the main components of the quality for the general environment; Also, the strengths and weaknesses of vitality's presence in space were regarded. The research tried to present a model through linking different views and theories by finding the most important human and environmental variables of the vitality and retrieving common concepts in order to identify a more comprehensive model and present the most effective spatial solutions, the possibility of using it in designing Bandar Anzali Sports Complex with an approach for promoting vitality. Such solutions as the following need to be regarded: applying natural and joyful colors to sporting activities, and creating contrast in lighting and color; making natural and artificial light enough to provide lighting and nightlife at night by installing appropriate lights; creating spaces for dialogue between sidewalks, like designing the sitting spaces with flexible furniture; Easily finding input routes to different parts by indexing them with color, light and materials; activating and turning on the lights of the complexes even when they are not in use (responding to some activities during different hours of the day); these solutions are prioritized along with other solutions presented in Table 5.

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