FIGHTING OBESITY WITHIN THE BUILT ENVIRONMENT WHILE PROMOTING PHYSICAL ACTIVITY

by

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ABSTRACT

This design presented in this thesis fuses a wellness and sports rehabilitation center with the use of overlying graphics. In terms of graphics, branding and wayfinding are the two dominant factors that influence design decisions. Designing a wellness and rehabilitation center needs to be strategic and have a distinct purpose. The interior design of such a sports complex should address the aspects of quality, quantity, vision, and good practice. Designing the center’s interior encompasses more than aesthetic elements and extends into sustainability and innovation in order to meet the project’s intended goals. In this case, the wellness center offers specific platforms for obesity patients to regain health while accommodating training and rehabilitation programs for athletes. Further, the local demographic breakdown and open space standards should be taken into account when designing a sports wellness and rehabilitation center.

A wellness, training, and rehabilitation center should provide a cost-effective solution for members and athletes. There are distinct requirements for the building’s working space and individual facilities, which calls for careful analysis when designing each one. The design and briefing stages of a wellness and rehabilitation center are crucial to its development. Specifically, the consideration of subsequent operational, installation, and design issues follows three dimensions. First, the predominant sporting use of the facility, which in this case is the promotion of health programs for individuals with obesity; second, the degree of intensity of the facility’s use and performance characteristics required; and third, considerations of the center’s projected lifespan.

Keywords: Sports Wellness, Rehabilitation, Graphics
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CHAPTER ONE: OVERVIEW

Background

Wellness centers, which are geared more towards promoting health and fitness than treating the sick, are slowly becoming more popular around the county. In addition, the obesity epidemic has grown dramatically over the past few years, leading Richmond to rank as the second most obese population in the US (Avellino, 2012). However, the number of wellness centers in Richmond is very low, which supports the decision to develop a wellness center to reach a solution to the problem stated above.

Sports rehabilitation and training facilities are important to athletes of all ages. Sports are often now focused on having bigger and stronger participants in all aspects of the game, meaning that overuse and injuries can occur at any time in a sports career. Sports rehabilitation training thus specializes in preventing and treating injuries suffered in athletics. In Richmond, the number of sports-specific training facilities available to the public is surprisingly low; therefore, the development of the proposed design would support the stated research objective.

Branding and wayfinding are two important factors that must be considered throughout the design process. Wayfinding is characterized as a person’s spatial behavior or orientation. The use of speech, the written word, print, signs, and architecture helps the users of a space find their way. Many issues arise in healthcare environments in terms of wayfinding, however. The first challenge is to eliminate misdirection, which leads to negative emotional effects on users. History shows that hospitals have been known as places of confusion and anxiety, partly due to poor wayfinding graphics. Another issue that seems to be a constant issue in this regard is the use
of changing terminology within the medical field. For a patient or visitor entering the hospital, these terms as well as their abbreviations can become difficult to understand.

The site in Richmond, Virginia was chosen to develop a sports wellness and rehabilitation center for a variety of reasons. In terms of adaptive reuse, the Lucky Strike Power Plant, LSPP, is listed on the National Register of Historic Places. It is also one of the dominant buildings on the well-known Tobacco Row. Furthermore, the building’s wide amenities for interior and exterior use feature large atriums filled with natural light from the large factory windows.

**Purpose**

The overall purpose of this project is to provide a wellness center to educate the community about the obesity rates that continue to rise in the US. In addition to the wellness center, the project focuses on sports rehabilitation and training to provide a safe and effective regimen to return athletes to their respected sports in shape and ready for competition. This is accomplished by developing a hybrid between a wellness center and a sports rehabilitation center. Through the design process and adaptive revitalization, this building will become socially, culturally, and economically valuable for reshaping the local community.

**Justification**

With the rising rates of obesity in the US, there is a constant need to educate society about the health risk involved as well as on how to prevent obesity and how to live life healthily, both physically and mentally. In addition to the wellness center, the need for sports rehabilitation and training is important for athletes to fully heal from their injuries and return to training.
The author chose a site in Richmond because it was named the second most obese city in the US following Memphis, Tennessee (Avellino, 2012). Although locals have started several programs geared towards children and teens in order to slow the growing obesity rate, the need for wellness is crucial to stopping this trend before it starts. In terms of sports rehabilitation, Richmond is home to several minor league sports and its training facilities including baseball, basketball, indoor and college football, tennis, motorsports, and hockey. With the rising rate of sports injuries to athletes, the need for a center dedicated to rehabilitation is important for the health of athletes and for stopping injuries from reoccurring. The development of a sports facility could support schools in the vicinity of the professional athletes living in Richmond, which features several minor division leagues. The facility could aid athletes to train properly under the direction of specialized healthcare professionals and, once finished, to continue to use the center as a fitness facility. Hence, the facility would function for a variety of ages as well as have many repeat users. Tobacco Row was chosen for this project in terms of using a historic structure for a new function while benefiting from the numerous factors the historic site offers. The wellness and sports rehabilitation centers can therefore provide Richmond with a new idea about health and training infused with authentic cultural elements.

**Brief Description of the Design Project**

The existing building measures 18,500 square feet and features a large open floor plan that is dominated by a column grid on every level for structural stability. The core of the design problem is to create a space that can serve as a solution to obesity and the effects of the built environment on human health.
One goal of this project is to develop a wellness center and sports rehabilitation training facility that honors the adaptive reuse of a historic building in addition to providing a space that promotes physical activity and wellness in the community to serve as an example for other cities around the nation.

One concept of the project is to honor Richmond’s historic sites and culture while promoting physical health and activity. The Shockoe Valley and Tobacco Row site served as a power plant for the Lucky Strike organization in the late 1800s and early 1900s. During the manufacturing of the Lucky Strike cigarettes, the industry formed the backbone of Richmond’s economy and led to the development of a major trade city. Although Richmond is no longer a node for tobacco manufacturing, the industry’s old warehouses, culture, and memories remain.

The proposed design is based on gears, mechanical devices that require all parts to work together properly, similar to the human body. The idea of gears correlates with the factory style of the structure as well as the building blocks of the human body in terms of fitness and health. Furthermore, the idea of repeating circles throughout the initial plan leads the design to work within the two geometries of circles and squares. Circles dominate the Lucky Strike branding package, which forms the historic logo. In terms of materials, the design hopes to encase a mixture of natural woods and metal in a modern unified design. Figure 1 is an abstracted diagram of the three related divisions of this thesis.
Limitations and Assumptions

To keep the present study within a manageable scope, some areas of the design, such as the back of house areas, are blocked in and not space planned in detail. Moreover, the design has to work within the local and state codes pertaining to historic structures. This requires the building to be documented and analyzed based on its historic characteristics. It was assumed that the entire structure would allow heating, ventilation, and cooling systems as well as fire safety sprinklers to be installed. Limitations to resources that are either real or imposed exist. Some questions that must be answered include the following: How much room on the site is devoted to the community amenities or the wellness center? How much can the client afford to spend on the development including the construction of the said facilities? What will the long-term working costs be? Can the facility be staffed during operating hours? Can membership dues cover the cost of any services or programs? Can operating costs be counterbalanced by permitting outside
memberships to the wellness center? Is it possible to come up with a strategic partnership with concerned universities or organizations that may share the available resources including space with the residents?

Definition of Terms

- **Accessibility** – creating spaces that serve as a universal design, regardless of level of ability (Definition of Interior Design, 2004).

- **Adaptive Reuse** – the act of changing a building’s function to a new facility type through appropriate renovations.

- **Branded Environment** – use of a branding module that is expressed in terms of interior and exterior settings.

- **Branding** – the act of using a trademark or distinctive name to identify a product or an organization.

- **Historic Preservation** – process of retaining a structure fully or in part through restoration efforts (Austin, Woodcock, Steward, & Forrester, 1988).

- **National Register of Historic Places** – the government’s documented list of historic places deserving of preservation.

- **Preventative Medicine** – division of healthcare that is engaged in the prevention of disease for individuals rather than for a whole society (Golledge, 1998).

- **Sports Medicine** – a division of medicine that aims to treat and prevent injuries related to sports and exercise.

- **Sustainability** – the act of using resources in a way they can be continued with a minimal long-term effect on the environment (Definition of Interior Design, 2004).
• *Wayfinding* – a process of following a path or route between an origin and destination
  (Golledge, 1998).

• *Wellness Center* – a facility that incorporates clinical and fitness aspects into an all-
  inclusive healthcare center.

**Research Components**

A review of the literature, presented in Chapter 2, explored the compatibility of the
relationship between historic preservation and adaptive reuse as well as wellness centers and
branded environments. This review created a foundation for the program, which is outlined in the
methodology of the thesis (Chapter 3). The results and analysis (Chapter 4) are shown in the
design development phase, illustrating a design solution based on the research collected. The
thesis concludes in Chapter 5 with the justification of the design decisions and presentation of
the project findings.
CHAPTER TWO: LITERATURE REVIEW

Introduction

This literature review entails an analysis of the possible interior design of a rehabilitation and wellness center to be established in Richmond in order to reduce the number of persons suffering from obesity. The presence of the wellness center would help boost the fitness levels of obesity patients, which would help in curbing the disease. The number of people suffering from obesity in the US, especially in Richmond, has increased over time. Nowadays, Americans are larger than ever before, according to recent studies. The level of obesity has increased due to the high consumption of calories in Virginia in recent years. According to Cutler, Glaesar, and Shapiro (2003), in the 19th century the number of obese patients was low compared with that in the 20th century because of the increased number of fast food restaurants nowadays, which produce food that contains high levels of calories. By contrast, families once prepared and cooked their own food at home and made sure that they ate a mixed diet. Most foods prepared at home nowadays by families take a short time to cook because of the introduction of new cooking fuels such as electricity and gas, which makes the food improperly prepared and can thus be harmful to the family. The other issue is that families in the present time add preservatives and artificial flavors to their food, which increases the chances of family members suffering from obesity. This is different to when families used natural spices and traditional cooking methods, which made sure the meal produced would help the body rather than destroy it (Cutler, Glaesar, & Shapiro, 2003).

In the US, more than two-thirds of adults are termed overweight or obese, with almost a third said to be obese, according to the National Health and Nutrition Examination Survey from
2003 to 2008 (Roger, Bonnardel, & Le Bigot, 2009). The term overweight is used to describe the situation where the body contains an excessive amount of body weight that is obtained from muscles, bone, fat tissues, and organs as well as the presence of water in the body. The term obesity is scientifically explained to be huge levels of fat in body organs and tissues. Obesity and overweight are caused by a state of energy imbalance, which leads to the slowdown of the body. The body needs a definitive quantity of calories from food to maintain its vital life functions. In order to maintain body weight, a person is supposed to eat food that contains the required calories wanted by the body. Environmental, genetic, socioeconomic, and behavioral factors can all lead to suffering from overweight and obesity (Roger, Bonnardel, & Le Bigot, 2009).

The presence of fast food restaurants in Richmond is another major cause of the eruption of obesity in the city. This is because many people prefer to buy food from restaurants to avoid the expense and time necessary to prepare a decent meal at home (Dixon, 2008). This is a sign of negligence, because people know that French fries contain a huge amount of calories.

It is also reasonable to state that the growth in technology in the state has led to expanding obesity. For instance, a lot of labor and time is used in the preparation of French fries (peeling, cutting, and cooking the potato), which makes it impossible for older restaurants to prepare the meal in the same time. Technological development has led to the growth of efficient machinery, which has made it easier for restaurants to prepare food (Costa & Richard, 2007).

Overweight and obesity are risk factors for a person to develop diabetes, high blood pressure, heart-related diseases, and other health problems. According to medical professionals, overweight and obesity are caused by more than one element. Furthermore, preventing or treating overweight and obesity would help the community significantly. The treatment of these
center: expected client load, which relates to the population characteristics of Richmond, and the required security systems (Rust & Oliver, 2004).

Moreover, the relevant authorities should address the main elements required when coming up with the interior design plan. These elements include the description and positioning of market research, resource allocation and budget development, theme and storyline creation, space programming and design, and programming. The following section describes the elements mentioned above and explains the conceptual planning involved in the interior design of the Richmond rehabilitation and wellness center for each (Seltman, 2004).

**Market Research and Community Profile**

The population of Richmond has been growing at a rate of 9.2% since 2006; however, its obesity rate has also been increasing rapidly. Almost 30% of the population is considered to be obese, with the enemy the abundance of fast food restaurants. The need for fitness and wellness centers is not only crucial for the city’s health but also provides a way to transform the lifestyles of its citizens. Recent studies show that obesity rates in 1980 were about 5% for men and 8% for women. Today, these numbers have risen to 10% for men and 14% for women (Avellino, 2012). Surveys conducted with 177,663 US adults from January to July 2012 reported that the majority of all Americans are overweight or obese in all 50 states with the lowest percentage being Colorado at 55.1% and highest being West Virginia at 69.3% (Mendes & McGeeny, 2012). Another projection of obesity rates in America is astonishing, suggesting that 42% of Americans may end up obese by 2030 if the statistics stay the same. These rising rates of obesity not only affect the person in question but also contribute to increasing healthcare spending over the past
20 years (Hellmich, 2012). According to the Centers for Disease Control and Prevention, obesity has tripled since 1962 (Figure 2).

![Bar chart showing obesity over time](image)

**Figure 2: Obesity over time (Hellmich, 2012)**

The amenities supplied by master planned communities including commercial wellness centers have become more diverse. One must make sure that he or she asks the right questions about what a person wants from a fitness center, because some people’s perceptions may be of an unstaffed, shady, and dirty fitness room with a single treadmill and an old multi-station weights machine. Instead of asking this kind of question, one is required to ask individuals if they would like a wellness center. They can then describe it as a state-of-the-art fitness center with programmable equipment. Asking questions that are more specific allows researchers to capture the interests of prospective buyers more precisely. The questions should be able to give the Richmond community a chance to express its choice of interior design techniques to be used (Stichler, 2001).

**Wellness Centers**

The evolution of wellness centers began when trends moved from a traditional hospital setting to outpatient facilities that promote wellness. Wellness centers are defined as a facility that incorporates both clinical and fitness activities in one inclusive healthcare center. The new
emphasis on wellness centers is brought about by several factors including the start of managed care and aging Baby Boomers (Gallup, 1999). Wellness centers appeal to all people, as they offer physical healing, behavioral medicine, social healing, a population mix, and education. The order of spaces in clinical and fitness functions can be described in the following design principles (Golledge, 1998):

1. **Signage.** This is the use of wayfinding systems to create clear pathways to make users feel calm and prevent confusion.

2. **Professional Appearance.** In terms of aesthetics, this is the first impression a user gets of the space and relates to the branding of the environment.

3. **Engineering Systems.** Ventilation systems are essential, as the fitness center is highly dependent on keeping the environment free of chemicals and odors that are common to invade the space.

4. **Acoustics and Basic Zoning Considerations.** Acoustics are a significant design feature as many private and public areas overlap and discretion is the central issue in clinical areas.

5. **Age Separation and Integration.** The segregation of fitness and clinical patients is important, as age differences and training regimens could be different; however, in most cases, the two can intersect to create a sense of unity.

6. **Other Accommodations.** Universal design aspects are integrated following the guidelines of the Americans with Disabilities Act (ADA). This also includes creating natural rhythm within the corridors and stopping points as needed. Lastly, the use of a patient/member monitoring system can benefit the wellness center by ensuring safety.
7. **Site Location and Design.** The location of the site is important, as this can affect decisions on parking, signage, and transitioning spaces from outdoors to indoors.

The use of advertising in the healthcare field has become more popular as researchers have noted that branding alters the impressions of a space. Gallup (1999) describes a four-stage model that seems to be the trend in wellness: emergence, growth, maturity, and decline. This concept relates to the idea of market penetration by wellness center products. The idea of wayfinding is important in wellness centers as it eliminates confusion and enforces clarity, leading to a successful space (Golledge, 1998).

Corporate wellness has also begun to rise in recent years. Many organizations have realized that fitness and exercise energizes employees and encourages a better work ethic. Current changes in healthcare design are following the demographic, technological, and socioeconomic changes in society. In addition, the key to a wellness center is to engage the community as an educational effort to integrate humanity. There are many benefits in linking wellness centers to hospital systems to share patients and encourage healthy lifestyles.

**Sports Medicine and Rehabilitation**

Sports medicine and rehabilitation facilities are common features in sports complexes for supporting sports activities. There are two realms into which sports medicine and rehabilitation fit when discussing sports facilities: (i) an inclusive athletic facility geared towards athletics (interscholastic, intercollegiate, Olympic, or professional athletes) and (ii) a community setting geared towards "weekend warrior" types. When designing, it is important to understand the essential components of each type of facility and its individual needs. For example, activities include team preparation, injury evaluation, injury treatment and rehabilitation, hydrotherapy,
maintenance, and administrative functions (Sawyer, Goldfine, Hypes, LaRue, & Seidler, 1999). To understand these needs, it is thus important to discuss each area in further detail.

1. **Team Preparation.** This area is geared towards preparing athletes for training and/or competition. Requirements for this area include tiled floors with an appropriate number of drains, treatment cabinets, waste receptacles, and a ceiling height of 10 foot minimum.

2. **Injury Evaluation/Treatment Area.** The injury treatment area has three sub-activities, including therapeutic modality applications and manual therapy. This area is usually filled with multiple treatment tables that can be separated by a suspended curtain system when necessary for privacy. In addition, flexibility is crucial, as movable carts are usually the only fixtures included. Again, the minimum height for this area is 10 feet, but preferably 12 feet.

3. **Rehabilitation Area.** This space is dedicated to therapeutic exercise equipment and is normally separated from the other areas in the complex due to noise and acoustical issues. The equipment involved includes free weights and mechanized strength training equipment for exercising shoulders, arms, backs, hips, thighs, knees, and ankles. Moreover, it is also important to place electrical outlets on all walls at every six feet for flexibility.

4. **Wet Space or Hydrotherapy.** The hydrotherapy rooms include whirlpools, ice machines, therapeutic pools, refrigerators, and storage areas for large drink containers. Flooring is noted to need a non-slip tiled surface, as water is present at most times.

5. **Administrative Area.** The office area contains all medical records and serves as the main means of business for the facility in terms of sports rehabilitation. Lockable shelving and storage is required for all medical records according to confidentiality laws.
6. **Maintenance Area.** This area is dedicated to storage and equipment repair; therefore, tables and shelving are required. In most cases, the storage space can never be too large in any sporting facility.

**Sports Medicine Area**

The rehabilitation and wellness center will also provide sports medicine services to clients. Sports medicine is related to training, as it deals with the physical fitness, treatment, and prevention of injuries caused by sports and sports training. The area will contain physicians who will assist clients whenever they visit. It will be a relaxing place, with a smooth wool carpet covering the whole sports medicine section. The walls of the section will be covered by information related to sports medicine therapy. It will also have a small place where clients will be able to purchase drugs allocated to them by physicians (Clemes, Ozanne, & Laurensen, 2007).

**Sports Training**

The interior design should contain a sports training facility, which will be important in the community for customers to undergo fitness programs to reduce the level of calories in their bodies (Arthur & Passini, 2007). This is because a person will get involved in any sports training to maintain a good state of health after losing weight. Therefore, the interior design of the sports training facility will contain equipment used to train people in different sports. The facility will also contain a conducive environment for making training sessions favorable to the body. The floor of the sports training area will be smooth to make sure that movement around the facility is easier. Lighting will be effective to make sure attendants and customers have an easy time while undergoing their different activities. The ventilation system should be efficient and effective to
circulate clean air around the facility (Goodman, Fichman, Lerch, & Snyder, 2005). The area will also contain a sound system to provide music, and thus motivation, to clients undergoing training. Playing music in the background makes someone work harder. However, not all genres of music can be used in a gym because some music produces a lot of noise, which might distract the person from working harder in the training section. The background music will be played at a low volume (Goodman, Fichman, Lerch, & Snyder, 2005).

**Accessible Sports Facilities**

The ADA requires that all new constructions and current facilities must comply with the guidelines of the ADA. Near the top of the list of required facilities are recreational facilities, including sports facilities. The emphasis of the ADA is to provide individuals with disabilities access and a universal design that does not limit them. Accessible routes are defined by the ADA as “a continuous, unobstructed path connecting all elements and spaces of a building or facility,” meaning that all routes to indoor and outdoor activities must provide an accessible route with ramps and the appropriate path width when needed. In terms of locker rooms complying with ADA guidelines, certain standards have been put in place to provide accessibility. For individual lockers, the guidelines state that at least 5% but not less than one of each type (full, half, quarter) must be accessible along with an accessible bench. Benches must have clear floor space surrounding to allow for wheelchairs and other mobility devices (American College of Sports Medicine, 2007). Figures 3 and 4 illustrate the dimensions and accessibility guidelines within a locker room setting and the space needed for exercise equipment.
Figure 3: Accessible locker room dimensions (American College of Sports Medicine, 2007)

Figure 4: Clear space requirements around exercise equipment (American College of Sports Medicine, 2007)

A good building layout makes it easier for the architect to design how clients can access different sections of the facility. The act of wayfinding inside the facility is boosted by signs and symbols, which direct clients to different parts of the facility. The path leading to different sections of the facility will be well painted and have good lighting systems to facilitate easy
movement (Cohen, 2008). The paths will be built in consideration of the required number of expected clients, which depends on the population of obese patients in Richmond. The paths inside the facility linking sections should be spacious because the expected clients may have large body sizes, rendering it impossible for more than two persons to pass a narrow path at the same time (Cooper, 2010).

**Sports Signage**

Signage is one of the most important means of communication with members of a health facility and with the public, and thus they are an essential part of the facility and planning process. The term signage not only correlates with wayfinding, but also conveys hazards, cautionary warnings, instructions, and general facility information. Proper signage in a health/fitness facility plays a crucial role in providing safety for all. In this regard, ASTM International developed its *Standards for Fitness Equipment and Fitness Facility Safety Signage and Labels* (F1749-02). The five categories of signage it recommends include (1) warning, danger, caution, and emergency signs (2) notice and standard operational signs, (3) directional signage, (4) rules and regulations, and (5) sign graphics. Over time, these types of signs will overlap within the design (Sawyer, Goldfine, Hypes, LaRue, & Seidler, 1999). The use of message boards and bulletin boards is also important to relate sports calendars and schedules to the members of the club as well as policies and staff information (American College of Sports Medicine, 2007).

**Branding**

The customer’s mind is usually attracted by the unique name and image of a place (Fotler, 2000). Branding is defined as a “disciplined process used to build awareness and extend
customer loyalty.” defined brands as having three primary functions: navigation, reassurance, and engagement. Brand identity is seen as something tangible and appeals to the senses, namely it is something you can see, touch, hold, hear, or watch. The main purpose of branding the center is to establish it in the marketplace in order to attract more customers. In this regard, the branding of the interior section will benefit from the presence of new and unique equipment that helps people lose weight. As a result, customers will spread the word around the community. According to the layout plan of the project, the outside appearance of the center will brand the place more than the interior because the outside appearance needs to be attractive (Weisman, 2007).

**Environmental Graphics**

The environmental graphics of the center will be attractive in order to encourage the community to visit to improve their levels of health. They will comprise attractive colors that complement the outside outlook of the facility. Graphics such as drawings should be informative of what the center provides to the community. The colors of the graphics should relate to the vegetation and terrain surrounding the facility. The mission and vision should be clearly stated at the facility’s venue (Bitner, 2007).

**Wayfinding**

Wayfinding is defined as the process or path that one follows to a particular destination from an origin. As Gollande (1998) reported, it is a “purposive, directed, and motivated activity.” In terms of wayfinding, the use of maps, as a tangible object and as a cognitive representation, comes to the forefront. Maps allow humans to record the absolute and relative locations of places, features, and spatial relationships. Cognitive maps bring up the idea of deliberate actions
within an environment as a representation of space. These types of maps include points (landmarks and nodes), lines (routes, paths, and tracks), areas (regions, neighborhoods), and surfaces (Golledge, 1998). Gender differences between men and women arise when researching wayfinding; men usually express more confidence than women and seek to explore more.

**Conclusion**

The interior design project of the Richmond rehabilitation and wellness center will portray the quality of services to be provided by the facility. The design of the facility will portray the growth of technology in society by equipping it with high-quality equipment controlled by technological systems. The interior design plan is formulated to suit the specific needs of Richmond residents. The design will not contradict any rule of law established to govern US citizens. In particular, it will consider the main aim of the rehabilitation and wellness center, which is to control the level of obesity and overweight in the town. The design will communicate the mission and vision of the facility, which will be appealing to customers. The team of experts behind the formation of the interior design plan should ensure that the interior design of the center relates to the culture, vegetation, and historical background of Richmond (Clemes, Ozanne, & Laurensen, 2007).
CHAPTER THREE: METHODS AND PROCEDURES

Design Program

The design of the wellness center will be influenced and based upon the research described in the review of the literature. This chapter presents the program for the project and describes in detail the project site, history, context, user profile, requirements, construction, and special issues pertaining to building codes, which all inform the design of the wellness center.

The rehabilitation center will be built in an old structure, which is currently home to Odell Associates, a well-known architecture firm. The architect in charge will change the present scenario and nature of the place to the required training and rehabilitation facility. The aspect of adaptive reuse towards the building will suggest new ideas for changing the existing structure to its new required purpose.

The structure covers a large surface area of 18,500 square feet. This size of space makes it easier for architects to subdivide the structure into the required sections. The proposed building in this case has been well maintained by the local authority. The only actions necessary are repainting the interior walls and refurnishing the hall with new equipment to bring elegance to the place. The transformation of the building will follow the guidelines provided by the program, which describe in detail the size and space allocation, including square footage, recommended adjacencies, and equipment recommendations. By considering the activities, services, and operational elements provided by each section, a purposeful design is developed (Costa & Richard, 2007).
The rehabilitation center will be divided into sections such as the sports training section, which will also be used as a fitness center, and the sports medicine section. The center will be constructed on a large piece of land to provide the much-needed space and thus deliver good results. The interior design of the center will depend on the culture, vegetation, and historical background of Richmond, which, as already discussed, faces a high number of its population having obesity. The historical background of Richmond will furnish the architect and proprietor with fixed ideas on ensuring that the rehabilitation and wellness center meets the targets of the market and the needs of the community to the fullest (Villa, Barbieri, & Lega, 2009).

The interior design of the rehabilitation center should be of high quality to portray the provision of high-quality services there. The center will provide traditional and non-traditional ways of body fitness to clients by using low-tech equipment to be installed in the center. This low-tech equipment will also produce low emissions, making the center eco-friendly.

When designing a rehabilitation and wellness center, it is important for the organizers to allocate enough space for the architects to implement the plan efficiently (Villa, Barbieri, & Lega, 2009). The interior design of the center will make sure the needs of the market are met and tell the story behind the construction of the facility. The design will communicate the mission and vision of the facility, which is to reduce the increasing rate of obesity in Richmond. The project will have a common thread and theme that defines this story and provides emotional value to customers. The center will bring the story that motivated the building of the center to life each day through the delivery and alignment of services with physical spaces and operational details (Costa & Richard, 2007).
Site Overview

The site of the proposed case study is the LSPP located on Tobacco Row in Richmond within the boundaries of Shockoe Valley. The building was chosen for several reasons, but mainly to revitalize the area and to exploit the local demographics, historical character, and numerous design features. The actual location of the proposed wellness center is 2700 East Cary Street, Richmond, shown in Figure 5. A topographical map is shown in Figure 6.

Figure 5: Aerial view, Tobacco Row
Site History

The project references the history of the site in terms of the historic nature of the building. Hence, this section describes its history and present-day conditions and then examines the site in terms of Tobacco Row, Shockoe Valley, and the Lucky Strike organization.

Richmond

Richmond is the capital city of Virginia. In the city’s early stages, it was a manufacturing town located on the edge of the James River. In 1607, the Powhatan tribe lived in the region with one of their capitals there known as Powhatan Shocquohocan or Shockoe. Shockoe is the Native American term referring to flat rock, in this case referencing the flat rock where Shockoe Creek joined the James River. It is important to note that this district is the site of the earliest settlement of Richmond and the first residential, commercial, and manufacturing development (Shockoe Valley and Tobacco Row Historic District, 2010).

Beginning with the Powhatan confederacy village and the settlement of English colonists from Jamestown, Richmond was founded in 1737 by Colonel William Byrd II (The Office of the
City Clerk, 2009). Maj. William Mayo constructed the original town of Richmond on a grid system. The grid outlined 17th and 25th streets and E. Cary and E. Broad Streets. Richmond was incorporated as a town on May 15, 1742 with roughly 250 residents. By 1860, Richmond was the nation’s center for tobacco manufacturing signaled by the growth of the Tobacco Exchange and consulates opening in area. In addition to tobacco manufacturing, Richmond was a significant force as a mercantile and trading center prior to the Civil War. However, following the war the production of tobacco decreased due to the postwar taxes and emancipation between 1860 and 1871. Over time, this area of the Shockoe Valley began to decline in terms of railroad and streetcar use (Shockoe Valley and Tobacco Row Historic District, 1985). Today, law, finance, and government, as well as banking firms, primarily lead Richmond’s economy. The city is known for housing the US Court of Appeals for the Fourth Circuit and the Federal Reserve Bank of Richmond. Not only big businesses run Richmond; it is a place for tourism as well.

**Richmond Power Plants**

Richmond had many power plants in the past. Indeed, many commuters and residents often passed several construction sites thinking that they belonged to a former plant. Nevertheless, Richmond had several industrial locations and factories with power plants, most of which still exist albeit for other applications nowadays. For instance, the Boathouse located at the Rocketts Landing Restaurant was initially a factory belonging to Richmond’s streetcar lines prior to its conversion to industrial usage and later to an eatery. In South Richmond, the Model Tobacco Complex located at the Jefferson Davis Highway possesses a power industrial unit that can be re-employed for complex redevelopment.
Babcock & Wilcox Co. (2005) posited that the Lucky Strike structure on Tobacco Row was initially a power factory with numerous structures for processing tobacco products. Later, in 2009, the area became an office space. The plant has played an important role in the local economy for repurposing and redeveloping projects that support community objectives. In 1926, Shockoe Bottom Locomotives Works in Richmond was closed, although the power factory structure underwent a transformation that remains today. After the opening of Brooks Roads and Parham’s St. Josephs Villa Complex in 1932, the orphanage owned the power factory. However, for several years, the power factory was not used. In 1981, an engineering company produced a report about condensation in the heating structure of the boiler house and the power factory then produced steam. The power plant at the Virginia Union University stands today, although it has not operated for several years.

From 1885–1945, Richmond’s industrial area had isolated power factories, but there lacked an interconnected system of multiple power factories that offered electricity (Leroux, 2009). As such, there would have been no electricity if a civic utility factory had have lost its generating ability. Several other industrial locations in Richmond had individual power factories. During the 18th century, most tobacco farmers and Virginia shippers kept facilities on Tobacco Row. They constructed brick structures to safeguard the tobacco from fire. Tobacco Row also hosted the Castle Thunder and Libby prisons during the Civil War. Most sites utilized steam for heating, which reduced the cost of employing the surplus power to produce electricity. Several power factories on the site sold some of their power to the civic utility (Smil, 2005).

Although the on-site power factories in Richmond could not offer the quantity of electricity needed, the factories played an important role in the local economy and redeveloped projects to
support community objectives (Wiser, 2000). These projects aimed to distribute public value, increase local administration, increase local revenues, and create jobs. Moreover, some equipment in the power factories was retained for the production of heat or steam for industrial and heating uses, while other facilities extended electricity usage for several decades (Babcock & Wilcox Co., 2005).

Additionally, other onsite power factories produced electricity until the plants closed or became too expensive for operations to continue. Some factories could not continue operations because equipment retrofitting was too expensive to be able to replace aged machinery in order to comply with new emissions regulations (Corporate Europe Observatory, 2009).

**Tobacco Row**

Tobacco Row is located on the north side of Cary Street from the 1800 to the 2700 Blocks, bordering the James River and Kanawha Canal. The Shockoe Valley and Tobacco Row Historic District are considered to be the oldest neighborhoods in Richmond and arguably the most developed throughout history (Shockoe Valley and Tobacco Row Historic District, 2010). This area once housed the tobacco warehouses and manufacturing site of the Lucky Strike Cigarette Company. In Richmond's early history, Tobacco was its most valuable export and the city was a major node in cigarette trade (Fisher, 2011). Indeed, during the 18th century, most tobacco farmers and Virginia shippers kept facilities on Tobacco Row. By the end of the 1980s, tobacco organizations began to vacate, and all companies had left after the completion of the James River Flood Wall in 1995. Abeloff H. William led the renovation and transformation of most Tobacco Row warehouses into loft apartments, offices, retail spaces, and condominiums.
In 1916, Richmond produced a quarter of the cigarettes manufactured in the US. However, by the 1980s the tobacco industry had abandoned Tobacco Row and its historical structures (Madrigal, 2011). The factory buildings range from traditional brick and wood frame constructions to industrial steel and concrete buildings that date back to 1910. In the 1985 inventory for the National Register of Historic Places, Tobacco Row is stated as significant for its diversity of residential, commercial, and industrial buildings, which helps explain Richmond’s development from village to metropolis (Shockoe Valley and Tobacco Row Historic District, 1985).

Figure 7: Tobacco Row, 1948 (Valentine Museum, 1948)

In 1991, Tobacco Row’s rebirth began as organizations acquired the buildings and transformed them into functional structures. Today, all the buildings used by the Lucky Strike organization have been reused by the community in a progressive manner, mostly as residential or office space, but also including the Virginia Holocaust Museum (Hazard, 2009). Thus, Tobacco Row has undergone a dramatic revitalization over the past few years.
Lucky Strike and Power Plant History

R.A. Patterson first introduced the Lucky Strike brand in 1905. Then, Lucky Strike was established in 1930 as the American Tobacco Company. Its power plant produced power for the Lucky Strike cigarette company owned by the Japan Tobacco and British American Tobacco groups. In the 1930s, the Lucky Strike brand was the most famous cigarette trademark and enjoyed the highest revenues.

At first, the company used the “It’s Toasted” slogan for its brands to notify consumers about its manufacturing method (tobacco was toasted instead of being dried in the sun, thus creating a desirable taste). At the end of the 1920s, it sold this trademark. After its initial year of advertising, Lucky Strike’s sales grew by over 300%. Cigarette sales increased from approximately 14 million in 1925 to 40 million in 1930.

Later in the 1920s, Lucky Strike associated itself with NBC music programs on the radio. B. A. Rolfe was a vaudeville producer and bandleader who recorded songs with the Lucky Strike
Orchestra for Edison Records. The American Tobacco Company then started sponsoring Lee Aubrey who was an auctioneer for tobacco from Lexington, Kentucky. The countdown on the weekly radio show kept the brand successful for many years. The marketing campaigns of the company mainly stressed the quality of the tobacco used by Lucky Strike. It also alleged that the superior quality of the tobacco produced a better flavor.

As part of its advertising strategy, Lucky Strike used Hollywood actors such as Douglas Fairbanks to pass on information about the cigarette’s flavor. Other celebrities who endorsed the company included Jack Benny on his television and radio program the Lucky Strike Show. In 1942, the firm changed the signature of the brand from dark blue to white. The company then utilized a well-known catchphrase citing that the Lucky Strike Green went into combat (Babcock & Wilcox Co., 2005). The organization later claimed that the removal of the copper used to produce the green on the cigarette packets was because the Second World War effort required copper. Thus, the company utilized chromium for the production of the green ink, while copper was used for the production of the gold-covered trim. To attract female smokers, the company added white to the packets as a marketing strategy. According to research, most women were not attracted to green packets.

In 1945, the tobacco company added a message on all packets that read “Lucky Strike means fine tobacco.” In 1976, British American Tobacco purchased the American Tobacco Company and later sponsored the Tyrrell Racing group in Formula 1 with Lucky Strike brands.

Between 1978 and 1994, Brown and Williamson purchased the US exports rights and launched clean styles referred to as “Lucky Strike Green.” The green slogan was only used on menthol cigarettes instead of the entire product range. By the end of 2006, North America had
stopped selling Lucky Strike’s standard and full flavored cigarettes. Nevertheless, British American Tobacco controlled the distribution and marketing territories belonging to the Lucky Strike brand. Additionally, R. J. Reynolds still markets the initial non-filter brands belonging to Lucky Strike in America. Lucky Strike released fresh packaging that has an opening with two ways, thereby splitting seven cigarettes from the others. In 2007, Lucky Strike used He Pingping, the smallest person in the world, as its endorser. Later in 2009, Lucky Strike transformed its UK brand from red to blue.

According to industrial forecasters, economic and financial aspects may cause the retirement of the LSPP because it is an aging factory. However, most old industrial units are located in strategic sites in metropolitan areas given their proximity to the waterfront. For instance, the location of the LSPP presents wonderful private and public usage opportunities such as offices, shops, and housing as well as parks, museums, and societal amenities.

For several years, the power plant was abandoned, thus blighting the site for local residents (Cobain & Leigh, 2005). However, power plant management started to plan to adapt the location similar to other power and utilities organizations. Based on a clear vision, the plant administrators developed a practical business plan that had a feasible funding mechanism to cover the substantial expenditure required for the site’s redevelopment and cleanup.

Repurposing the LSPP presented special problems, although it also created growth opportunities. By maximizing these opportunities, the local communities found an environment that was healthier, fresh businesses appeared, and jobs were created. The old plant properties were brought back to the revenue rolls. British Electricity International (2001) stipulated that
earlier redevelopments frequently focused on the preservation of the LSPP’s buildings and their important architectural and historic value.

In 2008, a report found that most power plants in the US such as Lucky Strike, which emit substantial amounts of poisonous gases, metals, and acids, do not have the technology to control emissions (Beychok, 2007). These emissions may lead to heart disease, chronic respiratory ailments, neurological damage, and premature fatalities. Studies have shown that most US residents reside in areas that do not meet nationwide ozone standards for atmosphere quality. Furthermore, the LSPP faces competition from other factories that use renewable and cleaner energy and natural gas (Babcock & Wilcox Co., 2005). Most renewable energy sources such as solar energy and wind are sporadic and need back-up generators for times when there is no sun or wind.

The fate of the LSPP may also determine the neighborhood’s future, thus involving the public in redevelopment plans. For instance, the compelling force for the LSPP site in Richmond originally began with the American Tobacco Company and Richmond residents. In most cases, older power plants such as the LSPP have been deserted for several years. Therefore, early planning for the reutilization of these locations avoids setbacks in financial growth and renewal, extends redevelopment projects, and lowers remediation costs.

If Richmond lacked a redevelopment plan, this would require considerably increasing property taxes, restricting local services, or merging property taxes and services to replace the missing revenue (British Electricity International, 2001). In any case, private utilities and developers collaborated with the public, city, and municipal council to meet society’s demands for the redevelopment of the LSPP location. The scale of the site is impressive and may assist in
the revitalization of the neighborhood and entire region. The power plant offers a distinctive ecology and distinctive amenities to visitors and tenants and its architecture harmonizes with the present surroundings.

The LSPP

The LSPP is on the eastern section of East Cary Road on Tobacco Row. The building was abandoned in the 1980s when the tobacco industry left Richmond and fell victim to graffiti, vandalism, and neglect (Figure 9).

![Figure 9: Graffiti on interior walls](image)

Only a few years after its abandonment, the entire area of Shockoe Valley and Tobacco Row was named on the National Register of Historic Places because of its architectural and historic significance (Shockoe Valley and Tobacco Row Historic District, 1985). Further, the Shockoe Valley and Tobacco Row Historic District’s architectural and historical significance led this area to be recorded as a historic landmark in 2009 as well as an award-winning Historical Adaptive Re-Use Project (Riggan, 2012).
The LSPP is classified as having an Art Deco architectural style because of its dramatic, sleek, and geometric appearance. Art Deco is known for embracing the machine age, which was the main objective in the construction of Tobacco Row, especially the LSPP. The buildings on the Row are embellished by cast-iron storefronts, branding of the manufacturing companies, and decorative brickwork on the facades (Figure 10).

![Figure 10: Lucky Strike branding on facade](image)

**Current Site Conditions**

Today, the site is home to an esteemed architectural firm, Odell Associates, which reclaimed the building and made several renovations including repairing smokestacks, a coal silo, and a water tower. The exterior of the structure was in overall good shape; however, the windowpanes in numerous windows had been broken and needed full replacement (Figure 11).
Figure 11: Exterior damage to windows

Other improvements included changes to the front entrance, reconstruction to a skylight that spans the entire building, and extinguishing graffiti on the interior walls.

Figure 12: Renovations in 2009
The unique office space offers 60 feet high ceilings that are open and filled with natural light streaming through the large windows, creating a distinctive working environment. Further, one addition to the LSPP is the sculpture of an American Indian, "Connecticut," which is known as an icon of the Richmond Braves, a minor league affiliate of the Atlanta Braves. The statue was on loan from the artist Paul Dipasquale at the baseball stadium until the Braves relocated out of town and a site was selected to house the sculpture. The Lucky Strike site was considered among three other finalists, and it won the honor by "providing the sculpture with the most visibility to the public" (Riggen, 2012).
Although Tobacco Row’s buildings are no longer in use by the Lucky Strike organization, they were built to last; therefore, all sites have been reused to create a striving community center. The large and open plan design of all the buildings has led them to be adapted for new uses such as restaurants, offices, and multi-family residences, which have inspired a total revitalization of the area.

**Context**

The adaptive reuse of the LSPP structure could serve as a defining moment in Richmond in terms of bringing the idea of wellness and sports rehabilitation to the forefront. With the city leading in recent obesity rates, promoting the idea of health and fitness is important to encourage the community to lead better lifestyles while enjoying life to the fullest. In Richmond, certain efforts have been made to encourage children and adults to lead healthier lifestyles such as the Virginia Foundation for Healthy Youth (Virginia Youth Obesity Prevention, 2012). Furthermore, the sports medicine division of the center is dedicated to aid and reinforce the importance of proper training in athletics, whether high school to professional levels. This is important due to the rise of professional athletics in the Richmond area, in particular baseball, soccer, and ice hockey. Tables 1 and 2 show the proximity of Richmond’s wellness centers and sports medicine facilities.
Table 1: Wellness facilities in Richmond

![Wellness Facilities Chart]

Table 2: Sports medicine facilities in Richmond

![Sports Medicine Facilities Chart]

In efforts to serve the community, Figures 15 and 16 display the major forms of transportation, including highways and transit systems, around Richmond and the LSPP.
Demographics in Richmond

According to the 2011 US Census Bureau, Virginia’s overall population is over eight million residents. Richmond has over 200,000 residents. Richmond is diverse in terms of industries
including healthcare, education, finance, public administration, and technical services. Figures 17–19 show the ethnic mix and common industries by gender.

![Race in Richmond, VA](image)

Figure 17: Ethnicity in Richmond (Onboard Informatics, 2012)
- Construction (10%)
- Accommodation and food services (8%)
- Professional, scientific, and technical services (8%)
- Finance and insurance (7%)
- Educational services (6%)
- Public administration (6%)
- Health care (5%)

Figure 18: Common industries (men) (Onboard Informatics, 2012)

- Health care (15%)
- Educational services (12%)
- Finance and insurance (9%)
- Public administration (8%)
- Accommodation and food services (7%)
- Professional, scientific, and technical services (6%)
- Administrative and support and waste management services (4%)

Figure 19: Common industries (women) (Onboard Informatics, 2012)
Client Description

For the purpose of this project, the client base is hypothetical. As a reference, the client is intended to be a developer in the healthcare field that collaborates with local hospital organizations in Richmond. According to recent studies and reports, most wellness centers are subsidiaries of healthcare facilities or are linked by common goals and objectives in the community.

User Profile

The Richmond user profile is useful for promoting design decisions regarding the wellness center project. The user profile is based on the demographics of Richmond and the surrounding suburbs. The wellness center aims to serve age groups between 18-35 years old in efforts to endorse health, fitness, and wellness. The following research provides general descriptions for the included age groups, termed herein Generation X and Generation Y.

Generation X includes around 50 million Americans ranging from there thirties to early forties. In general; this diverse group of individuals is better educated than the previous generation, Baby Boomers. This generation has grown up in a changing economy and looks on life as working to live rather than the previous mindset of live to work. The characteristics of this group include the following: independent, adapted to the latest technological changes, and flexible in terms of lifestyle changes (Kane, 2012).

The younger generation the facility intends to serves is Generation Y, also called the Millennials. This group ranges from late teenage years to twenties. Generation Y grew up with technology from a young age as it was being developed and they are considered to be more educated in that particular field than previous generations. The main changes seen in this
generation is the idea of flexible working hours to fit their families and social lifestyles. In addition, this group is achievement- and team-oriented, confident, and ambitious. They also seem to value teamwork in public settings (Kane, 2012).

Overall, the two generations that the wellness center aims to serve place importance on wellness and the needs involved within that field. In addition, the emphasis of sports wellness adds importance to training and rehabilitation in athletics. The design intends to address consumers’ wants and needs through the research conducted.

To carry out this project, we must also understand the age range of the target market. This will have a major impact on the wellness center concept. There is a wide disparity in the desires of adults aged between 55 and 65 years compared with those aged 70-plus years, which will affect various decisions such as equipment selection (e.g., menu of services, space programs) and the income levels of clients. This information may assist one to establish how much funding will be available to subsidize the operation of the wellness center. The age range will also help in the procurement of equipment for the rehabilitation center (Stichler, 2001).

**Analysis of Project Requirements**

The requirements and design considerations of the proposed wellness center were determined by the user profiles described above as well as the research presented in Chapter 2. Many of the requirements and design decisions are specific to wellness and sports rehabilitation centers. The general space requirements are listed in Table 3.
<table>
<thead>
<tr>
<th>Room</th>
<th>Sq. Ft.</th>
<th>Quantity</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lobby/Reception</td>
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<td>1</td>
<td>300</td>
</tr>
<tr>
<td>Waiting Area</td>
<td>150</td>
<td>1</td>
<td>150</td>
</tr>
<tr>
<td>Children Spaces</td>
<td>400</td>
<td>1</td>
<td>400</td>
</tr>
<tr>
<td>Nutrition Bar</td>
<td>300</td>
<td>1</td>
<td>300</td>
</tr>
<tr>
<td>Multipurpose Area</td>
<td>700</td>
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<td>700</td>
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<tr>
<td>Meditation</td>
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<td>1</td>
<td>120</td>
</tr>
<tr>
<td>Locker Rooms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locker Room</td>
<td>600</td>
<td>2</td>
<td>1200</td>
</tr>
<tr>
<td>Toilets</td>
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<td>550</td>
</tr>
<tr>
<td>Lavatories</td>
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<td>2</td>
<td>400</td>
</tr>
<tr>
<td>Showers</td>
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</tr>
<tr>
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<td>70</td>
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<td>250</td>
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<tr>
<td>Nutrition Kitchens</td>
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<td>200</td>
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<tr>
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<tr>
<td>Exercise Room</td>
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<td>Administration</td>
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<tr>
<td>Clinical</td>
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<td>Office</td>
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<tr>
<td>Massage</td>
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<td>2</td>
<td>200</td>
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</tr>
<tr>
<td>Laundry</td>
<td>200</td>
<td>1</td>
<td>200</td>
</tr>
</tbody>
</table>

|                      |         |          |       |
| SUBTOTAL              |         |          | 13780 |
| Circulation (25%)     |         |          | 3445  |
| Restrooms             |         |          | 1250  |
| TOTAL                 |         |          | 18475 |
Analysis of Space Requirements

Lobby

The reception area is the primary entrance of the wellness center and therefore it has a crucial impact as the first impressions of users through the branding concept. The lobby is intended to function as a transitional space that allows multiple gathering spaces that are defined by corridors leading to various locations. In addition, it is generously sized to allow public and semi-private areas to encourage social interaction, while enabling sight lines to maintain visual control from the front desk (Gallup, 1999). The design criteria for the reception include an area for the front desk, waiting area, children’s space, nutrition bar, and secure storage. The specific spatial relationships within the reception area are detailed in the adjacency matrix in Figure 20 and in Figure 21.

Figure 20: Lobby adjacency matrix


Figure 21: Lobby bubble diagram

**Locker Rooms**

Locker rooms are integrated into the design to create an intermediate space between the lobby and fitness area. The critical aspect of designing locker rooms is the decision to include separate family locker rooms and/or caregiver locker rooms in the overall design (Gallup, 1999). A good locker layout has multiple functional considerations. It should (1) provide scated dressing space removed from the main circulation paths, (2) provide at least one private dressing area for users with special privacy needs, (3) equip at least one dressing/locker cubicle for the disabled, (4) determine the size and quantities of lockers by analyzing anticipated user groups, and (5) reduce odors by means of natural or induced locker ventilation (Sawyer, Goldfine, Hypes, LaRue, & Seidler, 1999). Figures 22 and 23 identify the special notes and spatial relationships pertaining to locker rooms.
Fitness and Exercise

The fitness area within the facility is designed to provide a community-like atmosphere. The critical relationship within the fitness areas is to make the divisions flexible, therefore making the space multi-functional. Certain considerations need to be clarified when organizing the facility to provide maximum usage. The needs of each group are determined based on specific training needs, seasonal priorities, group size and equipment availability, participant/staff ratio, and the minimum space requirement per person (Sawyer, Goldfine, Hypes, LaRue, & Seidler, 1999). The spatial relationships are detailed in Figures 24 and 25.
Administration

Administration is intended to be close to the lobby area with a number of offices depending on the program and size of the facility. The office should have a degree of privacy to allow business functions to happen normally. Figures 26 and 27 outline the spatial relationships in the administration department.
Clinical

The clinical areas should be designed to accommodate acoustics and visual privacy from the general fitness areas as well as the lobby. Visual cues should lead users to their correct end locations; the use of signage can be added to avoid any confusion in these areas. Figures 28 and 29 state the spatial relationships in the clinical area.
Back of House

Storage space in modern facilities always seems to be scarce despite designing for extra room. The design for storage depends on its function and objects being accumulated. In addition, the use of clinical storage and disposal takes on different terms than normal; therefore, operational issues must be considered early to ensure that adequate space is planned. Figures 30 and 31 outline the storage and disposal relationships within the design.
Figure 30: Back of house adjacency matrix

Figure 31: Back of house bubble diagram

**Adjacency Matrix for All Spaces Considered**

Figures 32 and 33 relate to the project as a whole using the previously mentioned spaces linked together. This is a preliminary adjacency matrix for the schematic design and the design development phases.

Figure 32: Overall adjacency matrix
The blocking diagrams on the floor plan demonstrate the general square footages in terms of functions and exits. These diagrams form the basis of the design decisions presented in this project. Figures 34–38 present the block diagrams for each floor of the Lucky Strike building to display the general areas and square footage needed for each area.
Figure 34: Level 1 block diagram
Figure 35: Level 2 block diagram
Figure 36: Level 3 block diagram
Figure 37: Level 4 block diagram
Overall Square Footage Estimates

The Lucky Strike building overlooks the James River across East Cary Street. The interior space is divided into three floors that can be subdivided into five floors if the ceiling heights are
lowered. The gross square footage of the building totals 18,500 square feet. Figures 39–44 show the basic floor plans, exposing the column grid and initial elevations and sections.

Figure 39: First floor column grid
Figure 41: South elevation
Figure 43: West elevation
Construction and Materials

The existing building is constructed using brick and steel with poured concrete as flooring. The use of interior walls in the building is limited due to the open plan design, but when applicable the walls are made of running bond brick masonry. The interior ceilings comprise plaster where applicable in addition to the open framework ceiling in the main atriums. The windows are a dominant design feature of the Lucky Strike building in terms of the numerous bays that allow natural light to stream in throughout the year. New construction and renovation in the early 2000s aided the structural integrity of the building in addition to updating the codes and products used in order to create a more sustainable atmosphere. The empirical findings of previous studies show that buildings with high environmental standards can reduce cases of allergies, asthma, and cardiac diseases. It is therefore prudent that a sports complex be highly efficient in providing indoor air quality. Construction and design materials should be health friendly to both athletes and obesity patients. This means that the paints, polishing products, and interior accessories should meet health standards with zero to low emissions of harmful gases. In addition, the interior design should be sustainable without losing its graphic features.

Codes and Regulations

The design proposal conforms to the codes set forth by the 2009 Virginia Uniform Statewide Building Code (ASME 17.1). The design also complies with the 2009 Accessible and Useable Buildings and Facilities code (ANSI A 117.1). According to the regulating body, this proposal is classified as an Institutional, Healthcare (I-2) occupancy facility. To comply with all codes relating to fire and the Life Safety Code (NFPA 101) as well as the Codes for Fire Protection of Historic Structures (NFPA 914), the entire building is fitted with an automatic sprinkler system and smoke detectors (Harmon & Kennon, 2008). In addition, fire exits, stairways, and means of
egress are provided on every level of the structure. Regional guidelines were also addressed at the appropriate level. In accordance with the ADA, the design further addresses the needs of disabled users in order to create a universal design that can be used by all without limitations.

Summary

The design of the wellness center, which appears in the design development phase, expounds upon the program discussed in this chapter. The space planning, characteristics, and qualities of the wellness center are described with graphics supported by previous research listed in the review of the literature. Overall, the design of this center will promote community involvement and bring a sense of Richmond culture to an adaptive reuse area of the city.
CHAPTER 4: ANALYSIS AND FINDINGS

The design of the proposed wellness center aimed to apply in a unified manner the various findings of the research presented in previous chapters, which resulted in a design that successfully interpreted the knowledge gained from the research by emphasizing obesity within the built environment and graphics.

Proposed Design

The intention of the proposed design was to contrast the building’s historic features with new aesthetics. This created a juxtaposition of the old and new that aimed to impress visitors to the LSPP building. In Chapter 1, the concept was introduced as a gearshift that functions as the human body would in a mechanical manner. Some of the dominant elements from the shape and movement of these objects served as inspiration for the project such as circles, the idea of movement, and the selection of industrial materials.

User Experience

The experience begins on the first floor of the building. Here, you have a choice to enter the rehabilitation center or continue up the stairs or elevator to the wellness center. Users enter the building from E. Cary Street through the lobby doors. The detailed floor plan in Figure 45 shows the general spatial layout of the first floor.
Patients enter the rehabilitation center along E. Cary Street as well. On entering the space, they will experience a sense of excitement, as there is a sense of mystery in the windows of the lobby in terms of how much you can see into the space. Through the storefront windows, users
A bold teal color dominates the first floor; this color of branding serves as the basis for the interior. The use of wood throughout the building aims to relate to the natural environment and provide a balance between the bold color choices used.

After checking in with the receptionist, patients will be directed to the lobby to wait for the physiotherapist or an assistant to lead them to the therapy gym where the exercises are conducted. The lobby is anchored by a large black and white photograph lit from behind, which aims to provide inspiration to patients once they finish their therapy sessions. The changes in flooring materials are designed to suggest wayfinding in a subtle manner. In the physiotherapy gym, we use the actual logo as a branding aspect; therefore, the ceiling shapes are based on the diagonal space created between the F and R in the logo. The same is true in the gym space, as bold graphics are used to inspire and encourage patients as they are training and achieving new goals on a daily basis (Figures 48 and 49).
The Lucky Strike fitness center features an energetic color scheme, featuring neon green and a highly saturated purple for balance. The second level features a check-in station anchored under a two-story atrium space that visually connects levels 2 and 3 by a staircase. The branding is placed throughout the space using color, shape, or lighting. Like Flex Rehabilitation, bold graphics are placed to inspire and encourage users as well as to illuminate the space, as they are all backlit. One feature in the wellness center is the 40 foot climbing wall that can be accessed on the second level but reaches the height of the fourth floor. Here, wayfinding is used in an indirect way in terms of ceiling and floor changes, which create pathways and lead users through the space without excessive signage (Figures 50–64).
Figure 51: Fitness check-in

Figure 52: Fitness retail
Figure 53: Locker Room

Figure 54: Strength Training
Figure 55: Strength Training

Figure 56: Climbing wall
Figure 58: Cardio entry

Figure 59: Cardio
Figure 61: Group Fitness

Figure 62: Break room
The thesis project was displayed in the Georgia Museum of Art for the Master of Fine Arts Candidates Exhibition from March 16 to April 21, 2013. The installation included a video screen mounted on lockers to showcase the final renderings. In addition, a large info graphic was presented informing those of the recent obesity epidemic in America. Final boards were displayed on two separate walls to distinguish rehabilitation from the fitness functions. At the end of the exhibition space was a scale that acted as a performance piece for those who had the courage to step on the scale it would display their actual weight on the wall for everyone to view.
Figure 64: Board Design
Summary

The design of the wellness and rehabilitation center applied the research and design criteria derived from previous studies as well as the review of the literature. Every aspect of the environment and feature of the facility was designed to enhance patient and user experiences and to create a functional yet appealing interior.
CHAPTER 5: CONCLUSIONS AND FUTURE RESEARCH

This project began by aiming to design a wellness facility in order to educate the community on the rising obesity epidemic in addition to adding a rehabilitation center to promote proper training and physiotherapy for those in need of such services. The idea of adaptive reuse was important in terms of reusing the existing structure as a new function, thereby saving money and acknowledging the historical presence of the building.

Reflection

From the beginning, the goal of this project was to design a facility using graphics as a main driver in terms of wayfinding and brand identity. This research adopted these design goals and used obesity as a main design standpoint. This issue should be addressed nationally, but in particular in Richmond. Based on the local demographics and site research, the project took a new direction towards designing a fitness facility to promote wellness. In summary, this project found that an interior environment can be branded through design in terms of color, finish, applications, and layout.

Suggestions for Further Research

This project is a good beginning to what could become an extensive investigation of branded wellness and rehabilitation centers. The further exploration of the impact of branding within wellness centers and of adapting medical needs to the aesthetics of a facility could result in findings that may improve users’ experiences. In addition, the idea of vertical transitions in multi-level facilities could be an important base for further research in terms of patient and visitor experiences. Specifically, users and patients could be better understood by gathering information from interviews, surveys, and evaluations on vertical transitioning methods.
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