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Article

Urban Open Therapy Gardens in EU Cities Mission: Izmir Union Park Proposal

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Abstract: One of the biggest problems of societies living in modern world cities is the stress brought by a fast lifestyle. Stress affects individuals psychologically, physically, and socially. With the increase in the factors that cause stress, the need for places that individuals can use as therapy areas has also increased. Especially in this period when the 2030 100 EU (European Union) Cities Mission is determined, it is very important to design urban green spaces where the environmental and social criteria of sustainability are met, as places where society can breathe and where the society gets away from stress. In this study, based on the experiential quality criteria in outdoor therapy gardens, and the results of the evaluations made by experts and users, suggestions are made to improve the conditions of Birlik Park, located in the Gaziemir district of Izmir, one of the cities selected for the 100 EU Cities Mission, and to use it as an open space therapy garden.

Keywords: open therapy gardens; urban parks; experiential quality criteria model; 100 EU cities



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1. Introduction

The stress brought by a fast lifestyle is one of the biggest problems of societies living in cities. It causes individuals to be psychologically strained and affects them badly regarding health and social aspects. Cities inevitably expose society to structures full of chaos and stress. Urban life is known to cause many public health problems [1,2]. Experts state that people should be close to nature due to diseases arising from this confusion [3–5]. The need for individuals to provide therapy has increased with the increase in busy living conditions. After visiting these therapeutic areas, people feel fit, relaxed, and rejuvenated. These areas are regarded as healing places where people somehow relieve stress [6–8]. People should interact with nature psychologically and spiritually through passive or active contact. The interaction of people with nature directly is called “active contact”. In contrast, their interaction with nature while watching the flowers in the park or looking at the trees from a window is called “passive contact” [6]. According to Biophilia theory, a kind of evolution theory, humans are part of nature like every living thing [6,9]. Therefore, it heals by using nature in times such as stress, anxiety, anxiety, and illness [10–12]. Many studies in psychology, design, and health have proven that nature, when presented to people actively or passively, makes them feel better mentally and physically [12–18].

In cities, urban green spaces (UGSs) should be designed where the stored stress is relieved, and the people can breathe [19,20]. Urban parks and gardens are an important therapeutic element for urban life. These public spaces also serve two of the United Nations sustainable development goals (UN SDGs): Goal 3, good health and well-being and Goal 11, sustainable cities, and communities [21]. Especially in a period where sustainability is constantly on the agenda in the urban context, it is very important to design urban parks and public open green spaces that directly and tangibly connect the criteria of a sustainable society and sustainable environment for the benefit of society and the environment as much as possible.

The EU (European Union), which recently established its city mission for 2030, is of the view that making cities climate-neutral, which is home to 75% of its citizens, even though they only cover 4% of its land area, is a new way to bring definitive solutions to some of humanity's greatest challenges [22]. Cities will play a crucial role in achieving climate neutrality by 2050, the goal of the European Green Deal [23]. Defining the public green spaces of climate-neutral, smart, and sustainable cities chosen for this mission as places where residents can get away from stress, excessive anxiety, and urban chaos is an issue that needs to be solved effectively in sustainable urbanization. In addition, these areas filter urban air and help reduce heat islands [24,25]. These areas will help improve the quality of life of the EU community [26]. Designing urban green spaces for the benefit of society within the framework of the city mission for 2030, created by the EU community and its countries, which is the continent that sets the agenda and is the greenest continent of the modern world, is important in the creation of a pro-environment climate-neutral city. In addition, in terms of urban open space diversity, designing some designated areas as open-space therapy gardens will be good for the therapy needs of a sustainable urban society [27]. The relationship between open space therapy units and climate-neutral and sustainable cities is given in Figure 1.

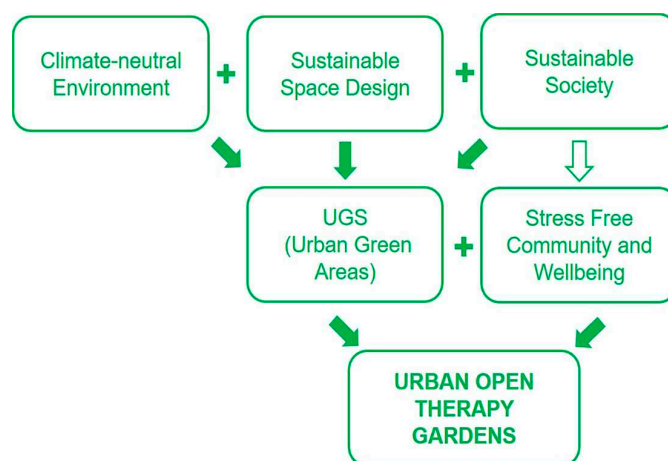


Figure 1. Relationship of concepts.

Turkish green spaces do not have a sustainability method or definition. Yet, European countries have different approaches, such as the Spanish MESMIS (productivity, stability, reliability, resilience, adaptability, equity, and self-reliance) [28]. Based on this method and different studies in the literature, it was thought that a sustainable urban park should have the following 10 features [1,10,28–31]:

- Helping community health;
- Easy access;
- Resilience and park maintenance;
- Holistic use;
- Protection of flora and fauna;
- Space and plant design according to climate and use;
- Element variety and movement;
- Harmony with nature;
- Management;
- Security and control.

When designing an outdoor therapy garden, it is important to experience nature with a combination of texture, taste, color, light, and sound [32]. For public open green spaces to appeal to most, if not all, of these 5 senses for relaxation and rehabilitation, it is necessary to analyze these urban areas' strengths, weaknesses, opportunities, and threats. In addition, these areas can be considered recreational areas where free activities can be performed and

educational and teaching areas for children when planned correctly [33]. While accessibility and sustainability are expected values of open space therapy gardens in urban areas, these values align with the 100 EU Cities Mission.

This study discusses how a selected urban park can be transformed into an outdoor therapy unit. As a result of the evaluations made by experts and users, suggestions were made based on sustainable urban park features and experiential quality criteria in outdoor therapy gardens. To improve the conditions of the Union (Birlik) Park, located in the Gaziemir district of Izmir, one of the 100 EU Cities, and to evaluate it as an open space therapy garden, 20 experts participated in three tests related to experiential quality criteria. These tests were prepared using the experiential quality criteria put forward by Sakıcı between 2009 and 2013 [7,34,35]. Furthermore, 128 park users also participated in a 25-question survey. The study provided suggestions about the park using the experiential quality criterion model and benefiting from expert and user opinions.

2. Materials and Methods

The Union (Birlik) Park selected for the study is in İzmir Province Gaziemir district Gazikent neighborhood. The park is 25 min and 10 min away from Izmir Centrum and Izmir Adnan Menderes International Airport by the İzban Suburban line, respectively. Moreover, it is 15 min away from Gaziemir town center by bus and a 20-min walk from Gaziemir Nevvar Salih İşgören State Hospital. Gaziemir National and International Children's Festival culture house is located approximately 28 m to the left of the park, and the education unit consisting of a kindergarten and primary school is located about 70 m to the right. In addition, there are cafes, restaurants, and shopping centers within two to five minutes' walking distance from the area. The relationship of the park to the culture house and the education units is shown in Figure 2.



Figure 2. The relationship of the park to the culture house and the education units.

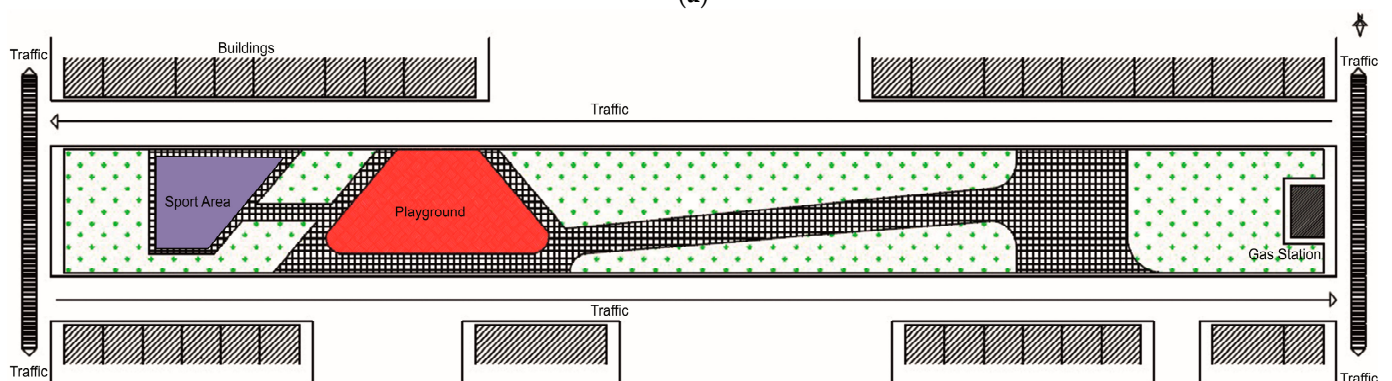
The park is planned for the common use of all ages due to its closeness to housing, health, education, and cultural units. Furthermore, in Turkish urban structuring, urban parks generally appear as public spaces that are seen as the common property of the public,

experienced by common users of all ages [36]. Yet it must be added that therapeutic gardens serve all ages [31], aligning with the Turkish green space approach. Considering this public expectation, this study aims to combine the concept of urban parks and therapy gardens in Turkey with a holistic approach.

Compared to the non-green urban structure of İzmir, approximately 43% of the neighborhood stands out as an urban green space and open sports area. The park covers an area of around 3854 m². It has a sitting area, a classic children's playground, and an area with adult fitness equipment. Although the park is located between four roads with traffic flow, there are two rows of parked cars on both wings of the longitudinal vehicle roads, as there is no parking lot for the residents of the surrounding apartments. However, there is slow traffic flow between the cars due to occupancy. Still, the other two roads are used as the main roads, and the traffic flow increases. Wires at the park's eastern entrance also surround a gas distribution station. In addition to the classical urban equipment, there are huts built by the neighborhood's residents for stray animals and equipment such as feed, water, and excrement boxes allocated by the municipality to the park. The plant presence in the park is unsuitable for an urban park and open space therapy garden. Existing photographs and sketches of the park are shown in Figure 3.



(a)



(b)

Figure 3. The current state (a) and sketch (b) of the park.

The design and use of urban open green spaces to relieve individuals from the stress of urban life will provide individuals with socialization in the therapeutic and social aspects. Open green areas where individuals can perform optional and social activities besides compulsory activities will psychologically relax them [37,38].

The method applied in this study is based on three basic experiential quality criteria: sensory stimulation, movement, and control [34] for open-space therapy gardens. These criteria were created following elements such as privacy and sense of control, sociability, physical movement, legibility, consistency, complexity, distance, size, attractiveness, comfort, and sunshade control [34]. Since human beings are a part of nature, it is a known fact that individuals relax when they communicate with nature. These areas, also called healing gardens, are divided into passive and active [6]. At the same time, passive therapy gardens pleasure by calming the person and suggesting a more recreational use, the areas that we can define as active offer direct use by activating the impulses of the individual [39]. These criteria are called experiential quality measures [34]. In addition, accessibility to the park was added to these criteria in this study because in urban areas, the accessibility of society to open green spaces is very important. This is one of the points that the UN SDGs Goal 11 and the World Health Organization (WHO) emphasize [26,40].

- **Sensory Stimulation:** The effectiveness of sensory stimulation dates to the 1970s [41]. In the 1980s, as it was free to touch the works with «hands-off» exhibitions in England, visually impaired visitors could understand and experience the works by touching them [42]. The areas used to provide therapy must be non-uniform areas that provide multi-sensory stimulation. This is achieved by using all the resource values of the area [35] and supported by other resources. Plants used for sensory stimulation have at least one of their unique audio, taste, texture, and visual characteristics. In addition, while these gardens and people relax and affect people in a good way, they also benefit wildlife-forming animals such as wasps, butterflies, and sparrows, and strong plant species that can stand up to the testing and touch of people that can be perceived by the five senses, appropriate color, light and shade planning, and enough contrast. Using artificial elements with hard and soft materials supports natural elements in terms of sensory stimulation [32,34].
- **Movement:** Basically, movement can be defined as the exercise or physical activity people conduct in the area due to using large muscle groups in the human body. Exercising reduces the stress and tension people are in, thus reducing depression and anxiety, and a garden that encourages people to act reduces the depression levels of users [34,35]. While using small paths and curvy turns in the area increases the user's interest in and movement in the area, experiences such as mystery, distance, legibility, and dimension in the area can be achieved with integrity and harmony in design elements [36,43].
- **Access:** Accessibility to green spaces should be one of the opportunities for urban residents and the benefits of urban sustainability [26,40,44]. According to the United Nations, these areas should be within walking distance of at most 400 m [40]. On the other hand, WHO decided this distance should be 5 min on foot and stated that the farthest distance is 300 m [26]. However, only 40% of these cities have approximately 18 m² of green area per capita, and 44% have urban green areas within 300 m distance [45]. Izmir, one of the 100 EU Cities, has UGS per capita of 3 m². It is the city with the lowest amount of green space per capita in Turkey [46,47]. Therefore, accessibility has been added to the movement criterion, one of the experiential quality criteria.
- **Control:** It is human control in the area. The ability to choose the desired activity, control the environment, personal privacy, and access to the area is called control [35]. Giving people a chance to choose reduces stress [18]. Allowing people to choose their environment increases their self-confidence and adds a therapy-providing feature [34]. The elements such as scale, light, temperature, and humidity are design elements that provide emotional control in people [48].

- The study created a photo archive of the area for the expert test. The sound of the area was recorded in the measurements made for the sense of hearing. In addition, a video of the area was taken for the experts to express more realistic ideas. Photos were shared with audio recording and video experts. A large number of photographs were taken to make objective evaluations of both the design and vegetation of the area. These photos were shared with the experts before the survey.
- Expert evaluation and user surveys were prepared using the tests and evaluations of Sakıcı's studies between 2009 and 2013 [7,34,35]. This model is called the experiential quality criteria model. These studies are related to the use of hospital gardens as therapy units. The tests and questionnaires made in these studies were applied to patients, patient's relatives, and experts from the design disciplines and healthcare. The Birlik Park study, on the other hand, explores how an urban park can be used as an urban open therapy garden that is experienced by people of all ages. At the same time, this park should have sustainable urban park features. Consequently, the questions asked in this study are slightly different and adapted to the subject. In this paper, the test survey participants are park users and only experts from the design disciplines.
- Twenty experts from the disciplines of architecture, landscape architecture, and urban design participated in the survey on the experiential quality criteria in Birlik Park. Three different expert tests were prepared for sensory stimulation, movement, and access and control. Each test has a 4-point Likert scale ranging from 0 to 3 points (0-none, 1-less, 2-undecided/moderate, 3-a lot). Table 1 shows the features of the expert tests.

Table 1. Test features.

Features	Sensory Stimulation	Movement Access	Control
Question Number	30	25	25
Measured Topics	Naturalness Herb Variation Wildlife Water use Architectural Elements Material Land Morphology	Movement Exercise Mystery Legibility Landscape Design Accessibility	Safety and Security Comfort Maintenance Activity Space Variety
Test success score for each expert (100%)	90	75	75
Total Points for 20 Experts (100%)	1800	1500	1500
Test Success Intervals	0–35% unsuccessful	36–70% moderately success	71–100% successful

Then, 134 park users aged 8 years to 65 years (and over), on experiential quality measures, participated in the survey during their time in the study area and under the supervision of the research team. Since there were problems with 6 users' answers to the survey, the survey analysis was based on the answers given by 128 people. Permission was obtained from the families of the participants under 18 to participate in the survey, participants under 12 answered the questions under family supervision, and the youngest participant's age was determined as 8. The survey consists of 25 questions. The first 3 questions comprise the 1st part of the survey, in which participants are asked about their gender, age, and educational status. Part 2 of 18 questions is about activity space sensation safety. In the 2nd part, a 5-point Likert scale was used, except for questions 16, 17, 18, and 19. The answer options in the Likert scale question in Question 4 are 1 (rarely), 2 (sometimes), 3 (often), 4 (usually), and 5 (always–everyday). It measures

the park usage routines of the participants. In other questions in which the Likert scale was used, 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree) answers were used. Question 16 is a multiple choice question. Questions 17, 18, and 19 are asked in the checkbox technique. Part 3 is Question 25 and participants were asked for their other opinions about the park. The participants themselves have to answer in this part.

Then, the area's constraints and opportunities were analyzed based on expert and user surveys. The area's strengths, weaknesses, potential constraints, and future opportunities were determined. In line with the findings, design and planting suggestions were made by the climate type of Izmir and the 100 EU Cities Mission related to the area, and opinions were shared.

3. Results

In expert tests for the park evaluation, all scoring was poured into the percentile, and 0–35% unsuccessful, 36–70% moderate, and 71–100% successful. Response averages (\bar{X}), standard deviations (σ), and Cronbach's alpha (α) values were calculated for the reliability test in all three questionnaires. Response values between 0 and 3 were taken as 1–4 to calculate the Cronbach alpha value. The tests received values of 0.94, 0.98, and 0.96, respectively. In all tests answered by experts, there are no outliers observed. These results show that the tests' reliability to the experts is high and valid [49].

Table 2 shows the test questions about sensory stimulation criterion and the experts' answers. According to the scores given by the experts in the survey on sensory stimulation criteria, the scores given by all participants in park sensory stimulation were collected. By taking 451 p, it remained in the 25% range. This showed that the park failed in terms of sensory stimulation. Considering the individual success percentage given by each expert in the field, it was observed that the lowest 16% (unsuccessful) and the highest 34% (unsuccessful) scores were obtained. In general, the answers of the experts are consistent with each other. In fact, they all gave the same answer by choosing 1 (few) for the 12th question and 0 (none) for the 4th, 22nd, 23rd, 24th, and 25th questions. No answer of 0 (none) was given in Question 13. This question has the feature of being the only question with 3 (many) answers. It should provide a concise and precise description of the experimental results, their interpretation, and the experimental conclusions that can be drawn.

Table 2. Sensory stimulation criterion and expert answers.

	Sensory Stimulation Criterion	\bar{X} (Mean)	σ (Standard Deviation)
Naturalness	1. Does the area look natural?	0.5	0.5
	2. Do the natural elements in the area balance the artificial elements?	0.7	0.5
	3. Are there natural sounds (water, bird, wind . . .) in the area?	1.0	0.4
	4. Is the area far from city noise?	0.0	0.0
Herb	5. Does the site offer diversity with suitable plant species?	1.4	0.5
	6. Is there any exotic planting in the area?	1.2	0.7
	7. Are seasonally changing plants included?	0.7	0.7
	8. Is there a planting emptiness–fullness balance in the area?	0.3	0.4
	9. Are there any plant species with a pleasant smell?	0.5	0.5
	10. Are there any remarkable plant species with different color characteristics?	0.6	0.7
	11. Have texture and form differences been tried?	0.4	0.5
	12. Are there any plant species with fruit and flower characteristics?	1.0	0.0
	13. There are no plant species containing harmful toxic substances.	2.1	0.9

Table 2. Cont.

	Sensory Stimulation Criterion	\bar{X} (Mean)	σ (Standard Deviation)
Variation	14. Are acoustic experiences included instead of a quiet environment?	0.3	0.5
	15. Are harmonic experiences included instead of single colors in the area?	1.3	0.6
	16. Are there regulations addressing the sense organs?	0.6	0.5
	17. Are there differences instead of the same quality in every place?	0.5	0.5
	18. Is there a variety of textures and materials in the flooring?	0.8	0.6
	19. Are landmarks created in the area?	0.5	0.7
Wildlife	20. Is there any wildlife in the area, such as birds, butterflies, and stray animals?	1.6	0.5
	21. Are plants attractive to these animals included?	1.1	0.4
Water Use	22. Is the use of stagnant water allowed?	0.0	0.0
	23. Is using moving (sprinkling, water play, running) water included?	0.0	0.0
Architectural Elements and Material	24. Are sculptures included in the area?	0.0	0.0
	25. Are structural elements such as flowerpots used?	0.0	0.0
	26. Are low voltage lamps used instead of high voltage in lighting elements?	0.7	0.5
	27. Is soft-smooth texture used instead of hard textures?	1.6	0.5
	28. Is harmony and contrast achieved with different materials?	1.4	0.5
Land Morphology	29. Are there elevation differences in the terrain (such as hills, descents, and ascents)?	1.0	0.9
	30. Are high walls that cause elevation differences in the area avoided?	1.4	0.5
Total (100% success: 1800p)		25% 451p	

In Table 3, movement-access criterion questions and expert answers are shared. A low score was obtained, as in the sensory stimulation criterion. With a total of 494 p points, the success rate was 33%. This result shows that the park was unsuccessful in terms of movement and access. Looking at the answers given by the experts, it was observed that consistent answers were given in this test, as in the first one. In this test, all experts gave the same answer to 9 questions. While all expert answers to questions 16 and 17 were 3 points, questions 4, 8, 9, 10, 19, 21, and 24 were all scored 0 by experts. Although unsuccessful, the movement access criteria test reached the highest success score among the 3 tests. The highest score, 3 points, was given in this test. It was determined that the experts used 3 points for 5 questions.

In Table 4, the experts' evaluation regarding the control criterion is given, and a low score was obtained, as in the other two experiential quality criteria. Unsuccessful results were also obtained in the control test. It failed with a score of 386 in the park control criteria, with a rate of 26%. Experts gave the same answer to seven questions. Compared to other tests, experts gave this test a lower score. In this test, only the 15th question was given three points. In this question, 9 experts gave 3 (high) points, while the other 11 experts gave 2 (neutral-moderate) points. All experts gave the same answer to 7 questions in the audit test. While all gave 1 (less) point in the 2nd question, 0 (score) was given in the 1, 4, 14, 16, 17, and 21st questions. Except for the 15th question, the question with 3 (many) points did not exist in this test.

Table 3. Movement access criterion and expert answers.

	Movement Access Criterion	\bar{X} (Mean)	σ (Standard Deviation)
Movement Exercise	1. Is there space to explore and research?	0.3	0.4
	2. Is it possible to move freely in the area?	1.3	0.5
	3. Is there a path system that circulates throughout the area?	1.6	0.5
	4. Do the footpaths in the area consist of organic lines that encourage walking?	0.0	0.0
	5. Are seating pockets or resting corners suitable for taking a break in the area?	0.6	0.5
	6. Are there physical exercise and sports areas for all ages and people?	1.5	0.7
	7. If there are exercise sports fields, are these fields sufficient?	1.2	0.4
Mystery	8. Is it tried to be created with area differences and hidden points?	0.0	0.0
	9. Are there any surprise events that will encourage the users to take action along the walking path?	0.0	0.0
	10. Are Vista builds included?	0.0	0.0
Legibility Landscape Design	11. Is the design plain-simple and clear?	1.6	0.5
	12. Are round and curved lines used instead of perpendicular, rigid, linear, and straight lines?	0.2	0.4
	13. Are smooth transitions used instead of sharp, sudden transitions?	0.9	0.7
	14. Does the environment (again) show consistency?	0.7	0.5
Accessibility	15. Is the slope in the area suitable for wheelchair users?	1.4	0.5
	16. Is the area accessible on foot by anyone 300 m away?	3.0	0.0
	17. Does the vehicle reach the road until it gets it?	3.0	0.0
	18. Is there a pedestrian–vehicle separation?	1.6	0.5
	19. Is the width of the pedestrian path (the distance that two wheelchairs can pass) appropriate?	0.0	0.0
	20. Are there boards explaining introductory, guiding, and therapeutic benefits?	0.7	0.5
	21. Are the level differences tried to be solved with ramps instead of stairs?	0.0	0.0
	22. Have height differences and deep pits been avoided?	2.4	0.5
	23. Have wheelchairs been taken into account in the selection of flooring material?	0.6	0.5
	24. Has a bike path been considered?	0.0	0.0
	25. Is there an ease of passage when it is desired to move between the places?	2.6	0.5
Total (100% success: 1500p)		33% 494p	

When we look at the user survey, the 1st part of the survey includes questions about the gender, age range, and educational status of the participants. There are 74 female (57.81%) participants. It is observed that the participants between the ages of 8–15 (82 persons—64.06%) are the highest. Regarding education, an associate or bachelor's degree (graduate–studying) (45 people—35.16%) is the most marked option. Information about gender, age group, and education are presented in Table 5.

In Part 2, questions using a Likert scale were handled separately, and standard deviation (σ), mean (\bar{X}), and Cronbach alpha (α) values were calculated. The α value was calculated as 0.71. Since this value is higher than 0.70, it is concluded that the test is reliable and valid. In Table 6, the questions asked and the standard deviation (σ) and mean (\bar{X}) values are shared.

Table 4. Control criterion and expert answers.

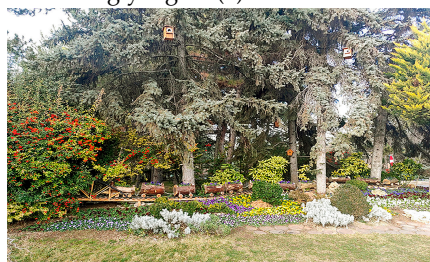
Control Criterion		\bar{X} (Mean)	σ (Standard Deviation)
Safety and Security	1. Is there protection against all disturbing things and unwanted social interactions?	0.0	0.0
	2. Are there enclosed areas for the safety of users in the area?	1.0	0.0
	3. Is the night lighting in the area sufficient for the security of the area?	0.7	0.7
	4. Is uncontrolled access to the area prevented?	0.0	0.0
Comfort-Maintenance	5. Does the area seem well-maintained?	0.5	0.5
	6. Is the equipment used comfortably?	0.4	0.5
	7. Do the seating elements have seats and armrests?	0.7	0.5
	8. Are the accessories suitable for the anthropometric structure of the users?	0.5	0.5
	9. Is the park size sufficient to create a therapy garden?	1.8	0.7
Activity Space Variety	10. Does the area offer spatial diversity?	1.5	0.5
	11. Does the site offer a variety of activities (active–passive)?	1.5	0.5
	12. Are areas designed for thinking and being alone suitably?	0.6	0.7
	13. Is there a free activity area where he can lie down and watch the sky or move freely?	0.8	0.7
	14. Are there covered areas in the area that are protected from sun, wind, and rain?	0.0	0.0
	15. Are open spaces included in the area?	2.5	0.5
	16. Are semi-open spaces included in the area?	0.0	0.0
	17. Are closed spaces that provide privacy, considering privacy, offered to users?	0.0	0.0
	18. Does the domain direct users to different activities?	1.6	0.6
	19. Can enough seating elements be used for different purposes?	0.5	0.5
	20. Does the space give the user a sense of control over their surroundings?	0.2	0.4
	21. Have alternative solutions been considered so that the area can be used in winter?	0.0	0.0
	22. Are spaces planned for group activities where users can socialize in the area?	1.1	0.6
	23. Are there spaces for different user groups?	1.4	0.5
	24. Are there places where they can interact with the natural environment?	1.0	0.8
25. Is it possible to have a picnic in the area?	1.4	0.5	
Total (100% success: 1500p)		26% 386p	

Table 5. Distribution of participants by gender, age, and educational status.

Question	N (Number of Participants) % (Percent)	
	128	100%
1. Your Gender?		
Female	74	57.81%
Male	54	42.19%
2. Your Age?		
8–15	82	64.06%
16–25	50	39.06%
26–35	18	14.06%
36–45	21	16.41%
46–55	8	6.25%
56–65	6	4.69%
65 \geq	9	7.03%
3. Your Education Level?		
Primary School (graduate–studying)	23	17.97%
Elementary School (graduate–studying)	19	14.84%
High School and Equal (graduate–studying)	29	22.66%
Associate or bachelor’s degree (graduate–studying)	45	35.16%
Master or PhD Degree (graduate–studying)	12	9.38%

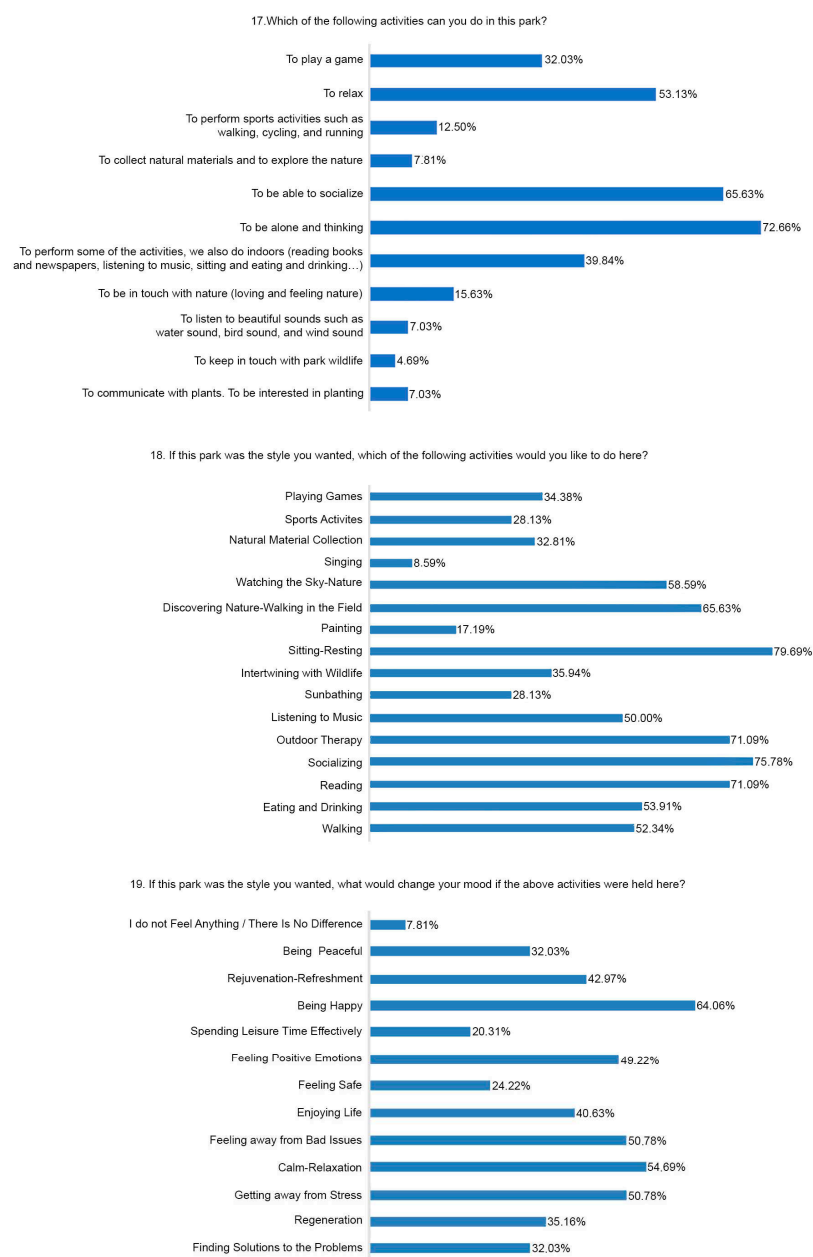
Table 6. Questions using the Likert scale.

Questions	\bar{X}	σ
4. How often do you come to this park in your daily life? Please, answer the question according to the values between the statements Rarely (1) and Always (5).	3.19	1.31
5. I do not visit the park often because there is a lack of variety of activities. Please, answer the question according to the values between the statements I Strongly Disagree (1) and I Strongly Agree (5). (Participants who marked the Usually and Always options should answer this question according to the deficiencies related to the area.)	3.91	1.02
6. I do not visit the park often because I fear contamination by pests, cat, or dog bites. Please, answer the question according to the values between the statements I Strongly Disagree (1) and I Strongly Agree (5). (Participants who marked the Usually and Always options should answer this question according to the deficiencies related to the area.)	1.43	0.70
7. I do not visit the park often because it is unattractive and abandoned. Please, answer the question according to the values between the statements I Strongly Disagree (1) and I Strongly Agree (5). (Participants who marked the Usually and Always options should answer this question according to the deficiencies related to the area.)	3.95	1.00
8. I do not visit the park often because there is a lack of good-quality open green spaces. Please, answer the question according to the values between the statements I Strongly Disagree (1) and I Strongly Agree (5). (Participants who marked the Usually and Always options should answer this question according to the deficiencies related to the area.)	4.02	1.03
9. I do not visit the park often because it feels unsafe. Please, answer the question according to the values between the statements I Strongly Disagree (1) and I Strongly Agree (5). (Participants who marked the Usually and Always options should answer this question according to the deficiencies related to the area.)	3.26	0.92
10. I do not visit the park often because I avoid epidemics such as COVID-19. Please, answer the question according to the values between the statements I Strongly Disagree (1) and I Strongly Agree (5). (Participants who marked the Usually and Always options should answer this question according to the deficiencies related to the area.)	1.52	0.81
11. I feel stress-free, rested, and happy after visiting this park. Please, answer the question according to the values between the statements I Strongly Disagree (1) and I Strongly Agree (5).	3.05	0.84
12. I am satisfied with the planting and planting design of the park. Please, answer the question according to the values between the statements I Strongly Disagree (1) and I Strongly Agree (5).	2.26	0.89
13. I am satisfied with the spatial design of the park. Please, answer the question according to the values between the statements I Strongly Disagree (1) and I Strongly Agree (5).	2.24	0.87
14. I find this park safe. Please, answer the question according to the values between the statements I Strongly Disagree (1) and I Strongly Agree (5).	2.41	0.77
15. I can easily reach this park on walking. Please, answer the question according to the values between the statements I Strongly Disagree (1) and I Strongly Agree (5).	4.19	0.99
20. If you perform the activities you chose in question 18 in this park and this park was the style you wanted, would you consider spending time here more often? Please, answer according to the values between the statements Strongly Disagree (1) and Strongly Agree (5).	4.52	0.90
21. I find the services provided in this park sufficient in terms of relaxation, rest, and relief from stress. Please, answer the question according to the values between the statements I Strongly Disagree (1) and I Strongly Agree (5).	2.05	0.78
22. Sports equipment in the park encourages me to perform sports. Please, answer the question according to the values between the statements I Strongly Disagree (1) and I Strongly Agree (5).	2.13	0.89
23. It does not bother me that cars and traffic are right next to the park. Please, answer the question according to the values between the statements I Strongly Disagree (1) and I Strongly Agree (5).	2.14	0.81
24. Would you come to this park more often if there were urban equipment, playgrounds, and planting as in the images? Please, answer according to the values between the statements Strongly Disagree (1) and Strongly Agree (5).	4.52	0.90



Choice A (I go to natural areas, the beach, recreation areas, or urban parks. I observe the scenery, get some fresh air, ride a bike, walk, or perform outdoor sports exercise.) Given to the multiple-choice question 16 “How do you relax when you are bored or overwhelmed?” was the most preferred answer with 57 people’s responses and a rate of 44.53%. B (I listen to music, dance, read, sleep, and am interested in different things at home.) was the second highest preference, with 49 people and a 38.28% ratio. The answers C (I go to the gym. I am interested in indoor sports.); D (I take sedatives/I go to the doctor/I obtain expert advice.); and E (I do nothing.) were preferred by, respectively, 9 people (7.03%), 8 people (6.25%), and 5 people (3.91%).

Questions 17, 18, and 19 that the participants can make more choices and their answers are shown in the graphs in Scheme 1. It was observed that the participants used the park mostly to think alone (72.66%), socialize (65.63%), and relax (53.13%) with their current situation. It has been concluded that if the park is designed as the participants want, they will perform many different activities. Participants think that in this case, they can experience resting (79.69%), socialization (75.78%), and reading and outdoor therapy (71.09%).



Scheme 1. Answer distribution of questions 17, 18, 19.

Participants stated that if they perform the activities they want in the park, they will be happy (64.06%), calm down and relax (54.69%), feel away from bad issues, and get away from stress (50.78%).

Part 3, Question 25 (Is there anything you would like to add in the park that you find positive/negative?), although the participants were far from concepts such as sensory stimulation gardens or open space therapy gardens, many participants (75.00%) thought the park would be better if it obtained a qualified space design. They stated that they would be satisfied if the park's planting were more planned and that they would spend more time in the park (71.09%). Users generally stated that the vehicle traffic next to the park is not good and the gas station to the east is unreliable, that the street should be closed to traffic and that they want the station removed (64.06%). In addition, although all users of the children's playground stated that they liked to use this area, they said they wanted to play in a clean, well-maintained park with different play options. In addition, most participants aged 8–15 (73.17%) stated that their hands hurt (electric shock) when they came into physical contact with their families and friends after playing games. This situation reveals that while children play, plastic equipment charges them with static electricity, and they are shocked when they are in contact with other individuals.

4. Discussion

As a result of the evaluation, it was determined that the park had unsuccessful planning in terms of experiential quality criteria. According to experts, this shows that the area is inadequate regarding therapeutics. Users of the park generally agree with the experts.

Considering the expert and user answers about the tests and survey they took, the naturalness of the park in the sensory stimulation criteria survey of the area, it was determined that the natural appearance of the area; the balance between artificial and natural elements; and natural sounds such as birds, wind, and water were low; and it was open to the noise of the city. The answers of the users about naturalness also support this.

The expert answers in the planting part of the same test are as follows: The area offers little diversity with suitable plant species. Exotic planting and plant species that differ according to the season are rare. There is no balance of emptiness–fullness in terms of planting in the area. There are no plant species that exhibit a good smell. Unique plant species with different color characteristics are given less attention, and the texture and form differences of the plants are not considered. In addition, plant species with fruit and flower characteristics are few. Since an oleander plant is in the area, experts believe an average amount of plant species contain toxic substances. Users' dissatisfaction with planting also supports this view of experts. A new planting design is a must.

Considering the expert answers in the diversity part of the test, it was determined that acoustic experiences were not included. The color diversity in the area and the arrangements addressing sensory stimulation were few. Experts stated that the qualitative differences in the area and the variety of flooring, texture and material are low, and the emphasis points are less created in the area. Some examples of sensory stimulation and plant designs are shown in Figure 4.

Expert answers on wildlife, water, and material use in the test are as follows: There is medium wildlife in the area. Bird species such as doves, pigeons, and crows can be listed as butterflies, insects, flies, squirrels, stray cats, and dogs under the municipality's care. The degree of vegetation for these animals is low. No use of water or structural and design elements such as sculptures and flowerpots are allowed in the area.

According to the results of the movement and access criteria test, it can be said that there is no space to explore in the park. The park provides a small amount of freedom for the users in the area. According to experts, although a system of paths travels the area from beginning to end, the walking paths are not natural and organic. This situation does not encourage users to explore the area. A few seat pockets are created to take a break in the

area. There is a small sports field for all ages, the equipment is poorly maintained, and there is no information on how to use the equipment.



Figure 4. Examples of sensory stimulation and plant design.

Considering the mystery part of the test, the experts think there are no differences in area and hidden spots or vista formation. The number of formations that will surprise the user during the walking experience in the area does not exist. Judging by the expert answers for legibility and landscape design, the park's design is moderately simple. In fact, when the park is examined, it can be said that a specific design was not made. Random planning was applied, and therefore it has a simple design. However, when the answers of the experts and users are interpreted, it cannot be said that both groups are satisfied with the design. Soft, organic lines are used sparingly in the park and moderately in smooth transitions. It can be said that the park has an average area-environment consistency. Figure 5 demonstrates a decent sample of mystery, legibility, and landscape design.

The examples in Figures 4 and 5 were taken from the Yaşar University campus garden. Besides being a university campus garden, the garden is designed as a therapy garden. In addition, each plant species used in the area has a plant identification card with the name and origin on which the name can be learned. With these aspects, it is thought that it can be an example of planting and design elements that can be used in Union (Birlık) Park.

Regarding accessibility, experts found the slope in the area less suitable for wheelchair users. The area is located where everyone can reach on foot, at a distance of 300 m determined by the WHO. Users have also confirmed this in the test given to them. The vehicle reaches until it reaches the road. Pedestrian–vehicle separation is moderate. The width of pedestrian path is not wide enough to pass two wheelchairs, and the finishing materials are unsuitable for wheelchairs. Introductory and guiding boards are few in the

area. Although there are a few code differences and deep pits, ramp use does not resolve them, but stairs do. Generally, there is no bicycle path in the investigated neighborhood. In one of the comments, park users stated that they could easily adapt if some bike lanes were added to the park area.



Figure 5. Samples of mystery, legibility, and landscape design.

The control criterion is the test with the lowest score. The area's security was too low for experts. In the section on comfort and maintenance, it has been determined that the area is not well-maintained, and the equipment used is not comfortable. Experts thought that the seating elements and other equipment were not suitable for the users' ergonomics and were uncomfortable. The park's size is sufficient to create a therapy garden but is imperfect. Users also stated that they generally do not find the park reliable.

Users consider the park abandoned due to a lack of proper area and planting designs. This also aligns with the experts' opinions. They stated that the place to perform sports activities is insufficient. When they come to the park, there is a general hesitation about getting away from stress. All these findings are in line with the expert opinions. The park's need for the new area and activity analysis needs to be met. Security problems and their connection with vehicle traffic need to be resolved. The participants generally come to the area to socialize, relax, play, and rest. It is understood that they will enjoy the positive changes to be made.

Constraints and opportunities analysis shows the following results were obtained:

- **Strengths:** It is located in the temperate climate zone, which shows that the park can be used in all seasons. Its proximity to the residences is one of its strengths. The park is one of the green areas of İzmir, which is not a green city. It is home to stray animals and birds.
- **Weaknesses:** Irregular planning of the area, lack of a strong planting design, being in a small area, not using the resource values correctly, lack of sport and activity opportunities, and having city noise in the area are the area's weaknesses.
- **Future opportunities:** Many plant varieties can be used due to the Mediterranean climate. It can be used as an earthquake-gathering area. With the right planning, the area can attract users of all ages.

- Potential constraints: The proximity of the park to the traffic areas and the gas station right next to it and the lack of security measures are the factors that threaten the area. Authors should discuss the results and how they can be interpreted from the perspective of previous studies and the working hypotheses. The findings and their implications should be addressed in the broadest context possible. Future research directions may also be highlighted.

In addition, municipalities are responsible for the maintenance and services of urban parks in Turkey. So, they conduct their own surveys to understand public opinion for decision making in public areas. Yet to the best of our knowledge, municipalities do not run any opportunity cost analysis for green spaces. However, there is no publicized public survey on the inspected area.

5. Conclusions

Considering the expert evaluations and user survey results, it was concluded that the area should be seriously re-planned and designed. Unfortunately, the area should be considered weak regarding rehabilitation and recreation. The planting of the area should be reviewed according to the climatic characteristics of the region.

The sun-shade-lighting design and cover systems should be designed. The area's path should remind a path dissolved in organic lines, and a water element should be designed for the relaxing feature of the water. Moreover, a new design should be made to increase the variety of activities that can be performed in the area.

The natural sounds in the area should be strengthened, and the equipment used in the area should be units of different materials and forms that attract users. The area should be designed with all barriers in mind for users of all ages. It should be arranged according to the universal design.

For visually impaired users, the relief plan of the area and directional landmarks should be placed, and a ramp for wheelchairs should be resolved. In addition, the gas unit next to the park needs to be moved, and new solutions should be sought to isolate it from vehicular traffic in the region. Figure 6 shows the proposed changes for the park.

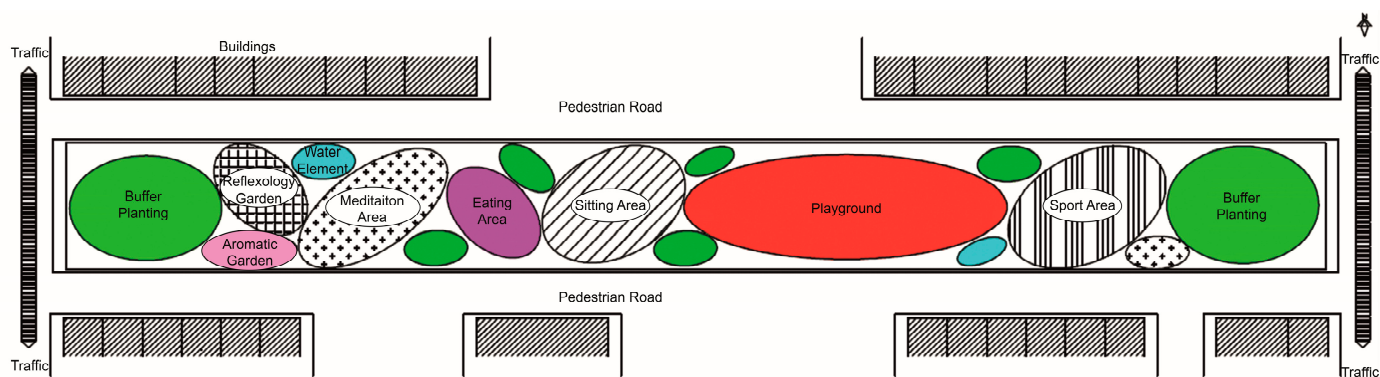


Figure 6. The proposed changes for the park.

Examples that can be used for the park are shown in Figure 7. All sample photos were taken from different parks and gardens of İzmir and are suitable for application to Union Park.

Urban open spaces will be important in meeting the social and environmental criteria in its mission to create neutral-climate future cities. In particular, the fact that one of the cities selected for the 100 EU Cities 2030 Mission is not a grey city but a green city and working on this issue will provide one of the requirements of this mission. Landscape architects and urban designers have a big role to play in the optimum use of UGSs. In addition, the participation of participants as stakeholders in park design, apart from authorities and experts, is important both for determining user requests and needs and for realizing the concept of the design for everyone. In this way, individuals will use the park

more to eliminate the negative effects of urban life and benefit from the created space's positive effects.



Figure 7. Examples that can be used for the park.

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