

Rehabilitative landscape in the urban environment

Linda Balode, *Latvia University of Agriculture*

Abstract. The article descriptively presents recent trends in the Rehabilitative landscape of the 21st century. This outdoor space of the therapeutic environment includes integration of architecture and landscape based on an ecologically and socially sustainable design. It is a choice of natural materials that reflects the cultural and landscape values, extensively using not only local plants, but also wood, glass, stone and metal materials, harmoniously incorporating them in the landscaped surroundings. The already existing forest plant base is often used, on which groups of wild/ native planting are harmoniously exposed. As well, there are examples where the synthesis of the elements of the forest and meadow landscape is successfully brought into an entirely new urban environment. Such landscape of the medical institution is rather economical as it does not require huge caring work. The wild trees and planting with interesting branches, bark color, bright colors of fruits and foliage dominate in the plant selection that can give aesthetic pleasure in the length of all four seasons. The architecture of the medical buildings is dominated by the outdoor and indoor space harmony where the way of expression, materials and the form are embodied by the application of glass planes in the building art. Harmoniously connected outdoor and indoor spaces create communication that is manifested in forms, structures, colors, proportions and, of course, in the human psychological regularities.

Keywords: urban environment, rehabilitative landscape, communication with nature.

Introduction

The architecture of health care and its surrounding outer space is one of the most complex and the most important spaces in the urban environment. Psychological moment finds, not only in the social attitudes, but also the environment in which the person living in. The environment in which people are able to treatment, relax and spend their free time. Most medical institutional the green area is obsolescent and not-functional. Today, high medical equipment technologies contributes ignore to patients, families and staff need the emotional and spiritual needs recovery in outdoors, but the studies reveal many interesting facts proving that a person's interaction with environment improves its mental and physical health. The landscape environment of health care is usually perceived as being a "scary area", thus separating it from the rest of the urban environment. But the trends of the 21st century bring new perspectives and approach to the landscape design of the landscape of health care facilities that is changing public views and the psychological limit. The overall image of the landscape is softened by a greater focus on the public space, nature and human interaction.

In the Europe of the 21st century, features of the development of the urban environment are also significantly influenced by the changes brought to the visual space cognition in the way of thinking [15]. Hence, the landscape environment space of health care has changed with the times. The visual communication focuses on the transfer of

information through the eyes in an understandable way and the reception of this information, as well as on the means and techniques used in the creation of the visual information.

In the Rehabilitative landscape, patients, visitors and the staff is to be provided with a maximum opportunity to communicate with nature – in the outdoor spaces, indoor atriums and in views from windows. In the single idea of rehabilitative outdoor space, the elements of each composition are included as stand-alone units. The stimuli of the psychological perception change patients' perspective on everyday life, as well as provide a sense of balance.

Despite of the long history of health care [1], nature's effects on human health have been studied relatively recently. Research has led to the belief that the garden plays a significant role in the patient recovery process. Roger Ulrich has carried out an important research in 1984, demonstrating the link between the length of the patient recovery in the health institution, the use of analgesic drugs in treatment and the opportunity to view nature from windows of the hospital. Rehabilitation procedures improve patients' physical and emotional endurance. In the interaction with the natural environment, patients receive positive emotions that leaves a healing effect on their physical health. Studies demonstrate the positive impact of nature on the patients' blood pressure, cholesterol and stress changes in the body [3; 13; 18; 21; 22; 23].

Materials and methods

The latest informational materials available on modern rehabilitative landscapes in the urban environment, which include general health care centers, hospitals, cancer treatment centers and maternity hospitals are studied. The study includes the author's subjective selection of eight of the world's recognized rehabilitative landscape sites located in the urban environment and landscape of which refers to the 21st century.

For the study of the rehabilitative landscape and its architecture, the descriptive method has been used, which is manifested as the informative, archivist and photo analysis. The overall image of the rehabilitative landscape and its individual elements, the stylistic features of the architecture of buildings in the composition, in materials and at the emotional level are analyzed. Communication of the indoor and outdoor spaces of the contemporary rehabilitative environment is studied, in the center of which the man is located.

The aim of the paper is to summarize the most characteristic features of the modern rehabilitation landscape in the urban environment. Examine and describe the most common outdoor space types of the rehabilitative landscape in the urban environment. When analyzing specific examples, to determine the trends of the rehabilitative landscape that recur quite often in the urban landscape nowadays. Specify the world's most vivid examples of the modern rehabilitative landscape, which harmoniously, aesthetically and functionally fit into the urban environment.

Results and Discussion

Typology of outdoor spaces in the rehabilitative landscape

The Typology of rehabilitative landscape primary focus is garden spaces in healthcare outdoors facilities. These landscapes spaces designed for a specific population, often with an specific purpose encouraging seniors to get outside for exercise, sunlight and fresh air; helping patients learn to use a wheelchair on outdoor surfaces and enabling children to play and relax during a hospital visit.

1. Landscaped setbacks – an area located at the main entrance. It visually separates the health care building from the entrance to the building.

2. Front porches – the hosting place where the patient is taken to the health care facility. It is usually equipped with a shelter and a restricted holding with a rest area.

3. Entry gardens – an aesthetically high-quality scenic area, located close to the main entrance of the building.

4. Courtyards - a sufficiently large central green zone for active and passive recreation of patients in their spare time.

5. Plazas – areas intended for sitting in a peaceful atmosphere, with solid covering materials and comfortable benches for having a rest. The solid surface areas around the seats are complemented by bright beds of plants more or less located at the height of the human eye level.

6. Roof terraces - the roof terrace is often a long, narrow balcony that occupies one side of the roof of the healthcare facility. The roof terrace is at risk from the sun, wind, rain, shadow and the views from the highest windows of the health care building, therefore, great attention should be paid to the selection of the roof terrace place [2]. For the improvement of the roof terrace, a wide range of assortment of potted plants and small architectural forms for relaxation purposes are located there.

7. Roof gardens – attracted to ecological buildings allow you not only to enjoy nature, but they create a free space for relaxation in the garden, letting you feel different atmosphere. The space of the roof garden is not interfered by hurrying passers-by and cars, there will be less daily noises, you can feel the fresh air and freedom there (the higher the roof, the smaller the percentage of heavy flue gasses in the air). The roof garden is not only for comfort, but also for air humidification and suppression of noises and dust in the urban environment, as well as for heating savings – in winters it heats the house, while in summers it prevents the premises from overheating. The planting selection is very important as well. You should be aware of the characteristics of plant roots, which, for instance, have an aggressive or a large root system. Therefore, it would be preferable to invite professionals who deal with roof gardens or at least you should have a consultation with them.

8. Healing gardens – the basic principles of these gardens date back to the medieval period. They were planted near hospitals, shelters, rehabilitation centers and nursing homes [9]. The healing gardens include garden rooms intended for different age groups. The healing gardens include elements and areas for the sensory development of people, often developing them specifically, for healing particular diseases [16; 25]. These gardens can be directed to both passive or active participation of patients in the green environment. It includes: Possibility viewing garden through the window; Comfortable benches - sitting outside; Dozing/napping/meditation/prayer; Gentle rehabilitation exercises; Walking to the preferred spot; Eating/reading/doing paper work outside; Taking a stroll; Child playing in the garden; Raised bed gardening; Vigorous walking. Sports [4].

The patients often cannot walk outdoors, so the landscape must be designed in such a way that it would be also possible to see from the hospital's windows. These gardens should follow a certain proportion of the materials used, where 70 % of all the area is occupied by trees, shrubs, flowers and grass, but only the remaining 30 % is used for walking paths and squares [6; 16]. When creating the healing gardens, a particular attention should be paid to the prevention of the negative urban factors in the urban environment. They include noise of the city, various odors and flue gases.

9. Meditation gardens - the gardens are aimed to promote relaxation of patients and concentration towards the recovery. Simplicity reigns in the garden. Some layout principles of the design: The circle – which symbolizes the cyclical nature of life; The square – symbolizes the universal order; The Celtic knot – the 20th century Scottish Celtic art professor George Bain (1881–1968), “the father of modern Celtic design” has taken interest in it. The Celtic knot can be closed or open - symbolizing the infinity, journey both physically and mentally. It is considered as the symbol of eternity [2; 14].

In the meditation garden, attention should be paid to the presence of water, which is characterized both by the water lisp and the pleasantly cool air. The garden should include space for a wide lawn and seating overlooking the soothing landscape. In choosing vegetables for the garden, clashing colors should be avoided, trying to use the lavender, blue and green shading [8; 10].

10. Viewing gardens – the gardens are usually relatively small and do not provide the opportunity to enjoy all the human senses. The garden is more based on landscape viewing. The garden can be arranged so that it would be easy to look at from the indoor spaces as well. Water elements can be found there. Such gardens are relatively simple and inexpensive, but they do not provide the patient with a full recovery, as given, if complemented by sense raising plants, Braille and other senses stimulant garden elements.

11. The viewing/walk-in garden – these gardens are small and usually located with the entrance from the corridor or the waiting room. The green zone is relatively quiet. This green zone is not interfered by other patients and the staff, moving along the corridor. Due to the small size, these gardens lack intimacy [2].

12. Edible gardens – gardens providing not only a visual enjoyment, but also the taste enjoyment. The specificity of these gardens lies in the distant past, associated with the monastery gardens. Garden planting is complemented by fruit-bearing shrubs, fruit trees and even flowering herbs, providing a completely different garden dimension [17]. Edible gardens include mostly annual plants, so

it also requires greater care. It is possible to change garden crops every year, so these gardens represent the variability of the world in space and time. Such gardens are important for both children's health care facility areas and any other healthcare facility areas.

The Rehabilitative landscape the site selection plays an important role in patient recovery. It must be quite broad landscape, include more spaces and should be encouraged to the patient a variety of positive feelings. Rehabilitation of treatment gardens is based not only on aesthetic the thought but also functional planning. The design must be in harmony with the patient and the environmental landscape. Whereas it is not just a relaxation space but also the possibility to get to know ourselves through a feelings and senses. With a Healing garden setting by people with mental or physical disabilities need to feel comfortable and safe. Integrated planning and garden elements stimulating the senses and develop a reflection of human activity. It is important to place in the garden, not only aesthetically high-quality art sculptures, but through the exhibits encourage patient participation and creative expression of the therapeutic in a garden setting. This is achieved with particularly selected plants, paths and tracks, space, structures, with patterns in relief and other garden elements.

Creativity and art in the design of rehabilitative landscapes in the urban environment of the 21st century

For centuries, the health care facilities have been hidden behind high walls and fences, which significantly influences the patients' perceptions. Within strictly defined limits, the “sick” and the healthy society has been isolated from each other not only physically, but also psychologically.

A well-designed rehabilitative landscape in the urban environments enhances the interaction of patients with nature, thereby reducing the fear and stress symptoms that often occur among patients [20]. Creativity and art of the rehabilitative landscape design have contributed to the generation of new and innovative ideas, moving forward new requirements and criteria for the new landscape space which promote the creation of a better rehabilitative landscape. The rehabilitative landscape trends that nowadays quite often recur in the urban landscape:

Landscaped roofs – one of the most notable trends of the new rehabilitative landscapes of health care in the urban environment. The existing roofs are greened, but in particular the development is tangible in the new building construction of health care. The roof gardens bring the urban environment not only closer to nature, aesthetic space, but also in combination with health care, help people to regain

emotional and physical health. The roof gardens are based on the fundamental principles of simplicity, naturalness and harmony. Local materials and plants suitable for the urban environment are used. Emotionally rich panoramic views, that at the street level cannot be even hinted, should be marked as a positive element to the roof gardens.

Closer to nature – landscape, architecture, hence the development of the urban space go hand in hand with the requirements of the people as individuals against their living space. Nowadays, a great attention is paid to the use of natural, local materials in the urban rehabilitative landscape. Also, in the world practice, there is an opportunity to look at several such examples where the natural elements of the forest and meadow landscapes – trees, boulders and water elements are brought into the urban rehabilitative landscape, in this way providing the patient with an artificially closer natural landscape. Such landscapes are distinguished by their specific charm and feelings that the patient receives while walking.

The simplicity of the structures – such landscapes are easily readable, without causing unnecessary anxiety in patients. Wide lawns complemented by natural, local woodland plants that synthesize with reed grasses, grasses and pebble areas dominate in the materials. In the design, one common concept unites each individual component that is often played out in a semi-circular or circle shape. Thus, the rehabilitative landscape brings in a new perspective into the urban environment. The natural materials – wood, metal, stone and glass also dominate in the building architecture.

Indoor and outdoor space communication – this communication is nowadays applied so widely in glass structures, which is also a substantial and significant addition to the landscape space of health care. In the 21st century, glass has become an inexhaustible source of inspiration for architects, landscape architects, interior designers and artists. Thanks to its physical, emotional, psychological characteristics, glass has provided a wide range of possibilities for the building and landscaping art. It is very important for patients, the staff and visitors to be in nature, but if not, then it is provided by glazing, which offers scenic views of the garden or a landscape designed backyard of the medical authority. One of such ways is the atrium. The atrium offers a versatile space with different ways to connect to the rooms around. Glass, harmoniously merging with the indoor and outdoor space, provides spaciousness, simplicity and clarity. In general, as the building material, glass has a very wide opportunities of manifestation – not only in flat façades, windows and doors, but also in glass columns, beam and ribs, floors, stairs and stair railings.

With seasonality – that is, where there is nature, there is also a rhythm. Not only the flow of the time rhythm, but also the daily and the seasonal cycles. Paying more attention to the changes in the landscape, it is possible to develop specific therapeutic gardens, combining various plants with various visual changes in leaves, fruit, bark, etc., throughout the seasons. It ensures efficient results, allowing you to enjoy the garden not only in spring, summer, but even in autumn and winter seasons.

World examples of planning rehabilitative landscapes of the urban environment in the 21st century. Transforming health

“Being comfortable within the space is essential for the patients. It is very important for mind healing and mind healing is very important to the body healing. We don’t just want bricks and mortar. We want healing happening in the healing garden.” Paul Dale, MD. Interim Medical Director, Ellis Fischel Cancer Center. Medical Construction & Design [5].

The natural local vegetation, natural materials used in architecture, soothing water elements and comfortable walking paths give patients a sense of peace both physically and morally during the entire treatment. Nowadays, gardens of health care facilities are subordinated to each person's individual needs, providing a sense of togetherness among the patients or feeling of individual privacy. Separation of the garden space for different users with different needs can be as important as the space itself. The basic elements of a healing or therapeutic garden include: Plants and wildlife, Walkways, Private sitting areas, Shade, Water features, Mobile outdoor furniture, Indoor/outdoor space communication, Fields of circular shapes are toyed in the garden design – in the hard and soft cover.

Jacqueline Fiske Healing Garden and Garden of Hope, Jupiter Medical Center JUPITER, FL

The whole Jacqueline Fiske Garden (Fig. 1) is divided into two separate parts of the garden: the Healing Garden and the Garden of Hope. The overall objective of the garden is to provide physical and mental rejuvenation to patients suffering from heart diseases. The staff and visitors may also enjoy the positive impact of the garden. The gardens provide a quiet, peaceful respite from the stress of the medical environment, illness and the problems.

The garden concept focuses on four points of therapy:

Sense of Control – based on a garden visitor's sense of freedom, allowing to determine what and how much one desires to view the garden,



Fig. 1. The greenery and recreational space of Jacqueline Fiske Healing Garden. The landscape is complemented by functional armrests for benches and walking paths [Source: from the Studio-Spout webpage: <http://www.studio-sprout.com/2012/09/jacqueline-fiske-healing-garden/>]



Fig. 2. The central part of the garden with water elements and a statue where people have a chance to rest and relax every free moment [Source: <http://www.healinglandscapes.org/blog/category/quotations/>]



Fig. 3. Jacqueline Fiske Garden of Hope, a resting place near water [Source: photo by Michiko Kurisu, http://www.healinglandscapes.org/blog/2012/04/earth-day-2012-sustainable-and-therapeutic-landscapes/img_4665/]

whether a person desires to be alone or in communication with others.

Exposure to Nature – 80 % of the bedroom windows of the health care authority is directed to the garden landscape. Greenery and the vast water landscape enrich biodiversity of the garden.

Exercise – the walking paths are complemented by small architectural form elements (benches, fountains and sculptures) which invite to study the garden and spend more time outdoors.

Social Support – application of the principle of the universal design in the garden allows you to enjoy nature and provides relaxation for people in wheelchairs [11; 12].

Both parts of the garden have a number of special features:

Jacqueline Fiske Healing Garden

Located on the east side of Jupiter Medical Center. The garden has curved hard surface walking paths and a bridge. A water element with the sculpture “Egret” – a grey heron pair (Fig. 2). The garden landscape is shaped by natural, dense plantings, which creates a sense of a sanctuary. The garden focuses on the man and his individual needs. The garden visitor has the opportunity to choose whether to sit in the sun, shade or to communicate with others or separately relax from the rest of the society. Benches and walking paths are fitted with armrests, which have a support function (Fig. 1). It is possible to view the landscape from the indoor space, the gym. A butterfly garden and arbor.

Jacqueline Fiske Garden of Hope

The garden includes a fern garden. An expansive wooden deck with an overlook of the lake on the southeastern side of the campus (Fig. 4). 40 transplanted oaks, giving a sense of independence and a sense of greatness to patients, as well as a sanctuary for birds and animals. Moveable furniture is used in the garden that encourages unlimited independence and autonomy (Fig. 3).

Therapeutic gardens at Lutz Center, FL

The fundamental principles of the garden are based on the universal design concept that provides a link of patients, families, visitors and the staff of the hospital with the surrounding natural environment. In the garden, you may receive physical, occupational, speech and horticultural therapy. The garden is divided into several zones: the residential, therapeutic, dining room and lobby zones.

One area of the garden from the other one is separated by winding walking paths in the central courtyard which run through the artificially created forest landscape, offering the visitor to enjoy the various sensory stimuli. The courtyard garden is designed as a forest of the senses, which provides the visitor with views of the natural scenery, sounds, smells and textures. The natural outdoor environment provides



Fig. 4. Jacqueline Fiske Garden of Hope, a resting place near water [Source: <http://www.studio-sprout.com/2012/09/the-jacqueline-fiske-garden-of-hope/>]



Fig. 5. Duke Raleigh Gardens landscape
[Source: from the Dukeraleigh hospital webpage:
<http://www.dukeraleighhospital.org/about-us/guild/gardens>]



Fig. 6. Duke Raleigh Gardens landscape
[Source: from the Dukeraleigh hospital webpage:
<http://www.dukeraleighhospital.org/about-us/guild/gardens>]

the underlying and fundamental sensory system development: (the underlying and more foundational sensory systems: proprioception, kinesthesia, vestibular and provide realistic settings for physical, occupational and speech therapy programs). The garden design provides multi-generational activities. The walking paths of the garden by universal design principles are supplemented with ramps and stairs, as well as the widths of the walking paths are respected so that even in wheelchairs it would be easy to move. In the garden, space is reserved for relaxation - card games, yoga, children's parties and for small outdoor events. There is a vine trellis, beds of herbs in the garden, providing the opportunity to develop the sense of taste. The therapy garden, adjacent to the health care facility, provides the opportunity for people to physically engage in the garden. A part of the therapy garden is equipped with special adjustable desks, chairs, ramps and railings [19].

Duke Raleigh Gardens at Duke Raleigh Hospital, Raleigh, NC

The Duke Raleigh gardens are created in three phases by the landscape designer Ran Johnston with Lassiter Mill Gardens in collaboration with Jeff Evans of Earth Graphics. The core values of the garden: in the landscape, local plant species, water elements and winding walking paths are used, permeating the green grass fields of the area (Fig. 5, 6). The garden provides a harmonious sanctuary for patients, visitors and the staff of the facility. There is a place for walking and recreation in the garden. The walking paths with hard surface and the wooden boardwalks allow you to easily move through the territory, even in the wheelchair [5].

Mercy Medical Center's, the Baltimore Hospital's Green Roof

As with the most city's hospitals, Mercy Medical Center has faced a difficult task – to improve the outdated infrastructure of the care environment. On December 18, 2010, the 18-storey hospital gets a brand new visual appearance. The Baltimore Landscape Architects Office *Mahan Rykiel Associates* (SAN) that more than 29 years has been practicing in the care facility, rehabilitation and therapeutic garden building, has cooperated with AECOM and it has developed a general plan at the landscape street level and the Centre's green infrastructure.

The main aim of the project has been to create a scenic outdoor space, which, practically, in urban environment at the street level has no place. The roof garden is a perfect solution to offer patients relaxation in a harmonious landscape. The main design principles: The rehabilitative environment design is based on the man and his needs. Including and improving the existing infrastructure. Enhancing density and connectivity.



Fig.7. Duke Raleigh Gardens landscape [Source:

<http://www.landscapeonline.com/research/article/17101>]

Managing run-off. Improving or creating the habitat. Creating an outdoor space to relax.

Within the project, roof gardens on 3 floors have been created (Fig. 7), which are also visible from the elevator, lobby and all the upper windows of the hospital. All three gardens are not connected among themselves. They share a common design concept, developed in the lawn, pavement and plant patterns. In all three levels, the lawn is arranged so that in the view from the top, a circle is formed. From all of the roof gardens, a magnificent panoramic view of the Baltimore south, east and north can be viewed. This is an additional benefit of the landscape space.

On the 8th floor, designed for maternity care, a fountain, a trellis structure, tables and chairs, multiple seasonal plantings and space for a future commissioned sculpture are located. Paving is dimensional/flagstone with granite accents and banding. The boardwalk pavers under the trellis articulate the 'porch' area and separate it for gathering and seating. Other seating options include stone benches along the stone dust path and a series of seat walls surrounding the fountain.

On the 9th floor, the intensive therapy department is located. This floor has a direct exit to the roof garden, which offers extensive lawn fields and less solid surface materials. In the hardcover, the Boardwalk pavers with granite accented bands are used. Throughout the outdoor space for relaxation, boulders are placed, offering a kind of aesthetic feeling. Closed, intimate relaxation zones with small walls and places to sit in groups, with the family and the staff. Portable desks and chairs are used in the relaxation zone.

On the 10th floor, the garden is not available for visitors. It is smaller in size. It is possible to watch it from the windows of the adjacent waiting room.

Mercy Medical Center's oasis garden plants

Despite the fact that the garden is located in an urban environment, the landscape is successfully

designed with sustainable and easy care planting. In the urban environment, the garden improves air quality and absorbs a large amount (about 75 %) of the fallout. Plantations serve as the home for birds, providing a positive impact on the recovery of patients. The greenery on the 8th and the 9th floor is quite similar. These gardens are designed and used for health-oriented plants, which visually and practically are suitable for urban conditions. Also, the seasonal changes in plantings are respected, which are essential for restoring health, therapy and rehabilitation gardens. Such plants as Amelanchiers, Armstrong maples, Clethra, Itea, Fothergilla and Skimmia are found in the garden, which provide a year-round floral flash with a variety of spring flowers, fall color and berries. On the ground plane, Amelanchiers, Armstrong maples, Clethra, Itea, Fothergilla and Skimmia provide the same seasonal changes. A Cherry laurel hedge along the back of each space provides privacy for patient rooms while allowing filtered views into the garden.

Ann B. Barshinger Cancer Institute at the Lancaster General Health Suburban Outpatient Pavilion. Lancaster, PA

Ann B. Barshinger Cancer Institute at the Lancaster General Health Suburban Outpatient Pavilion was launched in June 2013. In collaboration with Ballinger and Johathan Alderson Landscape Architects, there is developed an astounding design of the rehabilitative landscape, which is complemented by harmonious connection of the indoor and outdoor space through glass planes (Fig. 8). Glazing blurs the line between the indoor and outdoor space, enhancing the opportunities for meditation from the indoor space as well. The idea of the landscape design is inspired by the needs of cancer patients, their families and carers. Ann B. Barshinger Cancer Institute offers natural lighting indoors, scenic views from windows and modern artwork. The interior design is characterized by natural wood finishes, Terrazo flooring, terra cotta walls. The outdoor space design is dominated by harmonious natural meadows, woods and pond synthesized elements (Fig. 9). The Institute integrates diagnostic and treatment technologies with nature. Ann B. Barshinger Cancer Institute rehabilitation landscape is divided into four landscapes stopping points: Reflecting Pools, Meditation Rooms, Healing Gardens and Green Wall.

Portsmouth Regional Hospital, Portsmouth, New Hampshire

Portsmouth Regional Hospital Built was built in 1987. The hospital serves the people of the Seacoast Region, Maine, New Hampshire, Southern and Northeastern Massachusetts with comprehensive medical and mental health services.



Fig. 8. The meditation room looks out to the healing garden [Source: provided by Richard Hertzler/Staff, from the Wikoff Design Studio: <http://www.wikoffdesignstudio.com/category/featured-artists-and-inspirations/>]



Fig. 9. Ann B. Barshinger Cancer Institute healing garden landscape [Source: <http://www.architecturaldigest.com>]

Portsmouth Regional Hospital is one of the region's largest and most sophisticated medical centers. Specialized and equipped with advanced technologies.

The landscape design is played with a circle shape in the backyard, but with a semi-circle at the building's entrance. In the resting place of the backyard, mobile tables with benches are located. Spruce plantations are used in the landscape, which retain their green appearance in winter as well. Large areas of grasses are combined in large fields. In the landscape, grasses bring ease and harmoniously rustling sound (Fig. 10). The rehabilitation outdoor space is complemented by birch and other deciduous trees, shrubs characterized by interesting foliage in different seasons. Overall, the outdoor space is built on natural, forest and grassland base. Informality and

harmonious simplicity are tried out in the landscape patterns. The glazed planes in architecture allow patients to view the landscape through the seasons, all year long.

University of Missouri Health Care Healing Garden Courtyard Columbia, Missouri

In the courtyard of the building's central part, there is created a small healing or a rehabilitation garden for cancer patients, their families and the staff. It symbolizes communication and harmony center, which through the glazed planes communicates with the indoor and outdoor spaces (Fig. 11, 12). It is possible to view the garden from all floors. Natural materials are used in the landscape. Wood is used for the cover and benches. A running water element with stone texture soothes visitors of the garden. Native vegetation is used in

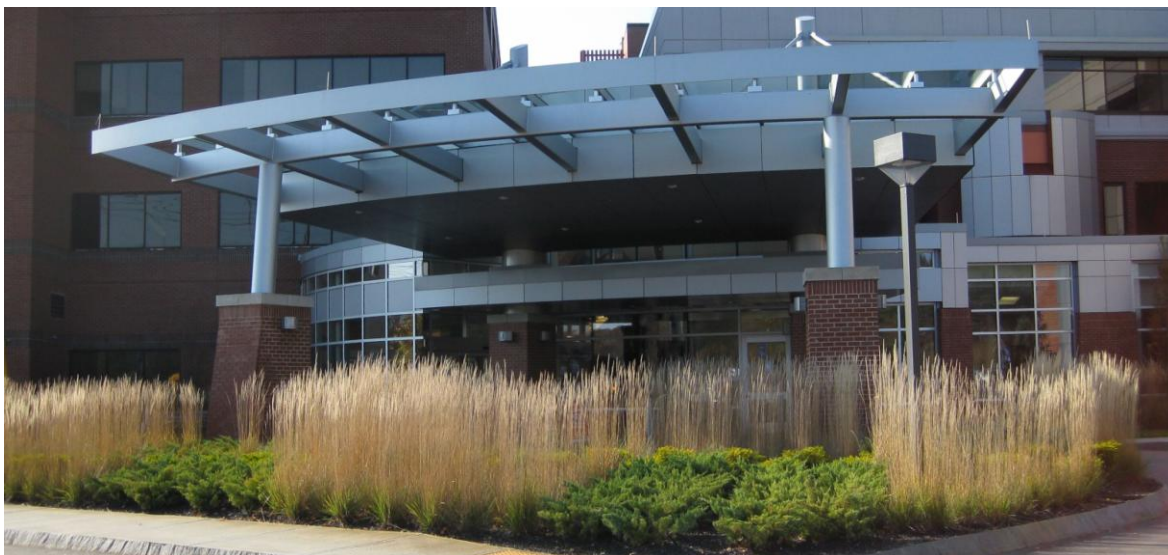


Fig. 10. Beautiful planting of grasses at the Portsmouth Regional Hospital entrance [Source: from the New England Garden and Thread webpage: <https://newenglandgardenandthread.wordpress.com/tag/portsmouth-nh/>]



Fig. 11. The indoor / outdoor space communication occurs both during the day and the dark time of the day. In the dark, the garden is illuminated by garden lighting lamps that make the garden landscape particularly appealing and attractive [Source: from the HOK webpage: <http://www.hok.com/design/service/landscape-architecture/university-hospital-healing-garden-courtyard/>]



Fig. 12. The indoor / outdoor space communication occurs both during the day and the dark time of the day. In the dark, the garden is illuminated by garden lighting lamps that make the garden landscape particularly appealing and attractive [Source: from the HOK webpage: <http://www.hok.com/design/service/landscape-architecture/university-hospital-healing-garden-courtyard/>]



Fig. 13. The indoor/outdoor space communication, the landscape closer to nature, simplicity, lightness and color harmony in the landscape of Poco Medical Center

[Source: from the Ewing Cole webpage: <http://www.ewingcole.com/portfolio-items/pocono-medical-center/>]

the greeneries, such as the dogwood tree – the State of Missouri.

”A positive image, positive outlook – the operating philosophy behind our gift shop and boutique, designed especially for cancer patients, survivors, their families and friends. We attend to the personal and emotional needs of cancer patients. Cancer treatment can result in visible changes to a person's body” [24].

Pocono Medical Center, East Stroudsburg PA

In the city, surrounded by the hilly landscape of Pocono, a modern treatment center for cancer patients is built. In designing the new Poco Medical Center, there has been a desire to change the cold, impersonal atmosphere that often pervades hospitals and cancer centers. The newly formed cancer center supports not only medical treatment, but pays particular attention to the natural landscape – the forest, brooks, hillocks and even the sky that additionally improves health of patients. Cancer patients are often restless, fatigued and suffer pain. Patients have access to a specially designed

environment which provides a tremendous emotional support during treatment. From the medical center's indoor space, people are able to communicate with nature through glazed windows. The very architecture is designed so that communication and nature do not end in the garden, but the landscape “comes into” the interior. It comes with pieces of boulder, wood elements and water in the interior. The center landscape focuses on the patient (Fig. 13).

In the design of the rehabilitative landscape provided for cancer patients, there are some essential, research based and proven elements to be followed: Patients' easy access to nature, Observation of living creatures, Natural solar lighting, Walking around, Sensory stimulation from the surrounding environment, Rhythm-day/night and weather change, View from the window and Peace.

In the outdoor landscape, there are used conifer plantations, birch clusters supplemented by grass fields, hard surfaces of winding walking paths and occasionally placed boulders (Fig. 14). The structure of walking paths is not uniform. Some of the



Fig. 14. The indoor / outdoor space communication, the landscape closer to nature, simplicity, lightness and color harmony in the landscape of Poco Medical Center

[Source: from the Ewing Cole webpage: <http://www.ewingcole.com/portfolio-items/pocono-medical-center/>]

walking paths are smooth, but some walking paths are covered with small hard plates, complemented by a surrounding subtle pebble cover.

The latest trends of the urban rehabilitative landscape in the global perspective quite often is used a simple and relatively economical way to build a rehabilitative landscape through natural / native planting. Natural materials are selected to reflect the cultural and landscape values, extensively using not only the local planting, but also wood, glass, stone and metal materials in the garden and building architecture (Fig. 3, 4, 5, 11, 12, 13). Also, in urban rehabilitative landscape several smaller multi-functional rooms are created in which it is possible to relax in a quiet and undisturbed atmosphere as well as to actively socialize and communicate with other patients (Fig. 1, 2, 3, 4, 6, 11, 12). All of the reviewed rehabilitative landscape examples have in common far away and opened panoramic lines. Most often they are seen from relaxation areas in gardens (Fig. 3, 4, 5, 6), or from windows which quite often are very large and airy, as well as from glass facades (Fig. 7, 8, 9, 11, 12, 13, 14). In this way a patient is physically and mentally closer to nature and rehabilitating landscape that often doesn't end with a garden or indoor glass planes, but the landscape is continued by using stone, wooden and water elements in patios, on rooftops, in courtyards, or even integrating the elements in interiors (Fig. 7, 11, 12, 13). These examples proves that, urban rehabilitative landscape also requires attention to the diversity of the landscape, in the perspective of landscape composition and composition of these individual

elements of contrasts-the morning, evening and even season averages. Just observing seasonal and diurnal changes of rehabilitation is possible in the garden to play with people's feelings, positive experiences and moods that work on rehabilitation of people.

Conclusions

The article reveals the latest trends of the urban rehabilitative landscape in the global perspective. The research is based on the analysis of the rehabilitative landscapes, which display a harmonious, aesthetic and functional integration of this environment in the urban environment. The article summarizes the typology of the rehabilitative outdoor space, met in the urban environment.

The research has revealed the most characteristic modern rehabilitative landscapes and the stylistic features of building architecture in the common composition, materials and at the emotional level. The indoor and outdoor communication of the modern rehabilitative environment where the man is in the center of the concept, as well as the latest trends of the rehabilitative landscapes around health care buildings and centers in the urban environment are studied. The featured world examples clearly show how the urban, the 21st century health care landscape environment space has changed with the times. The visual communication focuses on the transfer of information through the way perceivable by the eyes that enhances the emotional sensations of patients.

The trends of the 21st century bring a new perspective and approach to the design of the

landscapes for health care facilities which has changed the public opinion and brought down the psychologically negative border.

In the public space of health care, patients, visitors and the staff are given the maximum opportunity to communicate with nature – in the outdoor, indoor space, atria and in views through the window. In the rehabilitative, single outdoor / indoor space idea, each of the elements of the composition is linked as a stand-alone entity.

Quite often, there is used a simple and relatively economical way to build a rehabilitative landscape

through natural / native planting. Natural materials are selected to reflect the cultural and landscape values, extensively using not only the local planting, but also wood, glass, stone and metal materials in the garden and building architecture.

The stimuli of the psychological perception, promoted though thoughtfully designed landscape, change the patient perspective on daily life and provide a sense of balance during the period of treatment.

References

1. **Alberti, L. B.** *The Renaissance Garden in Italy. The History of Gardens*, USA. University of California Press, 1979, 95 p.
2. **Dale, P.** *Ellis Fischel Cancer Center. Medical Construction & Design* [online 20.10.2014]. <http://www.hok.com/design/service/landscape-architecture/university-hospital-healing-garden-courtyard/>
3. **Cooper, M. C. and Barnes, M.** *Gardens in healthcare facilities: Uses, therapeutic benefits, and design recommendations*. The Center for Health Design, Inc.; 1995.
4. **Cooper, M. C. and Barnes, M.** *Healing Gardens: Therapeutic Benefits and Recommendations*, John Wiley & Sons; 1999.
5. **Cooper, M. C.** *Healing Gardens in Hospital. Interdisciplinary Design and Research*, 2007; 1 (1). [online 20.10.2014]. http://test.spokane.wsu.edu/academics/Design/IDRP2/Vol_1/Cooper_Marcus.pdf
6. **Deborah, F.** *How Hospital Gardens Help Patients Heal*, Scientific American Magazine, 2012; 3.
7. *Duke Raleigh Gardens at Duke Raleigh Hospital* [online 20.10.2014]. <http://www.dukeraleighhospital.org/about-us/guild/gardens>
8. **Furgeson, Molly.** *Healing Gardens*, University of Minnesota Department of Horticultural -Science; 2012. [online 15.10.2014]. <http://www.sustland.umn.edu/design/healinggardens.html>
9. **Gerlach-Spriggs, Nancy and Kaufman, Richard Enoch and Warner, Jr. Sam Bass.** *Restorative Gardens*, Yale University Press, New Haven and London; 2004.
10. **Gökçen Firdevs Yücel,** *Hospital Outdoor Landscape Design Advances in Landscape Architecture*, Chapter 15, 2013. [online 21.11.2014]. <http://cdn.intechopen.com/pdfs-wm/45442.pdf>
11. *Jacqueline Fiske Healing Garden* [online 23.10.2014]. <http://www.healinglandscapes.org/blog/category/quotations/>
12. *Jacqueline Fiske Healing Garden. Jupiter Medical Center* [online 23.10.2014]. <http://www.studio-sprout.com/2012/09/jacqueline-fiske-healing-garden/>
13. **Kaplan, R.** *The psychological benefits of nearby nature*. In Relf, D. (ed.) *Role of Horticulture in Human Well-being and Social Development: A National Symposium*. Timber Press, Arlington, Virginia; 1992.
14. **Matthew, J.** *Journal of the Scottish Society for Art History*, University of Dundee. Autumn 2011 No 37 [online 15.10.2014]. <http://ssah.org.uk/files/2012/05/SSAH-newsletter-08-11.pdf>
15. **Mircefs, N.** *Ko nozīmē jēdziens vizuālā kultūra? “Visual Culture Reader”*, 2001. *Butler and Tanner Ltd.*, London, edited by Nicholas Mirzoeff [online 17.10.2014]. <http://rixc.lv/reader/txt/txt.php?id=81&l=lv>
16. **Mitrione, S and Larson, J.** *Healing by Design: Healing Gardens and Therapeutic Landscapes, Implications*, 2007; 2 (10) [online 11.10.2014]. http://www.informedesign.org/_news/nov_v02.pdf
17. **Parcell, Stacy.** *Healing Garden's New Dimension: Edible Gardens*, Healthcare Design Magazine, Chicago, USA, 2012; 5.
18. **Parsons, R.** *The potential influences of environmental perception on human health*. *Journal of Environmental Psychology*, 1991; 11, 1–23.
19. *Therapeutic Gardens at Lutz Center* [online 20.10.2014]. <http://www.studio-sprout.com/2012/09/the-gardens-at-lutz-center/>
20. **Ulrich, R. S.** *View through a window may influence recovery from surgery*, *Science*, 1984; 224 (4647): 420-421.
21. **Ulrich, R. S.** *Effects of interior design on wellness: Theory and recent scientific research*. *Journal of Healthcare Design*, 1991; 3, 97-109.
22. **Ulrich R. S.** *Evidence based environmental design for improving medical outcomes*. *Proceedings of the Healing by Design: Building for Health Care in the 21st Century Conference*. Montreal, Quebec, Canada, March 1-10; 2000.
23. **Ulrich, R. S.** *Health Benefits of Gardens in Hospitals*. *Plants for People Conference*, International Exhibition Floriade; 2002.
24. *University of Missouri Health Care Healing Garden Courtyard Columbia, Missouri* [online 15.10.2014]. <http://www.muhealth.org/locations/ellisfischelcancercenter/amenities/>
25. **Vapaa, Gartman, A.** *Healing Gardens: Creating Places for Restoration, Meditation, and Sanctuary*, What are the defining characteristics that make a healing garden? Master's thesis. Virginia Polytechnic Institute and State University College of Architecture and Urban Studies; 2002.

INFORMATION ABOUT AUTHOR:

Linda Balode graduated in Architecture Sciences – Master of Landscape Architecture and Planning from the Latvia University of Agriculture. At 2012 Linda started Doctoral studies in Latvia University of Agriculture. The theme of PhD thesis is “The rehabilitation gardens and parks, their development prospects in Latvia”. E-mail: linda.balode2010@inbox.lv

Kopsavilkums. Publikācija ietver jaunākās tendences, kas sastopamas 21. gadsimta ārstnieciskās vides ārtelpā, kas iekļauj arhitektūras un ainavas integrāciju, meklējot kopsaskaņu ekoloģiski un sociāli ilgtspējīgam dizainam. Rehabilitējošās videi tiek izvēlēti dabīgie materiāli, kas atspoguļo kultūrainaviskās vērtības, plaši izmantojot ne tikai vietējos augus, bet arī koksnes, stikla, akmens un metāla materiālus, tos harmoniski iekļaujot arhitektoniskajā ainavtelpā. Nereti tiek izmantota jau esošo mežaugu pamatne, uz kuras kompozicionālā harmonijā un veģetatīvā kopsaskaņā tiek meklētas savvaļas jeb vietējo augu grupas. Veiksmīga mežu un pļavu ainavas elementu sintēze tiek ienesta arī jaunā apbūves teritorijā. Īpaši tas ir attiecināms uz ārstnieciskajām iestādēm, tā iegūstot salīdzinoši augstu ne tikai estētisko, bet arī ekonomisko rezultātu, jo neprasa milzīgus kopšanas darbus. Augu izvēlē dominē dabas pamatne, koki un augi ar interesantu zarojumu, mizas krāsu, augļiem un lapojumu, kas estētisku baudījumu spēj dot visu četru sezonu garumā. Ārstniecisko ēku arhitektūrā dominē ārtelpas un iekštelpas harmonija, kuras izteiksmes veidu, materiālu un formu papildina stikloto plakņu pielietojums būvmākslā. Harmoniski sasaistīta ārtelpa un iekštelpa veido komunikāciju, kas izpaužas formā, struktūrā, krāsās, proporcijā un psiholoģiskā likumsakarībā.

Veselības aprūpes ēku arhitektūra un tās ārtelpa ir viena no sarežģītākajām un nozīmīgākajām telpām pilsētvidē, kuru parasti uztver kā „biedējošu zonu”, un atdalot to no pārējās apbūves teritorijas ar žogiem vai blīviem stādījumiem. Savukārt, 21. gadsimta tendences ienes jaunu skatījumu un pieeju aprūpes iestāžu ainavu projektēšanā, un maina sabiedrības uzskatus un psiholoģisko robežlīniju, tā meklējot kompozicionāli un vizuāli avangarda risinājumus, nodrošinot veselības aprūpes teritorijas sasaisti ar dabas pamatni un pilsētbūvniecisko telpu.