

Positive Health Effects of the Natural Environment on Children with Disability

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ABSTRACT

It is seen that nature have healing and treating features for the disabled children with natural environment values (vegetation, water resources, birds, and other living creatures) that they possess. Getting information about what these features are and what kind of improvement does the presence of the disabled children in these natural areas provide is the starting point of this study. The goal of the study is to determine the effect of the natural environment values of the Lake Eymir located in the immediate environment of Ankara city on the children with Cerebral Palsy. In order to define the healing and treating effects of the natural environment values of Lake Eymir-Mogan on the children with Cerebral Palsy, natural factors of the area of Lake Eymir the study was conducted step-by-step: 1. Systematically Observation 2. Development Observation Forms 3. Survey and interview. In the study, observation method was implemented on children with Cerebral Palsy chosen from Dogan Caglar Special Education Primary School (DCSEPS) in the Lake Eymir and its surroundings. After providing disabled children to join the trip and conduct different activities in the area of Lake Eymir and its surroundings for 6 days, development form was prepared in order to evaluate the effects of this kind of natural areas on the children subjected the study. This form was given to teachers working in DCSEPS and they were asked to observe the four students taking part in the study during lessons and in the classrooms. To obtain information about the level of performance of the natural areas in Ankara and their adequacy and compliance level, and also to better understand the problems of these children, survey studies were conducted on parents with disabled children. In addition, the interview was conducted face to face with the psychologist working in the Center of Education and Rehabilitation of the Cerebral Palsy and also in DCSEPS. In this study, it was seen that spending time in natural areas created a positive effect on the children with Cerebral Palsy and the activities conducted in this area improved motor, language, social and sentimental development as well as their self-maintenance skills.

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ÖZET

Doğanın sahip olduğu doğal çevre değerleri (bitki örtüsü, su kaynakları, kuşlar ve diğer canlılar) ile engelli çocuklarda iyileştirici ve tedavi edici özelliği görülmektedir. Bu özelliklerin ne olduğu ve engelli çocuklarda nasıl bir gelişme sağladığı hakkında bilgi edinmek bu çalışmanın başlangıç noktasıdır. Çalışmanın amacı, Ankara çevresinde bulunan Eymir Gölü'nün doğal çevre değerlerinin Serebral palsili çocuklar üzerindeki etkisinin belirlenmesidir. Eymir gölünün sahip oldukları doğal çevre değerlerinin Serebral palsili çocuklar üzerinde sağladığı iyileştirici ve tedavi edici etkilerini belirlenmesi için bu çalışma, aşamalar halinde yürütülmüştür: 1. Sistematik gözlem çalışması 2. Gelişim

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gözlem formları 3. Anket ve görüşme çalışması. Bu çalışmada, Doğan Çağlar Özel Eğitim İlkokulu'ndan (DÇOEİ) seçilen Serebral palsili çocuğa Eymir Gölü ve çevresinde gözlem yöntemi uygulanmıştır. Eymir Gölü alanı ve yakın çevresinde 6 gün boyunca Serebral palsili çocukların geziye katılarak ve farklı aktiviteler yapmaları sağlandıktan sonra, bu tür doğal alanların bu çocuklar üzerinde bıraktığı etkileri neler olduklarının değerlendirilmesi için gelişim formu hazırlanmıştır. Bu form DÇOEİ'nde görev yapan öğretmenlere verilerek onlardan çalışmaya katılan öğrencileri ders esnasında ve sınıf içinde gözlemleri istenmiştir. Engelli çocuklara yönelik, Ankara'da mevcut doğal alanların performans düzey ve bu alanların yeterlilik ve uygunluk düzeyi hakkında bilgi elde etmek, bu çocukların sorunlarını daha iyi anlamak için engelli çocuklu ailelere anket çalışması yapılmıştır. Ayrıca, Serebral Palsi Eğitim ve Rehabilitasyon Merkezi'nde ve DÇOEİ'de çalışan psikolog ile yüz yüze görüşme çalışması gerçekleştirilmiştir. Bu çalışma, doğal alanlarda zaman geçirmenin Serebral palsili çocuklarda olumlu bir etki yarattığı ve bu alanlarda etkinliklerin yapılması motor, dil, sosyal ve duygusal gelişim ile birlikte kendine bakım becerilerinin geliştiği gözlenmiştir.

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INTRODUCTION

The calming and healing features of nature were known and used since ancient times (Beer, 1990; Harris, 1996; Minter, 1996; Marcus & Barnes, 1999; Stigsdotter and Grahn, 2002; Özgüner, 2004; Söderback et al, 2004; Corazon et al, 2012). However, the importance of nature decreased in the medical world with the developments in technology and modern medicine. In recent 20 years, healing role of nature and specifically designed therapy gardens on human health has started to gain importance again (Olmsted, 1865; Söderback et al., 2004; Pouya et al., 2016b).

The important role of the natural areas of human welfare and happiness consists of two type of passive participation. One of which is the chance of realizing and watching the natural areas and the other is knowing that these kinds of areas exist and can be seen whenever wanted although they cannot be used (Ulrich and Addoms, 1981; Kaplan, 1992; Pasha, 2010). Today, many scientists have been conducting studies about the effects of natural and organized environment on human health and healing (Kaplan, 1973; Rohde and kindle, 1994). They have examined the designs of the gardens of institutions especially those that treat different patient groups, such as hospitals, nurseries, rehabilitation centers and psychiatry centers, etc. (Bulut ve Göktuğ, 2006).

Why do children need therapy gardens? Without a doubt, child's playing in nature in a has an undeniable healing effect (Akin, 2006). Nature embraces children with its infinite wealth, colors, fabrics, flavors, smells, and mobility and encourages their curiosity for

learning (Akin, 2006; Serez, 2011). Meteorological events of nature (thunder, wind, rain) oblige people of all ages to associate with the power of nature (Cosco and Moore, 1999). Environmental life presents birth, death, and metamorphosis to the child in all its parts like a dynamic mirror. Life cycles give clear messages about hope and healing. Thus, garden, at least as far as children think, is a place that has direct contact with nature and has therapeutic values. They not only increase the attention of children but also give them emotions of livingness and cohesion with earth (Kuo and Faber Taylor, 2004). Taking from indoors to outdoors cause an important change and similarly, being in the fresh air is mostly passive nature experiences and nice activities and they are generally followed by experience, hope, cognitive engagement and admiration (Gonzalez and Kirkevold, 2015).

Sensory stimulation principle

Human senses work when they are stimulated and the source of all stimulations is the environment of the individual (Hartig et al., 1991). Sensory stimulation in the gardens, like in many places, is really important in terms of the healing of patients and realizing their environments (Ghose, 1999; Brawley, 1992). Natural areas designed for therapy should be areas that provide sensory stimulation far from monotony. Being far from monotony is valid for all resource values of the area (water element, property morphology, green area, plant composition, rocky habitat etc.). The more sensory stimulation that the area provides the more attention of the users is directed to the natural area and detracts them from their trouble and stress (Sakıcı et al., 2013). Sensory stimulation is provided by

addressing senses by seeing naturalness or making contact (Oriens and Heerwagen, 1992). It is obtained through creating differences within sameness by the designer and imitating naturalness. Imitation method is designed by addressing five sense organs through seeing, hearing, tasting, touching, and smelling. In sensory stimulation, imitating naturalness is the most positive way. Naturalness provides difference within sameness by stimulating all senses (Sakıcı et al., 2013).

Movement Principle

Movement can simply be defined as the user's making exercise or moving as a result of using big muscle groups in the human body. Children with Cerebral Palsy have to move in order to support and encourage both their physical and social skills. Marcus and Barnes (1999) indicated that making exercise helped increase anxiety and depression of human and control stress physically. According to Kaplan and Kaplan (1989), one of the most important needs of humans is to understand and discover their environment. Moving away, leaving one's routine life and discovering new places help them to keep away from stress and gain health. Changing place physically is compulsory for moving away. Users have to move towards activities in order to discover the environment in a short period of time (Sakıcı et al, 2013).

Relation of Child-Game-Disability-Nature

The game is the most common product of the methods that represent cultural activities of children. Piaget contended that the minds of children weren't innate; rather, they are developed as a result of participation in the outer world. Friedrich (1891) also asserted that game and participation in the outer world were necessities in childhood (Aral et al., 2000). Playgrounds are the plain areas that children run and play freely, make use of their spare time, and improve themselves spiritually and physically. These areas consist of an important part of the daily recreational need of children (Müftüoğlu, 2006). The principle that says "The child shall have full opportunity for play and recreation, which should be directed to the same purposes as education; society and the public authorities shall endeavor to promote the enjoyment of this right," was adopted in 1959 according to the United Nation Declaration of Human Rights and Declaration of the Rights of the Child (Tekkaya, 2001).

When the magnitude of the Cerebral Palsy of population is compared to the general population in Turkey, (Maralcan et al. 2003; Barış and Uslu, 2009; Yorulmaz, 2010; Yalçın, 2012; Sakız and Woods, 2015), it is not possible to mention an area planning that contains wide fields, has rich recreational diversity and brings the healing features of the natural environment values to the forefront, except for the

limited-sized and numbered replannings made for the treatment of the disability (Akin, 2006; Pouya, 2016).

Identifying the ecologic, economic, social-communal, recreational-touristic, aesthetic, health (vital), educational functions provided within the city by the green web components which have different operational and functional services and constitute the green web located in the urban macro form is of great importance. It seems that nature parts having wide water surfaces and forestlands have richer opportunities in terms of natural values compared to other green areas (Guggenheimer, 1969; Nicholson-Lord, 2003; Clark, 2006; Pouya et al, 2016a). These green web components (like city forests, wetlands, wide city parks enabling wide mobility) may have healing and treating features for the physically handicapped children with their natural environment values (vegetation, water resources, birds and other living creatures). The goal of this study is to explain whether natural ecosystems are beneficial for the handicapped in terms of health (vital), recreational (physical and spiritual renewal), education, aesthetic, ethic, and therapy. It also aims to examine what kind of improvement on them is caused by being in natural areas.

Considered from this point of view, studying with 8-12 age group was thought to be rational in the study as it tries to identify treating features of the natural areas. In the study, healing and treating effects of the natural environment values of Lake Eymir-Mogan located in the immediate environment of Ankara city were defined. The reason for choosing this age group is that it is the age group in which awareness about environment and nature starts to shape for the first time if we look at the literature on the pertinent subject. In addition, it constitutes the periods of time when the interest towards environment intensifies and physical and mental mobility reaches its highest level. Also, it is highly important for the children to be in relation to natural areas in terms of their development (Ünver, 2014).

In this study, the Lake Eymir located in the immediate environment of Ankara city is replanned in accordance with the participation of shareholders and observation of the children with orthopedic disabilities as user groups. Students with Cerebral Palsy aged 8-12 in the Dogan Caglar Special Education Primary School (DCSEPS) in Ankara were subjected to this study.

Cerebral Palsy-Definition

Cerebral palsy is primarily a disorder of movement and posture. It is defined as an "umbrella term covering a group of non-progressive, but often changing, motor impairment syndromes secondary to lesions or anomalies of the brain arising in the early stages of its development". It may be stated as a static encephalopathy in which, even though the primary

lesion, anomaly or injury is static, the clinical pattern of presentation may change with time due to growth and developmental plasticity and maturation of the central nervous system (Sankar and Mundkur, 2005). While Cerebral Palsy is a blanket term commonly referred to as "CP" and described by loss or impairment of motor function, Cerebral Palsy is actually caused by brain damage. The brain damage is caused by brain injury or abnormal development of the brain that occurs while a child's brain is still developing before birth, during birth, or immediately after birth. Cerebral Palsy affects body movement, muscle control, muscle coordination, muscle tone, reflex, posture and balance. It can also impact fine motor skills, gross motor skills, and oral motor functioning (URL 1). There are several devices that can be helpful for persons with cerebral palsy. These devices can aid in the person's motor function or walk. A long-term treatment or therapy using this adaptive equipment can be effective in helping a person with cerebral palsy in walking or moving around outside on their own. Orthopedic impairment due to cerebral palsy can be aided by devices such as a wheelchair. Many people who have cerebral palsy in the legs are able to use their arms to roll a manual wheelchair. Other types of wheelchairs are available to people who cannot use

their arms, such as electronic or motorized wheelchairs. These types of wheelchairs can have a computer board attached to them to aid in communication (URL 2).

MATERIAL and METHOD

Study area

The study area was the Lake Eymir recreational area, which is located in Ankara city macro form and is one of the limited open green areas. The Eymir Lake with 4 km length is only 20 km away from the city center of Ankara (Beklioğlu, 2000; Eyyubi, 2004). It has the characteristics of alluvium dam lake (Dogan et al. 2009; Yenilmez et al. 2011). The Lake Eymir is one of the important components of the ecological system between the Lake Mogan and Imrahor Valley. The Lake Eymir is among the privileged areas for increasing urban life quality and creating an image for the city as well as its ecological contributions with its immediate environment to the city ecosystem (Figure 1) (Oruç, 2009). The Lake Eymir and its surroundings are one of the scarce places where townspeople conduct recreational activities and meet with nature when its location and rich, natural, cultural and recreational resource values are considered (Sarıemir, 2009; İnce, 2002; Köç, 2006; Gürer, 2014; Pouya, 2016).



Figure 1. Lake Eymir in Ankara

When the study is considered in terms of spiritual and physical rehabilitation of the children with Cerebral Palsy from the point of its construct, choosing the Lake Eymir and its surroundings with the healing and treating aspects of its resource values for this study seems to be an extremely meaningful and appropriate approach (Oruç, 2009; Pouya, 2016).

Also, the area of the Dogan Caglar Special Education Primary School was used as a material together with students with Cerebral Palsy used as subjects. The reasons for preferring this school are:

- It is a unique Special Education school that has the most ancient history located in Ankara (Elementary, Secondary and High School) (T.R. Altındağ District

Governor, 2013).

- In every step of the study; the construction of this school (administrative, educational, social, and physical) has enabled to conduct observation studies with children aged 8-12, surveys with the families and teachers, and interviews (Table 1).

- Presence of technical means (a place and equipment to make presentations, needed during the practice).
- Studying with a group of students (in order to materialize the observation stage of the study) from the chosen Special Education school as the subject group has been enabled.

Table 1. The information of the students who took place in the observation study (T.R. Altındağ District Governor, 2013).

Participant No.	Date of Birth	Handicap Condition
1	11/05/2007	Cerebral Palsy Mild Mental Retardation. Wheel chaired. She has a visual impairment. She has glasses, epilepsy, attention deficit, wears diaper.
2	09/03/2004	Cerebral Palsy, Moderate Mental Retardation, Wheel chaired, wears diaper.
3	03/09/2004	Cerebral Palsy, Mild Mental Retardation, he has speech disorder
4	10/27/2002	Cerebral Palsy, Moderate Mental Retardation, Wheel chaired, She has speech disorder, epilepsy. Uses neuromuscular blocker drug

Method

In order to define the healing and treating effects of the natural environment values of Lake Eymir-Mogan on the children with Cerebral Palsy, natural factors of the area of Lake Eymir, existing area usage, and socio-economic structure had to be examined and the study was conducted step-by-step: 1. Systematically Observation 2. Development Observation Forms 3. Survey.

The number of the sample observed in this study was four. In this type of observation, given the study purposes, it was not possible to have the natural observation and therefore, the samples were taken to the environment. This, in turn, had a set of limitations and difficulties (such as hard transportation, parent accompany), this issues made us focus on only four cases.

Systematical Observation

Observation study was organized as a 6-day fieldwork on 20-25 May. This study was conducted with a 15-person team consisting of 4 children with Cerebral Palsy chosen from DCSEPS, at least one parent that accompany children (mother-father), counsellor from the school, 4 professional observers (Professor of Karadeniz Technical University, Ph.D student of Landscape Architecture of Karadeniz Technical University, Ph.D student of Urban and Regional Planning of Istanbul Technical University and assistant professor of Karadeniz Technical University), a driver and Antalya Representative of Orienteering Federation (as a one day participant).

Before starting the observation study, all the places in the area and the activities conducted were explained in order to examine the area and its surroundings. The activities to be conducted by the children with Cerebral Palsy were determined. 6 sub-places were chosen in the area (Figure 2). The criteria of the sub-places were: sensory stimulation (touch, taste, smell, sight, and hearing), physical stimulation (mobility), the possibility of improvement of social skills (speaking and communication). Dealing with birds and fish and take a picture at the water's edge (area 1), A trip to the forest and the flower picking (area 5) for sensory stimulation; biking (area 3), horseback riding (area 4) for physical stimulation; orienteering activities (area 2), Playing ball (area 6) for the improvement of social

skills were the activities conducted. 1 area for each day and an observation study for approximately 2-3 hours in each area was conducted. Preparations had been made before starting the study and cooperation was demanded from the workers in the area for a comfortable atmosphere in the chosen sub-places.



Figure 2. Selection of sub-spaces for the observation technique in Lake Eymir

Observers took part in the activity as well, because of the fact that the observation tour was an unstructured one. The vehicle used for the disabled children of the school was assigned for the fieldwork. The comfortable mobility of the children was provided in the area with this vehicle and it served for 6 days. 1 observer for each child was picked and charged from the observer group consisting of the academicians who worked in the Karadeniz Technical University, Faculty of Forestry, Department of Landscape Architecture. "A Notation Chart" was used and developed in order to make it easy to observe and record (digitize) the data when it was necessary for the observations. The data obtained through the observations were recorded instantly in whipsstiches. These records were kept with the notes taken on the notation chart, observation forms filled right after the observations, and physical recorders (photograph and video recorders). The observation

data was recorded without interpretation and in an objective way.

On the first day of the observation study, children were brought to Area 3 which had been planned beforehand in the field of Lake Eymir. Each child was helped to ride a bike. The bikes were 3-wheeled. Children safely sat on the back and fasten their seat belts. Bikes were ridden safely in company with 2 people (Figure 3).



Figure 3. Pictures taken in Area 3 during the observations

On the second day of the observation study, children were brought to the horse riding area, Area 4. This area was close to the bike riding area and there were sitting and relaxing facilities. Each child was brought to the horse riding area, was helped to get on a horse safely and was toured around the children horse riding area 4-5 times with the help of the employees (Figure 4).

All the children happily took part in the activities under their parents' supervision. Excitement and happiness expressions were prominently observed in 4 children. Some children preferred to pet and take pictures of horses.

A handicapped male student who was afraid of getting on a horse in the beginning changed his idea and wanted to get on the horse as a result of other children's riding horses. It was a meaningful and pleasing improvement.



Figure 4. Pictures taken in Area 4 during the observations

On the third day of the observation, children were brought to Area 1. Area 1 was a premise located on the south side of the lake in an access point to water as explained in the previous chapter. Children viewed the most beautiful landscape of the lake and took photographs of surroundings. The birds around the lake drew children's attention. In this area, the observers taught children how to take photographs with a camera (Figure 5).



Figure 5. Pictures taken in Area 1 during the observations

On the fourth day of the observation, children were brought to Area 5 in order to observe their stimulation senses. This area was on the north of the lake and right on the roadside. Children touched the trees, picked flowers, and pine cones on the floor with their families in this area. Because of the fact that this area was inclined, bringing them to the area with wheelchairs

and their mobility was performed with the support of their parents, observers, and the counselor. Some of the parents took their children out of the wheelchairs and encourage them to walk or sit in the area. Some of the children were lifted with the help of the observers and were helped to examine pine trees closely. Discovery, examination wish, and expression of happiness were seen in almost all of them (Figure 6).



Figure 6. Pictures taken in Area 5 during the observations

On the fifth day of the observation, children were brought to Area 2. This area was designed as a basketball field. This area was preferred because of its flat floor and impervious surface in order to conduct orienteering activities to the children. Orienteering



Figure 7. Pictures taken in Area 2 during the observations

trainer in the activity designed three different games. Preparations were made before starting the game. The description of the games was explained in Table 3. (Figure 7).

On the last day of the observation study (sixth day), they went to the other area which was area 6. It was chosen as the most convenient place for playing with the ball because there was a huge the lawn in the area. Children were brought to lawn after eating in the area, they played ball with the observers. It was observed that the children hardly lift and threw the ball because of the fact that they were Cerebral Palsy. Albeit this, they all joined the game willingly and gladly and they proved that they could do it (Figure 8).

It was also observed that the children had difficulty in lifting and throwing the ball due to the fact that they were physically handicapped; but in spite of that, they all proved that they took part in the activities voluntarily and that they could succeed.

Developmental Observation Forms

After providing disabled children to join the trip and conduct different activities in the area of Lake Eymir and its surroundings for 6 days, development form was prepared in order to evaluate the effects of this kind of natural areas on the children with Cerebral Palsy. This form was given to 7 teachers working in DCSEPS and they were asked to observe the four students taking part in the study during lessons and in the classrooms. After 2 week-observation of the teachers, these observation forms were filled. In this form, improvements are made in five separate columns; Motor Development, Cognitive Development, Language Development, Social and Emotional Development, Self Care Skills. Teachers completed descriptive and detailed vacancies.

Table 3. The description of three orienteering activities

Game 1	Labyrinth orienteering was conducted as sorting numbers from 1 to 9. The aim of the game was to find the numbers that had been splattered randomly in the activity area and provide them to sort the numbers from 1 to 9 in an order. While doing this sorting, snapping the checkpoints on the floor into the slots through a thread with the electronic ring given to the participants, in the meantime focusing their attention and making believe them that they could do this was among the main goals.
Game 2	Puzzle orienteering. The aim of this game was to complete the whole puzzle by matching A4-sized 25 orienteering symbols on the paper with the dispersed and tiny symbols. While completing the puzzle, the aim of the game was for the participants to see the piece in the fastest way through ensuring eye, hand, symbol coordination and put it in its place as a puzzle piece. All the children completed this stage successfully.
Game 3	Snake orienteering. In this game, children followed the snake figure on the picture drawn on the map and passed through the funnels. Participants reached their targets by showing the designated route on the map to the group leaders (Orienteering trainer or observation group) and by going forward in order to pass through the funnels.



Figure 8. Pictures taken in Area 6 during the observations

The Survey study with the parents of the children with Cerebral Palsy

Reasons for Making Survey with the Parents: to get informed about the performance level of the natural areas around them and about the sufficiency and suitability level of the existing natural areas in Ankara for the disabled children, and to determine what the issues and problems are in terms of them. To know the thoughts of the parents on the subjects of the design of the natural areas (for example: area of Eymir) and to suggest them for designers. To take their opinions about determining and categorizing all positive and healing effects of the natural areas for the children with Cerebral Palsy (for example socializing, self-esteem, responsibility, development of fine and gross motor skills, spiritual effect, independence). To learn whether the children with Cerebral Palsy have been in these kind of areas in the past or not and to get information about their game experiences and activities they took part. To determine what the effects of these features are on their children, considering the resource values of the natural areas.

The Survey study conducted in this stage consisted of 2 parts as A and B. Questions were usually asked as test form. In addition to that, choices were given in order to give hint in some questions but they were open-ended questions in order that children can write other answers. Also, some questions were asked in order that the sorting of given choices didn't indicate priority.

Interviews

The last stage of the study was running the interview method. Interviews were made in advance of the interview form. During the interview, the interviewer changed the structure and the order of the questions of the questions, and he got into some details. The answers to the interviews are explained and discussed in the conclusion. The interview was conducted face to face with the psychologist working in the Center of Education and Rehabilitation of the Cerebral Palsy and also in DCSEPS. The questions asked in this interview were as follows:

- 1). Is there any educative effect of the natural areas on the children with Cerebral Palsy?
- 2). What kind of benefits do the natural areas have in terms of the health of the disabled children?
- 3). How can playing in the natural areas contribute to them? How should be the design of the natural areas towards the disabled children?
- 4). What kind of factors of nature is more important for these children and more effective for their healing/health?

RESULTS

Results of the observation forms

According to the observation form filled for participant 1, it was observed that this child had a particular interest in animals, especially in dogs and birds, and she wanted to pet or touch them. Moreover, it was observed that she learned to take landscape pictures

and touched the birds in area 1, participated and succeeded in winning the games and stated her pleasure from them in area 2, rode a bicycle, showed interest in dogs, and picked and smelled the flowers in area 3, rode a horse affectionately and excitedly, took pictures, and pet the horse in area 4, stood up and smelled the flowers with the help of her mother and picked them with her own hands in area 5, played with the ball with her friends, succeeded to stand up and shoot the ball in area 6.

According to the observation form filled for participant 2, the participant showed happiness for the activities included facial expressions and manners in spite of the fact that he had speech disorders. It was noticed that he learned to take pictures by help of his mother and watched the birds in area 1, fancied orienteering games, tried to put the key by himself in the first game, and clapped his friends continuously in the third game in area 2, rode a bicycle, watched the landscape and had a conversation with his mother while riding the bicycle in area 3, rode a horse affectionately and excitedly, and said that he loved this activity in area 4, entered the forestland, tried to discover pinecones carefully, picked flowers and took pictures with the help of his mother in area 5, played with the ball with his friends, tried to catch and shoot the ball in area 6.

According to the observation form filled for participant 3, it was observed that he had the most fun in area 2. In other words, he was in the orienteering games, watched the birds and took pictures in area 1, succeeded in the games, always laughed, and fancied the games in area 2, wanted to ride a bicycle, watch flowers, dogs, and turtles in area 3, had difficulty in stopping while riding a horse, tried to hold the people around, and rode the horse in this way and was happy to experience this for the first time in his life in area 4, was taken to the area in a wheel chair by his father, wandered the forest, picked flowers and started to examine them in area 5, played with the ball with his friends, tried to catch and shoot the ball properly each time in area 6.

Furthermore, it was observed that Participant 4 was a smart and sensitive child and wanted to succeed in all activities on her own. It was observed that she succeeded in taking pictures in area 1, gladly took part in the games and tried to put the keys by herself in area 2, rode a bicycle excitedly and took pictures in area 3, was the first one to ride a horse and always laughed out of love in area 4, started to examine and carefully watched the flowers in area 5, tried to take and shoot the ball by herself in area 6. It was observed that she tried to communicate with the observers and her friends and explain her creative ideas.

Additionally, it was observed that the children wanted to touch the water but they couldn't because of the fact that they were in wheelchairs and the water level was low in area 2.

According to the comments of the observers, the

presence of the handicapped children in natural areas showed that it would be beneficial in terms of their education. It was seen that children loved taking landscape pictures in area 2.

According to the comments of the observers, it was noticed that almost all the participants had the walking problem with wheelchairs in the chosen sub-places in the area of Lake Eymir. Ramps, pavements, and roads in the areas weren't convenient for them. It was observed that children wanted to touch the water in area 2 but couldn't touch due to the fact that they were in wheelchairs and the water level was low. According to the comments of the observers, presence of the disabled children in the natural areas showed that it was beneficial for their education. It was seen that the children fancied taking landscape pictures in area 2 and being in the natural areas and playing together made the disabled children socialize more and increased their self-esteem. Orienteering games in area 2 and ball-playing activities in area 6 gave them the opportunity to interact with each other and participants got information about geographical skills, map-read, field survey, and geographical subjects. According to the data obtained from the observation forms, orienteering game was proven to be doable for all children (including the disabled children). On that sense, orienteering is both a sport and a game that can be conducted in all private and public playfields on many levels. The area of Lake Eymir and other natural areas like that affect disabled children positively in terms of spirit, the sound of nature; the sound of water, the sound of birds, the sound of leaves, all of them are the factors that bring peace and happiness to the children. It was observed that the facilities in the area of Lake Eymir, for example especially the entrances of WCs, restaurants, and cafes were not designed convenient for the disabled children.

Results of the developmental observation forms

According to the development observation forms filled by the teachers working in DCSEPS, developments were seen on the 4 disabled children who took part in the study. After the activities and trips conducted in the area of Lake Eymir for three days, social and sensory development, motor development and cognitive development were observed more in the participants respectively. Participant 1 became more outgoing and her self-esteem increased compared to the past. Speech of participant 2 developed and he answered the questions better, also his muscle movements got better, and he succeeded in writing by himself. Science teacher stated that participant 3 couldn't write in the past but tried to write by himself after the trip as for motor development. Also, this searcher stated that the student was willing to learn and attend classes as for cognitive development and his communication as well as for social development. English teacher stated that hand movements of

participant 3 were well and he took part in the activities more willingly as for motor development and socialized more with his friends as for social development.

According to the development form filled by mathematics teacher for participant 4, it was stated that after the trip, this student wanted to take the floor more and answered the questions excitedly as for cognitive development, the demand of speech increased as for language development, and became more outgoing as for social development. Science teacher observed that after the trip, participant 4 became more sensitive and eager for the environment as for cognitive development, her self-esteem increased in the communication with her friends as for language development. The English teacher determined that after the trip, the same participant became more social and outgoing, and could continue to express herself without giving up as for language development.

In the opinion and suggestion part, teachers confirmed the presence of the handicapped children in natural areas and their participation in the activities and expressed their desire for these trips to be organized for all the disabled children. According to the teachers, the families having handicapped children don't have the opportunity to go outdoors because of the fact that their financial situation isn't well. Thus, these children only spend time at home and in the school. Being in natural areas and playing like other children make these children happier and contribute to the teachers at school as well.

Results of the Survey Conducted by the Parents

Overall, 79, 3% of the children use wheelchairs, of which 51% have mental problems. 48% of the fathers are self-employed and almost all the mothers are housewives.

The education level of the parents is elementary and secondary schools on average. 48% of the families have minimum income (Monthly income: 751-1000 TL).

In addition to their Cerebral Palsy, 51, 72% of the children have mental problems and 31, 01% of the children have speech disorders.

When analyzing the question "How do the parents took part in the research spend their spare time with their children?", it is stated that 25, 9% watch TV, 20, 9% rest in the home, 19, 2% visit relatives-friends, and 11, 7% go to parks.

It could be deduced that parents spend their time mostly at home environment instead of taking their children outdoors. 23% of the parents couldn't go to open-green areas with their disabled children, 51, 7% couldn't go because they are annoyed from the looks of the people around, 21, 9% have transportation problems and economic shortages.

In the study, families stated that they preferred these areas mostly on weekends (58, 9% of the families) and

they spent maximum 1-3 hours in these areas (59% of the families). It could be deduced from these results that the families do not prefer outdoor places in crowded and busy times and they cannot spend a long time in these areas.

When it was asked to the families what kind of places would you want to go if you had the opportunity, it was stated that 34, 7% want to go seashores or to the places with sea view, 18, 9% want to go to the parks within the city. 22% said to spend time in fresh air, 17% said to be near to nature and have the picnic, %15 said to sit and relax as the reasons for preferring these areas. In the surveys, families stated that animals, birds (18, 1%), nature sounds of the environment, and water elements (12, 3%) drew the attention of 22, 1% of the children in outdoors.

It was stated that 43% of the children showed interest in flowers and fruit trees and they wanted to touch them.

Results of the Interview Made with the Related Groups Intended for the Education and Rehabilitation of the Orthopedically Disabled

The number of factors affecting the development of a child increases and changes if there is orthopedically or health deficiency in the child. Aside from the issues that deficiency caused, factors like education level of the family, socio-economic situation, number of siblings, and their environment play a big role in the development of the child. Usually, the problems of the children with Cerebral Palsy are; no physical, language, speech, mental, social, and emotional features unique to them, balance disorder, limitation of movements like walking, running, and climbing, lack of self-esteem, poor motor coordination, adjustment problems, writing difficulties.

Natural and green areas in Ankara city are not useful enough for the disabled children, because of the fact that children with Cerebral Palsy cannot benefit from gardens and parks and there are a lot of reasons for that. Access problem (Families have access problems due to the fact that these parks and natural areas are usually distant, they can only go by their own cars because they cannot go on foot or by public transport vehicles), design drawbacks of the natural areas (Especially, roads are not convenient for wheelchair and users who need a walking stick), annoying looks and reactions of the people around are counted among the reasons. Natural areas are the places used for game therapy. Tactile activities; sand and water paintings, trees planted in the garden that provide smells, touchable surfaces or surfaces that direct the child can be conducted in these areas.

According to results of the interview, an opportunity can be created for the disabled children to be in the natural areas, to spend quiet time, to learn, to study, and to establish good relationships with other people.

Taking the disabled children to a garden can be used as a prize in order to encourage them. With the help of the activities like gardening, planting vegetables, digging, working at compost, proprioceptive data can be provided, general muscle development and (frequently) when a mission is completed improvement of self-esteem emotion can be provided. A natural place provides children to interact with games and friends, it can also help children to understand some terms; for example, it can help them to understand the terms "life" and "season".

Providing livable environments and healthy atmospheres for the disabled children in Turkey is known to be important in order for them to give meaning to their existence as an individual, to hold on to life, to socially renew, to get away from the environment they constantly live, to realize different experiences, to get informed about different subjects, and to be a sufficient and healthy individual without getting help from others. Being integrated with social life, taking responsibilities, gaining different experiences in different living environments, creating struggle environments that will overcome difficulties are among the opportunities to be provided. The areas having natural qualities such as rich natural areas in terms of natural resource values, forests, and river corridors can be presented to the handicapped who have to live in narrow living environments and hardly express themselves in these limited areas. It is the guarantee of their "Healing" and "Getting Healed" as a social creature and by protecting their physical and mental health.

DISCUSSION

This research, as well as previous studies, showed a positive physical and psychological effect of natural environments on humans (Ulrich, 1999; Neville, 2005; Stigsdotter and Grahn, 2002; Stigsdotter and Grahn, 2003; Söderback et al, 2004; Marcus, 2007; Corazon et al, 2012; Hartig et al, 2014; Pouya and Demirel, 2015), with the notion that children with Cerebral Palsy were studied in this case. The study showed that the healing effects of natural sites and the passage of time by doing activities in nature are more striking for children with disabilities. This study showed that children with Cerebral Palsy, like other children, can play balls, ride horses and enjoy cycling. They, like other kids, need outdoor and natural recreation and discovering the plants and natural landscapes is of their interests.

Research like this research done on children with disabilities has particular problems (Belcrave and Mills, 1981; Gray et al, 2003; Mathers, 2004; Neville, 2005; Christensen, and Jeon, 2006). Children with disabilities have different and wide-ranging characteristics whereupon have different needs. Among the problems encountered in this study was the displacement of children with disabilities, their mental

and emotional states, physical problems, meeting basic needs such as toilet and feed. However, such research is possible with the collaboration of parents and other stakeholders and the fulfilling financial cost.

The inappropriateness of open spaces designed in terms of disabled people in different cities of Turkey has been investigated by many studies (Özdingiş, 2007; Bulut at al, 2008; Aksoy, 2011; Sirel et al, 2012; Zengin and Eryılmaz, 2013; Eşkil, 2011; Yılmaz et al, 2014). In this study, interviews with parents with children with disabilities showed inappropriate parks and open spaces in Ankara city too.

The issue of disabled people, which today is one of the important concerns of developing countries such as Turkey, should be considered in all urban design projects and green spaces. With the participation of a group of landscape designers, urban designers and planners, and mayors and their respective groups, it is possible to create suitable and usable natural spaces inside and outside the city for the disabled.

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REFERENCES

- Akın ZŞ 2006. Çocuklar İçin İyileştirme Bahçeleri, Ankara Üniversitesi, Fen Bil. Ens., Peyzaj Mimarlığı AnaBilimDalı, Yüksek Lisans Tezi, 128 s
- Aksoy Y 2011. Çocuk Oyun Alanları Üzerine Bir Araştırma İstanbul, Isparta, Eskişehir, Erzurum, Kayseri, Ankara, Zonguldak ve Trabzon İlleri Örneği. İstanbul Aydın Üniversitesi Dergisi, 3(11): 82-106.
- Aral N 2000. Prevention Of Play In Child Development. Çağdaş Eğitim Dergisi. 25(265): 15-17.
- Barış EM, Uslu A 2009. Accessibility For The Disabled People To The Built Environment In Ankara. African Journal of Agricultural Research, 4: 801-814.
- Belcrave FZ, Mills J 1981. Effect Upon Desire For Social Interaction With A Physically Disabled Person Of Mentioning The Disability In Different Contexts. Journal of Applied Social Psychology. 11(1): 44-57.
- Beer A R 1990. Environmental Planning For Site Development, E & FN Spon, London, 1990.
- Beklioglu, M. 2000. Eutrophication and Biomanipulation: Lake Eymir ve Mogan. TUBITAK Bilim ve Teknik Dergisi, 309: 72-76.
- Oruç S 2009. ODTÜ'nün Kuşları 1995-2008. ODTÜ

- Kuş Gözlem Topluluğu. Ankara http://www.trakus.org/kods_bird/pdf/69374.pdf
- Brawley E 1992. Alzheimer's Disease: Designing The Physical Environment. *American Journal of Alzheimer's Care and Related Disorders & Research*. 7(1) : 3-8.
- Bulut Y Göktuğ T 2006. Sağlık Bulma Yönünde Çevresel Bir Etken Olarak İyileştirme Bahçeleri. *Atatürk Üniversitesi Ziraat Fakültesi Dergisi*. 23 (2) : 9-15.
- Bulut Y, Atabeyoğlu Ö, Yeşil P 2008. Erzurum Kent Merkezi Donatı Elemanlarının Ergonomik Özelliklerinin Değerlendirilmesi Üzerine Bir Araştırma. *Tarım Bilimleri Dergisi*, 14(2) : 131-138.
- Christensen KM, Jeon TK 2006. Creating Inclusive Outdoor Play Environments: Designing for Ability Rather than Disability. *The Journal of Eyewitness in Special Education*. 910: 48-55
- Clark P (Ed.) 2006. *The European City and Green Space: London, Stockholm, Helsinki and St. Petersburg, 1850-2000*. Ashgate Publishing, Ltd.
- Corazon SS, Stigsdotter UK, Moeller MS, Rasmussen SM 2012. Nature As Therapist: Integrating Permaculture With Mindfulness-And Acceptance-Based Therapy In The Danish Healing Forest Garden Nacadia. *European Journal of Psychotherapy & Counselling*. 14(4) : 335-347.
- Cosco N, Moore, R 1999. Playing In Place: Why The Physical Environment Is Important In Playwork. *Proceedings. Theoretical Playwork and the Research Agenda, PlayEducation, Ely, United Kingdom*.
- Dogan OK, Akyurek Z, Beklioglu M 2009. Identification And Mapping Of Submerged Plants In A Shallow Lake Using Quickbird Satellite Data. *Journal of Environmental Management*. 90(7): 2138-2143
- Eyyubi S 2004. Sürdürülebilir Kalkınma Stratejisinin Uygulanmasında Ekosistem Yönetiminden Ülkemizde Bir Yöntem Olarak Yararlanma, Ankara Üniversitesi, Fen Bil. Ens., Peyzaj Mimarlığı Ana Bilim Dalı, Doktora Tezi, 220 s.
- Eşkil, ÖY 2011. Engelliler İçin Dış Mekan Tasarım Özellikleri Bağlamında Ankara Kent Parklarının İrdelenmesi. *Bartın University. Fen Bil. Ens., Peyzaj Mimarlığı Ana Bilim Dalı, Yüksek Lisans Tezi, s.. 325 p.*
- Fröbel F 1891. *Froebel's Letters on The Kindergarten*. CW Bardeen.
- Ghose S 1999. *The Healing Dimensions Of Hospital Gardens: Three Case Studies Assessing The Use. Therapeutic Benefits And Design Recommendations*. The University of Texas. Department of Landscape Architecture. Master Thesis. Arlington.
- Gray DB, Gould M, Bickenbach JE 2003. Environmental Barriers and Disability. *Journal of Architectural and Planning Research*. 20(1) : 29-37.
- Gonzalez T, Kirkevold M 2015. Clinical Use Of Sensory Gardens And Outdoor Environments In Norwegian Nursing Homes: A Cross-Sectional E-Mail Survey. *Issues in Mental Health Nursing*. 36(1): 35-43.
- Guggenheimer E C 1969. Planning For Parks And Recreation Needs In Urban Areas. *Performing Arts Review*. 1(2) : 385-395.
- Gürer N 2014. Rekreasyon Alanlarının Tasarlanmasında Temel İlkeler, Ankara Eymir Gölü Örneği. *Journal of Recreation And Tourism Research (jrtr)*. 1 (2) : 1-17.
- Harris M 1996. *The Healing Garden*. Toronto, ON: Harper Collins Publishers.
- Hartig T, Mitchell R, De Vries S, Frumkin H 2014. Nature And Health. *Annual Review of Public health*, 35: 207-228.
- Hartig T, Mang M, Evans GW 1991. Restorative Effects of Natural Environment Experiences. *Environment and Behavior*. 23(1) : 3-26.
- İnce Ö 2002. Eymir Gölünde Biyomanipulasyon Uygulamasının Fiziksel, Kimyasal Ve Biyolojik Parametrelerle Takibi, Kırıkkale Üniversitesi. Fen Bil. Ens., Biyoloji Ana Bilim Dalı, Yüksek Lisans Tezi, 76 s.
- Kaplan R 1992. The Psychological Benefits Of Nearby Nature. In: D. Relf (Ed). *The Role of Horticulture in Human Well-Being and Social Development*. Timber Press. Oregon. 125-133.
- Kaplan R 1973. Some Psychological Benefits Of Gardening. *Environment and Behavior*. 5(2) : 145-152.
- Kaplan R Kaplan S 1989. *Experience of Nature: A Psychological Perspective*. Cambridge University Press: New York.
- Köç Y 2006. İmrahor Vadisi'nin Rekreasyon Potansiyelinin Saptanması, Ankara Üniversitesi Fen Bil. Ens., Peyzaj Mimarlığı Ana Bilim Dalı, Yüksek Lisans Tezi, 71s.
- Kuo FE, Faber Taylor A 2004. A Potential Natural Treatment For Attention-Deficit/Hyperactivity Disorder: Evidence From A National Study. *American Journal of Public Health*. 94(9): 1580-1586.
- Mathers A 2004. Participation Of People With Learning Disabilities In The Landscape Design Process Of Urban Green Space. In the proceedings of OPENSpace: People Space Conference.
- Maralcan G, Kuru I, Aydin UY, Altinel L, Bozan ME, Ellidokuz H 2003. The Prevalence Of Orthopedic Disabilities In The District Of Çay, Afyon, Turkey. *Acta orthopaedica et traumatologica turcica*. 38(5) : 343-347.
- Marcus CC, Barnes M. 1999. *Healing Gardens: Therapeutic Benefits And Design Recommendations*. John Wiley & Sons.
- Marcus CC 2007. *Healing Gardens In Hospitals. Interdisciplinary Design and Research e-Journal*. 1(1) : 1-27.

- Minter S 1996. *The Healing Garden: A Natural Haven For Body, Senses and Spirit*. Tuttle Publishing.
- Müftüoğlu U 2006. Tekerlekli Sandalye Kullanan Bedensel Engellilerin Kentsel Mekanları Kullanım Olanaklarının Trabzon Kent Merkezi Örneği Üzerinde İncelenmesi, Karadeniz Teknik Üniversitesi, Fen Bil. Ens., Peyzaj Mimarlığı Ana Bilim Dalı, Yüksek Lisans Tezi, 241 s.
- Neville L 2005. *The Fundamental Principles Of Seating And Positioning In Children And Young People With Physical Disabilities*. James Leckey Design Limited. 1. 3-5.
- Nicholson-Lord D 2003. *The Greening Of The Cities*. Routledge.
- Olmsted F L 1865. *The Value and Care of Parks*. Reprinted In Nash, R. (Ed.) (1968), *The American Environment: Readings In The History Of Conservation*. Reading, MA: Addison-Wesley. pp. 18-24.
- Orians GH, Heerwagen JH 1992. Evolved responses to landscapes. In: Barkow J, Cosmides L, Tooby J. eds. *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*. Oxford & New York: Oxford University Press. 98-121.
- Özgüner H. 2004. Doğal Peyzajın İnsanların Psikolojik Ve Fiziksel Sağlığı Üzerine Etkileri. *Turkish Journal of Forestry*, 2: 97-107.
- Özdingiş N 2007. İstanbul Kent Parklarının Bedensel Özürlüler Açısından Değerlendirilmesine Yönelik Bir Araştırma, Bahçeşehir Üniversitesi, Fen Bil. Ens., Çevre Tasarımı Ana Bilim Dalı, Yüksek Lisans Tezi, 178 s.
- Pasha S 2010. First Place Student Research Paper Award, Accessibility Assessment of Four Hospital Gardens in Texas, EDRA, (Texas A&M University), June.
- Pouya S 2016. Ortopedik Engelli Çocukların İyileştirilmelerine Yönelik Planlama Yaklaşımı: ODTÜ Eymir Gölü Örneği (Ankara), Karadeniz Teknik Üniversitesi, Fen Bil. Ens., Peyzaj Mimarlığı Ana Bilim Dalı, Doktora Tezi, 300 s.
- Pouya S, Bayramoğlu E, Demirel, Ö 2016a. Restorative Garden As An Useful Way To Relieve Stress In Megacities, A case study in Istanbul. *İnönü Üniversitesi Sanat ve Tasarım Dergisi*. 6(13): 355-369.
- Pouya S, Bayramoğlu E, Demirel Ö 2016b. Doğa İle Uyumlu Fiziksel Engelli Çocuk Oyun Alanları. *Journal of Architecture Sci. and Applications*. 1(1): 51-60.
- Pouya S, Demirel Ö 2015. What Is A Healing Garden?. *Mediterranean Agricultural Sciences*. 28(1). 5-10.
- Rohde CLE, Kendle AD 1994. Report To English Nature-Human Well-Being, Natural Landscapes And Wildlife In Urban Areas: A Review. Department Of Horticulture And Landscape And The Research Institute For The Care Of The Elderly, University of Reading, Bath.
- Sankar C, Mundkur N 2005. Cerebral Palsy- Definition, Classification, Etiology And Early Diagnosis. *The Indian Journal of Pediatrics*, 72(10): 865-868.
- Sakıcı Ç, Çelik S, Kapucu Ö 2013. Kastamonu'daki Hastane Bahçelerinin Peyzaj Tasarımlarının Değerlendirilmesi, SDU Faculty of Forestry Journal. 14: 64-73.
- Sakız H, Woods C 2015. Achieving Inclusion Of Students With Disabilities In Turkey: Current Challenges And Future Prospects. *International Journal of Inclusive Education*. 19(1) : 21-35.
- Sarıemir İ 2009. Ankara-Gölbaşı Mogan Parkı'nın Gölbaşı Özel Çevre Koruma Bölgesi'ne Etkileri, Bartın Üniversitesi, Fen Bil. Ens., Peyzaj Mimarlığı Ana Bilim Dalı, Yüksek Lisans Tezi, 151 s. p.
- Serez A 2011. *Healing Gardens Through History*, Istanbul Technical University. Department of Landscape Architecture. Master Thesis, 156 p.
- Sirel B, Boyacıgil O, Duymuş H, Konaklı N, Altunkasa F, Uslu C 201. Çukurova Üniversitesi Yerleşkesi Açık Alanlarının Fiziksel Engelliler Bakımından Ulaşılabilirliğinin Değerlendirilmesi. *Çukurova Üniversitesi, Mühendislik Mimarlık Fakültesi Dergisi*. 27(1): 53-72.
- Söderback I, Söderström M, Schäländer E 2004. Horticultural Therapy: The 'Healing Garden' and Gardening In Rehabilitation Measures At Danderyd Hospital Rehabilitation Clinic, Sweden. *Pediatric rehabilitation*, 7(4): 245-260.
- Stigsdotter U, Grahn P 2002. What Makes A Garden A Healing Garden. *Journal of therapeutic Horticulture*, 13(2) : 60-69.
- Stigsdotter U, Grahn P 2003. Experiencing A Garden: A Healing Garden For People Suffering From Burnout Diseases. *Journal of therapeutic horticulture*, 14(5) : 38-48.
- Tekkaya E 2001. Tasarlanmış Çocuk Hakları: Ankara Çocuk Oyun Alanları, *Milli Eğitim Dergisi*, 151.
- T.R. Altındağ District Governor 2013. Doğan Çağlar Engelliler Secondary School. Ankara. Turkey.
- Ulrich RS 1999. Effects of gardens on health outcomes: Theory and research. In C. Cooper Marcus & M. Barnes (Eds.), *Healing gardens* (pp. 27-86). New York: Wiley.
- Ulrich R S, Addoms D L 1981. Psychological And Recreational Benefits Of A Residential Park. *Journal of Leisure Research*. 13: 43-65.
- Ünver E 2014. Ergenlik Öncesi Erkek Çocuklarda Fiziksel Aktivite Düzeyinin 6 Dakika Yürüme Testi İle İlişkisi, Hacettepe Üniversitesi, Sağlık Bil. Ens., Spor Bilimleri ve Teknolojisi Ana Bilim Dalı, Yüksek Lisans Tezi, 104 s.
- Yalçın N 2011. Child Abuse In Turkey And Solution Proposal, Unpublished master Project, İstanbul.
- Yenilmez F, Keskin F, Aksoy A 2011. Water Quality

- Trend Analysis In Eymir Lake, Ankara. Physics and Chemistry of the Earth, Parts A/B/C. 36(5) : 135-140.
- Yılmaz T, Olgun R, Şavklı F, Öter B 2014. Kentsel Yeşil Alanlarda Tekerlekli Sandalye Kullanıcıları İçin Engelsiz Rota Belirlenmesi: Antalya Atatürk Kültür Parkı Örneği. İnönü Üniversitesi Sanat ve Tasarım Dergisi, 9(4): 1-14.
- Yorulmaz Ç 2010. Ortopedik Engellilere Eğitim Veren Kurumlardaki Engelli Bireylere Beceri Kazandırmada Karşılaşılan Sorunların İncelenmesi, Gazi Üniversitesi, Eğitim Bil. Ens., Eğitim Bilimleri Ana Bilim Dalı, Yüksek Lisans Tezi, 116 s.
- Zengin B, Eryılmaz B 2013. Bodrum Destinasyonunda Engelli Turizm Pazarının Değerlendirilmesi. Uluslararası İktisadi ve İdari İncelemeler Dergisi. 6(11) : 51-74.
- URL 1. <http://www.cerebralpalsy.org/about-cerebral-palsy/definition> (Accessed date: 17.01. 2017).
- URL 2. <http://www.cerebralpalsysource.com/about-cp/orthopedic-impairment/>(Accessed date: 10.05. 2017).