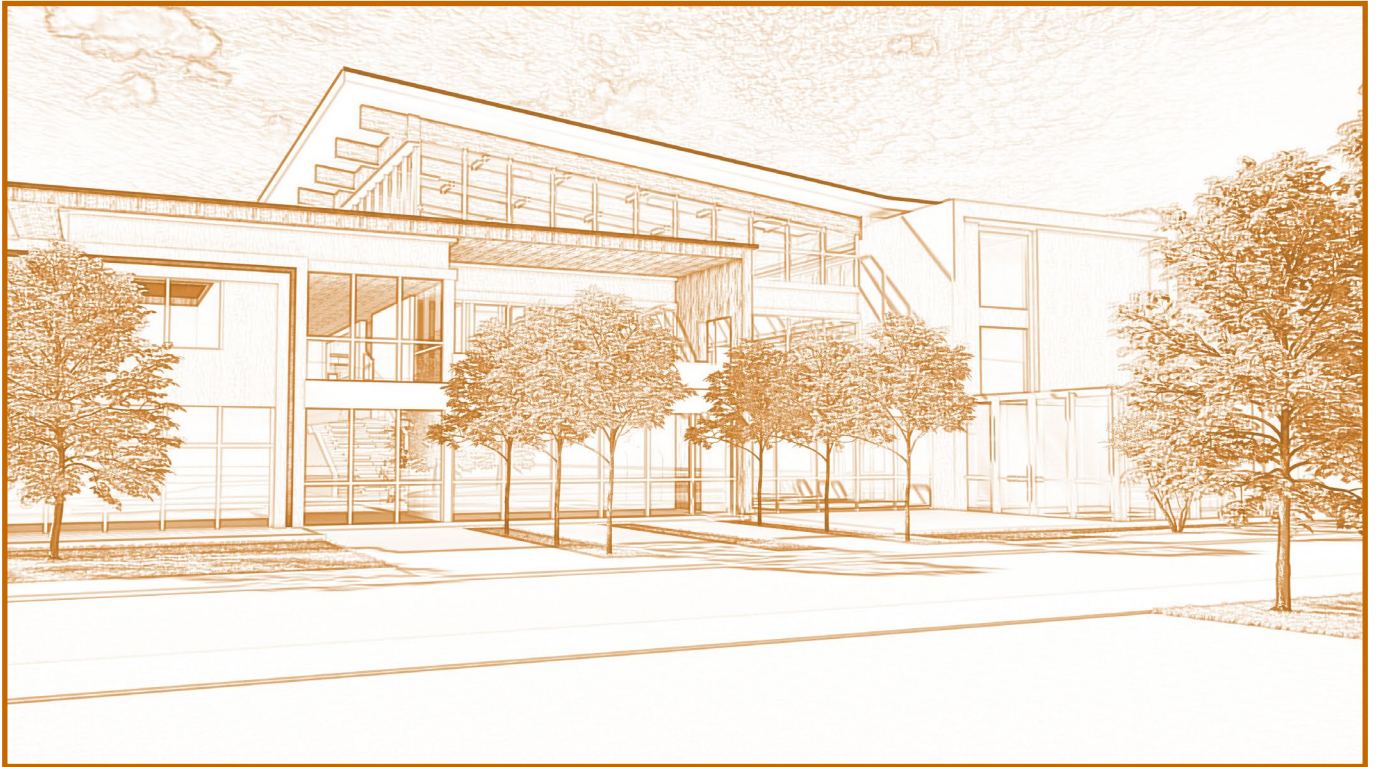




Mind&Body Rehab

*Rehabilitation Center where peoples' body and their
mind recover*

Zonghao Wu

Department of Architecture and Civil Engineering
Master's Programme of Architecture and Urban Design (MPARC)
Master Thesis Spring 2022
Healthcare Studio
Supervisor: Elke Miedema
Examiner: Cristiana Caira

Mind&Body Rehab

A Master Thesis in Healthcare Architecture

Chalmers School of Architecture:
Department of Architecture and Civil Engineering

Master's Programme of Architecture and Urban Design (MPARC)

Gothenburg, Sweden, 2022

Author: Zonghao Wu

Examiner: Cristiana Caira

Supervisor: Elke Miedema



CHALMERS
UNIVERSITY OF TECHNOLOGY

ABSTRACT

More than 100,000 sports injuries requiring medical examination occur in Sweden every year. Rehabilitation from sports injuries can be difficult, both physically and psychologically. They often experience negative emotions such as depression, isolation, stress, and lack of motivation. Many people feel that their rehab facility doesn't take mental health issues well into account after being treated in the hospital. Rehabilitation training should start from a more comprehensive point of view, placing physical and psychological rehabilitation in an equally important position.

Therefore, this master thesis will propose a rehabilitation center in Gothenburg, where people receiving rehabilitation training can communicate well with the community and the natural environment.

Research shows that increased physical activity, exposure to the natural environment, and enhanced interpersonal communication with the community can positively affect rehabilitation training. The psychological effects of these activities include relaxation, a sense of achievement and pleasure, and a sense of belonging. In addition, good mental health can play a role in speeding up physical recovery. Design strategies

including active design and biophilic design promote exercise and add natural elements to the building. The proposal contains circular corridors, a multifunctional staircase, and an indoor park. Sharing programs with community residents allows for better connection to the surrounding.

The project is based upon Research-For-Design and Research-By-Design approaches, including literature studies, interviews with patients and a relevant academic researcher(n=4), site analysis, evaluation on sketching, and reference studies focused on encouraging exercise and enhancing the connection to nature.

The thesis proposes a rehabilitation center in Backaplan, Gothenburg, sharing functions with the community, encouraging exercise, and having close relation to nature. The result may contribute to a raised discussion about the spatial and psychological needs of people affected by a sports injury and the importance of connecting the community in the development of health-promotive environments.

Keywords: rehabilitation, injury, disability, mental health, community

Acknowledgement

Special thanks to:

Elke Miedema

Cristiana Caira

Jieming Yan

Changjie Huang

Lydia Fu

Interviewees Daniel Johansson, Hao Chen,
Ethan Li, Jun Yan.

Studies

2014-2019

Bachelor's study: Architecture
Hunan University, Hunan Province, China

2020-2022

Master's study: Architecture and Urban Design
Chalmers University of Technology

Studios:

Autumn 2020: Senior Housing 22.5 hp

Spring 2021: Public Buildings 22.5 hp

Autumn 2021: Healthcare Architecture 22.5 hp

2017

Summer Studio:

Urban Design for Skoda
Czech Technical University in Prague, Prague,
Czech Republic



Work Experience

2016, 2020

Internship: Jingheng Architecture, China

2019

Internship: CAPOL-Huayang International
Design

Personal Connection

As an architect, I feel responsible for designing the building for the people who feel sick and growing old. I want to develop a better outdoor environment and indoor space for them and let the staff work in a more convenient and comfortable building at the same time.

Reflection on Professional Skills

From the Senior Housing and Healthcare Architecture studios, I explored the healthy design deeper and practiced it in my project. In the dementia village, it was easier, while in the hospital, it was more complex because there were many more kinds of users in it compared to the dementia village.

Active design is another critical skill I learned. It promotes physical activities through the environment design, which accelerates the recovery process and adds varieties and appealing elements to the space simultaneously.

During the master thesis, I want to research deeper into the skills I mentioned above and learn more about how to investigate deeper from the interviews. Although I had an assignment of interviewing an older person during the Senior Housing studio, I still feel that I lack some chance to research among a large group of users of the building and get practical information for a specific project. What's more, I will make more literature studies to complete the proposal more rational.

TABLE OF CONTENTS

01. Introduction	7
<i>Research</i>	
<i>Research Question</i>	
<i>Method</i>	
02. Background	11
<i>Healthcare design</i>	
<i>Sport Injury</i>	
<i>Mental Issues</i>	
<i>Sport Injury Rehab</i>	
<i>Therapies</i>	
<i>Interview summaries</i>	
<i>Users</i>	
<i>Active design</i>	
<i>Biophilic design</i>	
03. Context and Site	23
<i>Site Selection</i>	
<i>City Context</i>	
<i>Local Context</i>	
<i>Site Analysis</i>	
04. Program	31
<i>Design Ambitions</i>	
<i>Strategies</i>	
<i>References study</i>	
<i>Tool Box</i>	
<i>Layout and Connections</i>	
<i>Functions and Areas</i>	
05. Design Proposal	41
06. Conclusion	63
07. Appendix	69

01. Introduction

RESEARCH

Purpose

The purpose of this master thesis is to explore the design of rehabilitation facilities that pay attention to mental as well as physical health. Many people face mental issues after the injury from sports or daily life activities. The physical environment in the rehabilitation center cannot help enough with these problems.

It's time to improve awareness of comprehensive rehab, including physical and mental recovery, to provide better service, accelerate the process, and reduce the possibility of re-injury. The healing environment of the building can have a positive effect on people's well-being and recovery process (Bovenberg et al., 2010). By giving a proposal for a rehabilitation center in the Swedish context, I hope I can contribute to this discussion and help people live healthily.

Delimitation

To make the thesis manageable in the timeframe, some delimitations had to be made. First of all, the proposal will mainly focus on the need of teenagers and adults. The primary users will be the students who get injured from the sport as the site will be right next to the schools and a stadium.

Secondly, the economic issues will not be considered too much in this thesis. In real projects, it's always relevant to the clients and other specific context factors. This thesis would be better to focus more on the research and explore the research questions.

What's more, emissions and energy used won't be measured. Still, strategies that encourage sustainable lifestyles will be applied in the proposal, such as putting the bike-friendly site design as a priority.

RESEARCH QUESTION

How to improve patients' mental health with sports injuries in rehabilitation centers through architectural design?

Aim

The aim is to explore the design of space for comprehensive rehabilitation.

METHOD

The project is based upon Research-For-Design and Research-By-Design approaches. The Research-For-Design phase includes a literature study, case study, interviews, and site analysis, which gathers information about sports injury and the mental issues accompanying it, the current situation of the existing rehab centers, patients' needs and hopes, and the site condition.

After learning what's wrong with the current rehab centers and the needs of the patients and the site, I began to design by sketching and then evaluated it, which can also be called research by design.

Interviewees (n=4) include academics researching rehabilitation-related aspects, student-athletes who have been affected by injuries and have undergone rehabilitation, and ordinary people who have suffered orthopedic injuries. Through them, I can further understand the actual feelings and needs of patients and the systematic design strategies that can meet the needs of patients.

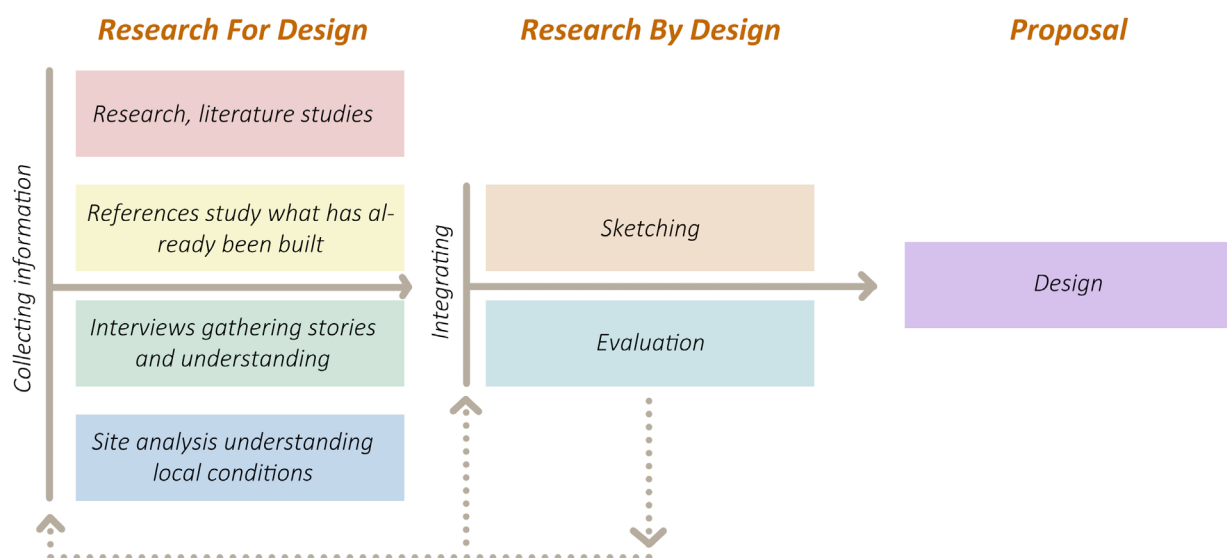


Figure A. Method process. Author's own image

02. Background

“Health is not a condition that one introspectively feels in oneself. Rather, it is a condition of being involved, of being in the world, of being together with one’s fellow human beings, of active and rewarding engagement in one’s everyday task.”

—— Gadamer (1993)

HEALTHCARE DESIGN

Health

The definition of health, according to the World Health Organization (2022) is “a state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity.

Healing environment

A healing environment is commonly considered as one that contributes to patients’ health and well-being (Van Nijhuis, 2017). To be more detailed, it can be described as an environment that contributes to the well-being, recovery, and healing of a client and can reduce patient stress and stimulates the self-recovering ability of the patient (Bovenberg et al, 2010).

In most studies on the healing environment, the strategies are applied through physical aspects such as natural elements and art which are proven to have a positive effect on patients’ health and wellbeing. A design decision is

usually related to the Evidence-Based-Design (EBD) process. Hamilton (2003) stated that, in EBD, decisions are made on the basis of credible research and evaluations of projects.

Through factor analysis, the different healing environment aspects are reduced to six factors: personal and social privacy, sound control, positive distractions, staff interaction, light, and physical comfort (Van Nijhuis, 2017).

Specific healing design physical aspects include (Montefiore Medical Center, 2022):

1. Exposure to nature such as views of the outside, interior or exterior gardens, aquariums, and art with a nature theme.
2. Soothing colors, natural light, pleasant sounds, cleanliness, visual stimuli such as artwork.
3. Reducing environmental stressors such as noise, glare from lights, and poor air quality.
4. Comfortable rooms with seating that can be arranged for visits from family and friends.

SPORT INJURY

What is sport injury?

A sports injury can be defined as a pathologic process that interrupts training or competition and may lead the athlete to seek medical treatment (Micheo, Sánchez, 2018). Common sports injuries include muscle strains, fractures, ligament and tendon strains.

104,000

sports injuries needing medical examination are estimated to occur each year in Sweden.

15%-20%

of all acute injuries in Sweden are sports injuries.

30%

of all acute teenagers' injuries in Sweden are sports injuries

(Aman, 2017).

MENTAL ISSUES

Relating to sport injury and rehab process

Research by Moore (2020) suggests that a person suffering from a sports injury experiences physical pain and weakness. In addition to this, they also face various negative psychological states at various stages of and after the injury. Depression can further aggravate various psychological problems. In most instances, rehabilitation is referred to as the physical activities that heal and optimize the musculoskeletal system. However, this overlooks mental health's important role in the post-injury phase.

According to the research by Herring (2006), patients face different adverse psychological conditions during injury and at different stages of recovery after injury. This research indicates that emotional responses to injury include sadness, feelings of isolation, irritation, lack of motivation, frustration, anger, alterations in appetite, sleep disturbance, and feeling disengaged. Problematic emotional reactions occur when symptoms do not resolve or worsen over time, or the severity of the symptoms seems excessive relative to other injured athletes. Depression and sadness are often the results of the injured person being unable to continue participating in sports that could bring joy and help relieve stress. Difficulty meeting up with former exercising partners creates a sense of isolation. Being unable to attend school or work because of the injury

makes it easy for the injured to lose motivation and lack of sense of identity.

Moore (2020) stated that some injuries, such as concussions, do not have an exact recovery time, causing patients to lose confidence and motivation because they cannot see a clear goal and timeline. Fearing the possibility of getting hurt again, the patient keeps thinking about the reason for the last injury, which easily leads to a bad state of overthinking psychologically, which brings pressure and is not conducive to the advancement of the rehabilitation course. Some patients may experience persistent denial of things. They refused to accept that they were seriously injured because of anxiety and stress and thus denied the recovery plan prescribed by the medical staff.

Emotional reactions, including a lack of confidence, apprehension, and fear, may accompany an athlete's return-to-play. These reactions may become problematic, interfere with performance and increase the probability of re-injury. Stress is a state of mind that increases the chance of injury. Stress can easily lead people to dare not exert force or exert excessive force when engaging in sports, which in turn leads to deformation of movements and a greater risk of injury (Herring, 2006).

SPORT INJURY REHAB

Sport injury rehabilitation center

Sports rehabilitation is a type of physical therapy that treats people of all ages who have musculoskeletal system pain, injury, or illness. In the sport injury rehabilitation center, patients can maintain health and fitness, recover from injury and reduce pain with the use of exercise, movement, and therapeutic interventions (Motion PT Group, 2022). Common sports injury rehabilitation modalities include psychology, speech therapy, occupational therapy, recreational therapy and physical therapy, et (Ferguson-Losier, 2015).

According to the research of Levleva and Orlick (1991), over the last 30 years, the use of psychological interventions to speed recovery has become increasingly popular and vital in ensuring an athlete's a successful recovery and return to play . Injured athletes may use psychological interventions to improve recovery time, facilitate physical recovery following surgery, buffer immune system deterioration, manage pain, prevent future injuries and enhance adherence to rehabilitation.

Design for mental health

Alyssa Chappe (2021) discusses the history of architecture design for mental health and how different aspects such as noise, nature, interior layout, and art impact mental health. According to her research, elements including open floorplans, private and open community space, views of nature, safety procedures, natural lighting, and artwork create a supportive environment for the clients' well-being and treatment.

Impacts on patients' mental health include reducing stress, lowering blood pressure and regaining self-awareness.

McLaughlan and Leng (2021) argue that interior layout with memorable landmarks helps find one's way through the environment, which is important for autonomy and the feeling of being self reliant.

Park and Mattson (2008) performed a clinical trial and the result shows that there is a psychological need for nature, as referenced by the lower levels of anxiety, blood pressure, and heart rate in the experimental group with the plants in the patients' rooms.

Staricoff (2006) states that including arts in recovery reduces stress levels, improves mood, accelerates recovery speeds, reduces the need for medication, and improves communication.

SPORT INJURY REHAB

Comprehensive rehabilitation

Comprehensive rehabilitation includes physical therapy, occupational therapy and speech therapy (West Tennessee Healthcare, 2020). Ewa Gaszewska (2013) stated that comprehensive rehabilitation has a beneficial effect on the patients' psychological well-being and quality of life. The greatest improvement involved alleviation of psychological anxiety, diminished feelings of unhappiness, and social inadequacy.

People suffering from sports injury have different needs according to their own condition, including the severity of the injury, the current stage of recovery, the individual's psychological state, the surrounding social environment, and

relationships. It's therefore essential to figure out their needs and solve the issues. According to the World Health Organization (2022), the definition of health is "a state of complete physical, mental, and social well-being and not merely the absence of disease and infirmity." Healing impacts a person's physical, biological, mental, emotional, and societal aspects (Gesler & Wilbert, 2003).

Being healthy includes balancing the interconnected relationships between the physical body, the mind, and the spirit (Gesler, 2003). Comprehensive rehabilitation treatment is necessary.

"... the body cannot be treated without at the same time treating the soul. It is further suggested that perhaps even this is not enough, that it is impossible to treat the body without possessing knowledge concerning the whole of being."

— Plato

(Gadamer, 1993)

THERAPIES

Comprehensive rehabilitation can include additional therapies such as:

Acupuncture

Acupuncture is often used to treat musculoskeletal conditions (of the bones and muscles) and pain conditions, including joint and postoperative pain (NHS, 2019).

Audio-Visual Therapy

By manipulating the brainwave frequencies, it can boost mood, improve sleep patterns, and sharpen and increase levels of attention or relaxation (Neurozone, 2022).

Fluidotherapy

The use of fluidotherapy dry heat helps reduce pain, edema, and muscle spasm from musculoskeletal disorders of the extremities (Aetna, 2021).

Hydrotherapy

The benefits of hydrotherapy include pain relief, increased joint range of motion, strengthening of weak muscles, increased circulation, improvement of balance and coordination, and re-education of paralyzed muscles (Sport Injury Clinic, 2022).

Massage

Massage benefits can include reducing stress and increasing relaxation, reducing pain and muscle soreness and tension, improving circulation, energy, and alertness, lowering heart rate and blood pressure, and improving immune function (Mayo Clinic, 2021).

Recreational Therapy

Recreational therapy can help rebuild skills, improve mood, boost quality of life, and strengthen social connections (Healthline, 2020).

INTERVIEW SUMMARIES

Interviewees (n=4) include academics researching rehabilitation-related aspects, student-athletes who have been affected by injuries and have undergone rehabilitation, and ordinary people who have suffered orthopedic injuries.

During the interview, several interviewees provided a lot of expectations for future rehabilitation center designs and their views on current rehabilitation centers. Among them, the interaction between people has been mentioned many times. They believe that isolation during rehabilitation training can cause patients to feel more stressed during the rehabilitation process.

In response to the problems existing in the current rehabilitation centers, some respondents said that the training space in the several institutions they have been to is too narrow. They often use small-scale stairs and ramps in a single room for repeated and boring training, which lacks communication with others. There is also no view of the natural landscape.

One of the retired footballers mentioned that being isolated is depressing. Due to the inability to participate in daily sports or training after the injury, the patient cannot continue to get along with teammates or sports partners, and his work or social life has been greatly affected. In rehabilitation training, if it is always limited to a single person or a relatively closed training space with a small number of people, the communication between patients and other patients and medical staff will be minimal, further increasing the isolation feeling. Such emotions lead to patients' lack of motivation to continue the rehabilitation course, which is not conducive to faster recovery.

So he thinks there should be more open spaces so that more people can rehabilitate in the same place or see more other patients being treated at the same time. A space like this avoids feeling lonely. In some professional sports clubs, injured athletes are rehabilitated in a rehabilitation center next to the training

ground. Some rehabilitation programs can be carried out directly on the training ground to continue to maintain contact with the team. He hopes to introduce this thinking into the rehabilitation center in the community, which means that the rehabilitation center should also be close to people's usual sports venues.

Lack of communication with ordinary community residents is also considered to be another critical problem in current rehabilitation centers. In many rehabilitation centers, only patients and institutional staff are in it, so patients feel that walking into a rehabilitation center means that they are not healthy people with everyday life, resulting in frustration and loss of self-identity.

Multiple interviewees who had traveled to rehab said it was important to be closer to the community where they lived. This saves commuting time for patients undergoing long-term treatment and allows more neighbors and friends to accompany them to the rehabilitation

center. Having someone they know in the company of someone they know will help them relax more during recovery. In addition, some training programs also need to invite more people to participate, which can be patients or interested people from the community.

USERS

Patients

Patients are the largest user group. Among them are not only professional athletes but also people who have suffered sports injuries in nearby schools, parks, and gymnasiums.

As a Community Rehabilitation Center, the building can be used by people who have suffered physical injuries for various reasons and need rehabilitation training. Patients can receive physical therapy, occupational therapy, recreational therapy, counseling, and teaching services.

They need a lot of open space and privacy when appropriate. The landscape of the training space is also a factor to consider.

Community Residents

Community residents included the patient's family, friends, and people drawn to experience the building. The patient's family and friends can make the patient's mood more relaxed and allow them to focus more on treatment.

Some of the programs, such as recreational therapy, inherently include a lot of play and socializing.

More community participation means activities can be more varied and fresh. At the same time, the involvement of many healthy people can also play a role in de-stigmatizing.

Family and friends of patients need more open space where they can gather and wait for the patient to complete the rehabilitation program. The community needs some attractive activity space that they are willing to stop and appreciate.

Staff

Rehabilitation staffs need to live in this building for a long time. They mainly provide patients with various guidance, treatment, counseling, lectures, and organizational activities. Employees need their own office space, small-scale discussion area, privacy for phone calls, break rooms, and meeting rooms. They also need a kitchen, dining, and relaxing area, preferably with a good landscape view. This way, they can get some space to relax from their busy work.

ACTIVE DESIGN

Definition

Active Design is a set of building and planning principles that promote physical activity. The attention to physical activity in design has been called Active Design (Dumitrache et al, 2020). The most commonly experienced, science-backed benefits of physical activity on mental health are reductions in stress, improved self-confidence, improved mood, better sleep quality, a sharper memory, and clearer thinking (Healthline, 2022).

Design guidelines

Michael Bloomberg (2010) introduced the Active Design guidelines for buildings which aimed to create opportunities for daily physical activities inside the buildings.

There are four measures and the first one is to increase the stair use in the building. By locating the stairs in visible and convenient locations, designing a comfortable and appealing stairs environment, and posting motivational signage, more people will be encouraged to use the stairs more.

The second measure is to put the share space and functions in a rational space that encourages people to have brief bouts of walking, and then provide an appealing and supportive walk route.

The third measure is to provide facilities that support exercises such as centrally visible physical activity spaces and drinking fountains.

The last measure is to create a pedestrian-friendly urban environment by designing the exterior and massing of the building with the strategies such as maximum transparency, multiple entries, and setting stoops and canopies.

BIOPHILIC DESIGN

Definition

Biophilic design is a concept that increases occupant connectivity to the natural environment through the use of direct nature, indirect nature, and space and place conditions.

Biophilic design can reduce stress, enhance creativity and clarity of thought, improve our well-being and expedite healing (Browning et al., 2014).

14 Patterns of Biophilic Design

In the paper "14 Patterns of Biophilic Design", Browning, Ryan, and Clancy (2014) articulate the relationships between nature, human biology and the design of the built environment. The patterns are divided into 3 fields, including Nature in the Space Patterns, Natural Analogues Patterns, and Nature of the Space Patterns.

Nature in the Space:

1. Visual Connection with Nature. A view to elements of nature, living systems and natural processes.
2. Non-Visual Connection with Nature. Auditory, haptic, olfactory, or gustatory stimuli that engender a deliberate and positive reference to nature, living systems or natural processes.
3. Non-Rhythmic Sensory Stimuli. Stochastic and ephemeral connections with nature that may be analyzed statistically but may not be predicted precisely.
4. Thermal & Airflow Variability. Subtle changes in air temperature, relative humidity, airflow

across the skin, and surface temperatures that mimic natural environments.

5. Presence of Water. A condition that enhances the experience of a place through seeing, hearing or touching water.

6. Dynamic & Diffuse Light. Leverages varying intensities of light and shadow that change over time to create conditions that occur in nature.

7. Connection with Natural Systems. Awareness of natural processes, especially seasonal and temporal changes characteristic of a healthy ecosystem.

Natural Analogues:

8. Biomorphic Forms & Patterns. Symbolic references to contoured, patterned, textured or numerical arrangements that persist in nature.

9. Material Connection with Nature. Materials and elements from nature that, through minimal processing, reflect the local ecology or geology and create a distinct sense of place.

10. Complexity & Order. Rich sensory information that adheres to a spatial hierarchy similar to those encountered in nature.

Nature of the Space:

11. Prospect. An unimpeded view over a distance, for surveillance and planning.
12. Refuge. A place for withdrawal from environmental conditions or the main flow of activity, in which the individual is protected from behind and overhead.
13. Mystery. The promise of more information, achieved through partially obscured views or other sensory devices that entice the individual to travel deeper into the environment.
14. Risk/Peril. An identifiable threat coupled with a reliable safeguard.

03. Context and Site

SITE SELECTION

Criteria

The selection of the site for the project should follow a pre-set criteria.

The site should be located in urban area so that the service can be provided to a large segment of people.

The site needs to be closed to the sport facilities and the schools, which will enhance the communication between the rehabilitation center and the familiar training environment of the students and athletes.

The site should have high accessibility to nature.

The site should be adjacent to car roads, ensuring accessibility for people with disabilities and strengthening connections to communities that are farther away.

Motivation

The previously defined site selection criteria have led to adopting the area currently belonging to TRB Tankstation as the proposed site. According to the program for Backaplan, a city center of Gothenburg with more than 2,000 residential units will be built on the site of today's transportation hub and large shopping mall. Located in the northern part of Backaplan, the chosen site next to Minelundsvägen fulfills the criteria and even provides more valuable features.

The site belongs to the new city center area of Backaplan

On the south side of the site there is a school for grades 7 to 9 and a gymnasium with a capacity of 600 people.

The site is planned to be located between a municipal park and a residential park, within a 25-minute walking distance from several existing natural parks in the surrounding area. The site is currently a concrete surface, and the green area will be further increased after the project is completed.

Minelundsvägen connects the site well to the large community to the west that now belongs to Kvillebäcken.

CITY CONTEXT

Backaplan

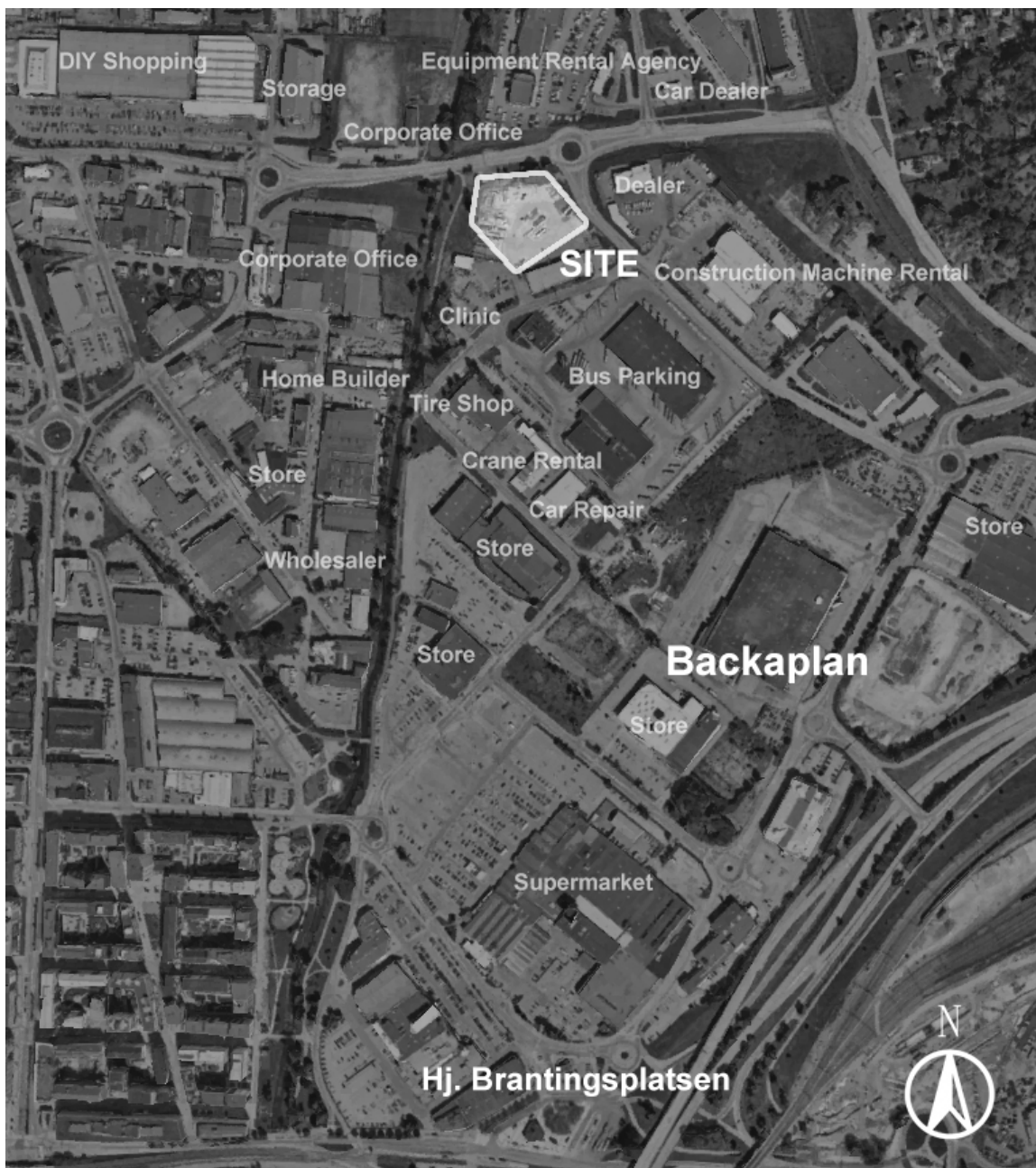
To the north of present-day Gothenburg city center, Backaplan is now a gathering place for large shopping malls and an important transport hub for the north of the city. Hj. Brantingsplatsen is in its south side where plenty of bus and train lines meet. The transportation hub is complemented by a large parking lot and maintenance facilities for the bus system. At the same time, the surrounding large shopping malls contain some restaurants. There is currently no residential area here, but according to urban planning, it will become a new urban center with more than 2,000 residential units in the future.



LOCAL CONTEXT

Current context

The site currently belongs to TRB Tankstation and it is part of the supporting facilities of the public transport system. The surrounding areas of the site are mainly automobile and construction-related industries, and a large number of automobile-related industries in the north will not be changed due to urban planning for the time being. There are a large number of supermarkets and shopping malls between the south side and the transportation hub. Residential areas began to appear further out to the northeast and to the west.



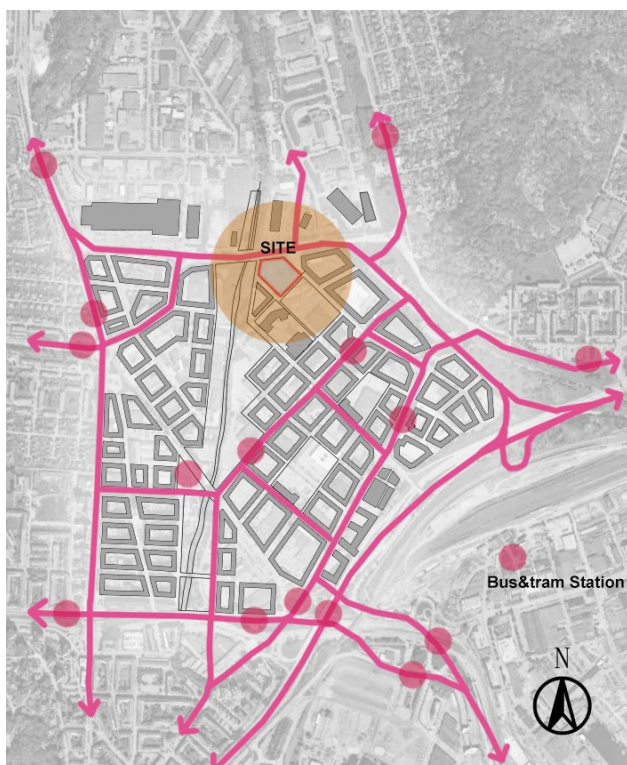
LOCAL CONTEXT

Future context

The site is located at the northern end of Backaplan New Town in the future planning of Gothenburg. Community parks and city parks surround the east and west sides, and the south and north are apartments and small squares, respectively. There is a junior high school and a gymnasium on the south side. The surrounding community is expected to have more than 2,000 residential units. The site is surrounded by bicycle lanes and pedestrian paths in all directions except for the main road for cars in the north.



Natural Elements & Landscape



Vehicle & Public Transportation



Bicycle

LOCAL CONTEXT

Scale 1:1000

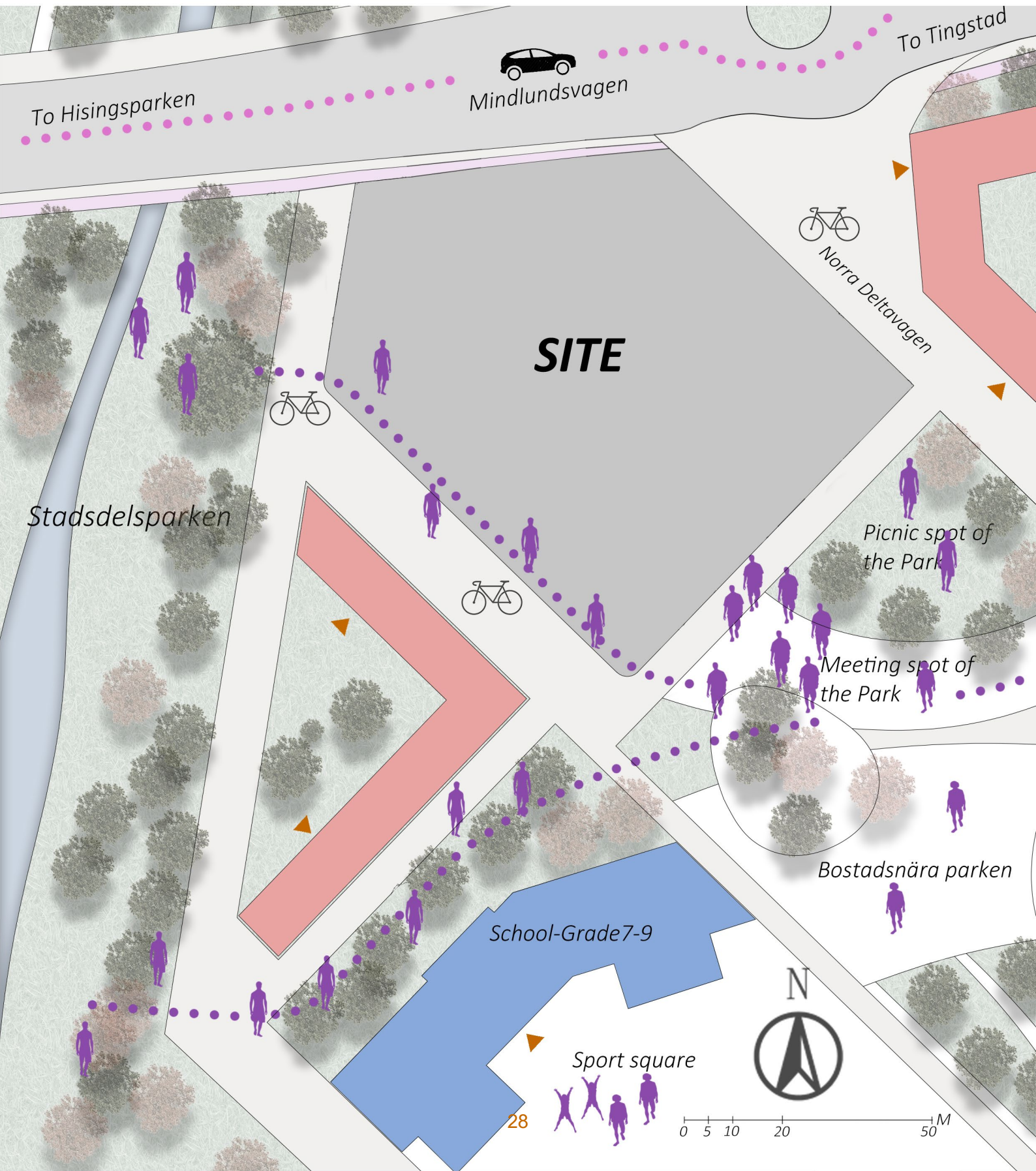
 Apartments

 Pedestrian flow

 Entrance

 Education

 Vehicle flow



SITE PHOTOS



Site: TRB Tankstation



North: Equipment Rental Agency



East: Darcia Dealer



South: Bus Parking



West: Suzan Clinic



Northeast: Arödsberget

SITE ANALYSIS

Strengths

- Surrounded by parks with nice landscapes and attractive spots
- Closed to school and stadium
- Central location within the city
- Closed to the natural mountain
- Accessible (by car, bike, public transport, walking)
- Empty plot

Weaknesses

- Hard surface
- Site shape is with a sharp corner. Roads for car need to be organized carefully.
- So closed to an apartment, the privacy may be affected.
- Noise from the main road for vehicles on the north.

S

W

O

T

- Connect the city park and the community park
- Provide service for people exercising in the community
- Hold activities together with the community park
- Provide a gathering point for the community
- Add more greenery to the original hard surface plot.

Opportunities

- Car parking space may be not enough
- People walk from one park to another may choose the path on the south, instead of crossing this plot.
- Community residents may tend to gather in the commercial blocks in the south of Backaplan

Threats

04. Program

AMBITIONS

Community connection

To be surrounded by others in times of hardships provides a sense of belonging and compassion to patients. (Ferguson-Losier, 2015)

Ways to strengthen the connection include sharing some functional areas inside the building, natural landscapes, parks, increasing the visual and auditory connections inside and outside the building. Considering that the potential site is surrounded by schools and gymnasiums, there are many functional areas that can be shared with each other before these architectural portraits, such as patients and community members playing their own sports activities at different heights in the same space.

Encouraging exercise

The most commonly experienced, science-backed benefits of physical activity on mental health are reductions in stress, improved self-confidence, improved mood, better sleep quality, a sharper memory, and clearer thinking (Healthline, 2022).

With strategies related to the Active Design guidelines, a more open rehabilitation training space can provide patients with a better vision and attract

them to keep moving. Attractive and exciting traffic spaces such as multifunctional stairs, ramps, and bridges will attract patients to use them. The circulation inside the building makes it possible to constantly walk around and explore the whole building without turning back and repeating the route when encountering a dead end.

Adding natural elements

According to the site analysis, the two sides of the building are the city park and the community park. Nature in space patterns of Biophilic Design helps organize the natural elements in the design.

Putting more natural landscapes on the site can make the texture of the city more continuous and form an overall landscape and sports atmosphere. The natural landscape itself can also make patients feel more relaxed. The ever-changing natural landscape frees people from monotonous scenes and reduces stress during training. At the same time, feel a part of nature and enhance self-identity. By adding balconies, terraces, roof gardens, and indoor planting of trees, building occupants can gain good views of the landscape anywhere.

STRATEGIES

Problems	Needs	Treatment	Architecture
<i>Mental Issues</i>	<i>Feelings</i>	<i>Activities</i>	<i>Spatial&Urban</i>

Mental Issues

I:Accompanying sport injury: *sadness, feelings of isolation, lack of motivation, disengaged*

II:During injury rehabilitation: *loss of identity, fear of re-injury, anxiety, loss of confidence*

III:Before Return-to-Play: *lack of confidence, apprehension, fear*

IV:After Return-to-Play: *stress (increase the probability of injury)*

Stage	I	II	III	IV
Issues	<i>sadness, feelings of isolation, lack of motivation, disengaged</i>	<i>loss of identity, fear of re-injury, anxiety, loss of confidence</i>	<i>lack of confidence, apprehension, fear</i>	<i>stress</i>
Feelings	<i>hapiness, belonging and compassion, assisted and guided</i>	<i>sense of independence, relax, achievement</i>	<i>sense of achievement, relax</i>	<i>relax</i>
Activities	<i>contact with nature,exercise, communication with groups and community</i>	<i>exercise, education, regular,moderate walking</i>	<i>regular, moderate walking, education</i>	<i>regular, moderate walking, education</i>
Spacial	<i>circular walkway, diverse paths, semi-underground gym, assistant elements and difficulty progressive corridor</i>	<i>circular walkway, diverse paths, education hall</i>	<i>assistant elements and difficulty progressive corridor</i>	<i>Circular walkway</i>
Urban	<i>outdoor gym park connecting the city park and community's park, inviting game space shared with community's residents</i>			

REFERENCES STUDY



Vandhalla” Egmont Rehabilitation Centre

It is designed for diverse abilities of the patients. The swimming pool for treatment with ramps is convenient for the wheelchair users. The disadvantage of the building is that all the treatment room is open or semi-open, which cannot promise the privacy for some patients.



Rehabilitation Centre Groot Klimmendaal

It has long stairs going through all the levels with view connection to different kinds of therapy department, encouraging walking and enhancing the communication. The volume of it is so thick that some rooms lack daylight.



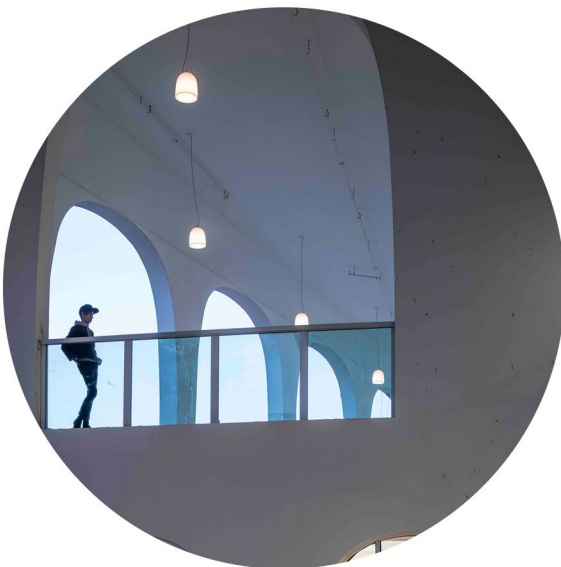
Woy Woy Rehabilitation Unit

The corridors are widened and become part of the therapy space. Stairs and ramps in small scale are placed in the corner of the corridor with good view to the outdoor landscape. Small gardens are invited between the volumes and surrounded by the corridors.



St. Johns Rehab

Right after entering the building, users can have a good view to the garden in the site. When people walking along the corridor next to the open rehabilitation hall, they keep facing to the raving which is one of the famous landscape in Toronto.

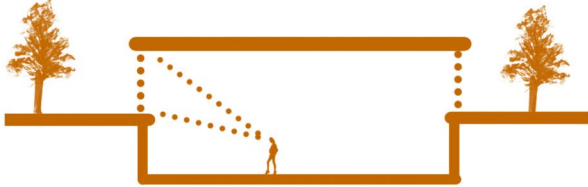


Ezra Lemarpe Medical Rehabilitation Center

Balconies and terraces create a transition layer between the indoor space and the outdoor environment. They not only provide nice viewing spots but also reduce the heat from direct sun shining in the Mid-East context. It lacks open therapy area, which results in a sense of isolation.

TOOL BOX

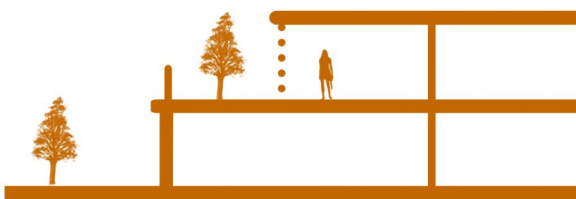
Adding natural elements



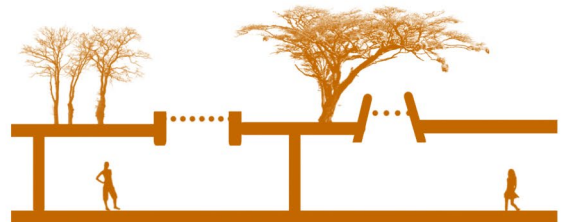
Swimming pool at the basement. Placing the windows at high position, it still promise the lanscape view and privacy of the patient at the same time.



The rooftop garden provide a space where the users can enjoy the sunlight and greenery on the second floor. They can also overlooking the parks in the community.



The balcony creates a transition layer between the indoor environment and outdoor natural lanscape, leading the natural view into the building smoothly.

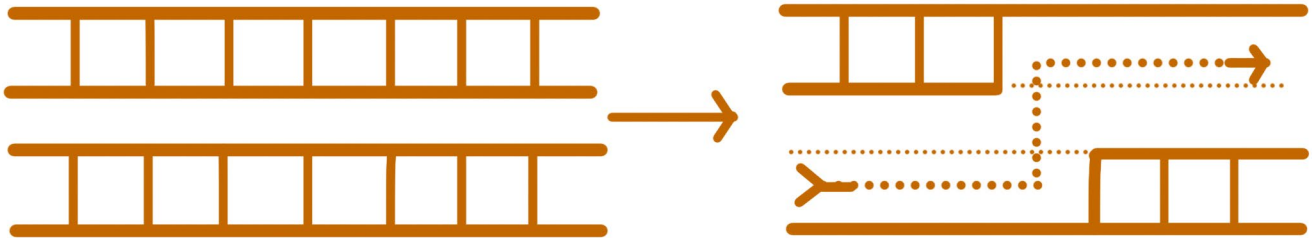


Adding skylight to the souna and changing room at the basement reduces the feeling of closed and isolation. The glass is blurry so the privacy can be promised.

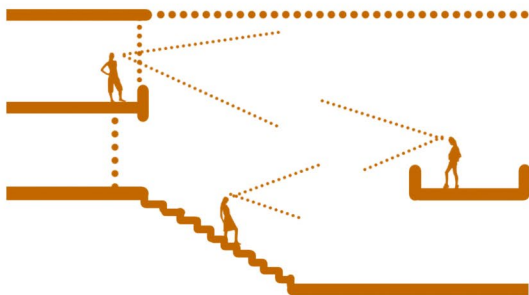


The atrium acts as a indoor park that not only has greenery but also create gathering spot for the activities that usually held in the outdoor park.

Encourage exercise

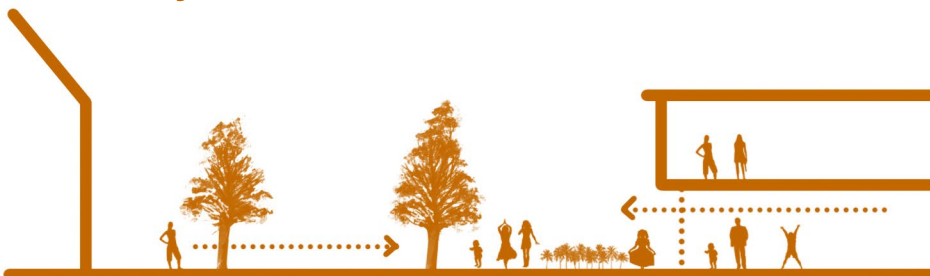


Changing some traditional closed therapy rooms into an open corridor for training, which also opens the corridor and reduces its monotonous and depressing atmosphere. Patients can communicate with others during the therapy and they can hang around the whole level, trying different facilities they meet.



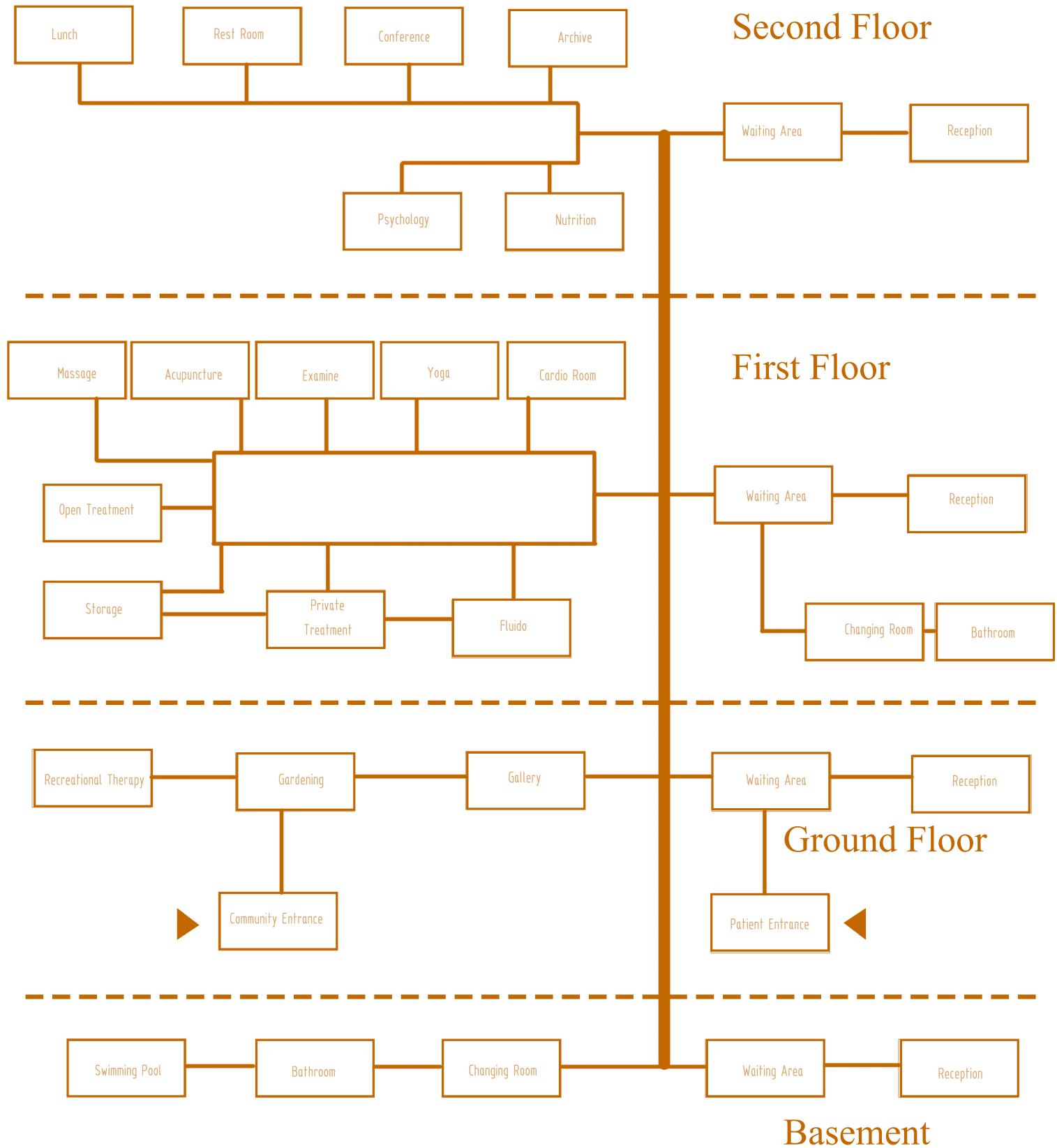
View connection increase communication and at the same time attract users to walk around and explore the whole building.

Community Connection



Activity space shared to the community not only invite more residents to join the recreation therapy but also acts as a transition natural space between the building and the community.

LAYOUT AND CONNECTIONS



FUNCTIONS AND AREAS

Functions	Area (square meter)	Functions	Area (square meter)
Ground Floor		Second Floor	
Common		Psychology&Nutrition	
Reception	16	Reception	16
Files	20	Files	20
Waiting area	200	Waiting area	26
Patient entrance	34	RWC	15
Conference	42	Psychology 1	20
Staff changing room	60	Psychology 2	28
Toilet	45	Nutrition 1	15
Storage	44	Nutrition 2	17
Cleaning	7	Nutrition 3	20
Trash	7		
Delievery	34	Administration	
Community entrance	53	Archive	13
Atrium	500	Office 1	80
		Office 2	12
Cafe		Group room	25
Fridge	6	Conference	32
Storage	7	Phone	12
Kitchen	28	Rest	16
Waste	9	Lunch	75
Cafe	74	Technical room	75
Recreational			
Studio 1	65	Basement	
Audio-Visual therapy	42	RWC	25
storage	18	Changing room	90
Studio 2	68	Sauna	60
		Swimming hall	570
Occupational		Reception	15
Adult rehab	35	Waiting area	92
Multifunctional hall	91	Consultation	34
Pediatric rehab	104	Technical room	73
Storage	30		
Group room	22		
		Total	
			5869
First Floor			
Physiotherapy			
Reception	16		
Waiting area	58		
Files	20		
Changing room	45		
Bathroom	38		
RWC	25		
Cardio room	52		
Yoga room	45		
Examine room	32		
Acupuncture	30		
Massage	30		
Multifunctional hall	126		
Move ability	400		
Storage	22		
Cleaning	6		
Trash	6		
Private treatment	30		
Fluidio therapy	30		

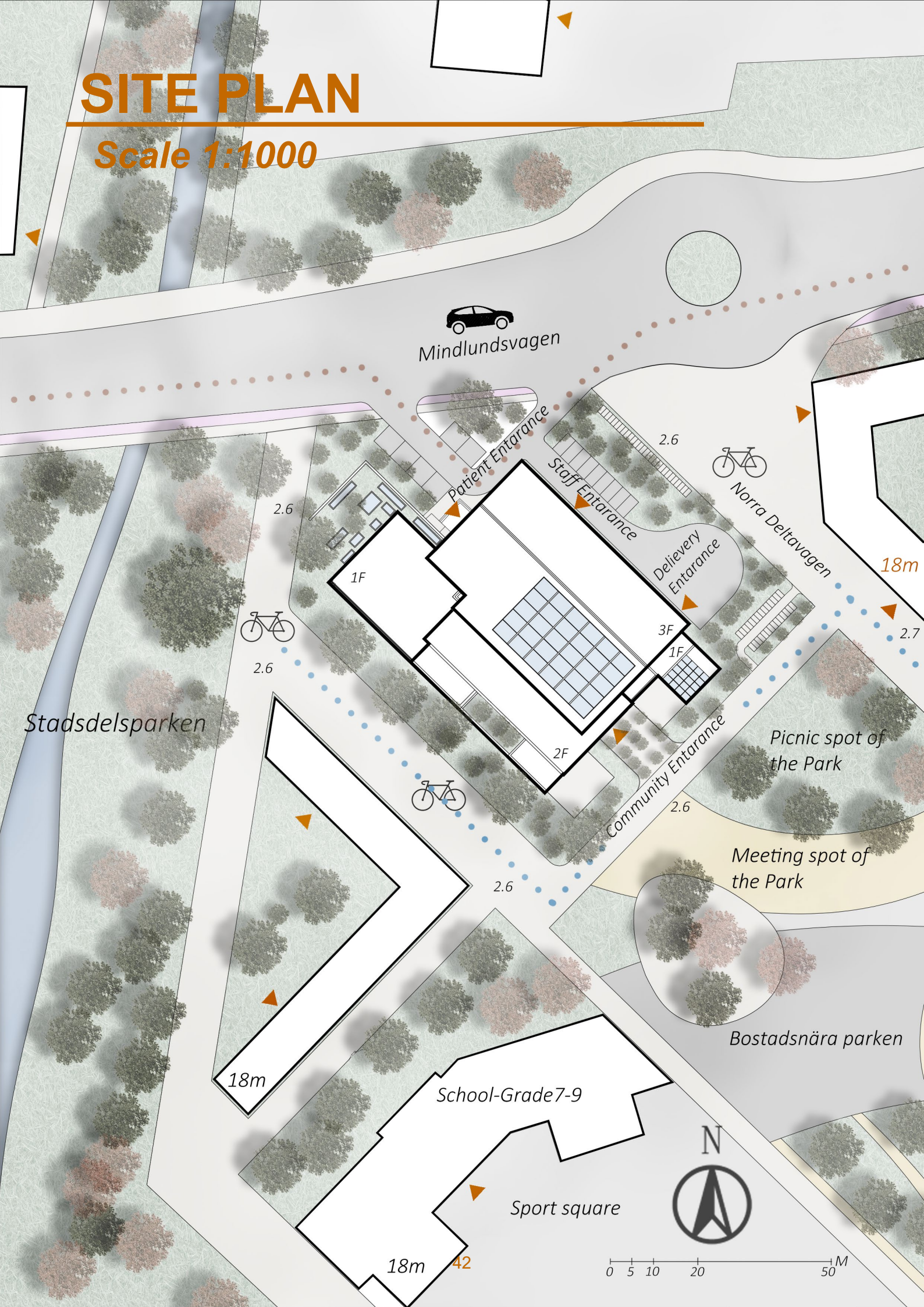


Figure B. Bird view.

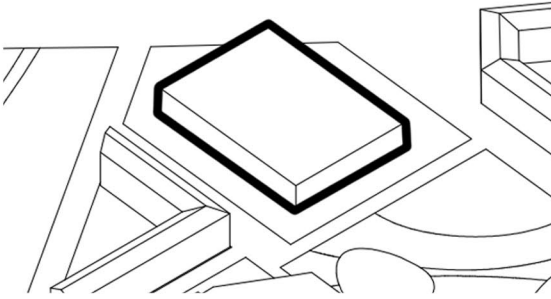


05. Design Proposal

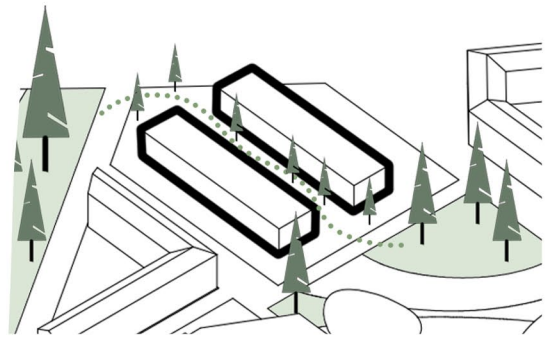
Scale 1:1000



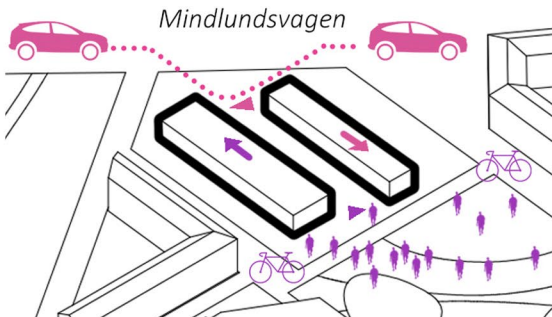
FORM DEVELOPMENT



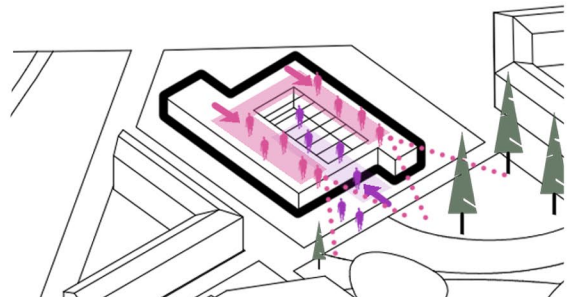
Create the original volume according to the total area of the program. There are two floors in the volume. It needs to be low to avoid blocking too much view of the landscape.



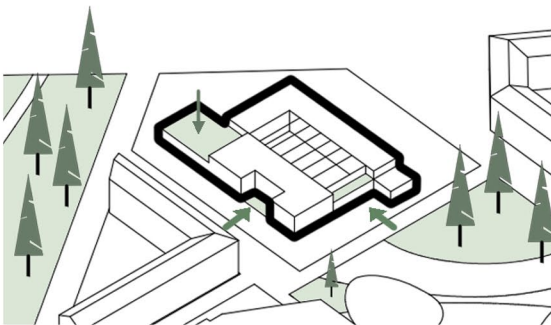
The building is divided into two volumes, connecting the two parks at both ends of the site, and the interior of the building forms a view to the two parks.



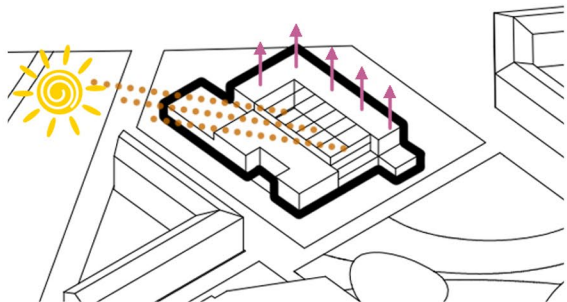
Mindlundsavagen is the only vehicle street next to the site. The patient entrance is placed in the north for the convenience of the disabled. The community entrance is in the south, facing the meeting point of the community park. Move the volumes slightly to create entrance squares.



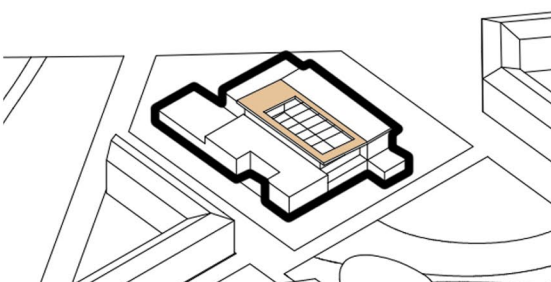
Community residents enter the building from the south and have the indoor park with gallery and rest area in the atrium. Patients' treatment space is mainly on the first floor, having good view towards the landscape of the community park.



Several transition areas between the natural and interior spaces were then made through the unevenness of the surface, the addition of terraces, balconies and rooftop garden.



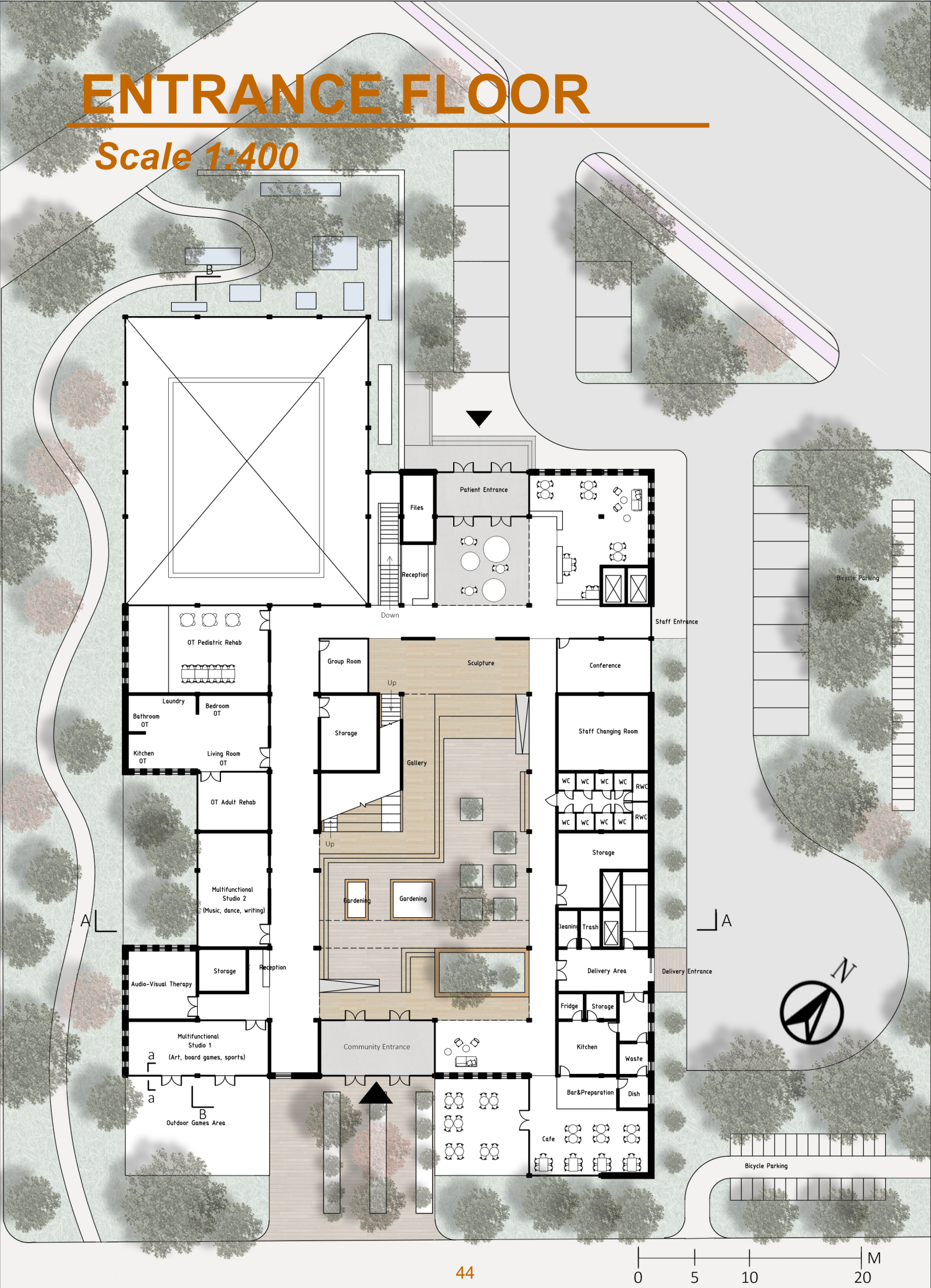
The north-facing volume is raised so that the side windows on the south side of the atrium can absorb enough heat in winter when the sun is low.



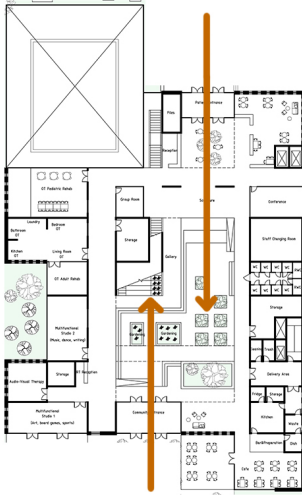
The roof is enlarged a bit to cover the balconies and reduce excessive direct sunlight on the ground floor of the atrium.

ENTRANCE FLOOR

Scale 1:400



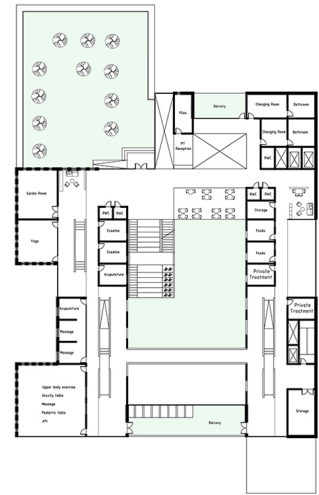
DESIGN CONCEPTS



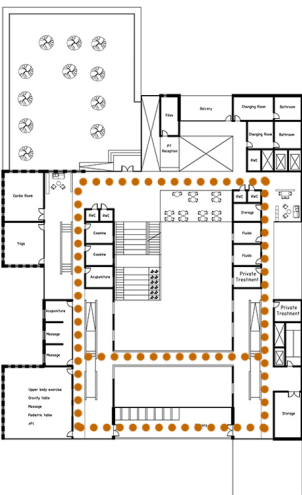
Patients and community visitors enter the building from different entrance and meet in the indoor park.



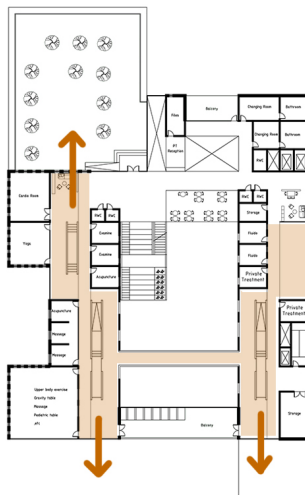
Exhibitions in community parks can be transferred to galleries during inclement weather, and works by patients from recreation therapy can also be displayed here.



Invite the nature into the building by adding terraces, balconies and rooftop garden.



A circular flow line passes through the various training areas, encouraging patients to move freely and explore within the building.



Open training spaces replace closed rooms, with good views of the landscape and fostering interpersonal communication.

PROGRAM EXPLANATION

The functions of the building are based on some completed projects and some suggestions from the interviewees. According to the interviews, more communication with the community and sportspeople, more open rehabilitation treatment spaces, and more diverse rehabilitation spaces are all welcome. In addition, privacy is also an essential factor that patients will consider when conducting specific treatments, such as acupuncture and audio-visual treatments.

There are two entrances on the ground floor, patients enter from the north entrance, and community residents enter from the south entrance. The north entrance faces the main urban road for cars, and there are accessible parking spaces and wheelchair ramps on the entrance plaza for patients' convenience. The south entrance faces the community park, schools, and gymnasiums, making it easier to attract community residents. The cafe on the right side of the community entrance faces the picnic area of the community park, while the recreational treatment area on the left side of the door with the outdoor activity area faces the crowd gathering area of the community park. Community residents can more easily participate in recreational therapy game projects, creative projects, and other fun social activities.

After the patient enters from the north entrance, reception and waiting areas are

on both sides. If patients need to go to the spa area on the ground floor, they can go down the stairs behind the reception desk or down the elevator next to the waiting area. The spa area has a pool and sauna with accessible ramps. Unlike the high windows of conventional swimming pools, the spa area here is submerged by one floor, and the high windows are located on the ground floor to see the landscape of the ground garden. Frosted glass skylights in the changing rooms and saunas let in sunlight, reducing the usual sense of enclosure.

After passing the reception, we entered the indoor park. A gallery and exhibition area connects the patient entrance to the recreational therapy area, where works from the recreational therapy area, such as paintings and sculptures, can be displayed. Community park exhibits and other social events can be moved to indoor parks during inclement weather. In the center of the indoor park are a grand staircase with a rest area and various plants. The grand staircase serves as an auditorium for lectures, while the plants provide a natural element to the park. The area directly opposite the stairs is a gardening area for recreational therapy patients. The specially designed planting platform is convenient for patients in wheelchairs to set up flowers and plants, and the platforms of different heights are beneficial to patients of different ages. Next to the stairs is the occupational

therapy area. It is divided into two areas for children and adults. Adults can train a variety of housekeeping skills. Different training areas can simulate the environment of the kitchen, bathroom, laundry room, living room, and bedroom. The children's training area is equipped with unique small-scale furniture, and the swimming pool on the first floor can be seen through the window, which increases visual communication and interest.

Community visitors walk up the grand staircase to face the landscape of the roof garden, from which they can look out over the city park. The changing room and bathroom are behind the elevator on the north side for patients undergoing rehabilitation training. And different treatment items are distributed in the corridors on both sides. Treatments that require privacy are placed in a single room, such as acupuncture, heat therapy, and massage. In addition, several private treatment rooms can perform different treatments depending on the situation. The two corridors are an open training space, transforming the traditional monotonous and depressing narrow corridors into attractive multifunctional spaces.

Two corridors face views of the community park and create circulation through bridge-like training spaces across the indoor park, inviting people to walk

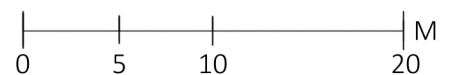
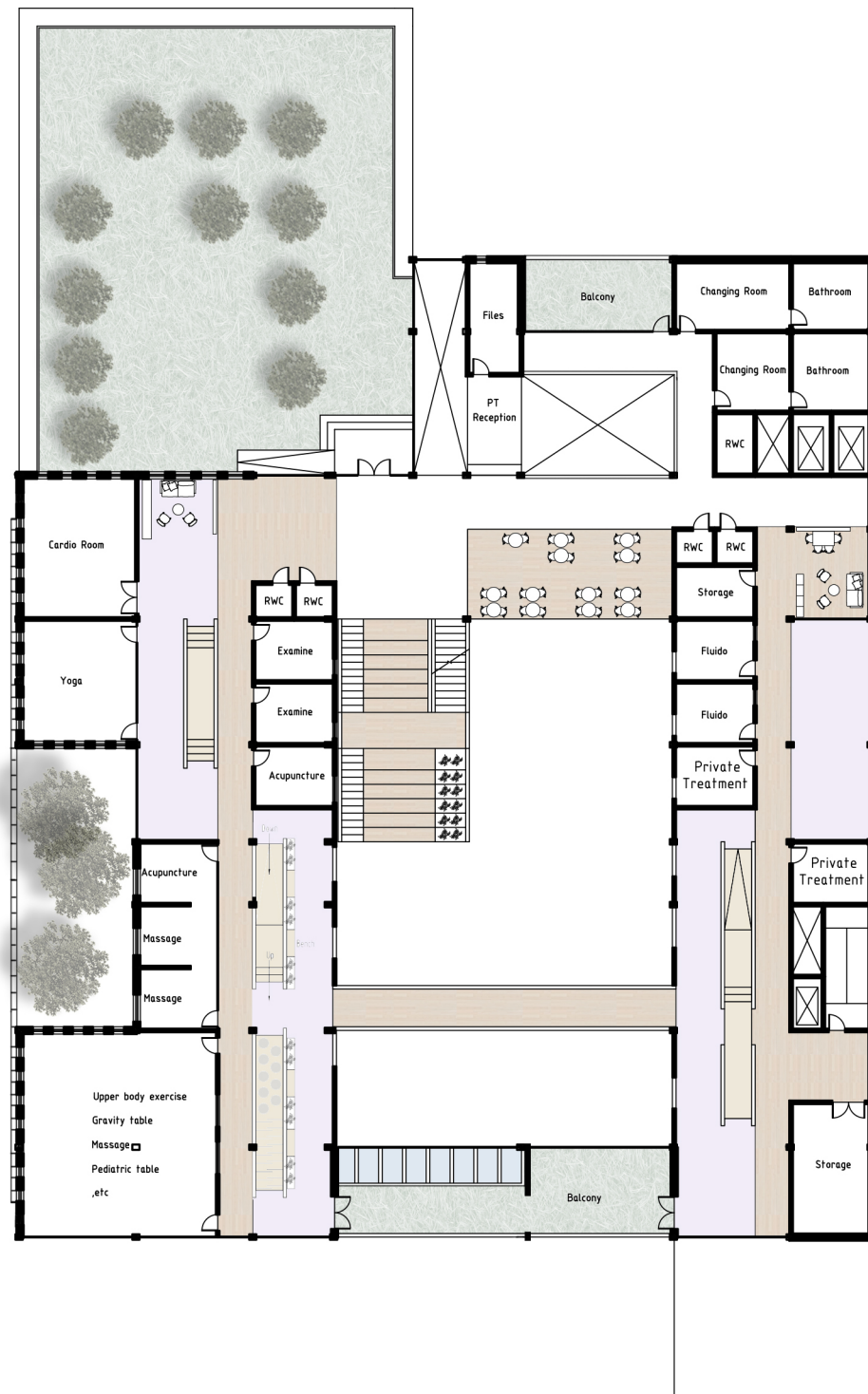
and explore the building constantly.

There are various training facilities inside the corridor, such as small-scale steps and slopes and tracks on the ceiling for assisting walking, helping rehabilitation patients relearn their mobility in different situations. Around a small recessed garden, there is a cardio training room, a yoga room, and a training room with other professional equipment.

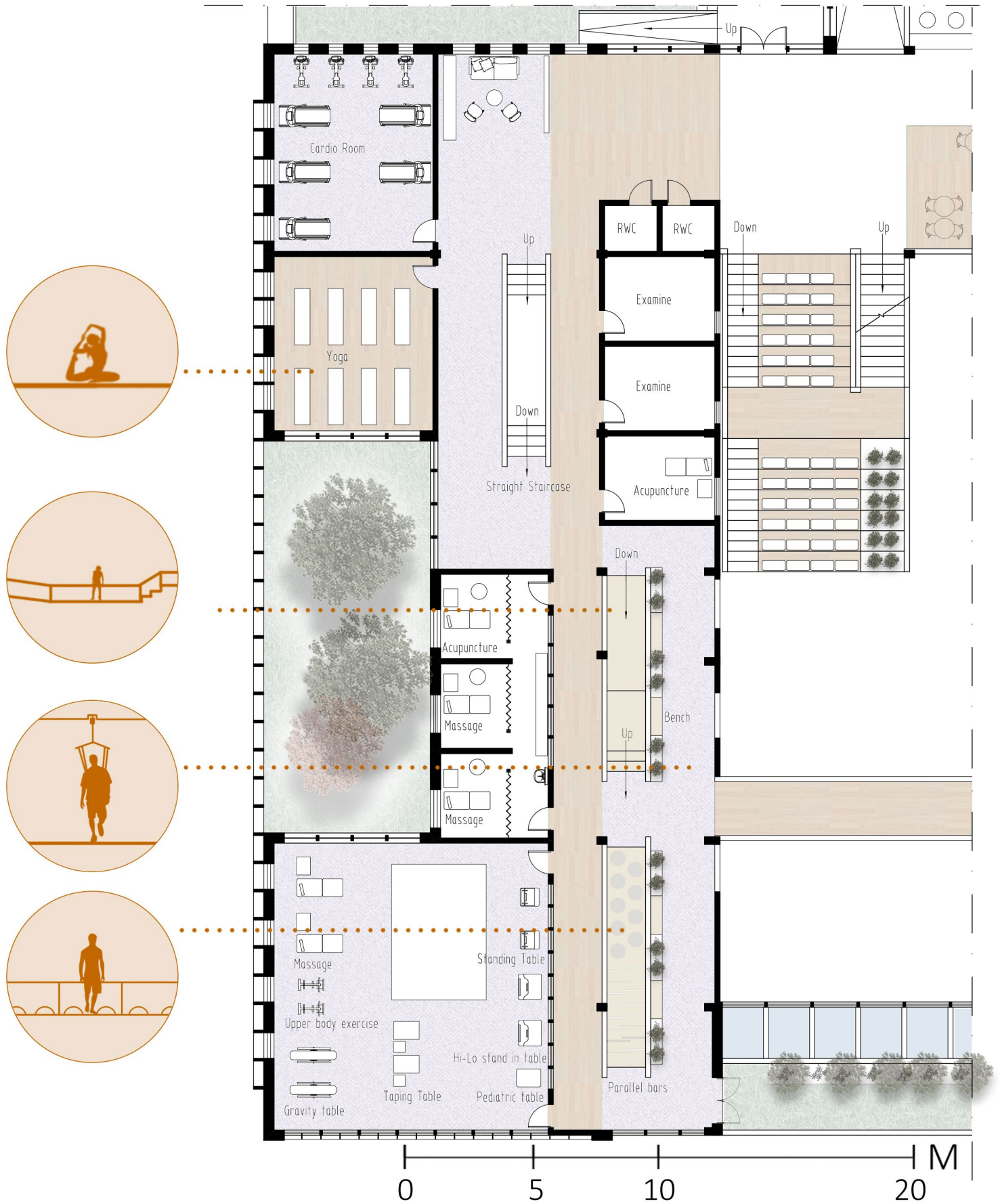
Nutritional therapy and psychotherapy are on the top floor, where information and teaching services can be provided, facing the indoor and city park landscapes. The staff office area is also on the top floor. The staff entrance is next to the elevator on the north side of the first floor. There is a meeting room next to it, which is convenient for employees on different floors to arrive quickly. The staff area has a kitchen and living room and faces the community park with great views. The corridors of the staff area have some open group meeting areas where employees can discuss and rest. Most of the offices are organized in groups. The logistics entrance is on the south side, and outside is the return yard for trucks.

FIRST FLOOR

Scale 1:400

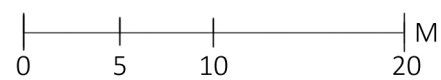


Scale 1:200



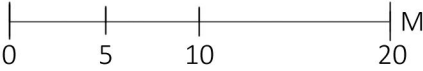
SECOND FLOOR

Scale 1:400



BASEMENT

Scale 1:400



Sections

Scale 1:200



A-A Section



B-B Section



ELEVATIONS

Scale 1:400

South Elevation



North Elevation



0 5 10 20 M

West Elevation



East Elevation



MATERIALITY



Material Choice

Pressed wood is used for lightweight partition walls in interiors, reducing the burden on load-bearing structures and increasing floor plan flexibility as part of movable walls.

Fair-faced concrete was used for some of the walls, including the walls of the stairwell elevator, and the balustrades of the balconies inside.

Plank wood is used in the planting area of the atrium to ensure that people can feel a soft touch while sitting on the ground.

Through the gaps between the formwork, the water in the planting area can penetrate into the aquifer under the wooden floor to provide water to the plants.

Most of the façade is made of solid wood treated with waterproof paint, and its texture allows the entire building to blend better with the natural landscape of the surrounding park.

DETAILED ELEVATION

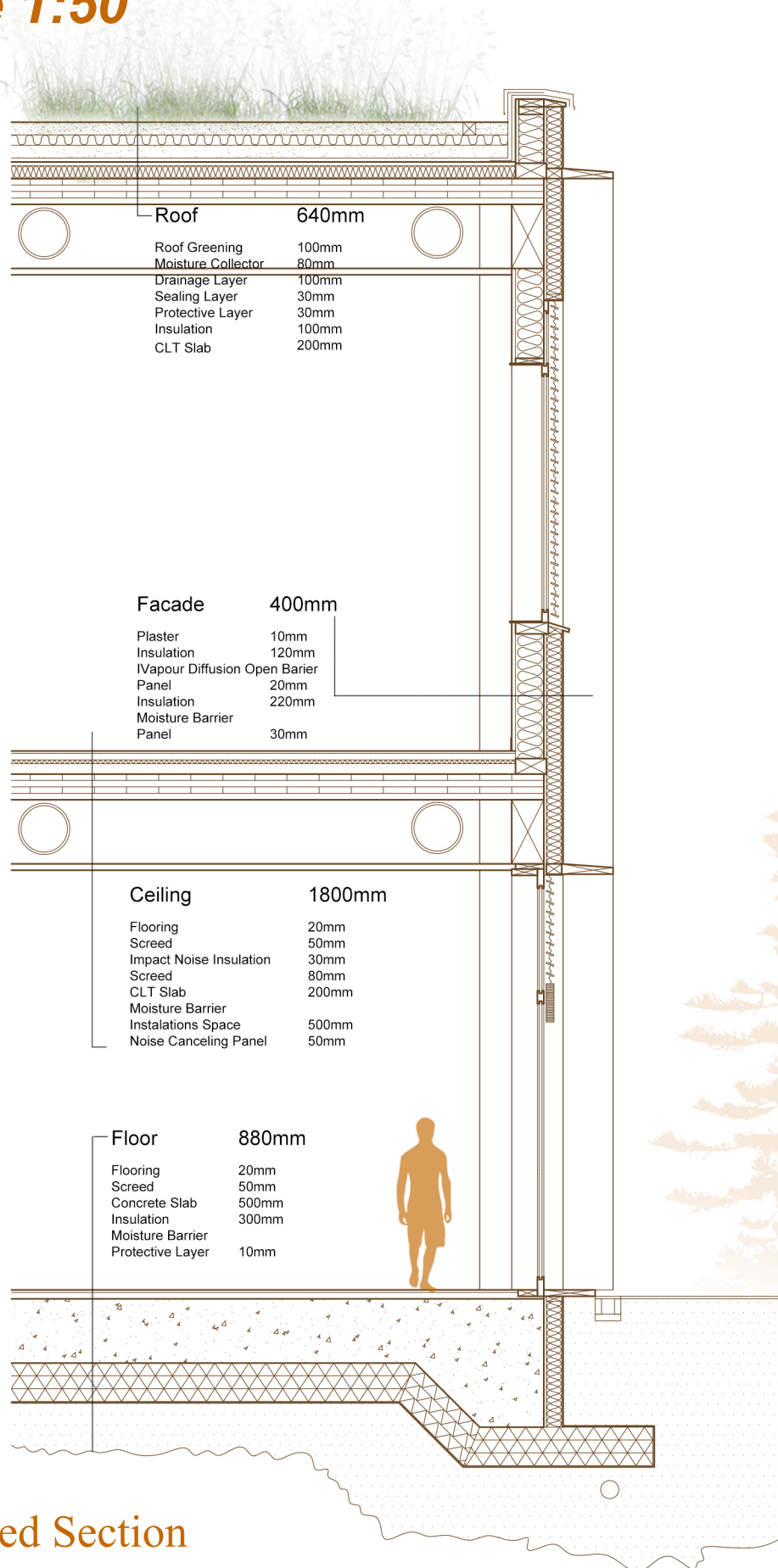
Scale 1:100



Zoomed-in Southern Facade

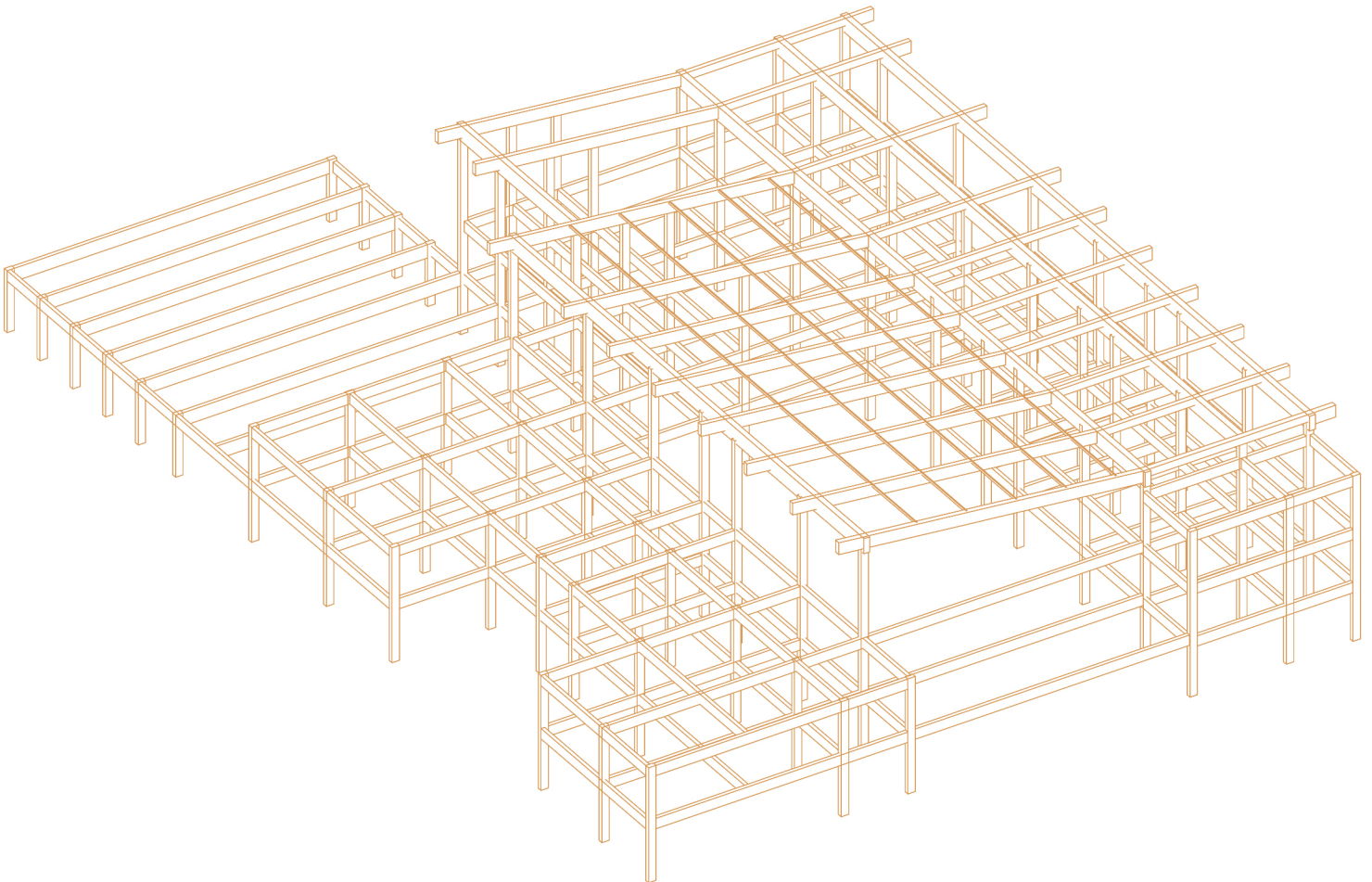
DETAILED SECTION

Scale 1:50



a-a Detailed Section

STRUCTURE



THE ATRIUM



THE BRIDGE



THE COMMUNITY ENTRANCE



06. CONCLUSION

REFLECTIONS

Discussion

The aim of the thesis is to propose a rehabilitation center that supports the mental health of the patient with the help of natural elements, connection to the community and encouraging exercise. The project's design is based on literature readings, case studies, interviews, site analysis. In the beginning, I lacked first-hand knowledge and even had great difficulty deciding what functions should be in the building.

Based on the study of multiple existing cases, the basic functions of the rehabilitation center were settled. Through literature reading and interviews, I have learned about the psychological problems that professional athletes and sports enthusiasts will encounter at various stages after injury and their needs. The main psychological issues they face are isolation, depression, stress, and lack of motivation. In addition, some respondents who had undergone rehabilitation programs also expressed their views on the current rehabilitation center building. They believe that the lack of open spaces in these buildings results in a depressing atmosphere and inability to communicate with many people, which aggravates their sense of isolation, increases stress, and is not conducive to recovery. They hope to have more open

space and attract more people from the community to make the whole building enjoyable.

After conducting site analysis, I found that the landscape of the surrounding parks can be used to create a better natural atmosphere with the greening of the site. The project has designed an activity space where community members can participate, an open and circular corridor exercise area, and an urban area where sightlines from different locations in the building can meet each other. There are also indoor parks, terraces, balconies, roof gardens, and planting experience areas. After some adjustments, they present an inclusive and vibrant atmosphere with good views of the natural landscape.

The next step to consider is some technical details, including the relationship between the size of the lighting surface and the indoor park's temperature, the species selected for indoor plants, and the detailed structure required for eye-catching architectural shapes. Of course, there is also the issue of cost because the expenses of medical institutions are always large and tight.

Conclusion

This thesis is dedicated to filling the gaps in the field of rehabilitation centers in Gothenburg, providing patients who need rehabilitation from sports injuries with a rehabilitation center that can help them regain their mental health. Early research gleaned information from multiple sources, identifying psychological problems associated with sports injuries, deficiencies in current rehabilitation centers, and patient aspirations. Based on this information, the design principles of the scheme are determined, and the corresponding detailed design strategies are formulated. Finally, an open, natural, and full of sports atmosphere rehabilitation center proposal was completed. The ultimate goal of the design is to allow patients to recover both physically and mentally, thereby further speeding up their physical recovery.

REFERENCES

- Aetna. (2021). Fluidized Therapy (Fluidotherapy). [http://www.aetna.com/cpb/medical/data/400_499/0450.html#:~:text=Fluidized%20therapy%20\(Fluidotherapy\)%20is%20a,the%20properties%20of%20a%20liquid.](http://www.aetna.com/cpb/medical/data/400_499/0450.html#:~:text=Fluidized%20therapy%20(Fluidotherapy)%20is%20a,the%20properties%20of%20a%20liquid.)
- Aman, M. (2017). Acute sport injuries in Sweden and their possible prevention. <https://gih.diva-portal.org/smash/get/diva2:1166071/FULLTEXT04.pdf>
- Bloomberg, M., Burney, D., Farley, T., Sadik-Khan, J. (2010). Active Design Guidelines: Promoting Physical Activity and Health in Design. <https://www1.nyc.gov/assets/planning/download/pdf/plans-studies/active-design-guidelines/adguidelines.pdf>
- Browning, W., Ryan, C., & Clancy, J. (2014). 14 Patterns of Biophilic Design <https://www.terrabinbrightgreen.com/wp-content/uploads/2014/09/14-Patterns-of-Biophilic-Design-Terrapin-2014p.pdf>
- Bovenberg, F., Takkenkamp, J., Vennik, L., & Francken, G. (2010). Helende omgeving draagt bij aan herstel. *Sociale Psychiatrie*, 29(94), 7.
- Chappe, A. (2021). The Effect of Architecture and Design on Mental Health and Implications for Open Art Studios. https://digitalcommons.lesley.edu/cgi/viewcontent.cgi?article=1515&context=expressive_theses
- Dumitrache, O., Miedema, E., Dobre, C. (2020). Active Care - Building Design for Habilitation Centers. <http://dx.doi.org/10.1088/1755-1315/588/3/032078>
- Ferguson-Iosier, O. (2015) Architectural [Physio]therapy a Dynamic Healing Process. https://curve.carleton.ca/system/files/etd/ad80546-bc58-4a40-ad2e-f5a4c2c20b0f/etd_pdf/d93be8a3ecca478bf83ea1cd85daffee/ferguson-losier-architecturalphysiotherapyadynamichealing.pdf
- Gadamer, H. (1993). *The Enigma of Health: The Art of Healing in a Scientific Age*.
- Gaszewska, E., Ortowska, K., Towalska, O., Kozuchowski, M., Sieklucka, T. (2013). A preliminary evaluation of the effects of comprehensive rehabilitation on emotional well-being and the quality of life in female patients with osteoarthritis. <https://www.termedia.pl/A-preliminary-evaluation-of-the-effects-of-comprehensive-rehabilitation-on-emotional-well-being-and-the-quality-of-life-in-female-patients-with-osteoarthritis,18,21589,1,1.html>
- Gesler, Wilbert M. (March, 2003). *Healing Places*. Lanham, MD: Rowman & Littlefield, 2003. 3.
- Hamilton, D. K. (2003). The four levels of evidence-based practice. *Healthcare Design*, 3(4), 18-26.

Healthline. (2020). The Benefits of Recreational Therapy. <https://www.healthline.com/health/recreational-therapy>.

Healthline. (2022). Exercise and the Brain: The Mental Health Benefits of Exercise. <https://www.healthline.com/health/depression/exercise>

Herring, S., O'Neill, L., Coppel, D., Daniels, J., Gould, D., Grana, W., Hong, E., Indelicato, P., Jaffe, R., Joy, E., Kibler, W., Lowe, W., Putukian, M. (2006). Psychological issues related to injury in athletes and the team physician: a consensus statement. https://www.aafp.org/dam/AAFP/documents/patient_care/fitness/ACSMissuesrelatedtoinjury.pdf

Levleva, L., Orlick, T. (1991). Mental Links to Enhanced Healing: An Exploratory Study. *The Sport Psychologist*, 5(1), 25-40.

Micheo, W., Sánchez, L. (2018). Rehabilitation in Musculoskeletal and Sports Injuries in Older Adults. *Geriatric Rehabilitation*, 161-168. doi: 10.1016/B978-0-323-54454-2.00012-1

Mayo Clinic. (2021). Massage: Get in touch with its many benefits. <https://www.mayoclinic.org/healthy-lifestyle/stress-management/in-depth/massage/art-20045743>

McLachlan, F., Leng, X. (2021). Colour here, there, and in-between—Placemaking and wayfinding in mental health environments. *Color Research & Application*, 46(1), 125-139. <https://doi.org/10.1002/col.22570>

Montefiore Medical Center. (2022). Creating a Healing Hospital Environment. https://www.montefiore.org/body_healingarts.cfm?id=2638&fr=true#:~:text=A%20healing%20environment%20is%20defined,a%20sense%20of%20well%2Dbeing.

Moore, R. (2020). The Impact of Mental Health on Injury Recovery. Performance Health Academy. <https://www.performancehealthacademy.com/the-impact-of-mental-health-on-injury-recovery.html>

Motion PT Group. (2022). What is Sports Injury Rehabilitation. <https://motionptg.com/resources/sports-injury-rehab/#:~:text=Sports%20rehabilitation%20is%20a%20type,from%20injury%20and%20reduce%20pain>.

Neurozong. (2022). Audio-Visual Entrainment. <https://neurozonewave.com/brain-disorder-services-los-angeles/therapies-programs/audio-visual-entrainment/#:~:text=By%20manipulating%20the%20brainwave%20frequencies,a%20state%20of%20deep%20relaxation>.

NHS. (2019). Acupuncture. <https://www.nhs.uk/conditions/acupuncture/>

Scrivener, K., Pocovi, N., Jones, T., Dean, B., Gallagher, S., Henrisson, W., Thorburn, M., Dean, C. (2019). Observations of Activity Levels in a Purpose-Built, Inpatient, Rehabilitation Facility. *Health Environments Research&Design Journal*. 2019 Vol 12(4) 26-38

REFERENCES

Sport Injury Clinic. (2022). Hydrotherapy Benefits for Athletes. <https://www.sportsinjuryclinic.net/treatments-therapies/hydrotherapy>

Staricoff, R. L. (2006). Arts in health: the value of evaluation. *The journal of the Royal Society for the Promotion of Health*, 126(3), 116-120. <https://doi.org/10.1177/1466424006064300>

Van Nijhuis, J. (2017). Healing environment and patients' well-being. <https://edepot.wur.nl/412000>

World Health Organization. (2022). WHO remains firmly committed to the principles set out in the preamble to the Constitution. <https://www.who.int/about/governance/constitution>

Zvyagintseva, M., Skripkina, J., Fedorchenko, N. (2019). Principles and Exanples of Design of Rehabilitation Centers IN Russia and abroad. *Journal of Applied Engineering Science*. Paper number: 17(2019)4, 646, 567 - 570.

07. APPENDIX

Daniel (former football player)

Feeling of isolation is the main mental issues after getting injured because you cannot participate in the training with your teammates and friends in a period of time. For some professional athletes, they can use the rehab center in the professional sport clubs that are closed to their training zone. Some rehab treatment can even be placed right on the training area like the football pitch, which helps a lot reduce the feeling of isolation.

At present, rehabilitation centers in Gothenburg are generally small in scale. If ordinary people need to go to a rehabilitation center near the community, the walking distance is generally no more than 20 minutes. Due to their small size, many rehabilitation center training programs are individually split into small rooms, and sometimes one or two simple machines may be used in a closed environment to perform mechanical and boring training movements throughout the morning. This makes it difficult for people to keep going for treatment every day.

Hao (plays football every week)

Rehabilitation centers can be found near almost every community in Gothenburg, which is good. Many times mild pain can be easily resolved without the need for a very large facility. Every time I go to a rehabilitation center, I meet many elderly people. These elderly people are not injured, but some parts of the body will have some pain as they get older, and they need to go to the rehabilitation center for treatment such as acupuncture and massage.

Many people around me are afraid to undergo surgery after a sports injury such as a broken bone. In addition to the fear of the surgery itself, there is also the fear that post-operative recovery will be too long and painful. I once had a fractured collarbone, and after the bold surgery, I went to the rehabilitation center for rehabilitation training, and I can travel abroad soon. Rehabilitation centers should attract more people to participate and become a place of attention rather than exclusion.

Ethan (got severe injury years ago)

I once suffered a tibia fracture in my lower leg. Conservative treatment was used and no surgery was performed. After the treatment, he stayed at home and waited for the natural healing of the tibia, without any rehabilitation training during the whole process. After recovering to a certain level, use a wheelchair to go to school. A few months later, the muscles of the fractured right leg were found to be significantly atrophied, and the left leg was significantly thicker than the right leg.

Only then did I realize that the lack of rehabilitation training would have such consequences. However, little information has been received on rehabilitation training before this, and school education generally only talks about how to prevent injuries, not what we should do after an injury. This leads to anxiety after injury, not knowing how to deal with it is the best way to recover. Maybe the rehabilitation center can offer some courses, or hold some public activities so that people who are usually healthy also have a certain understanding of rehabilitation training.

Jun Yan (professor)

Compared with the loss and isolation of amateur sports enthusiasts after injury, professional athletes feel more stress and anxiety after injury. Because the injury means that your career may be affected, you may miss a key opportunity in your sports career due to the injury, or the body cannot return to the level before the injury due to the injury. Athletes who are under heavy psychological stress are likely to enter a state of stress after returning because they feel unable to cope with the surrounding game situation. This in turn leads to increased muscle tension, narrowed vision, distraction, and other physical conditions, which in turn increase the athlete's risk of re-injury.

Therefore, it is very important for professional athletes to continuously reduce psychological stress during the rehabilitation training process. In the process of physical exercise, organized group activities can obtain more opportunities for social interaction, feel more social support, and have a positive impact on improving psychological conditions.