



Alexandria University
Faculty of Fin Art
Department of Decor

Subject of Thesis

**"Technological Development And Its Impact On Space Planning Of Sports
Club For People With Special Mobility Needs (Paralympics Games)"**

Thesis submitted to Department of Decor
Faculty of Fin Art – Alexandria University
In partial fulfillment of the requirements for the degree of master in
Interior Architecture

By

Marwa Kamal Ahmed Abu Sadah

Demonstrator in Faculty of Art & Design – Decor Department

Pharos University – in Alexandria

٢٠٢٠

Research Summary

Summary of the first chapter

- Countries are now giving more attention to their citizens with special needs, depending on the circumstances of each country, which constitutes a wealth that can be used to contribute to the further development of society.
- Know the Paralympics:
 - It is the parallel games of the Olympiad of Paras, and is considered the second largest international multi-sport event, in which athletes with varying degrees of disability participate.
- The role of the interior designer in designing the Paralympic gymnasiums:
 - Interior design is an art and a science strongly associated with architecture, to agree
- The human needs within the environment in which he is present in various places, which helped to maintain the comfort and health of the user. The concept of interior design can be simplified. The interior designer must come up with a flexible design without obstacles in the training places that are used in the Paralympic games as they are the same as those used in Olympic Games.
- The historical birth of the Paralympic Games:
 - The emergence of sports facilities from time immemorial, unlike various other establishments, gradually changing until they reached what they are now, so there are sports cities that contain many vital facilities
- People with special mobility needs participating in the Paralympic Games:

- Sensory impairment: is due to injury to the main nerves of the sensory organs.
- Intellectual disability: is due to a defect in the higher functions of the brain.
 - Mobility disability: It is known as disability due to the loss of one or more parts of the body, or because of a defect in the nerves, muscles, bones and joints that leads to a lack of movement.
 - Psychological disability: means harm resulting from a mental illness.
- The participation of people with special needs in sports and competitions significantly helped them feel that they are active members of society in general, by giving them equal opportunities to develop and demonstrate their skills and to increase public awareness of their abilities and needs through sports training and competitions to reach international competitions and Paralympic tournaments.
- □ The role of technological development in sports clubs and Paralympic games:
 - Technological development and nanotechnology plays a major role in the field of sports medicine, and its various uses in treating athletes and discovering their capabilities early, and directing them to sports that suit the capabilities and composition of the muscular athlete through the host study that is carried out in specialized laboratories, in addition to analyzing performance by placing special devices on The player's body to monitor his movements, also the importance of technological development in facilitating the use of internal spaces for training halls and sports fields.

Summary of the second chapter

- Achieving design considerations for gyms, so that people with special needs can practice their training, is one of the elements that must be taken into account by the interior designer during the design process so that the athlete with special needs can practice sports without hindrances within the sports club and training hall.
- □ Design considerations begin with the entrance doors, corridors, ramps, the design of the audience runway and the spaces for the movement of wheelchairs within them.
- The design of the floors is an important element in the buildings because of its visual and functional impact directly related to all activities in the space.
- The floors of the toilets for the disabled must be non-slip and should not have a difference in the level.
- □ The sizes of sports fields vary according to the different sports activities in terms of dimensions and materials used, as well as sources of ventilation and lighting.
- Building entrances should be prepared to facilitate movement in and out of wheelchair users.
- □ Corridors should be wide for ease of use by wheelchair users, and have a slight inclination, flat and free of steps in order not to hinder the movement of their users.
- الأبواب The doors opening must be from the inside and be provided with lattices along the corridor on one side.
- One of the problems that hinder the movement of wheelchair users is the use of narrow and poor-quality elevators, which leads to the difficulty of their use by people with special needs freely. Therefore, when installing the elevator in buildings, it is taken care of the use of high-quality and accurate elevators to ensure that they stand precisely at the required level and leave enough space in front of The elevator allows wheelchair users to move freely to reach the elevator.
- At least one toilet must be provided for each of the sexes in each group of toilets for people with special needs, as well as access to it directly from the elements of horizontal and vertical movement.

- Those in charge of sports facilities designed to hold multiple sporting events must ensure that the lighting conditions in these facilities take into account the requirements of all the various sports that will be practiced. And care must be taken when choosing the lighting design, as it is assumed that the design provides an adequate and uniform light level while reducing glare as much as possible.
- Natural lighting in gymnasiums is combined with artificial lighting, but this should not cause distraction for the trainees, and the ambient lighting is designed to improve vision, give space to the space and create an attractive environment for the place.
- Industrial lighting mainly affects the quality and fun of playing in gyms, so industrial lighting is an integral part of the design of closed training halls.
- The lighting fixtures must be placed in a way that does not obstruct the field of vision of the players and sports officials in the event, taking into account the careful selection of colors and surface materials in conjunction with the lighting to achieve the optimal quality of vision, and because of the open playing space the importance of regularity of the brightness of the lighting, taking into account the reflections of the floor material.

Summary of third Chapter

- The advanced technology in interior architecture is an expression of a special personal intellectual trend and is not a fixed feature that is repeated in societies. Therefore, building materials technology is related to construction technology (namely, transportation, installation and maintenance). It also influenced the development of the intellectual process along with the technology of building materials.
- Modern ecological materials also played an important role in preserving the building's sustainability functionally and aesthetically, so the exterior cladding of the building's surfaces played an important role in the negative impact of weather factors on the building and was also able to make an important difference in the design and formation
- The interactive design requires a lot of information related to the visualization of the final shape of the vacuum, as well as it poses many new challenges through the interactive experience to be activated.

- Nowadays, competition in sports is increasingly fierce. Moreover, the improvement of athletes' performance has been constantly affected by external factors.
- The continuous development in construction methods and construction methods and the discovery of new materials that serve the construction process and those developments were and will continue to be a focus of creative intellectual development, and nature will remain a source of the architect's creativity, as he quotes and abstracts from it, inspires and respects its principles, designing buildings that preserve them.
- The emergence of high-tech materials, the athletic performance develops rapidly. With the development of nanotechnology, sports machines have become more streamlined, more convenient, and protective.
- Nanotechnology provides accurate support for athletes and makes data in mathematical measurement more accurate. Today, nanotechnology has become an important factor in supporting and developing sporting achievements and designing sports training and competition spaces.

Summary of forth Chapter

- There are applied models in interior architecture that motivate people with special needs to achieve themselves, their dreams and aspirations, in order to achieve more championships.
- Through what has been exposed to the interior design models of advanced European clubs in the world, all places and requirements for activities that take place in sports clubs must be taken into account at the beginning of the design process, as these facilities are of high cost and therefore must be studied from several architectural and interior aspects and the introduction of modern technologies Saving resources and the possibility of making them places that apply sustainability standards as much as possible.
- The greatest achievement that can be achieved in sports clubs is the "inclusive environment" that provides complete freedom of movement and activity, in a safe and healthy environment for people with special mobility needs.

- Most of the gymnasiums, the layout is organized around a central playground so that the multi-purpose deck includes infrastructure for basketball, volleyball, bochia, goal ball and rugby quadruple.
- Gyms that use digital technologies are a vibrant and fully interactive environment that combines the latest technology and experimental design.
- An interactive training ecosystem was launched to help people with special needs reach their full potential on and off the field.