



# Contemporary Safety Management of Virtual Golf in South Korea

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## Abstract

**Purpose:** The purpose of this study is to provide implications for virtual golf safety management in Korea through the literature review of current safety issues of virtual golf industry. **Research design, data, and methodology:** This study employed a qualitative approach to review prior studies and related documents presenting current safety perspectives of virtual sports facility management. First, the study reviewed the experiences of virtual golf players and safety criteria suggested from previous literatures. Second, two experts in sport facility management reviewed the manuscript including implications and provided their opinions including major implications and insights for virtual sport industry. Views of experts were added to the final manuscript. **Results:** This study found that installation standards and safety and hygiene standards by industry are enacted for the safety management of sports facilities, however, there is a need for standards to be adjusted because the contents are general, abstract, and lack detail, thus causing difficulty to secure effectiveness. **Conclusions:** For virtual golf courses, it is necessary to develop a safety inspection checklist that suits the characteristics of indoor virtual golf. In this line, safety criteria need to be developed with the consideration of characteristics of screen golf to establish an efficient safety management system and create a safe use environment.

**Keywords:** Safety Management, Sport Facility, Virtual Golf, Risk Management

**JEL Classification Code:** D6, H53, H72, I31, L83

## 1. Virtual Golf in South Korea

The virtual sports market, which started with screen golf in the late 1990s, is now rapidly spreading to various fields of sports. Virtual golf is a system game designed to enjoy golf indoors using virtual reality and is also called a golf simulator. Of the virtual sports, screen golf is popular in South Korea. The number of people who play screen golf in Korea is about 3.51 million, and the market size as of 2019 is 1.39 trillion won, exceeding the indoor and outdoor golf driving range market size (715.6 billion won). In particular, despite the impact of the COVID-19 pandemic, which has recently hit the world, the domestic screen golf industry has grown due to the influx of overseas golfers and an increase in new golfers centered on the 2030 generation. For example, Golfzon, a representative screen golf provider in South Korea, has been increasing its sales every year since 2017 and its sales of 2020 increased by 21.1% compared to the sales of the previous year recording in 281 billion KRW. As such, screen golf contributes to the popularization of golf and changes the paradigm of the golf industry in Korea (Choi, Greenwell, Hums, & Hambrick, 2019). Along with field golf, screen golf is playing a leading role in the golf industry. This is a remarkable phenomenon in that the global golf population has declined since the late 1990s (Mullin, Hardy, & Sutton, 2014).

The major reason of showing explosive growth of virtual golf in South Korea is that it plays a role in removing some of the barriers to entry to golf by lowering the temporal, spatial, and economic burdens of field golf (Choi et al., 2019; Lee & Kwon, 2021). For example, virtual golf utilizing interactive simulators allows participants to use actual golf clubs and balls in front of a projection screen, which eliminates limitations regarding time, weather, and location by providing global golf courses through downloaded aerial images (Kim, Seo, Kim, & Chang, 2014).

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Furthermore, in Korea, virtual golf provides a competitive-economical option compared with actual golf. In the Republic of Korea, it is expensive (e.g., high green fee) to enjoy golf because the government charges the golf industry a high tax rate (Choi, 2016). Therefore, this new type of golf has become an alternative option, eliminating the financial burden. Plus, virtual golf has become one of the more popular sport-related businesses in South Korea, as it offers convenient accessibility for golfers who may experience difficulties in accessing actual outdoor golfing opportunities (Choi et al., 2019).

## **2. Safety Management of Virtual Golf**

Prevailing facility management (FM) discourses have recognized the importance of efficient facilities to improve the quality of life and the productivity of business. Since the strengthening of safety inspection and management of sports facilities is directly related to the health and life of the people, active and systematic safety management of the sports facility industry is required (Donaldson, Borys, & Finch, 2013). In line with this recognition, facility management research in sport has elaborated systematic modules for safety operation of facility. In order to safely manage sport facilities, safety management systems including safety policy, safety risk management, and safety promotion should be considered (Lee, Kim, & Yu, 2018). In particular, safety management of sport facility has viewed safety accidents of consumers as an important matter. This is because sport facilities provide a number of services to the public and some issues of this area that are in common is the lack of knowledge regarding safe practices in the sport facility industry. Safety accidents that occur during sports activities cause atrophy of sports activities. In this sense, it is important to minimize and prevent the possibility of safety accidents for business (Chen, 2018). Although the risk of safety accidents exists due to the nature of sports activities, the importance of safety management of sports facilities is further emphasized because accidents can be prevented in advance through systematic safety management by establishing operational criteria of major components such as safety policy, safety risk management, and safety promotion (Vinodkumar & Bhasi, 2011).

In particular, unlike existing sports facilities, virtual experience sports facilities are a new type of sports facilities based on IT technology (Miles, Pop, Watt, Lawrence, & John, 2012). Because it takes place in a narrow indoor space, there is a relatively high risk of safety accidents during the use of the facilities, they are vulnerable to fire, and the forms of activities vary in each sport, so it is necessary to implement safety management in consideration of these characteristics (Kwon, & Chung, 2018). In addition, safety management of virtual sports facilities is important because it also affects the use experience and selective properties of facilities (Kwon, & Chung, 2018; Seo, Kim, & Choi, 2015; Wang, Kim, & Park, 2020). Safety issues such as the management and hygiene of facilities such as turbid indoor air, batting mats, balls, gloves, and shoes, anxiety due to dark indoor environment, dangerous situations due to narrow space, and fire risk were found to be negative experiences when using screen golf, and safety, pleasant environment, facilities, smoking and drinking, and indoor ventilation were found to be required. Factors corresponding to safety management of a screen golf, such as securing a safe distance, cleanliness and air purification, were shown as important optional properties (Kwon, & Chung, 2018).

As such, the safety management of sports facilities is important not only to prevent the contraction of sports activities through the prevention of safety accidents, but also to the marketing aspect because it affects the use experience and selective properties. Therefore, it is necessary to create a safe environment and to increase satisfaction in using the facility through systematic safety management of the virtual golf.

Virtual golf has appeared since the late 1990s, but it was supposed to be reported as golf driving range business until the Act on the Installation and Use of Sports Facilities has been amended in 2019. Therefore, accordingly, it was obliged to comply with the facility standards and safety and sanitation standards prescribed by the Special Act on the Safety Management of Publicly Used Establishments (hereinafter referred to as the Multi-Use Facilities Act) and the golf practice range business of a reported sports facility under Article 10 of the Sports Facilities Act, and to equip fire-fighting and safety facilities. However, according to Korea Consumer Agency, 20% of screen golf practice areas have emergency exits locked, 75% do not have portable emergency lights or operate, and 35% do not have enough space around the batter's box, so the ceiling is damaged by the golf club and exposed to safety management risks. Also, due to insufficient management of the screen golf course facilities, a damaged golf club may cause blindness, or due to insufficient space around a batter's box, the golf club may be hit by a ball that has popped out after hitting the screen or may be hit by a backswing and be injured.

As safety management problems of screen golf have emerged, the need for detailed facility standards and safety and hygiene standards for screen golf courses has been raised (Seo, Kim, & Choi, 2015). As a result, on September 19, 2019, the Sports Facilities Act was revised, and a virtual experience sports facility business was newly established in the reported sports facilities business, which included screen golf courses and screen baseball stadiums, and specific screen golf course facility standards and safety and hygiene standards were prepared.

Screen golf shall comply with the common standards of facility standards for sports facility business and standards for each type of sports facility business. The specific facility standards specified in the golf event of the virtual experience sports facility business are as shown in Table 1.

**Table 1.** Criteria for Virtual Experience Sports Facilities Business Golf Facilities

Screen golf course facility standard
<ul style="list-style-type: none"> <li>○ The distance from the other seat to the screen shall be at least 3M, the height from the other seat to the ceiling shall be at least 2.8M, and the distance from the other seat to the waiting seat shall be at least 1.5M, and there shall be sufficient space around the other seat to prevent the occurrence of wall, ceiling, and other equipment from colliding with the golf club swung by the user.</li> <li>○ All walls, except the screen, must be made of a shock-absorbent material.</li> <li>○ The screen should be completely attached to the wall without defects.</li> <li>○ The floor shall be installed with non-slippery materials.</li> </ul>

Like the facility standards of the sports facility business, the common standards for safety and hygiene are presented and the standards for each type of sports facility business are presented. Looking at the safety and hygiene standards of screen golf, it is stated that equipment such as golf clubs and golf shoes rented to users should be managed safely and hygienically.

### 3. Implications for Virtual Golf Safety Management

The virtual experience sports facility business is a small-scale sports facility business, and the small-scale sports facility business conducts safety checks twice a year through self-inspection. Therefore, in the case of a screen golf, the operator shall conduct a safety inspection on his/her own according to the safety inspection table for small-scale sports facilities, and submit the results of the safety inspection to the mayor supervisor or the alderman in writing or through the website (sports facility notification) operated by the National Sports Promotion Foundation. The previous self-safety checklist for small sports facilities consisted of contents that were specified as common standards in facility standards and safety and hygiene standards for sports facility businesses (Bouabdallaoui, Lafhaj, Yim, Ducoulombier, & Bennadji, 2021). In other words, all facilities corresponding to small-scale sports facility businesses were conducted with the same safety inspection table without reflecting the characteristics of each sports facility. However, as the guidelines for safety inspection of sports facilities were revised in November 2020, the items of the self-safety checklist for small sports facilities were revised. The overall safety inspection was supplemented, and the facility standards for screen golf were included as the facility standards for each sports facility and safety and hygiene standards were added.

As a result of the establishment of a virtual experience sports facility business in the reported sports facility business, the standards for screen golf course facilities and safety and hygiene standards are prepared, and the safety inspection table for small sports facilities is revised, and the safety management of screen golf is conducted twice a year through self-inspection. However, such legal systems do not properly reflect the characteristics of screen golf facilities and operations, and are specified around the facility installation standards, which do not comprehensively include the contents necessary for the safety management of screen golf. Although installation standards and safety and hygiene standards by industry are enacted for the safety management of sports facilities, there is a need for standards to be adjusted because the contents are general, abstract, and lack detail, thus causing difficulty to secure effectiveness. In addition, despite the revision of the self-safety checklist for small sports facilities in November 2020, safety inspections have been carried out through the previous self-safety checklist for small sports facilities, which was not specified until recently.

The volume and environment of sports facilities are different for each sport, the types of activities performed inside the facilities are various, and the required safety management elements are different. For efficient safety management of small sports facilities, it is necessary to develop a safety inspection checklist that suits the characteristics of sports facilities for each sport. In this context, it is necessary to develop safety criteria considering the characteristics of screen golf to establish an efficient safety management system and create a safe use environment.

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