

THE CHAMPS OLYMPIC ACADEMY

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Abstract

Olympic is a global sporting event comprising summer and winter sports, where both masculine and woman athletes compete in separate competitions and represent distinct nations. The event is currently being organized every two years in even years. The government of Saudi Arabia has announced a vision for 2030, in which particular attention has also been paid to enhancing its participation and achievement in sport at internationally, particularly at the Olympic Games. Thus, to achieve the vision 2030, this study has proposed the development of an Olympic academy at Jeddah, Saudi Arabia. For this work, three case studies related to the architecture of the sports facilities and academy was examined. Accordingly, with reference to the case studies analyzed, the estimated gross floor area for the proposed Olympic Academy was 11 442 m². The structure of the Olympic Academy consists of a number of zones, including academic zone, residential zone, training zone, family zone, administration zone and restaurant zone. The proposed site for development is located at Southern Obhur, at the intersection of Prince Talal Street and Prince Mohammed Al Faisal Street. The Olympic Academy was designed on the basis of modern and contemporary features. The development of this Olympic Academy will strengthen the process of preparing world-class athletes for Saudi Arabia and improve the possibility of realizing the 2030 vision.

Keywords--Olympic, design, academy, Saudi Arabia, sports

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INTRODUCTION

The Olympic Games (OG) has influenced the design of sports facilities since its inception [1]. The location of Olympia is an illustration of how athletics venues are immediately and tangibly linked to a global sporting event that has become of widespread importance over the world [2]. Likewise, the first Olympic stadium continues to be the most reminiscent of the many Olympic sites that were created as a result of sporting events, that matched its objectives and its principles [3]. In addition, this is an area that has become socially important for participating countries. Naturally, all Olympic arenas are excellent where their peculiarity can be clarified by their dimension and the overall measurement of the venue of the Games as proposed by the International Olympic Committee (IOC) [4].

All these arenas are obviously linked to some of the features of the participating and organizing countries heritage [5]. Consequently, their importance extends further than their rigid historical value to democratic, economic, cultural and athletic aspects as well [5]. Contemporary Olympic games can give rise to social thoughts and enhance cultural distinctiveness. They could also help to tackle local history and enhance the financial position of the organizing nation [6]. Correspondingly, previous host nations have continuously benefitted from organizing the sporting event as some Olympic arenas are now classified as social legacy assets at distinct levels ranging from local, domestic and international [7].

The government of Saudi Arabia has launched a 2030 vision [8], in which special attention has also been paid to increasing its participation in sport at international level. The 2030 vision was designed to enhance Saudi Arabia's sporting achievements at the Olympics. In order to fulfil this vision, Saudi Arabia requires the development of Olympic sports centers or academies. In addition, the people in Saudi Arabia benefit will benefit from the development of an international academy that will strengthen the country, raise its level of sport participation and increase its overall economic revenue from sport. Therefore, this work

presents a proposal on developing an Olympic academy at Jeddah, Saudi Arabia.

CASE STUDIES

In this work, three case studies on the architecture of the academy were examined for the proposed development of the Olympic Academy. The case studies analysed are as follows:

- Beijiao Sport Center
- Latymer Upper School Sports Centre
- Lin'an Sports Center

Bei Jiao Sport Center

Bei Jiao Sport Center is located at Bei Jiao, China (Figure 1). This facility was designed by architects from Decode Urbanism Office. This building has an area of 47000 m². The sport center is surrounded by many types of buildings, residential, media headquarters, culture centre, citizen square, shopping centre, city park and the old town. It's a sports training center serving a number of neighborhoods. The center offered a training place and a hall for collective competition, a place for the renovation of body, physical and mental activity. There are several types of sports halls, such as the quad-game court, the aquatic zone, and the badminton and ping-pong halls. In addition, there is a private area for trainers and a public area for visitors and spectators, as well as a courtyard in the middle of a building that serves all users. The main approach used in this project is connectivity, taking into account the privacy of each trainer and creating a special zone with separate entrances for each trainer. The central open courtyard, located in the middle of the building, serves all users and inspires connectivity. It contains shops and a sitting area. Then the building itself was divided into three main zones. The first zone consist of main stadium (quad game court) and its training center with its services, such as changing room, and storage. The second zone consist of aqua center that houses the Olympic pool, training pool, shower, changing room with a separate entrance and lobby. The third zone is comprised of a gym and fitness room, and ping pong hall and its services. In terms of the building structure, due to the long span of the function used by the sports hall, the building uses two types of

structures that contain a wild span and a double height. It used space trusses for the roof (span: 70 m) and the skeleton for the multi-story function, and the storage underground is in the basement. Furthermore, the building has a double façade that allows natural light to come inside the building, a smooth design that gives harmony between the zones and feels like an energetic and active building. The zone of the Bei Jiao Sport Center consists of 30 % of the trainer zone, 35 % of the spectator zone, 10 % of the open area, 15 % of the circulation area and 10 % of the service area.

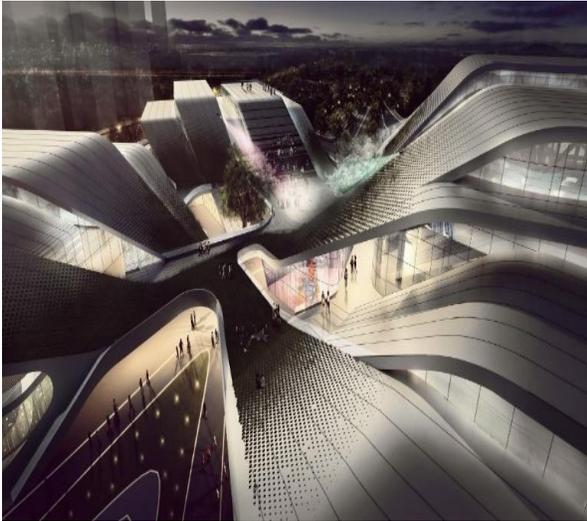


Figure 1. Bei Jiao Sport Center

Latymer Upper School Sports Centre

Latymer Upper School Sports Centre is located at Hammersmith, London W6, United Kingdom (Figure 2). It was designed by architect Faulkner Browns. This project has a total area of 3500 m². The Latymer Upper School's elegant and efficient sports center maximizes the space available on a tightly limited site, creating a center for sporting excellence and ambition. The school located in London Zone 2, most of which is a residential building. The architecture and design concept was a crystal box-containing activity spaces and fitness center above a concrete cabinet comprising a swimming pool. The glazing in the bottom cabinet required to be transparent with controlled transparency to ensure privacy and cladding to ensure thermal efficiency. Furthermore, the building structure incorporated profillin panels.

Furthermore, the layout of the building connected the two easy geometric quantities of the games room and the toilet wall to the housing spine that includes the primary lateral and vertical circulation paths. Remotely, the outflow of the structure is exceptionally basic and controlled, with a palette of fiber-bond and glass. The essential volumes of the games corridor and pool are clad in dim fiber-bond boards, regulated with various shades and sizes. The other structure used in the building is Skelton with a ribbed roof to provide a wild span in the aquatic zone. In addition, the building consists of a six-lane swimming pool (25 m) with a floating floor, to allow a water depth of two meters for speed-oriented competition swimming, and shallower water for teaching and community use.

The other available facilities within this building are spectator seating, fitness suite, three large multi purpose studios, six-court sports hall and support accommodation for staffs. The zone of the Latymer Upper School Sports Centre consists of 30 % of the sports hall, 15 % of the classes zone, 10 % of the outside court zone, 20 % of the circulation area, 15 % of the service area and 10 % of outdoor area.



Figure 2. Latymer Upper School Sports Centre

Lin'an Sports Center

Lin'an Sports Center is located at China (Figure 3). This building was designed by the Zhejiang University Architectural Design & Research Institute. This building has a total area of 75000 m². It is located in the suburban area of the city. The building consists of gymnasium, training hall, natatorium, outdoor stadium and business support, and the outdoor landscape. The body of the gymnasium is placed in a tapered and perforated double surface plate to produce a translucent and light visual effect. On the other side, the height gap of the building is fully exploited and the remaining features are incorporated together. With the layered terrace as a main design attraction, the landscape usage to create a constant structure that coordinates with the neighboring mountain setting and shows the primary representation of the gymnasium. In conjunction with the geomorphic characteristics of the low hill and the soft curve of the premises, the sports center is intended as a distinctive shape with the presence of the contour lines, reacting to the adjacent hills around the town. In addition, by linking the layers to the geomorphology, the building interface connects with the urban nature and makes the multi-level building exceptionally enhance the overall appearance of the site. The gymnasium has a three-dimensional truss system. The span of the lower competition room is 74.4 meters and the swimming coaching center has a lattice framework with a width of 110 meters north and south and a range of 58.8 meters east and west. Furthermore, several venues within the building are set up with roof light pipe that does not require the indoor lighting during daytime. Likewise, the progressive perforated glass screen outside the gym offers an outer shade for the structure, creating an interior soft light. Other facilities available around the building include a children's park, a supermarket, a fitness center and a liner commercial belt on the side of the road and the inner street.



Figure 3. Lin'an Sports Center

PROGRAM ASSUMPTION AND SPACE DETAILS

For the proposed Olympic academy, the estimated gross floor area is 11 442 m². Table 1 describes the zone division of the proposed Olympic academy. Based on Table 1, the Olympic academy is comprised of several zone, which are academic zone, residential zone, training zone, family zone, administration zone, restaurant zone, entrance and manager room. The space details and measurement is shown in Table 1.

Table 1. Space details

Zone	Gross Floor Area (m ²)
Academic	1069
Residential	2824
Training	6360
Family	890
Administration	107
Restaurant	152
Manager and entrance room	40
Total	11442

PROPOSED SITE AND ANALYSIS

For this work, the proposed site as shown in Figure 4, is located at Southern Obhur, at the intersection of Prince Talal Street and Prince Mohammed Al Faisal Street. This site has a total area of 15600 m². There is no historical significance in this site, but it reflects the new development in Jeddah. There are a lot of new projects around and the new population is being extended. The site, located between two main roads, linked high north of Jeddah to the south. In addition, the Prince Talal Road was linked between the two roads and the Almalik Road. Meanwhile, Prince Mohammed Road was linked to the Aljawhara Stadium. The neighbourhoods around the site are new, with an average age of less than 10 years. In addition, there is no building exactly around the site except the Aljawhara Stadium. Generally, all the buildings nearby are in good condition. The future development of this area includes the sporting city of King Abdullah, the new neighbourhoods, the Kingdom Tower, new shopping mall, the development plan of the Cornish Medical Center around the proposed site. Thus, new neighbourhoods with good services in this area will motivate people to expand to this area. In terms of climate, this site is exposed to average humidity level of 60 % throughout the year with temperature in the range of 29°C to 39.4 °C. In addition, the site is exposed to an average of 11 hours of sunlight throughout the year. The proposed zoning of the site is shown in Figure 5. Based on Figure 5, the zoning of the site is comprised of residential zone (blue color), training zone (yellowish green), courtyard zone (green color), hall zone (purple color), classes zone (pink color), clinic zone (peach color) and restaurant zone (light brown).



Figure 4. Proposed site location

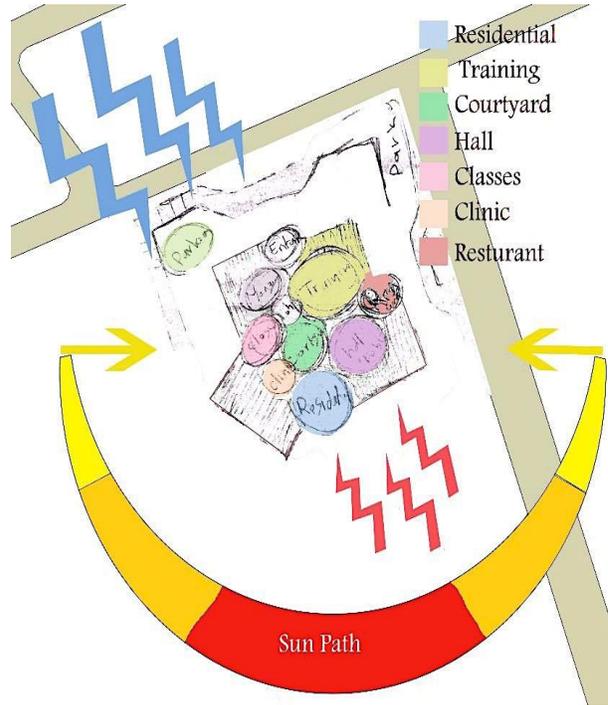


Figure 5. Site Zoning

PROJECT DESIGN

The Olympic Academy was designed on the basis of modern and contemporary features. The academy consisted of several zones, such as education zone, administration zone, training zone, family zone, residential zone, dining, services and open spaces. For the education zone, the natural daylight was used from the left side of the building structure and was oriented towards a favorable wind direction for natural ventilation. The classrooms were oriented to the north. The materials used to build the classroom were highly sustainable and of high quality. For the administration zone, the offices have been designed in a large area that can accommodate a larger number of occupants with individual spaces. For the training zone, it was designed with exposure to natural daylight and ventilation. It also consisted of a 34.5 x 27.0 x 7.5 m 4-court hall that created two team sports zones or a competition play area aligned with spectator seats. The height allows players to play at the club level and to play at the premier level. The clear height of 7.5 m should be achieved throughout the entire hall. The height is designed to provide good ventilation, depending on the capacity, and should also have good natural lighting. In addition, the fitness equipment area was designed to be a valuable complement to the sports hall. It allows a range of general fitness and fitness activities to take place on a more casual basis than the main sporting activities that are usual on a scheduled basis for the sports hall. For the family zone, it was designed with clear entrances for easy access with open spaces with natural light and ventilation. Likewise, the residential zone was designed with huge spaces to enable comfortable environment for the occupants with private zones. Furthermore, good lighting and ventilation was incorporated to the residential zone. For the dining zone, it was designed with kitchen facilities and dedicated service entrance. This zone was orientated towards the natural view of the surrounding area. For the service area, it was designed with prayer hall that is directed towards Mecca. Furthermore, separate entrance were designed for male and female users. In addition, toilets, shower rooms and changing rooms were designed to be close to the prayer room for the ease of use of the occupants. Figure 6 to Figure 8 shows the building design of the proposed Olympic academy.

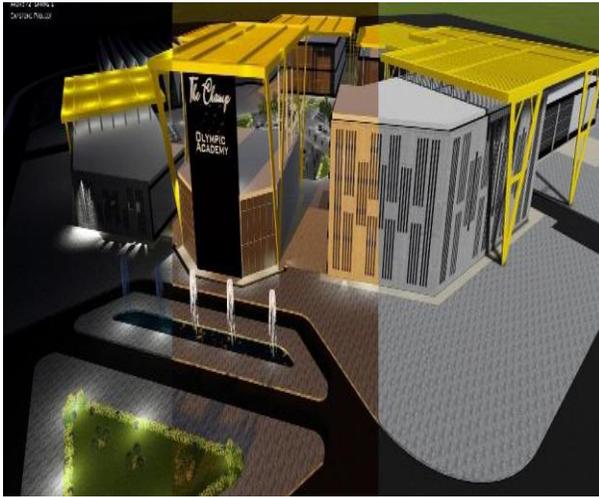


Figure 6. 3D view of the Olympic academy



Figure 7. Outdoor park



Figure 8. Training courts

is 11 442 m². This academy was designed with several zones, such as academic zone, residential zone, training zone, family zone, administration zone and restaurant zone. The Olympic Academy is expected to produce more of Saudi Arabia's world-class athletes capable of competing at the highest level and improving the nation's overall performance at the Olympic Games.

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CONCLUSION

This work has proposed the development of Olympic academy at Jeddah, Saudi Arabia. This was done in order to meet the requirements of the 2030 vision set by the Government of Saudi Arabia. For the Olympic academy, the estimated gross floor area