

# Designing a Research for Sports Rehabilitation Health Care Centers as an Approach for the Graduation Project in Interior Design

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**Abstract:** Rehabilitation centers for some people especially for those whom practice sports or suffering from injuries or disability is very essential to re participate in sport, or in the community to empower the people with an injury or disability and their families.

In all cases, the availability and validity of rehabilitation services is different in all stages and need special settings that vary between the nations and regions depends on different considerations such as the type of therapy it provides as a service, for example, medical rehabilitation and therapy needs to be provided in special care hospitals for special medical therapy.

This paper designed to highlight the comprehensive role of the rehabilitation services, which needs special Interior design that should be commonly available as possible in the region.

This paper will also argue the importance of using the research on the senior level as a base for the senior graduation project.

**Keywords:** Rehabilitation- Sports Injuries- Research Design.

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## 1. INTRODUCTION

The main aim of this research is to provide a model on designing a special rehabilitation centre to deal with physical injuries for the patients and help them to participate in the community society after the help they receive from the rehabilitation centre and the hospitals and to help the patients to develop their skills.

Due to the increasing cases of sports' injuries, it is necessary to establish a sports rehab centers for injured athletes to provide medical services at their home countries instead of seeking treatment and rehabilitation overseas.

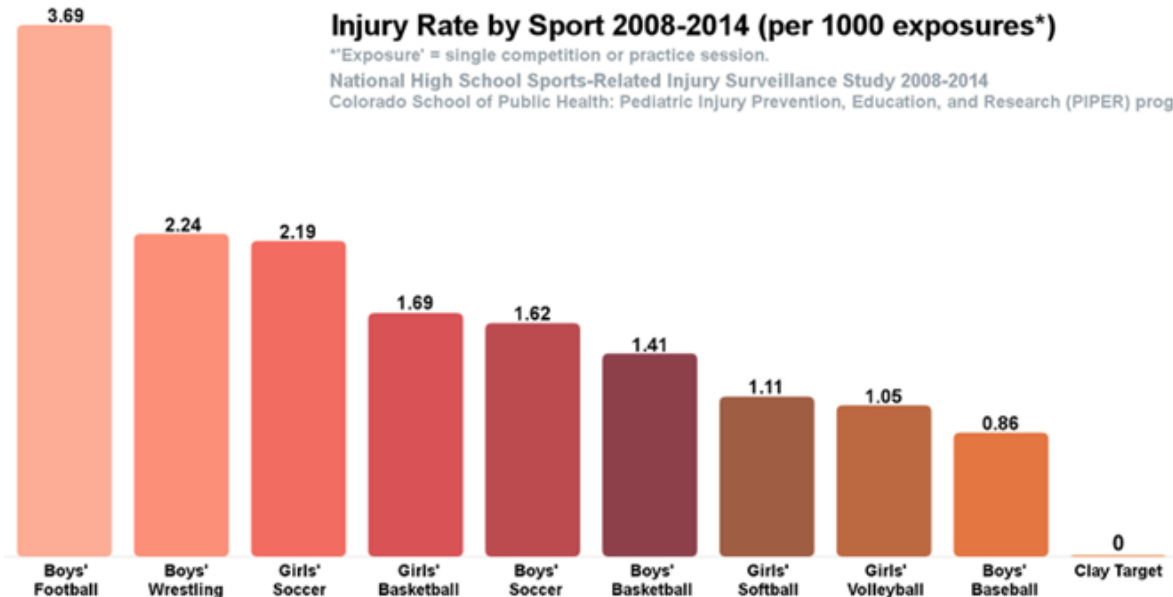
In a research project, two significant elements between that certain differences can be identified are the research design and methods. Hence, for those pursuing research in any field of study, an awareness of research methods and research design is vital. There are many research methods that provide a loose framework or guidelines to conduct a research project. One has to choose a method that suits the requirements of the project, and the researcher is comfortable with. On the other hand, the research design is the specific framework within which a project is pursued and completed. Many remain confused about the differences between research methods and research design. This article will differentiate between the two and make it easier for research students.<sup>1</sup>

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<sup>1</sup> - <http://www.differencebetween.com/difference-between-research-methods-and-vs-research-design>

**1.1 Research Problem:**

This research Hypothesis consist of the shortage of numbers of having such centre to deal with different sports’ injuries, which cause a high cost for the player to travel to other similar billings to find the suitable treatment to establish a sports rehab center for injured athletes to receive medical services at home instead of seeking treatment and rehabilitation overseas.



**Figure 1: Injury rate from 2008-2014 Source: Wiclayterget.com**

**1.2 Research Objectives:**

The main objective of this research is to propose a model of physical rehabilitation centre design to help with proper and speed recover the patients, the design will also engage the patients with the society to support this process.

This will be achieved through two main functions;

1. Create a built environment for patients who suffer from sports injuries to engage them into the society.
2. Providing the patients with high quality of medical treatments and provide them with Hiring a highly qualified staff and medical team members and experts to the centers to receive continuous counseling related to their treatment.
3. Offer an appropriate interior design space, equipments and facilities to return athletes active participation as quickly and successfully as possible.

**2. LITERATURE REVIEW**

Research is generally defined as a systematic investigation that establishes novel facts, solves new or existing problems, proves new ideas, or develops new theories. It is primarily associated with the search for knowledge, especially in the sciences and technological fields. Design, in contrast, deals with the act of planning and communicating a course of action to others, usually through the creative exploration of an area of interest. Charles Eames defined design as “A plan for arranging elements in such a way as to best accomplish a particular purpose.”<sup>2</sup> The term “design research” combines these two reasonably well-understood areas of practice, research and design, resulting in a seemingly meaningful merger roughly equivalent to the investigation of knowledge through purposeful design.<sup>3</sup>

<sup>2</sup> - Neuhart, J., Neuhart, M., and Eames, R. (1989) Eames Design: The work of the office of Charles and Ray Eames, Harry N. Abrams, New York.

<sup>3</sup> - “Demystifying “Design Research”: Design Is Not Research, Research Is DesIGN”- Trygve Faste & Haakon Faste, IDSA, Education symposium Aug.2012.

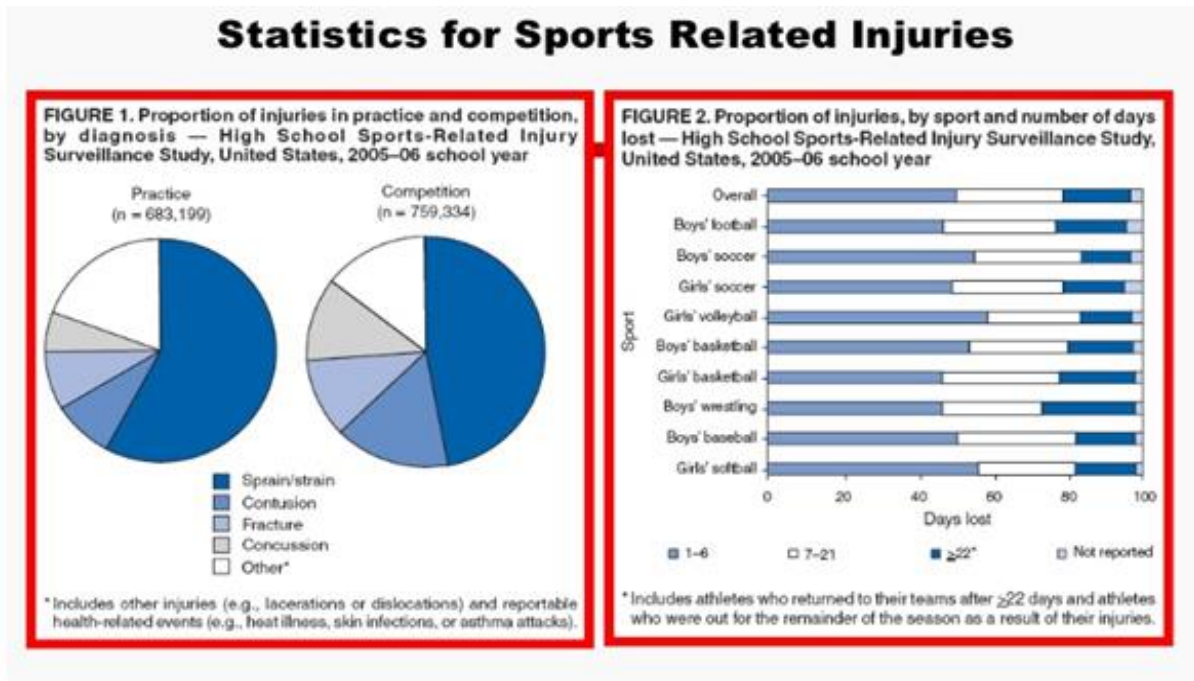


Fig.2: Shows the statistics for sports related to injuries

This research has a reflection on the senior project’s design for a rehabilitation center in Riyadh, as part of the senior graduation project at the discipline of Interior Design, the research idea deals with different aspects related to the interior design for Sports Rehabilitation Centers in Riyadh. It is designed to provide medical and rehabilitation services with a focus on prevention and treatment for anyone with orthopedic and sports related injuries.

This paper will focus on three aspects to highlight the relationship between the research and the final project, those aspects are:

**First**, this paper will concentrate on the research and its relation to the project’s context. **Second**, it will argue the relationship between the research and the senior project’s design.

**Finally**, it will focus on the approaches used to implement the research on the project and the design methods.

### 2.1 Project’s Description:

This project is about Sport Rehabilitation Center in Riyadh. To provide all Medical and Rehabilitation services as well as treatment, prevention of orthopedic and sports-related too. It is Important to have sport rehabilitation center in Riyadh because there are increasing numbers of, they are obliged to travel abroad seeking treatment and rehabilitation.

-In the design the patients are attracted by public functions like:

- Male and Female Rehab
- Inpatient Rehabilitation
- Hydrotherapy
- Sports Rehabilitator
- Hand Therapy
- Fitness Area
- ACL Treatment Program

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- Athlete Screening Program
- Recovery Services
- Rehabilitation Research
- Rehabilitation Practicum Students

-In addition to other Functional spaces like:

- Social
- Admin
- Relational
- Treatment
- Sport
- Services
- Circulation

### 3. RESEARCH METHODOLOGY

To achieve the main goals and objectives of the research the methodology that has been done depended on the data that will be collected from different sources. A qualitative and quantitative approaches will be used for the research in addition to Analytical studies that will be used to guide the research and the design thorough the design process.

The method was divided into three approaches: The first approach will focus on similar and selected case studies of rehabilitation centers and healthcare buildings locally regionally and globally to and study them, the second approach will analyze the available data, the last approach will be applying the output on the design.

Social research was done also on the patients to examine their experience of joining the rehabilitation process in relation to the design as application of best use of the research to guide the design process.

Both theoretical and analytical approaches were used to be used as the first step of design in the interior studio.

The proposed Sports Rehabilitation Centers in Riyadh-KSA provide a range of medical and rehabilitation services in the following areas:<sup>4</sup>

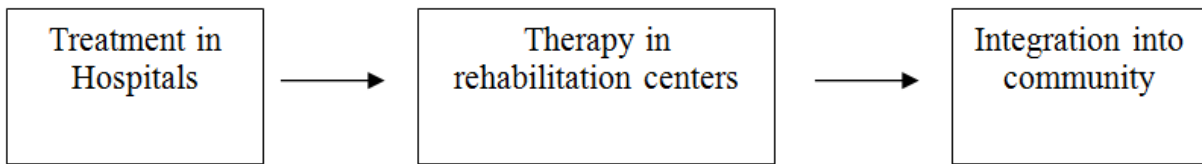
1. **Physical Therapy** – it aims to treat orthopedic and neurological conditions such as arthritis, spine injury, movement disorders and offers post-operative care and concussion management.
2. **Occupational Therapy** – this medical service provides treatment for visual perceptual deficits, development delay and so on.
3. **Speech and language Therapy** – it provides treatment and support for anyone who has difficulties in communication; feeding and swallowing problems due to sports related injuries.
4. **Massage rooms** – it offers state-of – the- art equipment and comfortable treatment rooms to customers.

Thus, it is important to provide appropriate space and equipments to create newly modern facility with state-of-the-art equipment and technology for comfortable and spacious treatment rooms.

The main concept of the project's design is based on speed and hope for the fast recovery of patients, It has arises from desire and need for speedy recovery of target customers with sports related injuries.

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<sup>4</sup> -<http://www.thelegendssportscomplex.com/facility/mainlobby>

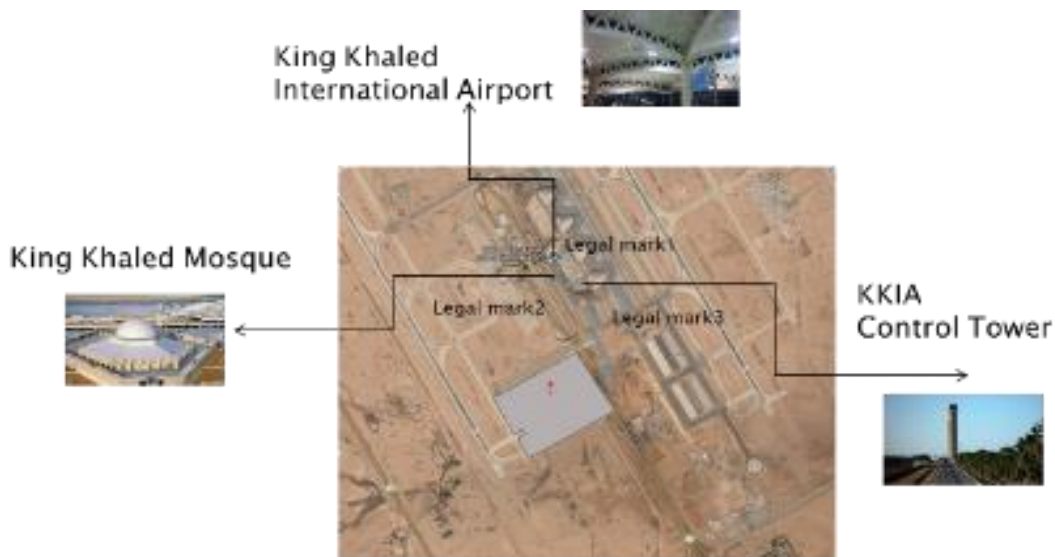


**Fig. 3: The Process for the effective treatment for the physical injuries**

#### 4. RESEARCH THEME

The theme of the studio was based on speedy recovery for those who receive treatment at Sport Rehabilitation Center. The theme of designing the rehabilitation center met the development of the theme and research idea, such as the location for the project in Riyadh-KSA. The city Riyadh provided the opportunity to abled as well as disabled people to be part of the society.

It is clean lined and focuses first and foremost on function and avoids the excessive accessories and decorative elements seen in many other styles.



**Fig.4: shows the site and location analysis & the adjacent buildings**

However, although the character of the rehabilitation center becomes more public, it still means the patient room's environment should feel private and safe. This ambiguity makes the design of a rehabilitation center very interesting.<sup>5</sup>

#### 5. PROGRAMMING AND ANALYSIS

The process of analyzing the project done through the design programming, analyzing and the zoning and others, since all are very important due to the importance of the spatial relationships can be a clearly seen in the plan.

##### 5.1 Spatial Relationships' Analysis:

The analysis studies done on the theoretical part of this research and was designed to be applied on the practical part to guide the design process with clear approaches to reach the best research design.

<sup>5</sup> -Reflection on research and design for a rehabilitation center in Amsterdam, Jurjen Zeinstra, Laura Alvarez, Bas Gremmen, Studio: Interiors, buildings and cities. Urban Culture and New Openness, Feb,2014

Table-1: The following schedules highlighting the relationship between the spaces

I. Social				
Function	Size	Requirements	Plan layout	Image
Lobby	30 x 32 x 5	<ul style="list-style-type: none"> <li>Natural light</li> <li>Cove lighting</li> </ul>		
Reception	10 x 13 x 5	<ul style="list-style-type: none"> <li>Pendant lighting</li> <li>Natural light</li> <li>Ambient light</li> <li>Wall washers</li> </ul>		
Lounge	30 x 15 x 5	<ul style="list-style-type: none"> <li>Ambient light</li> <li>Natural light</li> <li>Pendant light</li> </ul>		

5-1-1 Bubble Diagram:

Bubble diagrams are systems of lines and circles used in architecture to show relationships between functional areas of a program to develop an architectural plan. Appearing in many disciplines, they have been called "probably the most versatile and basic device for abstraction." Although the instrument par excellence of functional planning, there is little scholarly examination of bubble diagrams. Yet, in their origins, there may be a richness that warrants closer scrutiny.<sup>6</sup>

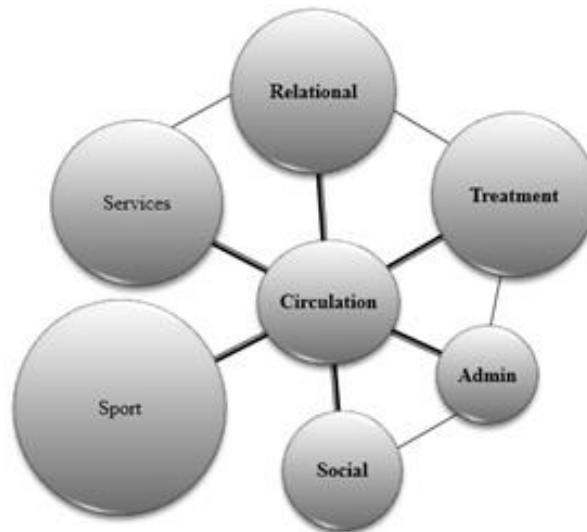


Fig.5: shows the Bubble Diagram

5-1-2 Matrix:

Evaluation matrices are used to evaluate a number of options against prioritized criteria. This process is relatively simple to apply and aids the team in making objective decisions. Project activities in which evaluation matrices are useful:

Evaluating:<sup>7</sup>

<sup>6</sup> - The Cosmogony of Bubble Diagrams, PAUL EMMONS, University of Pennsylvania

<sup>7</sup> - Evaluation Matrices.doc

- Customer “wants” against functional requirements;
- Functional requirements against design requirements;
- Design requirements against potential design solutions.

As any other analysis and evaluating tool used prior the beginning of the design process, the results were carefully considered. On the other hand, it helped not to change the main requirements or criteria to set any particular option. it also helped to give more explanation for using some spaces and it is relationship until reach the final decision.

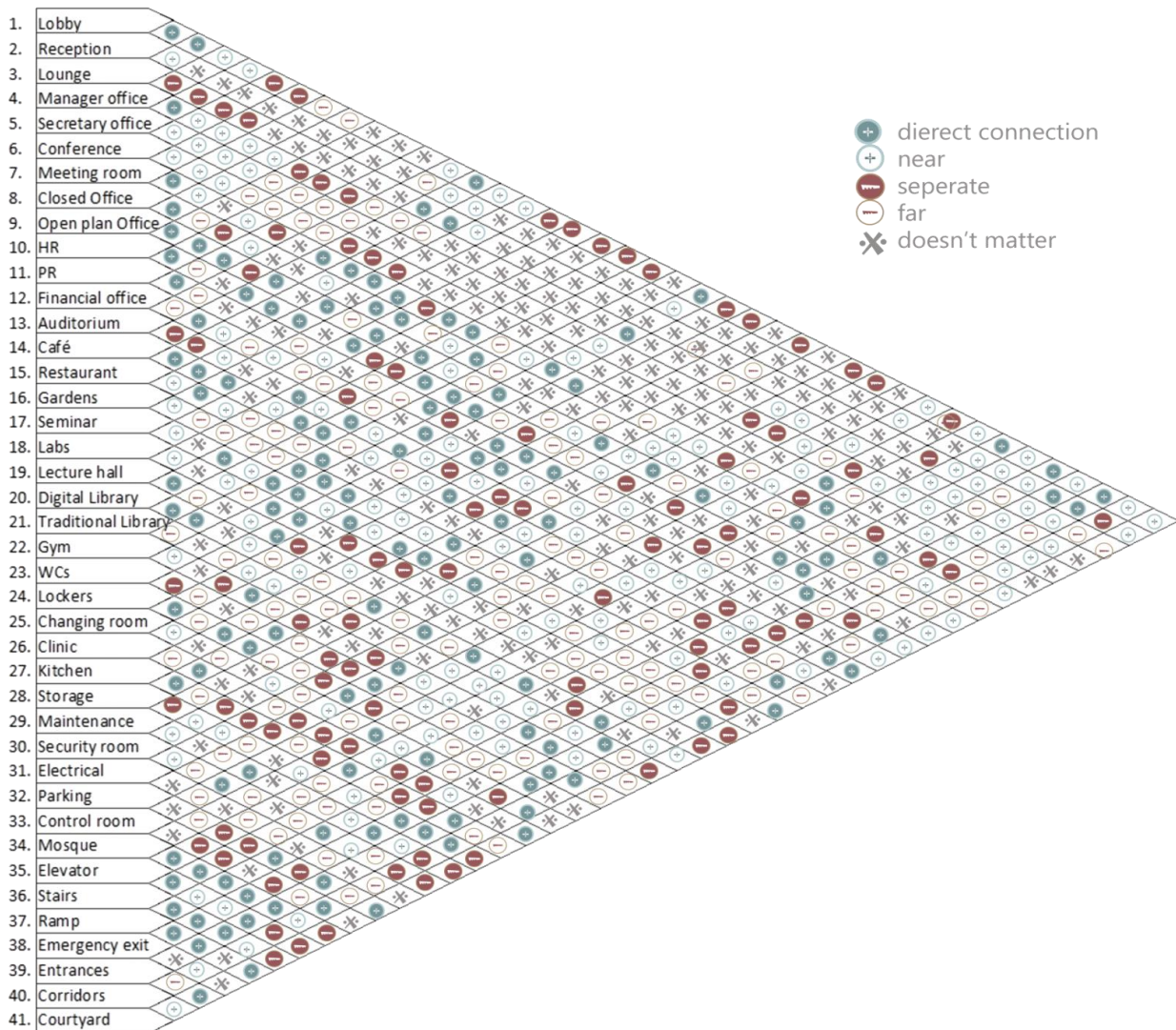


Fig.6: shows the Bubble Diagram

**5.2 Environmental Studies:**

Environmental studies are a broad discipline that explores humans and their relationship with the natural environment. The discipline encompasses ecology and environmental science, as well as policy, law, economics, and sociology. It is important to remember that nearly any topic can be studied in terms of its relationship with the natural environment, which is why the field is interdisciplinary.<sup>8</sup>

<sup>8</sup> - <http://www.uvm.edu/>

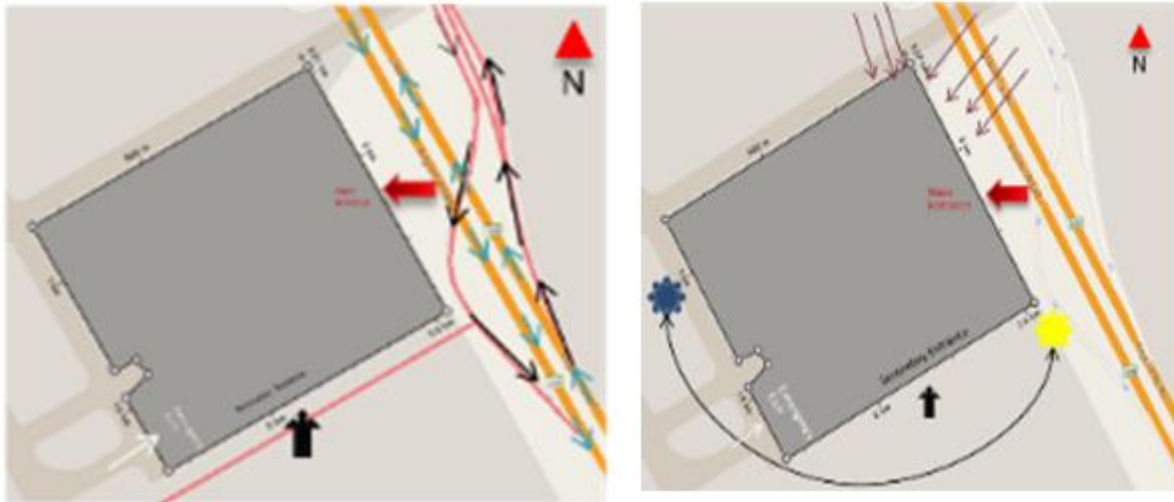


Fig.6: shows the Wind & Sun directions

The environmental analysis included the sun direction and the wind path according to the building orientation and direction.

### 6. CHOSEN MATERIALS

Several tables of analysis were done also on the best and appropriate materials used in every space in the interior to choose material that meets the design’s requirements based on each space’s function.

Table -2: Walls - Modern style

Name	Picture	Manufacture
Wallpaper		
Wallpaper		
Wallpaper		
Ceramic wall		
Paint		
Paint		

### 7. RELATIONSHIP BETWEEN RESEARCH AND DESIGN

This research questioned how the interior designer of a rehabilitation center could use the design to contribute to the self-reliability of the patients and a return them to society, on the on the other hand the return to the society is very priority for the patients, not only because of their physical annoyance, but also the mental too.



The first category of design research is design through research (i.e., research). This category reiterates our framing of research as a kind of design. We also refer to this quadrant as studious design research, because design research of this nature explicitly studies natural and technological phenomena to advance human knowledge. For all practical purposes, studious design research is synonymous with the research practices of other conventional fields of research, that is, research practitioners are always studious design researchers regardless of their awareness that their activities are “design.” The second category of design research is the design of research. Like studious design research, formative design research has its basis in scientific convention. This quadrant reflects a critical aspect of design through research: it is the process by which research activities are routinely designed. The third category of design research, “hands off” and designerly, is research on design. The continued growth and success of design requires that designers improve their practice, and research on design is one such approach. Design research in this quadrant performs the critical role of examining design processes to enhance the effectiveness and efficiency of a given design method or process.<sup>9</sup>

Because artists and designers use research to understand the topics they are working on as a process of creation and self-reflection, they are able to improve their design research practice in ways similar to diagnostic design research methods. A major difference, however, is that design process knowledge is embedded in the designer’s internal toolkit as well as in the external world as a result of the generated designs. In this regard embedded design research enables the enhanced performance of future design action through knowledge disseminated through broader means than that of traditional research.<sup>10</sup>

## 8. FINDINGS AND DISCUSSIONS

In my opinion it is important when you are researching by design to zoom in and zoom out constantly and reflect on the qualities that you want to reach, especially in the beginning of this process. You have to keep in mind that research by design brings you new insights in a number of aspects and therefore you should not hold back of changing the scheme of the building.

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- [5] <http://www.differencebetween.com/difference-between-research-methods-and-vs-research-design>
- [6] Evaluation Matrices.doc
- [7] <http://www.uvm.edu/>

<sup>9</sup> -“DEMYSTIFYING “DESIGN RESEARCH”: DESIGN IS NOT RESEARCH, RESEARCH IS DESIGN”- Trygve Faste & Haakon Faste, IDSA, Education symposium Aug.2012.

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