OUTDOOR SPORTS AREA DESIGN FOR PEOPLE AFFECTED BY CEREBRAL PALSY

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OUTDOOR SPORTS AREA DESIGN FOR PEOPLE AFFECTED BY CEREBRAL PALSY

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ABSTRACT

OUTDOOR SPORTS AREA DESIGN

FOR PEOPLE AFFECTED BY CEREBRAL PALSY

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This thesis analyzes the outdoor sports areas design for people who have cerebral palsy. The primary aim of this study is to improve their integration with the community by the help of the positive effect of sports.

Cerebral palsy (CP) is one of the disorders on a list of conditions that can affect a person's ability to take part in daily activities. It is possible that the creation of a facility for people with disabilities could help reduce the obstacles that they face and enable them to improve their quality of life. Designing an outdoor sports area for all might be one of the most effective tools to help them to socialize and feel part of a community.

This study is structured in three chapters. Chapter one introduces about disability, disability in sports, and similar cases for disabled people. In chapter two, the case study of Cerebral Palsy Portuguese Association's Villa Urbana Gondomar was analyzed. After the analysis of the case study, part three addressed the design proposal of the study case.

Quantitative and qualitative research design was undertaken and based on existing literature. In addition to the literature review, questionnaires, observations, and interviews were used to understand their needs and expectations from sports areas. There are 34 Guests with cerebral palsy.

Key Words: disability, cerebral palsy, outdoor sports area, sociality, design for all.

ÖZ

BEYİN FELÇLİ İNSANLAR İÇİN DIŞ MEKAN SPOR ALANLARI TASARIMI

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Bu çalışma, dış mekan spor alanı tasarımlarının beyin felçli insanlardaki etkileirini incelemektedir. Ana amaç, onların toplumla olan ilişkilierini sporun yardımıyla kuvvetlendirmektir.

Beyin felci, kişilierin günlük aktivitelerini tamamlamakta sorun yaratan engeller listesinde yer almaktadır. Engelliler için tasarlanan tesisler, onların karşılaştıkları engelleri azaltır ve hayatı daha az zor hale getirmekte yardımcı olabilir. Doğal elemanlar kullanarak tasarlanan spor alanları, onların sosyalleşmeleri ve hayatın daha çok parçası olmaları için etkili bir yardım yöntemi olabilir.

Bu çalışma üç bölümden oluşmaktadır. Birinci bölüm, engelliler, engelliler için spor ve örnek projeleri incelemektedir. İkinci bölüm, Protekiz Beyin Felçliler Kurumuna ait olan Villa Urbana Gondomar'ın ncelenmesidir. Bu incelemeden sonra bölüm üçte bir tasarım önerisi vardır.

Bu çalışmada, var olan literatür temel alınarak nitel ve nicel araştırma yapılmıştır. Literatür araştırmasına ek olarak anket, röportaj ve gözlem yöntenleri de kullanılarak beyin felçli insanların ihtiyaçları ve spor alanlarından beklentileri hakkında veri toplanmıştır. Bu tesiste 34 beyin felçli misafir bulunmaktadır.

Anahtar Kelimeler: engelli, beyin felci, spor alanı, sosyalleşme, herkes için tasarım

To My Grandmother

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I am grateful for having the chance to spend time together with APCC organization and guests. I have learned a lot from each of them and I hope I was able to reciprocate, through my thesis and the project, the best part of me.

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List of Abbreviations

ADA	: The Americans with Disabilities Act
APPC	: Cerebral Palsy Portuguese Association
CFD	: Center for Discovery
CISS	: The International Committee of Sports for the Deaf
CMRC	: Crotched Mountain Rehabilitation Center
CP	: Cerebral Palsy
INAS-FID	: International Sports Federation for Persons with Intellectual Disability
IPC	: The International Paralympic Committee
NRN-APPC	: Regional North APPC Core
NSCD	: National Sports Center for the Disabled
PCP	: People with Cerebral Palsy
SAD	: Seasonal Affective Disorder
UK	: United Kingdom
UN	: United Nations
VUG	: Villa Urbana Gondomar
WHO	: World Health Organization

Introduction

This thesis aims at developing the outdoor sports areas for disabled people affected by cerebral palsy to enhance their social life and make them part of the community. Because of the positive effects of the natural environment on the people with cerebral palsy (PCP), outdoor sports area was chosen.

Cerebral palsy (CP) is one of the disorders on a list of conditions that can affect a person's ability to take part in daily activities. Statistics say that each five in two thousand babies are born with congenital cerebral palsy. Despite advances in obstetrical and pediatric care, this statistic has recently increased over the years. In reality, there are very few places where a person with their disabilities can continue to thrive. Often parents are left with no choice but to stay home or hire someone to assist these people with day to day activities.

PCP may feel apart from the public and alone, and can have problems with daily activities. Their condition can result in reduced independence and increased reliance on friends, families and care assistants. The subject of this study was selected because of the importance of sports for PCP. With the help of sports, any people feel themselves as part of the team that is helpful to overcome the feeling of being different (McCotenkey, et al. 2013). Because of the importance of sports, the research about outdoor sports areas was chosen in order to create better life standards for all.

Although solutions of the sports areas and equipment were designed in sundry samples, the main problems about designing outdoor sports areas and social effects of these areas have not been clarified very well. Even though it is believed that nature is very helpful for PCP, there is a lack of links among nature and sports. Even with enough people and time to help, participation in sport can only realistically take place if institutions provide support for people with a disability.

The fact that these were cited as significant obstacles to participation demonstrates that there are large gaps in sports provision for PCP, and most probably also for people who have any other disability. In order for participation to take place, these issues need to be adequately dealt with via research into the particular needs of disabled people.

In this thesis, first of all, to understand cerebral palsy (CP), the definition of disability and its history need to be defined. Disability is a general term to explain different types of impairments. To clarify the place of CP in disability, types of impairments were analyzed according to WHO and IPC. Disability in sport was another point that needed to be examined to understand the help of sports on PCP. Their necessities to overcome the obstacles in daily times and also in sports areas were observed to improve their quality of life. In addition, other examples that were already established were examined to understand the effects of nature on PCP.

Because each person has a unique situation, a mixed research methodology was used to examine all details. Effects of design on quality of life and sociality should be considered as standard rules for disabilities. In that case, quality of life surveys was helpful to clarify their ideas. In addition to surveys, to understand the users' needs, interviews and observations were used. As a case study, Villa Urbana Gondomar (VUG) was chosen in Gondomar, Portugal. VUG was established by the Cerebral Palsy Portuguese Association (APPC). Because of APPC believes a mixed type of community is helpful for PCP to overcome alienation from community, they created a mixed type population that includes children, teenagers, and adults with and without CP. This population structure gave a perfect opportunity to observe and understand sports area design for all needs.

Chapter 1

Disability and Sports

1.1 Definition and History of Disability

Disability is any mental or physical circumstance that limits a person to move, to sense or to be a part of social activities. Disability could become part of our life temporarily or permanently. The term disability is conventionally used to refer to a condition serious enough to handle or block normal daily activities. According to the UN Convention on the Rights of Persons with Disabilities, "*Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which, in interaction with various barriers, may hinder their full and effective participation in society on an equal basis with others.*" (U.N, 2009, p.4) Disabilities can be permanent, temporary, or intermittent. They can be part of the life of people when they are born or can happen later in life through injury or illness. The World Bank presumes that nearly one billion people, around 15% of the world's population, have a disability and including the families of people that have disabilities; more than 25% of the world is directly affected by disability (World Health Organization [WHO], 2011).

Today, people with disabilities are partially integrated to the community. Even if there are many organizations that are working to improve the communication of disabled people with the community, there are still several objectives to pursue. To understand the place of disabled people in the community, it is necessary to analyze the history of disability.

Neolithic tribes believed that impairments were originated by spirits who introduced in the body the evil (Albrecht, 1992). The Spartans, because of their harsh individualism, abandoned disabled people of any age range, and let them die (DePoy & Gilson, 2004).

The earliest known record of the treatment of disabilities comes from Egypt and the Hittites living in Anatolia. An estimate of records of 1500 BC in ancient Egypt "Papyrus Eber" is mentioned in the case of deafness. This papyrus lists a number of drugs used in the treatment of deafness (Arda & Aksu, 2004, p. 357-358). The "Papyrus Koller", belonging to 1200 BC in Egypt, states that a clergyman should respond to the language of the deaf by marking it with respect. In ancient Egypt, it is known that hearing impaired people who use sign language are regarded as a kind of holy person (Eriksson & Schmale, 1998).

In Europe, the human body became main matter of the society was during the periods of Ancient Greece and Rome. In that time, the idea of the human body was dominated by the culture of the *"Body beautiful".* Body was seen as a piece of art, powered by perfection and harmony. Aristotle explains in the Metaphysic, "*The chief forms of beauty are order, symmetry and clear delineation*" (Aristotle, 1984). The philosopher advises to suppress a child if it had been imperfect. Greek law also decreed that a new-born baby was not a child until seven days after birth, so an imperfect child could be disposed of without any guilt. These dogmas showed the idea that 'good' looked beautiful and the misshapen and disabled were 'bad'.

Since Islam appeared, in VII Century, it always had a primary role in determining how disabled people discern themselves. The disability was seen as a condition in which God put the person as a test in front of him. People had to be thankful under any condition because it was what God choose for each individual. This attitude didn't encourage the people to fight for their rights and it didn't give them the feeling of being in the position to demand rights (Bezmez & Yardımcı, 2010).

In Europe, in the Feudal and Middle Ages, most of the impaired people were accepted by the families to work on the land or in small workshops. The Bible was the first document to prescribe antidiscrimination statutes: "*Thou shalt not curse the deaf nor put a stumbling block before the blind, nor make the blind to wander out of the path.*" But when there was a social upheaval, black deaths or epidemic, disabled people were accepted as scapegoats as sinners or cursed people who were the reasons of the disasters upon society. As a result, many people started to practice the auto-flagellation to try to protect themselves from the plague by the penitence. One of the early examples of the restriction and discrimination of disabled people is people with leprosy quarantined in leprosariums (Stiker, 1999).

The horror of becoming marked was really powerful and the sickness of leprosy started to be associated with black magic and sin. Between 8 and 20 million of people, mostly women, and impaired children, were put to death across Europe accused of being witches. Martin Luther, the founder of Protestantism, endorsed the killing of disabled babies as "*incarnations of the devil*" (Miles, 2005). In the XVI Century, in Holland, lepers were seen as sinners and their assets were seized by the State so they had to be shored up by the charity of parishes or people not affected by the sickness (Steiner, 2014).

The Renaissance is a time of history based on the ideas of Classical Greek and Roman fundamentals. The idea of the body beautiful returned, as it is possible to see in the art production: most of the sculptures and the paintings showed idealized human forms and perfect complexions. These did not show the real situation of the population. In this age, many people had impairments or were scarred by smallpox, an infectious disease that leaves permanent marks on the body. As shown in Figure 1, an interesting example is the depiction of the Duke of Urbino, which is always portrayed showing the same profile on the other side of the face was disfigured in a battle.

Figure 1. Portraits of Duke of Urbino (Warnke, 1998)

The 19th century is the time of the greater segregation of disabled people. According to the routine of factory operations, the workforce had to be physically flawless for a good performance, and the disabled people were rejected. They were seen as "*worthy poor*" and with the help of the Poor Law Relief, they had the right to have a place in the workhouse or money from public funds. As a result, disabled people needed more medical profession for treatments and cures (Boot, 1990, p. 217-228).

In the last part of the century, Darwin's theories of evolution and natural selection started to be interpreted by a growing number of intellectuals, scientists, and politicians. These people, called as "*eugenicist*", were purposed to improve the quality of the human genes. According to their idea, disabled people, especially the ones born with a disability, would make ornery the genes of the humans. Because of that reason, disabled people were more frequently isolated in single-sex institutions or sterilized. According to Mary Dendy who was a promoter of residential schools for mentally handicapped people, children who were mentally disabled should be "*detained for the whole of their lives*" as the only way to "*stem the great evil of feeble-mindedness in our country*" (Jones, 2013).

Starting with the 20th century, the eugenicist ideas caused an expansion of sterilization of disabled people. Born-deaf women and anyone with a disability was sterilized in several states in the USA around the 1930s. Some of the states kept these laws till the 1980s.

In the United Kingdom, the Mental Deficiency Act of 1913 classified disabled people in four main categories:

- Idiots – people with mental defectiveness, incapable of understanding the dangers around.
- Imbeciles – even though not totally idiots, so accepted that they are not able to handle themselves and their responsibilities.
- Feeble minded – accepted that they need observance and control for their own safety or the other people. Children, who appear to be feeble minded, are not able to take education from ordinary educational institutions but they need special schools.
- Moral defective – persons with mental impairments and aggressive attitudes. They need to be controlled for the protection of the others (Jones, 2013).

Children and adults with physical disabilities and communication defeats were penned in institutions and many were released just in the 1980s. Children with considerable learning problems were judged uneducable and those with less significant learning difficulty went to educationally sub-normal schools.

During the Third Reich of Hitler, in Germany, disabled people were shown by propaganda films as "useless eaters" or a burden on the state. Feature films, such as "*Ich klage"* (Eng: I Accuse), 1941 by Wolfgang Liebeneiner, had an important impact on the population in justifying the idea of mercy killing. This film was watched and influenced all German population; just a minority disagreed with its message. It was banned by the allied powers after the war (Winkel, 2005, p. 647-654). Physically and mentally disabled adults were murdered in 1939-40 by doctors of the state.

In 1940, by the efforts of Archbishop Galen of Munich, adults' murders were reduced; however, the slaying of disabled children continued until 1945. The *Action T4*, the Nazi Program of euthanasia, cost between 60 000 and 100 000 lives. In the USA in the 1990s, disabled activist made propaganda against euthanasia with the motto "*T4 Never Again*" (Jesse & Zitelmann, 1989).

In the UK, from 1890, disabled people fought for their rights, for their inclusion, and for their human dignity. After the First World War, hundreds of thousands of veterans with no rights started a campaign for the "*Right to Work*" through the National League for the Blind and Disabled. It was the first disability movement in the country, which through disabled people organized a movement against discrimination. In the 1920s, groups of disabled ex-soldiers were formed all over the UK and they gain a law adjudicated to ensure their right to employment. As a result, employers were forced to assume registered-disabled employees with a quota system of 3%. In 1996, the Disability Discrimination Act was proclaimed (Bell & Heitmueller, 2009).

In the last decades, there have been always more disability movements, fighting for full integration and the end of segregation. Many parents and families campaigned for the human rights of their disabled children or family members. In Turkey, it did not go in the same way and there were not significant social improvements. The lake of efforts in pursuing the rights contributed to increase the financial and educational difference in the society for this group (Tufan, Yaman, & Arun, 2007). Results of Research on the Disabled in Turkey (DIE, 2002) that was made by the General Directorate of the Prime Ministry for the Administration for Disabled People and the State Planning Institute, pointed out that disabled people couldn't have fully egalitarian rights, such as social, political and citizenship rights.

Nine million disabled people were recorded in Turkey in 2005, which means 12,3% of the population. Only 21,7% of them was employed because of the difficulties joining the labor market. This exclusion was derived from their limited access to education; indeed, illiteracy reached the 34,4% of disabled people in the country (DIE, 2005).

The Islamic religion has always shaped the way to relate to people with and without disabilities in a positive way. Disabled people are seeing as needy of help and the provision of it is admirable in the religion. This relation brought positive results in the society in terms of citizenship (Bezmez & Yardımcı, 2010).

Nowadays, there are several causes for which there is a struggle: use public transport, get into buildings, go to school or college with friends, or get a job. Although civil rights legislations have improved the perception of disability, still the majority of the communities assume disabled people as divergent because of stereotypes (Mladenov, 2014).

1.2 Disability Types

Millions of people live with ill-health, injury or disability, while science, technology, and design can play a significant role in helping them to complete everyday tasks easier. People with disabilities face a variety of challenges that may include loss of independence, fear of falling, and the risk of social exclusion. Disabilities include an incredibly diverse range of conditions, affecting people of all age groups and from all backgrounds. Living with a disability, whether it be visible to others or hidden, is different for every individual. Even if each person has an individual problem, it is important to divide disabilities into categories.

Disability types can be decided differently according to how they will be used. While the law, states or municipalities can use general classifications to help them in public spaces, IPC uses ratio a very detailed classifications way to create

more equitable games. For this study, health organizations were used to understand to general sense about disability. In addition to that, IPC was used also to understand the approach of categories in sports.

1.2.1. According to Health Organizations

1.2.1.1. Temporary Disabilities

Instead of accepting the minority of the community as disabled, it may be a better approach to accept the majority of the society as temporary disabled. The human body has a full capacity in only a limited period of life. It is a fact that, any person has a period of time with temporary disabilities. Being child or old, being pregnant, having a broken bone, and even being a tired or sick are kind of temporary disability moments (Altman, 2001).

1.2.1.2. Permanent Disabilities

A disability is the limitation of an individual's ability to perform an activity. That does not mean that a person with a disability cannot participate to activities equally. Permanent disabilities can be categorized in four types: blindness or low vision, deafness or difficulty of hearing, having physical disabilities and psychiatric disabilities (Mishra & Gupta, 2006). Knowing the strengths and weaknesses of these disabilities is essential to overcome the social and physical obstacles.

In addition to this, disabilities that do not fit the above categories are at least as important as others. There is an implied assumption that each disability has specific needs about health, education, rehabilitation, and socialness. Even though it may be very individual problems for each person; it would be very helpful to understand the general conditions of each group of impairments to create a better environment for them.

"The chief handicap of the blind is not blindness,

but the attitude of seeing people towards them."

(Keller, 1925)

According to the records of the World Health Organization (WHO) in August 2014, 285 million people are estimated to be visually impaired worldwide: Approximately, 39 million people are blind and 246 million have a low vision problem. Almost 90% of the world's visually impaired that means more than 256 million live in developing or undeveloped countries and 82% of them are aged 50 and above (WHO, 2014). In the last twenty years, the number of people visually impaired from infectious diseases has reduced. Moreover, the important point is that 80% of all visual impairments can be cured (WHO, 2011).

There are four levels of visual function that was updated in 2006, according to the International Classification of Disease; normal vision, moderate visual impairment, severe visual impairment, and blindness. Moderate visual impairment and severe visual impairment are classified under "Low vision". Most of the visually impaired people are over 50 years old. There will be more risk to have people with visual impairment by an increasing of the elder population in many countries.

Deafness is a partial or total inability to hear. Hearing loss may occur in one or both ears (Britannica, 2012). In childhood, hearing problems can affect negatively the ability to learn the language. When a child has a hearing loss, it needs an immediate attention. Indeed, language and communication skills improve mostly during childhood, especially before the age of 3. If hearing loss is not detected on time, children are not able to develop their skills. For mature people it can cause work related difficulties and older people hearing loss can cause loneliness. The reasons of hearing problems can be genetics, ageing, exposure to noise, infections and birth (Northern & Downs, 2002).

According to the records of WHO in March 2015, over 360 million of the world's population had disabling hearing loss and 328 million of them were adults. One of every three people over 65 years of age have problems about disabling hearing loss (Lin, Yaffe, Xia, Xue, & Harris, 2013).

There are four types of hearing loss: conductive hearing losses, sensorineural hearing losses, mixed hearing loss and central hearing loss. Disease in the outer or middle ear can end up with conductive hearing losses. Medical or surgical interventions can usually solve impairments of a person with conductive hearing loss. Sensorineural hearing losses end up with the damage of inner ear sensory hair cells. That problem mostly affects the person's ability to hear certain frequencies more than others (Brookhouser, 1996)

A person with a sensorineural hearing loss may be fixed by the help of the amplification to increase the sound level. Combination of conductive and sensorineural loss is a mixed hearing loss and means that a problem occurs in both the outer or middle and the inner ear. Damage or impairment to the nerves creates a central hearing loss. It can occur either in the nerves that carry signals to the brain or in the brain itself (Rosenhall, Nordin, Sandström, Ahlsen, & Gillberg, 1999, p. 349-357).

Psychiatric disabilities (Also called Intellectual disabilities) involve a wide range of limitations in learning, thinking, solving problems, sense-making of the world, developing everyday life skills, and having anxiety or depression. Psychiatric disabilities affect about 2–3% of the general population and 80% of the affected people have mild psychiatric disability. Non-syndromic cases are 30–50% of the total cases and 25% of cases are caused by a genetic disorder (Daily, Ardinger & Holmes, 2013). A psychiatric disability generally affects a person's communication, social, and self-care skills. It may also affect the ability to learn.

Psychiatric disability is divided in to four groups:

- Mild intellectual disability (IQ level 50 to 70),
- Moderate intellectual disability (IQ level 35 to 49),
- Severe intellectual disability (IQ level 20 to 34),
- Profound intellectual disability (IQ level less than 20) (Katz & Lazcano, 2008, p. 132-141).

The mild category takes around 85 percent of people with intellectual disabilities. They are capable of reading, but complicated topics can be a problem to understand totally. People with moderate intellectual disability have decent communication abilities but cannot communicate on very complex issues. The moderate category takes about 10 percent of the whole group. Many of them can live personally without any nursing, but some of them may need the care of a person. The severe category corresponds to only about 4 percent of intellectual disability. They have low communication level and they need to be taken care by someone or by a care health organization. Living without supervision or support is not an option for them. People with profound intellectual disability need continuous support. Usually, these people have other physical impairments as well. People with intellectual disabilities take about 1 to 2 percent of psychiatric disabilities (Daily, Ardinger & Holmes, 2013).

Physical disability is the long term effects of inactivity to affect the health and functional ability of a person, such as spinal cord injury, amputation, spina bifida, and blindness. Physical disabilities can be congenital (a condition present at birth) or as the result of the injury or condition developed later on in life. Although most physical disabilities can be recognized from outside, some of them are out of sight including lung diseases, respiratory impairments, epilepsy and other limiting conditions.

A person's environment has an important influence on the life experience of the disability. Barriers in the environment can increase the risk of limitations to participation in everyday activities. Environmental factors may also affect the health. According to the WHO Commission on Social Determinants of Health, inequality is the main reason of poor health and disability. Environmental factors include complex situations rather than simply physical and information access. In addition, other obstacles can be policies and service delivery systems, including the rules underlying service provision (Miller & Gillinson, 2004). In Europe, analyses of health care services detected organizational barriers such as waiting lists, lack of a booking system for appointments, and complex referral systems. These obstacles are more complicated for persons with disabilities who are not always capable of waiting for a long time, or who cannot navigate complex systems (Scheer, et al. 2003, p. 221-230).

Physical disabilities can be categorized in two according to effects the body; wheelchair users and mobility impairments. Wheelchair users can have the impairments of CP, multiple sclerosis, muscular dystrophy, spinal cord injuries, and spina bifida. Mobility impairments can have the disability of amputees, arthritis, lupus, diabetes, medical illnesses, cystic fibrosis, multiple sclerosis.

CP is a condition caused by harm to the sections of the brain that control movement, balance, and posture. Symptoms appear in early childhood and with treatment, most children can significantly develop their capabilities. CP is one of the most widespread neurodevelopmental circumstances in childhood (Andersen, et al. 2008, p. 4-13). Symptoms can be different for each person. In addition to posture and movement problems, there may also be problems with vision, hearing, sensation, swallowing, and speaking. Most of the problems eventuate during pregnancy; but, they may also occur in shortly after birth. In most cases, the reason of CP is unknown. It may be divided into three part to understand how it occurs; prenatal period, labor period, and postnatal period.

Table 1. CP Reasons (Parker, Zuckerman & Augustyn, 2005)

Prenatal Period Problems	Labor Period Problems	Postnatal Period Problems
Infection during the pregnancy	Premature birth	Fever
Blood type incompatibility between mother and child	Multiple births	Meningitis
Mother with thyroid abnormalities	Breech birth	Encephalitis
Maternal infections or fevers	Complicated labor and delivery	Hepatitis
Genetic abnormalities	Asphyxiation of baby	Cerebral hemorrhage
Fetal injury		
Exposure to toxic substance		
Congenital brain malformations		
Diabetes		
Small for gestational age and seizures		

Because cerebral palsy has much wider variety, it can be qualified by several classification systems that can be based on severity level, motor function, and gross motor function classification system. Cerebral palsy may also come with a variety of other health problems; most of which are related to the brain injury (Rosenbaum, et al. 2007, p. 8-14). These issues can include a variety of neurological, orthopedic, and secondary problems, which are listed in Table 2.

Table 2. Diseases that may cause CP (Rosenbaum, & Stewart, 2004)

Neurological Problems	Orthopedic Problems	Secondary Problems
Mental retardation	Scoliosis	Poor growth
Learning disabilities	Hip dislocation	Aspiration pneumonia
Attention deficit	Contractures of joints	Gastro esophageal reflux
Hyperactivity disorder	Discrepancy in leg length	Hernia
Visual impairment		Sleeping disorders
Seizure disorder (epilepsy)		Poor nutrition
Hearing loss		Communication disorder
Speech impairment		Drooling
Swallowing difficulties		Upper airway obstruction
		Constipation

The following disorders are classifications based on movement and body parts.

By type of movement:

Spastic: too much muscle tone

Athetoid: no muscle control

Hypotonic: decreased muscle tone (not enough tone)

Ataxis: balance and coordination problems

Mixed: mixture of two or more of the above (Albright, 1996, p. 1-4)

By type of body parts:

As shown in Figure 2, CP can be categorized according to impairments on body parts.

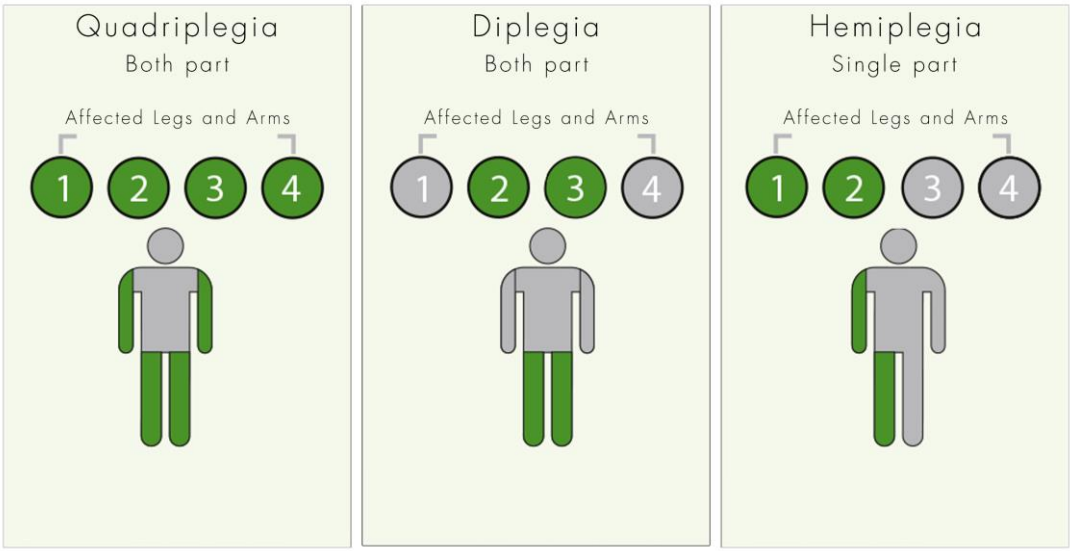

Figure 2. Classification of CP Based on Body Parts (Almasri, et al. 2011, p. 130-154)

CP cannot be cured, but treatments help to improve a child's capabilities. Generally, if the treatment begins earlier, children have a better chance to improve the capabilities or learn new ways to accomplish tasks. Professionals work with the child and family to determine the child's needs. These professionals can be pediatricians, physical therapist and rehabilitation physicians, orthopedic surgeons, physical and occupational therapists, ophthalmologist, speech and language therapists, social workers, and psychologists. There is no standard solution that works for all children. Because of each individual needs a unique treatment and early response improve the treatment outcome; this process usually is done when children are between 2 and 6 years.

1.2.2. According to International Paralympic Committee

The interest of para-sport is to prevent unfair and presumable competition, in which the least disabled athlete has an advantage. Para-athletes are classified into different categories for a competition called as sports classes according to impairment. As partly grouping athletes by age, gender or weight, the IPC

classification system confirms if a para-athlete is eligible to compete in a sport and how they are clustered into majors for competition.

Para-athletes are grouped according to their degree of activity limitation due to the impairment. Essential for sports, para-athletes have to perform activities for categorization. Each sport takes different activities, and impairment has a different impact on each sport as well. In order to minimize the impact of impairment on sports performance and consequently to provide fair and equal competition, the classification must be sport specific.

Sorters work together in categorization panels to classify athletes. While classifying through the process of athlete evaluation, there are always three important points taken into account by the classification panels:

- Whether or not the athlete is eligible for this sport
- The minimum disability criteria of the sport for each contest.
- The sport class limitation accuracy that is measured according to athlete's activity (Tweedy, et al. 2014, p. 11-17).

1.2.2.1. Eligible Impairment

The first step in disability sport classification is to find the answer to the topics that mentioned above. An impaired athlete could take advantage of sport opportunities provided by The Paralympic Movement, if the athlete is eligible according to the "Policy on Eligible Impairments in the Paralympic Movement" (Tweedy & Vanlandewijck, 2011, p. 259-269).

There are 8 different types of physical impairments in The Paralympic Movement. These are impaired muscle power, impaired passive range of movement, limb deficiency, leg length difference, short stature, ataxia, hypertonia, and athetosis. In addition to them, athletes with an intellectual or visual impairment are also included the Paralympic Movement (Tweedy, et al. 2014, p. 11-17). The

definitions for the qualified impairment sorts as characterized in the World Health Organization International Classification of Functioning, Disability and Health (WHO, 2001) are accepted by The Paralympic Movement.

1.2.2.2. Minimum Disability Criteria

Paralympic classification rules incident to every sport describe minimum inability criteria for a competitor to be viewed as qualified. A level of amputation for competitors with limb inadequacy, or maximum tallness for short stature could be cases of least incapacity criteria.

To put it all in simple terms, an athlete does not have to meet the criteria in all sports. A rule of sports says that if an athlete is not eligible to compete in a sport, it does not judge the presence of a genuine impairment (Vanlandewijck, & Chappel, 1996, p. 65-88).

1.2.2.3. Sport Class

A sport class is a category which groups athletes depending on how much their impairment impacts performance in their sport. Therefore, a sport class is not necessarily comprised of one impairment type alone, but can be comprised of athletes with different impairments. However, these different impairments affect sport performance to a similar extent. For example, you will find athletes with paraplegia and double above-the-knee amputation competing in the same sport class in IPC Athletics. In individual sports, athletes compete against athletes in their own sport class to ensure the impact of impairment is minimized.

Some Paralympic sports only have one Sport class, such as Powerlifting. To compete in these sports, the athletes only need to meet the minimal impairment criteria. Although some sports like ice sledge, hockey or powerlifting have only one sport class; IPC Athletics has 52 sport classes. The reason is that the different disciplines, for instance: jumping, running and throwing events; and also the sport includes athletes of all ten eligible impairments (Vanlandewijck, & Chappel, 1996, p. 65-88).

1.2.2.4. Athlete Evaluation

A classification board can just assign a sports class through competitor assessment. Athlete evaluation occurs not only before sports competition but also during competition. Each athlete evaluation differs from that of another. Classification panels composed of two or three classifiers manage athlete evaluation.

Athletes may be classified multiple times throughout their career according to their changeable impairments and impact on certain activities of the impairments. Besides, if a state of health of an athlete deteriorates, he/she is obliged to inform the sports committee for re-assessment (International Paralympic Committee[IPC], 2007).

1.3 Disability in Sports

On-going researches are to give some historical setting with respect to inability in the 20th century to theorize the future of handicap in a sport in the 21st century. Examining the inclusion of people with disabilities in sport and the importance of it for its benefits and it is also important in order to increase their quality of life. Sport is very important for disabled people to become members of a community and not to feel marginalized (Fay & Wolff, 2009, p. 231).

Disabled sports are sports practiced by people with whichever disability. Several sports are referred as "adapted sports", which means modified according to the type of disability, but not all; there are sports that are invented especially for people with disability, so they do not exist for able-bodied categories. Disability sport is a term introduced by DePauw and Gavron in their book, "Disability and Sport". The term was introduced to refer to sports created just for disabled athletes or modified for them. Each of them has an own history, competition program, organization, and approach to the sport. Throughout the 20th century, these groups mostly preferred that sports organizations divided sport specifically for disabled people (Depauw & Gavron, 2005). Sport federations were founded to bring the attention of the most common kind of disabilities, such as physical disabilities, intellectual disabilities, and the deaf.

The first official international competition for deaf athletes was the "Paris Silent Games" in 1924. It was established by the "Comité International des Sports des Sourds" -CISS (The International Committee of Sports for the Deaf) - and they became the modern Deaflympics, governed by the CISS (Bailey, 2008).

Sports for disabled athletes exist since 1911 in the U.S.A. That year the "Cripples Olympiad" was organized. Walter William Francis won both the running and wrestling championships and he became one of the most unbeaten athletes.

After the Second World War, the number of disabled people increased drastically and sports became an important part of rehabilitation. Sports that first was practiced for rehabilitation, turned into a competitive sport. This happened also by the contribution of the work of Sir Ludwig Guttmann, of the Stoke Mandeville Hospital in England, which elaborated this new way to see sport more than just a therapy. During the Olympic Games in London in 1948, he organized a competition for disable people at Stoke Mandeville; this was the first of the Stoke Mandeville Games, which became the modern Paralympic Games. Competitors with limb amputations and visual impairments could participate at the first Paralympic Game, played in Rome in 1960. Disabled people affected by cerebral palsy could join the competitions only after 1980 (Cooper & Nowak, 2011).

Nowadays, the International Paralympic Committee, with the support of many other international sports organizations, directs the Paralympic sport. There are many sports activities disabled people can join, such as cycling, wheelchair tennis, shooting, wheelchair basketball, adapted water sports, and snow skiing.

Competitions for people with intellectual disabilities started to be organized in the 1960s with the support of the Special Olympics Movement. Kennedy Shriver was the founder of this movement that grew out of a series of summer camps organized. She was very careful about equal justice and she noticed that people with intellectual disabilities were excluded. She knew that among them there were many talents because she had chance to face with disabilities and she was also an athlete in Manhattanville College in Upper Manhattan (the school later moved further north to Purchase, New York). She believed that sport could be a common ground to unite any kind of people. Then, in 1968 the first Special Olympics were held in Chicago and today a variety of training and competitions of different sport are provided by the organization (Shriver, 1962, p. 71-75).

In the USA, Disabled Sports USA association started to establish sports organizations, especially for disabled people. This association was created in 1967 by disabled military members to help injured soldiers that were coming back from the war in Vietnam (Crandall, 2011). In 1970, the National Sports Center for the Disabled (NSCD) was founded by Hal O'Leary at Winter Park in Colorado. Today,

For the first time in 1986, persons having intellectual disabilities were allowed to participate at the Paralympic Games. International Sports Federation for Persons with Intellectual Disability (INAS-FID) was settled to uphold certain competitions for persons with intellectual disabilities. This approach was in contrast to the inclusive and participative "sports for all" supported by the Special Olympics. In 2000 a big cheating scandal shacked the Summer Paralympics because some athletes who participated to the games were revealed to have no disability. Because of this occurrence, INAS-FID athletes were permanently eliminated from Paralympic races but this decision did not affect intellectually disabled athletes (Sainsbury, 2004).

The competitions for people affected by physical disabilities started to be more comprehensive since 2006 when the Extremity Games were designed to offer extremes sports for people with limb loss or limb difference. College Park Industries, a manufacturer of prosthetic feet, arranged the competition for athletes with amputations to give the chance to compete in extreme sports in order to include disabled people in wide fields of sports genre. This event is organized in Orlando every year and includes several games, such as skateboarding, wakeboarding, surfing, mountain biking, rock climbing, moto-x, and kayaking. Nowadays, much equipment for disabled athletes has arisen to inspire new ways to practice those extreme sports and welcome them into extreme sports community (Jaarsma, et al. 2014p. 871-881).

Many sports had to be adapted to be played by different kind of disabled people as well as many sports are exclusive for disabled athletes. Up to each movement, sports disciplines are not considered in the same level of importance and not all of them can join the Paralympic Games. Also, there are many people who practice sports outside of the formal movements.

Starting from 1988, the International Olympic Committee authorized Disabled Sports for physical disabilities and incorporates it into the Games. The Olympic Games takes place right before the Paralympic Games. This schedule aims to involve the interest of the majority of the people who follow the Games and to foster greater attention about disabled sports. A research published on a Swiss website has shown that most of International Sports Federations record more people with disabilities than any other sportsmen or sportswomen. These are important achievements because adapted sport can help society to learn about disabilities and they can also remove some of the stigma associated with disabilities leading people toward a wider inclusion of disabled people into the society (Cooper & Nowak, 2011).

Between the 1980s and 1990s, many organizations and countries worked to include disabled athletes into the non-disabled sports system and the major games such as Olympic Games and Commonwealth Games. Since 1984, Olympics Games included the Paralympics competitions in the program but the integration of full medal events has not being done, so, the figure of the disabled champion remains controversial. The first time the disabled athletes were fully included in the national team was during the Commonwealth Games in Manchester in 2002 and continued in the 2006 Commonwealth Games held in Melbourne. Canadian Chantal Petitclerc became the first disabled athlete to carry the own country's flag during the Opening ceremony of integrated games. It needs to be pointed up that swimmer Natalie du Toit and track athlete Oscar Pistorius have raced the able-bodied category at the Olympic Games and other competitions (Paralympic Games, 2012).

The Self-Determination theory claims that human motivation and personality concerns individuals' characteristic development propensities and inborn mental needs. This theory can be used to understand how athletes participate in competitions, especially between intellectually or developmentally disabled people (Inventory, 2008). The Motivation of joining such a competition like Special Olympics is very important for the integration of them and their families in the society.

"Unified sports" include teams made up of competitors with and without impairments. Special Olympics Unified Sports have been advancing social inclusion with preparing programs and competitions since 1990s. With the help of training together, they have an environment that creates inclusion and friendship. "Unified sports" has expanded all around the world and now 127 countries are part of it with more than 700,000 participants (Special Olympics International (Ed.), 2015).

In Turkey, "Sports For All" was mentioned first time by Atatürk. He talked about the necessity that people managing sport movement and raising awareness of sport must supply the Turks of all ages with physical education in his speeches in 1923 and 1937. This idea shows that the understanding of "Sport For All" was stated well in advance by Atatürk (Tuncel, 2003, p. 9-10).

The value that physical exercises create in terms of life quality, keeping and improving health is an accepted truth all over the world. As in many countries, an intense work has been carried on in Turkey since the 1960s in order to encourage participation in sports. Article 59 of the Constitution of 1982 states that ''Government takes the precautions that will improve the physical and mental health of Turkish citizens of all ages. It encourages sport to reach the masses''.

The necessity of institutionalization of the activities of Sport for All organized as the works of some federations and voluntary agencies for years was repeated in the Sports Council on 8th-11th May, 1990 and Sport for All Federation was established officially on 12th June, 1990. Sports for All Federation administers in 13 branches from 19 which are determined by IPC.

1.4 Regulatory Architectural Information

The regulatory information includes bylaws, rules and regulations based on location, building type, and project theme. Given that the intention of this project is to create a completely accessible facility for PCP, ADA Requirements have been thoroughly documented and analyzed.

The environmental approach is the acknowledgment of environmental rights through the advancement of reasonable improvement, upheld in the correct administration of the environment, especially environments and natural resources, adding to the advancement of a "green economy", rational and productive utilization of natural resources, to guarantee the prosperity and the continuous improvement of quality of life.

It is up to municipalities, within their powers, to realize environmental policy at local level, both through direct action of its organs and agents, such as through the mobilization and coordination of all citizens and social forces, a process participated and based on the full exercise of environmental citizenship, respecting the following principles:

- Sustainable development;
- Intra and intergenerational responsibility;
- Prevention and precaution;
- The polluter pays principle;
- User-pays principle;
- Accountability;
- Recovery;
- The mainstreaming and integration;
- International cooperation;
- Knowledge and science;
- Environmental education;
- Information and participation;

This part is developed with information that regards these themes as they refer to disability needs. The main themes can be divided into five categories, each of which includes a number of sub themes. The five themes are psychological effects of architectural design, circulation, and movement for someone in a wheelchair, therapeutic outdoor spaces, accessible devices and technology, and sports equipment.

1.4.1 Psychological Effects of Environmental Design on PCP

In this part, color, light, and form were introduced simply to show the importance of environmental design.

Color, specially design for impaired people, is very important to guide them and make the life easier. Seeing a color is an act of sensory perception. We perceive color principally as characteristics of the objects around us.

When we look at a color, we already have a certain experience and preconceptions in our memory, which influences our color perception. There are various factors that can affect colors. Surrounding of the object, surface texture, lighting conditions, amount and location of the color in space, hue, intensity, and relation with other colors can change the color perception of the person. It is even accompanied by cultural and social factors. The human experience and response to color are as diverse as people themselves. For this reason, it is not possible to generalize color experience, color effect, or the human response to color. Personal factors can be basic personal disposition, personality and temperament, physical and psychological conditions, age and gender, and sensitivity to color. Under and overstimulation are opposite poles between which a certain perceived amount of information is experienced. It has often been assumed that white, gray, and black were neutral colors in spatial design (Costa & Pereira, 2014).

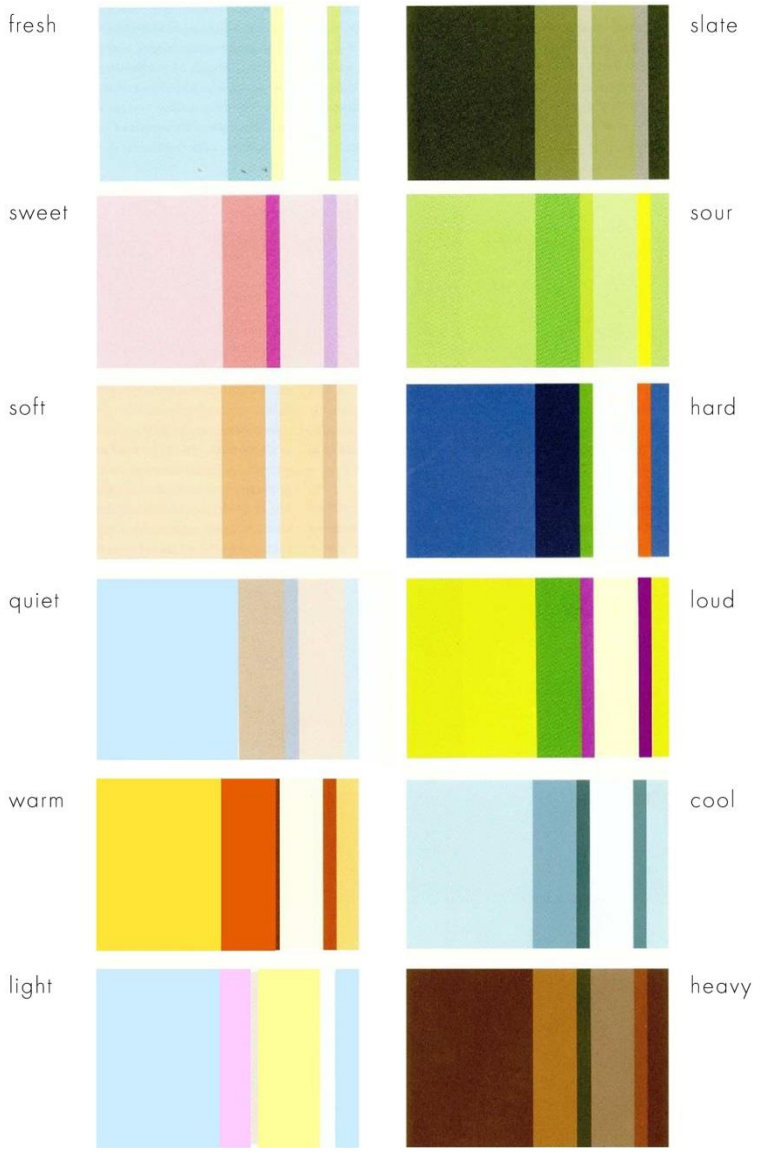

Figure 3. Color Chart (Meerwein, Rodeck, and Mahnke1998, p.25)

As shown in Figure 3, colors have a profound effect on an individual's moods and feelings. Designers can use these effects to provide accessible spaces in which to live with minimal stress and optimal comfort. In designing the built environment, equal attention must be given to the psychological, physiological, visual and aesthetic aspects of color. The balance between unity and complexity is the first and most important rule in designing attractive and healthy environments. The synesthetic effects of color in spatial design can influence the perception of spatial dimensions. An applied psychological approach towards color gives designers a powerful tool to design and create attractive and healthy environments (Rosch, 1975, p. 303).

Colors can be perceived in a different way by PCP. Especially in children with CP, the level of the disability links with the loss acuity of vision. Children that are affected more from cerebral palsy have also worse visual acuity, measured by the Visual Acuity Card Test (Hertz, B. G., & Rosenberg, J. 1992, p. 115-122).

Perception of color has been previously analyzed in children with CP in the different studies (Sakuma, Y. 1971, p. 105 & Kozeis, N. 2007, p. 44-53). In both studies, color segregations were analyzed based on simple ordering or figure-found tasks. No color related impairments were found in children with CP.

It is clear that this light allows us to define what is around us, by day and night: the changing perception of the things or the bodies on which it impacts, and the space that contains them. Light, or lack of light, can also change this space in every season, every day of the year, every hour of the day, every moment.

For many people, winter means months of feeling tired, unhappy, and even depressed. Medical researchers have found that the lack of natural light during shorter winter days contributes heavily to an emotional disorder called Seasonal Affective Disorder (SAD). The resulting demand for natural light has contributed significantly to an awareness of the role that windows and doors play in creating a healthy, comfortable environment (Rodin & Thompson, 1997, p. 352-359).

Growing evidence says that daylight is essential to health, wellbeing, and productivity. By carefully designing windows for commercial or residential buildings, architects can contribute to the increased productivity and psychological health. Poor lighting results in fatigue and loss of concentration especially in the case of disabled and elder people (Schweitzer & Frampton, 2004, p. 71).

Shade and form can play an important role in how space is experienced. For example, small spaces with a low ceiling can feel heavy and unwelcoming, whereas large open spaces with a high ceiling can feel energizing and welcoming. This is one theme that will be imperative to creating a facility which has a number of spaces with different uses.

1.4.2 Circulation and Movement for Someone in A Wheelchair

A person with a wheelchair needs ramps, elevators or platform lifts for easy access to all levels of the buildings. Ramps are the most reasonable option for creating a building that is for patients with limited mobility. Even if the person does not need to use a wheelchair, ramps might create an easy path for people that have a limitation to moving.

• As shown in Figure 4 Inclination plays a critical part in the length of the slope and the quantity of landing that happens between level transitions.

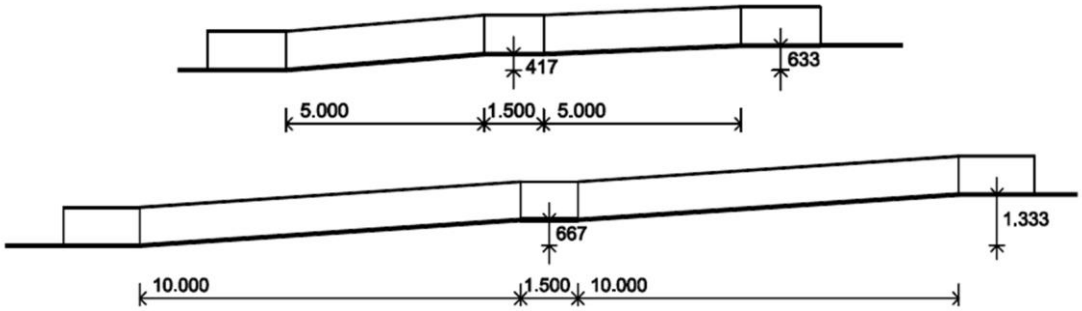

Figure 4. Ramp Landing Measures (Goldsmith, 2000, p. 60)

• The width of the ramp is another factor to consider depending on the traffic with which the ramp will endure. If the ramp will be a heavily used then it should be wide enough for two wheelchairs to easily pass by one another.

• Landings ought to be placed distance of each 10 m, at each alters of direction and at the top and bottom of every ramp.

• The minimum length of the landing should be 1.20 m and it should be at least the same width of the ramp.

• A protective handrail must be placed at least 0.40 m high along the full length of inclines.

• The hard and nonskid surface should be used on the inclined surface. Floor coverings should be avoided.

• As shown in Table 3, a maximum of 1:20 slope is recommended. More extreme slants might be permitted in extraordinary cases relying upon the length to be secured

Table 3. Slope Rate (Neufert, Jones, Thackara, & Miles, 1980)

Maximum Slope	Maximum Length	Maximum Rise
1:20, 5%	-	-
1:16, 6%	8 m	0.50 m
1:14, 7%	5 m	0.35 m
1:12, 8%	2 m	0.15 m
1:10, 10%	1.25 m	0.12 m
1:08, 12%	0.5 m	0.06 m

The main obstacles in elevators for disabled people may be;

- Inadequate space inside the lift cab.
- High position of switches and control board.
- Narrow passage entryways.
- Insufficient opening time period.

As shown in Figure 5, the minimum internal lift measurements, considering one wheelchair passenger alone, are 1.00 m x 1.30 m and the entryway opening ought not to be under 0.80 m. The lift interior ought to have a handrail on three sides mounted 0.80 to 0.85 m from the floor. For simplicity of reach, call switches should be mounted 0.90 m to 1.20 m from the floor.

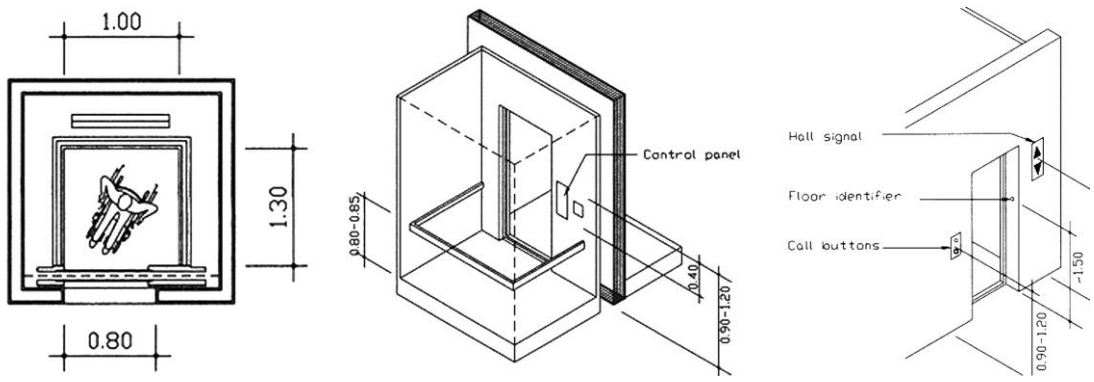

Figure 5. Plan, Interior and Exterior of Elevator (Goldsmith, 2000, p.63)

Platform lifts are special passenger-elevating devices for the disabled between two different levels that can be connected by vertical or an inclined movement of lifts. As shown in Figure 6, for vertical movement platforms; maximum level changes can be 2.50m. Furthermore, for more than 1.20 m, the lift should be positioned in a closed structure with entryways at the distinctive open levels.

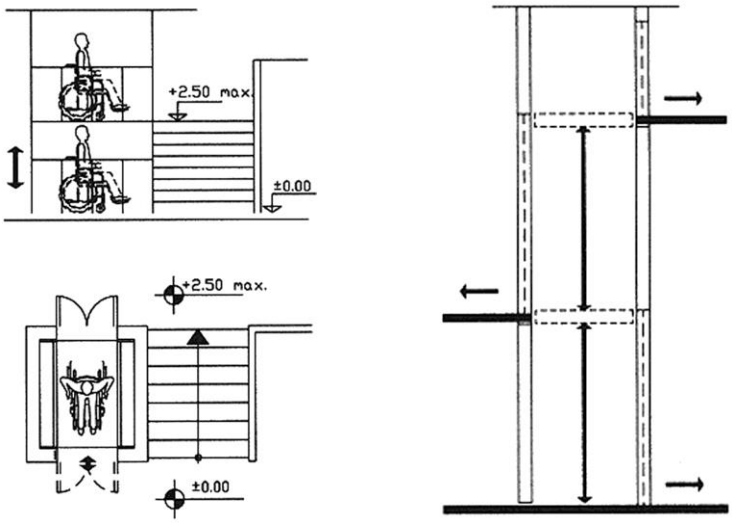

Figure 6. Lifts Plan and Elevation (Goldsmith, 2000, p.65)

Inclined movement stage lifts contain three elements: a railing, an electric generator, and a moving stage or seat. As shown in Figure 7, the minimum width and the length of the stage should be 0.90 to 1.20 m. The operating system of the lift can be either lateral or suspended. The base width of the stairs ought to be 0.90 m to permit the establishment of a lift.

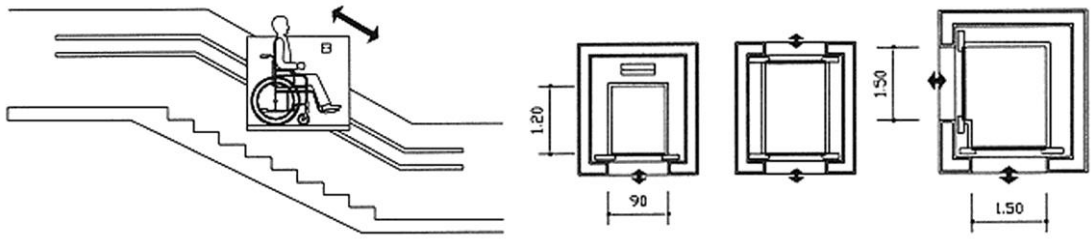

Figure 7. Inclined Movement Platform Details (Goldsmith, 2000, p. 65)

1.4.3 Therapeutic Outdoor Spaces

The environment has an important role in shaping individuals' behaviors. It is also known that individuals react to or are encouraged by their close circle. Thus, it indicates that some emotions may influence the healing process of individuals. Thus suitable designed outdoor environments in facilities catering to individuals' special needs may have a considerable beneficial impact on their health and wellbeing (Souter-Brown, 2014).

Furthermore, an appropriately familiar landscape will help to make life more meaningful for these individuals. For example, people with limited mobility may become intensely aware of plants and other living things in gardens and parks.

The elements of a good landscape design should persuade any individual to go outside and make it easy to do so. Therefore, special attention should be given to particular features of landscapes and also to the implications of specific medical disorders or limitations of people. These features and implications should include attention to such aspects as accessibility, curtilage interest, views, seasonality, sensory stimulation, suitably designed seating, security and safety, accession to wildlife, social activities and recreation as well as possible physiotherapy or occupational therapy applications. The ongoing maintenance and associated costs need also to be considered (Marcus & Sachs, 2013).

1.4.4 Accessible Devices to Assist Daily Activities

Most people with cerebral palsy that affects both legs use a power wheelchair for mobility. Some more mobile people with cerebral palsy can use a walker to get around, and may not use a wheelchair at all.

The reason pool devices are so important is because water therapy can be an extremely effective method of increasing mobility for people with disabilities. There are a variety of devices to aid disabled people to get in and out of a pool:

- Lifts that can be in many different versions
- Ramps into the pool
- A pool floor lift which is one of the newest technologies for accessible pool devices bring the entire pool floor up to the deck level. This may be the best option for a therapy pool because the water level can be adjusted based on the patient who is being cared for.

Transportation is an extremely important policy issue for PCP. The facility should provide some way for patients to get around. Vans are one of the more feasible possibilities especially for farther distances. However location may help with opportunities for patients to use their power wheelchairs to go down town.

In order to facilitate the patients' access to the building, automatic doors are used for the entrances and also they may be used in other parts of the building. There might be several options to design those doors.

- Wall switches: It works with a button to open the door.
- Motion detectors: It works automatically with sensor that can detect movements.

Bed lifts are devices used to help care assistants in securely exchanging patients with constrained portability from wheelchairs or beds to another resting area, for example, a shower seat or cabinet.

Patients with greater mobility can support some of their own weight. As shown in Figure 10, a lifting device helps a person with limited mobility to get from bed to their wheelchair. The bottom image demonstrates the overhead lift that runs on a track and it assists a person to be taken from one room to another without the use of his/her wheelchair. This device is functional especially at night. For instance, if someone needs to use the bathroom, he/she is able to do by getting into this device on their own without any assistance of another person. Consequently, it identifies with the requirement for independence.

1.5 Design Examples for Cerebral Palsy and Sports

The following study cases were selected according to their similarities with the objective of the research. The type of disability influences the typology of the place. The examples are health care center with residences in a mixed community where people from outside can join activities or visit the facility. They may be family members, people with disabilities who practice the center in the daily time, or external educators. Courses for the development of skills are held and the connection with nature recovers a primary importance. Buildings are integrated with the exterior environment that is an active and educational place for the clients of the facility.

In each facility, several activities take place according to the kind of disability. In these study cases, sport is a useful tool that supports the socialization between people who lives at the facilities but it is just seen as a recreational activity.

1.5.1 The Center for Discovery – New York

Location : Harris, NY

Architects : Guenther 5 Architects

Date Completed : March 2003

Size : 2700 m^2

Project Cost : $ 5.6 Million

Building Type : Health Care, Special Needs Housing

Figure 8. General View of the Center for Discovery (Glazer, 2013)

The Center for Discovery is supporting the scholarly, social, and recreational improvement of the community while providing a sheltered and mindful environment for the last fifty years. The Patrick H. Dollard Health Center gives consistent and particular medical care required by its 250 full-time occupants. People with serious neurological and developmental deteriorations with a need of primary and specialty medical and dental care are served in 28 diagnostic and treatment facility.

This is the initially authorized medical facility for the Center and is also the first in New York City to have met green building standards determined by the Department of Health necessities. It incorporates a private school for children and an outpatient office for grown-ups.

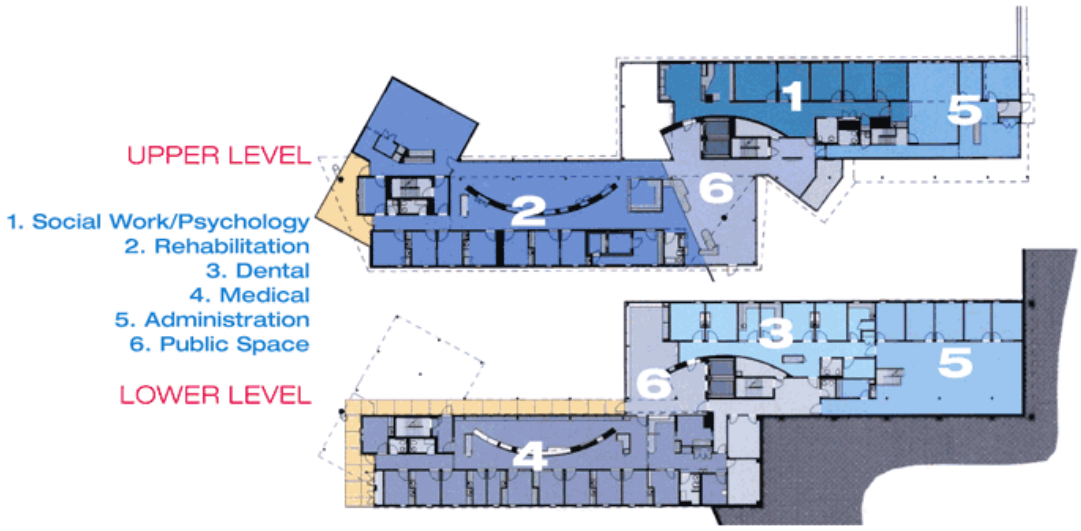

Figure 9. Plans of the Center for Discovery (Glazer, 2013)

The facility takes place in rural New York and is one of the buildings inside a 1.4 km^2 campus, providing support to children and adults. From all of that has been built by the center for discovery, it's one of the first medical facilities.

Beforehand, this place was an abandoned chicken farm with some leftover materials. As shown in Figure 10, with a horse pasture and farm, the center is suitable for agriculture activities. These are also included to the opportunities given by the center to their patients and these are open to usage to anybody regardless of their physical inabilities. This also creates a chance of an organization for patients and locals to cooperate.

Outdoor activities are practiced in an environment designed for disabled people. There are no obstacles along the facility. The only limitation might be in the practice of activities on grass where normal wheelchairs may run into unsuitable conditions. This problem was overcome by the introduction of special wheelchairs designed specifically for garden activities.

Figure 10. Horse Therapy and Agriculture Activities (Glazer, 2013)

Environmental Aspects

• Via an innovative building coating, high use of daylighting and efficiency based products, a ground-sourced heating system.

• Public spaces have lots of day lighting during working hours by the help of the buildings slim and cross patterned design. The building has a reflective roof and includes structural shading devices that help reducing energy demands. Moreover, the wood elements shade the light along the big windows and let the visual contact with the landscape (Figure 11).

• Along the main connection paths, borders are created by bushes and plants to lead the disable person along the facility in safety (Figure 11).

• Natural material is used to improve the sensation of natural and healthy place and do feel the people in a relaxed environment (Figure 11).

• Environmental health objectives that apply straightforwardly to human services operations were considered at an auxiliary level. Lifecycle evaluations for construction materials and decorations considered health impacts notwithstanding expense and strength (Souter-Brown, 2014).

The Structure is designed as a rectangular shape, divided from the middle. This creates four parts with two different heights each. Natural daylight passes through double-height walls at each end of the structure and also in the intersections. That provides a perception of a simple and spacious area. This project's aim is to create awareness on the relation between ecological health and medical frailties which also helps providing basic health needs to the community.

Figure 11. Exterior, Interior and Backyard of the CFD (Glazer, 2013)

Building Program

Indoor Spaces:

Child care, Circulation, Other, Medical treatment, Lobby/reception, Electrical systems, Office, Public assembly, Conference, Mechanical systems, Restrooms

Outdoor Spaces:

Drives/roadway, Parking, Shade structures/outdoor rooms, Other, Interpretive landscape, Pedestrian/non-motorized vehicle path, Wildlife habitat, Restored landscape (Guenther & Vittori, 2008)

1.5.2 Crotched Mountain Rehabilitation Center (CMRC) - Greenfield

Location : Greenfield, NH

Architects : Monahon Architects

Date Completed : 1953

Size : 5,6 km^2 Campus

Building Type : Education, Rehabilitation, Community and Residential Support

Figure 12. General View of Crotched Mountain Rehabilitation Center (Gingsberg, 1988)

Crotched Mountain Foundation's aim is to support people with disabilities and their families, encourage them to develop and also create communities to corporate. CMRC, which is a non-profit constitution, creates academic, curative and habitation opportunities to mentally and physically disabled children and teenagers. Adults and children with severe cerebral disorders from southern NH and northern MA can also get support from CMRC. Two hospitals, management offices, preparatory school, auditorium, indoor pool, gym saloon, guest housings, staff housing and residences are all included in CMRC's assets (Gingsberg, 1988).

The location of CMRC has a breathtaking natural atmosphere and has huge academic, vocational, curative and amusement possibilities. Helping children to develop themselves and learn to work independently is CMRC's main aim.

Figure 13. Exterior of Crotched Mountain Rehabilitation Center (Gingsberg, 1988)

Children aged 5 to 22 with disabilities can have an education in a joyful place at Crotched Mountain School. Special remedial services and personalized educations are given to students all year.

The school helps children socialize as much as possible. An atmosphere where understanding grace and appreciation is of high importance is provided to them. In difference to other schools, students are thrived here. They are supported to get in lots of activities and trying out new hobbies in weekdays and even in weekends. Developing skills, usage of senses, promoting self-esteem and socializing are all emphasized by these activities. Depending on these necessities, students have the chance to get professional help and consulting from the school nurse, health center and hospital.

Programs were created according to the special needs and interests of students. Every day is a new chance for children to develop themselves, learn new things and get lots of experiences from home and community life (Outdoor Recreation Master Plan, 2006).

1.5.3 Norwood's Ravenswood Village – Berkshire, England

Location : Berkshire, England

Architects : Greenstone Design UK Ltd

Date Completed : 2013

Size : 0,36 km^2 Campus

Building Type : Residential care

Figure 14. View of Ravenswood residence

Ravenswood is a Jewish Association created in 1953 by four families aimed to provide education and care for their children and for the others with learning disability. Today Ravenswood hosts 130 people in 13 care homes set in Berkshire countryside.

Residents receive person-centered cares 24-hour-a-day but they should be able to manage themselves wherever possible. Indeed, they take part of several activities which are aimed to develop independence through life-skills courses and employment services. Courses are held in the facility and they are focused on different learning areas, such as practical living skills, personal development, health/wellbeing and work/community engagement (Hersov, 2007, p. 183-205).

Ravenswood invests a lot in the sport activity giving the chance to join different sports within Ravenswood or using community facilities. Activities include athletics, boccia, football, horse riding and keep fit. Between the residents, there are also champions of regional, national and international competitions, such as Special Olympics (Hersov, 2007, p. 183-205).

The most interesting aspect of this facility is the garden, which aim is de-stressing of the residents and to keep them physically active. Two gardens were designed for the different typology of users, using for both of them universal design principles. They each offer specific therapeutic elements, as well each resident has particular needs and problematic. Two gardens, Pamela Barnett and Tager, are divided by a 2 meters timber fence which is hidden by a hedge. On one side is a sensory-rich environment, on the other one is made by calm and logical elements (Souter-Brown, 2014).

The first garden, called Pamela Barnett, is designed for adults with intellectual disabilities. This kind of impairment requires a higher level of stimulus as they are harder to get and elaborate inputs from outside. Then, a garden rich of colors, tastes, movements, textures and wildlife was created to catch their attention. Residents mostly delight gardening and the contact with the variable nature. Varied planting and abundant flower and fruits would create interest and desire to explore. Moreover, architecture has to give them enough variety of surfaces which it is important, first of all, the safety of the space.

Residents should be able to frequent the garden on their own safely and feel more independent. In indoor spaces, guests become more agitated and frustrated and many times these feelings develop into emotional outbursts which are hard to control. Practicing outdoor spaces is helpful to lower the stress level and maintain them active and stimulated.

Figure 15. Concept plan of engaging, exploratory sensory garden for mentally disabled residents in mental health village, Buckinghamshire, UK (Souter-Brown, 2014)

Residents have the chance to discover multiple spots disposed through the garden such as jungle planting, fishponds, walk-able bog garden and water features, as it is represented in figure 15. In the rainy days they can watch outside sitting under the shelter. Figure 16 shows some solutions integrated with the green area: multiple seating areas are disposed throughout the garden and each of them allows at least two seats so that a care assistant or visitor can sit with the resident.

Figure 16. Sketch of seating in residential mental health village (Souter-Brown, 2014)

The garden is crossed by interconnecting paths such as walkways covered by pergolas, open beam structures and open areas where the sun can pass directly. There are different materials on the floor, like self-binding aggregate, sleeper-and-gravel path and stone pavers.

As represented in the figure 17, open beams path frames the walkway and creates shadows effects on the ground. Wind chimes, bird feeders and sensory balls are hanged overhead.

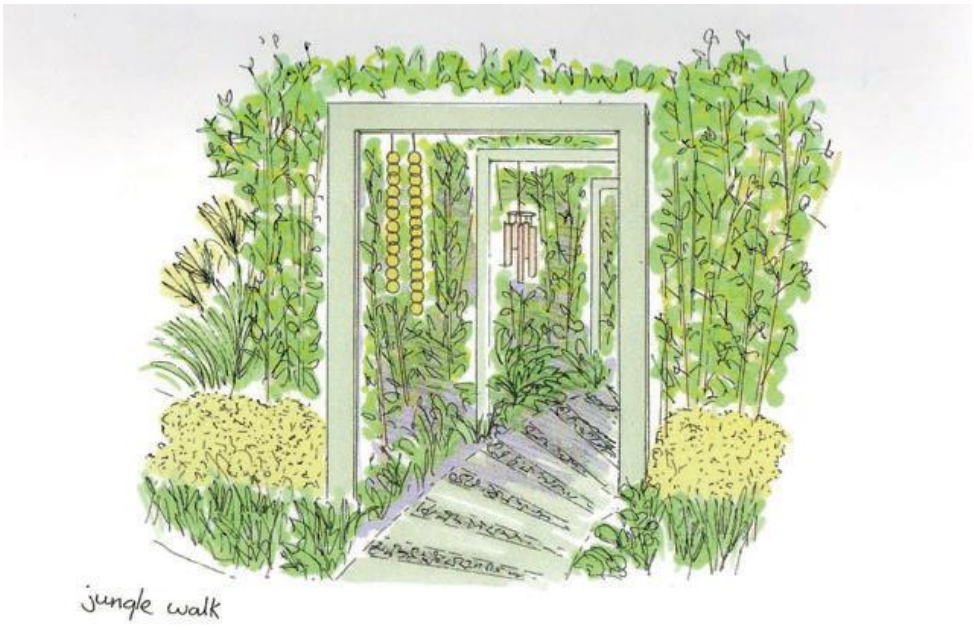

Figure 17. Sketch of path under pergola in high needs sensory garden for residential mental health village, Buckinghamshire, UK (Souter-Brown, 2014)

Very different is the design used for Tager garden that is formal and linear in the layout, which is reported in figure 18. This garden is designed for people with severe autism so it needs to be simple and to transmit the minimum sensory stimulus. Different areas are framed by evergreen hedging, topiary, and monastic-styled flat lawn in order to compartmentalize the single spaces and keep them separated. A peaceful and calm environment is a de-stressing function for the residents.

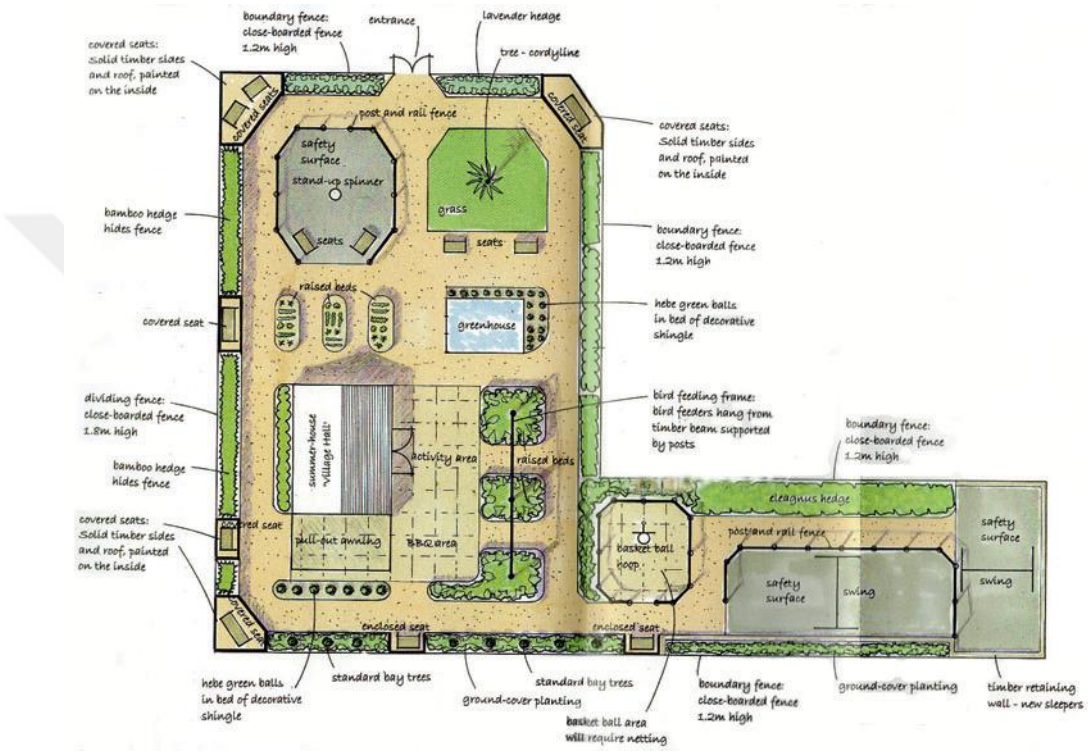

Figure 18. Concept plan of highly structured, predictable sensory garden for autistic residents of mental health village (Souter-Brown, 2014)

Compared with Pamela Barnett garden, the Tager garden is really different but both of them are the sensory garden and they assume their aspect according to specific user groups. In Tager garden, represented in figure 19, users need to feel safe and secure so they have to memorize the space clearly and be familiar with it. Everything designed should be predictable and as much as permanent, in fact, no flowering plants are allowed in this place. As with Pamela Barnett case, residents are positively affected by outdoor space because of the calming influence of the environment.

In addition, existing sports facilities of the Centre were integrated with the design of the garden during the project. The equipment was placed along the fence line to create the "Activity Zone". The outdoor fitness area is important to keep fit and healthy the residents that often are physically strong.

Figure 19. Sketches of garden house pavilion, bird feeding station and spinner adult play within sensory garden for autistic residents of mental health village (Souter-Brown, 2014)

These study cases were chosen in terms of their approach to PCP by using sports and outdoor areas. Disability type is an important issue to organize and design the environment of the facility. These facilities have a community with or without a disability that is similar to the case study of this thesis.

Another issue was these study cases were established in different years. This was important to understand to changes of approach to PCP in the case of time. They were all surrounded by green areas. This was another common ground with the objective of the study.

Their methods of combining nature, sports, and outdoor area activities were good examples to understand the needs of such a facility. Precaution methods for their safety were analyzed to create a safe facility with no obstacle.

Chapter 2

Case Study “APPC Villa Urbana Gondomar"

In this study, VUG, has a mixed population with or without CP, was chosen as a case study. In addition, there are residencies for 34 for PCP; people are also welcomed for physical therapies, recreational activities, sports, hobby classes, post-school education classes, and kindergarten. These different age groups that visit VUG with a different aim create a great community to understand PCP relations with people. It was also important to understand their communication level difference among the people they already know and just meet.

VUG is a facility of The Portuguese Association of Cerebral Paralysis (APPC), was founded in Lisbon on 26 July 1960, with statutes approved by the Ministry of Health and Welfare on that date and was considered Legal Person of Public and Administrative Utility. Its creation was due to the initiative of a group of parents, supported by technicians, who felt the response difficulties these children and young people with cerebral palsy.

APPC, with the support of the Calouste Gulbenkian Foundation, was born the 1st Rehabilitation Centre for Cerebral Palsy in the country. Since 1974, there was the urgent need to decentralize rehabilitation support services and increase the efficiency of integration in mainstream education.

To this end, the first to be created (1974) was the Regional North APPC Core (NRN - APPC), based in Oporto. The effort and concerns of a group of parents with the support of some technicians, which thus sought to respond to the high number of cases of children with cerebral palsy in the north of the country.

As a Private Institution of Social Solidarity, of and for people with disabilities, the APPC started to develop its action throughout the Portuguese territory, through 13 Regional Centers (História, 2015).

In 1975, for strength and commitment of the Northern Regional Center APPC is created the Cerebral Palsy Rehabilitation Centre of Porto was created, and since then has remained in operation.

Thus, keeping the Private Institution Status of Social Solidarity, of and for people with disabilities, consisting of parents, friends, coaches and people with disabilities, since NRN develops its action in a comprehensive manner, seeking to diversify as much as possible the answer to whatever the age of the population with disabilities.

Since 2003, corresponding to the need to increase efficiency, gives up the autonomy of the different cores, constituted in autonomous and private affiliated charitable associations in the Federation of Portuguese Cerebral Palsy Associations. In this context, the Northern Regional Center is established giving rise to the Association of the Port of Cerebral Paralysis (História, 2015).

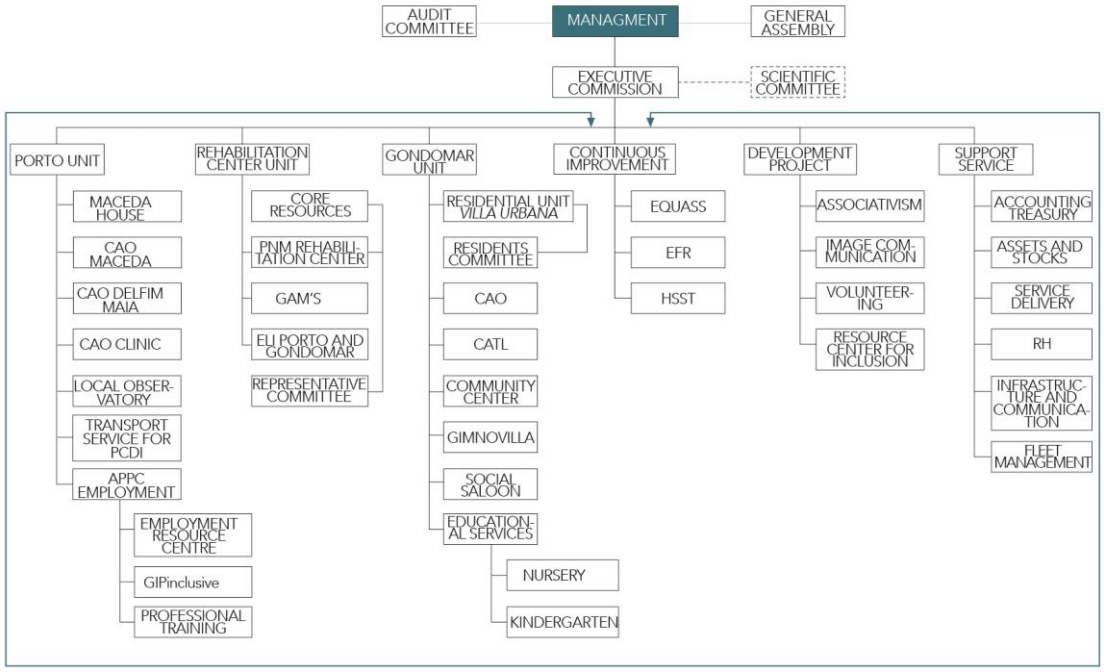

Figure 20. APPC Organization Chart (Produced by the author)

APPC VUG for the permanent accommodation for young people and adults with cerebral paralysis, called APPC VUG, works in a building situated at Francisco de Almeida, no 153, Valbom, Gondomar. It belongs to the Association of the Port of Cerebral Palsy (APPC). Since this is an institution of social solidarity nonprofit, this service is the result of the cooperation agreement with the Social Security Institute, I.P. through the District Centre of Social Security Port in 28/07/2004.

APPC VUG consists of 14 independent houses, built from scratch for the needs of PCP. Residents can benefit all technical and human resources required to achieve the life expectations of each. The dwellings were designed to address key issues and, too often, a basic daily routine of each individual, including mobility, food, and personal hygiene. The use of new information technologies and communication, allow the necessary independence.

APPC VUG's vision is to be the reference entity in the social economy, innovation of intervention and sustainable management practices. They are the partner specialized in providing service excellence for human diversity. They support life projects. They believe that the customer has the ability to freely design their lives. They dedicate themselves to the goals they set themselves, safeguarding always first and foremost the best interests of the client, persisting and reinventing solutions (História, 2015).

2.1 Objectives

The aim of the project is to develop the outdoor sports areas for PCP in APPC VUG to improve their social life and connection with the community. The subject of this study was selected because participation in sports in a community is important especially for disabled people. Participation is a valuable outcome measure for evaluating rehabilitation programs for disabled people. With the help of the sports, the person feels himself a part of the team that is helpful to overcome the feeling of being different.

CP is one of the disorders on a list of conditions that can affect a person's ability to complete daily activities. With the help of interviews, observation and survey, frequency of participation statues varied between PCP and the general population were searched and examined to understand better how the quality of life such as communication and relation, and environmental factors such as natural lights, weather, interior and exterior spaces, lightings, and materials might influence participation.

Multi-center, population-based study in people with and without cerebral palsy was undertaken. Surveys, interviews, and observations were done to understand the participation for sports in different age ranges, different vital capacities and socialness.

Sports for all areas and equipment have sundry examples. However, even with enough people with time to help, participation in sport can only realistically take place if institutions provide for people with a disability and if the disabled facilities that are available are suitable for the person's particular disability. The fact that these were cited as significant barriers to participation demonstrates that there are large gaps in sports provision for people with CP impairment, and possibly also for the general population who have any other disability.

2.2 Methodology

In VUG, 34 PCP in age older than 25 years old are welcomed in residencies. In the same time, there are also facilities for physical therapies, recreational activities, sports, hobby classes, post-school education classes, and kindergarten for people with or without CP.

In this study, the methodology was important to understand each individual problem to understand the general problems. In that case, surveys, interviews, and observation methods were used to analyze the PCP and their relations with the environment.

CP quality of life Surveys (Appendix 1, 2, and 3) were made to understand the participation for sports in different vital capacities and socialness. Surveys were prepared for 3 different groups. Additionally, the author had a chance to make interviews with trainers, director of VUG, manager of the rehabilitation center, physiotherapist, and coordinator of Rehabilitation Center. The author also had a chance to observe the training of Paralympic champion, Portuguese National Bocce Team, and children. Besides, the author had a chance to play with them to have an experience.

How frequency of participation varied among PCP was realized and examined variation across ages. Understanding the environmental factors such as interior atmosphere, the connection between interior and exterior space, lightings and materials might influence participation was also useful for the case study.

Interviews were mostly about what kind of sports they are interested and how they train, how the rehabilitation center works, and how the Villa Urbana works. Observations were helpful to understand their life standards and how they feel part of the team while they are making sports.

Ultimately, secondary resources are used to collect general data about CP and compare similar cases.

2.2.1 Surveys

In this study, because each person has a unique situation, Likert Scale was used to make questions simple and easy to understand. Three different types of surveys were prepared for different target groups; families of visitors of APPC Villa Urbana (Appendix 2), guests (PCP lives in VUG called as a guest) of APPC Villa Urbana (Appendix 1) and workers of APPC Villa Urbana (Appendix 3). It helped to perceive ideas from the different point of views. Families and workers were important to understand PCP'S life at home, before attending VUG and while in VUG. Understanding how PCP's feel about their life, in general, was really important to have an opinion on how to incorporate them into the community.

Surveys were prepared according to researches that especially focused on PCP (Livingston, et al. 2007 and Shelly, et al. 2008). At first, surveys were prepared in English and afterward, considering their lack of English knowledge, they were translated in Portuguese with the help of my Supervisor Maria Milano in Porto. In a case of disability of PCP in VUG, questions were prepared with short sentences. Also, it is asked to care assistants to help PCP to choose their answers.

In each survey, questions were categorized in 4 different headlines; family and friends, participation, communication, and an environment. Family and friends part involved 15 questions that analyze their life expectations, relations with family, and other people. Participation part involved 4 questions to understand their interests with recreational and sport activities. Communication part involved 5 questions that were helpful to understand the quality of their dialog with people they already know or they just meet. Also, their ideas about the effect of sports on communication were questioned. Environment part involved 7 questions that analyze their ideas about outdoor areas. Also, usage of the outdoor spaces in VUG was analyzed. Additionally, surveys of the families and workers involved psychology part with 4 questions in understanding opinions of PCP about their life and future. This part exists because getting an honest answer on private questions is not always possible.

26 surveys for guests of VUG, 40 surveys for workers of VUG, and 21 surveys for families of visitors of VUG, in total 87 surveys, were made. Each survey took approximately 15 minutes for PCP. It took less time for workers and families to complete a survey. Surveys were proceeded to start from March 2016 and till May 2016. Surveys of guests were completed in one month, but particularly surveys of families were completed as a last because of the difficulty to get contact with the families. Surveys of guests were made by the help of the care assistants according to PCP's disability level. The others were made by each individual.

Surveys were analyzed in two different systems. Firstly, each survey analyzed one by one to understand the link between the answers. It was important to understand their connection between their communications, participations, and ideas about environment and sports. Especially, the connection between their ideas about recreational activities, sports, and outdoor areas were important to analyze their interest with outdoor areas and activities were parallel or not. Also, collected data shows the connection between interests with sports and having good relations with people. The second way to analyze data was measuring the amount of the answers to see the general idea about results. There were critique questions that analyzed their communication quality. Comparing their ideas about communication level with people from or off the VUG, or participation ability to recreational activities and sports activities, or being outdoor and using backyard and terrace were important outcomes to analyze general situation connected with the case study area. Surveys were analyzed approximately in one month. In the end, charts and tables were created the see results clearly.

2.2.2 Interviews

Interviews were the most important tool to gather detailed information about PCP and their needs regarding environment. The qualitative research interview seeks to describe and the meanings of central themes in the life world of the subjects. The main task of interviewing is to understand the meaning of what the interviewees say (Kvale, 1996, p. 275-284). Interviews are particularly useful for getting the story behind a participant's experiences. The interviewer can pursue in-depth information around the topic (McNamara, 1999). The author had a chance to make interviews with trainers, Paralympic bocce player, Paralympic race-runner player, Director of Villa Urbana Gondomar, manager of the Rehabilitation Center, physiotherapist, and Coordinator of the Rehabilitation Center.

As first, the aim of the thesis and important points were explained to interviewees. Also, the importance of interviewees was stated for this study. Unstructured and semi-structured interviews were used in meetings. During the first meeting with Director of Villa Urbana Gondomar Liliana Araújo (Appendix 4), an unstructured interview was used to collect a general idea about the association. In other instances, semi-structured interviews were mostly used to get information that is related to the thesis.

Speeches were recorded during the interviews. Afterward, they were deciphered. According to interviewees' proficiency, interviews were categorized. Concurrence and adversative ideas were connected with each other. These groups were analyzed to find out themes' relationships and differences. Afterward, these analyses linked to the body of knowledge to support the theory and establish how they helped to explain the case under the study.

The aim of the interviews with people that have different proficiency is to understand the different point of views. First of all, Director of Villa Urbana Gondomar and Manager of Rehabilitation Center were important to understand their policy and get general information about APPC. Trainers and players (Appendix 5) were chosen to understand the sports activities' details. Furthermore, having an interview with Coordinator of the Rehabilitation Center and physiotherapist (Appendix 5) were helpful to understand their approach to improving PCP body capacity to make life easier for them.

2.2.3 Observation

With the permission of APPC, the author had a chance to visit the Rehabilitation Center and VUG to watch their daily activities and training. Observation is the strongest tool to understand the reality of their life. Research and even interviews with individuals do not give the same feeling as watching while they are training. In addition, the author had a chance to join them, train with them and even compete with them. The author has a lack of pictures, because of permission and sometimes because of going with the flow and the author did not want to stop the moment.

Observation in Rehabilitation Center was totally different than Villa Urbana Gondomar. The Rehabilitation Center is a place for the people from all age groups. There are places for playgrounds, sense room, computer room, medication room, psychologist room, examination room and indoor sports area. Playgrounds were designed to keep them safe while they are playing (Figure 15).

Figure 21. Playground Area (Photograph taken by author)

A "Sense room", is totally isolated from light and sound, had been designed for children with CP. The person that will use the area can adjust the light and temperature and choose music and video that can be projected on the floor. The person lays down on the specially designed board that helps to move on the floor easily. There is also other sitting units and rocker in the room. In addition, there is other equipment that can be used to create sounds and music. This multifunctional room is the favorite place for them (Figure 16).

Figure 22. Sense Room (Photograph taken by author)

In the computer room, there are specially designed keyboards, mouse, and some toys to link them to the world by using the internet. Because each object is designed for different individual, there are more than hundred different types of each product.

The medication room, psychologist room, and examination room are designed for medical care. Especially the examination room is used for designing a wheelchair for each individual.

At the Rehabilitation Center, indoor sports area is taking a key position. Trainers and professional players visit this area to train. Other people, especially children, take these people as a model for themselves and it is helpful to generate some interest with sports even while they are so young. Sport is giving them an aim of life. While you are playing with them, they are so concentrated to win. In this area, I had a chance to play bocce with children, watch the national bocce team training and talk with trainers to learn about their programs (Figure 17 and 18).

Figure 23. Bocce Experince with Trainers and Children (Photograph taken by author)

Figure 24. Bocce Experince with Trainers and Children (Photograph taken by author)

2.3 APPC Villa Urbana Gondomar

2.3.1 Regulatory Architectural Information

The Municipality of Gondomar confers powers on these matters to two organizational units:

- Environmental Development Division
- Division of Public Spaces and Streamlining

The performance of these organizational units falls within the following areas:

- Management of public green spaces;
- Management / control of the Municipal Service of Municipal Waste;
- Promotion of public hygiene, urban sanitation and quality of life of citizens;
- Preparing and implementing the Annual Plan for Environmental Education for the city;
- Defense of the living soil and subsoil and the water springs, the rivers and reservoirs;
- Management of water lines and river system, air quality, waste and noise in cooperation with competent officials;
- Noise prevention and control of pollution noise in accordance with the provisions of the General Regulation of noise;
- Act on situations prejudicial to public health, promoting and performing actions of pest control and disinfestation;
- Detection and removal of vehicles in a state of abandonment in the street;
- Planning and implementation of actions aiming at rational use of energy;
- Preparation of plans, studies, and regulation for compliance with the law and all matters related to the environment (Município de Gondomar, 2007).

2.3.2 Architectural Themes

With the light of information that gained from interviews with workers and trainers, color, light, and shade are more important for PCP. For example, they are more sensitive to direct light than an average person. That is one of the main reasons that most of their sports activities are indoor activities in APPC. Even if it is easy to control ambient conditions, this control brings also too many borders around them.

Although the minority of the CP people can walk or use a crutch to support their body postures, the majority of the CP people use wheelchair. Ramps are the most suitable solution for the CP people. Even the person doesn't use the wheelchair; ramps might provide easy access to another floor levels. There is one main ramp that connects floors with each other. In addition to that, Elevators and platform lifts are also used in APPC to create easy access options.

Therefore, therapeutic outdoor spaces are an important step in helping an individual with CP become a versatile individual afforded the benefits that physical, mental, and social experiences provide. Therapeutic outdoor spaces focus on inclusion by letting the person to participate in activities and also to feel part of the activities. This provides happiness and quality of life.

APPC Villa Urbana Gondomar is designed perfectly for needs of CP people with all circulations, facilities, and houses. Wheelchairs, pool devices, transportation devices, automatic doors and bed lifts are all well considered.

The importance of the wheelchair is clear for CP people. The difference between wheelchairs for CP people with a normal wheelchair is each of them should be designed according to the need of the individual. In Rehabilitation Center of APPC, there are technicians to organize the chairs for them. Also, they have cooperation with a private company.

2.3.3 Site Analysis

Gondomar is a name and a land with historical resonances. Several findings reveal the old roots of human experience on this site since prehistory. The exploitation of the gold mines in nearby regions and the strategic position of "Crasto" demonstrate the permanence of the Romans in these lands.

Among other versions, the "Gondomar" designation is assigned to the Visigoth king "Gundemaro" that in 610, had founded here one Couto. Although there are no remains of the Visigoth horsemen, Gondomar received its first charter in 1193, Sancho I, which later was confirmed by King Alfonso II, through the Inquiries. The Monarch "did honor of Gondomar" to D. Soeiro Reymondo, that here was the sun. In the reign of King Manuel I, is given the second charter to the "City of Gondomar" in 1515. Also, these fertile lands were donated to D. Vilhena Daisy.

In the following centuries, the "trial of Gondomar" not always framed the current parishes. Over the years several changes of status and demarcation of some locations did vary the shape of the county. Data from 1868 to incorporation in the municipality of the parish of St. Cosme, Valbom, Rio Tinto, Rio Tinto, São Pedro da Cova, Jovim, Foz do Sousa, Covelo, Medas, Melres, and Lomba. Formally only in 1927, the county seat was confirmed as Gondomar village, on request to the Presidency. In 1985 a law was passed to create the Parish of Baguim do Monte. In 1991 Gondomar ascends the city, as did Rio Tinto in 1995 (Município de Gondomar,2012).

Villa Urbana is located in Gondomar that is located approximately 10 km west of Porto. Gondomar's population is 168.027 according to 2011population census. While you are designing outdoor spaces, one of the most important points is to know weather conditions of the site. Because of that, average temperature, the average of sunny days, the average of rainfall and snow, humidity, and speed of wind are important issues.

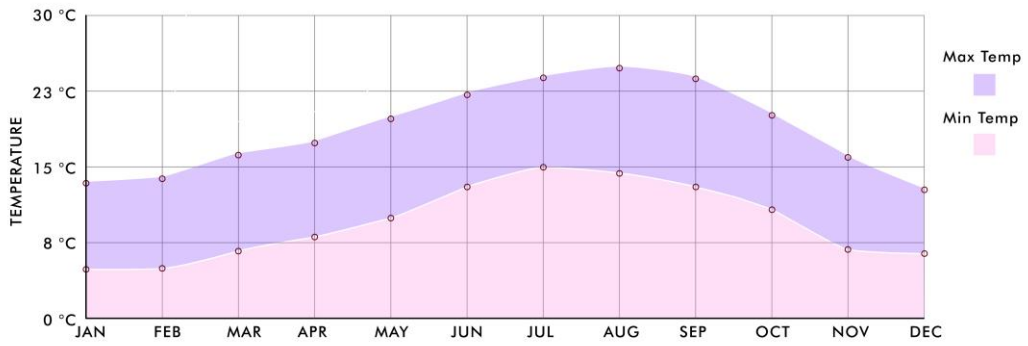

Figure 25. Average Minimum and Maximum Temperature Over The Year (Average Monthly Weather in Gondomar, Portugal, 2016)

The temperature is one of the most important issues for PCP. Their bodies may react negatively in too cold and too hot weather. As shown in Figure 19, average minimum and maximum temperature over the year in Gondomar is quite good for PCP. Even temperature is not so cold or hot in the winter and summer time.

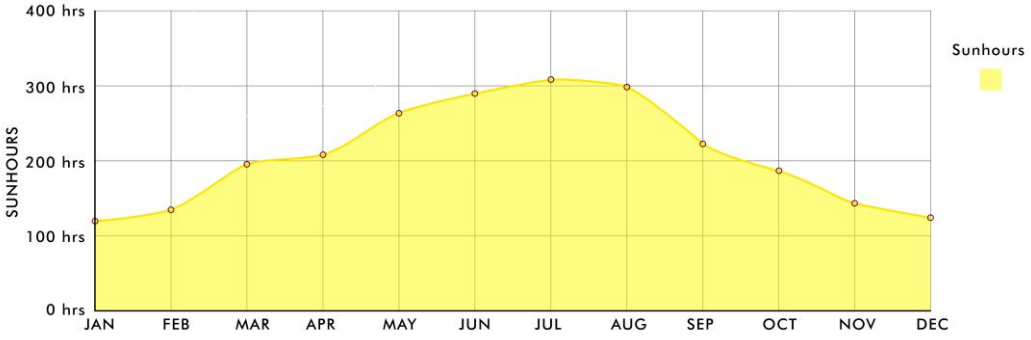

Figure 26. Average Monthly Hours of Sunshine Over The Year (Average Monthly Weather in Gondomar, Portugal, 2016)

Another important issue is sun hours. Sun hours are important for using natural light for daily activities. As shown in Figure 20, average monthly hours of sunshine over the year in Gondomar are enough mostly in spring and summer seasons. It should be consider for lightning solutions.

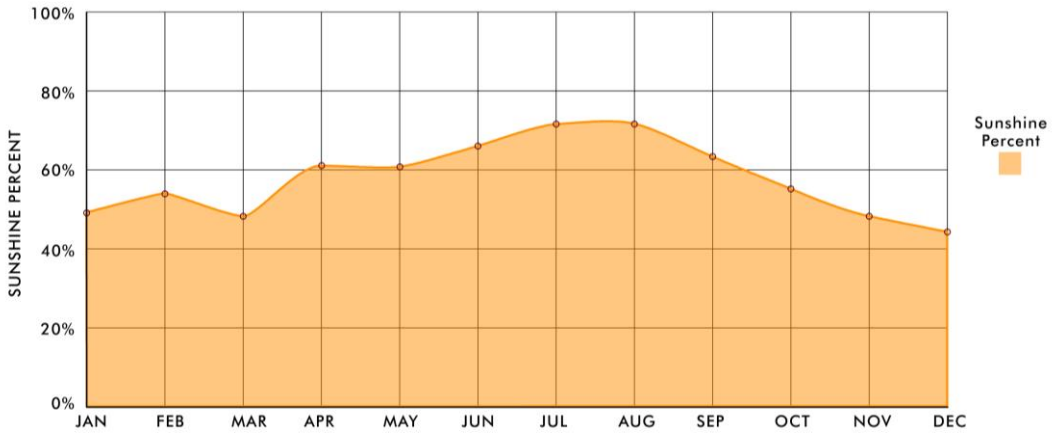

Figure 27. Average Percent of Sunshine Over The Year (Average Monthly Weather in Gondomar, Portugal, 2016)

Another important issue is sunshine percent. Direct sunlight may affect PCP more than others. As shown in Figure 21, the average percentage of sunshine over the year in Gondomar is good for PCP. In Gondomar, even in the sunny days, direct sunshine percentage is not so high ratio. The direction of the sun was considered to create maximum shadow areas during the sun hours.

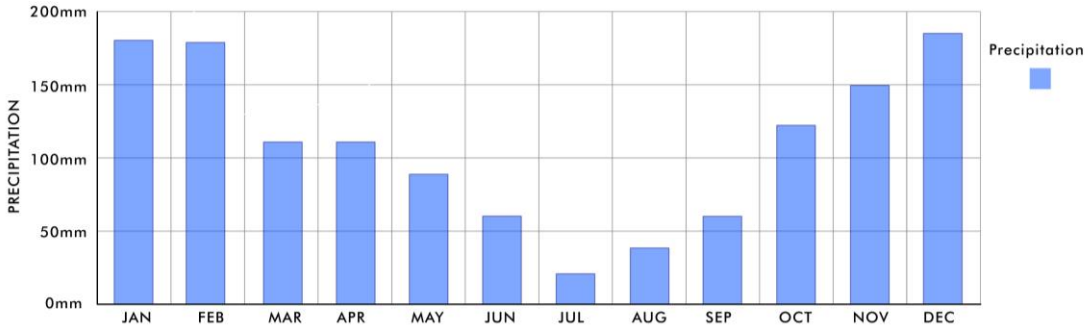

Figure 28. Average Monthly Precipitation Over The Year (Rainfall, Snow) (Average Monthly Weather in Gondomar, Portugal, 2016)

One of the important issues is precipitation and rainy days average. Outdoor spaces are not chosen for sport and recreational activities on rainy days. It should be considered while designing the terrace and backyard. As shown in Figure 22 and 23, average monthly precipitation and rainy days are a lot in a winter time.

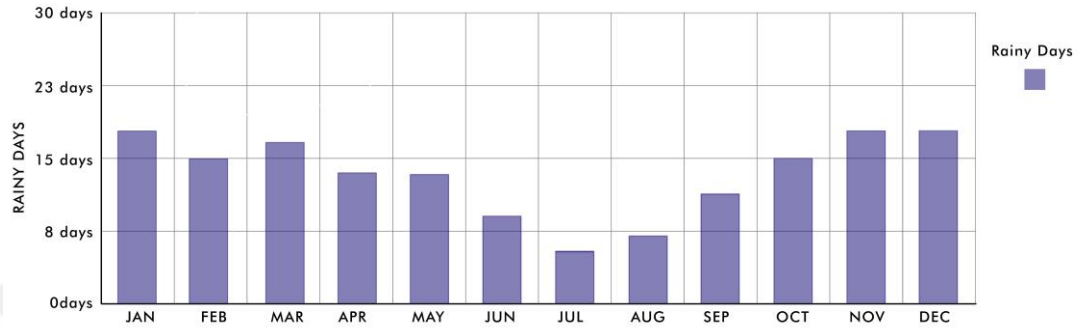

Figure 29. Average Monthly Rainy Days Over The Year (Rainfall, Snow) (Average Monthly Weather in Gondomar, Portugal, 2016)

Another important point is humidity. Humidity has increased the effects of the hot and cold days. In addition, wind speed is an important issue that works contrary to humidity. As shown in Figure 24 and 25, average humidity is always high in Gondomar; but wind speed is also effective.

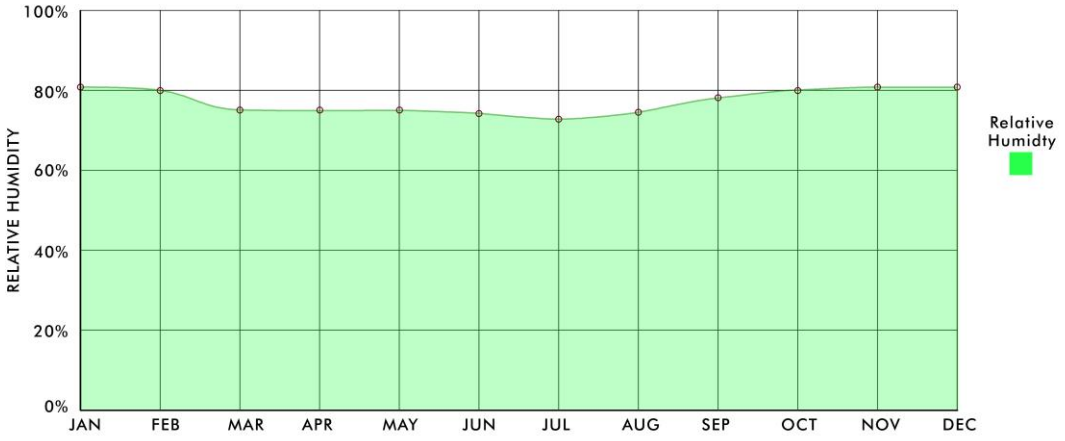

Figure 30. Average Humidity Over The Year (Average Monthly Weather in Gondomar, Portugal, 2016)

Figure 31. Average Wind Speed Over The Year (Average Monthly Weather in Gondomar, Portugal, 2016)

The weather is analyzed to understand the conditions for sports activities. The months May, June, July, August, September and October have a nice weather with a good average temperature. Most rainfall is seen in December, January, and February that will affect the sports very negatively. December is also the wettest month. This month should be avoided to be outside; because, humidity and cold together are creating unsuitable conditions for sports. Very hot days can be a problem too. In summer, Gondomar has dry periods especially in July that is typically the driest month and August that is the warmest month (Average Monthly Weather in Gondomar, Portugal, 2016).

The weather conditions are always the biggest challenge for designing outdoor spaces. Especially, if it is an area that will be used as an activity and a sports center, it is significantly harder than usual situations. Therefore, the area was organized to reduce the negative effects of weather conditions.

2.3.4 Program of VUG

This part is the analysis of existing facilities of VUG. The program was designed specifically for the disabled user. The objective will be to create spaces that are fully accessible to each of the clients. APPC Villa Urbana Gondomar has two floors. The land is approximately 7500 square meters. Accept the paths, car roads and the parking area main building are placed on approximately 6000 square meters area. Administration, reception, residences, activity areas, sports areas, dining hall, service rooms, toilets, paths, terrace, backyard and vertical connections are places in that area (Table 4 and Figure 26) (APPC, 2015).

Table 4. Area Division (APPC, 2015)

PLACE	SQUARE METERS
Administration	303
Reception	34
Residences Big Rooms	810
Residence Small Rooms	300
Activitiy Areas	900
Sport Areas	1120
Dining Hall	225
Services	325
Terrace	375
Back Yard	1340
Vertical Connections	35
Toilets	115
Paths	130
TOTAL	6012

Recently a kindergarten area was added to the basement. Kinder garden is under some residences, placed under the terrace area. This area works mostly as a separate area from all the facilities. However, dining hall and some activity areas are used by kindergarten children too. This area was not examined because of its limited relationship with the project area.

Figure 32. Functional Plan (Produced by the author)

The main entrance is placed at first floor. It is connected with the main path that is ending with the terrace. Relations between all main areas are provided by the path (Figure 27).

Figure 33. Entrance of the Villa Urbana Gondomar (Photograph taken by author)

In activity areas, there are special rooms for each age group. There is also a room with computers that is called "Young Space" (Figure 28).

Figure 34. Activity Areas (Photograph taken by author)

The back part of this area is organized in a dining hall that is designed for kindergarten children and guests of Villa Urbana Gondomar (Figure 29). In addition to food service, they have a kitchenette that can be used by guests any moment.

Figure 35. Dining Hall (Photograph taken by author)

On the first floor, residences are placed around the activity areas and dining hall. In addition, on the ground floor, residences are also placed under the terrace. There are single, double and triple room options. Even though the rooms have the same plan; each room can be decorated by the owners as they want. The rooms have a living room with kitchen, bedroom/s and bathroom (Figure 30).

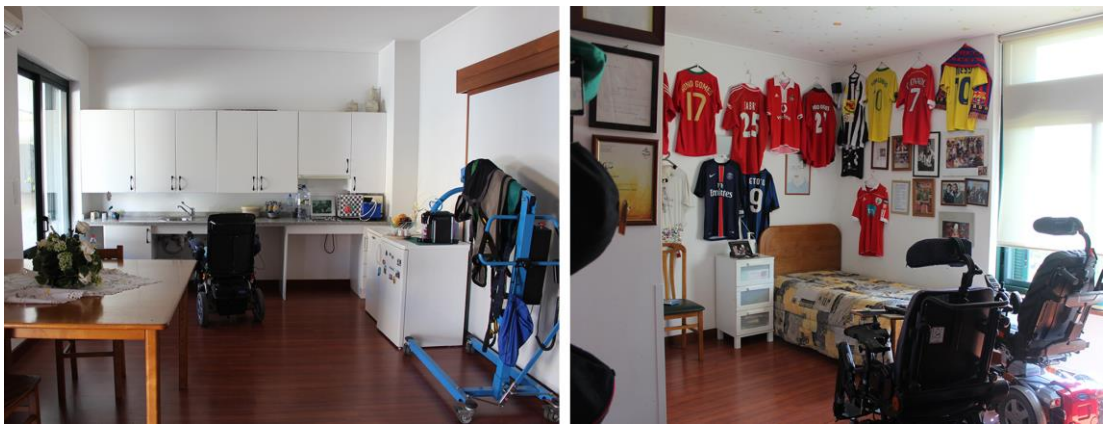

Figure 36. Living Room & Kitchen and Bedroom (Photograph taken by author)

All the bathrooms are equipped according to their needs (Figure 31).

Figure 37. Bathroom in Residence (Photograph taken by author)

At the end of the first floor, there is daily activity room that is used for meetings, celebration and important days (Figure 32).

Figure 38. Activity Room (Photograph taken by author)

The terrace is located behind the activity room. It is connected by a door to the main path. This is one of the areas that is part of the project developed during this study (Figure 33).

Figure 39. Terrace (Photograph taken by author)

At the other side of the activity room, the ramp is placed. This is the main connection between two floors (Figure 34).

Figure 40. Ramp (Photograph taken by author)

On the right of the ramp, there is an entrance of the activity classes and sports area. Firstly, three different activity classes are placed. These areas are used for painting, wood crafting and stitching by the guests of Villa Urbana Gondomar (Figure 35).

Figure 41. Activity Classes (Photograph taken by author)

Sports areas are placed behind the activity classes. There are two multifunctional areas that can be used for bocce and any kind of indoor activities (Figure 36). These areas are connected with the pool that has a special lift to carry disabled people inside. The pool is used to help guests to improve their movement quality.

Figure 42. Indoor Sport Areas (Photograph taken by author)

On the ground floor, there is a backyard that is facing all residences. This is the other area that is part of the project developed during this study (Figure 37 and 38).

Figure 43. Back Yard Terrace and Residences (Photograph taken by author)

Figure 44. Back Yard Wall (Photograph taken by author)

Chapter 3

Results, Discussion and Design Proposal

3.1 Results of Surveys

Surveys were made for three different target groups that are families of visitors, guests, and workers of APPC VUG. Each of the surveys was divided into four different headlines: Family & Friends, Participation, Communication, and Environment. These categorizations were helpful to participants to understand the topic clearly as well as surveyor to analyze fast and easily.

First of all, guests of VUG surveys were examined. "Family & Friends" part helped to understand their communication quality with their families and friends in VUG. Moreover, it was used to understand how happy they are about their life and what their expectations are from the future. Their social life was analyzed to understand their interest in sports. When the results of two questions are compared, it is obvious that if they know the people from VUG, they have no problem to communicate with them (Figure 39).

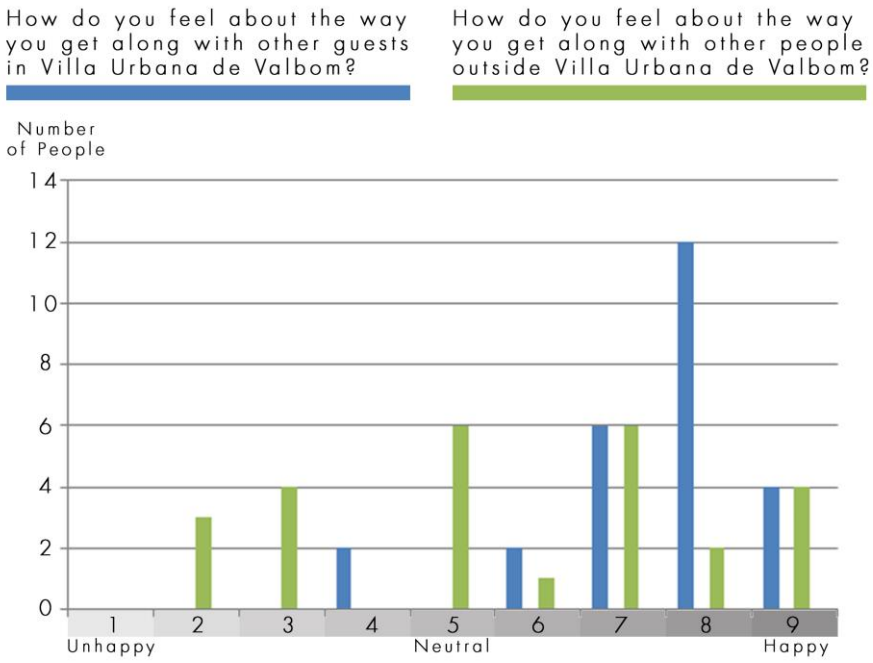

Figure 45. Comparison of the Results of Two Questions about Family & Friends

The result of this part shows that the guests have good communication with their families and people who look after them. They are happy to be in touch with the other guests in VUG, but the problem is communication with the people outside VUG. In addition, the answer to "How do you feel about hanging out on your own?" shows that they like to spend their time with other people. With the light of this information, the area should be designed not for only people that are living in Villa Urbana Gondomar; it should also invite people from outside to increase communication with other people outside of VUG. This new area will make them excited to be a part of the new activities.

The "Participation" part helped the author to understand their interest to participate in social and sports activities at VUG. The result shows that they are interested in being part of the social events more than sport activities. Thus, Exterior area should be designed as multifunctional area. So, even if the person is not interested in sport, with the help of the recreational activities; sports can be more attractive for the person (Figure 40).

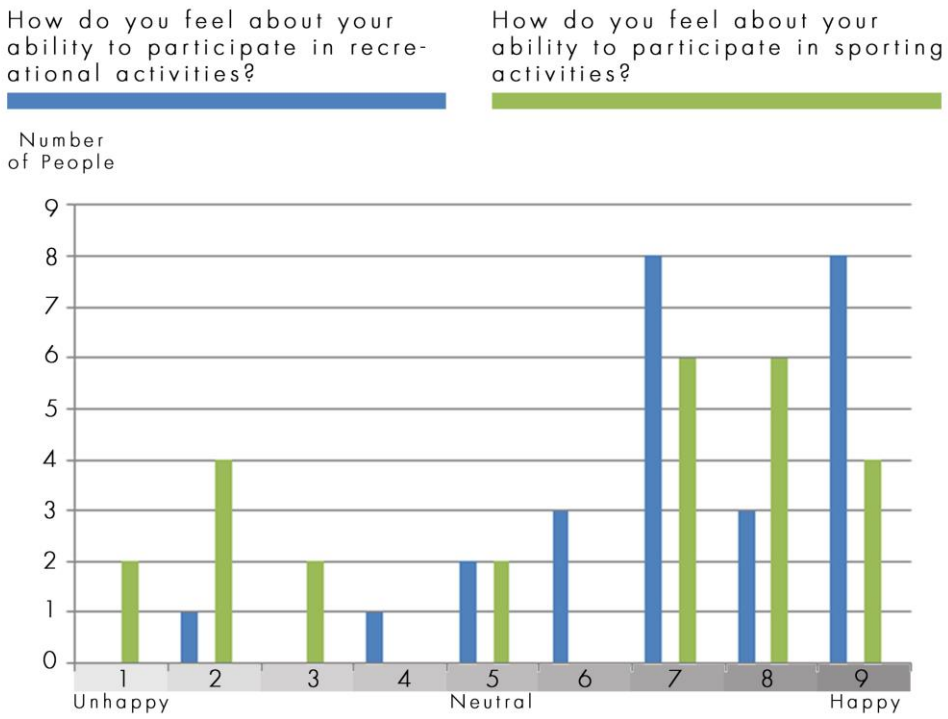

Figure 46. Comparison of the Results of Two Questions about Participation

The "Communication" part helped to understand their communication quality with people that they know or not know. It is also important to understand what they are thinking about the effect of sports on communication. Also, communication is an important point that can increase their life of quality. In that part, it was clear to see that the connection between communication and sports works bilaterally. Mostly, they think that sports can be a good medium to communicate with new people. New outdoor area, with multifunctional options, will invite them to do more sports and communicate with other people easily.

Ultimately, the "Environment" part was helpful to understand the quality of life in their environment and their approach to open areas like terrace and backyard. The final part, that is the most important part of this research, was very helpful to clarify their ideas about being outside, joining outdoor activities and what the potential is for the outdoor spaces. Results of this part show that they are interested in using the terrace and backyard at Villa Urbana Gondomar, but they do not have a suitable atmosphere to spend time there (Figure 41).

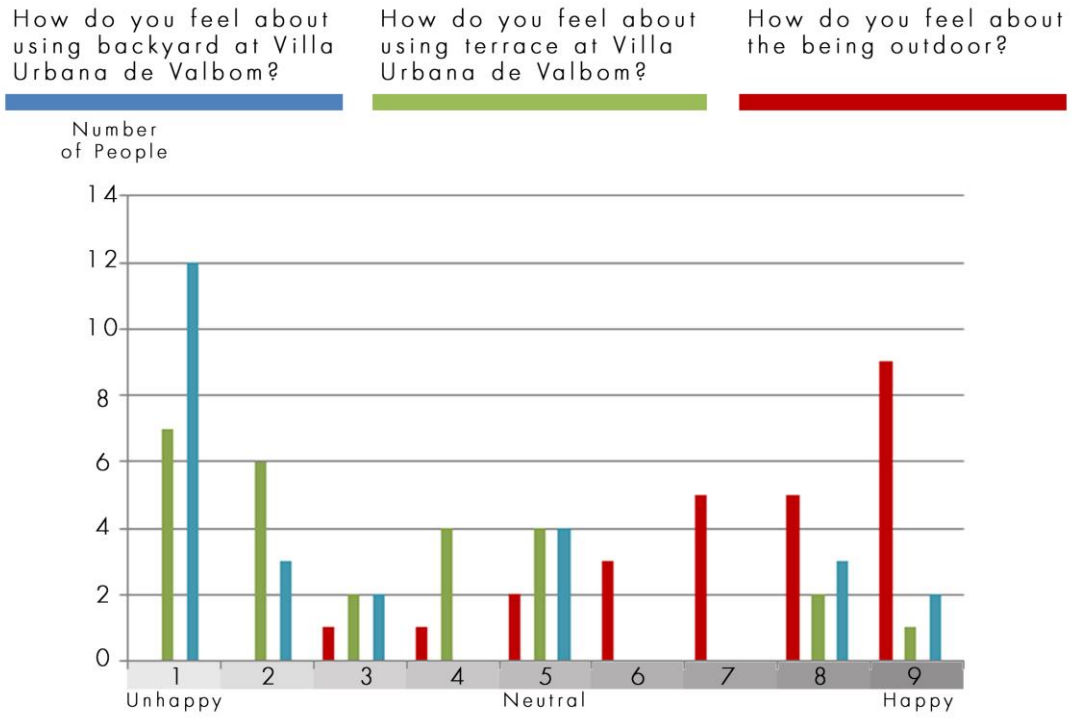

Figure 47. Comparison of the Results of Three Questions about Environment

In the questionnaires of the workers and families (Appendix 2 and 3), there is another part called "Psychology". In that part, there are questions to understand what kind of expectations they have for their life and their future. Also, there are more detailed questions that cannot be asked directly to the person about their quality of life. Other four parts of the workers and families questionnaires are similar with the guest questionnaire to compare the coherence of the results.

These divisions in questionnaires were helpful to categorize inputs quickly. Based on this information, the sociality, participation, and communication through attending sports activities were compared to understand how the sport is important to feel part of the society. Data was used to compare the environmental design quality with participation.

Questions about their happiness and their expectations from future were helpful to clarify how happy they are and what their expectations from the future. Such data could be helpful to compare the changes of their life with the effect of sports. Results show that if the person is interested in any kind of sports, this person has positive answers about the quality of life.

3.2 Results of Interviews

In the first visit of the Villa Urbana Gondomar, the Director of Villa Urbana Gondomar Liliana Araújo was met. She welcomed the author and his Supervisor Professor Maria Milano to inform them about VUG and their guests and sports activities around there. In the same day, an interview took place with Paralympic bocce player and his training was watched.

In that meeting, first of all, she talked about two places that are APPC VUG and Rehabilitation Center. In The Rehabilitation Center, they welcome all age group of the PCP. However, In VUG, the guests of houses are for older than 25 years old. In addition, there are activity classes for 5-18 years old mixed group that includes

several PCP and also there is a kindergarten that also includes several children with CP. In VUG, there are two indoor places for sports; gym and pool. The pool has a special lift to help them to go inside of the water in safe. The water is 34 Celsius degree to make their muscles relax and move softly.

After that, the author had a chance to watch the training of a bocce player. His trainer gave details of the game and aims. At the same time, there was a dog therapy in next room and water exercises in the pool. Interviews with trainers who work in both places of APPC gave information about their approach to sports and what is the effect of the sports on PCP's life. The assembly power of the sports was obvious.

In The Rehabilitation Center, the author had to chance to play bocce with children and had an interview with the trainers. They are training them for race-running, bocce, and rowing. In that place, they are training people from children to old people. PCP start to practice sports at very young ages. In that time, they are shy and have a problem to communicate with other people. However, in the course of time, they start to feel part of the team and gain self-confidence to communicate with people. After for a length of time, these young people start to feel part of the team.

Trainer Luis Pacheco, who is a professional trainer of bocce and race-running, told that they have built several bocce courts in primary schools. The best thing about bocce game is creating a fair competition between PCP and others. Another important point was that they are happier while they are playing bocce against others. Playing and competing with others also make them more self-confident.

Trainers, workers, and families aim to create a mixed type of community that includes all age groups with and without CP. This is the main goal for all APPC facilities. Even though they try to create this environment for PCP; the main problem is that facilities work separately from each other. For example, VUG has a lack of elder people community. Although guests are older than 25 years old; the other activity classes are mostly for age 18 and younger.

APPC offers a range of service to professional, practitioners, physios, schools, parents and families to help support more people with CP into a sport. APPC's experienced and professional trainers offer a range of consultancy services to leisure, sports and health professionals seeking advice, guidance, and training on issues relating to CP for children with CP.

APPC competitive program starts from 5-year-olds and there is no upper age limit. Events include a variety of track and field disciplines with age appropriate throwing equipment and weights being used. APPC also work closely with Portugal Athletics and other partners to ensure good quality provision exists locally by supporting coaches in mainstream clubs in understanding what a CP athlete requires to ensure a positive experience.

There are many kinds of sports that can be done by PCP. However, APPC trainers mostly focused on three main sports branch; bocce, table cricket, and race-running. Bocce can be played indoors or outdoors on a hard, flat surface mostly in a team play, socially or competitively, up to the Paralympic level. With assistive devices, bocce can be played by anyone, no matter their ability. Table Cricket is a game for everyone, young or old, disabled and non-disabled, to play and have fun. Race-running is a new sport in Portugal being developed by APPC. It is for children, young people, and adults who cannot functionally run and rely on sports aids for mobility and balance.

According to trainers, these three sports are the best option for PCP. The most important reason is while PCP plays bocce and table cricket, they need a team created by players with or without CP. Team idea is helpful for them to feel a part of the group and socialize. In contrast to them, race-running is an individual sport. In general, challengers prefer race-running that gives great aim for PCP. Because of these reasons, bocce, table cricket, and race-running were chosen to setup in case study area.

Dr. Ana Lages, the physiotherapist of APPC VUG, emphasized the importance of the link between health and outdoor nature experiences. She emphasized those potential benefits; but perhaps more importantly, the known harm, particularly to children, that comes from a deficiency of outdoor experience. Whether alone, with random strangers, or close friends, moving in a beautiful natural environment is good for PCP. People may not recognize the degree their lives are compromised by a lack of quality nature experience until it is provided.

3.3 Results of Observations

Visiting the place was an essential experience in order to approach in a correct way to the project in VUG. Walking through the building gave a chance to see the people who animate these spaces, using the facilities, sharing time together. Each of them has unique problems; but thanks to the good and specific design, they are able to avoid the obstacles and live an independent life. Their movements were observed in relation to the facility where everything is thought in a very detailed way. VUG was one of the important examples to learn a lot from this experience and enlarged knowledge about the CP problems and, moreover, the specific solutions that they adopted.

VUG and Rehabilitation Center have varied opportunities to learn something different from each. In VUG hosts pass time with other guests and children. Mostly, main activity room and other activity classes were used for recreational or daily activities. They like to be outside in sunny days. Their psychology is positively affected by fresh air. However, they have no facility or living place to spend their time outside. VUG has many facilities for hosts and guests but all of them are located in indoor spaces. Spaces for free time are concentrated inside but there are no facilities or organized spaces in open air.

The terrace and the courtyard have a great potential, but it is not used. Just the terrace is used and only rarely and it is not equipped for any use. It is important to specify that it is easier to control light, temperature and comfort conditions in an indoor area. A wise challenge may be the design of some of these facilities with a high control of the level of comfort in outdoor spaces. Indeed, patients with CP are often sensible to weather condition and, especially, to direct sunlight.

A long time was spent with workers and guests to get to know their needs, likes, and dislikes. Some design elements became obvious; others needed careful guidance from the guests. The residents delight in nature and will happily walk through the grass barefoot; they love to sit and giggle at the antics of insects and animals, and enjoy gardening and growing things. They need a variety of surfaces underfoot but laid so as not to create any trip hazards. One woman from residency loses attention when exposes to any reflective surface, so workers ensured all features within the residency had a matte finish. It seems as an individual problem. However, trainers also mentioned reflected surfaces' importance for sports areas.

The APCC in Gondomar works about a project which aims to integrate PCP with public. Indeed, a few years ago, a new educational project started with the opening of the kindergarten. The kindergarten has own classes where children have their lessons. The other facilities are shared with APCC guests and visitors. This project is really important: children have a chance to get used to PCP and live this

situation in a normal way. In the same time, PCP can spend time together with the children and their families. In many festivity occasions, the kindergarten organizes some events and all the community is part of it. This relation between all mixed people is very important for their psychology. Except for this integrated program they do not have many other chances to communicate with people, and it would be interesting to improve this essential aspect.

The Rehabilitation Center is connected with the efforts of the people who frequent this place to do rehabilitation in order to fight against their physical problems. However, it is possible to breathe a peaceful atmosphere there. Also, there are mostly children and teenagers; because in this age, it is possible to have better results. Workers welcome them with a smile and they make them feel at home. It was noticed that these people have a self-acceptance of their problem and they work hard to improve their conditions, with the very important support of their families and workers.

It was interesting to visit the Rehabilitation Center to understand the solution adopted to solve cerebral palsy problems. In the multisensory room, children can experiment and touch different materials to stimulate their senses. This is an important aspect of the project because the architecture is made by infinitive options of materials and the correct choice increases the quality of the project.

Surely, the most significant experience was playing bocce with the children. While playing bocce, each individual was the part of the team and community. Sitting on a wheelchair removes all obstacles between the author and children with CP. Once the game started, there was just a real competition. The players of each team welcomed the author happily and they supported each other. The result of the game was not on focus. The mood of the game was very powerful. The conversation problem between the author and children was solved after a while. Team spirit was a strong power to bring out of one's shell.

While young athletes with CP were playing, it was obvious that roles were simple. However, the quality of the performance depends on the capacity of the player to focus on the game and this is not always easy for athletes with CP. The environment should be suitable and guarantee the best light condition for the players. The color of the floor needs to be different from the color of the balls. The main ball is white so the floor should contrast with this color; the lines of the court are also white. Direct light makes concentration difficult.

The game is very useful to improve the socialization between the players. This aspect is primary for the development of the project, which aims to increase this aspect of the PCP. Bocce is one of the most popular games because it is based on easy rules, not a specific body performance is required, and it is a competitive group game. It is helpful for PCP to be part of a group and having more chance to socialize. Another important sport is table cricket. It has the same approach like bocce. Disability is not an obstacle to doing this sport. Team idea is a helpful tool to improve the communication of PCP.

3.4 Design Proposal and Technical Details

All the information gathered from surveys, interviews, and observations was very helpful to understand PCP and their expectation from life. It was the first step to understanding all these details; because there were unique situations for each. After interviews were made, surveys were prepared to collect more data. All gathered data was analyzed to use in the case study that is about developing outdoor sports area for disabled people that affected by CP to improve their social life and links with the community.

VUG has a mixed community to observe the communication quality of PCP. The facility consists of a kindergarten, activity classes for different age groups, younger than 18, indoor sports areas and houses for PCP. The main problem of this community is that there are not adult and elderly people from outside of VUG. To invite them there, there should be activity and sports facilities that can work independently from the main building. Even if they have some prejudices about PCP, they will overcome the idea while they are in contact with them. In that way, mutual dreads from CP people and public will be broken. And also, it might create more mixed type community around CP people and they might feel better about being part of the community.

Another issue was a group of people that do not like to attend sports activities. The way to invite them to this area is to make it a multifunctional area that can be used for sports and recreation activities. Terrace and backyard can be connected with a path both physically and visually. So, while people use the terrace, they may see the people that make sports. After a while, they could be part of the both activities and see how sports can be a reason to have great moments.

From the interviews, it was clear that they like outdoors if they have a reason to be there and if there are suitable conditions for them. Negative conditions could create bigger problems for PCP. That is why all sports areas for PCP are placed indoor. Even though there are many potential outdoor activities and sports events, all team sports activities were limited to indoor areas. Bocce, table cricket and race-runner were chosen to be designed for outdoor sports areas. These are the most popular games among PCP. Also, in bocce and table cricket, the person should be part of the team that can be formed with the mixed community. That is helpful to improve their ability to communicate with each other.

Open space plays a vital role in meeting people's recreational needs in both formal and informal roles, from organized sports to walking. Access to open spaces and thus recreational activities is integral to sustaining a decent quality of life. Not only are they places to meet friends, to exercise and to observe nature, they can also perform an important role in conservation and biodiversity. Health, design and education professionals around the world agree that children, and adults, need outdoor exercise in stimulating, green environments. What is missing from previous studies is an emphasis on the supportive qualities of the environment. Sensory and therapeutic gardens were analyzed to understand their effects on PCP. They provide active healing through the act of gardening. Inclusive, accessible design is at the heart of therapeutic landscapes.

The project area consists of two areas that are terrace and backyard. The terrace area is connected with doors to the main hall and main activity room. Therefore, terrace area was designed for table cricket. In the case of recreational activities, tables with wheels can easily move to main activity room's storage and the whole area can be used for the activity. The other two sports are placed in the backyard that is already suitable for two bocce courts and one runway. For sports areas, sufficient contrast between the colors of game equipment and the surfaces was necessary for easy recognition.

Another important point was the positive effect of the natural environment. Gardens, as a microcosm of the natural landscape, have an innate ability to bring people together, to encourage healthy, active lifestyles. The guests like to join recreational activities if they are more connected with nature. There is no water feature not to create any reflection surface that might distract PCP.

The location of the facility and existing building was creating perfect conditions to have a natural area. The facility is located on the top of the hill and facing the Estádio do Dragão. The back yard is also available for this purpose.

Because terrace and backyard are located at two different levels; a connection was needed between these two levels. Inside the main building, there are already two elevators that are very close to the terrace. They can be used as a first option to link these areas. In the end of the backyard, a huge wall is placed to create an enclosed backyard area. Instead of creating a standard ramp, with using that wall, these areas were designed with the idea of combination of bleacher and ramp. Using natural elements and combining these two elements to design these areas created a facility that can work separately from the main building. Under this area, there are places for changing rooms, toilets and showers. With all the specifications, this area could host sports competitions with a big number of audiences. It is also a big facility that will call the citizens of Gondomar to spend their time. It will serve the APPC VUG's main aim and will create more mixed population in facility.

Experiences gained from Rehabilitation Center gave some information about the types of problems faced. The objects that are specially designed for the guests are important tools that show the importance of materials and scales. In addition, safety is the most important thing that should be considered. It affects materials that need to be used in design. Safe, attractive green space can be designed. PCP and their care assistants can spend time at outside in safe. It is important that residents are able to access the garden area on their own, safely, so that they can enjoy a sense of independence and self-mastery. First of all, the surface of the ramps should be nonskid surface. That is very important not only for wheelchairs, but also for the people using a crutch. Furthermore, Because of their high level of sensitivity for their environment, lightning is another important issue. Their sensitivity to light and colors needed consideration. The quality of their life depends to the details of the environment. It is really important for them to have an environment guarantees optimum light condition.

Terrace was designed with plants surrounding the concrete walkways. These plants were chosen medium size that can be maximum 1.5 meters. In order for the

garden to provide the required calming, de-stressing natural elements, it was framed the space with evergreen hedging, topiary and a monastic-styled flat lawn. These plants created safe path. Vertical gardens were placed on chimneys. These parts left for PCP to take care. The height of the vertical garden gave an easy access for gardening. Multiple seating areas allow for individual choice, depending on mood, weather conditions, and the number of people who wish to socialize on a given day. Each area allows for a minimum of two people, so care assistants can sit with a resident if required. On path wind chimes, bird feeders and sensory balls hang from the overhead canopies. Same idea was used also while designing ramps and bleachers part. Especially in that part, to keep people in the community for as long as possible this area needed to ensure needs for calm, quiet spaces are met. For others, this area ensured some spaces are bright and filled with color, texture and movement. While at times the needs may be conflicting, with thought accommodations can be made across the public realm.

As a result, with the light of all information collected, outdoor sports areas were designed to improve the communication level among PCP and community.

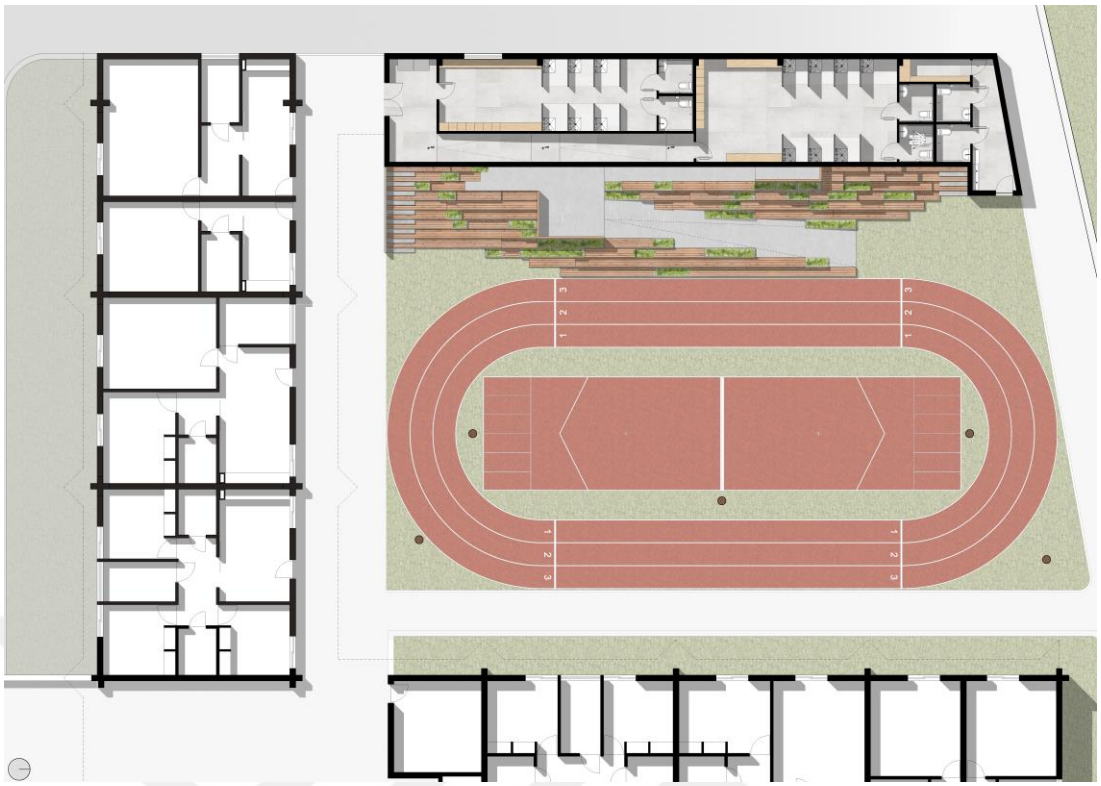

Figure 48. Ground Floor Plan (Produced by the author)

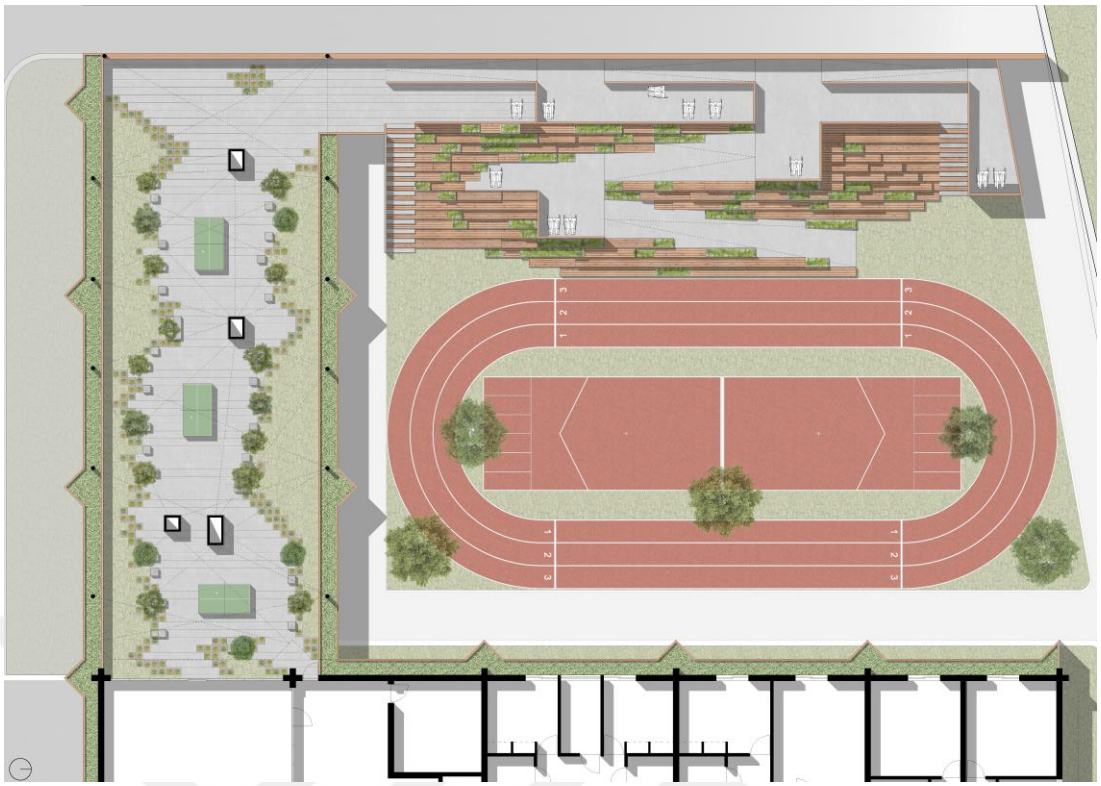

Figure 49. First Floor Plan (Produced by the author)

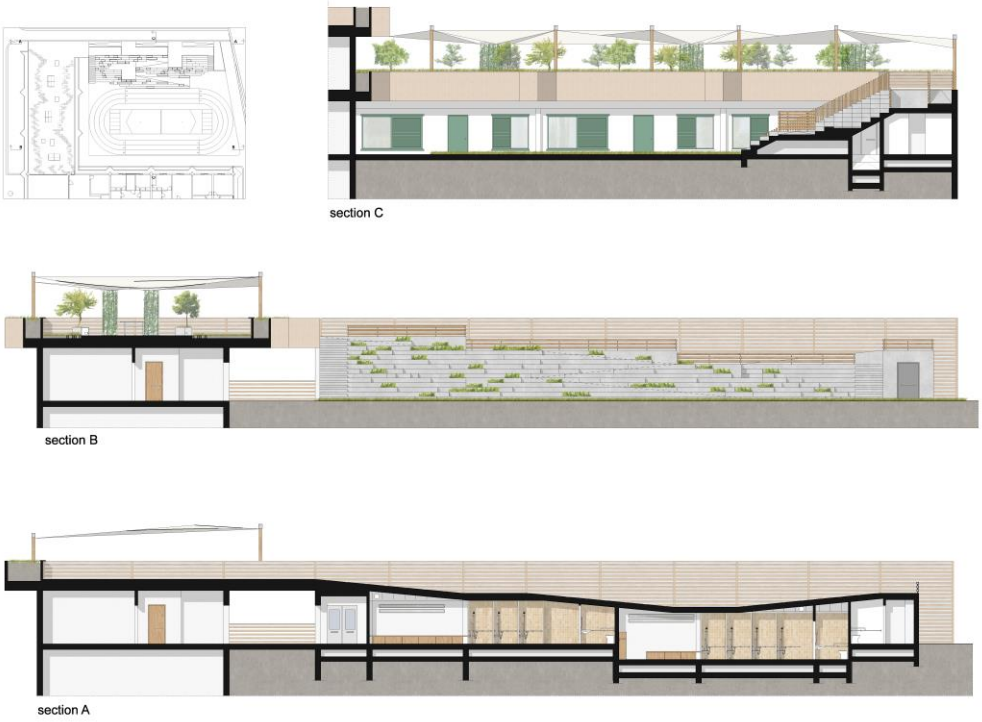

Figure 50. Sections (Produced by the author)

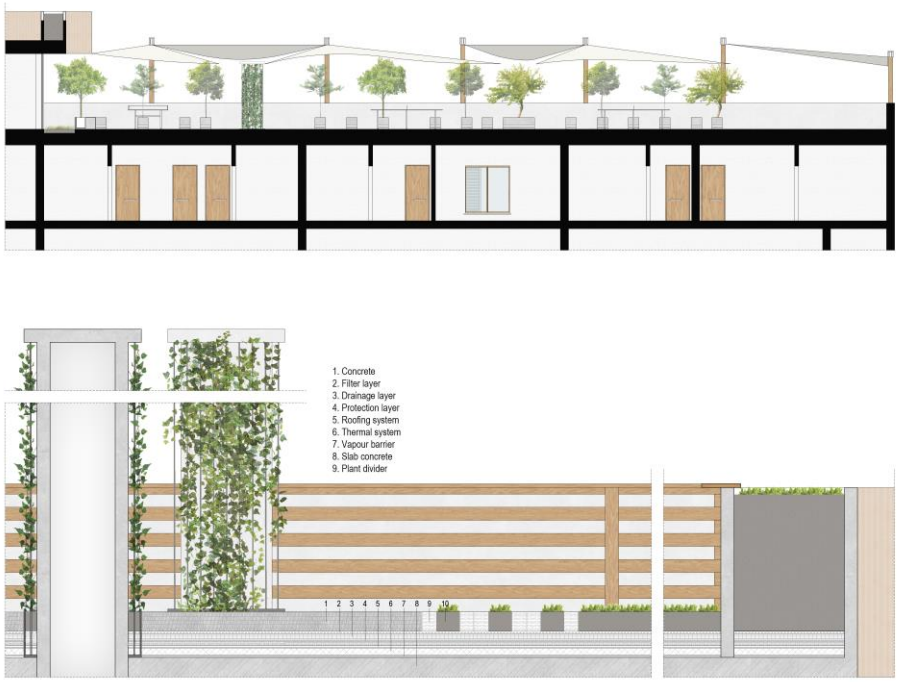

Figure 51. Section and Detail Drawings (Produced by the author)

Figure 52. Rendering from Terrace (Produced by the author)

Figure 53. Rendering from Terrace (Produced by the author)

Figure 54. Rendering from Bleachers (Produced by the author)

Figure 55. Rendering of Bleachers (Produced by the author)

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Figure 56. Rendering of Outdoor Sports Areas (Produced by the author)

Figure 57. Rendering of Outdoor Sports Areas (Produced by the author)

Figure 58. Model of Design Proposal – General View (Produced by the author)

Figure 59. Model of Design Proposal – View from Backyard to Terrace

(Produced by the author)

Figure 60. Model of Design Proposal –View from Terrace to Backyard

(Produced by the author)

Figure 61. Model of Design Proposal –View of Terrace

(Produced by the author)

Figure 62. Model of Design Proposal –View of Terrace

(Produced by the author)

Figure 63. Model of Design Proposal –View of Bleacher and Ramps

(Produced by the author)

Conclusion

Achieving the participation of disabled people in social and urban life is a requirement and duty of modern society. Disabled people are connected to life and become fruitful individuals for themselves, their families and countries as long as they are part of the community. In this context, sports activities should be carried out to strengthen the connections disabled individuals in social areas. This thesis analyzed the PCP and effect of sports areas design to their social life and make them part of the community.

Quantitative and qualitative research design was undertaken and based on existing literature. In addition literature review, surveys, observations, and interviews were used to understand their needs and expectations from sports areas. Three different types of surveys were prepared for different target groups; families of visitors of APPC Villa Urbana, guests of APPC Villa Urbana, and workers of APPC Villa Urbana. In each survey, questions were categorized in 4 different headlines; family and friends, participation, communication, and environment to analyze questions easily. It was helpful to compare the results of the similar cases. Each individual's survey was analyzed for qualitative analysis. In addition, all results were counted to understand the overall approach of PCP for quantitative analysis. Also, interviews with trainers, director of APPC Villa Urbana Gondomar and some workers were done to get their ideas. In addition, observations at the Rehabilitation Center were used to see players with CP while they are practicing sports.

Various samples around the world were examined to see how the facilities help PCP. Even though these facilities use the nature and animals very effectively to solve their problems and make them more social, they only use indoor sports activities. This thesis was aimed to improve outdoor sports area that might also be used as a recreational activity area.

APPC Villa Urbana Gondomar, established to provide residencies and sports and recreational activity areas for PCP, was the case study. Firstly, People that live, work, study, train and instruct in that facility were observed to understand the program of the area. The area has already indoor sports areas in very good condition but there are no outdoor sports areas. In addition, APPC VUG has a suitable territory that includes a huge backyard and an empty terrace. The variety of people that are using this place provided a good chance to aim an "Inclusive Design".

The terrace and backyard area were used as the project area. With the light of all is information, the area of VUG was designed to bring citizens of Gondomar to the new sports area. According to interviews with the trainers, three sports types were chosen to establish the project area; bocce, table cricket, and race-running. These are helpful sports types to improve the communication of PCP.

Inclusion is the main tool to lead the project toward positive results. The project invites the users to share the facilities, to dialogue and to create new relations through the sport support. Moreover, the multifunctional solution is an added value for APCC VUG and the users. The project area was designed as a multifunctional area that can serve for sports activities and any other recreational activities. The terrace can be used for leisure times and meetings in addition table cricket competition. In addition bocce and race-running, the backyard can be used for celebrations, concert, and theater.

The result of the interviews and surveys showed that PCP prefer to spend time in outdoor areas with nature. Vertical gardens, medium size plants, grass area, trees that create natural shadows were used in the project area to create a natural therapeutic outdoor area.

APPC VUG made significant contributions to the implementation of more advanced models for PCP in Porto similar to those in other cities, diffusion of these services at city scale and rehabilitation, social and cultural development of PCP. Furthermore, the most prominent difference between APPC VUG and other such existing complexes was the addition of a mixed type of community with or without CP.

The design ideas presented above and within the case study can be adapted and applied for use in public spaces such as public gardens, school gardens, and city squares. The key to success is ensuring that the healthy choice is the easiest choice. Regardless of their type of disability, adults and children need to be able to easily get outdoors, so as to engage with nature and with their community by the help of the sports activities.

The case study was limited to APPC VUG located in Gondomar. Also despite similar cultural dynamics, the findings of the current study cannot be generalized to other cities in Portugal. In addition, interpretation and implications of the current findings had to be addressed with caution as confounding variables such as perceived competence, specific relationship of culture and interests was not directly measured within the case study.

The following recommendations are put forward to further understand the dynamics of sports for all and as such a better outdoor sports area. Given the novelty of some findings, in-depth qualitative research is imperative among APPC athletes with disabilities. Future studies can pay more attention to the cultural interpretation of factors related to motivation in sports for all. Coaches and support systems of PCP should also be given more attention in order to determine how these factors affect PCP and can be further developed. More attention should be given to the distinction between people with or without CP. Future research should investigate differences in motivation processes of people with or without CP.

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Appendix

Appendix 1. Questionnaires for Guests of Villa Urbana Gondomar

Cerebral Palsy Quality of Life Questionnarie

Below there are some questions about your life such as your family, friends, participation, communication and environment.

Each question begins with "How do you feel about…..?"

This questionnaire has been designed for people have all different types of cerebral palsy and some questions might be hard to answer. Please just do your best to give an answer for each question. The questionnaire is measuring how you feel, not what you can do.

This information will be used for my master degree thesis that is about "Sports area design for people that are affected by cerebral palsy".

For each question we want you to choose the best number that shows how you feel. You can choose any number from 1 (Very unhappy) to 9 (Very happy).

Here is an example:

Very unhappy	Unhappy	Neutral	Happy	Very happy

Q. How do you feel about...

the way you get along with people generally?

1	2	3	4	(5)	6	7	8	9

Thank you for your helpful opinion,

Gökhan Keskin

1

Family & Friends

Q. How do you feel about...

	Very unhappy			Unhappy		Neutral		Happy	Very happy
your life in general?	1	2	3	4	5	6	7	8	9
your quality of life?	1	2	3	4	5	6	7	8	9
how happy are you?	1	2	3	4	5	6	7	8	9
the way you get along with people generally?	1	2	3	4	5	6	7	8	9
the way you get along with the person who looks after you?	1	2	3	4	5	6	7	8	9
the way you get along with your family?	1	2	3	4	5	6	7	8	9
the way you get along with other guests in Villa Urbana de Valbom?	1	2	3	4	5	6	7	8	9
the way you get along with other people outside Villa Urbana de Valbom?	1	2	3	4	5	6	7	8	9
hanging out on your own?	1	2	3	4	5	6	7	8	9
hanging out on your friends?	1	2	3	4	5	6	7	8	9

going out on trip with family? 1 2 3 4 5 6 7 8 9

how you are accepted by your family? 1 2 3 4 5 6 7 8 9

how you are accepted by other guests? 1 2 3 4 5 6 7 8 9

how you are accepted by colleague? 1 2 3 4 5 6 7 8 9

the way you try new things? 1 2 3 4 5 6 7 8 9

your future? 1 2 3 4 5 6 7 8 9

Participation

Q. How do you feel about...

your ability to participate in social events at Villa Urbana de Valbom? 1 2 3 4 5 6 7 8 9

your ability to participate in social events outside of Villa Urbana de Valbom? 1 2 3 4 5 6 7 8 9

your ability to participate in recreational activities? 1 2 3 4 5 6 7 8 9

your ability to participate in sporting activities? 1 2 3 4 5 6 7 8 9

Communication

Q. How do you feel about...

the way you communicate with people you know well?	1	2	3	4	5	6	7	8	9
the way you communicate with people you don't know well?	1	2	3	4	5	6	7	8	9
the way other people communicate with you?	1	2	3	4	5	6	7	8	9
the way you communicate with people using technology?	1	2	3	4	5	6	7	8	9
the affect of sports in communicate with others?	1	2	3	4	5	6	7	8	9

Environment

Q. How do you feel about...

the special equipment you have at home in Villa Urbana de Valbom (e.g. special seating, standing frames, wheelchairs, walkers)?	1	2	3	4	5	6	7	8	9

the special equipment you have at common spaces in Villa Urbana de Valbom (e.g. special seating, standing frames, wheelchairs, walkers)? 1 2 3 4 5 6 7 8 9

the special equipment you have in sport areas (e.g. special seating, standing frames, wheelchairs, walkers)? 1 2 3 4 5 6 7 8 9

the being outdoor? 1 2 3 4 5 6 7 8 9

the using terrace at Villa Urbana de Valbom? 1 2 3 4 5 6 7 8 9

the using backyard at Villa Urbana de Valbom? 1 2 3 4 5 6 7 8 9

Thank you!

5

Cerebral Palsy Quality of Life Questionnaire For Families

Below there are some questions about how you think your child FEELS about aspects of their life such as family, friends, health and job. Each question begins with "How do you think your child FEELS about…..?"

This questionnaire has been designed for adolescents with all different types of cerebral palsy and some questions might be hard to answer. Please just do your best to give an answer for each question. The questionnaire is measuring how your teenager feels, not what they can do. This information will be used for my master degree thesis that is about "Sports area design for people that are affected by cerebral palsy".

For each question you may circle the best number that shows how you think your child FEELS. You can circle any number from 1 (Very unhappy) to 9 (Very happy).

Here is an example:

Q. How do you think your guests feel about...

their ability to communicate with other guests

Thank you for your helpful opinion,

Gökhan Keskin

1

Family & Friends

Q. How do you think your child feels about...

	Muito infeliz		Infeliz		Neutro		Feliz		Muito feliz
the way he/she gets along with people generally?	1	2	3	4	5	6	7	8	9
the way he/she gets along with you?	1	2	3	4	5	6	7	8	9
the way he/she gets along with other carers?	1	2	3	4	5	6	7	8	9
the way he/she gets along with his/her brother(s) & sister(s)?	1	2	3	4	5	6	7	8	9
the way he/she gets along with children?	1	2	3	4	5	6	7	8	9
the way he/she gets along with adults?	1	2	3	4	5	6	7	8	9
his/her ability to spend time on his/her own?	1	2	3	4	5	6	7	8	9
his/her ability to spend time with friends?	1	2	3	4	5	6	7	8	9
going out on trip with you?	1	2	3	4	5	6	7	8	9
how he/she is accepted by other children?	1	2	3	4	5	6	7	8	9
how he/she is accepted by adults?	1	2	3	4	5	6	7	8	9

how he/she is accepted by people in general? 1 2 3 4 5 6 7 8 9

your capability of satisfy his/her needs? 1 2 3 4 5 6 7 8 9

his/her capability of satisfy his/her own needs? 1 2 3 4 5 6 7 8 9

about his/her future? 1 2 3 4 5 6 7 8 9

Participation

Q. How do you think your child feels about... Muito infeliz | Infeliz | Neutro | Feliz | Muito feliz

his/her ability to participate in social events at Villa Urbana de Valbom? 1 2 3 4 5 6 7 8 9

his/her ability to participate in social events outside of Villa Urbana de Valbom? 1 2 3 4 5 6 7 8 9

his/her ability to participate in recreational activities? 1 2 3 4 5 6 7 8 9

his/her ability ability to participate in sporting activities? 1 2 3 4 5 6 7 8 9

Communication

Q. How do you think your child feels about...	Muito infeliz	Infeliz	Neutro	Feliz	Muito feliz
the way he/she communicates with people that he/she knows well (using any means of communication)?	1	2	3	4	5	6	7	8	9
the way he/she communicates with people that he/she doesn't know well (using any means of communication)?	1	2	3	4	5	6	7	8	9
the way other people communicate with him/her?	1	2	3	4	5	6	7	8	9

Environment

Q. How do you think your guests feel about...	Muito infeliz	Infeliz	Neutro	Feliz	Muito feliz
the special equipment he/she has at guest houses (e.g. special seating, standing frames, wheelchairs, walkers)?	1	2	3	4	5	6	7	8	9
the special equipment he/she has at common spaces in Villa Urbana de Valbom (e.g. special seating, standing frames, wheelchairs, walkers)?	1	2	3	4	5	6	7	8	9

the special equipment he/she has in sport areas in Villa Urbana de Valbom (e.g. special seating, standing frames, wheelchairs, walkers)? 1 2 3 4 5 6 7 8 9

the being outdoor? 1 2 3 4 5 6 7 8 9

the using terrace at Villa Urbana de Valbom? 1 2 3 4 5 6 7 8 9

the using backyard at Villa Urbana de Valbom? 1 2 3 4 5 6 7 8 9

Thank you!

5

Cerebral Palsy Quality of Life Questionnaire For Primary Caregiver

Below there are some questions about how you think your guests FEEL about aspects of their life such as family, friends, health and job. Each question begins with "How do you think your guests FEEL about.....?"

It is important for you to report how you believe your guests feel. Sometimes it is difficult to know how your guest is feeling. Please just try and answer as best as you can. This information will be used for my master degree thesis that is about "Sports area design for people affected by cerebral palsy".

For each question you may circle the best number that shows how you think your guests FEEL. You can circle any number from 1 (Very unhappy) to 9 (Very happy).

Here is an example:

Thank you for your helpful opinion,

Gökhan Keskin

1

Family & Friends

Q. How do you think your guests feel about...

	Very unhappy	Unhappy	Neutral	Happy	Very happy
the way they get along with people generally?	1	2	3	4	5	6	7	8	9
the way they get along with you?	1	2	3	4	5	6	7	8	9
the way they get along with other carers?	1	2	3	4	5	6	7	8	9
the way they get along with their families?	1	2	3	4	5	6	7	8	9
the way they get along with other guests in Villa Urbana de Valbom?	1	2	3	4	5	6	7	8	9
the way they get along with other people outside Villa Urbana de Valbom?	1	2	3	4	5	6	7	8	9
the way they get along with children?	1	2	3	4	5	6	7	8	9
their ability to spend time on their own?	1	2	3	4	5	6	7	8	9
their ability to spend time with friends?	1	2	3	4	5	6	7	8	9
going out on trip with families?	1	2	3	4	5	6	7	8	9

how they are accepted by their family? 1 2 3 4 5 6 7 8 9

how they are accepted by other guests? 1 2 3 4 5 6 7 8 9

how they are accepted by colleague? 1 2 3 4 5 6 7 8 9

how they are accepted by people in general? 1 2 3 4 5 6 7 8 9

Participation

Q. How do you think your guests feel about...

their ability to participate in social events at Villa Urbana de Valbom? 1 2 3 4 5 6 7 8 9

their ability to participate in social events outside of Villa Urbana de Valbom? 1 2 3 4 5 6 7 8 9

their ability to participate in recreational activities? 1 2 3 4 5 6 7 8 9

their ability to participate at job? 1 2 3 4 5 6 7 8 9

their ability to participate in sporting activities? 1 2 3 4 5 6 7 8 9

Communication

Q. How do you think your guests feel about...

the way they communicate with people they know well (using any means of communication)? 1 2 3 4 5 6 7 8 9

they way they communicate with people they don't know well (using any means of communication)? 1 2 3 4 5 6 7 8 9

they way other people communicate with them? 1 2 3 4 5 6 7 8 9

Psycology

Q. How do you think your guests feel about...

their life in general? 1 2 3 4 5 6 7 8 9

themselves? 1 2 3 4 5 6 7 8 9

their future? 1 2 3 4 5 6 7 8 9

their opportunities in life? 1 2 3 4 5 6 7 8 9

Environment

Q. How do you think your guests feel about...

the special equipment they have at guest houses (e.g. special seating, standing frames, wheelchairs, walkers)?	1	2	3	4	5	6	7	8	9
the special equipment they have at common spaces in Villa Urbana de Valbom (e.g. special seating, standing frames, wheelchairs, walkers)?	1	2	3	4	5	6	7	8	9
the special equipment they have in sport areas (e.g. special seating, standing frames, wheel-chairs, walkers)?	1	2	3	4	5	6	7	8	9
the being outdoor?	1	2	3	4	5	6	7	8	9
the using terrace at Villa Urbana de Valbom?	1	2	3	4	5	6	7	8	9
the using backyard at Villa Urbana de Valbom?	1	2	3	4	5	6	7	8	9

Thank you!

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Appendix 4. Interview with Liliana Araújo – Director of Villa Urbana Gondomar

L: We have two places where they can do sports. We have one here and I am going to show you gym and the pool. And we have some adaptations for them to go inside to water. I can show you the lift. It has a new technology that is really expensive one. When we built that pool, we choose the hot water option that is 34 degree because of capacity of the people with cerebral palsy. The lift can make them inside of the pool in anyplace of the pool. I will show you. And in the gym, we have some classes are mixed, and we have another one that is only for disabled people that has cerebral palsy and other kind of disabilities; because, we do not only have disabled people with cerebral palsy. Some services have all kind of disability together. This is in here. Outside, the other place that you were there today in the morning, they have also a gym that is specialized for bocce. Do you know bocce? It is the main game that people with cerebral palsy usually play. They have 4 balls. They are blue or they are red color. And it is a white one. They have to put their balls close to the white ball. There are three kinds of bocce. One group, if they don't have any problem with the upper part of the body, they can throw the ball. They can throw from down or they can throw from up. Or they have some kind of special helmet. They put the helmet on and used that for the throw the ball. There is a helper that back face to the game. So helper cannot see the game. The gamer tells how the direction or high is. If you write on the internet you may find all details. Another Olympic game that is trained here is Petra- Race Runner. It is sport with bicycle with three wheels. There is small wheel in front and two bigger wheels at back. They put their feet on the ground and run. They are going to practice in few minutes. So you may watch. In that facility, we have two Paralympic athletes. One of them plays bocce and he has a gold medal. The other one is in race-runner team. They live in here in houses. So, these are two main areas. In the first one, we have teams that specialized in training. We have national coaches. This is our big area. Then, we have another kind of place that they do capoeira that is a kind of Brazilian

dance. They also do some kind of physical activities classes that they can do some stretching or relaxing according to our activity plan. And then, in gym, we have all kind of classes for everyone. They are mixed classes. We have bale, karate, dance, and many other options mostly for children.

G: What is the age group? Do you have any specific division?

L: Yes. It depends to activity. For example, for bocce, it starts from 6 years old and there is no upper limit. In that facility, we have also children starts from 3 years old for pre-school education. For sports, we don't have limitation.

G: How do they train?

They work mostly all together. When they train for Olympic game, they are working individually with a trainer. Each of them has an individual coach and trainers practice with them according to schedule that they decided together. So, you can visit both places. First of all, you can watch them in here. You can see what they do here, how they practice. And also, you can go to Rehabilitation Center to observe them. In there, all day they practice. You may talk with trainers, players and families if they can speak English. The only thing, you may not take picture without asking each person. They need to give permission to rake it. Be careful please. In here, gym is always used for activities. You may never find empty. They are doing physical activities, dancing, theatre, capoeira, etc. During all day, there are some kinds of activities. In Rehabilitation center, they are more specialized. You may choose which place is better for your work.

G: It seems this area is better to observe; because, here, there are many different kind of activities that I can observe to understand their reactions. And also, it is better to see them in the mixed classes. It seems better for me to start from here; but, I really want to observe other area too. In that case, I may see more professional people and I may do interview with trainers as well.

L: You may visit both of course. If you want to see gym, let me just check what is going on there and we may visit?

G: Yes, I appreciate.

L: We may go down. You can see what I told.

(While we are passing in front of the guest houses) This building was made for adults with cerebral palsy that do not have the possibility to have their own house. They need support. They are 25, 26, and 30 years old and they want to live alone. They want to get out of their parent's house. But, they need to be supported to get rest, to go to the bathroom. Here, we have 14 houses where they live alone and we give them to support that they need to do things in a motorway. They are completely safe here. Cerebral palsy effects to motor movements of the body. We have some people that can only move eyes.

(We arrive to gym entrance from car parking area) For people that only come for gym, they don't need to pass from all the facility and they may go inside from here. This is a separate area. We have a lot of people from the community. They come here to do only for plates, zumba, or any kind of activity that we have in gym.

(Pool Area) It is hot because it is a pool area. We also have 120 seniors. This is the pool. I was talking about the lift. We use that kind of things to place on the lift. Lift is there and there the lift can work in x and y direction and after down.

G: What is the depth of the pool?

L: 1.20 m. And the water is really hot because of the motor neuron. It is really needed for them to relax and move better. In here, we have all kind of activities. We have hydro gym, swimming for adults, swimming for children and swimming for young people.

(Gym part 1) Now, they have a dog therapy and this is Luna (dog). Dog therapy works amazing and gives perfect results with our clients that have cerebral palsy or autism. What you see on the ground, it is the mark for bocce. These are the fields for bocce that you need to pass the line with the balls.

(Gym part 2) Ahh he is training bocce. This is the kind of helmet. (She starts to inform me to "SPORT MAN" in Portuguese) This is our friend from ESAD and he is an Erasmus student that came from Turkey. He is searching about the effects of the sports on the cerebral palsy disability. He will be with you for a while to watch to understand what we are doing here, how the facility works and how we can design interior and exterior of the area for a new sports zone.

(He started to train in the same time with his trainers for Rio 2016)

G: How are they using the helmet?

L: You will see that he will use the helmet the give a speed the ball. He is our one of the Olympic Champions. He came from the China a week ago. He was in a competition. Trainer is only helping him. He cannot see the area, only the player can see. He said the trainer how he should place.

G: He decides everything; he decides the angel, height and which ball he will use. Is there any difference between the balls?

L: Yes they are soft or hard and heavy or light.

G: What is the aim in training now? (She translates all questions to trainer in Portuguese and after translates back to me)

L: He needs to get to blue go away. And this is very difficult. By the way you can take the ball and you will see each ball has different weight. They have different functions for different aim.

(we are walking inside the pool area) Pool has a lot advantage for people with cerebral palsy; because they have a lot of limitation on their body movements. The water is hot to make them relax. So, they can do movements that usually they cannot do. They have some kind of movements that is really hard for them. If I want to move my arm like this I can do it; but 80% percent of the cerebral palsy orders of the moment are not working right. If I want to put my arm up, probably my arm will be like this (right up). In the hot water, they are more relaxed and movements are more soft.

G: Is this because of the only hot water?

L: Yes; because it makes the muscles and nerves warm and relaxed.

They are different kind of cerebral palsy. They can be like hypertonic or, in opposite, it seems like they don't have any power and their body posture is down. Some can walk some cannot walk, they are very different. It depends of the part of the brain that is damage and how it is big damage. It is very different with each other.

(Tour is over in area) So, is it good for your work?

G: Yes, very much thank you.

L: I can share with you the schedule of the coordinator. So, you can talk with him. That he will be able for you to work together. And also, we may contact with you by mail or telephone. Is it good for you? We can put this on the process.

G: It can be nice to make questionnaires. I don't know how it will be possible to make a questionnaire.

L: Yes. You can. Do you want one or more than one questionnaire?

G: It can be better to do more than one group. So, I can compare them and have a better result.

L: Do you want to them all in the same age?

G: I was thinking to focus on the younger than 18 years old.

L: For that, you need to talk with Rehabilitation Center. It is not a problem. We can do that. But in here, we have only adults like the man that you saw. They are always more than 25 or 30. If you teenagers, we may talk with Rehabilitation Center, no problem. What are the best days for you to go there?

G: Any day.

L: You can give me your e-mail. I am going to meet with director of there. We are going to schedule something for tomorrow. I will write you the time. And there will be one person will be with you there. And also, that person can give you info you need. You can write your e-mail write here. It will take two months to learn your name. keskingokhan... And this is mine. (She is writing some coaches and trainer names). Coach Ana Sofia. I am going to send you the schedule of the trainings in here, if you want to join any activity in here. Ana Sofia is going to talk to you to schedule tomorrow. Is it good?

G: Yes, it is great. And, May I visit some of the house if it is possible to see the organization on the rooms? Because you said it is design different for each of them.

L: Yes. I would like to show you entire building. So, I can do it right now if you want?

G: But, you said that you have a meeting?

L: Yes, but, I am already late. It was eleven and nobody said anything to me. So, I guess they quit on me.

G: Thanks for your time. I will be on contact with you.

L: You are welcome.

Appendix 5. Interview with Pedro Fernandes (Coordinator of APPC Rehabilitation Center), Sara Brandao(Trainer), Luis Pacheco(Trainer).

Pedro Fernandes: Those three teams make the same work as rehabilitation but with people on different geographic areas. We have also other team; if we want to go to a spa, for example, we want to relax, we have a team that takes care of those issues to help them to be well. Another team tries to provide them anything they need to get a job; it can be information, preparing them or trying to include them in some companies. So we are organized in different interests and needs that they have.

In this area we have offices, for patience therapist, speech therapist and physiotherapist. For example, in this moment we have here a person that is trying wheelchairs. They are watching what the best is for the person, trying the materials. A technician from a company came here, it doesn't belong to us. He came here with the wheelchair and all the adaptations, everything, and with our therapist they are trying to see what is better by the posture. It's like an evaluation in team, not only us but with the person from the company that provides these wheelchairs.

We have always small seats, usually for therapist. This is like a desk, it can turn. And we have always the mirror because it's really helpful for us. I said this because I was in gymnastic. For us is not easy to know what we are doing while we do therapy.

I can show you this part where therapists are doing adaptation on the toys to give the opportunity to them to play like another child that can do everything. We made something like this... we are doing now also some adaptations without wire, wireless. We have a volunteer who makes these adaptations; he is the father of one of our clients. He is good in doing this kind of job so he is a volunteer and he is always thinking on doing different things for the kids.

Each day we do here around 90 or 100 treatments. People come here and it's free. We receive some money from the government so everything we do here it's free. Our institution, that is Cerebral Palsy O Porto Association as it is called in English, coordinates the job and everything here and also in other places. We have more buildings and on those places people that are there they pay for that, some money according to their possibilities. For example in Villa Urbana people that are there pay some money, if they want to stay in the apartments or even if they want to join the activities they give a co-participation. In all the other activities they pay. It cannot be too much but it is difficult for us to do this evaluation. Perhaps there are people that say "I cannot pay that, so I don't want to go anymore" even they want. This is the reality.

APPC, the name of our institution, have agreement with the Social Security to provide services. We provide services and the roles of the Social Security, who gives us the money, they make the roles and we have to respect that. The same people who is receiving the treatments they receive also money from the government. So the government needs to pay them and for the services that they provide to them. Here, because it is about rehabilitation, it's free.

Here we have more offices. There is also psychologist, doctors.

Gökhan: Which kind of doctors?

P: Physiatrist. They are simple rooms.

G: Does the doctor give medicine here? Or for example they go to hospital and they receive the therapy there? I mean, here you don't work as a hospital.

P: No. it's not a hospital, it's a rehabilitation center. For example, to do physiotherapy and to know what to do on physiotherapy, the doctor makes the prescription. He suggests that the person need the physiatrist and needs to this kind of physiotherapy. Here we do the evaluations, sometimes it is together with other

professionals. So here it's not like going to the doctor because you have some pain. Sometimes they have pain because they use some adaptations so when they come here they explain their problems, of course.

In these rooms we make some evaluations to help them. It can be also on work, or school or professional schools. We are able to see at school what is the reality, how they are taking notes during the classes, for example, and we make the evaluation to see which kind of communication system you need to help them to communicate with the others. There are several programs; it can be by pictures, for example. On the computer they can select the pictures and then the computer says the word, then they can listen.

They can use the computers, for example word. It's like this kind of screen and the first line stays like highlighted and it emits a sound "beep, beep" and you can push the bottom here, or switch like that one. Then it starts to select and they can write. It's a long process but if they can be fast you can adjust the speed of the program according to the speed of each person. It will be much faster. This is one system; there is another one that you can touch here, another one is with the eyes: we make a calibration with this camera and the eyes. Then, the mouse goes in the place where they are looking. We just look and it goes and if you want to click, you just stay little bit in the position without moving. Here there are all these toys, for the kids.

I want to show you this part because the athletes are still practicing. Before the kids come, we can visit it. These athletes belong to the national team; the lady is from Lisbon, she is here during this week for training with the boys. They are going to Dubai for competition. That's why they are training and they work as a team, together. There is also the teacher and a volunteer who helps us. They were in China two weeks ago for the World Championship and probably these three are going to compete in Rio de Janeiro. Armando is also fighting for this, but it's really difficult for him.

This is already prepared for the kids. They use some other devices. It usually stays with the kids. Do you have any idea about snooze-land? (Sense Room)

G: No, I do not have any idea.

P: So it is an activity, the main goal we did for this activity is provide feelings to the persons. It can be with smell, eyes, ears, touching, feeling, and hear with that kind of work. It can be than to estimate the person most of the times what i see is more to relax. Do not look because it is probably the one finishing one session and the lady supposed to come here. That people stay relax, sitting, if you want to try that one is very good, it is very relaxing. We can use different kind of music of course. And also if we change that, we can use different kind of images. Sometimes they want to be doing applause. Sometimes we can see different reactions. This is the first time I am using this. It is new, it is another one. There is one more thing. This has got different lights; it is going to change the lights.

It has got some lights and the lights are going to change. But we cannot change them all. So we can be like on this carpet. Usually, they like and mostly they appreciate a lot. You can smell it also. And sometimes it depends on the people. You can understand and appreciate it because you can realize muscles are relaxing and they start putting themselves on this position. You can be sure that something is going to happen. We cannot understand how they feel; but we can understand it provides good feelings.

G: What kind of games or sports they prefer generally?

Trainer: They cannot play outdoor sports so we have to stay indoor mostly. They prefer to play bocce and table cricket. Mostly children do not want to play first. They are shy. But after, they join the game and never quit anymore. They are interested with race-running. With special equipment, they like to feel freer.