

Research Article
(Araştırma Makalesi)

Ege Üniv. Ziraat Fak. Derg., 2021, 58 (2):181-191
<https://doi.org/10.20289/zfdergi.740080>

Gülden SANDAL ERZURUMLU¹ 

¹ Ömer Halisdemir University, Architecture
Faculty, Landscape Architecture
Department, Niğde/Turkey

* Corresponding author:
gpezvaj@gmail.com

Evaluation of the sufficiency of urban green spaces: Nigde city example

Kentsel yeşil alanların yeterliliklerinin değerlendirilmesi : Niğde kenti örneği

Received (Alınış): 20.05.2020

Accepted (Kabul Tarihi): 03.07.2020

ABSTRACT

Objective: In this study, the numerical values that will guide the planner and the manager depending on the accessibility, adequacy and effective service areas of the Niğde urban green areas (GA) have been obtained.

Material and Methods: The usage of GA of Niğde City is examined as children's playground, park and sports areas. The data was obtained from ASTER, Landsat 7-ETM and SPOT satellite images, the Niğde Development Plan (2017) with a scale of 1/1000 and ArcGIS software was used in spatial competence and accessibility analyzes of green spaces.

Results: Active GA of Niğde city center is distance between neighborhood centers and percentages are calculated for each neighborhood. There are sport areas only in 4 parks in 61 neighborhood. 91% of the neighborhood and district parks are below 1 ha, while 9% are between 0.001-0.004 ha. Sports areas, 6% is between 4-6 ha, while 1% is 0.1 ha.

Conclusion: Niğde urban green space assets quite low when compared with cities of the European Union, within the framework of the Reconstruction Act in Turkey have also been found to be inadequate.

ÖZ

Amaç: Çalışmada, Niğde kentsel yeşil alanlarının ulaşılabilirliği, yeterliliği, etkili hizmet alanlarına bağlı olarak planıcı ve yöneticiye yol gösterecek sayısal veriler elde edilmiştir.

Materyal ve Yöntem: Niğde Kenti YA kullanımları, çocuk oyun alanı, park ve spor alanları olarak irdelenmiştir. Verilerin elde edilmesinde, ASTER, Landsat 7-ETM ve SPOT uydu görüntüleri ve 1/1000 ölçekli Niğde İmar Planından (2017), yeşil alanların mekânsal yeterlilik ve erişilebilirlik analizlerinde ise ArcGIS yazılımından yararlanılmıştır.

Araştırma Bulguları: Niğde kent merkezinde, her mahalle için aktif yeşil alanların, mahalle merkezleri arasındaki uzaklıklar ve yüzde oranları hesaplanmıştır. 61 mahalleden sadece 4 park içerisinde spor alanı bulunmaktadır. Mahalle ve semt parklarının % 91'i 1 ha'ın altında iken % 9'u ise 0.001-0.004 ha arasındadır. Spor alanlarına bakıldığında ise, % 6 sı 4-6 ha arasında iken % 1'i 0.1 ha dır.

Sonuç: Niğde kenti yeşil alan varlığı Avrupa Birliği kentleri ile karşılaştırıldığında oldukça düşüktür, Türkiye'de İmar Kanunu çerçevesinde de yetersiz olduğu tespit edilmiştir.

Keywords: Children Playground, City, Green Area, Niğde, Urbanization.

Anahtar sözcükler: Yeşil Alan, Niğde, Kentleşme, Kent, Çocuk Oyun Alanı

INTRODUCTION

Migration from rural to urban areas is continuing due to various problems in health, employment, education in areas all over the world. Urbanization in the world is increasing rapidly.

Urban improving the quality of life of people living in areas different recreational activities for city residents is important (Gülgün et al.2018).

As Önder et al. (2011) mentioned, 65% of the world population is expected to live in the urban environment until 2025. In this direction, as a result of urbanization and population growth, the amount of green space per capita is gradually decreasing. For this reason, the sustainability of green spaces is very important in urban life. This causes the green areas needed by people to be destroyed and transformed into residential areas. As a consequence of urbanization, the natural ecosystem has left its place to buildings, which is why the need for people to green space has increased day by day. The amount of green space in the large cities are less than the developing cities. In order to create and protect the green space systems in urban residential areas; it is required to identify, monitor, plan and sustain the existing green areas in the urban area. But nowadays, the development of the construction sector and the pressures on the green areas are increasing, and due to that, the expected benefits from green areas are inadequate in terms of quantity, quality and accessibility. In addition to the green areas, children's playgrounds are also inadequate in this context. In our country, many regulations and studies have been made about the accessibility of residential areas, playgrounds for children, schools and green areas.

Çetiner (1991) points out that for the access of the users, a kindergarten should be 400 m and a children's playground should be 400-800 meters away. Another physical parameter is the size of the children's playground area. This criterion also varies according to the age group and the size of the housing unit it serves (Friedberg, 1982; Yılmaz ve Bulut, 2002; Demiriz et al., 2003; Aydemir, 2004). According to Friedberg (1982), a child should be able to leave the house and go to the playground in the residential unit alone in 2-3 minutes, and to the neighborhood park in 10 minutes. According to the report prepared by the European Commission, the walking distance to the neighborhood parks in the urban environment is considered to be 15 minutes (Yenice, 2015). Altunkasa (2004) emphasizes that access to children's playgrounds in the city environment should be 400 m in walking distance and 10 min in distance, and 20 min in walking time and 800 m in distance for the neighborhood parks. Çetiner (1991) and Wiedemann (2003) stated that their views are the same as Altunkasa. They stated that the children playground and recreation areas areas should be 400m and 800m in the neighborhood. In addition, Önder et al. (2011) reported that the distance to sports activities is 20 minutes walking distance and 800 meters distance, distance to the city park is 30 minutes with walking distance of 1200 m. Yenice (2015) indicates that accessibility distance to children's playgrounds may be up to 400 m and 800 m for neighborhood park and sports activity. According to Öztan (2004), the area size for pre-school playgrounds should be 250 m² for the smallest area, 500-1000 m² for the necessary areas, and the average area for each child should not be less than 6.5 m².

As you can see in the studies done, different views are presented as distances to green areas, time and distance. In general, it is reported that it should be 400m to children playgrounds, 800m to sports fields, 1200m to city park, and walking distance of 10, 20 and 30 minutes respectively.

The aim of this study, which has been studying urban green spaces at the neighborhood and district levels that is located in the city center of Niğde, assessment of Niğde neighborhood parks, sports facilities and children's playgrounds in terms of area size and access distance. As a result of the study, recommendations have been made to make appropriate selection decisions for the establishment of new green areas, taking into account the possibility of effectively utilizing the identified green areas. In this context, it is aimed to determine the effectiveness of active green areas on the quality of urban life in Niğde and to contribute to the elimination of the deficiencies.

MATERIALS and METHODS

According to the data of the Turkey Statistical Institute in 2015, Niğde is a province with 351,468 population. Due to migration from villages and different places, the city develops very rapidly in terms of spatial development. The research area is about 5,700 hectares (TÜİK, 2015). (Figure 1).

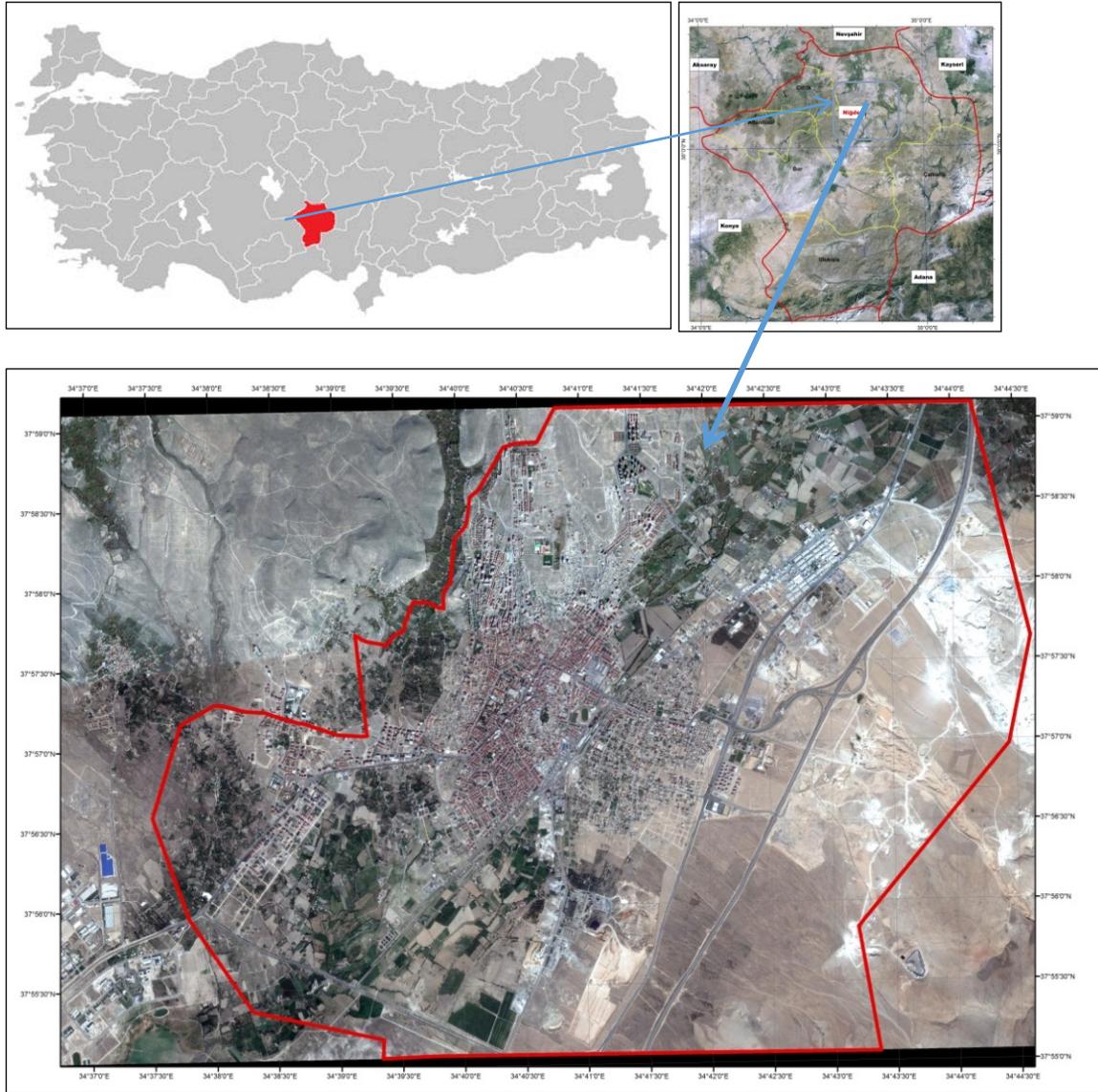


Figure 1. Niğde city and research area boundaries.

Şekil 1. Niğde kenti ve araştırma alanı sınırları.

According to the geographical coordinates system, the mathematical position of Niğde province is between, $37^{\circ} 25' - 38^{\circ} 58'$ northern latitudes and $33^{\circ} 10' - 35^{\circ} 25'$ east longitudes. A part of the provincial land located in the Central Kızılırmak section of the Central Anatolia Region is located in the Adana Section of the Mediterranean Region. Altunhisar and Çiftlik districts are all located in the Central Anatolia Region while the Central District and the Bor district have the lands in both regions. Çamardı and Ulukışla districts are all located in the Mediterranean Region. The surface area of the province is $7\,400\text{ km}^2$ ($7\,365\text{ km}^2$), covers 4.87% of the Central Anatolia ($151\,176\text{ km}^2$) and 0.90% of the whole country ($814\,578\text{ km}^2$) (Anonymous, 2018)

According to the environmental situation report, which was prepared by the Provincial Directorate of Environment and Urbanism in Niğde, the amount of green space per capita in Niğde city center is stated as approximately 6 m^2 (Anonymous 2012).

Children playgrounds are located in green spaces of various sizes in Niğde city. There are playgrounds in 43 parks in 61 neighborhoods in the research area. The number of playgrounds per child in these parks in Niğde is about 1 hectare (Table 1).

Table 1. Amounts of green area, playgrounds, sports fields and the green area per person, in Niğde city

Çizelge 1. Niğde Kenti'nde mevcutta bulunan yeşil alan, çocuk oyun alanı ve spor alanları ve kişi başına düşen yeşil alan miktarları

Neighborhood		Park No	Total Area (m ²)	Playground (m ²)	Sports field (m ²)	Green area (m ² /person)
Name	Population (person)					
Aşağı Kayabaşı	26.745	1	33144.93	371.65	1682.61	
		2	1461.61	-	-	
		3	5985.56	-	-	
		4	4160.27	422.41	-	
		5	2981.74	83.36	-	54060.81/26745
		6	578.79	116.02	-	=2.02
		7	1512.08	164.02	-	
		8	1056.70	656.72	-	
		9	2399.66	292.53	-	
		10	779.47	-	-	
Yukarı Kayabaşı	5.340	11	785.00	268.41	-	785.00 / 5340
		12	3045.87	180,33	-	=0.14
		13	3531.72	320.76	-	
		14	7516.67	-	-	
		15	1086.56	424.40	-	
İnönü	6.513	16	7111,17	124.48	-	
		17	640.07	-	-	42406.08 / 6513
		18	2259.65	248.15	-	=6,51
		19	1910.32	-	-	
		20	3093.61	302.02	-	
		21	10735.13	662.04	-	
		22	1475.31	125.65	410,12	
Dere	6.511	23	1619.05	190.75	-	7208.76 / 6511
Şehitler	3.174	24	5589.71	-	-	=1.10
		25	524.95	222.34	-	524.95 / 3174
Yenice	5.887	26	610.35	-	-	=0,16
		27	7672.28	534.85	-	8282.63 / 5887
		28	40639.65	820.55	-	=1.40
Efendibey	14.833	29	4155.29	303.24	609.92	
		30	361.97	361.97	-	52087.33/14833
		31	3009.59	160.96	-	=3.51
		32	3920.83	441.92	-	
Şahinalı	7.831	33	2262.94	537.38	-	
		34	3074.48	-	-	8527.4 / 7831
		35	719.98	296.46	-	=1.08
		36	2470.00	513.33	-	
Kale	463	37	17630.74	403.30	-	17630.74 / 463
Burhan	2.019	38	690.67	-	-	=38.07
		39	1441.59	223.93	-	2132.26 / 2019
						=1.05

Table 1. Continued
Çizelge 2.. Devamı

Neighborhood		Park No	Total Area (m ²)	Playground (m ²)	Sports field (m ²)	Green area (m ² /person)
Name	Population (person)					
Esenbey	1.250	40	690.67	-	-	1120.24 / 1250 =0.89
		41	429.57	-	-	
		42	2290.39	529.49	-	
Selçuk	19.773	43	1289.68	324.35	-	8513.82/19773 =0.43
		44	1559.98	320.36	-	
		45	2772.11	750.80	-	
		46	601.66	297.35	-	
		47	5694.74	-	-	
		48	319.21	-	-	
İlhanlı	16.786	49	2125.59	489.88	-	60671.99/16786 =3.61
		50	3493.18	373.78	-	
		51	16560.75	-	-	
		52	2517.09	193.85	-	
		53	3441.81	638.03	-	
		54	6227.04	271.84	-	
		55	1939.20	266.12	-	
		56	4981.12	137.10	-	
		57	13372.26	612.76	-	
Nar	2.232	58	2127.14	234.83	550.71	2777.33 / 2232 =1.24
		59	650.19	-	-	
Saruhan	1.167	60	1372.16	-	-	4148.39 / 1167 =3.55
		61	2776.23	-	-	
Sıralı	969	-	-	-	-	-
Songur	530	-	-	-	-	-
Ahipaşa	256	-	-	-	-	-
Cayır	1.483	-	-	-	-	-
Şahsüleyman	4.267	-	-	-	-	-
Total	128.029	61	270877.7	8598.13	3253.36	270877.7 / 128029 =2.11

As seen in Table 1, only 3.15 m² of the total green areas constitute the playground. Although the area with the largest amount of green space per capita is Kale, the playground for children is calculated as 43.72 m².

The amount of green space in the city center covers approximately 271 hectar of area. In the Niğde center, the amount of green space per capita is 2.11 m².

The spatial adequacy of the green areas in Niğde city center are shown in Figure 3.

At the Niğde center, when the sizes of the green areas are compared with the population, the amount of green area per person varies between 1.08-38.07 m². One of the reasons why the amount of green area around Kale is high; is due to preservation of the green area due to the fact that the historic old buildings are under protection around Kale.

According to the standards in the studies carried out up to now, the distances of the park areas of Niğde city center: It is classified as larger than 0-400, 401-800, 801-1200 (Table 2).

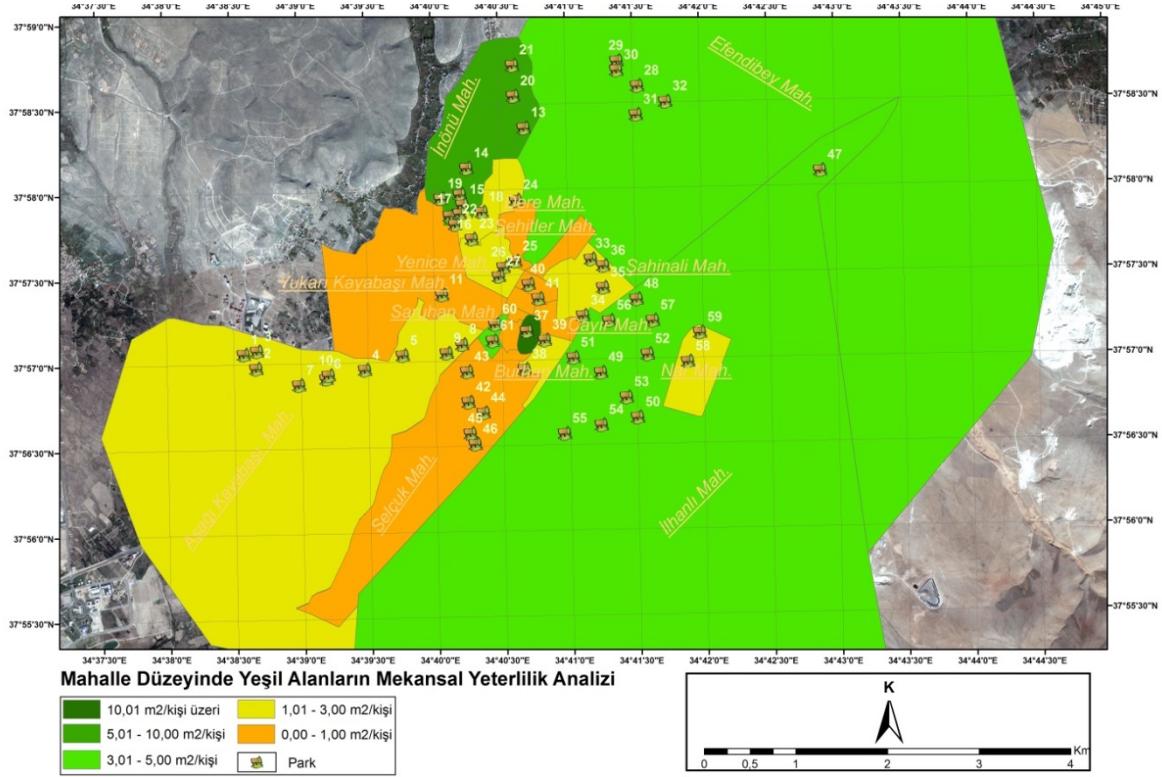


Figure 3. Analysis of spatial adequacy of green areas at neighborhood level in Niğde city center.

Şekil 3. Niğde kent merkezinde mahalle düzeyinde yeşil alanların mekânsal yeterlilik analizi.

Table 2. Sizes and percentages of park areas in Niğde City Center

Çizelge 2. Niğde kent merkezinde bulunan park alanlarının büyüklükleri ve % oranları

Distance to Neighborhood Park Areas (m)	Area (m ²)	Percentage (%)
0-400	129.031	22.73
401-800	97.199	17.12
801-1200	79.847	14.07
1201 or more	261.626	46.08
Total	567.703	100

Transportation to neighborhood parks in Niğde city center was evaluated in 4 groups. Parks with a distance of 0-400 m were 22.73%, 17.12% at a distance of 401-800 m, Areas with 801-1200 m are 14.07%, The areas with more than 1201 m was calculated as 46.08%. Accessibility of park areas in Niğde central district is given in Figure 4. In the works carried out, the numbers of children's playgrounds and neighborhood parks vary between 400-800 m.

The legislation published in the Official Gazette dated 14.06.2014 numbered 29030 has been announced by making some amendments in 2017. The walking distances on the list of Annex-2 of the Official Gazette dated 17.05.2017 and numbered 30069 are expressed as "In the development plans; it can be planned in the service area where pedestrian should be reached considering the distance between children's playground, outdoor sports area, family health center, kindergarten, primary school 500 meters, secondary schools 1,000 meters and high schools 2,500 meters". For the social open and green areas, it is stated that the amount of green space per person should be 10 m² regardless of the population (playground, park, botanical park, zoo, recreation area) (Anonymous, 2017).

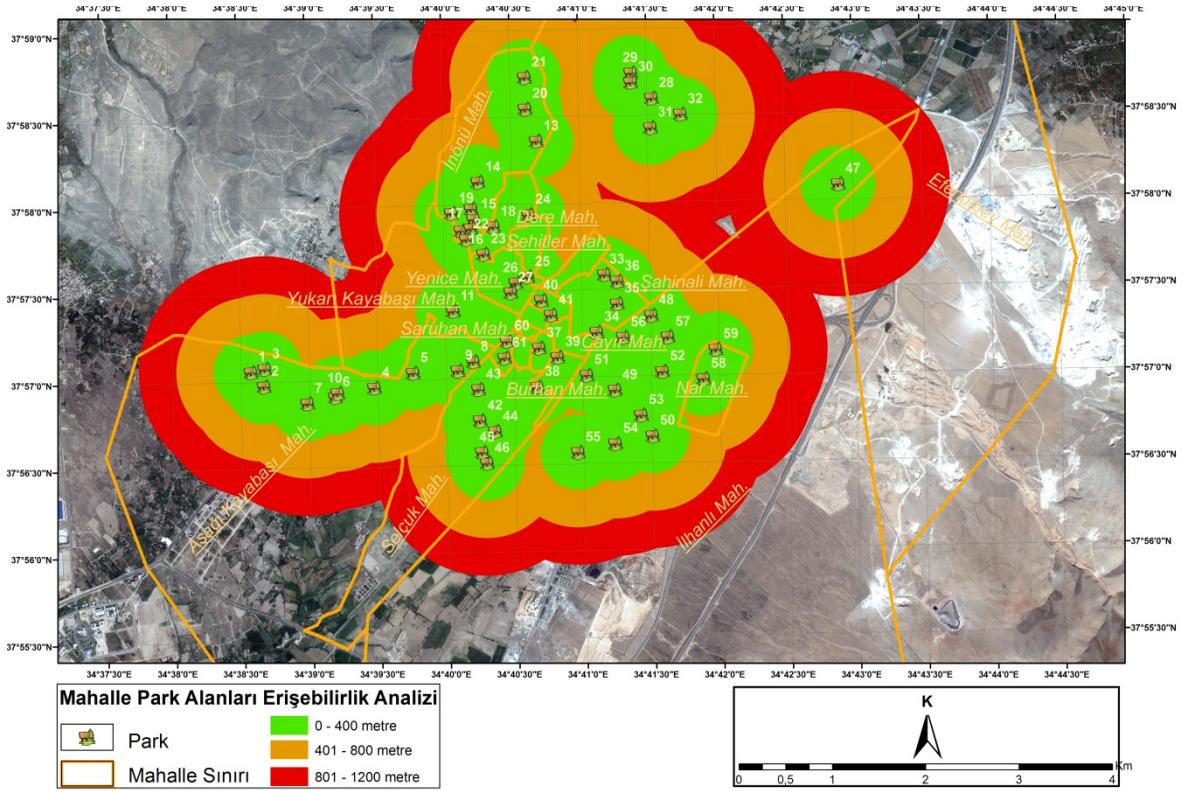


Figure 4. Accessibility analysis of park areas in Niğde central district.

Şekil 4. Niğde kent merkezinde mahalle park alanları erişebilirlik analizi.

The presence of active green space was obtained and indexed as per capita values and at the neighborhood level. Active green areas, distance between neighborhood centers and percentages are calculated for each neighborhood. Niğde city center is very poor in terms of sports area. There are sport areas only in 4 parks in 61 neighborhood. 91% of the neighborhood and district parks are below 1 ha, while 9% are between 0.001-0.004 ha. When looked at sports areas, 6% is between 4-6 ha, while 1% is 0.1 ha. This data shows that the sports areas in Niğde city are well below the desired criteria.

DISCUSSION and CONCLUSION

In the legislation regarding physical planning in Turkey, children's playground described as a part of the city's active green space system. Regardless of the population, 10m² active green area is allocated per person, and children's playgrounds are included in these green spaces when a city is planned. However, the amount of playground areas allocated per capita is not defined as standard. This standard varies according to countries.. Aydemir (2004) states that 11 m²/person in Munich and 2.5 m²/person for playgrounds are allocated in Amsterdam. For cities in Turkey, varying suggestions have been made between 1 m²/person to 2.5 m²/person (Çetiner 1991; Aydemir 2004). On the other hand, it is determined that the amount of children's playgrounds available in our cities is very inadequate. Şişman and Özyavuz (2010) found that the amount of playground per capita in Tekirdağ is 0.55 m²/person, and Turkan and Önder (2011) found that the amount of playground per capita in Balıkesir is 0.18 m²/person (Uysal, 2015). In our country, according to the Procurement Regulation No: 23804 issued in 1999, 10 m² active green area per capita is required for urban living quality. This value, which is about one fourth times that of Western countries, determines the standard of living of our cities (Bağcı, 2010).

In urban spaces, researchers recommend refreshing open spaces, such as urban parks, which can be reached at a distance of about 400 m or 5 min walk in any part of everyday life (Bruch, 2006). This

is why accessibility is a very important factor in the planning and design phase of green areas. Accessibility must be at walking or bicycle distance. Some countries have made suggestions for accessibility. For example, for accessibility to the green areas in the UK, the maximum distance from the green area to the house is 300 m. Minimum 1 ha for a population with a population of 1000, at least 20 ha for a house in 2 km, 100 ha for a village in 5 km and some suggestions have been made that 500 ha of natural reserves should be constructed within 10 km.

Regulation on the Construction of Spatial Plans (2014) in Article 12 of the Fourth Division it has been expressed as; "In the development plans; it can be planned in the service effect area where pedestrian should be reached considering the distance between children's playground, outdoor sports area, family health center, kindergarten, primary school 500 meters, secondary schools 1,000 meters and high schools 2,500 meters".

In Niğde Province, 226.230 m² is at 0-800 m distance, the walking distances of others do not match the regulation. This measure is an indication of the inadequacy of green space and its inaccessibility.

In Turkey, the figures are quite low. For example, while the amount of green space per person in Istanbul is 6 m², Bursa is 10 m², İzmir 5 m², Samsun 5.6 m², Balıkesir 3.1 m². With the "Regulation on the Amendment of the Municipalities and Type Development Regulations Outside the Law 3030" published on 02.09.1999, the amount of active green area was determined as 10 m² in residential areas outside the big city municipalities and 14 m² outside this area. However, the current amount of green space per capita in our country corresponds to an average of 1-2 m² in residential areas. Again, when you look at the public green areas of the cities (parks and gardens); while it is 1.5% in Istanbul, it is 14% in New York a similar mega-city, 38.4% in London and 41% in Hong Kong. When we evaluate these figures, it is obvious that the green areas that our cities have are not comparable to other cities of the world in terms of "quantity".

According to the WHO, the green area per capita in the city should be at least 9 m², 10-15 m² is ideal. The average green area per capita in developed countries is around 20 m² and ranges between 1-9 m² in Turkey. The amount of green space per capita in some cities in Europe and America; Stockholm 87.5 m², Newyork 23.1 m², Roma 45.3 m², Paris 14.5 m², Londra 27 m², Amsterdam 45.5 m², Berlin 27.1 m² (Anonymous, tarihsiz).

The social and environmental impact of urban green spaces in quality urban life is important. Advantages of the area are related to accessibility and proximity. People's wish for living in urban areas closer to green areas are mentioned in previous studies. Burgess et al. (1988); Coles and Bussey (2000) and Grahn and Stigsdotter (2003) report that the closer the green areas are to the settlement areas, the more visits they get.

It is seen that the distribution of green areas existing in Niğde city center is unbalanced and inadequate. It is very important to assess the functional nature of the green space and future plans to understand the relationship between the urban population and the green space. To determine the amount of green space, it is necessary to determine the ratio to the amount of green space per person, which is commonly used. Determining the appropriate amount for the city, allocating space and adjusting the distances from the settlement areas and creating a suitable green space, especially where it should be applied, is a problem of planning which is not easy to realize.

The following conclusions can be drawn according to the results obtained from the accessibility and spatial analysis study in the study:

It is observed that there is an insufficient and unbalanced distribution of green areas around Niğde city.

Children playground areas, sports areas, neighborhood parks, which are considered as green areas in Niğde city, have a very low area compared to the standards.

Nigde urban green space assets and the amount of green space per capita, as well as being quite low when compared with cities of the European Union, within the framework of the Reconstruction Act in Turkey have also been found to be inadequate.

People who perceive that the green space surrounding the area is of better quality are reported to perform more physical activity than the people who perceive the green space around them as less quality (Annear et al. 2009, Stronegger et al. 2010, de Jong et al. 2012). Similarly similarly well-maintained green spaces make people feel that the area is a safer place (La Grange ve ark. 1992, Brown and Bentley 1993). According to Akpınar et al. (2015), neglected green areas prevent people from using these areas and reduce their desire to use them. It is emphasized that it is necessary to have easy access to green areas in order to meet the social and psychological needs of people and that these areas should be in sufficient number and in desired quality. Green areas should be proportionate to the population living in that area, evenly distributed in the urban environment. In order for the green areas to be organized and sufficient, they must be in contact with the competent authorities.

The amount of green area per person in Niğde province is 2.11 m² which is quite low. For the people of Niğde, who continue their lives in the widespread population and insufficient green areas, it is very clear that the importance of green areas is understood today and there is not enough green area. It is clear that the it is needed to speed up the study of green areas, whether in regional or national scale. In recent years, efforts have been made to increase the amount of green space in Niğde, to speed up the efforts to start greening in the central refugees. However, in current conditions, the accessibility level of green areas is insufficient. For this reason, the recreational areas in the valleys around the city center can be expanded. On the other hand, the use of financial resources to be provided by the institutions in the implementation of field regulatory works and the ensuring of post-implementation continuity are related issues. The creation of recreation areas can contribute to the green areas by determining the ratios according to the numbers of the people living in the surrounding settlements and evaluating them as the green area, instead of separating the areas that can not be used among the areas where the reconstruction is done.

REFERENCES

- Akpınar, A. & M. Cankurt. 2015. Türkiye'de kişi başına düşen yeşil alan miktarı ile ölüm oranı arasındaki ilişkinin incelenmesi. Adnan Menderes Üniversitesi, Ziraat Fakültesi Dergisi. 2015; 12(2) :101-107
- Altunkasa, M.F. 2004. Adana'nın kentsel gelişim süreci ve yeşil alanlar. Adana Kent Konseyi Çevre Çalışma Grubu Bireysel Raporu. Adana.
- Annear, M.J., G., Cushman, & B. Gidlow, 2009. Leisure time physical activity differences among older adults from diverse socioeconomic neighborhoods. *Health and Place* 15:482-490.
- Anonymous, 2012. Niğde Valiliği Çevre ve Kentcilik İl Müdürlüğü. Niğde İl Çevre Durum Raporu 2011. http://www.csb.gov.tr/turkce/dosya/ced/icdr2011/nigde_icdr2011.pdf (Accessed date: 07.02.2020)
- Anonymous, 2017. Mevzuatı geliştirme ve yayın genel müdürlüğü, Mevzuat Bilgi sistemi mevzuat. Mekânsal Planlar Yapım Yönetmeliği. Birinci bölüm.17.05.2017
- Anonymous, undated. (www.tepav.org.tr/tr/blog/s/4059). Alıntı Tarihi.27.11.2019.
- Aydemir, S. 2004. Kentsel açık ve yeşil alanlar "rekreasyon", Kentsel Alanların Planlanması ve Tasarımı, 285-337, Trabzon.
- Bağcı, Ö. 2010. Yeni kent (Mersin) kentsel alanında peyzaj mimarlığı disiplini kapsamında kentsel gönenç araştırması. Çukurova Üniversitesi, Fen Bilimleri Enstitüsü, Yüksek Lisans Tezi. Adana
- Brown, B., & D.L. Bentley, 1993. Residential burglars judge risk: the role of territoriality. *Journal Environ Psychol* 13: 51-61.
- Bruch, S.P. 2006. Environmental equity of Lansing's urban park policy, Michigan State University Department of Geography, Doctorate Thesis

- Burgess, J., C.M. Harrison, & Limb, M. 1988. People, parks and the urban green: a study of popular meanings and values for open spaces in the city. *Urban Stud.* 25: 455–473
- Coles, R.W. & S.C. Bussey, 2000. Urban forest landscapes in the UK- progressing the social agenda. *Landscape and Urban Planning* 52: 181–188.
- Çetiner, A., 1991. Kentcilik çalışmalarında donatım ilkeleri. İstanbul Teknik Üniversitesi Mimarlık Fakültesi. Baskı Atölyesi. İstanbul
- Demiriz, S., A. Karadağ, & İ. Ulutaş, 2003. "Okul öncesi eğitim kurumlarında eğitim ortamı ve donanım", Anı Yayıncılık, Ankara
- de Jong, K., M. Albin, E. Skarback, P. Grahn, & J. Bjork, 2012. Perceived green qualities were associated with neighborhood satisfaction, physical activity, and general health: Results from a cross-sectional study in suburban and rural Scania, southern Sweden. *Health & Place* 18: 1374-1380.
- Friedberg, M.P. 1982 "Juvenile Play Areas", (Ed. Alpern, A.), *Handbook of speciality elements in Architecture*, Chapter Seven, Mcgraw-Hill Book Company.
- Grahn, P. & Stigsdotter, U.A. 2003. Landscape planning and stress. *Urban Forestry and Urban Greening* 2: 1–18.
- Gülgün Aslan, B., K., Yazıcı, B. & Türkyılmaz Tahta, 2018. Kentsel doku içinde yer alan modern alışveriş merkezlerinin peyzaj tasarım kriterleri yönünden değerlendirilmesi: Manisa-Forum Magnesia ve İzmir - Optimum Outlet alışveriş merkezleri örneği. *Ege Üniversitesi, Ziraat Fakültesi Dergisi*, 2018, 55 (4):421-431
- La Grange, R., K., Ferraro. & Supancic, M. 1992. Perceived risk and fear of crime: role of social and physical incivilities. *Journal Research Crime Delinquency* 29: 311-334
- Önder, S., A.T., Polat, & S. Korucu. 2011. The evaluation of existing and proposed active green spaces in Konya Selçuklu district, Turkey. *African Journal of Agricultural Research* Vol. 6(3), pp. 738-747.
- Öztan, Y. 2004. Yaşadığımız Çevre ve Peyzaj Mimarlığı, Tisimat Basım San., S:252, Ankara.
- Stronegger, W.J., S. Titze, & P. Oja. 2010. Perceived characteristics of the neighborhood and its association with physical activity behavior and self-rated health. *Health & Place* 16:736-743
- Şişman, E.E. & M. Özyavuz, 2010. "Çocuk oyun alanlarının dağılımı ve kullanım yeterliliği: Tekirdağ örneği", *Tekirdağ Ziraat Fakültesi Dergisi*, 7 (1):13–22.
- TÜİK, 2015. www.tuik.gov.tr/jsp/duyuru/upload/PP-2015.pdf (Accessed date:05.02.2020)
- Türkan, E.E. & S. Önder, 2011. "Balıkesir kenti çocuk oyun alanlarının irdelenmesi", *Journal of Tekirdag Agricultural Faculty*, 8 (3) 69-80.
- Uysal, A.B. 2015. Çocuk oyun alanlarının geliştirilmesinde bir yerel katılım deneyimi. Yıldız Teknik Üniversitesi, Mimarlık Fakültesi E-dergi. Cilt 10.Sayı.3.s.423-439
- Van Herzele, Wiedemann, T. 2003. A monitoring tool for provision of accessible and Attractive urban green spaces. *Landscape and Urban Planning* 63 (2003) 109–126
- Yenice, M. 2015. "A Method for evaluation of the efficiency of urban green spaces; Aksaray, Turkey". *Artium* 3 (2015)
- Yılmaz, S. & Z. Bulut, 2002. Kentsel mekanlarda çocuk oyun alanları planlama ve tasarım ilkeleri", *Atatürk Üniversitesi Ziraat Fakültesi Dergisi*. 33 (3), 345-351.