

## A Study on Analysis of Factors Affecting User Satisfaction of Large-Scale Public Sports Complex

<sup>1</sup>Hyounghseok Oh and <sup>2</sup>Young-Kag Kim

<sup>1</sup>Department of Architecture, Kongju Nat'l University, 1223-24 Cheonan daero,  
Cheonan, Chung-Nam, South Korea

<sup>2</sup>Urban Plus E&C, 436-2 Gaesin-dong, Chungju, Chung-Buk, South Korea

---

**Abstract:** This study focused on extracting factors affecting satisfaction of users who use large-scale public sports complex periodically and utilizing for planning and operation of the facility in the future. For theoretical background, the definition of large-scale public sports complex, samples and satisfaction factors of facilities were reviewed. Through the survey, the factors affecting user satisfaction had analyzed in order of level and type of programs, sports instruments, convenience of visiting facility and the amount of price for program. Also, the factors causing dissatisfaction responses had resulted in order of long travel time and distance, lack of facilities and outdated instruments and environment. Because the dissatisfying rate is more than twice satisfying one, preemptive actions should be considered for successful public sports complex.

**Key words:** Large-scale public sports complex, satisfaction analysis, sports programs, level of experts, traveling distance, convenience of visits

---

### INTRODUCTION

Through international sports event such as Asian game, Olympics and World Cup, daily physical education had begun to settle down with increasing public interest and activation of policy. It became as beginning of nationwide spread of public sports facilities. From the 90's, the social demand for public sports complex had been increasing quickly with growth of economic affordability. The wide implementation of 5 days work week system in 2000's act as a ground work for various leisure life. Commercial sports centers were sprung up everywhere to follow this well-being tend. As a result, under privileged classes from this sports service occurred. To improve this social exclusion, public sports centers were planned nationwide. It is recognized as a basic welfare facility in an advanced country because the application of human fundamental rights should expand from providing minimum condition for living to satisfying the quality of life.

Reginal public sports complex acts as a space for community activities and serves as a space for local residents to act autonomously and can also be used as a space for various cultural activities in local community where the facility is located. Especially, in the case of small cities and rural areas, there is a tendency to establish facilities with multiple functions due to the problem of redundancy of investment and accessibility.

The purpose of this study is to analyze the factors affecting the satisfaction of large-scale public sports facilities and to utilize them in the construction and operation of facilities in the future.

**Overview of public sports complex:** The academic definition of physical education facilities refers to a physical environment with a certain spatial range that is installed and managed on the assumption of more pleasant and safe athletic activities. In broad terms, it is a concept of collection of artifacts, sculptures including equipment and utensils that are artificially adapted to the physical needs of the exercise. In narrow terms, its concept refers to various places for physical exercise education.

The legal definition is to refer to facilities that are continuously used for physical education activities and the related facilities (study 2, paragraph 1 of installation and utilization of sports facilities act) or to promote healthy sports, outdoor sports and other facilities (national sports promotion act).

Sports facilities are divided into playgrounds, gyms and general sports facilities depending on the facility type and are classified as public sports facilities, private sports facilities and school sports facilities depending on installation and operating organization. The public sports facilities are divided into professional sports facilities and daily physical sports facilities. Professional sports

**Table 1: Status of public sports complex and area per person**

Years	No. of public sports complex						Area/Person (m <sup>2</sup> )
	Soccer	Gym	Field	Tennis	Etc.	Sum	
2005	250	385	07.069	287	726	08.717	1.92
2006	315	476	08.026	335	797	09.949	2.16
2007	395	586	08.691	376	898	10.946	2.38
2008	467	529	09.531	428	1.387	12.342	2.54
2009	558	581	10.669	487	1.673	13.968	2.88
2010	618	639	11.458	549	1.783	15.137	3.12
2011	649	681	12.194	565	2.038	16.127	3.29
2012	718	738	12.855	598	2.248	17.157	3.31
2013	801	819	14.536	660	2.582	19.398	3.80

facilities are athletic facilities such as athletic field and gymnasium required for holding domestic and overseas tournaments and training of athletes. Daily physical sports facility refers to social service center readily accessible to the public near their residence. Professional sports facilities and daily physical sports facilities are classified according to Article 5 and 6 of “Installation and utilization of sports facilities act” but there are many facilities used in combination for professional sports or daily sports depending on the utilization and operation patterns. These public sports facilities have been steadily increasing in size nationwide.

Nonetheless, the rate of participation in the national daily sports has been gradually decreasing. Public sports facilities seem not satisfy the needs of ordinary residents, daily sports users and professional athletes and most facilities are not functioning properly due to aging and low utilization of facilities. Also, public sports facilities cannot secure competitive advantage over private facilities because consistent care is not performed efficiently after its construction and the operation is not flexible enough to meet the current consumer’s desires (Table 1).

Looking at the details of the problem, first, most public sports facilities are operated by administrative managers. Facilities opening hours are limited due to facility management reasons and are closed during weekends which is most of leisure time. It is operated by the manager convenience rather than the user-centric, so, the needs of users of public sports facilities are not fully accepted. Second, it is insufficient to focus on improving utilization of existing facilities by focusing solely on new developments in sports facilities. Third, it is simply being ignored by consumers because they function simply as a limited space for physical activity or do not reflect consumer’s propensity. Lack of adequate preparation for facility operation causes operating deficits every year and consequently the cost burden of local governments is increasing.

To overcome these problems, the establishment of sports facilities should be based on a thorough

understanding of the needs of various users and a careful examination of lifestyle and behavior. It should be accompanied by improvement of the physical environment such as remodeling and renovation of the space by evaluating the utilization of existing facilities as well as new supply. Management efficiency of public sports facilities should be secured. Recently, the need for public sports complex to meet these demands is emerging.

In general, the sports complex facilities include sports facilities a main stadium where outdoor sports such as soccer, baseball and athletics can be performed, a gymnasium where indoor sports such as basketball volleyball can be performed and a swimming pool etc. and subsidiary facilities related sports. But, it is necessary to clarify its meaning through its uses and size at present. It is distinguished from a large sports complex such as a comprehensive stadium and capable of accommodating regional characteristics and operating resiliently according to the local user’s demands. Nowadays, mixed-use sports facilities, also known as sports complex, consist of variable spaces for daily sports and health promotion programs as well as stadiums for citizen viewing. Because of these circumstances, it has difficult aspects for private companies to join and invest.

## MATERIALS AND METHODS

**Examples of domestic public sports complex:** The scale of the public sports complex varies according to the characteristics of the area, the objects and purpose of use. A representative example established by local governments is Hwasung Sports Complex built to promote health through various sports programs for citizens as well as pro sports watching. It consists primarily of indoor sports tracks, soccer fields, basketball and volleyball. Since, the Sports Complex is a complex structure with many sports facilities and it carries out health welfare program for residents, it is unreasonable for a private company to build and operate. While, the profitability of the sports complex is important, it has a greater purpose in promoting the health of the citizens (Table 2-4 and Fig. 1-3).

**Prior researches of satisfaction factors:** Basically, satisfaction is a personal experience and can be influenced by individual’s past, present and future. The existing researches judge that the satisfaction of the use of public facilities are identified by the service satisfaction and the intention to revisit. This is the process of analyzing each success and failure factors based on aspects of satisfaction and evaluation results.



Fig. 1: Hwasung sports complex



Fig. 2: Cheonan sports complex



Fig. 3: Gimcheon sports complex

According to Lee and Cho (2012), the factors of facility and equipment, program factor, leader factor and price of use were set as major factors and the relationship between daily sports service factors and user's satisfaction with sports facility was investigated. Lim (2011) found that factors affecting the satisfaction and repurchase intention of public sports facilities are

Table 2: Summary of hwasung sports complex

Division	Contents
Admin party	Hwasung urban corporation
International (pro)	Football, volleyball, basketball
Organization	Government offices, sports organization
Main stadium	Athletics class 1, international soccer field (35,266 seats)
Auxiliary stadium	Athletics track, , international soccer field (2,002 seats)
Indoor gym	Basketball, volleyball (5,158 seats)
Basketball court	Outdoor 1, outdoor Half 1
Outdoor facilities	Pagora 5, Bicycle storage 3, playground 1, hydroponic facility 3
Other facilities	Nursing room 4, kiosk 11, cafe 1, bank 1, restaurant 1

Table 3: Summary of cheonan sports complex

Division	Contents
Admin party	Cheonan city facility management corporation
International (pro)	Football, volleyball
Organization	Resident's center, sports club
Main stadium	Athletics class 1, bowling alley, (26,000 seats)
Indoor gym	Basketball, volleyball, etc. (5,482 seats)
Swimming pool	National sports center, 50m-8 lanes (204 seats), Squash, Aerobics, Sauna
Tennis court	Indoor: Hard 4 (458 seats), outdoor: hard 9, artificial 3
Auxiliary stadium	Track, football ground

Table 4: Summary of gimcheon sports complex

Division	Contents
Admin party	Gimcheon city sports industry division
International (pro)	Tennis court
Main stadium	Athletics Class 1, Soccer ground, (25,000 seats)
Auxiliary stadium	400 m 4 lanes, 112 m 76 m Track, Football ground
Indoor gym	Basketball, Gymnastics (5,482 seats), Subsidiary stadium (365 seats)
Swimming pool	50 m Certified Standard Lanes, Diving Int'l Class 2, (1,510 seats)
Tennis court	Chemical hard 20 (1,400 seats)
Korea archery	150 m, 6th stand
Shooting range	30×10 m, 30 Station
Diving ground	2 Stories, 1 Building
Training center	
National sports Center	3 Stories, multipurpose room, gymnasium
Outdoor facilities	National sports memorial tower

program, price, facility, staff, accessibility, etc. Through an expert interview, Lim (2007) selected programs, leaders, facility environment and the promotion of facility as contributing factors to the relationship between public sports facilities and its satisfaction. Jung (2013) selected programs, leaders, facilities, operations and convenience of transportation as factors for analyzing the satisfaction of users of public sports facilities in Seoul. In the case of Han (2003), satisfaction was analyzed based on the factor of consideration as a variable of study when choosing Public Sports Complex. He extracted the variables such as price of use, leader, facilities, programs and employee kindness.

Based on these previous studies, the satisfaction factors of using public sports facilities for questionnaires were derived. The convenience of visiting facilities,

**Table 5: Samples configuration**

User	Frequency (Person)	Ratio
<b>Sex (%)</b>		
Male	67	87.0
Female	10	13.0
<b>Experience of facility</b>		
Yes	41	53.2
No	36	46.8
<b>Periodic use</b>		
Yes	74	96.1
No	3	03.9

facilities and programs, the price of use and subsidiary facilities were selected as factors that were relatively frequent and less influential. The travel convenience to the facility, public transportation convenience, types of transportation, convenience of parking and use convenience in winter and rainy weather were selected as the details of the convenience of visiting facilities. For facilities and programs, the diversity of facilities and programs, the type and quality of exercise equipment were selected. In case of price of use, price level of exercise facilities and programs, level of discounts and attitude of staffs are specified in detail. The dining area, the resting area and the additional facilities were selected as the detailed items for the subsidiary facilities.

**Overview of survey:** The purpose of this study is to investigate the satisfaction and dissatisfaction factors in the utilization of facilities based on the experience of the user's experience through the survey. The survey was conducted through a structured questionnaire and lasted for about two weeks from June 1st-15th, 2016. A total of 85 questionnaires were collected during the survey and 77 questionnaires were used for the analysis except those with false responses. As a result, 67 respondents were male (87%) and 10 respondents were female (13%). Among the respondents, 41 respondents had experience using complex sports facilities (53.2%) and 36 of them did not (46.8%). Considering that they can become a potential customer of new complex sports facilities in the future, the periodic use was important. The ratio 74 respondents regularly exercise (96.1%) and 3 respondents do not (3.9%) shows that most participants could be interested in complex sports facilities (Table 5).

## RESULTS AND DISCUSSION

**Empirical analysis:** In this study, the analysis of the experiences of users of public sports facilities was divided into four factors. The questionnaire was composed of four factors and 16 items including convenience of visitors to sports facility, level of exercise equipment and operation program, level of the price of the facility, satisfaction of the related subsidiary facilities of the public sports facilities. The survey items are as follows.

**Table 6: Questionnaire for satisfaction measurement of users**

Factors	Items
Exercise equipment and operation program	Diversity of exercise facilities (Q4)
	Variety of exercise programs (Q5)
	Types and assortment of exercise equipment (Q6)
Convenience of the visit	Quality level of exercise equipment (Q7)
	Travel time to sports facility (Q1)
	Traffic convenience to sports facility (Q2)
	Available Type of transportation (Q3)
	Parking convenience (Q12)
Level of the price	Usability in winter and rainy day (Q16)
	Price level of exercise facilities (Q8)
	Price of exercise programs (Q9)
	Level of price discount (Q10)
	Staffs' Services (Q11)
Subsidiary facilities	Dining space for visitors (Q13)
	Relaxation space for visitors (Q14)
	Additional facilities for users (Q15)

The satisfaction factors of users of public sports facilities were analyzed. First, users of the sports facilities were found to be most satisfied with factors such as exercise equipment and programs which leading group should be interested in the development process of sports facilities. Especially, collaboration with athletic experts is essential in the business process. Next, the factors of convenience of the visit were found to have a significant effect on satisfaction. It shows high value of travel time and traffic convenience, parking, convenience of use in winter and rainy weather. Then it is analyzed that the level of price of the facilities and programs are important. This suggests that it is necessary to establish and operate an appropriate level of pricing policy because the level of the price serves as an objective criterion for the user of the facility. Finally, satisfaction with the subsidiary facilities was suggested. The result of this analysis shows the fact that the Public Sports Complex is often used for exercise purpose only unlike other commercial facilities and it is combined with the problems such as clothing when visiting the facility. However, it should be noted that the recent sports facilities are converging with cultural facilities.

Next, the most dissatisfied experiences of using the public sports facilities were analyzed to extract items that should be prevented on developing public sports facilities in the future. The results of the questionnaire analysis consisting of 12 responses and 1 direct entry items are as follows.

The largest number of responses were in terms of long travel time and distance (34.9%), followed by a lack of facilities (14.0%) and a below expected facility level (11.6%). Based on the results of the analysis, there are main factors leading group should manage for the continuous operation in the process of building the complex sports facility (Table 6-8).

**Table 7: Satisfaction per factors of sports complex users**

Factor/stems	Min.	Max.	Ave.	SD
<b>Exercise equipment and operation program</b>				
(Q4)	2.00	5.00	4.00	0.83
(Q5)	2.00	5.00	3.79	0.89
(Q6)	2.00	5.00	3.65	0.84
(Q7)	2.00	5.00	3.74	0.69
<b>Convenience of the visit</b>				
(Q1)	1.00	5.00	3.49	0.98
(Q2)	2.00	5.00	3.63	0.95
(Q3)	2.00	5.00	3.53	0.88
(Q12)	1.00	5.00	3.63	0.98
(Q16)	2.00	5.00	3.35	0.90
<b>Level of the price</b>				
(Q8)	2.00	5.00	3.58	0.96
(Q9)	1.00	5.00	3.47	0.88
(Q10)	1.00	5.00	3.42	0.93
(Q11)	2.00	5.00	3.58	0.85
<b>Subsidiary facilities</b>				
(Q13)	1.00	5.00	3.09	0.92
(Q14)	1.00	5.00	3.23	0.87
(Q15)	1.00	5.00	3.26	0.93

**Table 8: Dissatisfaction analysis of sports complex users**

Factore	Items	Ratio	C. ratio
Q5	Long travel time and distance	34.9	34.9
Q9	Lack of space for children	14.0	48.9
Q2	Less than expected facility level	11.6	60.5
Q1	Expensive rates	09.3	69.8
Q8	Lack of seating space	09.3	79.1
Q3	Level and quantity of equipment	04.7	83.8
Q4	Staff Services	04.7	88.5
Q10	Inadequate customer service	04.7	93.2
Q6	Uncomfortable traffic	02.3	95.5
Q12	Discomfort in winter, rainy day	02.3	97.8
Q13	I do not know	02.2	100

## CONCLUSION

This study focused to derive the planning factor through the satisfaction analysis of public complex sports facility among the large-scale public facilities. In the theoretical background, the definition of public sports facilities, facility cases and satisfaction factors for facility use were identified. The empirical analysis was conducted to examine the effect of individual factors on user satisfaction.

First, users of the public sports facilities were found to be most satisfied with factors such as exercise equipment and programs. It means that collaboration with athletic specialist is essential. Next, the convenience factors of the visit, especially, the travel time and traffic convenience, the parking lots and the degree of

convenience in winter and rainy season, have important effect on satisfaction in order. The price level of the facility could be an effective judgement standard for the choice of facility. The results of this analysis show that the users of the Public Sports Complex evaluate the quality of the exercise as the most important purpose more than anything. The highest rate of dissatisfaction factor was the length of travel time and distance, followed by lack of facilities for youth and facility level below expectation. As a result of the analysis, preventive measures and management of dissatisfied items are essential, considering that the ratio of unsatisfied factors is more than twice as much as one of satisfaction factors.

This study analyzed the factors affecting the satisfaction based on the questionnaire analysis of users of Public Sports Complex. Future studies require detailed analysis of the satisfaction of various users in different groups. Identifying the similarities and differences of satisfaction factors in diverse groups will be an essential task for determining the program composition and operational planning of public sports facilities suitable for the region.

## REFERENCES

- Han, J.H., 2003. A study on selective factors and use contentment extents in case of public gym users. Master Thesis, Myongji University, Seoul, South Korea.
- Jung, J.H., 2013. Study on the satisfaction of public sport facility users in Seoul metropolitan area. Master Thesis, Sogang University, Seoul, South Korea.
- Lee, J.Y. and M.S. Cho, 2012. Analysis of influencing factors on satisfaction of daily living physical education service. Korea Policy Res., 12: 451-472.
- Lim, E., 2007. The relationship between public physical exercise facility and satisfaction. Master Thesis, Korea National Sport University, Seoul, South Korea.
- Lim, M.K., 2011. The effects from the quality of public sports institution service customer satisfaction and repurchase intention. Master Thesis, Kookmin University, Seoul, South Korea.